

**POSITIONING MHLATHUZE WATER AS A SERVICE  
PROVIDER FOR USUTHU-MHLATHUZE CATCHMENT  
MANAGEMENT AGENCY**

**By**

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Masters of Business Administration in Water Management at the  
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**DECLARATION OF ORIGINALITY**

I, SIPHO ABEDNEGO MOSAI, hereby confirm, except where indicated through the proper use of citations and references, that this is my own original work and I have not submitted it for any other degree or course.

Signed: A. Mosai

Date: 27/10/2004

## ACKNOWLEDGEMENTS

**I wish to express my heartfelt and sincere gratitude to:**

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My precious daughter, Senwelo, for being my source of inspiration.

Above all, Jehovah God.

## **EXECUTIVE SUMMARY**

### **1. BACKGROUND**

Mhlathuze Water (MW) is a public sector water utility created in terms of Water Act 54 of 1954, MW has legislative mandate to provide support services to DWAF and other government institutions such as municipalities and Catchment Management Agencies (CMAs).

The objective of the CMA is to manage and coordinate water resources management functions at local level. This includes the power to manage, monitor, conserve and protect water resources and to implement catchment management strategies (NWA, 1998).

Because of shortage of water resources specialist skills such as water resources monitoring, water resources assessment, flood prevention, and resource protection to mention few, the Usuthu-Mhlathuze CMA will have to outsource some of the specialist functions to private and public institutions like Mhlathuze Water on a competitive basis (DWAF, 2003).

### **2. PURPOSE**

The primary purpose of the dissertation is to analyze and understand the needs of the Usuthu-Mhlathuze CMA as well as MW's competencies so as to develop positioning strategy for MW.

To achieve the primary purpose of the dissertation the following research objectives have been identified:

- Identification of the needs of the target CMA.
- Identification of MW's strengths and weaknesses to see if MW can satisfy the needs of the target CMA.
- Analysis of competitors' strengths and weaknesses to measure MW against competitors.

The three analyses will provide a base essential for developing and recommending a positioning strategy to MW.



### **3. METHODOLOGY**

The customer needs analysis information of the Usuthu-Mhlathuze CMA was mainly sourced from the following documents:

- Usuthu-Mhlathuze Situation assessment (**Appendix 1**).
- Proposal to establish the Usuthu-Mhlathuze CMA (**Appendix 2**).
- Legal review on CMAs (**Appendix 3**).
- Australian documentation on catchment management institutions (**Appendix 4**).

For the competitor analysis, a profile of most organizations in the water sector operating in the area of the CMA was sourced from MW's consultants panel for various disciplines (**Appendix 5**).

The internal analysis was compiled using information from reports produced by MW in the last five years and was also informed MW's participation in various studies and projects in the catchment management area (**Appendix 6**). Strategic employees from various MW's departments were contacted with the view of authenticating the analysis findings.

### **4. FINDINGS AND CONCLUSION**

A number of areas of need for the imminent Usuthu to Mhlathuze CMA were identified. These included water quality management, flood management, construction and operation of waterworks, monitoring the performance of water users, monitoring the condition of water resources, alien vegetation management, education on water resource management, promotion of community participation, ensuring access to information regarding water resource management, development of a Catchment Management Strategy, provision of water to meet environmental needs, ensuring sustainable water sharing and efficient water use, and pursuing opportunities for productive use of alternative the water source.

The competitor analysis (**Appendix 7**) provided the strengths and weaknesses of competitors likely to target the CMA as service providers. The likely major competitors of MW are: Scott Wilson, BKS, Jeffares and Green Consulting

Engineers, Water Resource Planning and Conservation Consulting Engineers and Ninham Shand Consulting Engineers.

Scott Wilson and DMM partnership have major strengths that MW would need to be aware of in developing a positioning strategy. The other competitors do not offer a suite of water resource management service. They are therefore not expected to be MW's major rivalries.

## **5. RECCOMENDATIONS**

MW should position itself as the low cost service provider because the imminent CMA will be very price sensitive.

Apart from positioning itself as a low cost provider, MW should also position itself as a deliver good quality services. MW's strengths in terms of experience, expertise, knowledge and understating of the water resource dynamics demonstrate that MW can safely position itself as a deliver good quality services.

MW is the only water resources management services provider that provides a suite of water resources management functions (**Table 5.1, p. 49**). The organization is also the only service provider that acts as an implementing agent that already provides water resource management services for DWAF (*de facto* CMA). Based on this, and the fact that MW is well known (DWAF, 2003), it is appropriate for MW to also position itself as leader in water resources management in the CMA area of operation (Thompson and Strickland, 2003).

The most appropriate promotional tool that will solicit immediate response and cultivate lasting customer relationship for MW is direct marketing (Kotler, 2000). This means that MW must package their service offerings and go and sell them directly to the *de fact* CMA and later to the CMA. The benefits of using this tool is that the message will be specifically directed to the prospect specifically prepared to appeal to CMA and can be immediately changed depending on the response (Kotler, 2000).

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## LIST OF ABBREVIATION

CITES	-	Convention on International Trade in Endangered Species
CLPA	-	Catchment and Land Protection Act of 1994
CMA	-	Catchment Management Agency
CMC	-	Catchment Management Committee
CWSS	-	Community Water Supply Schemes
DWAF	-	Department of Water Affairs and Forestry
ICM	-	Integrated Catchment Management
ICs	-	Implementation Committees
IWRM	-	Integrated Water Resources Management
J&G	-	Jaffares and Green Consulting Engineers
KZN	-	KwaZulu-Natal
MEA	-	Multilateral Environmental Management
MW	-	Mhlathuze Water
NWA	-	The National Water Act 39 of 1998
PIC	-	The Rotterdam Convention on the Prior Informed Consent
PIC	-	Prior Informed Consent
SAAWU	-	South African Association of Water Utilities
SW	-	Scott Wilson
S-W	-	Strengths and Weaknesses
SWOT	-	Strength, Weakness, Opportunity, Threats
TDS	-	Total Dissolved Solids
WMA	-	Water Management Area
WRC	-	Water Research Commission
WRM	-	Water Resources Management
WRP	-	Water Resource Planning and Conservation Consulting
WSA	-	The Water Services Act 108 of 1997

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# CHAPTER 1

## INTRODUCTION

### 1.1 BACKGROUND

Mhlathuze Water (MW) was established in 1980 with a primary mandate to design and construct a major regional Water Treatment Plant and a regional Offshore Effluent Disposal facility.

Over the years the organization's core business has grown dramatically and has extended service delivery to local and regional councils, it also supports the local Catchment Management Committee, acts as Implementing Agent for rural schemes as part of the Community Water Supply Schemes (CWSS) initiative of Department of Water Affairs and Forestry.

The area of MW covers some 37 000 km<sup>2</sup> (**Figure 1**) and within which the Board has built and operates Inter-basin Transfer Scheme, major Water Treatment Plants, two Offshore Effluent Disposal Pipelines and operates several other water and sewerage plants on an agency basis for local municipalities. All these assets have been funded without grant or subsidy from the Department of Water Affairs & Forestry, by raising loans on the capital market and servicing the debt through the Board's tariff structures.

#### Primary Activities

The primary activity of Mhlathuze Water is divided into core business and non-core business.

#### Primary Activities – Core Business

- Inter-Basin Transfers,
- The supply of Raw, clarified and potable water,
- Regional Effluent Disposal System.

Most of this core business is centered on the Greater Empangeni/Richards Bay industrial and residential complex.

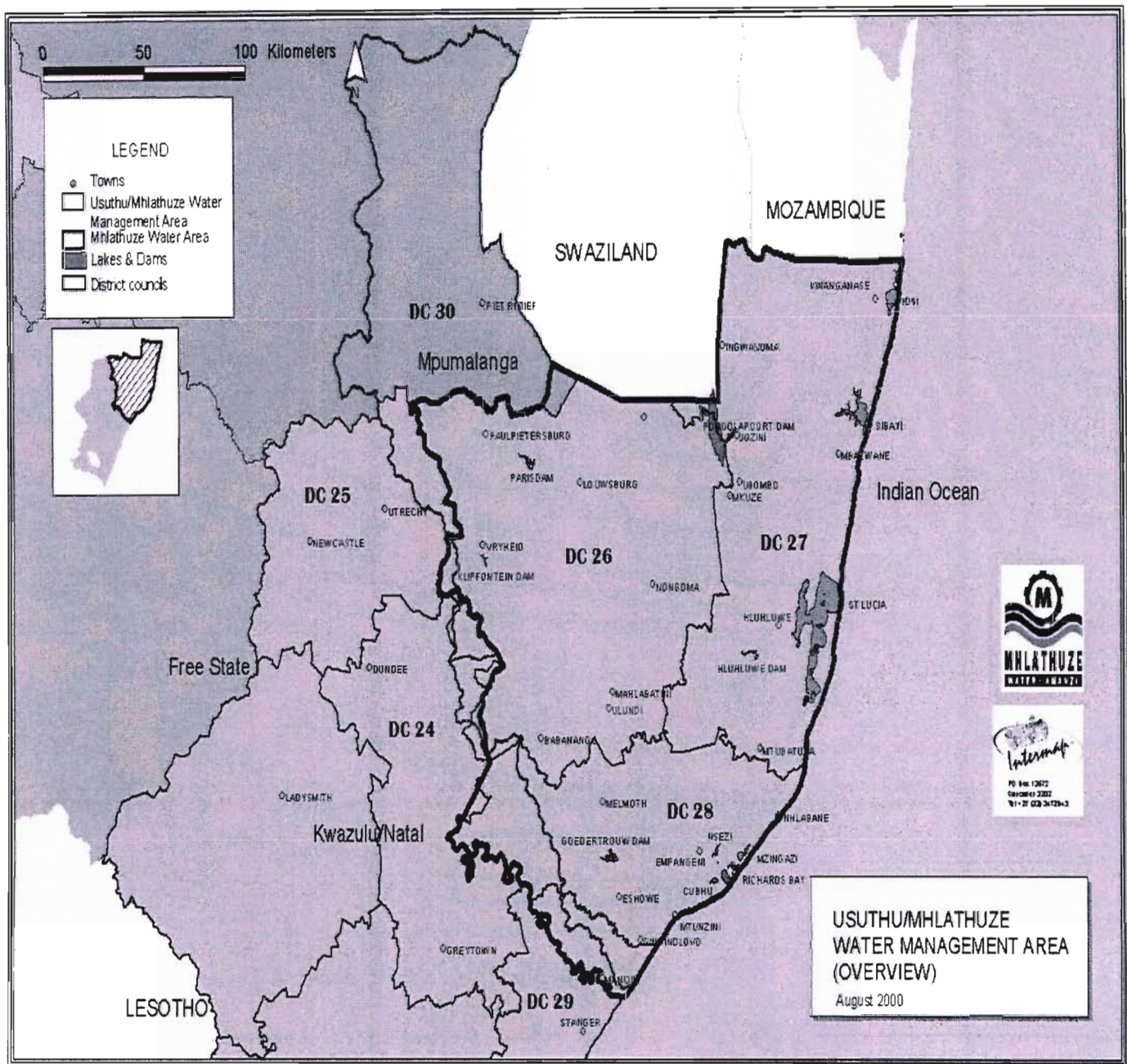


Figure 1. Mhlathuze Water Area of Operation (Mhlathuze Water, 2003)

### Primary Activities – Non-core Business

- Contractual service provision to various municipalities.
- Rural water services development.
- Acting as Implementing Agent for Department of Water Affairs and Forestry (DWAF).

### Other Activities

Commercial provision of Scientific Services to outside organizations.

As a public sector water utility created in terms of Water Act 54 of 1954, MW has legislative mandate to provide support services to DWAF and other government institutions such as municipalities and Catchment Management Agencies (CMAs).

The National Water Act (NWA) of 1998 requires that the Minister of Water Affairs and Forestry delegates the management of water resources to regional & local levels through the establishment of the CMAs. Within Mhlathuze Water's area of operation, the Usuthu-Mhlathuze Catchment Management Agency will be established (NWA, 1998).

In terms of section 77 of the NWA, the CMA is a body corporate that will have a board that is representative of all stakeholders. The Minister will appoint the members of the board and do so with the object of achieving a balance among the interests of water users, potential water users, local and provincial government and environmental interest groups (NWA, 1998).

In essence the objective of the CMA is to manage and coordinate water resources management functions at local level. This includes the power to manage, monitor, conserve and protect water resources and to implement catchment management strategies (NWA, 1998).

## **1.2 PROBLEM DEFINITION**

Because of shortage of water resource specialist skills such as water resource monitoring, water resource assessment, flood prevention, and resource protection to mention few, the

Usuthu-Mhlathuze CMA will have to outsource some of the specialist functions to private and public institutions like Mhlathuze Water on a competitive basis (DWAF, 2003).

Recognizing the importance and need for dedicated capacity and expertise in water resource management, the Board of Mhlathuze Water commissioned the establishment of the Water Resources Department to, amongst the others, develop a positioning strategy that will ensure Mhlathuze Water is the preferred service provider to the imminent Usuthu-Mhlathuze CMA. The challenge therefore is to develop a positioning strategy that will ensure Mhlathuze Water is the service provider of choice to the Usuthu-Mhlathuze Catchment Management Agency.

### **1.3 PURPOSE**

The primary purpose of the dissertation is to analyze and understand the needs of the Usuthu-Mhlathuze CMA as well as MW's competencies so as to develop positioning strategy for MW.

To achieve the primary purpose of the dissertation the following research objectives have been identified:

- Identification of the needs of the target CMA.
- Identification of MW's strengths and weaknesses to see if MW can satisfy the needs of the target CMA.
- Analysis of competitors' strengths and weaknesses to measure MW against competitors.

The analyses will provide a base essential for developing and recommending a positioning strategy to MW.

### **1.4 CHAPTER PLAN**

#### Chapter 1: Introduction

The chapter will provide background and motivation for the dissertation. In addition, it will outline the objectives of the research and also introduce the rest of the dissertation by presenting chapter plans.

#### Chapter 2: Catchment Management Agencies

The chapter will discuss the legislative framework supporting and guiding the establishment of the CMAs; catchment management guideline documents meant to provide guidance to the

imminent CMAs; compare the South Africa CMA model to that of Australia and bring to light challenges confronting developing countries in establishing CMAs and the Usuthu-Mhlathuze CMA in particular.

### Chapter 3: Positioning

The chapter will discuss the theory of positioning by firstly defining positioning, then explain the role of positioning in marketing, and finally provide guidance in terms of what the components of a positioning strategy should be.

### Chapter 4: Methodology

To develop positioning strategy of Mhlathuze Water three analyses will be conducted. This includes the needs, competitor and internal analyses.

#### 4.1 Needs analysis

The needs analysis will outline the needs of the Usuthu-Mhlathuze CMA using information from the:

- Usuthu-Mhlathuze Situation assessment.
- Proposal to establish the Usuthu-Mhlathuze CMA.
- Legal review on CMAs.
- Australian documentation on catchment management institutions.

#### 4.2 Competitor Analysis

This part of the methodology will assess MW's service offerings in relation to the competition's offerings. The section provides the strength and weakness analysis of individual competitors that are likely to target the CMA as service providers. Information that contains a profile of most organizations in the water sector operating in the area of the CMA will be sourced from MW's consultants panel. The consultants panel is a list of service providers in engineering and water resource management sector readily available to MW should consulting services be required.

### 4.3 Internal Analysis

The internal analysis will focus on the evaluation of MW's strengths and weaknesses to determine if MW has got competences to seize opportunities that may be presented with the establishment of Usuthu-Mhlathuze CMA and deal with threats posed by undesirable situation in the environment. In other words, the analysis will be helpful in matching MW's resources and capabilities to the water resource management services opportunities that may be made available by the CMA as it outsources some of its functions.

### Chapter 5: Findings and Discussion

Findings and discussion chapter would report on analyses conducted in methodology chapter. The chapter will also discuss findings in relation to the positioning theory.

### Chapter 6: Conclusion and Recommendations

This chapter would wrap up the document and recommend positioning strategy for MW.

### Chapter 7: References

## CHAPTER 2

### CATCHMENT MANAGEMENT AGENCIES

Chapter 2 provides the water industry context within which the Catchment Management Agencies (CMAs) will be established. The subsections will (i) discuss the legislative framework supporting and guiding the establishment of the CMAs; (ii) discuss catchment management guideline documents meant to provide guidance to the imminent CMAs; (iii) compare the South African CMA model to that of Australia and (iv) bring to light challenges confronting developing countries in establishing CMAs and the Usuthu-Mhlathuze CMA in particular.

#### 2.1 WATER RESOURCE MANAGEMENT BY CATCHMENT MANAGEMENT AGENCIES

Water is a wonderful substance that occurs naturally in solid, liquid and gaseous form (Clarke, 2002). It is recognized as the most fundamental and indispensable of all natural resources and neither socio-economic development nor environmental diversity can be sustained without water (Ashton and Seetal, 2002).

Despite the fact that the earth is encapsulated by water that covers 71% of the planet, water is a scarce commodity (Clarke, 2002). Of the planet's total water, 98% is undrinkable seawater, 1,2% is locked in the polar caps and the glaciers, and only 0.8% is left for drinking, irrigation, manufacturing, brewing, sewage, washing, and so forth. (Clarke, 2002).

The earth's average rainfall over the entire surface is 850mm per year. South Africa's annual rainfall is 500mm per year making it a semi-arid country (DWAF, 1996). South African water resources are therefore scarce and need to be effectively and efficiently managed for the current and future generations (Clarke, 2002). The Department of Water Affairs and Forestry (DWAF) has recognized that the establishment of catchment institutions at local level is the best way of ensuring water resources are utilized in a sustainable manner (DWAF, 1996). Catchment management is the management of water resources within a water drainage basin (Lake Eyre Basin, 1997). It is the relationships of people living upstream and downstream of the river basin connected by the fact that one person's consumption may be another's loss, and one person's waste disposal another's pollution (Lake Eyre Basin, 1997).

The process towards the establishment of catchment management agencies in South Africa is a politically-led process underpinned by a number of pieces of legislation. The next subsections discuss legislation that gives effect to the management of water resources by CMAs.

### **2.1.1 Catchment Management Agencies' legislative framework**

The establishment of the CMAs in South Africa is given effect by the National Water Act of 1998 (NWA, 1998). The essence of establishing CMAs is basically to ensure that water resources are utilized in a sustainable manner for the current and future generations (NWA, 1998). It is widely recognized that best way of sustainably managing water resources is to have these resources managed at regional or local level by the people themselves (DWA, 1996). South Africa is a signatory of many Multinational Environmental Agreements (MEAs) that give effect to the right to an environment that is not harmful and access to basic water supply. The following are some of the examples of Multilateral Environmental Agreements (MEA) that lead to the entrenchment of CMA concept in the South African legislation:

#### **(a) The Convention on International Trade in Endangered Species (CITES)**

CITES is one of the first MEAs drawn up and entered into force around 1973. CITES objective is to control trade in endangered species and their parts, as well as products made from such species. It establishes trade controls, ranging from a complete ban to a partial licensing system (The Convention on International Trade in Endangered Species, 2003).

#### **(b) The Vienna Convention on Substances that Deplete the Stratospheric Ozone Layer, with the Montreal Protocol**

The objective of the Montreal Protocol is to institute a regime of control for several classes of industrial chemicals now known to harm the stratospheric ozone layer. It aims to control trade in ozone-depleting substances and trade in products containing controlled substances (The Vienna Convention on Substances that Deplete the Stratospheric Ozone Layer, with the Montreal Protocol, 2003)



**(c) The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal**

The Basel Convention resulted from the concern of developing countries, particularly in Africa, that they could become the dumping grounds for hazardous wastes that could no longer be disposed of in the developed world. The Basel Convention has been marked by disputes over the most appropriate strategy for controlling the movement of hazardous waste (regional bans versus prior informed consent) and the technical difficulty in establishing unambiguous distinctions between wastes and materials for recycling (The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal, 2003).

**(d) The Convention on Biological Diversity**

The objective of the convention is to conserve biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising from the use of genetic resources (The Convention on Biological Diversity, 2003).

**(e) The Convention on Climate Change and Kyoto protocol**

The ultimate objective of the convention and the protocol is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner (The United Nations Framework Conventions on Climate Changes, 2003)

**(f) The Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade**

The purpose of this convention is to ensure that the appropriate authorities in the importing country are informed promptly if the imported goods are banned or severely limited in the countries of their origin (The Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 2003).

**Summary**

Environmental agreements and treaties of which South Africa is a signatory informed the entrenchment of sustainable utilization of natural resources in the country's legislation. The

next section briefly discusses several South Africa pieces of legislation enforcing sustainable development.

### **2.1.2 South African Legislation underpinning the establishment of CMAs**

Starting with the Constitution, the South African government has promulgated various pieces of legislation that give effect to its commitment to Multilateral Environmental Agreements.

#### **(a) The Constitution of the Republic of South Africa Act 108 of 1996**

The Constitution of the Republic of South Africa Act 108 of 1996 is the highest and most important law of the land (The Constitution of the Republic of South Africa Act 108 of 1996). The Constitution provides that everyone has the right to an environment that is not harmful to their health or well being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative measures that among the others ensures sustainable development (The Constitution of the Republic of South Africa Act 108 of 1996). Furthermore, section 27 of the Constitution provides that everyone has the right to sufficient food and water (The Constitution of the Republic of South Africa Act 108 of 1996).

To give effect to the right to basic water and to a healthy environment, the Water Services Act 108 of 1997 (WSA) and the National Water Act 36 of 1998 (NWA) Act were, amongst the others, passed as laws. The WSA and the NWA were passed by DWAF as the custodian of all water resources and primarily the responsible authority for the provision of water services.

#### **(b) The Water Services Act 108 of 1997**

The object of the Water Services Act 108 of 1997 (WSA) is, amongst the others, to provide for the right to access to basic water supply and sanitation; and to provide for the establishment and disestablishment of water boards and water services committees and their powers and duties (WSA, 1997). In terms of section 29 of the WSA, the primary function of the water boards is to provide water services to other water services institutions within its service areas. The government-owned water boards currently operate water resource infrastructure, bulk potable water supply schemes (selling to municipalities and industries), some retail water infrastructure and some waste water systems. Furthermore, in terms of section 30 of the WSA, water boards may perform an activity other than its primary activity (WSA 1997). These activities may include, but not limited to (WSA, 1997):

- Providing management services, training and other support services to water services institutions, in order to promote co-operation in the provision of water services;
- Providing catchment management services to or on behalf of the responsible authorities;

According to South African Association of Water Utilities (SAAWU), there are currently 19 water boards providing bulk water to municipalities (SAAWU, 2003). Prior to the promulgation of the WSA, water boards had a monopoly in the provision of bulk water services within their area of supply, which was protected by legislation (SAAWU, 2003). That is, municipalities were obliged to use the bulk water services provided by a water board. The WSA changed the relationship between water boards and municipalities in order to ensure consistency with the South African Constitution, which allocated the primary responsibility for ensuring the delivery of water services to local government (SAAWU, 2003). This change meant that municipalities are no longer obliged to use the services of water boards and that all services provided by water boards to municipalities must be undertaken by means of mutually agreed contracts (WSA, 1997). The promulgation of the new legislation meant that it is no longer business as usual for the water boards. It also meant that Water boards now operate in a truly competitive water services industry where they need to establish themselves as entities that can compete with and beat both private sector and other public sector entities for business opportunities (SAAWU, 2003). This means that water boards like Mhlathuze Water (MW) need to position themselves as service provider of choice to institution like CMAs that will be operating within the industry.

### **(c) The National Water Act 39 of 1998**

The National Water Act (NWA) gives effect to the constitutional proviso of the right to an environment that is not harmful and protected for the benefit of present and future generations from the water resources point of view (NWA, 1998). It also gives effect to section 27 of the Constitution that provides the right to sufficient food and water. The general objective of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, effectively and efficiently managed (NWA, 1998). To achieve this purpose, the Act requires that the minister of Water Affairs establish suitable institutions to implement the law.

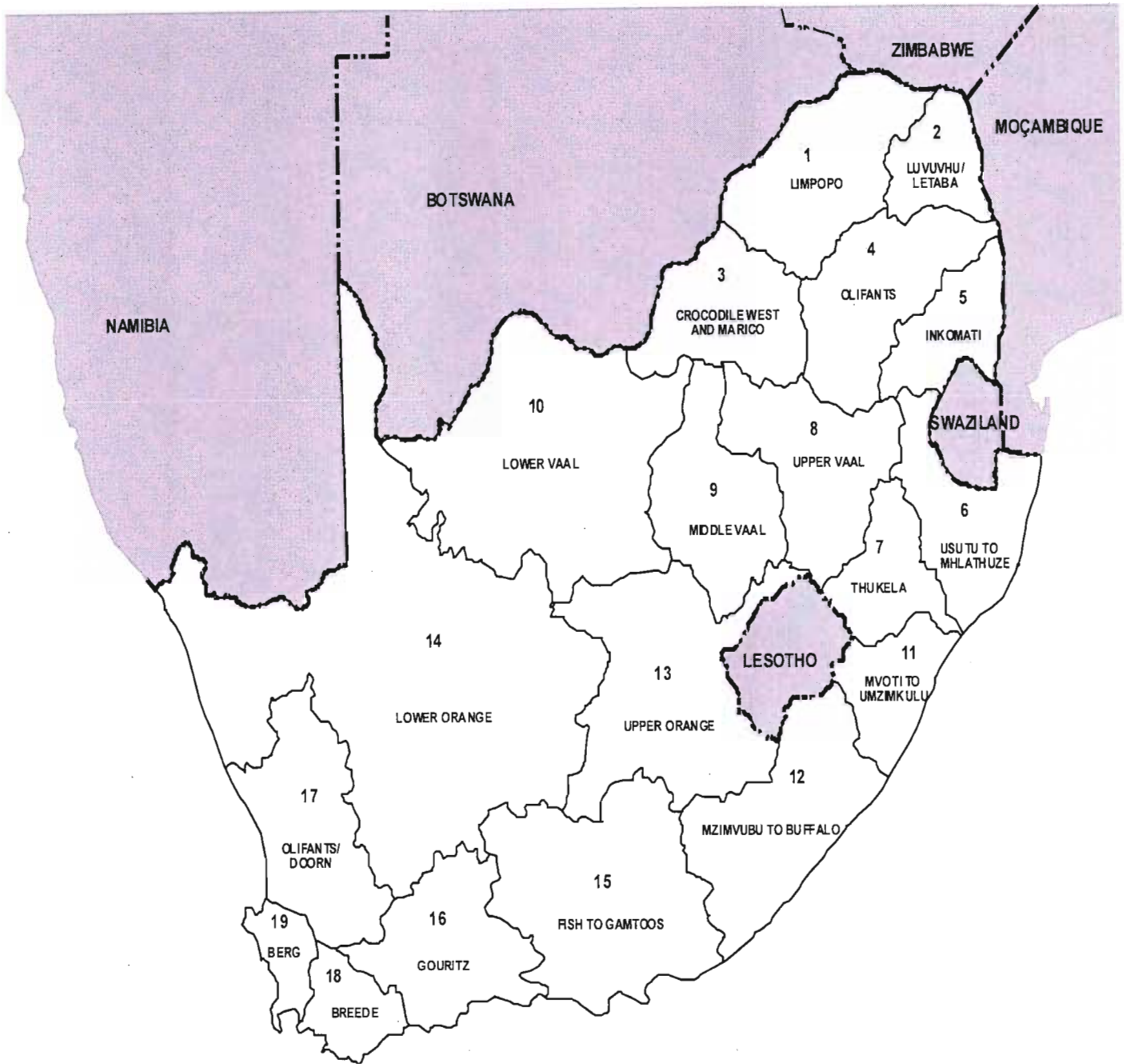
Chapter 7 of the NWA provides for the progressive establishment of the CMAs by the Minister of DWAF (NWA, 1998). The purpose of establishing these agencies is to delegate water resource management to regional or catchment level and to involve local communities.

In terms of Government Notice No 1160 of October 1999, South Africa is divided into 19 Water Management Areas (**Figure 2**). A CMA will be established in each Water Management Area (WMA) (Government Notice No 1160, 1990). It is expected that there will be three CMA in Kwazulu Natal. The Mvoti to Mzimkhulu CMA, Thukela CMA and the Usuthu to Mhlathuze CMA (**Figure 3**). MW area of operation mainly covers the Usuthu-Mhlathuze WMA (**Figure 1, p. 2**).

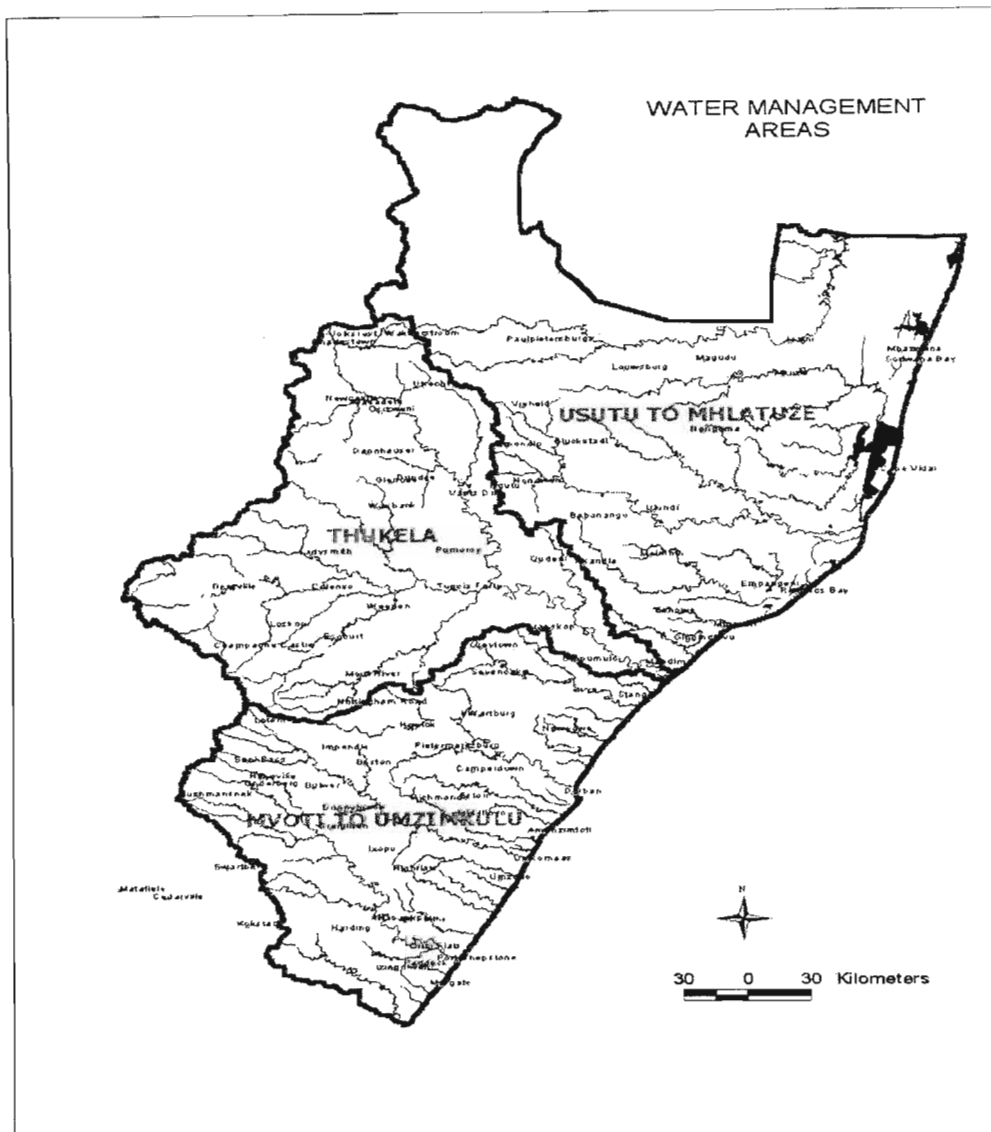
The CMA will develop and give effect to a catchment management strategy, which provides the framework for management of water resources in a WMA and that is in harmony with the National Water Resources Strategy (DWAF, 2000).

Every CMA will be governed by a board, representing the interests of water users, potential water users, local and provincial government and environmental interest groups (DWAF, 2000). The board must seek cooperation and agreement on water-related matters from the various stakeholders and interest groups within the WMA (DWAF, 2000). Furthermore, the governing board does not form the actual water resources management functions, but rather ensure that these are performed within specified parameters, either by the CMA staff or other organizations to which functions have been delegated or contracted (DWAF, 2000).





**Figure 2** Water Management Areas (WMAs) of South Africa (Government Notice No 1160, 1990)



**Figure 3** The three Water Management Areas (WMAs) in Kwazulu-Natal (DWAF, 2003).

Because of the envisaged capacity challenges, various functions of the CMA may be outsourced under a management or service contract, to private companies, public institutions or other organizations (DWAF, 2003). While legal functions such as setting water user charges and issuing licenses cannot be contracted out, there are a range of functions that legally can be outsourced, such as identifying significant water management issues within the WMA and potential means of addressing them (DWAF, 2003); spring and source protection; flood prevention; construction and operation of waterworks; monitoring the performance of water users; monitoring the condition of water resources (including collection and analysis of

information); education on water resource management; training and capacity building within the CMA and amongst other stakeholders; collection of water use charges; debt collection; financial and non-financial audits; engineering; security and cleaning services; operation of workshops; communication and public relations; recruitment of CMA staff (DWAF, 2003). The WSA allows for Water Boards to provide support services to the CMA should the CMA decide to outsource any of these function (NWA, 1998).

### **Summary**

The establishment of CMAs in South Africa is a political imperative informed by many treaties of which South Africa is signatory. The South African Constitution has since provided for sound environmental management. From a water resources management point of view, the South African government has promulgated the NWA that provides for the establishment of CMAs to effectively and efficiently manage water resources. Furthermore, the WSA that provides for the establishment of Water Boards was also promulgated. In terms of the WSA, Water boards may provide support services to CMAs.

A number of guides have also been mainly produced by DWAF and the Water Research Commission (WRC) to assist and provide support to the development and implementation of CMAs in South Africa. The next sections looks at them.

#### **2.1.3 Catchment Management Agencies' Guideline documentation**

To assist with the development and functioning of CMAs, several guideline documents have been written because delegation of water resource management to the lower levels can only be successful if accompanied by appropriate support in terms of tools, resources, etc.

The WRC and DWAF have played a leading role in providing guideline documents to imminent CMAs. The formative documents began in 1996 with a joint publication report entitled 'The Philosophy and Practice of Integrated Catchment Management - Implications for Water Resources Management in South Africa' (DWAF, 1996). The publication presented the result of a research project that reviewed local and overseas experiences with integrated catchment management (ICM). The report then provided suggestions for the incorporation of ICM principles into South African water resource management policy (DWAF, 1996). The document was the first step in the development of a perspective on South Africa's water

resource management (Karodia, 1998). The document informed the formulation of the ‘White paper on a National Water Policy for South Africa’ (DWAF, 1997).

The ‘White paper on a National Water Policy for South Africa’ was followed by a set of guidelines for the development of catchment management plans: ‘Guidelines for Catchment Management to Achieve Integrated Water Resources management in South Africa’ (Gorgens, *et al.* 1998). The object of the document was to accentuate the importance of integrated catchment management as an all-encompassing concept, requiring the integration of water resource management with land management and environmental resource management. However, the document recommended that the implementation of CMAs be an incremental approach whereby the emphasis within CMAs would be on the integration of the water resources only, and in the short term leaving land management and environmental resource management out (Gorgens, *et al.* 1998). The base for this was that the inclusion of all would place huge demands on the resources and coordinatory capacity of the South African government (Gorgens, *et al.* 1998). Rather than inviting failure by commencing on too ambitious a footing, DWAF opted for incremental approach (Karodia, 1998).

Another project was initiated by DWAF together with WRC in the late 1997 to create a strategic plan detailing the steps required for the implementation of catchment management agencies in South Africa (DWAF and WRC, 1998). DWAF then released two publications, ‘The National Policy on the Implementation of Catchment Management in South Africa’ in July 2000 (DWAF, 2000) and ‘The development of a generic framework for a catchment management strategy’ in January 2001 (DWAF, 2001) to basically present framework template to facilitate preparation of the catchment management strategies that will be developed by the CMAs.

In November 2001 DWAF produced a ‘Guideline on the viability study for the establishment of a catchment management agency’ (DWAF, 2001a). This guideline document provided background, indicated issues that should be considered, and outlined an approach to assessing CMA viability. The viability study provided a strategic framework for the CMA operation based on specified assumptions, and highlighted critical requirements for a viable and sustainable CMA as proposed (DWAF, 2001a).



## Summary

In brief, the guideline documents provide a framework for the development of CMAs in terms of their functioning and operational structures. The next section looks at the South African model in relation to the tried and tested CMA model adopted by the Australians.

### 2.1.5 CMAs in Australia vis-à-vis CMAs in South Africa

The Catchment Management Authorities in Australia are established under the Catchment and Land Protection Act of 1994 (CLPA, 1994) to ensure integrated catchment management in their areas of operation. The considerable degradation of land, water and biodiversity resources, that impacts rural communities, economic production and natural ecosystems basically led to the establishment of CMAs across Australia (CLPA, 1994).

The CMAs in Australia not only focus on water resources, as is the case with the envisaged CMAs in South Africa. They also focus on land management issues and integrate the two (water and land management). The integration of land and water issues is informed by the interconnectivity of hydrology, land-use and aquatic ecology subsumed under the broader concept of natural resources, and, as complimentary life-support systems, under the even broader concept of the environment (Gorgens *et al.* 1998). According to Karodia (1998), the separation of the management of water resources from the land issues is a deliberate action by the South African government not to place huge demands on the newly established CMAs. The idea is to avoid failure by commencing on a too ambitious a footing, but instead adopt an incremental approach that will later look at land management issues as well (Karodia, 1998).

The CMAs establishment in Australia are driven by the lead government agency that after identifying problems such as water quality through their monitoring networks initiate discussions with relevant stakeholders in the catchment (DWAF, 1996). Stakeholders, with the guidance and technical support of the lead agency, will form a CMA to mainly deal with the identified problem (DWAF, 1996). The CMA will then develop objectives and strategy to address identified problems. With time, the CMA will look at the other catchment problems as its capacity increases, again with the support of the lead government agency (DWAF, 1996). The lead government agency can be the department that deals with water, environment or even agriculture (DWAF, 1996). Similarly, the establishment of CMAs in South Africa is driven by DWAF that also identifies a wide range of water resources challenges through monitoring networks (NWA, 1998). After the establishment of CMAs, DWAF will then only

look at policy matters related to water resources management and provide support to the CMAs that will be looking at operational matters at local level (NWA, 1998).

The structural set-up of the CMAs in Australia is similar to the envisaged structural set-up of CMAs in South Africa. The Australian structural set-up is comprised of:

**The Board** that is directly responsible for the development of strategic direction for land and water management in the region (DSE, 2004). The board also set priorities, evaluate the effectiveness of outcomes, monitor the external and internal environment and identify opportunities (DSE, 2004).

**The Implementation Committees (ICs)** that are conduits for local community input, and are responsible for the development of detailed work programs and the oversight of on-ground program delivery for specific issues or sub-catchments (DSE, 2004).

**The Staff** that is there to support the Board and ICs oversee development and implementation of programs and liaise with the community, government and other catchment-focused organizations (DSE, 2004).

Along similar lines the CMAs in South Africa will be comprised of:

**The Governing Board** – whose aim is to enable local interests to influence decisions about integrated water resources management within the CMA area of operation (DWAF, 2000). The governing board will also be representative of expertise, demographics, gender and previous involvement in water resources issues (DWAF, 2000).

**Catchment Management Committees (CMCs)** - that will act as conduits between water resources bodies and institutions such as Water Boards (DWAF, 2000) The essence of establishing CMCs is an acknowledgement of the fact that the CMA area of management will be too large and diverse for the CMA to effectively management it (NWA, 1998).

**The staff** – headed by the Chief Executive Officer will ensure implementation of the governing board's of policies and programmes. The CMA will have minimal staff and outsource all work that other service providers can provide more efficiently (DWAF, 2000).

## **Summary**

In brief, the CMA model of South Africa is very similar to that of Australia in terms of structure and function. The similarities suggest that the South African model is based on the Australian's model. The main question though, is whether CMA model in a developing country based on a model adopted from a developed one will function in a country with completely different challenges and obstacles. The next section looks at challenges facing CMAs in developing countries.

### **2.1.6 Catchment Management challenges in developing countries**

The concept of catchment management has been around for a long time in many developed countries like the United States, Canada, Britain and New Zealand (Lake Eyre Basin, 1997). In developing countries, however, the concept is still relatively new and the model has, in general terms, not been successful (Lake Eyre Basin, 1997). For example, the Damodar Valley Authority, India's attempt to adopt the USA's Tennessee Valley Authority model, proved to be a failure. Four decades after it was established, the only thing the Authority is managing is a thermal power plant (Lake Eyre Basin, 1997). In China, Basin Management Committees were established as early as the 1950s in some of the major river basins, such as the Yangtze and the Yellow, to plan and exploit water resources, generate electricity, mitigate flood damage and provide facilities for navigation. But the Committees quickly abandoned their broad agenda, and in the end focused narrowly on irrigation (Lake Eyre Basin, 1997). In Sri Lanka, the experience was much the same: a Water Resource Board was established in 1964 to promote integrated water resources planning. The Board never worked on its broad mandate, but instead concentrated on hydrological investigations and drilling tube wells (Lake Eyre Basin, 1997).

The adoption and implementation of the Usuthu-Mhlathuze CMA in South Africa is also faced by several challenges ranging from socio-political issues to technical capacity and capabilities challenges.

#### Socio-Political challenges

The estimated population of the Water Management Area (WMA), the CMA area of operation, is 2,2 million (Census, 2001). The socio-economic analysis reveals great disparities in terms of income, education and access to services, as is common in many parts of South Africa (DWAF, 2003a). The average per capita income for the area is R5 300, which is well

below the national average of R9 520 (DWAF, 2003). In addition, the poverty index of the WMA is very high with the most impoverished areas generally situated in rural parts of the WMA (DWAF, 2003a). The Ingwavuma district has in fact the second highest poverty index in the whole of the country. It has been stated that in the Mhlathuze sub-basin in Kwazulu-Natal, around 10 percent of the people, typically the better off, use 99 percent of available water resources (Steyl *et al.* 2000).

The WMA is subject to a range of political tensions as well. The CMA will have to manage tensions in carrying out its mandate (DWAF, 2003a). As such, it will have to ensure that it is seen to be part of a broader suite of co-operative governance and be seen to be consulting widely and in good faith.

### Water Quality Challenges

Potential problems with managing the pollution occurring in the Usuthu-Mhlathuze Water Management Area (WMA) are its size, multiple-catchments and dispersed nature (DWAF, 2001b).

Mhlathuze catchment, one of the multiple catchments of the Usuthu-Mhlathuze CMA, is a relatively small catchment with quite large areas of formal agriculture (DWAF, 2001b). Around Babanango, there is generally extensive livestock production that may pose pollution (DWAF, 2001b). Some erosion problems are also likely, particularly in the steep topography of the central valley area, which is predominantly subsistence agriculture. Areas of intensive vegetable production also exist (DWAF, 2001b). Towards the coast, the gradient flattens out, and sugar cane productions dominant, with soil loss and some nutrient and biocide contamination possible. Waste and bi-products from the milling of cane are potentially and historically (Archibald *et al.* 1969 cited by DWAF, 2001b) sources of significant organic pollution. Close to the coast, urban and industrial problems from Empangeni, eSikhawini and the Richards Bay complex are significant, and includes issues related to the harbour and shipping (Archibald *et al.* 1969 cited by DWAF, 2001b). The newly developing TICOR mining operation may also contribute to mineral and sediment pollution in this area (DWAF, 2001b).

Small adjacent catchments include the Mlalazi, with Eshowe and Mtunzini towns, and the Matigulu, with Gingindlovu and Matigulu towns (DWAF, 2001b). These catchments include



quite significant rural populations with erosion problems predominant (DWAF, 2001b). Localised faecal and related pollution is likely from some of the denser settlements, and extensive areas of sugarcane close to the coast may cause related pollution problems (DWAF, 2001b).

Faecal and nutrient pollution is likely in the upper Mfolozi catchment from Vryheid and settlement areas such as Emondolo (DWAF, 2001b). Mine related pollution problems are also possible with elevated sulphate levels from the upper Black Mfolozi River having been identified and attributable to coal mining (DWAF, 2001b). The Hluhluwe Umfolozi Game Reserve Complex is well-managed land use area with limited pollution potential (DWAF, 2001b). Below this, limited erosion related sediment and nutrient problems, and some localized faecal problems are likely in the flatter coastal margin where there are quite large areas of subsistence rural agriculture (including several other small catchments in the Nongoma area), commercial sugar cane (large and small scale), other plantation crops and some forestry (DWAF, 2001b). Mtubatuba has some faecal and nutrient pollution potential, and a large sugar mill is located here, with historical records of organic enrichment from wastes (Archibald *et al.* 1969 cited by DWAF 2001b).

DWAF (2003) noted gross pollution (high TDS, low pH, high sulphate and iron concentrations) in the Mkhuze River from coalmines in the Vryheid area. The central areas of both catchments are quite dissected and have some erosion potential, but in general are utilized reasonably well by commercial livestock farming and game reserves (DWAF, 2003).

Close to the Swaziland border, there are some population concentrations including Pongola town, but pollution problems are limited, localized and faecal in nature (DWAF, 2003). Historical records (Archibald *et al.* 1969 cited by DWAF 2001b) note high organic pollution immediately below the town of Pongola but that the river recovered quite quickly after the town. The coastal flats below the Ubombo Mountains have significant irrigation schemes, which may cause problems (DWAF, 2003). The water table is very high, with salinity an issue (DWAF, 2003).

This section demonstrates that poor water quality pose a serious threat to water resources in the WMA and should as such receive appropriate attention from the CMA management.

### Alien Vegetation

The impact of alien vegetation in South Africa has become a major problem with severe consequences on the environment, particularly the water environment (Versveld *et al.* 1998). Various studies into the impact of alien vegetation have demonstrated that about 8% of the country is already invaded by alien vegetation, with an estimated 7% water consumed annually by these plants (Versveld *et al.* 1998). More worrying is the realization that these plants have a potential to increase at an estimated rate of 5% annually if left unchecked (Versveld *et al.* 1998).

Further compounding the threat posed by alien plants in general is the obvious lack of adequate resources to support initiatives that aim to bring alien invasive plants under control. According to Versveld and co-workers (1998), it would already have required an estimated R600 Million a year over five years by 1998 to effectively remove alien plants in the country (Versveld *et al.* 1998). These costs estimated equates to some R20 Billion budget over a 20-year projection to control alien plants in the country. However, the costs of doing nothing are even worse (Versveld *et al.* 1998). The CMA will have to systematically deal with alien plants situation in the WMA.

The Mhlathuze River System in the Usuthu-Mhlathuze Water Management Area has been identified as one of the most infected of the province (Versveld *et al.* 1998). Mhlathuze Water (2003) identified over 40 species of alien vegetation in the Mhlathuze River System.

The benefits associated with the eradication or reduction of alien plants and appropriate re-vegetation and management measures ranges from improved yields and quality of the freshwater resource systems, social empowerment through job creation (Mosai and Chunda, 2003), financial savings for water users in the water management area (as a result of augmentation deferment), to sustained biodiversity (and associated improved tourism opportunities), prevention of soil erosion (with resultant protection of arable land)/ siltation and hence prevention of blockage of rivers (with associated impacts on aquatic life) (Kasrils, 2000).

Chunda *et al.* (2003) and Magadlela (2000) reveal a host of challenges facing alien plant control programs. Among the challenges are: (a) The *ad hoc* and inconspicuous nature with which areas for clearing initiatives are being selected for intervention (Magadlela 2000); (b)

The gross lack of knowledge and information conveyance to the intended beneficiaries of the program (characterized by the enhanced spread of the alien species such as *Chromolaena odorata* and *Lantana camara* chiefly used as hedge/fence by rural communities) and relevant authorities (Chunda *et al.* 2003) as well as; (c) The lack of sufficient resources to support the control programs in the region where joblessness and poverty is rife (Chunda *et al.* 2003).

The CMA will have to commission programmes targeted at systematically and deliberately dealing with the spread of invasive alien plants in the Usuthu-Mhlathuze CMA.

### Financial challenges

The Usuthu-Mhlathuze CMA will be funded from two main sources. Ongoing income and initial DWAF seed funding (DWAF, 2003a).

The primary sources of the going funding for Usuthu-Mhlathuze CMA WMA will mainly be charges for irrigation, urban and industrial use, forestry and water transfers (DWAF, 2003a). The WMA is a net exporter of water via the two transfer schemes from the upper Usuthu into the Vaal system (DWAF, 2003a). This scheme will provide the facility for the CMA to gain additional income for its catchment management efforts. Similarly, however the WMA will become responsible to pay for the water transfer from the Thukela WMA. The estimated proportion of income generated by the five ongoing income sources is shown in **Table 2.1**.

**Table 2.1** Funding Sources for Usuthu-Mhlathuze CMA (DWAF, 2003a).

Funding Source	Year 1 (%)	Year 10 (%)
Forestry	15	15
Irrigation	8	14
Urban and Industrial	22	33
Water transfers (Balance of outflow and inflows)	1	2
DWAF subsidies	54	35
<b>Totals</b>	<b>100</b>	<b>100</b>

The other source of funding is the initial DWAF seed funding (DWAF, 2003a). This is extremely important as it comes at a point in the CMA's history when it will be at its most

vulnerable (DWAF, 2003a). The seed-funding amount will be calculated based on differences between income and expenditure (DWAF, 2001).

The major reason for the funding is to cover very significant once-off costs in terms of the establishment of systems and infrastructure and carrying out strategic studies and investigations in the first few years (DWAF, 2003a).

In the first year of operation, the Usuthu-Mhlathuze WMA will need an estimated total budget of R13m. Operational budget of R9m and capital budget of R4m. The CMA will, however, only receive an income of R11m from tariffs charged to water users. To make up for the shortfall of R2m, a subsidy (seed funding) will be needed from DWAF to make the CMA viable (DWAF, 2003a).

Of the R13m expenditure, a paltry R2.2m will go to water resource management programmes in **Table 2.2**.

**Table 2.2** The Usuthu-Mhlathuze water resource management programmes' budget for the first year of existence.

<b>PROGRAMMES</b>	<b>BUDGET (R'000)</b>
Working for Water	200
Catchment Management Strategy	500
Reserve determinations	200
River Sampling and analysis	100
Water Resources analysis	1 200
<b>TOTAL</b>	<b>2 200</b>

DWAF (2003a) make obvious that the CMA will be operating on shoestring budget that cannot support the implementation of most water resources management programmes. The CMA will then have to exploit other avenues to raise additional funds to implement a full spectrum of water resource management programmes.



### Technical capabilities challenges

It is envisaged that in the early operational stages, the Usuthu-Mhlathuze CMA may not have the necessary human resources in terms of numbers and capability. It is therefore recommended (DWAF, 2001) that specialist functions that require sometimes-esoteric skill sets be outsourced under a management or service contract, to private companies or public institutions. This includes: spring and source protection; flood prevention; construction and operation of waterworks; monitoring the performance of water users; monitoring the condition of water resources (including collection and analysis of information); education on water resource management; training and capacity building within the CMA and amongst other stakeholders; collection of water use charges; debt collection; financial and non-financial audits; engineering; security and cleaning services; operation of workshops; communication and public relations; recruitment of CMA staff. However, legal functions such as setting water user charges and issuing licenses cannot be contracted out (DWAF, 2001).

It is therefore critical that the CMA utilize institutions with good credentials as they outsource some of its technical functions.

### Information management challenges

According to the National Water Act, one of the CMAs initial functions will be to develop a catchment management strategy (NWA, 1998). For the CMA to do so it will require capability in information systems and address basic management support functions such as Internet access, Email, billing, debtors, asset management, etc. DWAF (2003) highlighted the serious lack of information on a number of the significant rivers. To correct this, the report recommended extensive monitoring programmes, both in terms of quantity and quality issues.

### **Summary**

The imminent Usuthu-Mhlathuze CMA will be faced by several daunting challenges. These include financial, technical and socio-political challenges. Most of these challenges are likely to be areas of need for the CMA particularly technical challenges that will probably be outsourced (DWAF, 2003).

MW intends providing support services to the imminent CMA and as such needs to position itself as a service provider of choice. The next chapter provides a review of positioning theory that will be utilized as a base to craft a positioning strategy for MW.

## CHAPTER 3

### POSITIONING

The previous chapter described Usuthu-Mhlathuze CMA in terms of its legislative framework, objectives, operational structure and functions. The previous chapter also highlighted challenges that are faced by the imminent Usuthu-Mhlathuze CMA. Because of the lack of capacity and technical capabilities in rising to these challenges, the CMA will have to outsource most of its technical functions to outside service providers on a competitive basis (DWAF, 2003). For MW, this means that the organization must be competitive to be the service provider of choice to the CMA. In other words, MW services' relative to the competition's offering will have to occupy a distinctly distinguishable place in the mind of the target market, i.e. the Usuthu-Mhlathuze CMA (Kotler, 2000).

This chapter reviews the theory of positioning that will be essential in positioning MW as a service provider of choice to Usuthu-Mhlathuze CMA. The chapter also defines positioning, explains the role of positioning in marketing, and provides guidance in terms of what the components of a positioning strategy should be.

#### 3.1 POSITIONING DEFINITION

Trout (1996 p. ix) defines positioning "not as what you do to the product, but what you do to the mind." His contention is that "the ultimate battleground is the mind, and the better you understand how the minds works, the better you'll understand how positioning works." Similarly, Hopkins (2003, p. 1) describes positioning "as understanding your niche and defining your competitive edge." Hopkins' (2003, p. 1) definition specifically mentions competition. Furthermore, "positioning creates clarity both externally and internally." Internally it "energizes the people and resources in a business toward a unified strategy for future growth." Hopkins (2003, p. 1). Positioning is also defined as "how one gives one's product or service brand identification." (Liraz 2002, p. 1). Further explained, positioning is "analyzing each market segment as defined by the research activities and developing a distinct position for each segment." (Liraz 2002, p. 1). The organization must determine how it wants to appear to the target segment, or what must be done for the target segment to ensure that it buys the product or service (Liraz, 2002). Kotler (2000, p. 298) simply defines positioning as "a distinctive place a product or service occupies in the mind of the target market."

Trout and Reis (1989) define positioning by emphasising the need to communicate a positioning strategy with the right and relevant target market. “Positioning is an organized system for finding windows in the mind. It’s based on the concept that communication can only take place at the right time and under the right circumstances.” (Reis and Trout 2001, p. 21). In essence, this definition suggests that marketers should look for open windows of the mind that have been targeted and only communicate with these windows as positioning opportunities. To further explain positioning, Reis and Trout (2001, p. 219) define positioning as “thinking in reverse. Instead of starting with yourself you start with the mind of a prospect. Instead of asking what you are, you ask what position you already own in the mind of a prospect.”

### **3.2 THE ROLE OF POSITIONING IN MARKETING**

The role of positioning in the marketing strategy is to link market analysis and competitive analysis to the internal corporate analysis (Lovelock, 1996). Lovelock (1996, p. 170) views these three analyses as diagnostic tools “ providing input to decisions relating to product development, service delivery, pricing, and communication strategy.” There are three principal uses of positioning in marketing management (Lovelock, 1996):

1. Defining and understanding the relationship between products and markets.
2. Identifying market opportunities for introducing new products and redesigning existing products.
3. Making marketing mix decisions relative to what the competition does.

Consequentially, Lovelock’s (1996) approach in developing the positioning strategy involves three steps:

*Market analysis* was the first step identified. In executing this analysis the following fundamental questions are raised (Lovelock, 1996):

- What is the overall trend and level of the demand for the service offered?
- What is the geographic position of this demand?
- Is the demand increasing or decreasing?
- Are there variations for the demand?

This analysis is “needed to gain a better understanding of not only the customer’s needs and preferences within each different segment, but also how each perceives the competition.” Lovelock’s (1996, p. 171). A market analysis mainly includes market segmentation and target strategy of the selected target audience (Lovelock, 1996).

According to Oliver (2002), understanding market segmentation is very important in that not all customers in a broadly defined market have the same needs. Furthermore, marketing practitioners have to select a segment and serve it. Oliver (2002) also emphasized that marketers need not straddle segments and sit between them. He further suggested that marketers need to understand how their market works (market structure), list what is bought (including where, when, how applications), list who buys (demographics, psychographics), list why they buy (needs, benefits sought), and search for groups with similar needs (Oliver 2002).

Obringer (2003) argues that determining the right target audience is probably the most important part of marketing efforts, because “it doesn't matter what you're saying if you're not saying it to the right people” (Obringer 2003, market plan page).

*Internal corporate analysis* was the second analysis identified by Lovelock (1996). Here the organization looks at its human, physical, information and financial resources together with an assessment of limitations and constraints. This analysis suggests the execution of an internal environment analysis (strength/weaknesses analysis) to determine if the organization has got competences to seize opportunities and deal with threats posed by undesirable situation in the market (Kotler, 2000).

*Competitive analysis* was the third analysis Lovelock (1996) identified. The analysis provides a sense of competitors strengths and weaknesses, “which, in turn, may suggest opportunities for differentiation.” Lovelock (1996, p. 171)

Put differently, the analysis assists managers in understanding who their rivals are, what their latest moves are, what their strengths and weaknesses are and what their likely future moves are. Reis and Trout (2001, p. 38) said: “In today’s market place the competitor’s position is just as important as your own”. Thompson and Strickland (2003, p. 103) describe the process of paying attention to what the competitors are doing as ‘competitive intelligence’. Obringer



(2003) continues by saying competitive analysis covers not only the directly competing companies (those who offer a very similar product with similar attributes), but also other product/service variations the firms may be competing with. In summary, Obringer (2003) recommends that in conducting the competitive analysis, management answer the following questions:

- What are the competition product's or service's strengths and weaknesses?
- What are their strengths and weaknesses as a company (financial strength, reputation, etc.)?
- Are there weaknesses that can be exploited?
- What are the differences between the organization's product features and competition's?
- What were their sales for last year?
- What is their pricing structure?
- In what media vehicles do they promote their products or services?
- What is their advertising message?
- Where else do they promote their products or services?
- What were their total advertising expenditures for last year?
- What is their overall goal (profitability, market share, leadership)?
- How are they trying to meet their goals (low prices, better quality, lower overhead)?

Making use of this analysis firms can differentiate their market offering from competitors' offerings. Kotler (2000) identified five dimensions that companies can use to differentiate their offerings (**Table 3.1**)

Precisely because competitors have a tendency of copying market offerings, most competitive advantages last for a short period (Kotler, 2000). As advised by Kotler (2000, p. 286), companies "constantly need to think up value adding features and benefits to win the attention and interest of choice-rich, price prone customers." It is therefore clear from this explanation

that differentiation for effective positioning is not a once-off exercise, but a never-ending course of action that needs continuous monitoring and evaluation.

**Table 3.1** Differentiation dimensions for positioning.

<b>Product</b>	<b>Services</b>	<b>Personnel</b>	<b>Channel</b>	<b>Image</b>
Form	Ordering ease	Competence	Coverage	Symbol
Features	Delivery	Courtesy	Expertise	Media
Performance	Installation	Credibility	Performance	Atmosphere
Conformance	Customer training	Reliability		Events
Durability	Customer consulting	Responsiveness		
Reliability	Maintenance	Communication		
Reparability	Repair			
Style	Miscellaneous			
Design				

*Source: Kotler (2000, p. 288)*

Similarly, Brooksbank (1994) also see a position strategy fundamentally made up of three components:

- A good comprehension of internal strengths and weaknesses together with a reasonable grasp of market opportunities and threats (SWOT analysis)
- Sound customer's needs understanding (Needs analysis)
- Competitive advantage (Customer analysis)

In summary, positioning links the three analyses that are the fundamental building blocks of a positioning strategy.

### **3.3 MARKET POSITIONING**

According to Reis and Trout (2001), the most powerful concept in marketing today is owning a word in the mind. To accentuate this point, Reis and Trout (2001, p. 9) said: "You look for the solution to your problem not inside the product, not even inside your own mind. You look for the solution to your problem inside the prospect's mind." Trout (1996, p. 23) advises market practitioners to "focus on one powerful attribute and drive it into the mind of the prospect".

Market positioning is about analyzing defined market segments and developing a distinct position for each segment (Liraz, 2002). It's about how the company's product(s) appears to the segment, or what must be done for the segment to ensure that it buys your product or service (Liraz, 2002). There are several main ways a company can position its products (Liraz, 2002):

Positioning on specific features - if a product or service has some unique features that have obvious value positioning on specific features may be more appropriate (Liraz, 2002).

Positioning on benefits – positioning on what a product or service can do for customers (Liraz, 2002).

Positioning for a specific use – this works best when one can teach customers how to use a product or when one uses a promotional medium that allows a demonstration (Liraz 2002).

Positioning against another product or a competing business – a strategy that ranges from implicit to explicit comparison. Implicit comparisons can be quite pointed, but the message is clear (Liraz, 2002). Explicit comparisons can take two major forms. The first form makes a comparison with a direct competitor and is aimed at attracting customers from the compared brand, which is usually the category leader. The second type does not attempt to attract the customers of the compared product, but rather uses the comparison as a reference point (Liraz, 2002).

Product class disassociation – Apparently it's particularly effective when used to introduce a new product that differs from traditional products (Liraz, 2002). Lead-free gasoline and tubeless tires were new product classes positioned against older products. (Liraz, 2002)

Hybrid bases - incorporates elements from several types of positioning. (Liraz, 2002)

Lovelock (1996, p. 173) warns, “positions are rarely static: they need to evolve over time in response to changing market structures, technology, competitive activity, and the evolution of the firm itself.” Simply put, market positions are evolutionary by nature and should change as the market changes.

### **Summary**

Positioning is about identifying the needs of a target market and satisfying them better than competition. This entails identifying the company's internal strengths and weaknesses an exercise that will enable the organization to satisfy the target customer's needs better than competition.



For MW to be successful it first has to understand its internal strengths and weaknesses (S-W analysis) then identify the segment in the market where its distinctive strengths are able to satisfy customers' needs (Customers' needs analysis). MW must also gather competitive intelligence (Competitive analysis) to have competitive edge of rivalries. The methodology chapter of the document details these three analyses for MW.

## **CHAPTER 4**

### **METHODOLOGY**

#### **4.1 PURPOSE OF THE DISSERTATION**

The primary purpose of the dissertation is to analyze and understand the needs of the Usuthu-Mhlathuze CMA as well as MW's competencies so as to develop positioning strategy for MW. To achieve the primary purpose the following research objectives were identified:

- Identification of the needs of the target CMA.
- Identification of MW's strengths and weaknesses to see if MW can satisfy the needs of the target CMA.
- Analysis of competitors' strengths and weaknesses to measure MW against competitors.

The three analyses will provide a base essential for developing and recommending a positioning strategy to MW.

#### **4.2 DATA SOURCES FOR THE NEEDS, COMPETITOR AND INTERNAL ANALYSES**

There are two broad sources of data: primary data and secondary data (Luck and Rubin, 1987). Primary data refers to data obtained from individuals, from families' representatives, or from organizations (Luck and Rubin, 1987). Groups of people are often used as a supply of information. Contrary, secondary data is data already acquired and available (Luck and Rubin, 1987). The type of data used to craft MW's position strategy is secondary data acquired internally within the organization and externally from other institutions.

The internal data sourced within the organization was used for the internal and competitor analyses. The external data sourced from DWAF for the current work in the establishment of CMAs was used for Usuthu-Mhlathuze CMA needs analysis.

#### **4.3 THE USUTHU-MHLATHUZE CMA NEEDS ANALYSIS**

The customer needs analysis information of the Usuthu-Mhlathuze CMA was mainly sourced from the following documents:

- Usuthu-Mhlathuze Situation assessment (**Appendix 1**).
- Proposal to Establish the Usuthu-Mhlathuze CMA (**Appendix 2**).
- Legal review on CMAs (**Appendix 3**).
- Australian documentation on catchment management institutions (**Appendix 4**).

#### **4.3.1 Proposal to Establish the Situation Assessment and Usuthu-Mhlathuze CMA reports**

The data used for the needs analysis of the Usuthu to Mhlathuze CMA was mainly data sourced from DWAF for the work done towards the establishment of the Usuthu to Mhlathuze CMAs. The two documents are the Usuthu-Mhlathuze Situation Assessment (**Appendix 1**) and the Proposal to Establish the Usuthu-Mhlathuze CMA (**Appendix 2**). The compilation of these two documents was preceded by a broad and extensive public participation process. Public consultation workshops were held in different locations in the WMA. Stakeholders attending these workshops were largely drawn from four sectors of the society:

- Government and public sectors
- Para-statal and utility sectors
- Private sector
- Civil society

The involvement of all stakeholders in the public participation process was informed by the notion that the essence of establishing CMAs is to involve everyone in the management of water resource and as such have their water resource needs addressed by the CMA. For example, if the majority of the stakeholders in the catchment are concerned with poor water quality, the CMA management will prioritize and put in place a water quality monitoring and assessment programme to manage water quality. Subsequently, water quality becomes an area of need for the CMA; the CMA will then either develop and manage water quality programmes internally or outsource the function if there is a lack of skills and expertise in-house. Usuthu-Mhlathuze Situation Assessment (**Appendix 1**) and the Proposal to Establish the Usuthu-Mhlathuze CMA (**Appendix 2**), identified several challenges that can be interpreted as areas of need for the envisaged CMA. These challenges are presented in the findings section of the dissertation.

### **4.3.2 Legal review on CMAs**

The legal review section of the dissertation provides an account of what will legally be expected of the CMAs as soon as they are established. A legal review document compiled by EnAct International was utilized as a source of information (EnAct, 2002). The review is titled “Towards an alignment of the roles and responsibilities of regulatory authorities in Kwazulu Natal Province vis-à-vis the establishment and operation of catchment management agencies: Legal Review” and seeks to clarify roles and responsibilities of the CMAs in South Africa (**Appendix 3**). The logic behind presenting legislative roles and responsibilities of the CMAs is that they (CMAs) will be bound by law to execute certain functions and therefore in areas where they don't have internal capacity they will then have to outsource them to outside institutions on a competitive basis.

### **4.3.3 Australian documentation on catchment management institutions.**

The South African CMAs structure and functions with a degree of customization is modelled around the Australian models (DWAF, 1996). It is therefore expected that Usuthu to Mhlathuze CMA will have similar functions and needs to those of Australian CMAs.

One of the most successful catchment management agencies in Australia is the Northern Adelaide and Barossa Catchment Water Management Authority (NAB, 2001). The authority has been functioning for several years and has got vast experience not only in water resource management but land management as well. Despite the fact that catchments are unique in terms of hydrology, pollution, demography, socioeconomics and so forth, there are key catchment management issues that the Usuthu to Mhlathuze needs to have in place that are absolutely fundamental to the success of any CMA (Water Research Commission, 1998). Because of the similarities between South African CMAs and Australian CMAs (DWAF, 1996), the Northern Adelaide and Barossa Catchment Water Management Plan (**Appendix 4**) was used to determine what the likely needs of the Usuthu to Mhlathuze CMA would be.

## **4.4 COMPETITOR ANALYSIS**

The objective of this analysis is to assess MW's competition's offerings. The section provides the strength and weakness analysis of individual competitors that are likely to target the CMA as service providers.

For the competitor analysis, a profile of most organizations in the water sector operating in the area of the CMA was sourced from MW's consultants panel for various disciplines. The consultants panel is a list of service providers in engineering and water resource management sector readily available to MW should consulting services be required. The consultant panel list was compiled by placing advertisements in various newspapers inviting consultants to submit their profile for inclusion in MW's consultant panel. Following receipt of consultant profile, the consultants were grouped according to their water service experience, water resource expertise, HDF (Historically Disadvantaged Firm) status following MW's "Consultants Appointment Procedures-Infrastructure-Projects and Studies."(**Appendix 5**).

From the consultant panel in the "A" category/group (firms with extensive water expertise, a proven track record and suitable for large or medium sized projects/studies), companies with experience and expertise in water resource management were identified as major competitors for MW (**Appendix 6**). A competitive analysis was then conducted based on their strength and weaknesses relative to MW's.

#### **4.5 MHLATHUZE WATER'S INTERNAL ANALYSIS**

The internal analysis focused on the evaluation of MW's strengths and weaknesses to determine if MW has competences that could be used to seize opportunities that may be presented with the establishment of the Usuthu to Mhlathuze CMA and deal with threats posed by undesirable situations in the environment. In other words, the analysis will be helpful in matching MW's resources and capabilities to the water resource management services opportunities that may be made available by the CMA as some of its functions are outsourced.

The analysis was compiled using information from reports produced by MW in the last five years and was also informed MW's participation in various studies and projects in the catchment management area (**Appendix 7**).

Strategic employees from various MW's departments were contacted with the view of authenticating the analysis findings. From the Water Resources department, a Water Resource specialist was contacted. From the Planning and Development department, the Programme manager was contacted. To authenticate the financial and information aspects of the internal analysis, MW's Financial manager was approached. For matters related to human resources,



MW's Human Resources manager was consulted and for matters pertaining to communication, validation was sought from the Communication officer.

The roles and positions of strategic employees in the organization are:

- The Water Resource specialist-The incumbent reports to the senior manager and his tasks include providing specialist water resource management advice to the board on all water resource management issues. The incumbent is also responsible for all water resource management projects undertaken by the board of MW. This is comprised of water quality management, alien vegetation management, water conservation and other water resource management function.
- The Programme manager-All projects manager in the Planning and Development department report to the incumbent. The Planning and Development department is responsible for all engineering related water resource management projects.
- The Financial manager is not only responsible for the financial management of the business but also in charge of information management part of the business. The manager has been with the organization for 15 years and has vast experience in the two aspects of the business (finance and information).
- The Human Resources manager is responsible for all human related matters.
- The Communication Officer is in charge of the development and implementation of MW's communication strategy. The Communication Officer is from the Administration department.

### **Summary**

The needs, competitor and internal analyses that are essential in the development of positioning strategy were conducted. The internal data sourced within the organization (MW) was used for the internal and competitor analyses. The external data sourced from DWAF for the current work in the establishment of CMAs was used for Usuthu-Mhlathuze CMA needs analysis. The next chapter presents the findings of the three analyses and discusses them.

## CHAPTER 5

### FINDINGS AND DISCUSSION

This chapter presents the results of the need, internal and competitor analyses. The chapter also discusses the three analyses in relation to the theory on positioning in the literature review chapter.

#### 5.1 THE USUTHU TO MHLATHUZE CMA NEEDS ANALYSIS

The previous chapter highlighted several documents recording water resource management challenges that can be viewed as the Usuthu to Mhlathuze CMA areas of need because of the envisaged capacity challenges of the CMA (DWAF, 2003). The findings of the needs analysis are reported in terms of the needs identified in documents attached as **Appendix 1 to 4**.

##### 5.1.1 Usuthu-Mhlathuze Situation Assessment

The Usuthu-Mhlathuze Situation Assessment (**Appendix 1**) document highlighted alien vegetation as one of the challenges facing the imminent CMA. Below is information from other reports that unpack alien vegetation situation in the CMA area of operation.

##### **Alien vegetation**

The impact of alien vegetation in South Africa has become a major problem with severe consequences on the environment, particularly the water environment (Versveld *et al.* 1998). Various studies into the impact of alien vegetation have demonstrated that about 8% of the country is already invaded by alien vegetation, with an estimated 7% water consumed annually by these plants (Versveld *et al.* 1998). More worrying is the realization that these plants have a potential to increase at an estimated rate of 5% annually if left unchecked (Versveld *et al.* 1998).

Further compounding the threat posed by alien plants in general is the obvious lack of adequate resources to support initiatives that aim to bring alien invasive plants under control. According to Versveld and co-workers (1998), it would already have required an estimated R600 Million a year over five years by 1998 to effectively remove alien plants in the country (Versveld *et al.* 1998). These costs estimated equates to some R20 Billion budget over a 20-

year projection to control alien plants in the country. However, the costs of doing nothing are even worse (Versveld *et al.* 1998).

The Mhlathuze River System in the Usuthu-Mhlathuze catchment management area has been identified as one of the most infected catchments of the province (Versveld *et al.* 1998). The study in W12B quaternary catchment of Mhlathuze River System identified over 40 species of alien vegetation alone in with various levels of abundance (Mhlathuze Water, 2003).

Chunda *et al.* (2003) and Magadlela (2000) reveal a host of challenges facing alien plant control programs. Among the challenges are: (a) The *ad hoc* and inconspicuous nature with which areas for clearing initiatives are being selected for intervention (Magadlela 2000); (b) The gross lack of knowledge and information conveyance to the intended beneficiaries of the program (characterized by the enhanced spread of the alien species such as *Chromolaena odorata* and *Lantana camara* chiefly used as hedge/fence by rural communities) and relevant authorities (Chunda *et al.* 2003) as well as; (c) The lack of sufficient resources to support the control programs in the region where joblessness and poverty is rife (Chunda *et al.* 2003).

The CMA will have to commission programmes targeted at systematically and deliberately dealing with the spread of invasive alien plants in the Usuthu-Mhlathuze CMA.

### **5.1.2 Proposal to Establish the Usuthu-Mhlathuze CMA**

The Proposal to establish the Usuthu-Mhlathuze CMA document (**Appendix 2**) presents a number of areas of need for the imminent Usuthu to Mhlathuze CMA. These include water quality management and information challenges.

#### **Water quality management**

- In the CMA area operation, several industrial towns are causing point source pollution with agricultural pollution problems dominating (DWAF, 2003).
- There is a possible soil loss and some nutrient and biocide contamination possible towards the coast as the gradient flattens out and sugar cane production is dominant (DWAF, 2001).
- Waste and bi-products from the milling of cane are potential sources of significant organic pollution in the WMA (Archibald *et al.* 1969 cited by DWAF, 2001).



- Localised faecal and related pollution is likely from some of the denser settlements, and extensive areas of sugarcane close to the coast may cause related pollution problems (DWAF, 2001).
- Faecal and nutrient pollution is likely at times in the upper Mfolozi catchment from Vryheid and settlement areas such as Emondolo (DWAF, 2001).
- Mine related pollution problems are also possible with elevated sulphate levels from the upper Black Mfolozi River having been identified, attributable to coal mining (DWAF, 2001).
- The town of Mtubatuba has some faecal/nutrient pollution potential, and a larger sugar mill is located there, with attendant historical records of organic enrichment from wastes (Archibald *et al.* 1969 cited by DWAF, 2001).
- In the Paulpietersburg area, there is some localised faecal and mining related pollution likely from human settlements and mining related activities, respectively. High TDS, low pH, high sulphate and iron concentrations in the Mkhuze River from coalmines in the Vryheid area have been noted (DWAF, 2001).
- The coastal flats below the Ubombo Mountains have significant irrigation schemes, which may cause problems. The water table is very high, with salinity an issue (DWAF, 2003).
- The river flows into Swaziland, and again international quality and quantity issues must be met (DWAF, 2001).

### **Information needs**

The Proposal to establish the Usuthu-Mhlathuze CMA document (**Appendix 2**) identified very significant gaps in the information that the CMA will need address. In addition, much of the existing information is in different formats, numerous different locations and refers to differing areas and boundaries (DWAF, 2001). To expedite the very important process of developing the initial Catchment Management Strategy, the CMA requires capability in information systems to address basic management support functions such Internet access, Email, billing, debtors, asset management, etc. The document also highlights serious lack of information on a number of the significant rivers. To correct this, the report recommended extensive monitoring programmes, both in terms of quantity and quality issues.

### 5.1.3 Legal review on CMAs

According to EnAct (2002) attached in **Appendix 3**, the CMAs will be expected to carry out a range of functions immediately upon its establishment. Some of the initial functions include to:

- Investigate, and advise interested persons on, the protection, use, development, conservation, management and control of the water resources in its Water Management Area.
- Develop a Catchment Management Strategy.
- Co-ordinate the related activities of water users and of water management institutions within its Water Management Area.
- Promote the co-ordination of the implementation of its Catchment Management Strategy with the implementation of any applicable development plan in terms of the Water Services Act (Act 108 of 1997).
- Promote community participation in its functions.

To carry out these initial functions the *de facto* CMA (DWAF) will have to undertake a preparatory work preceding the actual establishment of the CMA (EnAct, 2002). Amongst others, this entails:

- Access to information regarding water resource management in water management area.
- An understanding of all water users, particularly communities in the CMA area of operation.
- An understanding of all water management institutions and water users association in the area.

For the CMA to tackle these initial challenges, it will certainly need technical support from all relevant institutions in the water management area (DWAF, 2003).

### 5.1.4 Australian documentation on catchment management institutions.

The lessons learned from the Australian CMA models particularly from the Northern Adelaide and Barossa Catchment Water Management Plan, cited in the methodology chapter

and attached in **Appendix 4**, are that effective CMA need ensure the following activities are carried out:

- Provide water to meet environmental needs.
- Identify and protect ecologically significant areas.
- Pursue sustainable water sharing and efficient water use.
- Pursue opportunities for productive use of alternative water source.
- Achieve improvements in land management practices.
- Improve community awareness to underpin behavioural change.
- Improve monitoring and evaluation of key catchment processes.
- Facilitate the implementation of floodplain management strategies.

To make an assessment of what the imminent Usuthu-Mhlathuze Water CMA needs will be, water resource management challenges and tasks that CMA has to perform to achieve its legislative mandate, were translated or viewed as the Usuthu to Mhlathuze CMA areas of need. **Appendix 1, 2, 3 and 4** identified several challenges in accordance to the period of intervention needed tackle the challenges. The following list summarizes the challenges:

- Spring and source protection.
- Flood management.
- Construction and operation of waterworks.
- Monitoring the performance of water users.
- Monitoring the condition of water resources (including collection and analysis of information).
- Alien vegetation management.
- Education on water resource management.
- Promotion of community participation in its functions.
- Ensuring access to information regarding water resource management.
- Training and capacity building within the CMA and amongst other stakeholders.
- Development of a Catchment Management Strategy.
- Provision of water to meet environmental needs.
- Ensuring sustainable water sharing and efficient water use.
- Pursuing opportunities for productive use of alternative the water source.

It is envisaged that in the early operational stages, the Usuthu-Mhlathuze CMA may not have the necessary human resources in terms of numbers and capability. DWAF (2003) recommends that these specialist functions that require sometimes-esoteric skill sets be outsourced under a management or service contract, to private companies, public institutions or organizations.

## 5.2 COMPETITOR ANALYSIS

The purpose of competitors analysis is to assess MW's service offerings in relation to the competition's offerings. The analysis provides the strengths and weaknesses of competitors likely to target the CMA as service providers. To conduct the competitors analysis, MW's panel consultant list was used. The panel was compiled following MW's "Consultants Appointment Procedures-Infrastructure-Projects and Studies." (**Appendix 5**). The panel is made up of organizations in the water sector operating in the area of the CMA. From the consultant panel, companies in the "A" category (firms with extensive water expertise, a proven track record and suitable for large or medium sized projects/studies) with experience and expertise in water resource management were identified as major competitors for MW. A competitive analysis was then conducted based on their strength and weaknesses relative to MW's.

The likely major competitors of MW are: Scott Wilson, BKS, Jeffares and Green Consulting Engineers, Water Resource Planning and Conservation Consulting Engineers and Ninham Shand Consulting Engineers.

It was observed that most of them are engineering companies that offer water resources management services as add-on activities. **Appendix 6** provides a detail characterization of individual competitors in terms of number of years they have been in business, their strengths and weaknesses. In summary the following observation were made from the competitors analysis:

- Competitors in the water resources management segment do not offer a suite of water resource management services. For example, Water Resource Planning and Conservation Consulting is only good with water conservation and demand management and has no notable expertise and experience in water quality management. Scott Wilson is the opposite; they have expertise in water quality and no experience in water conservation.

- None of the competitors offer alien plant management services.
- Competitors are private organizations that are in the business to make profit through providing support services to the CMA.
- Competitors do not have laboratories to do water quality analysis.
- Scott Wilson has a partnership with DMM Development Consultants. All members of DMM Development Consultants are from previously disadvantaged background, qualified and competent engineers and scientists, who have gained their vast experience in South Africa and limited chemistry experience in the United States of America. DMM is a multi-disciplinary firm and offers services in Environmental investigations, Waste management, Water resources planning and management and Community development.

Scott Wilson and DMM partnership have major strengths that MW would need to be aware of in developing a positioning strategy. The other competitors do not offer a suite of water resource management service. They are therefore not expected to be MW's major rivalries.

### **5.3 MW'S INTERNAL ANALYSIS**

Presented in this section is a summarized version of MW's strengths and weaknesses informed by reports, major studies and projects undertaken by MW experts in the past five years. A list of these studies and projects undertaken by experts in the organization is attached in **Appendix 7**. The internal analysis findings are presented according to strengths and weaknesses identified from each department and confirmed by key experts in those departments.

#### **5.3.1 Water Resources Department**

- The Water Resources department of Mhlathuze Water have a strong water resources management expertise and proven track record in water quality, water conservation, and evasive alien plant control.
- The organization has a state-of-the-art ISO 17025 accredited laboratory facility that can be used to supplement water quality monitoring for catchment monitoring.
- The water resources department as part of its entrenchment strategy is already providing water resources management services to DWAF (*de facto* CMA) under management service contract. This includes the management of water quality

monitoring programmes such as microbial monitoring programme and the management of invasive alien plants removal projects. Talks are currently underway to appoint the water resources department as implementing agents for water conservation and demand management projects.

- Fruitful collaborative partnership with water resource management utilities in other catchments such as Umgeni Water. This enables exchange of ideas and leverage of one another's resources and expertise as the need may arise.

### **5.3.2 Finance and Information Department**

- The core business of MW (effluent management and bulk water provision) is in good financial position and can be deployed elsewhere as a source of financial resources.
- MW doesn't have cutting-edge e-commerce systems for accruing and exchanging information with customers and suppliers.
- MW doesn't have a website and cannot conduct business in the internet.
- As an organ of state MW and is not allowed to make profit. It is solely owned by the minister of DWAF and as such not allowed to make money by selling of shares or having equity owners. For Mhlathuze Water to operate it borrows money from capital or money markets to fund their capital projects on behalf of customers. For this reason, Mhlathuze Water does not have a strong balance sheet because it is highly geared.

### **5.3.3 Planning and Development Department**

- The organization has for the past 15 years conducted studies and produced water resource related reports that have provided the institution with relevant water resource know-how in the Usuthu-Mhlathuze Water Management Area (WMA).
- The utility has over the years built strong partnerships with DWAF (the *de facto* CMA in the absence of one) by acting as implementing agents for Community Water Supply Schemes (CWSS).

### **5.3.4 Human Resources Department**

- In terms of human assets, MW has highly motivated and energetic water resource specialists; astute professional engineers, business graduates with cutting-edge



managerial know-how; and collective learning embedded in the organization built over time.

- The company's vision is not clear and commonly shared by all employees.

### **5.3.5 Administration Department**

- Within the water resource management segment, MW brand name is well known.
- MW has got loyal customers in Mondi Kraft, Hillside and other industries in the Greater Empangeni area.
- There's a perception that MW is expensive. This came out of informal discussions with prospective customers in the MW's area of operation. This might taint brand's image.
- There's no formalized way of obtaining customer satisfaction feedback.
- The organization doesn't have institutionalized system and programme to encourage innovative ways of doing business. For example research and development section.
- MW doesn't have (unique) advertising and promotional talents. No marketing strategy.
- As a state institution it is highly bureaucratic, decision-making is not always quick.
- MW only has offices in Richards Bay making provision of services in other parts of the WMA difficult.
- MW has a low degree of organizational agility in responding to shifting market conditions and emerging opportunities because of many laws that governs the organization as an organ of state.

## **5.4 DISCUSSION**

The discussion section individually discusses the three analyses in relation to the pertinent theory mentioned in the literature review chapter.

### **5.4.1 Needs Analysis**

The imminent Usuthu to Mhlathuze CMA will be faced by several challenges that are likely to be CMA's areas of need (DWAF, 2003). These areas include water quality management, alien vegetation and information needs. It is also expected (DWAF, 2003) that the CMA will deal with these challenges by outsourcing them on a competitive basis to private and public institutions.



According to Kotler (2000) marketing is about identifying customer's needs and satisfying them better than competition. Documents and reports mentioned in methodology chapter outlines the imminent CMAs needs. However, Kotler (2000) warns market practitioners that customer's needs change with time. This suggests that MW should consistently watch the CMA's needs and accordingly change its positioning strategy because the CMA's needs might change post establishment phase. Lovelock (1996, p. 173) has also warned that "positions are rarely static: they need to evolve over time in response to changing market structures, technology, competitive activity, and the evolution of the firm itself." The market position of MW should be evolutionary by nature and should change as the market changes (Lovelock, 1996).

Also, Smith and Wheeler (2002) strongly believe that understanding customer needs is an absolute key in customer satisfaction. They further argue that satisfying customers is not enough because satisfied customers shop around. What is crucial is customer loyalty because loyal customers tend to become advocates of the service provider. MW has got long-term contracts with the *de facto* CMA (DWAF) for water resource management in the Usuthu-Mhlathuze CMA area. Through these partnerships with the *de facto* CMA, MW can learn more about the imminent CMA needs. The existing partnerships provide a good platform for MW to apply Smith and Wheeler (2002) lesson of not only seeking customer satisfaction but customer loyalty also. They believe that loyalty could be built by being the most service oriented, technology driven and being geographically diversified company.

Smith and Wheeler (2002, p. 35) are of the opinion that loyalty should be followed by advocacy. They say: "Revenue growth has everything to do with advocacy, the readiness of customers to prefer a supplier and then refer friends, relatives, and colleagues. Advocacy is a genuine, deeply felt, loyalty." Smith and Wheeler (2002, p. 36) suggest that advocacy is created "by creating such a differentiated experience that customers become your best salespeople." This suggests that MW should find ways of converting the *de facto* CMA (DWAF) into advocates that will sell MW to the imminent CMA.

#### **5.4.2 Competitor Analysis**

For MW to be the service provider of choice, it needs to have competitive advantage over its competitors (Thompson and Strickland 2003). Competitive analysis was conducted to have

sense of competitors strengths and weaknesses, “which, in turn, may suggest opportunities for differentiation.” Lovelock (1996, p. 171) (**Table 5.1**).

**Table 5.1.** The comparison of MW against competitors with regards to key tasks that the CMA will outsource.

<b>CMA NEEDS TO BE OUTSOURCED</b>	<b>MW</b>	<b>SW</b>	<b>BKS</b>	<b>WRP</b>	<b>J&amp;G</b>
Water Quality Management.	√	√	√	X	X
Flood management.	√	√	√	√	√
Construction and operation of waterworks.	√	√	√	X	√
Investigations in alternative the water source.	√	√	√	X	√
Monitoring the performance of water users.	√	√	√	X	√
Ensuring sustainable water sharing and efficient water use.	√	√	√	X	√
Monitoring water resources condition.	√	√	√	√	√
Water Conservation and demand Management.	√	X	X	√	X
Education on water resource management.	X	√	X	X	X
Water resource information management.	√	X	X	X	√
Promotion of community participation.	X	√	X	X	X
Water resource training and capacity building.	X	√	X	X	X
Alien vegetation management.	√	X	X	X	X
Development of a Catchment Management Strategy.	√	√	X	X	X

X - No experience in handling the task.

√ - The presence of skills and experience required for the tasks

J&G – Jaffares and Green Consulting Engineers

MW – Mhlathuze Water

SW – Scott Wilson SA

WRP – Water Resource Planning and Conservation Consulting

From the competitive analysis it was observed that MW has many strengths that could be utilized to provide MW with competitive edge. One of them is that MW is the single largest user of water resource in the imminent CMA area of operation with vast experience in performing with wide range water resource management functions.

Another MW's competitive advantage is that it provides a suite of water resource management services except for education on water resource management, promotion of community participation, water resource training and capacity building (**Table 5.1, page 49**). Kotler (2000) names firms that provide a range of services to a particular customer 'group market specialists'. MW can as such choose to differentiate and position itself as a one-stop service provider for a wide spectrum of water resource management tasks. Thompson and Strickland (2003) describe the type of competitive strategy that MW needs to adopt to position itself accordingly as a 'broad differential strategy'.

Also, none of the MW's competitors offer alien plant management services (**Table 5.1, page 49**). MW therefore stands unchallenged with respect to alien plant management services. Looking at the budget (R200 000) provided for alien vegetation programme (Working for Water) in the first year of the CMA operation (DWAF, 2003), it is not advisable for MW to position itself as specialists in alien vegetation management services only. Palmer and Cole (1995) suggest that if the market segment is too small and not feasible, it has to be discarded.

Water quality management includes the laboratory analysis of water quality samples. Competitors do not have laboratories to do water quality analysis. MW has laboratories to do all water quality analysis. In fact, MW's laboratories are ISO 17025 accredited. This gives MW a competitive edge over the competitors with regards to water quality management tasks.

Mhlathuze Water is an organ of state and as such not allowed to make profit. Competitors are private organizations that are in the business to make profit from customers that are price-sensitive (DWAF, 2003). This provides MW as a distinct advantage of being as low cost service provider.

The major potential threat is Scott Wilson (SW) SA. SW has a strong partnership with DMM Development Consultants. DMM was formed in 1997. All members of the firm are previously disadvantaged, qualified and competent engineers and scientists, who have gained their vast experience in South Africa and limited chemistry experience in the United States of America. DMM is a multi-disciplinary firm that offers services in Environmental investigations, Waste management, Water resources planning and management and Community development. Their profile matches that of Mhlathuze Water's Water Resources

department except that they have no experience working in the Usuthu-Mhlathuze CMA area of operation.

Water Resource Planning and Conservation Consulting (WRP) specializes in water conservation and demand management with no notable expertise and experience in other areas of water resources management such as water quality (**Table 5.1, page 49**). WRP positioning strategy can be referred to as 'individual service positioning' (Adcock, 2000) because they have chosen to focus on a specific water resource management service-water conservation and demand management.

Jaffares and Green Consulting Engineers (J&G) and BKS Consulting have blurred positioning strategies. They are very strong in engineering related tasks such as the construction of waterworks but absent in other areas (**Table 5.1, page 49**). From the analysis made, it is very difficult to understand what differentiates them from competitors.

#### **5.4.3 Internal Analysis**

The internal analysis presents several MW's strengths that the organization can leverage to seize opportunities that will be presented by the CMA as it outsources some of its functions. **Table 5.1 (page 49)** presents functions that are likely to be outsourced by the CMA and MW's ability to perform these functions when they are outsourced.

There are, however, internal organizational weaknesses that have to be attended to. MW must develop a strategy to deal with its weaknesses to position itself as the preferred service provider to the Usuthu to Mhlathuze Catchment Management Agency. The following weaknesses if not attended to may hamper MW's capability of providing information management support services to the CMA:

- MW doesn't have cutting-edge e-commerce systems for accruing and exchanging information with customers and suppliers.
- MW doesn't have a website and cannot conduct business in the internet.

MW has a low degree of organizational agility in responding to shifting market conditions and emerging opportunities because of many laws that governs the organization as an organ of state. According to the WSA (1987) water boards can provide support services to water management institutions such CMAs. So this weakness will not deny MW the opportunity of

providing the CMA water resource management support should the CMA needs dramatically change.

#### **5.4.4 MW's positioning options**

There are several main ways a company can position its products (Liraz, 2002):

Positioning on specific features - if a product or service has some unique features that have obvious value positioning on specific features may be more appropriate (Liraz, 2002). Positioning on specific features will require MW to identify a unique feature, such as the only service provider that provides a suite of water resource management, and base the organization's positioning on this unique feature.

Positioning on benefits – positioning on what a product or service can do for customers (Liraz, 2002). In this instance MW will focus on the benefits of the services, such as the protection and conservation of water resource, to be provided to the CMA and position itself accordingly.

Positioning for a specific use – this works best when one can teach customers how to use a product or when one uses a promotional medium that allows a demonstration (Liraz 2002). Here MW positioning strategy will focus on teaching the CMA management how to manage water resource effectively and efficiently.

Positioning against another product or a competing business – a strategy that ranges from implicit to explicit comparison. Implicit comparisons can be quite pointed, but the message is clear (Liraz, 2002). Explicit comparisons can take two major forms. The first form makes a comparison with a direct competitor and is aimed at attracting customers from the compared brand, which is usually the category leader. The second type does not attempt to attract the customers of the compared product, but rather uses the comparison as a reference point (Liraz, 2002). With this option MW can position itself by simply comparing its strengths (known brand in the water resource management field) to rivals weaknesses (relatively unknown brands in the water resource management field).

Product class disassociation – Apparently it's particularly effective when used to introduce a new product that differs from traditional products (Liraz, 2002). Lead-free gasoline and tubeless tires were new product classes positioned against older products. (Liraz, 2002). To

use product class disassociation positioning strategy MW will have to identify new services that differ from the traditional services outlined in **Table 5.1, page 49**.

Hybrid bases – With this option MW could incorporate elements from several types of positioning to develop positioning strategy. This can be a mix of benefits and uniqueness of the services MW is offering.

### **Summary**

Chapter 5 presents the results of the need, internal and competitors analyses. The chapter also discusses the three analyses in relation to the theory on positioning. The next chapter makes concluding remarks by combining the three analyses and also recommends a positioning strategy for MW.



## CHAPTER 6

### CONCLUSION AND RECCOMENDATIONS

The previous chapter (Chapter 5) presents the findings of the needs, competitor and internal analyses necessary to develop a positioning strategy. This chapter makes concluding remarks by combining the three analyses and then recommends a positioning strategy for MW.

#### 6.1 CONCLUSION

The primary objective of the Usuthu-Mhlathuze CMA will be to ensure that water resources in the WMA are efficiently and effectively managed, i.e. ensure sustainable utilization of water resources (NWA, 1998). To do so, the CMA will have to, amongst the others, ensure that the quality of water in the watercourses is of good quality, invasive alien plants are controlled, and water is conserved (DWAF, 2003). To perform these specialist functions, the CMA will rely heavily on service providers to execute these specialist tasks on their behalf due to the envisaged lack of capacity particularly in the early years (DWAF, 2003).

Mhlathuze Water (MW) intends providing support services to the imminent CMA and as such needs to position itself as a service provider of choice. Because the CMA will outsource its functions on a competitive basis, MW will have to compete with other service providers to obtain business from the CMA. The competitive analysis for MW identified five major competitors of MW: Scott Wilson, BKS, Jeffares and Green Consulting Engineers, Water Resource Planning and Conservation Consulting Engineers and Ninham Shand Consulting Engineers. The major potential threat for MW is Scott Wilson (SW) SA. SW has a strong partnership with DMM Development Consultants, a multi-disciplinary firm whose profile matches that of Mhlathuze Water's Water Resources department responsible for water resource management.

The internal analysis demonstrates several MW's strengths that the organization can leverage to seize opportunities presented by the CMA as it outsources some of its functions. MW, however, should also deal with some of its weaknesses that might put it at a disadvantage.



## 6.2 RECCOMENDATIONS

According to Kotler (2000) each company must decide how many differences to promote to its target customers. Ries and Trout (2001) favour one consistent positioning message, i.e. each brand should select an attribute and tout itself as number one on that attribute. This suggests that MW should position its service offerings as either best quality or best price. They believe that if a company hammers away at one of these positions and delivers on it, it will probably be best known and recalled for its strength.

Kotler (2000) does not agree that single positioning is always the best. He argues that double-benefit positioning or even triple-benefit positioning may be necessary if two or more firms claim the best in the same attributes. Given that “quality and customer satisfaction are rarely differential ideas.” (Trout 204, p. 35), MW is advised to adopt a triple-benefit positioning strategy that not only communicates the benefits but uniqueness of MW’s service offerings. Liraz (2000) refers to this type of positioning strategy as hybrid because it incorporates elements of several types of positioning.

### **Low cost service provider**

Hopkins (2003, p. 1) describes positioning “as understanding your niche and defining your competitive edge.” The socio-economic analysis reveals that the average per capita income for the Usuthu-Mhlathuze CMA’s area operation is R5 300, which is well below the national average of R9 520 (DWAF, 2003). In addition, the poverty index of the WMA is very high with the most impoverished areas generally situated in rural parts of the catchment area (DWAF, 2003a). This means that the imminent CMA will be very price sensitive as it outsources some of its functions. MW will therefore have to position itself as the low cost service provider.

Fortunately, competition will be posed by private organizations (**Appendix 6**) that are profit driven whereas MW is an organ of state that is allowed to provide the support services to the CMA on a cost recovery basis (WSA, 1997).

Thompson and Strickland (2003), however, advises companies to guard against compromising deliverance of good quality products in the name of keeping costs below those of rivals. Thompson and Strickland (2003) believe that a product offering that is too basic weakens rather than strengthens a firm’s competitiveness. They are also of the opinion that

pursuing cost reduction in a manner that sabotages the attractiveness of the company's product offerings turn buyers off.

There are basically two options from which MW can choose for achieving superior returns as a low cost provider (Thompson and Strickland, 2003). Option 1 is to use low cost edge to under-price competitors and attract CMA's contracts in great enough numbers to increase the total returns. Option 2 is to refrain from price cutting altogether, be content with the present market share and use lower-cost edge to earn a higher profit margin on each contract awarded, thereby raising the firm's returns (Thompson and Strickland, 2003). The simplest for MW is to win contracts for water quality management, monitoring and assessment; water conservation and demand management; alien vegetation control; and hydrological monitoring and leverage on economies of scale thereby affording to either under-price competition or use lower-cost edge strategy.

To succeed with a low cost provider strategy, MW must do the following:

- Scrutinize each cost creating activity and determine what drives the cost.
- Proactively restructure the value chain to eliminate nonessential work steps.
- Create cost-conscious corporate culture that feature broad employee participation in continuous cost improvement efforts
- Eliminate unnecessary perks and frills for executives
- Strive to operate with exceptionally small corporate staffs to keep administrative costs to a minimum.

### **Good quality service provider**

Differentiation strategy works best if there are many ways to differentiate the product or service (Thompson and Strickland, 2003). Apart from positioning itself as a low cost provider, MW should also position itself as a deliver good quality service. MW's strengths in terms of experience, expertise, knowledge and understating of the water resource dynamics demonstrate that MW can safely position itself as a deliver good quality services. Ideally, too, MW positioning strategy should be sustainable and not be easily matched by competitors (Doyle and Saunders, 1985). Positioning on the basis of superior quality service will also ensure sustainable differentiation precisely because quality is hard to copy (Doyle and Saunders, 1985).

Water resource management service and other services, because of their intangibility, are difficult to position and at times may require tangible supplement to reinforce them (Palmer and Cole, 1995). To deal with this challenge it is recommended that MW create an image that differentiates it from other competitors by indicating that there are many advantages/benefits in doing business with MW. The benefits are that CMA will be doing business with market leaders that provide good quality service at competitive prices. To also deal with the intangibility issue, MW will have to produce good quality reports that will serve as a tangible goods to help communicate MW's good quality service.

### **Premier water resource management service provider**

MW is the only water resource management service provider that provides a suite of water resources management functions (**Table 5.1, p. 49**). The organization is also the first and the only service provider that acts as implementing agent providing water resources management service to DWAF (*de facto* CMA). Based on this, and the fact that MW is well known (DWAF, 2003), it is appropriate for MW to also position itself as leader in water resources management in the CMA area of operation (Thompson and Strickland, 2003). Trout (2004) argues that being first is a differentiation idea. Substantiating this he says: "It's much easier to get into the mind first than to try to convince someone you have a better product than the one that did get there first." (Trout 2004, p. 38)

### **Communication**

However, Trout (1996, p. ix) defines positioning "not as what you do to the product, but what you do to the mind." His contention is that "the ultimate battleground is the mind." The challenge for MW is to find a specific place in the prospect mind wherein it will be positioned as a market leader that provides good quality service at competitive prices. To do so, Reis and Trout (2001) recommends that rather than seeking to improve perceptions on which MW is perceived weak, MW should play to its strengths. Because "improving product features and correcting weaknesses can be expensive." (Lovelock 1996, p. 180), MW's communication campaigns should focus on the organization's strengths (Reis and Trout, 2001) such as a non-profit making organization that provides good quality services. The campaigns should highlight strengths such as strong water resources management expertise and proven track record in water quality, water conservation, and evasive alien plant control.

The communication mode of MW must appeal to the Usuthu-Mhlathuze CMA and should also help the organization drive the prospect not only to be aware of, but also to act on MW's offer (Kotler, 2000). The most appropriate promotional tool that may solicit immediate response and cultivate lasting customer relationship for MW is direct marketing (Kotler 2000). The benefits of using this tool is that the message will be specifically directed to the prospect specifically prepared to appeal to CMA and can be immediately changed depending on the response. This means that MW must package their service offerings and go and sell them directly to the *de fact* CMA and later to the CMA (Kotler, 2000). MW should communicate their leadership position, competitive prices and the deliverance of good quality service.

### **Customer focus**

The absolute key for MW's positioning strategy success is to continuously stay in contact with the Usuthu to Mhlathuze CMA, understand the CMA's needs, and adapt the offerings to their changing needs. Adding value to the CMA and satisfying their needs should be at core of MW's business. MW should put the CMA's needs and wants in the forefront of their business offerings in order to survive (Kotler, 2000). Equally important, MW should bare in mind that differentiation for effective positioning is not a once-off exercise, but a never-ending course of action that needs continuous monitoring and evaluation (Kotler, 2000).

### **POSITIONING STATEMENT**

MW must position and differentiate itself as a market leader that provides good quality services at competitive prices. In the mind of the prospect Mhlathuze Water should be positioned as:

***The premier low cost service provider that adds the greatest customer value***

## CHAPTER 7

### REFERENCES

- Adcock, D. 2000, *Marketing Strategies for Competitive Advantage*. John Wiley & Sons Ltd, London.
- Ashton, P. and Seetal, A. 2002, *Challenges of Water Resource Management in Africa In Rebirth of Science in Africa: A shared Vision of Life and Environmental Science*. Umduas Press, Hatfield, South Africa.
- Brooksbank, R. 1994, The Anatomy of Marketing Positioning Strategy. *Marketing Intelligence and Planning*, 12(4), pp.10-14.
- Census, 2001 *Statistics South Africa* (online). <http://www.statssa.gov.za> [Accessed 20/06/2003].
- CLPA, 1994 *Catchment and Land Protection Act 1994, Act No. 52/1994* (Online) [http://www.dms.dpc.vic.gov.au/12d/C/ACT00793/1\\_4.html](http://www.dms.dpc.vic.gov.au/12d/C/ACT00793/1_4.html) [Accessed 06/02/2004].
- Chunda, M., Mosai, S. and Dilika, F. 2003, *Alien plants control strategy - Mhlathuze River catchment: WMA 6 (Kwa-Zulu Natal North Coast)*. Paper presented at the Working for Water: Inaugural Research Symposium. 19-21 August 2003, Kirstebosch, South Africa.
- Clarke, J. 2002, *Coming Back To Earth: South Africa's Changing Environment*. 1<sup>st</sup> Edition. Jacana (Pty) Ltd, Houghton, South Africa.
- Doyle, P. and Saunders, J. 1985, Market Segmentation and Positioning in Specialized Industrial Markets. *Journal of Marketing*, 49 (Spring 1985), pp. 24-32.
- DSE, 2004 *Land and Water Management, Victoria, Australia*. (online) [http://www.nre.vic.gov.au/web/root/domino/cm\\_da/nrenlwm.nsf/frameset/NRE+Land+and+Water?OpenDocument](http://www.nre.vic.gov.au/web/root/domino/cm_da/nrenlwm.nsf/frameset/NRE+Land+and+Water?OpenDocument). [Accessed 28/01/2004].



DWAF, 1996, *The Philosophy and Practice of Integrated Catchment Management: Implications for water resources management in South Africa*-WRC Report No. TT 81/96.

DWAF, 1997 *White paper on a National Water Policy for South Africa (online)* <http://www.dwaf.gov.za/Documents/Policies/nwpwp.pdf> [Accessed 25/01/2004].

DWAF, 2000, *The National Policy on the Implementation of Catchment Management in South Africa*. First Edition (Final Draft). Department of Water Affairs and Forestry, South Africa.

DWAF, 2001, *The development of a generic framework for a catchment management strategy*. Final Draft. Department of Water Affairs and Forestry, South Africa.

DWAF, 2001a *Guideline on the viability study for the establishment of a catchment management agency (online)* <http://www.dwaf.gov.za/CM/cma.htm> [Accessed 05/02/2004].

DWAF, 2001b, *Usuthu to Mhlathuze Water Management Area Draft Situation Assessment*. Prepared by A. J. Wilson and Associates International cc for Department of Water Affairs and Forestry, South Africa.

DWAF, 2003, *Proposal To Establish Usuthu to Mhlathuze Catchment Management Agency*. Draft 3. Prepared by A. J. Wilson and Associates International cc Department of Water Affairs and Forestry, South Africa.

DWAF, 2003a, *Assessment of Financial Feasibility Related to the Establishment of a Catchment Management Agency for the Usuthu to Mhlathuze Water Management Area*. Prepared by G. Muller Associates cc. Department of Water Affairs and Forestry, South Africa.

DWAF and WRC 1998, *A Strategic Plan for the Department of Water Affairs and Forestry to Facilitate the Implementation of Catchment Management in South Africa*, WRC Report No. KV 107/98.



EnAct, 2002, *Towards an alignment of the roles and responsibilities of regulatory authorities in Kwazulu Natal Province vis-à-vis the establishment and operation of catchment management agencies: Legal Review*. Prepared by EnAct International for the Department of Water Affairs and Forestry, South Africa.

Gorgens, A., Pegram, G., Uys, M., Grobick, A., Loots, L., Tanner, A. and Bengu, R. 1998, *Guidelines for Catchment Management to Achieve Integrated Water Resources Management In South Africa*. – WRC Report No. KV 108/98.

Government Notice No 1160 (1999), Establishment of the water management areas and their boundaries as a component of the national water resource strategy in terms of section 5(1) of the National Water Act.

Hopkins, M. 2003 *The sky's the limit with positioning strategy* (online). <http://www.moneymangement.com.au/articles/44/0c015d44.asp>  
[Accessed 08/05/2003].

Karodia, H. 1998, *Catchment Management: legal framework, implementation, and challenges*. Royal Society of South Africa - Working Conference; Implications of the new water policy: problems and solutions. 11-13 November 1998.

Kasrils, R. 2000, *A water perspective on invasive species. The Best Management Practices for preventing and controlling invasive alien species*. Symposium Proceedings. Creda Communication.

Kotler, P. 2000, *Marketing management*. The Millennium Edition. Prentice-Hall, Inc.

Lake Eyre Basin, 1997, *Catchment Management Options Paper* (online). <http://www.lakeeyrebasin.org.au/pages/page26.html> [Accessed 12/01/2004]

Luck, J. D. and Rubin, R. S. 1997, *Marketing Research*. 7<sup>th</sup> Edition. Prentice-Hall, Inc. pp 117-126.

Liraz, M. 2002 *Small Business Marketing: How To Develop A Marketing Plan* (online). <http://www.bizmove.com./marketing/m2h.htm> [Accessed 03/03/2002].

Lovelock, C. H. 1996, *Services Marketing*. 3<sup>rd</sup> Edition. Prentice-Hall, Inc.

Magadlela, D. 2000, *Social challenges in the Working for Water Programme: Findings from a study of selected projects. The Best Management Practices for preventing and controlling invasive alien species*. Symposium Proceedings. Creda Communication.

Mhlathuze Water, 2003, *Alien Vegetation Assessment Study (Mhlathuze Catchment: W12B)*. A report Prepared by Multi-Consult and Gaea Projects for Mhlathuze Water, Richardsbay 3900, Report No.1/2003

Mosai, S and Chunda, M. 2003, *Invasive alien vegetation assessment in the Mhlathuze River catchment (W12b) and the intervention strategy*; A paper presented at the River Symposium, Brisbane Australia 2-5 September 2003.

NAB, 2001, *Key Catchment Issues: Northern Adelaide and Barossa Catchment Water Management Plan* (online) [www.nabcatchment.net](http://www.nabcatchment.net) [Accessed 05/02/2004].

NWA, 1998, *The National Water Act of 1998 (Act 36 of 1998)*.

Obringer, L. A. 2003 *How Marketing Plans Work* (online). <http://money.howstuffworks.com/marketing-plan1.htm>. [Accessed 25 June 2003].

Oliver, G. 2002 *Overview of Market Segmentation and Marketing Planning Software* (online). [http://www.themarketingprocessco.com/document\\_downloads/march2002seminar/market\\_segmentation\\_and\\_marketing\\_planning\\_software.pdf](http://www.themarketingprocessco.com/document_downloads/march2002seminar/market_segmentation_and_marketing_planning_software.pdf) [Accessed 06/03/2002].

Palmer, A. and Cole, C. 1995, *Service Marketing: Principles and Practice*. Prentice Hill, New Jersey.

Reis, A. and Trout, J. 2001, *Positioning: The battle for your mind*. McGraw-Hill: New York.

SAAWU, 2003, *South African Association of Water Utilities: Members* (online). <http://www.saawu.co.za> [Accessed 07/01/2003].

Smith, S. and Wheeler, J. 2002, *Managing the customer experience*. Prentice Hall Financial Times, London.

Steyl, I., Versfeld, D. B. and Nelson, P. J. (2000), *Strategic environmental assessment for water use Mhlathuze catchment – KZN*. Report Number: SEA-01/2000. Department of Water Affairs and Forestry.

The Constitution of the Republic of South Africa Act 108 of 1996, 1996.

<http://www.polity.org.za/> [Accessed 12/09/2003].

*The Convention on Biological Diversity* (online). 2003, <http://www.biodiv.org/> [Accessed 20 June 2003]

*The Convention on International Trade in Endangered Species of Wild Fauna and Flora* (online). 2003, <http://www.cites.org>. [Accessed 20 June 2003].

*The Rotterdam Convention* (online) 2003, <http://www.pic.int/> [Accessed 20 June 2003]

*The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal* (online). 2003, <http://www.basel.int/> [Accessed 20 June 2003].

*The United Nations Framework Convention on Climate Changes* (online). 2003, <http://unfccc.int/> [Accessed 20 June 20, 2003].

*The Vienna Convention on Substances that Deplete the Stratospheric Ozone Layer, with the Montreal Protocol* (online) 2003, <http://www.unep.ch/ozone/vienna.shtml> [Accessed 20 June 2003].

Thompson, Jr., A. A and Strickland, A. J. 2003, *Strategic Management – Concepts and Cases*. 13<sup>th</sup> Edition. New York, Irwin McGraw-Hill.

Trout, J. 1996, *The New Positioning*. Irwin McGraw-Hill: New York.

Trout, J. 2004, *Trout on Strategy*. Irwin McGraw-Hill: New York.

Trout, J. and Reis, A. 1989, Positioning 20 years later-The decline and fall of advertising. *Advertising Age*. Vol. 60; pp20.

Versveld, D.B., le Maitre, D.C. and Chapman, R.A., (1998), *Alien invading plants and water resources in South Africa*. WRC Report No. TT 99/98.

WSA, 1987, The Water Services Act of 1987 (Act 108 of 1987).

Water Research Commission, 1998, *Guidelines for Catchment Management to Achieve Integrated Water Resources Management In South Africa*. WRC Report No. KV 108/98

**APPENDIX 1**

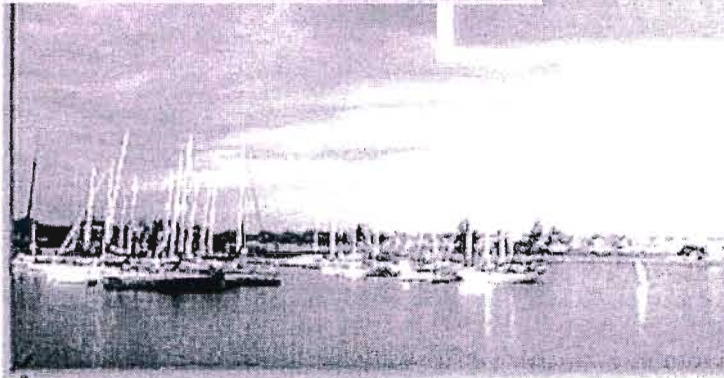
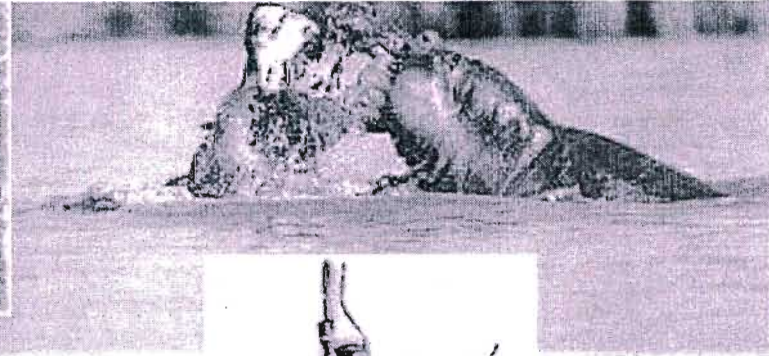
**THE USUTHU-MHLATHUZE SITUATION ASSESSMENT REPORT**



DEPARTMENT OF WATER AFFAIRS AND FORESTRY  
REPUBLIC OF SOUTH AFRICA

KwaZulu Natal Regional Office

# Usutu to Mhlathuze Water Management Area Situational Assessment



Reg. No. 2000/01474/723

*A.J. Wilson & Associates International cc*  
Management Consultants



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**List of abbreviations**

CMA	-	Catchment Management Agency
CSF	-	Catchment Steering Forum
DWAF	-	Department of Water Affairs and Forestry
ER	-	Environmental Reserve
HA	-	Hectares
KZN	-	KwaZulu-Natal
MAP	-	Mean Annual Precipitation
MAR	-	Mean Annual Runoff
NGO	-	Non-government organisation
PDWG	-	Proposal Development Working Group
TLC	-	Transitional Local Council
WMA	-	Water Management Area
WSA	-	Water Services Authority
WSDP	-	Water Services Development Plan
WUA	-	Water User Association



## Glossary of terms

Alien plants	- plants not indigenous to (not found naturally in) South Africa
Anthropogenic	- pertaining to the scientific study of the origin and development of human beings
Aqueduct	- artificial pipe or channel for conveying water
Aquifer	- any rock formation containing water in recoverable quantities
Bacteriological	- the study of bacteria; a class of micro-organisms which are often parasitic, agents in putrefaction and the cause of many diseases
Biotic	- pertaining to living organisms
Catchment	- the area from which a river is fed ie. the area draining into a river
Conurbation	- dense cluster of neighboring towns considered as a single unit in some respects
Demography	- the study of population
Ecological Status Classification	- a system developed to define the ecological health of a river
Ecological	- related to the study of plants, animals, peoples and institutions in relation to environment
Effluent	- liquid industrial waste or outflow from sewer
Environmental Reserve	- the volume and pattern of water releases required to maintain the health of ecological systems associated with a river
Estuarine	- relating to the wide lower tidal part of a river
Faecal	- emanating from human or animal excrement
Genera	- group consisting of closely related species
Hydrogeology	- the branch of geology dealing with groundwater
Hydrology	- the study of water resources in land areas
Impoundment	- in this context, a reservoir of water
Institution	- an organization established for some object
Invertebrate	- collective name for all animals without a backbone

Jurisdiction	- extent of power or area over which authority extends
Nutrients	- in this context, chemical compounds in water which sustain and feed plants; normally nitrates and phosphates emanating from fertilizers and detergents
Riparian	- in the floodplain of a river or stream
Runoff	- that part of rainfall which finds its way into water courses
Social Reserve	- the basic water requirement set aside for human consumption based on 25 litres per capita per day
Socio-economics	- study of the relationship between economics and social factors
Statutory	- enacted or recognized by statute
Stochastic	- statistically random
Stratigraphy	- geological study of rock strata and their succession
Taxonomy	- classification or its principles e.g. classification of animals or plants
Topography	- the detailed study, description or features of a specific area
Trophic	- extent of nutrients in a water body
Water demand management	- a programme of measures undertaken to reduce the consumption of water

## 1. Introduction

This document attempts to give a status report on those factors which are relevant to catchment management in the Usutu to Mhlathuze Water Management Area. Its purpose is twofold. Firstly, to inform stakeholders of the key issues impacting on water resources management in the area. Secondly, it is an essential component of the proposal document required as part of the process to establish a Catchment Management Agency referred to in section 2.0 below.

Catchment Management is by definition a broad and holistic process. As a result, the scope of this document is very wide. In addition, it is anticipated that this document will be disseminated to a fairly wide audience. Given this background, a deliberate attempt has been made in designing this document, to keep it as brief and informative as possible. The style is thus very much "executive summary" in nature and extensive use of pictorial forms of presentation has been made.

The brief in carrying out this situational assessment has been to use the best information available but not to gather any new data. In some cases it is clear that there are significant gaps in the information available but this will have to be addressed at some later date, possibly by the newly formed CMA.

## 2. Background

### 2.1 The National Water Act

A key provision in the National Water Act of 1998 is for the establishment of Catchment Management Agencies (CMA). These entities are geographically based with their boundaries coinciding, as far as possible, with river catchment boundaries. Ultimately it is foreseen that 19 agencies will be established that will cover the whole of South Africa. The broad purpose of CMA's is to manage water resources within their area of jurisdiction for the ultimate benefit of all stakeholders. Their initial functions have been identified in the Act as follows:

- *to investigate and advise interested persons on the protection, use, development, conservation, management and control of the water resources in its water management area;*

- *to develop a catchment management strategy;*
- *to promote the co-ordination of its implementation with the implementation of any development plan established in terms of the Water Services Act, 1997; and*
- *to promote community participation in the protection, use , development, conservation, management and control of the water resources in its water management area.*

In addition the Act stipulates that, in performing its functions, the CMA must:

- *Be mindful of the constitutional imperative to redress the results of past racial and gender discrimination and to achieve equitable access for all to the water resources under its control;*
- *Strive towards achieving cooperation and consensus in managing the water resources under its control; and*
- *Act prudently in financial matters.*

In Kwazulu Natal it is envisaged that there will be 3 CMA's, namely:

- ⇒ Mvoti to Mzimkulu
- ⇒ Thukela
- ⇒ Usutu to Mhlathuze

Their corresponding Water Management Areas (WMA's) are illustrated in Figure 1 on page 11.



Figure 1 : KZN water management areas



## 2.2 The CMA Establishment Process

In July of 2000, the regional office of the Department of Water Affairs (DWAF) initiated the process to establish Catchment Management Agencies in KwaZulu-Natal. Broadly speaking, this process will entail the following steps:

- i. Development of the proposals to establish the CMAs
- ii. Submission of proposal to the Minister of Water Affairs
- iii. Once the proposal is accepted, establishment of an Advisory Committee to advise the Minister on membership of the CMA Governing Board
- iv. Submission of recommendations to Minister on the composition of the Governing Board
- v. Appointment of the Governing Board
- vi. Thereafter the CMA becomes formally operational

This process is shown diagrammatically in Figure 2 on 13.



### KZN CMA Establishment

#### Processes & Milestones

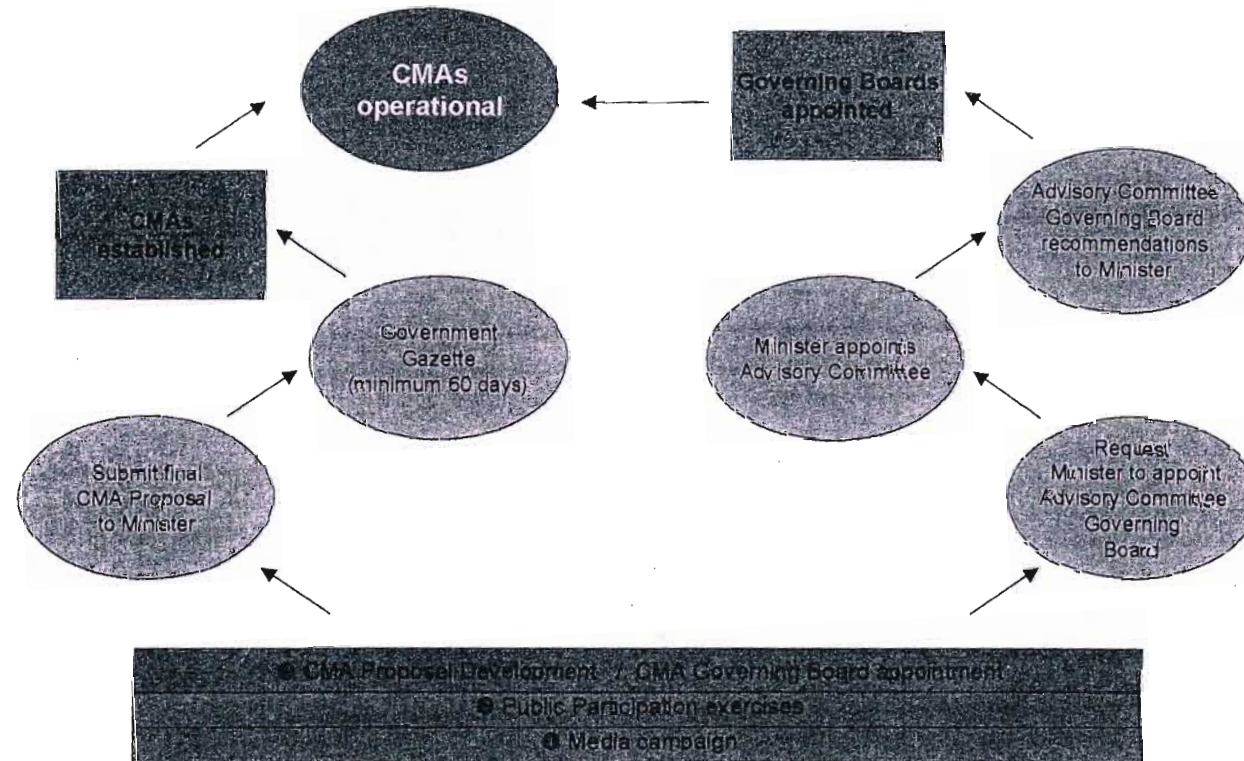


Figure 2: CMA establishment process

# Usutu to Mhlathuze CMA Proposal Development

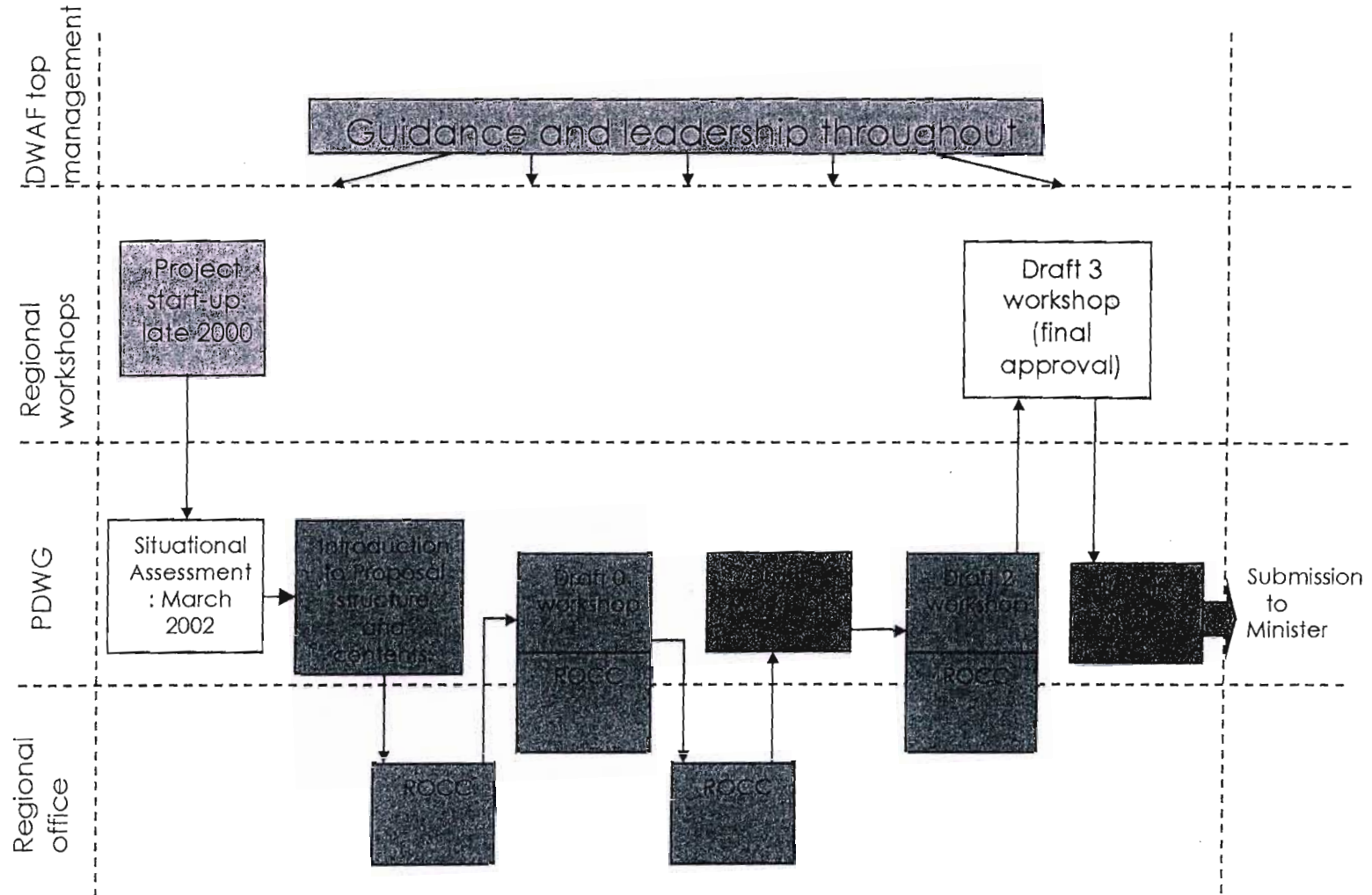


Figure 3: CMA proposal development process

Figure 2 demonstrates that the CMA proposal is a key element of the establishment process.

The process to develop the CMA proposal is depicted in Figure 3 on page 14.

Figure 3 illustrates the key role played by the Catchment Steering Forum (CSF) and the Proposal Development Working Group (PDWG) in the process. The CSF is a non-statutory structure which is broadly representative of all stakeholders in the WMA. Its role is to oversee the proposal development process and ensure that it fulfils the requirements of all the key stakeholders.

The PDWG will meet more frequently and will work closely with the team of DWAF and consultant personnel tasked with developing the relevant documentation. They will, in effect, guide the development of the CMA proposal. The PDWG will be a much smaller group than the CSF. The PDWG will oversee the development of draft documents but the final approval will come from the forum.

Figure 3 also emphasizes that the situational assessment is an essential element in the process. Not only is it required for the final proposal which is sent to the Minister but it is also utilized to inform the CSF and PDWG to allow them to have the knowledge and common understanding to fulfill their role in guiding the proposal development process.

### 2.3 The Importance and Relevance of Catchment Management

It is self evident that there is very little that is more fundamental to human existence than good quality water. The growth in world population is placing severe strain on water resources in many parts of the globe. This is so serious that some analysts believe that water related conflict has the potential to be the cause of wars in the new millennium.

It is well documented that, by international standards, South Africa is defined as an arid country with average rainfall, on average, being less than 500mm per annum. This situation is made more complex by the fact that the rainfall in

South Africa is unevenly districted both temporally and geographically. The net result of this is that it has been estimated that, at current rates of growth, South Africa's water resources could be exhausted in 30-40 years. Evidence of this is already being manifested at a local level with some catchments experiencing substantial stress in terms of meeting water demands. This emphasises the need to manage our scarce water resources as effectively and efficiently as possible.

The impact of human activities has also had a significant impact on water quality. As a result, many important catchments experience severe pollution problems. This has a direct financial impact in terms of increased treatment costs necessary before the water is safe for human consumption. For many rural communities this situation is even more serious as they are directly reliant on the local rivers and streams for every day consumption. In some cases the rivers are so polluted that even human contact is hazardous.

Serious soil erosion problems are being experienced in numerous catchments. This is due to settlement densities which are beyond the carrying capacity of the land, coupled with poor agricultural practices. The result of this is that thousands of tons of valuable topsoil is being lost into the ocean every year.

Alien plant species are starting to have significant impacts on water resources. Infestation of the riparian zone is resulting in surprisingly large reductions of available water as a result of water consumption by these species. Other rivers experience problems of a different nature due to high levels of nutrients as a result of pollution. This encourages problems with prolific and highly problematic species such as water hyacinth, water lettuce and kariba weed.

It must also be recognized that management of water resources is an extremely complex process. Not only are river systems in an ongoing dynamic state but there are many competing water users in the catchment such as agriculture, forestry, industry, the environment, tourism, towns and cities and rural communities. All of these have a legitimate need for water.

Catchment management is both an approach and a philosophy which represents the response to the problematic scenario sketched in the above paragraphs. It recognizes the systemic nature of the various processes impacting on water resources. As a result, it adopts a holistic and integrated approach to management. It recognizes that there are



many competing users and adopts a cooperative and collaborative approach to problem solving. The ultimate objective being the mutual benefit of all stakeholders, both of current and future generations. It also places a very strong emphasis on local stakeholders having the major influence on decisions which impact on their catchment. Catchment management recognizes the fundamental logic in adopting the catchment, as opposed to other political and administrative boundaries, as the most effective unit for management of water related issues.

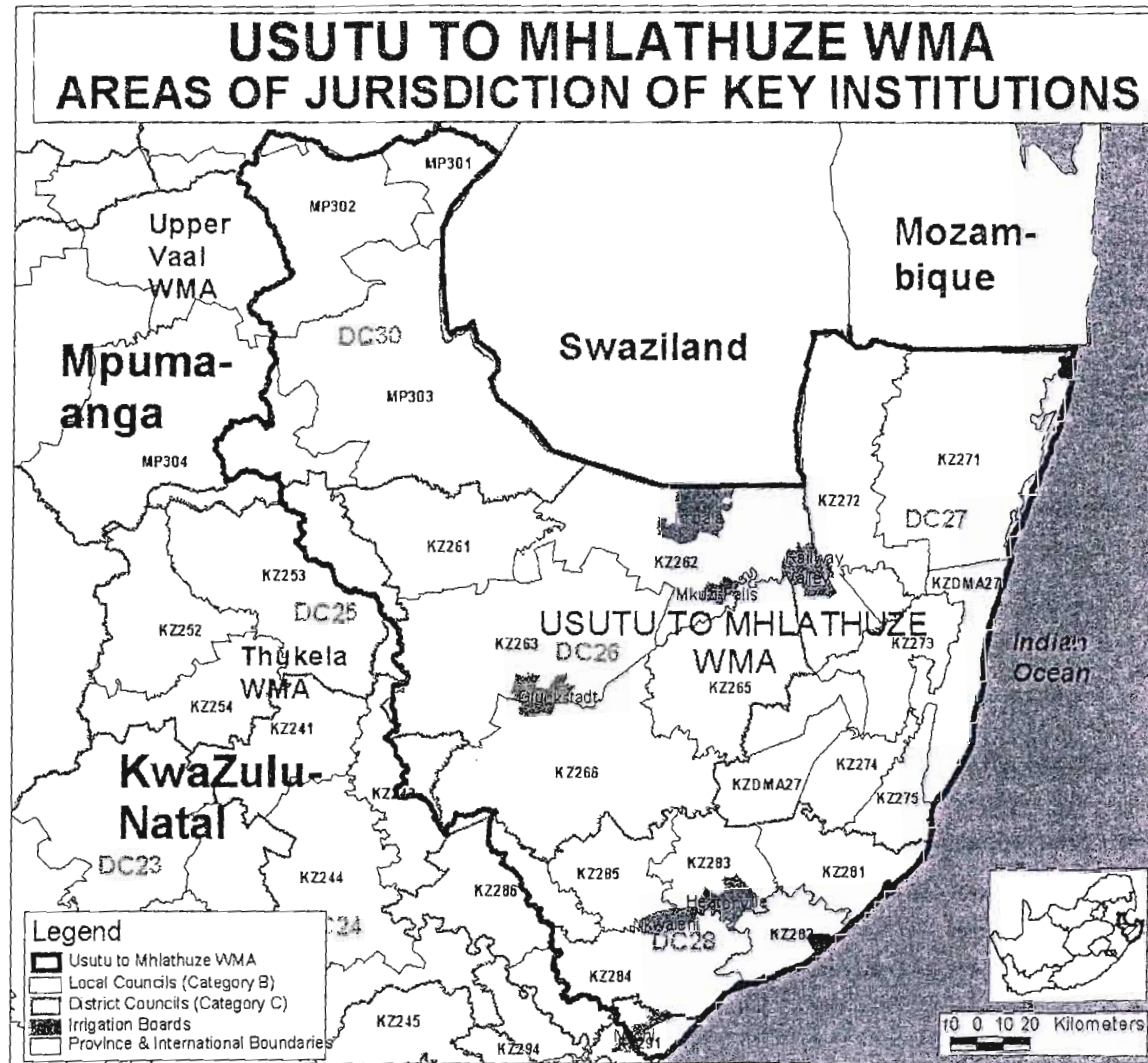
### 3. Institutional Arrangements

#### 3.1 Within the Water Management Area

At a WMA level there are many institutions that have an impact on rivers and water resources. The most important of these are listed below and their different areas of jurisdiction are depicted in Figure 4 on page 19.

- Zululand District Municipality
- Umkhanyakude District Municipality
- Uthungulu District Municipality
- East Vaal District Municipality (situated in Mpumalanga)
- Mhlathuze Water
- Richards Bay Local Council
- Ulundi Local Council
- Vryheid Local Council
- Amsterdam Local Council
- Gluckstadt Irrigation Board
- Heatonville Irrigation Board
- Impala Irrigation Board
- Mkuzi Falls Irrigation Board
- Umfuli River Irrigation Board





**Figure 4 : Areas of jurisdiction of key institutions in the WMA**

In terms of the Water Services Act, District Municipalities and the Metros are classified as Water Services Authorities (WSA). These have the primary responsibility for the provision of water services (water and sewerage) to the end customer. District Municipalities are classified as category C municipalities. In terms of the Amendment to the Municipal Structures Act, Water Services Authority status can be delegated to local councils (category B municipalities) if this is agreed to by the national Minister of Planning and Local Government. In terms of areas of jurisdiction, category B's are subsets of category C, although this does not reflect the relative capacities. In many cases the large category B's have very significant capacity.

Water Services Authorities are clearly significant and important water users. As part of their responsibilities, they have to prepare Water Services Development Plans (WSDP's) which set out their master plan for the provision of water services to all those living in their area of jurisdiction. These WSDP's will clearly inform the water resources planning process and vice versa. As such they are important documents also for CMA's.

Irrigation Boards were a creation of the previous Water Act. Their primary function was to manage and administer the provision of irrigation water to farmers in particular parts of river catchments and to ensure the collection of levies necessary for payment to DWAF occurs to recover, at least partially, costs of infrastructure. Under the new legislation, they are obliged to register as Water User Associations (WUA). To be able to do this they have to demonstrate that their membership is representative of all stakeholders in their areas. WUA's could very well become more involved in the more holistic management of water resources and land use. Their role could thus be significantly broader than was the case with Irrigation Boards.

It should also be noted that a number of Catchment Management Fora (CMF) have been set up by DWAF in the last few years. These are voluntary organizations which have come together around a common interest in water resources for particular sub-catchments. These are potentially important organizations in the new water resources landscape as CMA's could utilise them as structures which could function effectively at a local level. If this were to be the case then the CMA would have the authority to delegate certain powers to CMF's. The following CMF's have been established in this WMA:

- Mkuze
- Mhlathuze
- Hluhluwe Advisory Committee
- Enyati forum
- Nkongolwana Forum
- Tshoba and Manzana

### 3.2 Regional Institutions

The most important regional institution which has an impact on water resources is the Provincial Government. In this regard, there are a number of Departments which have an interest in, and/or influence on, water resource and catchment management matters as follows:

- Traditional and Local Government Affairs
- Agriculture and Environmental Affairs
- Economic Affairs and Tourism

The broad impact of CMA's would also indicate that the Premier's Office would be a stakeholder. In addition, it is interesting to note that the Provincial Growth and Development Strategy for KwaZulu-Natal not only identified water as an extremely important resource but also as a source of "competitive advantage" for the Province. It was noted that this creates significant opportunities for development in irrigated agriculture, wet industries such as paper and pulp, and tourism. These clearly have the potential for positive impacts in terms of employment and economic growth, again underlying the importance of sound catchment and water resources management to the region.

In Mpumalanga, the key Provincial Departments are as follows:

- The Premier's Department
- Local Government and Traffic
- Agriculture, Conservation and the Environment

Other important regional institutions are as follows:

- Kwanalu (the KwaZulu-Natal Agricultural Association)
- KwaZulu-Natal Chamber of Business
- WESSA (the Wildlife and Environmental Society of Southern Africa)
- Kwanaloga (the KZN local government association)
- LOGAM (the Mpumalanga local Government Association)
- KwaZulu-Natal Irrigation Association
- Regional Consultative Forum (an NGO network)
- KwaZulu-Natal Rural Forum (an NGO network)
- South African Sugar Association
- South African Timber Growers Association
- Forestry Industries Association
- Transvaal Rural Action Committee (TRAC)

### 3.3 Department of Water Affairs

In the absence of a CMA, the Department fulfills the role and this is particularly the case for the regional office. By the same token, it is clear that many of the functions currently undertaken by the Department will ultimately be taken over by a fully functional CMA. As a result, it is foreseen by the Department that the requirement for regional offices will ultimately fall away once all three CMA's are fully functional. It is also the case that even some functions carried out at national level will be taken over by CMA's, particularly if they are more effectively administered at a local level.



The current split of functions between the regional and national offices is summarized in table 1 below:

Function	Regional	National
Dam safety		✓
Water resources planning		✓
Pollution control	✓	
Forestry regulation	✓	
Hydrographic survey	✓	
Hydrology: data collection	✓	
Hydrology: analysis		✓
Water drilling services	✓	
Geotechnical drilling	✓	
Geohydrology	✓	
Monitoring of Water User Associations	✓	
Environmental monitoring and rehabilitation of abandoned mines	✓	
Abstraction control	✓	
Water user licenses (and streamflow reduction licenses)	✓	
Water demand management		✓
Working for Water programme	✓	
Operation of government schemes	✓	
Betterments		✓

**Table 1 : Allocation of responsibilities in DWAF**



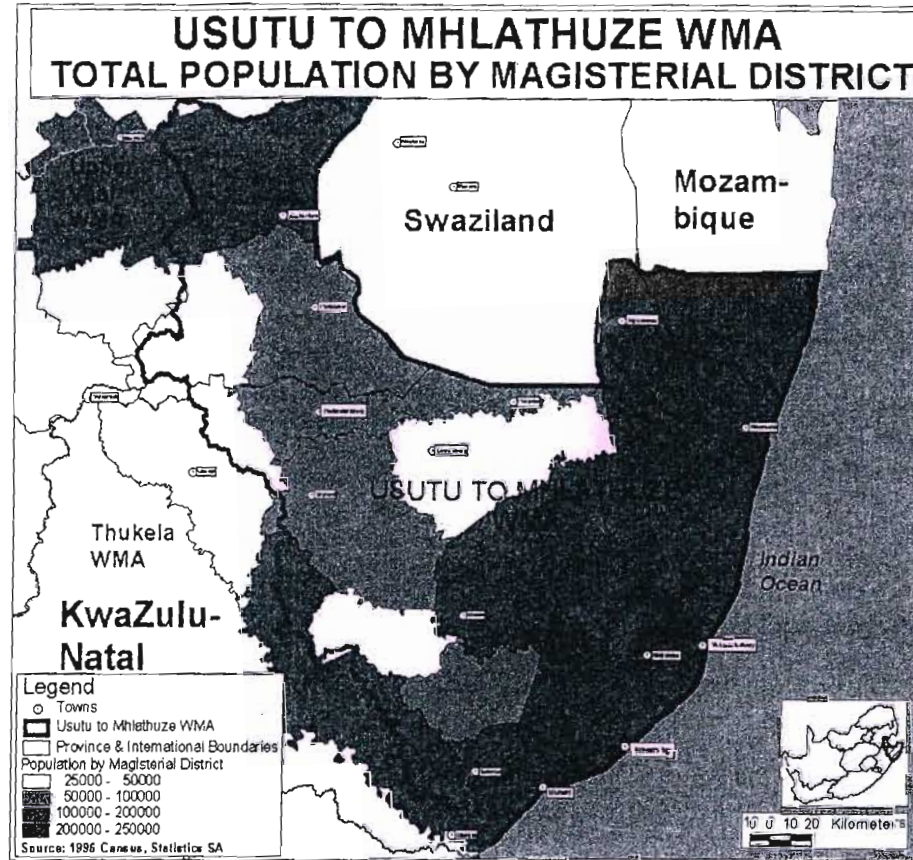
## 4. Demographics and Socio-economic Profile

### 4.1 Total Population

The total population of the WMA is approximately 2.16 million, of which 80% is in KwaZulu-Natal and the remaining 20% in Mpumalanga province. Much of the area is rural in nature, containing several large conservation areas. The principal urban area is the Richards Bay/Empangeni conurbation, which serves nearly 250,000 people.

The map on page 26 shows the population of each magisterial district within the WMA. The districts with the lowest populations are Ngotshe and Wakkerstroom, both of which have less than 35,000 people. Several rural farming districts in the interior have populations of less than 50,000 including Piet Retief, Paulpietersburg and Utrecht.

The two most heavily populated districts are Lower Umfolozi (241,000), which includes both Richard's Bay and Empangeni, and Eshowe (215,000).



**Figure 5 : WMA total population**

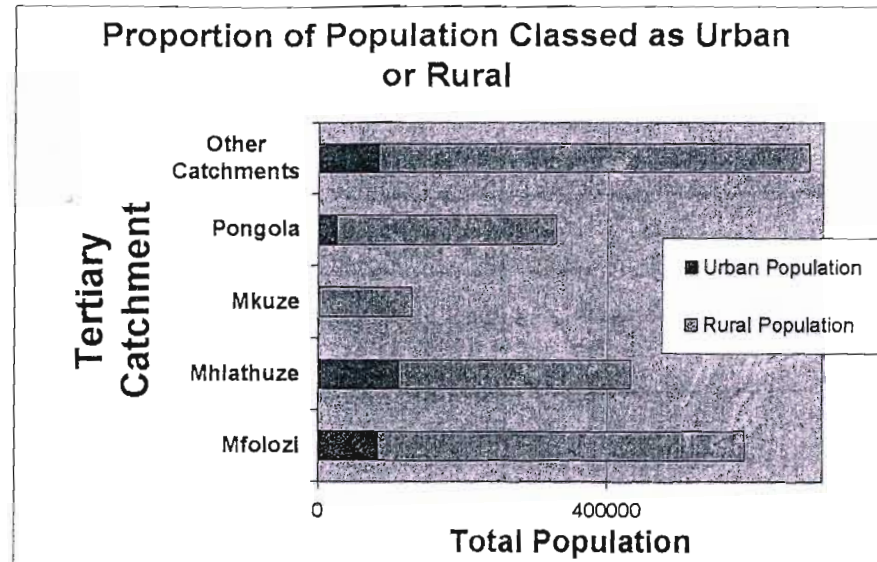
The total population of specific tertiary catchments in the WMA is shown in Table 2 below. The catchment with the highest population is the Mfolozi River (V312) with 590,000, followed by the Mhlathuze River with 431,000. Together, the four largest tertiary catchments account for 68% of the total WMA population.

	Total Population*	Population Density <i>people/km<sup>2</sup></i>	% Urban Population	% Rural Population
<b>Usutu to Mhlathuze WMA</b>	2 159 000	39	14%	86%
<b>Specific Catchments:</b>				
Mfolozi	590 000	59	14%	86%
Mhlathuze	431 000	103	26%	74%
Mkuze	129 000	28	1%	99%
Pongola	328 000	28	8%	92%
Remaining Catchments	680 000	27	12%	88%

**Table 2: Demographic statistics for selected tertiary catchments in the WMA**

\* Based on 1996 Census Enumerator Areas intersected by tertiary catchments

Figure 5 on page 26 depicts the percentage of each major catchment's population classed as urban versus rural. 'Urban' represents people living in defined municipal and local authority areas, whereas 'rural' represents farmlands, tribal areas and other small villages and settlements. All catchments in the WMA are predominantly rural, the most so being the Mkuze, which is classified as 99% rural. The most urban is the Mhlathuze, with 26% of its population living in defined urban areas.



**Figure 6 : Proportion of population classified as urban and rural**

4.2 Population Density

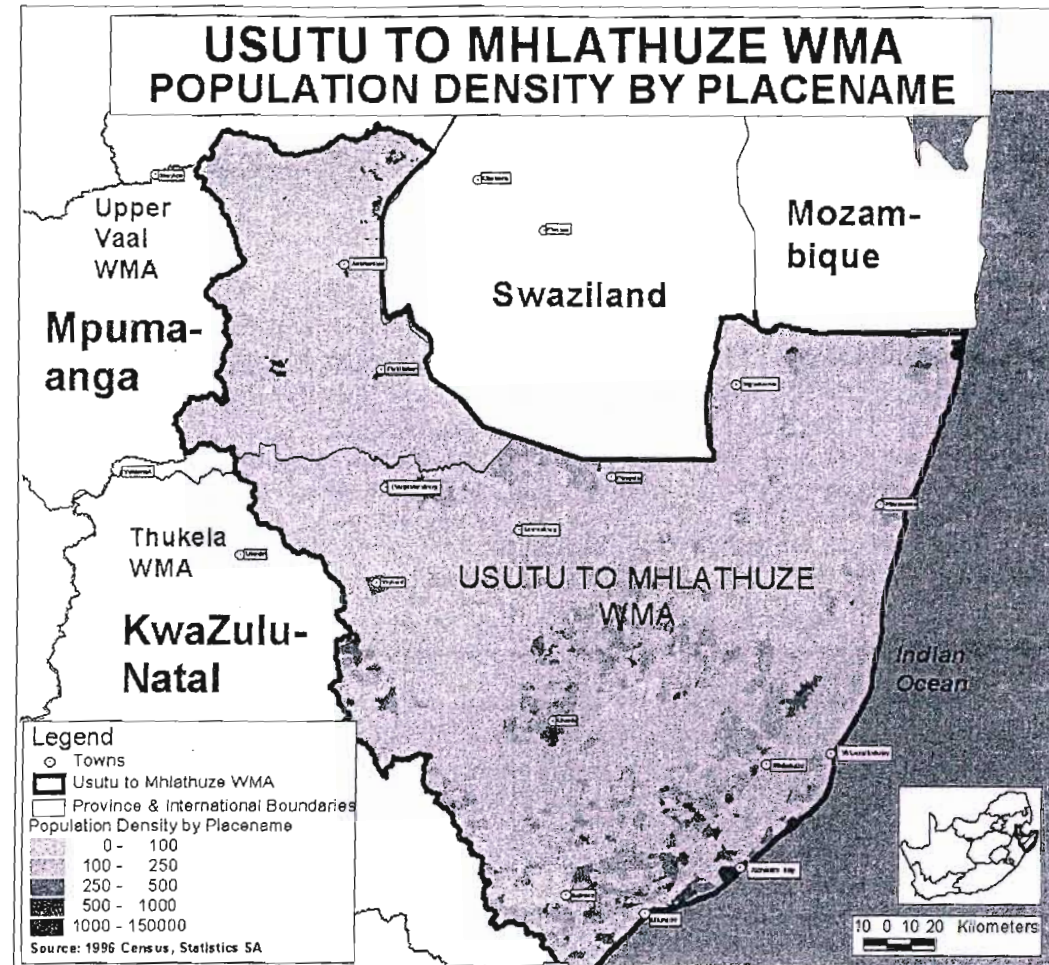
Population density measures the number of people per unit area, expressed as people per square kilometer. The Usutu to Mhlathuze WMA has an average population density of 39 people per square kilometer, which is among the lowest of all WMA's on the eastern side of South Africa. Fifty-three percent of the total WMA area is settled at a density of less than 10 people per square kilometer.

The districts of Ermelo and Wakkerstroom (which occupy the northern portion of the WMA in Mpumalanga) are both sparsely populated. Low population densities are also found in KwaZulu-Natal, in the districts of Ngotshe and Ubombo and in the Umfolozi, Hluhluwe and St Lucia reserves. The highest population densities, which average more than 350

people per square kilometer, occur in the coastal strip adjacent to and including Richard's Bay and Empangeni. Other pockets of relatively dense settlement occur around inland towns such as Ulundi, Eshowe, Vryheid, and Paulpietersburg.

Figure 7 on page 30 illustrates the distribution of population densities within the WMA. Population densities within specific tertiary catchments range from a high of 103 in Mhlathuze to a low of 28 in the Pongola and Mkuze catchments.





**Figure 7 : Distribution of population densities within the WMA**



### 4.3 Per Capita Income

Per capita income is derived by dividing the total income earned by the inhabitants of an area by the population of that area and is therefore an average for the whole population. It highlights the spatial distribution of poor and affluent areas within a WMA and is closely linked to illiteracy and poverty. It also gives an indication of the ability of the local population to pay for services such as water.

Income levels in the WMA are low. The average per capita income for the entire WMA is R5,300 per annum, which is significantly below the national average of R9,520. The highest average income of R6,500 is found in the Mhlathuze catchment, which includes Richard's Bay and Empangeni (see Table 3 on page 32 and Figure 8 on page 33). The Mfolozi catchment is second highest with R5,300. The sparsely populated Mkuze catchment, with no major industrial or commercial centres, has a per capita income of R3,400 per annum, which equates to a subsistence level of R285 per month. The remaining tertiary catchments have an average income of R5,300.

	Households	Average annual per capita income*	% Households with electricity	% Households with piped water	Poverty index
<b>Usutu to Mhlathuze WMA</b>	340 750	R 5,300	30%	24%	0.63
<b>Specific Catchments:</b>					
Mfolozi	88 500	R 5,300	27%	24%	0.67
Mhlathuze	73 000	R 6,500	54%	39%	0.52
Mkuze	18 500	R 3,400	10%	11%	0.79
Pongola	50 250	R 4,600	22%	16%	0.66
Other Catchments	110 500	R 5,300	23%	21%	0.62

**Table 3 : Selected socio-economic indicators for tertiary catchments in the WMA**

\* Income data from sources such as the 1996 Census requires adjustment since respondents often overlook various sources of household income in their responses or deliberately understate their income. The data shown here has been adjusted using the 1995 Income and Expenditure Survey and the National Accounts.

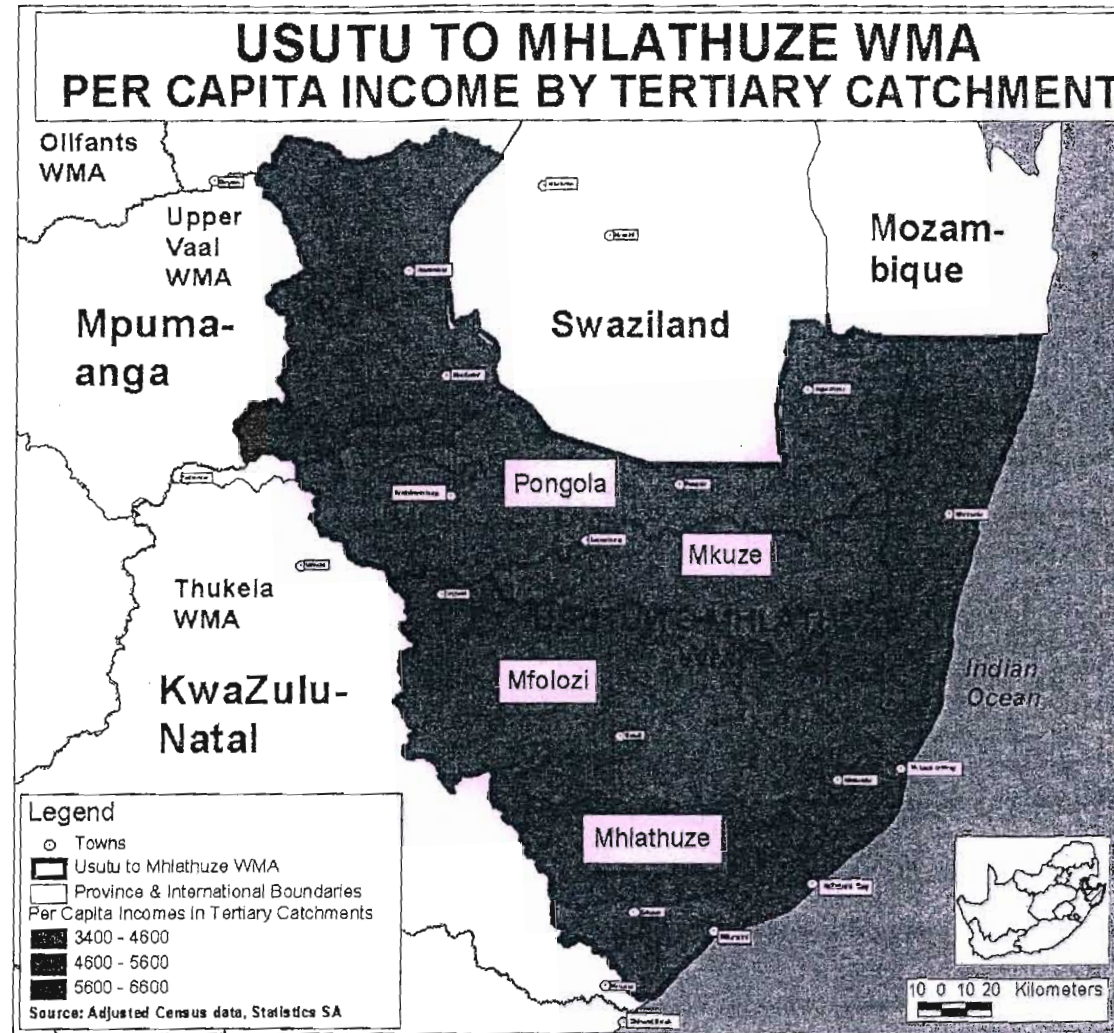


Figure 8 : Per capita income for tertiary catchments in the WMA

#### 4.4 Poverty Index

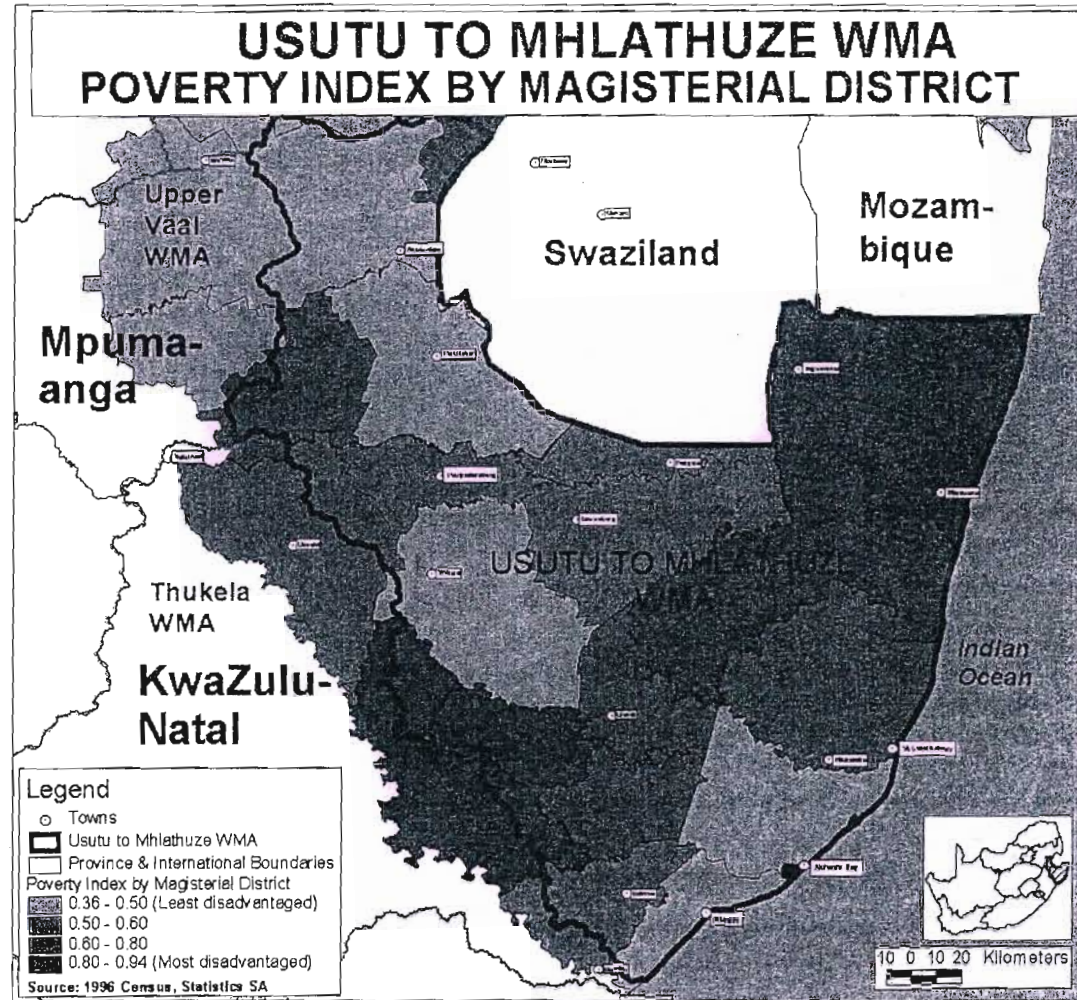
The index of poverty provides a simple means of identifying relative patterns of advantage and disadvantage within the WMA and its catchments. The criteria used to create the index were chosen to illustrate three dynamics; firstly the level of economic activity within the local population, secondly the extent to which the population is literate and thirdly the level of service provision to the community. Each criterion was ranked from worst to best and combined into a single index ranging from 1.0 (most disadvantaged) to 0 (most advantaged).

The poverty index for the entire WMA is 0.63, which is significantly higher than the national average of 0.41 (a higher score denotes comparatively more poverty). The districts of Ingwavuma, Ubombo and Nongoma, in the north-east, as well as Nquthu, Nkandla and Babanango in the south. of the WMA, are particularly impoverished. Ingwavuma, for example, has the second highest poverty score in South Africa. Much of the Apartheid legacy of inequitable service provision and low government spending is evident here.

More prosperous areas are to be found along the coastal strip from Mtunzini to Richard's Bay and inland around towns such as Vryheid, Ermelo and Piet Retief, which serve traditional farming areas. The district with the lowest overall poverty index is Umfolozi, which benefits from the presence of Richard's Bay.

Figure 9 on page 35 illustrates the distribution of poverty and economic advantage within the WMA.





**Figure 9 : Distribution of poverty and economic advantage within the WMA**

## 5. Catchment Characteristics

### 5.1 Physical Characteristics

The physical and natural characteristics of the Usutu to Mhlathuze Water Management Area are displayed in Figures 10 and 11 on pages 38 and 39.

The major rivers in the WMA are the Pongola River, the Mhlathuze, the Mkuze and the Mfolozi. A particularly important issue with respect to the Pongola is that it is an international river with its catchment area shared with both Lesotho and Mozambique.

The Pongola River rises at some 2 200 m above mean sea level near Wakkerstroom (in Mpumalanga) and descends steeply through the major portion of its catchment to the west of the Lebombo Mountains. It has an area of 7081 km<sup>2</sup>. It passes between the Lebombo and Ubombo ranges through a narrow gorge and the lower reaches of the river lie on the Maputuland Plain east of the mountains. Here it has a slope of 1 in 3000; the abrupt change in gradient stems the flow rate of the river on the plain, causing a deposition of part of the sediment load and the flooding of extensive areas adjacent to the river course. The Pongolapoort Dam was constructed at the eastern end of the narrow gorge separating the Lebombo and Ubombo ranges. It has a mean assured yield of 862 million m<sup>3</sup> per annum sufficient to provide an assured annual duty of 1220mm to approximately 48 000 ha (Heeg and Breen, 1982).

The Mhlathuze River catchment has a surface area of 4,209 km<sup>2</sup>. It rises in the west at an altitude of 1,519m and flows over 100km eastwards to the sea. There are nine quaternary catchments and the coastal area is characterised by several freshwater lakes. By South African standards this is a high rainfall catchment, with rainfall generally ranging between 800 - 1400 mm along the coastal belt. There are some rain-shadow pockets where rainfall is between 700-800 mm. The Goedertrouw Dam was constructed on the Mhlathuze River in 1980. It currently has a capacity of 300 million m<sup>3</sup> and is principally for provision of water to the industrial complex at Richards Bay.



The high rainfall coastal belt is heavily afforested to the north, includes agriculture, and, most importantly, heavy industry. The deep-sea port of Richards Bay is situated at the mouth of the Mhlathuze River and all industrial development is focused within the Empangeni/Richards Bay complex. This is one of the most important industrial complexes in South Africa, based on the export of coal from Northern KZN and Mpumalanga, and on heavy industrial development, notably aluminium smelting, pulp and paper, and fertilisers. Power, water, and export facilities are the generators of the industrial sector and there are expectations that this sector may double in size over the next 20 years.

The predominant geological formation in the WMA belongs to the Bluff Formation covering 16% of the WMA. It runs in a thick band from the southernmost part of the province up to the northernmost Assegai catchment border of the WMA. This is closely followed by the Vryheid sandstone formation that mottles the inland areas. Of almost equal cover of 8-10% each are the Pietermaritzburg Shale, Dwyka Tillite, Dolerite and the basement granite and gneiss. The Acid Pongola Rocks Formation, Natal Group Sandstone and Rhyolite cover 3-5% each. Water bodies and Lake St Lucia cover 4.7% of the WMA.

The area is covered with soils of varying agricultural potential; very high potential soils fall on the Makatini Flats and the Pongola River flood plains. High potential soils are confined to the surrounds of Mkuze and Hluhluwe Game Reserves. The remainder of the WMA represents soils of moderate agricultural potential with pockets of low potential soils.

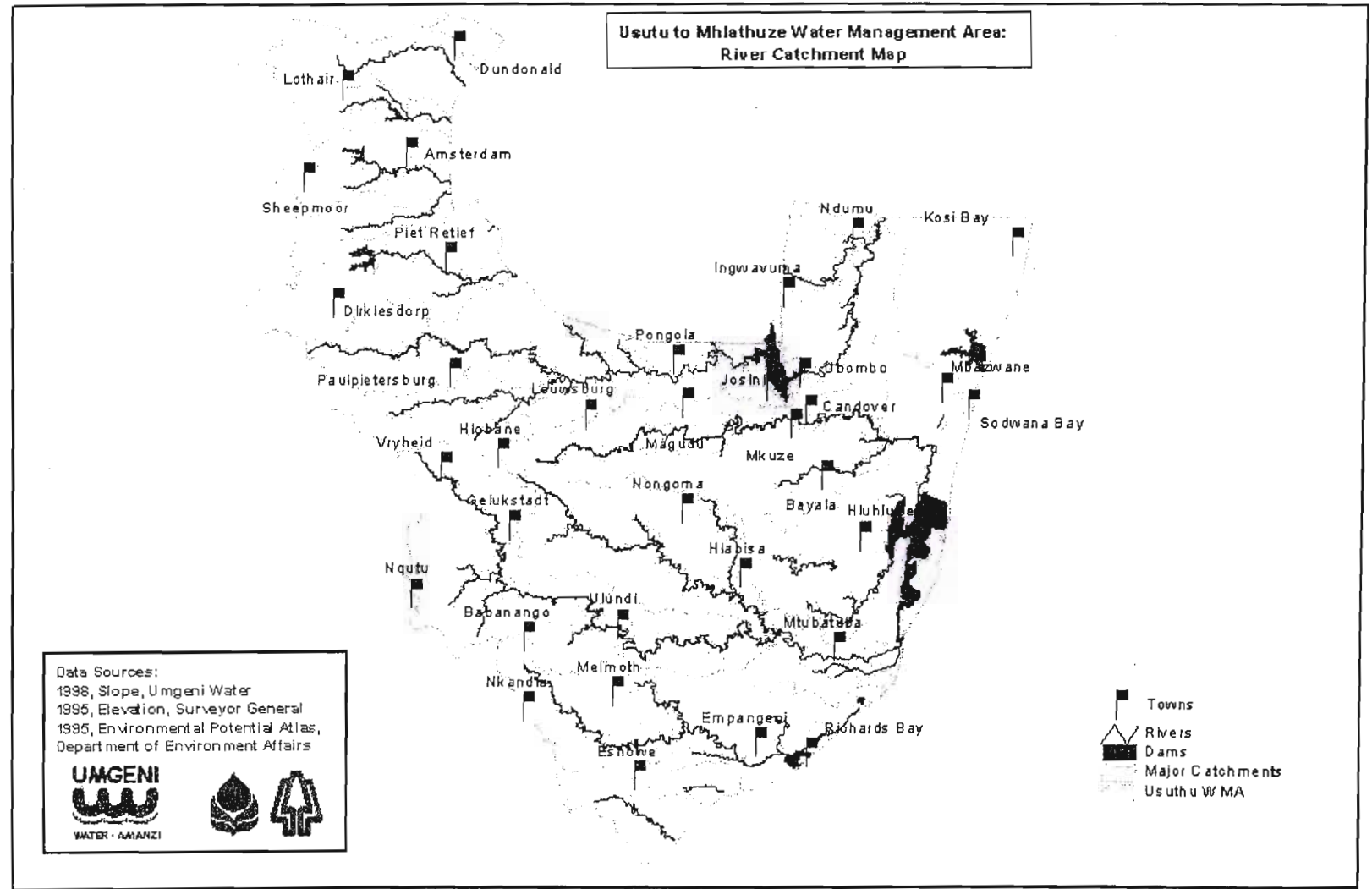


Figure 10 : Usutu to Mhlathuze WMA river catchment map

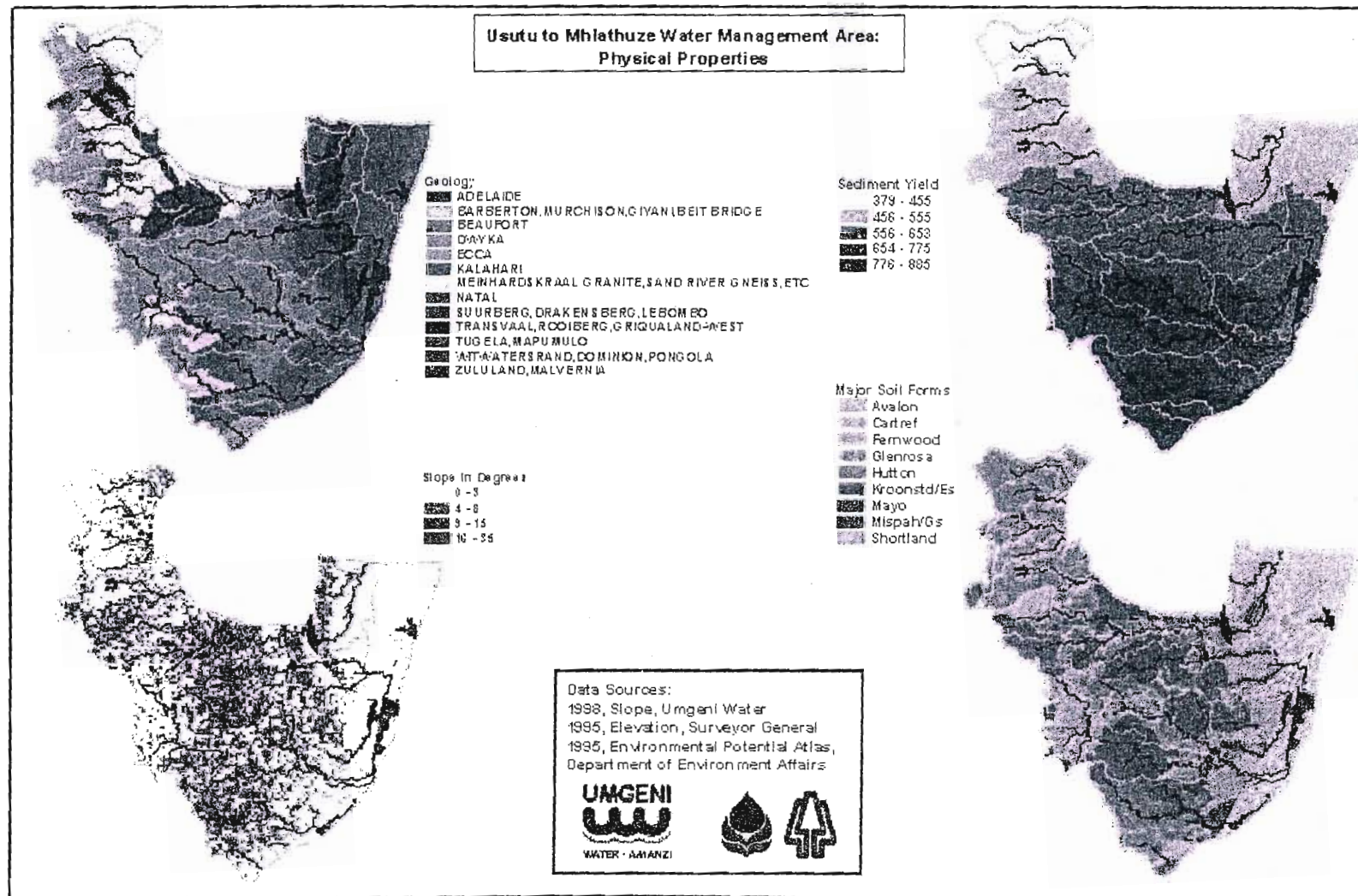


Figure 11 : Usutu to Mhlathuze WMA physical properties

## 5.2 Land Use

Figure 12 on page 41 shows the land use of this WMA which includes the major urban settlements of Richards Bay, Empangeni, Ulundi, Vryheid, Paulpietersburg and Piet Rietief. A number of minor settlements are spread inland. These include Mtinzini, Eshowe, Melmoth, Amsterdam, Pongola and Jozini. The remaining settlements are either small farming cooperative areas or rural settlements.

This WMA supports largely coal mines in the Vryheid area (Hlobane Collieries), but there is also mining activity around Piet Retief and at Richards Bay (Richards Bay Minerals). There is heavy industry in the urban areas of Richards Bay and Empangeni on the coast, as well as a few bulk users around Piet Retief and Paulpietersburg.

The majority of land is used for agriculture with areas of grassland. There are large amounts of forestry around Richards Bay up to the St. Lucia wetland areas, as well as around Melmoth, Nongoma and the northern areas from Paulpietersburg up to the top of the WMA in the west.

The agriculture found in this WMA includes large areas of beef pastures, wheat and maize cropping with sugar cane (irrigated and dry-land) along the coast and up towards Pongola. Cotton and citrus are also grown in the coastal areas up to Pongola, with vegetables, nuts, soya and other crops and dairy pastures being spread from the coast to the inland regions. The majority of irrigation is done using sprinkler irrigation systems, but micro irrigation is also used in the western areas. About 30% of the irrigation water losses occur in the canals below and coastward from Pongolapoort Dam.

The Usutu to Mhlathuze WMA supports large natural park and wetland areas. The entire coastline from St Lucia up to the Mozambique border at Kosi Bay is a wetland sanctuary. Other reserves include Tembe Elephant park, Umfolozi, Ndumo, Itala and Hluhluwe reserves.

The major dams to be found in this WMA include Pongolapoort, Zaaihoek, Goedetrouw and Klipfontein. There are a number of small dams in this WMA that are largely utilized for irrigation purposes.



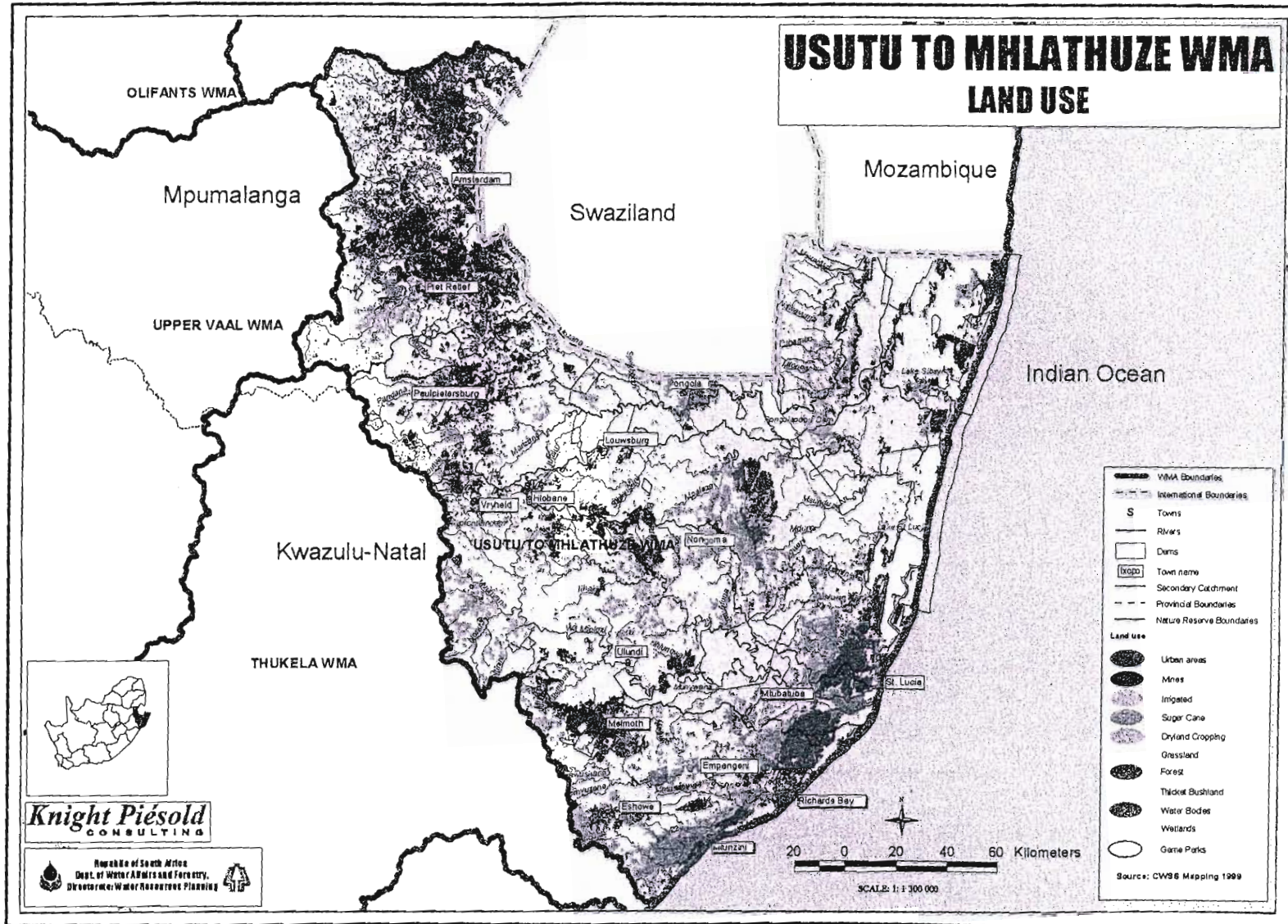


Figure 12 : Usutu to Mhlathuze land use



### 5.3 The Natural Environment

An overall summary of the characteristics of the natural environment is depicted in Figure 13 on page 46.

KwaZulu-Natal estuaries are naturally productive systems, reportedly having the highest fish species diversity in Southern Africa. For many estuaries, a cyclical system is created by floods and mouth closures, inundating the flood plain, providing a protective environment for the young fish and marine organisms which are flushed out to sea at periods of floods or when the mouth breaches. Up to 40% of the Tugela Bank prawn stock spend their juvenile stage in the Port of Richards Bay, significantly higher when the St Lucia mouth is closed. Richards Bay, with restricted freshwater inflow and a permanently open mouth, is in good ecological condition given the amount of development (DTEA, 1998).

Studies by the KwaZulu-Natal Nature Conservation Services (KZN NCS) reveal that there are substantial wetlands losses nationwide. As an example, it is estimated that 58% of the Mfolozi catchment wetlands were lost by 1988. Wetlands are faced with the following pressures; increase in human population, cropping and overgrazing, timber production, mining and industrial pollution and urbanisation. In 1990, policy proposals were drawn up from a six-year research project involving 13 different government agencies and 9 different private sector organisations collectively referred to as the Wetland Steering Committee. The Rennies Wetlands project has been initiated under the auspices of the Wildlife and Environment Society of South Africa and the World Wildlife Fund for Nature of South Africa. At a provincial level, MONDI, SAPPI and the South African Sugar Association, among others, have wetlands rehabilitation projects (DTEA, 1998).

In terms of the vegetation types in the Mhlathuze WMA, there are fourteen different types. Arid and lowveld types of vegetation are the most dominant covering 26% of the area, which is moderately well conserved. 20% of the Coastal Forest and Thornveld are conserved in proclaimed nature reserves in KZN. The Highland Sourveld and Dohne sourveld (covering 2%) are noted for their high endemism and plant species richness. None of the Dohne sourveld is conserved

in Natal. 7% of the area is covered in Zululand Thornveld type where 4% is found in some proclaimed nature reserves province wide. About a fifth of this veld type is grassland, which is rich in endemics (Acocks, 1953).

Areas of heritage importance cover more than 50 km<sup>2</sup> area of this WMA. 400 km<sup>2</sup> of the whole area is protected areas with proclaimed conservation sites such as Mfolozi, Hluhluwe and Lake St Lucia as shown on the following list;

Name	Area (HA)	Year of proclamation of reserve
Pongola Bush	858	1973
Pongolapoort dam	1 917	1979
Richards Bay	1 200	1935
Umlalazi	1 028	1948
Great St Lucia Wetland	258 686	1895
Hluhluwe-Umfolozi Park	96 453	1895

*Additional sites after the amalgamation with KwaZulu are not included.*

**Table 4 : List of protected areas controlled by KZN Nature Conservation Services**

Alien plant infestations in the various conservation sites in this WMA are of prime importance to the KwaZulu-Natal Nature Conservation Services (KZN NCS). Numerous attempts have been made to control or eliminate such undesirable infestations where they occur. The KZN NCS policy, as stated in the management plans for the various reserves, is to maintain the diversity of indigenous plant species occurring in the reserve and to remove alien plant species outside intensive use areas. In several game and nature reserves, intensive investigations have been carried out and documented. 1% of its annual budget was dedicated to the removal of alien plants (Macdonald and Jarman, 1985).

Analysis of the extent of alien invading plant cover per tertiary catchment (WRC, 1998) reveal that there is more than 20% infestation in the southernmost areas including the Mhlathuze catchment. The level gradually decreases as one moves north-east, with the Mfolozi at 1 to 5% and the Mkuze at 5 to 10%. In the lower reaches, where most of the conservation areas occur, this figure reduces to a modest 0.1 to 1% cover.

The deep-water harbour constructed at Richards Bay and the associated rail link to the interior has created the potential for large-scale development in the region. The main industries in the WMA are heavy mineral and aluminium smelters and pulp and fertiliser manufacturers. At Empangeni, the industrial development is directed towards the needs of agriculture and forestry. Other large industries in the area are the sawmill at the KwaMbonambi and the sugar and paper mills at Felixton.

This WMA is particularly richly endowed with ecological features of both local, national and international interest and concern. Chief of these is undoubtedly the Greater St. Lucia Wetland Park which has been declared a World Heritage Site, with two parts of it registered as Wetlands of International Significance under the Ramsar Convention. The Park comprises the last remaining subtropical area containing its original diverse components of wild plants and animals on the south-eastern coast of Africa, and one of the last remaining in the world. Within the Park are exceptional wetland, terrestrial and marine ecosystems with accompanying species that include many endemic and internationally recognized threatened species and migratory species. The high species richness of the Park is outstanding, principally due to its regional position at the interface between tropical and subtropical African biota, but also due to past speciation events within the Maputaland Centre of Endemism. Landscapes are also outstanding and the geomorphological processes by which they are formed are believed to be of universal importance (DEAT 1999). Other significant biodiversity features within this WMA include the relatively extensive network of game reserves and state forests representing and preserving important and significant species and landscapes (e.g. the Hluhluwe/Umfolozi Game Reserve Complex and the Black and White Rhino conservation). Much of the uniqueness of these systems is driven (and hence strongly affected) by catchment processes.

Analysis by the KZN Nature Conservation Service indicates that the North Coast region (covered by this WMA) is one of two areas in the province having the highest degree of endemism for reptiles. This also applies to the 26 endemic and threatened fish and crustacean species for the province with the most important areas for these being the Pongola and St Lucia catchments and the St Lucia Estuary (Goodman 2000). In summary, their (KZN NCS) report highlights that on a provincial basis the sites of highest biodiversity value are primarily scattered through the Northern KwaZulu-Natal (this WMA) and Midlands regions (Goodman 2000).



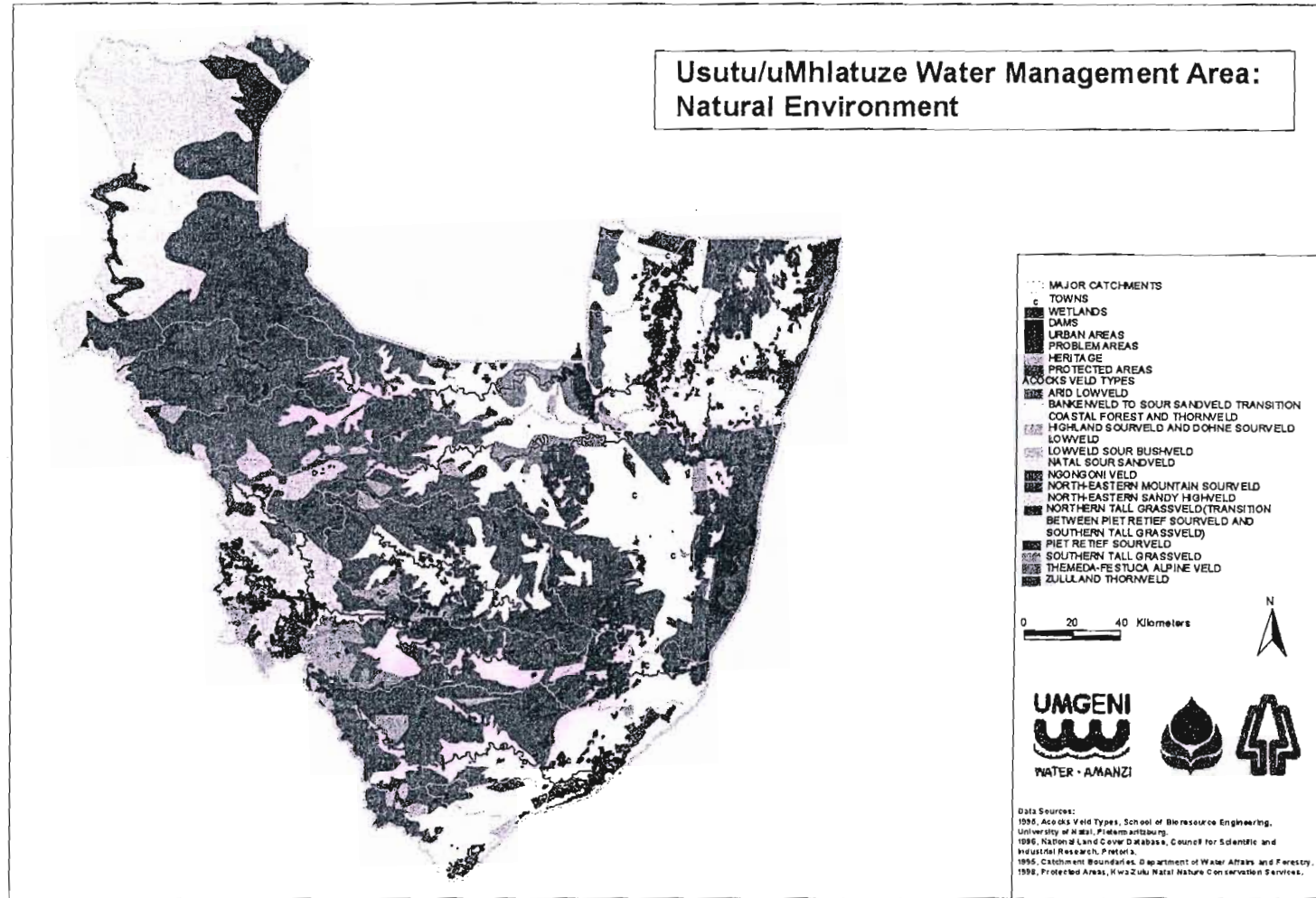


Figure 13 : Natural environment of the Usutu to Mhlathuze WMA



## 6. Hydrology

### 6.1 Climate and Temperature

Climatic conditions vary significantly from the north and west (Drakensberg mountain range) to east (Indian Ocean) across the Usutu to Mhlathuze WMA.

The mean annual temperature ranges between 12 and 14 °C in the west to 20 and 22 °C at the coast, with an average annual temperature for the whole WMA of 16 to 18 °C. Maximum daily temperatures are experienced in Summer in December to February and minimum daily temperatures in Winter in June and July.

Table 5 below summarises temperature information for these months.

MONTH	MEAN DAILY TEMPERATURES	AVERAGE (°C)	INLAND	COAST
			RANGE (°C)	RANGE (°C)
January	Mean temperature	21,9	16 – 26	24 to >26
	Maximum temperature	27,5	20 – 28	28 – 32
	Minimum temperature	16,4	10 – 20	>20
	Diurnal range	11,1	12 – 13	<10
July	Mean temperature	13,3	6 – 16	14 to >16
	Maximum temperature	20,7	14 – 24	22 to >24
	Minimum temperature	6	-2 to 8	8 to >10
	Diurnal range	14,7	16 – 17	13 - 14

**Table 5 : Temperature Data**

Snowfalls on the Drakensberg mountains between April and September have a significant influence on the climate of the WMA. Frost occurs in May to September inland. There is zero frost at the coast. The average number of heavy frost days per annum range from 1 to 30 days for the inland areas to nil for the eastern coastal area.

## 6.2 Rainfall

Rainfall is strongly seasonal in this WMA with in excess of 80 % of rain occurring as thunderstorms during the period October to March. The peak rainfall months are December to February in the inland areas and November to March at the coast. Mean annual precipitation (MAP) ranges from in excess of 1200 mm in the west, to 400 mm to 600 mm around the Jozini area, increasing to over 1200 mm at the coast. The overall MAP is about 840 mm.

Annual variability of rainfall is indicated by the historic coefficient of variation of the rainfall record, which ranges from (20 % to 25 %) in the west to greater than 35% in the Jozini area, reducing to less than 20 % at the coast.

**Figure 14** on page 49 shows the rainfall distribution within the WMA.



### 6.3 Runoff

Mean annual runoff (MAR) figures are in excess of 250 mm in the West (20 % of MAP), to less than 50 mm (10 % of MAP) in the central areas, to in excess of 100 mm at the coast (8 % of MAP). The northeastern coastal areas incorporating Kosi Bay and Lake Sibayi, are endoreic areas, contributing minimal nett runoff. The overall MAR is 112 mm (13 % of MAP).

Figure 15 on page 51 shows the distribution of runoff within the WMA.

### 6.4 Evaporation

In accordance with the rainfall pattern, the relative humidity is higher in summer than in winter, with a daily mean peak for February (ranging from 68 % in the inland areas to greater than 72% for the coast) and a daily mean low in July ranging from 60 % in the inland areas to greater than 68 % at the coast.

Potential mean annual gross evaporation (as measured by 'A' pan) ranges from 1600mm to 1800 mm in the west to 1800 mm to 2000 mm at the coast. The highest mean monthly 'A' pan evaporation is in December (200 mm to 240 mm) and the lowest mean monthly evaporation is in June (80 mm to 110 mm).

Figure 16 on page 52 shows the evaporation distribution within the WMA.





Figure 15 : Distribution of runoff in the WMA



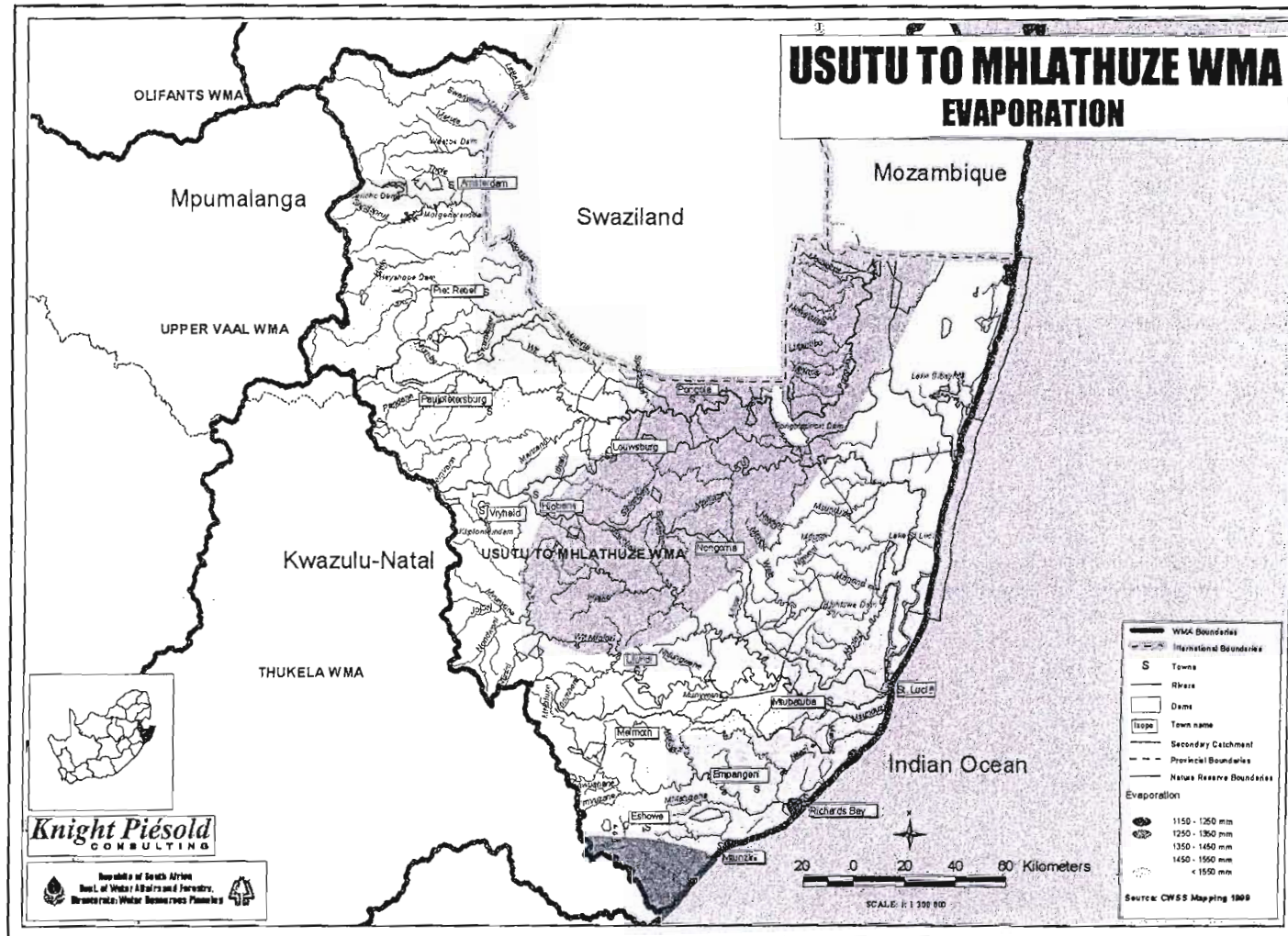


Figure 16 : Evaporation distribution in the WMA

## 6.5 Groundwater

In terms of geology, the bulk of this WMA is underlain by Karoo sedimentary rocks comprised chiefly of shales, mudstones, sandstones and associated dolerite intrusions. In the coastal plain these are overlain by unconsolidated to semi-consolidated fine sands.

In the more rugged areas, natural groundwater discharge occurs in the form of springs and seeps. In the coastal plain there are numerous freshwater lakes.

Generally speaking there are no primary aquifers in the WMA. As a result, groundwater potential is almost exclusively associated with structural features such as faults, joints, fractures and dykes. Again the coastal plain differs in that the sands function as primary aquifers. Borehole yields are generally medium to low but the potential is widespread. There is little large-scale use of groundwater. The overall groundwater potential of the area is depicted in Figure 17 on page 54.

Groundwater quality in the area is generally very good. There is little salinity except in isolated areas. Bacteriological contamination is generally low, although areas adjacent to boreholes are susceptible in some areas. Coal mining and landfill sites also provide isolated contamination potential. The impact of the increasing development of pit latrines will need to be carefully monitored.

Groundwater utilization overall is very low. There is clearly great potential for more extensive use, particularly to supply communities in rural areas. In some cases it also has the potential to supply small to medium size settlements.

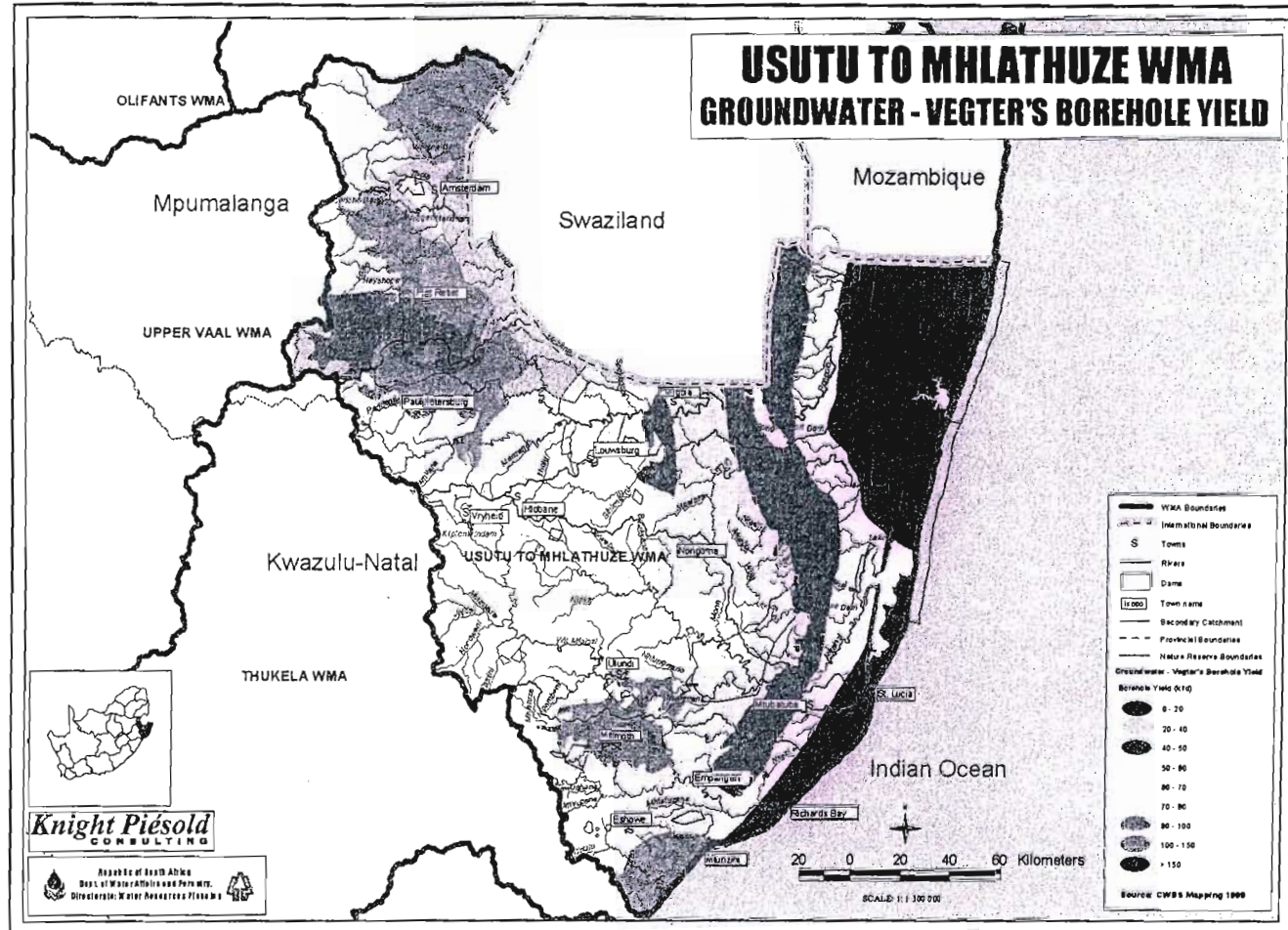


Figure 17 : Groundwater potential in the WMA



## **7. Water Resources Infrastructure**

### **7.1 Existing Infrastructure**

The major water and wastewater infrastructure in the WMA is shown in Figure 18 on page 59.

Major water resources infrastructure in the WMA takes the form of dams designed to supply irrigation and for water transfers to the power stations on the eastern Highveld.

The major dams in the WMA of more than 5 million cubic metres, in order of capacity are Phongolapoort, Heyshope, Goedertrouw, Paris, Morgenstond, Westoe, Jericho, Lake Nhlambane, Lake Mzingazi, Hluhluwe, Klipfontein and Lake Cubhu.

The Usutu River Government Water Scheme consists of the Westoe, Morgenstond and Jericho Dams and related infrastructure. This scheme transfers water from the Usutu River catchment to the Vaal River and Olifants River catchments.

The Usutu-Vaal River Government Water Scheme consists of Heyshope Dam and related infrastructure. It transfers water into the headwaters of the Vaal and Assegai Rivers.

The Phongolapoort and Paris Dams form the basis of the largest controlled irrigation scheme in the WMA.

Goedertrouw Dam receives water from the Thukela River and supplies irrigators downstream of the dam as well as the urban and industrial demands of the Empangeni-Richards Bay area.

The raw water supply at Ulundi is abstracted from a weir in the Mfolosi River. The level in this is regulated from the Klipfontein Dam.

Further information on the main water resources infrastructure is summarised in Table 6 on page 56.





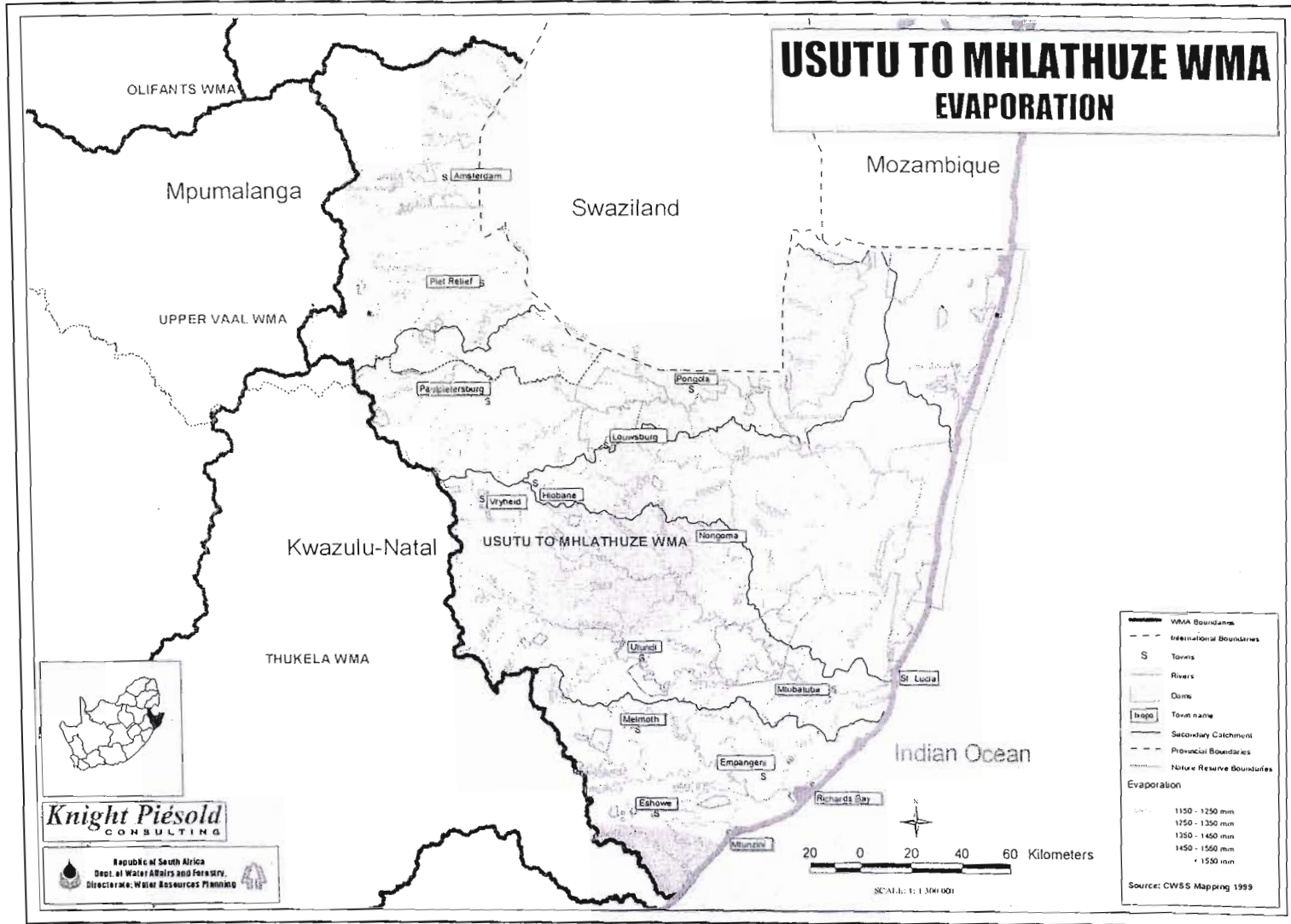


Figure 16 : Evaporation distribution in the WMA

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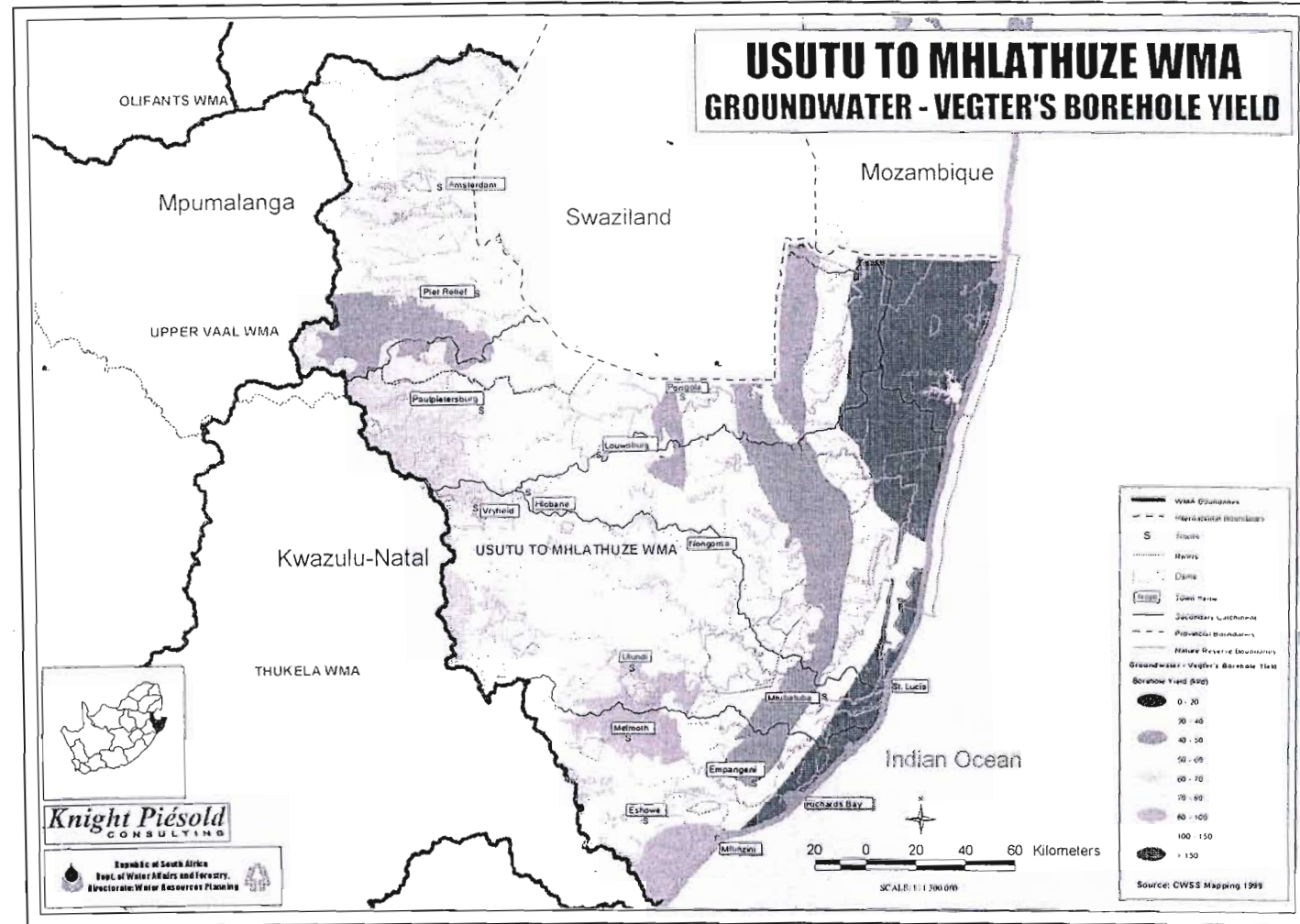


Figure 17 : Groundwater potential in the WMA

## 7. Water Resources Infrastructure

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The raw water supply at Ulundi is abstracted from a weir in the Mfolosi River. The level in this is regulated from the Klipfontein Dam.

Further information on the main water resources infrastructure is summarised in Table 68 on page 567.



NAME	QUAT NO.	LIVE STORAGE CAPACITY <sup>(2)</sup> (million m <sup>3</sup> /a)	USE*	OWNER	HISTORICAL YIELDS (million m <sup>3</sup> /a)
Phongolapoort	W44E	2445.3	Irrigation, environmental	DWAF	526
Goedertrouw <sup>(3)</sup>	W12B	315.4	Irrigation, domestic, industrial, mining	DWAF	270 <sup>(2)</sup>
Lake Mzingazi <sup>(6)</sup>	W12J	38.0	Domestic, industrial, mining	Dept Public Works	6.2
Lake Cubhu <sup>(6)</sup>	W12F	6.5	Domestic, industrial, mining		3.8
Lake Nzesi <sup>(6)</sup>	W12H	2.9	Domestic, industrial, mining		8.6
Lake Nhlabane <sup>(6)</sup>	W12J	39.7	Mining		30
Hluhluwe	W32E	28.0	Irrigation, domestic	DWAF	17
Klipfontein	W21A	19.0	Irrigation, domestic	DWAF	13
Sokhulu Reserve	W23C	4.0	Mining, domestic	Tisand (Pty)Ltd	Unknown
Silversands	W32C	3.0	Irrigation?	Hassard P.C	Unknown
Mhlabinyati	W31H	2.6	Irrigation	St Lucia Sugar Farms	Unknown
Silversands #2	W32C	2.5	Irrigation?	Hassard P.C	Unknown
Heyshope Dam	W51B	453.0	Strategic, Industrial	DWAF	67
Morgenstond Dam <sup>(4)</sup>	W53A	101	Strategic	DWAF	(1)
Westoe Dam <sup>(4)</sup>	W54B	61	Strategic	DWAF	(1)
Jericho Dam <sup>(4)</sup>	W53B	60	Strategic	DWAF	70.6
Paris Dam <sup>(5)</sup>	W41E	114	Domestic, irrigation	Impala Irrigation Board	Unknown

**Note: Main dams have been defined in this table as dams with a full supply capacity exceeding 5 million m<sup>3</sup>**

(1) The yields quoted in the table above are for dams operated on their own and not in a systems context.

(2) Storage volume above lowest drawdown level

(3) The Goedertrouw Dam is operated as part of a system which includes the transfer of 34 million m<sup>3</sup>/a from the Thukela River.

(4) The Jericho, Morgenstond and Westoe dams are operated as a system to deliver a historical yield of 70 6 million m<sup>3</sup>/a. Source: Vaal River Systems Analysis Update, 1997.

(5) Since Paris Dam has been built to supplement current irrigation in the area, a detailed yield analysis was



The Goedetrouw Dam is operated as part of a system which includes transfers from the Thukela River via the Middledrift transfer scheme. Sophisticated hydrological modelling tools allow for ongoing analysis and adjustment of the operating rules on an almost "real time" basis.

As was noted in chapter 6, the Usutu River Government Water Scheme transfers water from the Usutu River catchment to users in the Vaal River catchment (Camden Powerstation and Ermelo municipality) and Olifants River catchment area (Kriel, Matla and Kendal Powerstations and the town of Davel). Water supply to these catchments is from the Westoe and Morgenstond Dams, which feed into Jericho Dam. From Jericho Dam, water is pumped over the watershed to the Onverwacht reservoirs from where it is fed along an extensive water distribution network. The Jericho, Morgenstand and Westoe dams are operated as a system to deliver a historical yield of 70,6 million m<sup>3</sup>/a.

The Usutu-Vaal River Government Water Scheme receives water from the headwaters of the Vaal and Assegai Rivers. Water is pumped from Heyshope Dam through a network of pumping stations, rising mains and canals that finally lead to Grootdraai Dam. Water is distributed to Matla, Duvha and Tutuka Powerstations as well as Sasol II and Sasol III. Surplus water can be discharged along the Steenkoolspruit, a tributary of the Olifants River that feeds Witbank Dam.

Releases from the Pongolapoort Dam are particularly sensitive because of the extensive and highly sensitive system of pans below the dam as well as international obligations to Mozambique. In order to sustain the pans, the current approach is to release a "flood" of approximately 300 M cubic metres over a period of 3 to 4 weeks in September/October of each year. This practice is however currently under investigation to analyse whether a more sophisticated operating rule is needed to take into account the complex interaction between agricultural, environmental, water resource and social factors. There is also an agreement to supply water to Swaziland. This water is supplied via a pump station and pipeline operated by DWAF.

## 8.2 Yields of Major Dams and Systems

The yields of the major dams in the WMA, together with other relevant statistics, are given in Table 6 on page 56 & 57.

### 8.3 International Obligations

The Usutu Mhlathuze WMA shares a common boundary with both Swaziland and Mozambique. As a result, certain catchments are shared, specifically the Usutu and the Pongola, which both form part of the Maputo River System. In terms of the use of the water in these rivers, there are currently no formal agreements in place although this is currently the subject of negotiations between the 3 parties. This will ultimately culminate in an interim Maputu system agreement on water use between the co-basin states. In the interim, the allocation of water tends to be guided by various international conventions but specifically the "Revised Protocol on Shared Water Courses in the SADC".

As part of compensation for flooding of land in Swaziland by Pongolapoort dam, there is a small transfer scheme in place. This supplies water via a pump station and pipeline to Lanumisa.

## 9. Existing Permits and Registration of Water Users

Under the previous Water Act, permits had to be obtained for the construction of dams exceeding a certain volume and height of dam wall. These became known as Section 9b and 9c permits respectively. The location of these in this WMA is shown in Figure 19 on page 64.



## 7.2 Water Resources Planning

Water resources planning proposals are summarized in Figure 18 on page 59.

The raw water supply to the Mhlathuze system supplying the Richards Bay/Empangeni complex has recently had a major augmentation in the form of the Middledrift scheme (capacity of 134 million cubic metres per annum). This supplies water via a weir on the Thukela River and a major pumping scheme and pipeline. This should provide sufficient capacity for the next 10 to 15 years.

A major dune-mining project is currently being planned by Ticor at Fairbreeze, just south of Mtunzini. This will require between 0,5 and 1,5 cumecs, depending on whether it is also utilized for irrigation and urban purposes. This project will be supplied with water from either the Thukela direct or the Mhlathuze. If it is from the latter, then the Middledrift scheme will need to be augmented substantially earlier. A more likely scenario however is that a new pipeline will be developed close to the coast. If this proceeds, then it will be sized to provide further augmentation capacity to the Mhlathuze system.

Significant expansion plans are being considered by both Richards Bay Minerals and Mondi Kraft. The water requirements for these have been allowed for in the Mhlathuze augmentation plans outlined above.

Mhlathuze Water are planning to upgrade their Nsezi waterworks by 35 MI/day in 2003 and by a further 30 MI/day within ten years.

No other major water schemes or augmentations are planned in the WMA.



## 10. Water Use

### 10.1 The National Water Situation Assessment Model

Early in 1999, DWAF commissioned a study that was initially known as "The National Water Balance Model". Subsequently it became known as "The National Water Situation Assessment Model". Its purpose was to develop a high level overview of the status of water resources for each significant river, and hence each WMA in the country. As such, it would provide an invaluable tool for the use of the fledgling CMA's. Its focus was on water quantity, as opposed to water quality, and its intention simplistically was to estimate water use and then compare this to water availability. In order to do this it has had to take into account the following aspects, amongst others:

- Urban use
- Forestry
- Irrigation
- Bulk industrial use (not in urban areas)
- "The Social Reserve"
- "The Environmental Reserve"
- Alien plant use of water
- Groundwater usage and potential
- Available water resources

A summary of the key outputs of the WSAM model for this WMA are shown diagrammatically in figures 20 and 21 on pages 68 and 69. Figure 20 illustrates that water use in this WMA is dominated by agricultural consumption. The greatest 'use' in the WMA is for irrigation, which is closely followed by afforestation and sugar cane. In the Usutu catchment, transfers out of the catchment represent a significant use. Urban use is very small, relatively speaking, and is concentrated in the Mhlathuze catchment. Mining and major bulk industries are also significant water consumers, particularly in the Mhlathuze catchment.



Figure 21 summarises the position in terms of available water resources. It illustrates that the WMA as a whole has significant potential for further development of water resources, if this is deemed to be desirable. This is particularly the case in the Mfolosi and Usutu catchments. In terms of current water resource availability, as expected, the Pongola has a very large available resource in the form of the Pongolapoort Dam. Also of note however are the very significant requirements of the Environmental Reserve in all the rivers (see below). It is also clear that groundwater potential is under-utilised in all catchments.

An extremely important component in the above analysis is the Environmental Reserve (ER) determination. This gives an estimate of the water requirements to maintain, in a healthy condition, the ecosystems associated with the river. As can be appreciated, to evaluate this accurately is an extremely complex and difficult process. There are various "short-cut" techniques for evaluating the environmental reserve and these have been utilised in the Water Situation Assessment Model. To evaluate the ER more accurately requires that a study is undertaken by a multidisciplinary team of water and environmental experts. These studies are very expensive and they are thus being addressed on a prioritised basis by DWAF. Very few have been completed in the country and, at the time of writing, only one, for the Mhlathuze, is proceeding in this WMA.

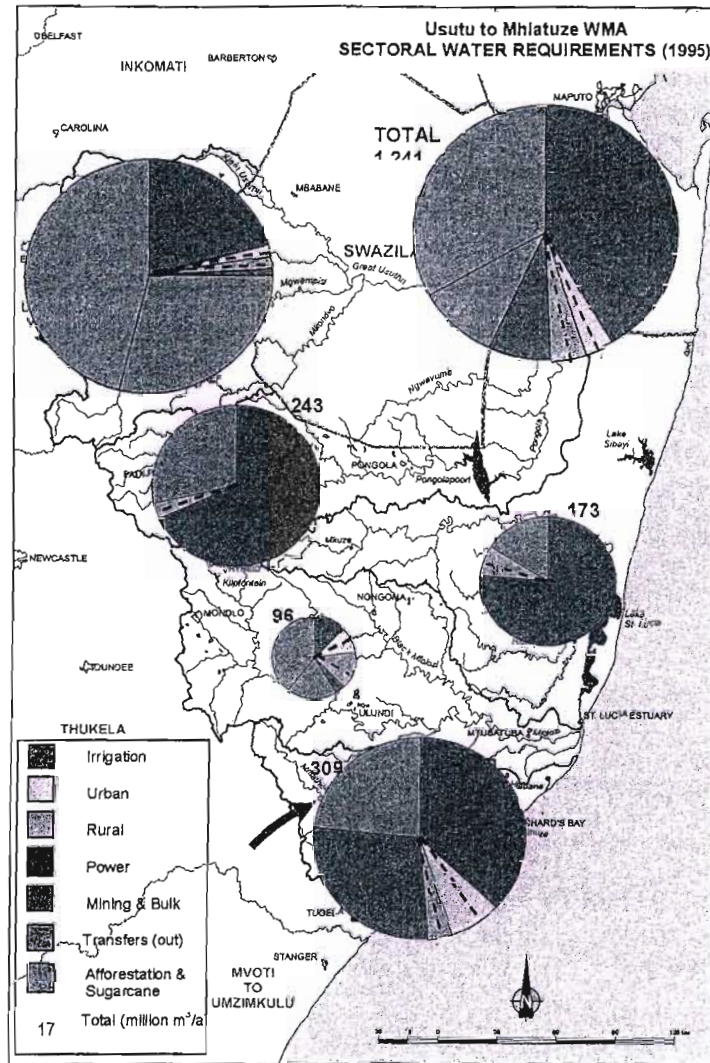


Figure 20 : Usutu to Mhlathuze WMA sectoral water requirements (1995)

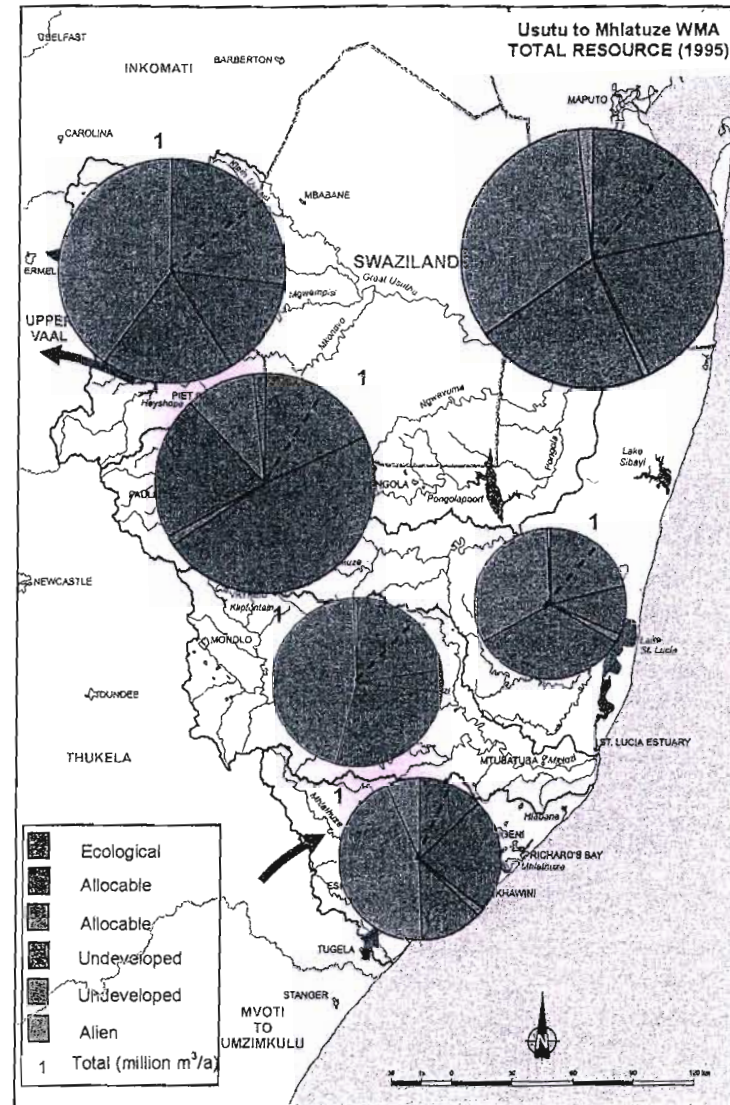


Figure 21 : Usutu to Mhlathuze WMA total resource (1995)

## 10.2 Water Conservation Initiatives

A major water demand management and conservation study is nearing completion in the Mhlathuze catchment. This includes a comprehensive assessment of all uses and users in the catchment as well as proposed strategies designed to improve water use efficiency.

Information on other water conservation initiatives within the WMA is sketchy however it does not appear that there are other major initiatives currently in progress, either within local government or other institutions.



## 11. Water Quality

### 11.1 Pollution Potential

An overview of the water quality status of this WMA is illustrated in figures 22 and 23.

Potential problems with managing the pollution occurring in this WMA are its size, multiple-catchments and dispersed nature, inclusion of part of Mpumalanga province, and river catchments that drain into (and out of) Swaziland and Mozambique. Local area catchment and pollution management offices may be essential to be able to cover this very large WMA, and significant inter-provincial and international problems would have to be dealt with. Several industrial towns may cause point source pollution, but erosion-related and agricultural pollution problems dominate.

The Mhlathuze is a relatively small catchment with quite large areas of formal agriculture. Around Babanango, this is generally extensive livestock production, with forestry further downstream in the Melmoth area. Some erosion problems are likely, particularly in the steep topography of the central valley area, which is predominantly subsistence agriculture. Some areas of intensive vegetable production exist. Towards the coast, the gradient flattens out, and sugar cane production is dominant, with soil loss and some nutrient and biocide contamination possible. Waste and bi-products from the milling of cane are potentially and historically (e.g. Archibald et al. 1969) sources of significant organic pollution. Close to the coast, urban and industrial problems from Empangeni, eSikhawini and the Richards Bay complex are significant, and includes issues related to the harbour and shipping. The newly developing ISCOR heavy minerals mining operation may also contribute to mineral and sediment pollution in this area.

Small adjacent catchments include the Mlalazi, with Eshowe and Mtunzini towns, and the Matigulu, with Ginginhlovu and Amatikulu towns. These catchments include quite significant rural populations with erosion problems predominant. Small-scale crop and vegetable production may exacerbate this. Localised faecal and related pollution is likely from some of the denser settlements, and extensive areas of sugarcane close to the coast may cause related pollution problems.



Faecal and nutrient pollution is likely at times in the upper Mfolosi catchment from Vryheid and settlement areas such as Emondolo. Mine related pollution problems are also possible with Archibald et. al. (1969) having identified elevated sulphate levels from the upper Black Mfolosi River, attributable to coal mining in that catchment. Erosion related issues are associated with predominantly cattle farming, both formal and subsistence, from the source to below Ulundi. Besides local faecal pollution, the latter town is not significant. The Hluhluwe Umfolozi Game Reserve Complex is a well-managed land use area with limited pollution potential. Below this, limited erosion related sediment and nutrient problems, and some localised faecal problems are likely in the flatter coastal margin where there are quite large areas of subsistence rural agriculture (including several other small catchments in the Nongoma area), commercial sugar cane (large and small scale), other plantation crops and some forestry. Mtubatuba has some faecal/nutrient pollution potential, and a large sugar mill is located here; with attendant historical records of organic enrichment from wastes (e.g. Archibald et. al. 1969). The river occasionally ceases to flow during the dry season (significant as the self purifying ability of the river will be impaired). Based on the report of Porter (1981) the water quality in the Mfolosi system appears to be relatively unchanged between 1969 and 1979.

The upper Pongola catchment is in reasonable condition, with predominantly extensive formal agriculture. A number of wetland areas in the upper catchment help maintain quality. A section of the upper catchment falls within the Mpumalanga province. In the Paulpietersburg area, there is some localised faecal and mining related pollution likely from human settlements and mining related activities, respectively. Archibald et al. (1969) notes "gross pollution" (high TDS, low pH, high sulphate and iron concentrations) in the Mkuze River from coal mines in the Vryheid area. The latter is also possible in the upper Mkuze catchment at Hlobane. Quite large areas of timber plantations also exist in this area. The central areas of both catchments are quite dissected and have some erosion potential, but in general is utilised reasonably well by commercial livestock farming and game reserves. Close to the Swaziland border there are some population concentrations including Pongola town, but pollution problems are limited, localised and faecal in nature. Historical records (Archibald et al. 1969) note high organic pollution immediately below the town of Pongola but that the river recovered quite quickly after the town. The coastal flats below the Ubombo mountains have significant irrigation schemes, which may cause problems. The water table is very high, with salinity an issue. The remainder of the plain is poorly drained and used for subsistence agriculture for the most part, with large wetlands. Populations are

generally low. There are some areas of forestry, and due to the very flat terrain, erosion problems are minor. The Pongola River drains into Mozambique, and thus international quality and quantity issues must be met.

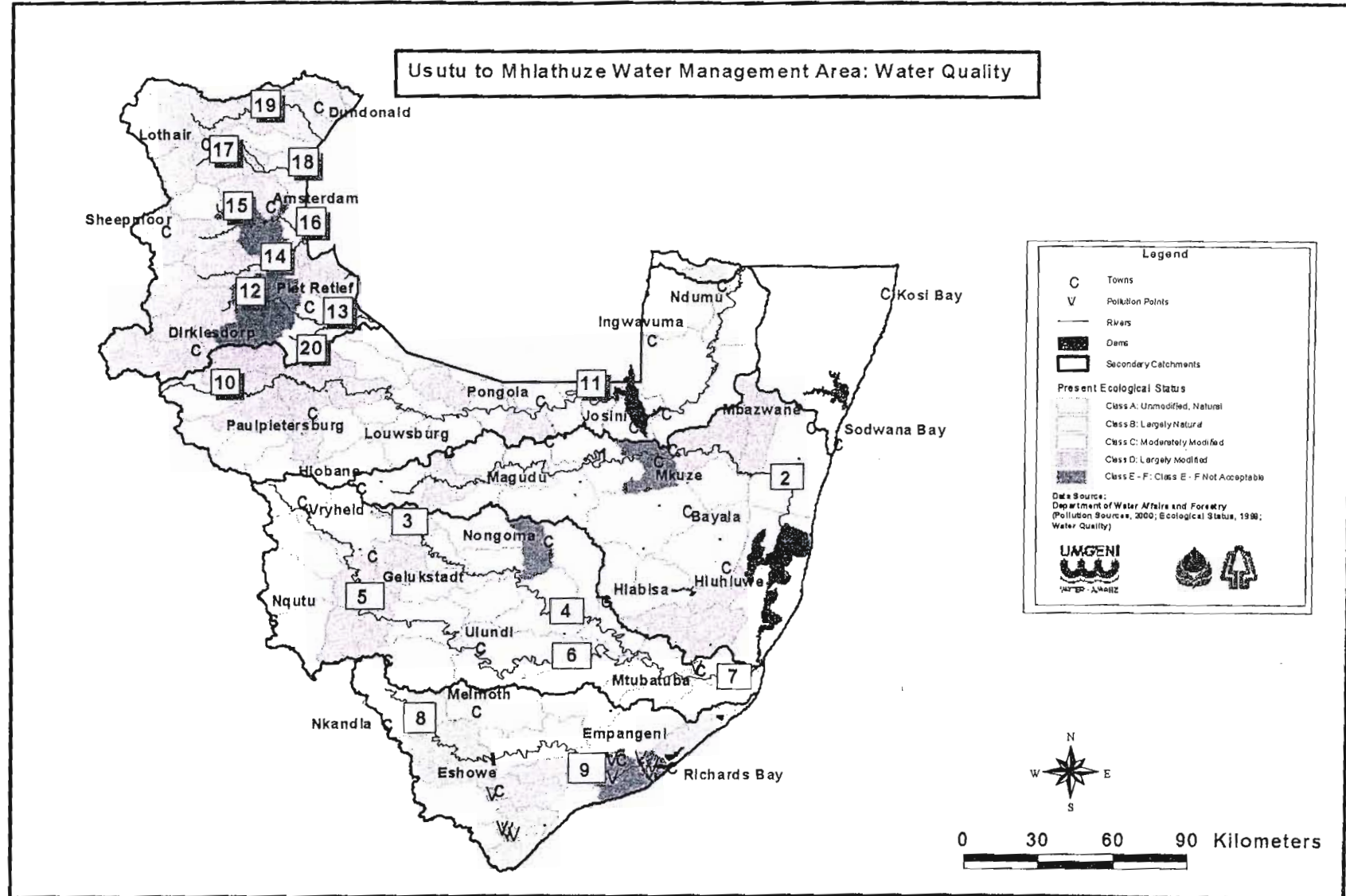
The Assegaai River falls entirely within Mpumalanga. The upper catchment resembles that of the Pongola, but the Heyshope dam is a notable feature. Downstream of this are large areas of forestry and the town of Piet Retief, a possibly significant pollution source at times. Populations elsewhere are low and dispersed. The river flows into Swaziland, and again international quality and quantity issues must be met.

The Ohlelo, Ngwempisi, and Usutu Rivers for the most part drain gently undulating terrain used for formal agriculture, predominantly timber. Amsterdam is the only town of any size, and elsewhere population numbers are low and dispersed. Few serious pollution problem sources are known to exist, although water quantity issues may need to be addressed as the rivers flow into Swaziland

Based on the Desktop Reserve Determination carried out by DWAF, the present Ecological Status Categories show almost  $\frac{3}{4}$  of this system to be largely natural (classes >B) and hence in good condition (Table 8 on page 74). Of concern are the 6% (in the upper catchment of the Pongola and the upper reaches of the Pongolapoort Dam) that are classified as 'largely modified,' class D. The intensive agriculture (irrigated) regions associated with the lower portions of the Mhlathuze River, and below Pongolapoort Dam, are understandably rated as 'moderately modified,' class C. In the former case (as with the lower reaches of the Mfolozi system) this is principally associated with the severe modification and degradation of the riparian zones in the lower section of the river, with sugar cane largely replacing natural coastal swamp, and the river canalised by associated agricultural activities. The lower quaternary catchments of the Mfolozi should also probably have been classified as 'largely modified' in the Desktop Reserve study, based on this impact.

Class	No. of Quaternaries	Area of Quaternaries (km <sup>2</sup> )	% of total
A – unmodified	37	17 338	39
B – largely natural	44	15 671	35
C – moderately modified	22	8 708	20
D – largely modified	7	2 616	6
<b>Totals</b>	<b>110</b>	<b>44 333</b>	<b>100</b>

**Table 8 : Desktop Reserve Determination of present Ecological Status Categories of rivers in the WMA**



**Figure 22 : Water quality in the WMA**



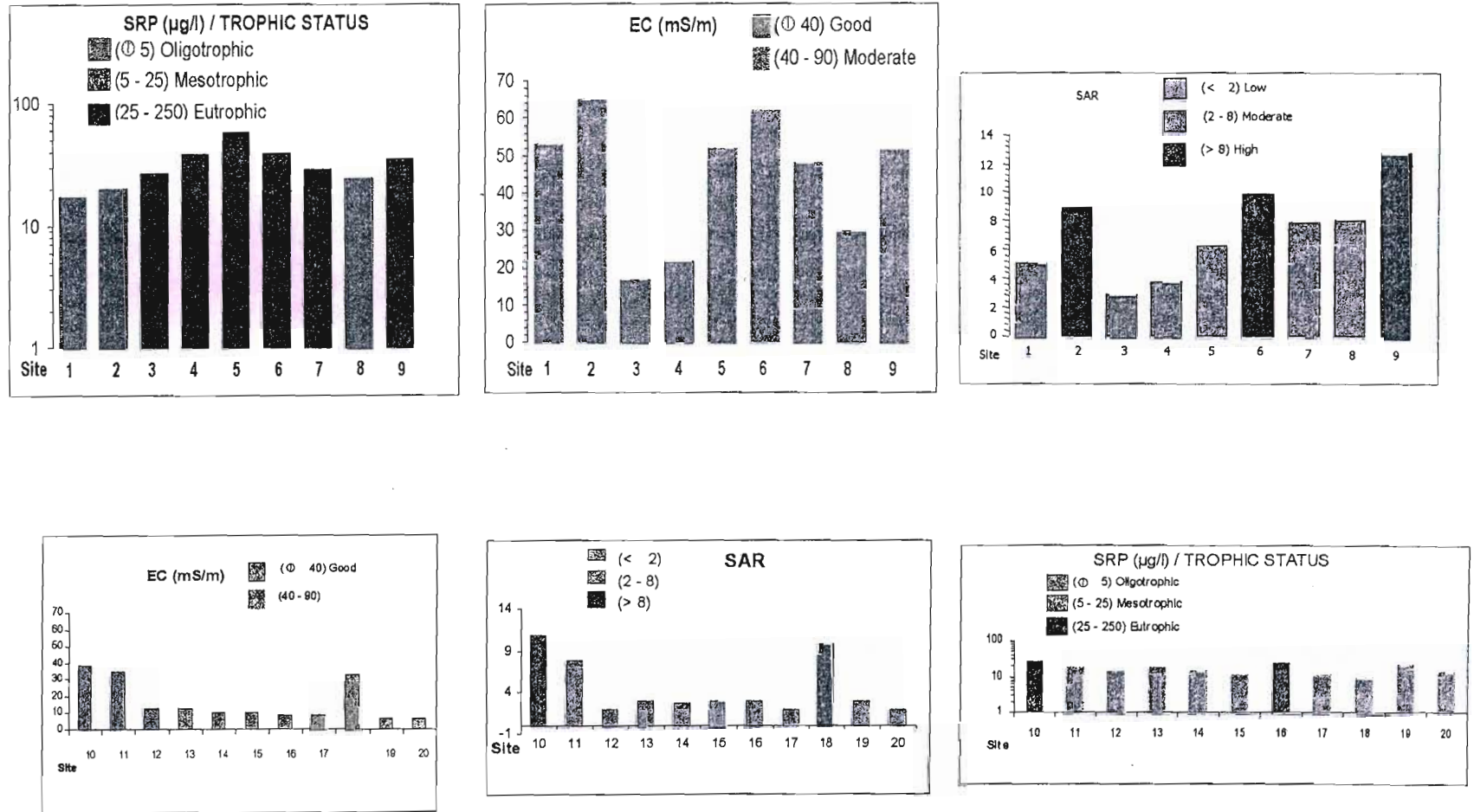


Figure 23 : Water quality bar graphs



## **12. Cost Recovery**

The Department of Water Affairs (regional office) currently has two different groups of major water users in the Province. The first group consists of Water Boards, Regional Councils, TLC's and certain major industries such as Iskor. There are 19 of these and they are billed monthly. The second group consists mainly of Irrigation Boards and some farmers. There are 76 of these and they are billed every 6 months. Overall cost recovery for these customers is excellent with 100% achieved in the year 1999/2000. This yields an amount of R70 million.

Once the registration process referred to in section nine is complete, then it is estimated that there will be an amount of between 12 000 and 16 000 users throughout the Province. In the new dispensation these will all have to be billed by the CMA's and possibly in the interim by the DWAF regional office. In certain cases these can be administered by an intermediary institution, which will reduce the numbers dealt with directly by the CMA to some extent. It nevertheless clearly represents a significant logistical challenge and a completely different scenario from the current situation.

Cost recovery amongst other institutions in the WMA varies greatly. It would appear that most of the local authorities are coping reasonably well although many are experiencing problems in the townships incorporated from the former Kwazulu administration. In the rural areas the situation is much more problematic with virtually all the local government institutions, as well as DWAF, achieving very low levels of cost recovery.

The picture amongst Irrigation Boards is also variable. Some are very good while others are very poor.

## **13. Conclusions**

This situational assessment has attempted to summarize, based on available information, the current position in the Usutu to Mhlathuze Water Management Area. This is a very important part of the proposal development process, particularly in terms of being able to brief stakeholders and to make them aware of the key issues. It will hopefully thus be a useful tool to assist in terms of making decisions about what activities and objectives should be considered as high priority by the CMA in its early

years. This is very important information to include in the CMA proposal and to guide the feasibility study phase. As a result, it is appropriate at this point to attempt to summarise some of the key findings of this study.

By South African standards, this WMA is well endowed with water resources. This implies that in normal circumstances there is not undue competition for water in the WMA, with the possible exception of the Mhlathuze catchment. From past experience however this position can change dramatically in a severe drought situation! Water shortages inevitably result in conflict between users and these situations will become more prevalent as demand increases in the future.

The estimated population of the WMA is 2,2 million. The socio-economic analysis reveals great disparities in terms of income, education and access to services, as is common in many parts of South Africa. The average per capita income for the area is R5 300 which is well below the national average of R9 520. In addition, the poverty index of the WMA is very high. The Ingwavuma district has in fact the second highest poverty index in the whole of the country. The most impoverished areas are generally situated in rural parts of the WMA. The National Water Act dictates that addressing past inequities must be a primary consideration of the CMA's. In addition, it is relevant to note that the areas in question are often the most vulnerable with respect to water quality problems, the most susceptible to flooding, the least well endowed with safe sanitation (resulting in severe faecal pollution) and the most susceptible to poor agricultural practices. All of these facts emphasize the importance of these communities being represented on appropriate structures and also being the focus of significant upliftment and capacity building efforts.

With respect to groundwater potential, this is generally speaking under-utilised. The coastal plain has the best potential for primary aquifers and in the hinterland there is an extensive system of structural features such as dykes, joints and faults that have good potential for groundwater. This creates an opportunity for more effective use of this resource in the future, particularly in the rural areas.

Water quality in the rivers in the WMA is generally good. There are however areas of concern which will need to be carefully monitored and hopefully improved over the course of time. These include the upper reaches of the Pongola, Black Mfolosi and Mkuze, as a result of coal mining. The lower reaches of the Mhlathuze, Pongola and Mfolosi are of concern due to intensive irrigation, severe degradation and modification of the riparian zones, and canalisation. There are localized problems with faecal pollution from communities lacking basic services and also significant erosion problems in some areas due to poor agricultural

practices. The fact that many rural communities are directly reliant on raw water from the rivers and streams emphasizes the importance of improving this situation. The recent cholera epidemic in the area bears grim testimony to this.

In view of its tremendous environmental (and hence tourism) assets, which include the World Heritage Site of the Greater St Lucia Wetland Park, environmental concerns are of critical importance. In this regard, it is encouraging that, in terms of the Ecological Status Classification, some 81 of the quaternary catchments are classified as "A" or "B". As was noted above however there are areas of concern. In some cases, the ecological classification of sections of a river have deteriorated to "E/F" (the lowest possible). This is clearly unacceptable and programmes need to be put in place to ensure that this situation improves in the future.

In much of the WMA, the information on the extent of alien plant infestation is rather sketchy. The information available indicates that there are significant problems in the Mhlathuze catchment. The rivers to the north of this would appear to have relatively minor problems.

Although there are a number of well-established and resourced institutions within the WMA, these tend to be concentrated in the Richards Bay/Empangeni area. There are also relatively few Water User Associations and Catchment Management Fora and they are geographically widely dispersed. The presence of effective institutions is extremely important as it relates directly to the capacity within the area to address catchment management in a meaningful way. It will thus be a particular challenge for this WMA. The nature of the CMA model relies implicitly on a cooperative and collaborative approach, so the capacity of the various potential partner institutions is of considerable interest. It is also of note that there does appear to be some consensus around the philosophy of catchment management, even though there is some concern with respect to the precise role and functions of the new institution.

Apart from the tremendous diversity and size of the WMA, a particular challenge lies with respect to the substantial area of the WMA in another province (Mpumalanga) and (two) international boundaries. This not only makes the institutional environment more complex but also renders the difficult task of effective catchment management substantially more challenging. The international boundaries also result in very specific requirements in terms of downstream obligations to neighbouring countries.



There is a broad spectrum of water users in the WMA but not a particularly large number. The process for registering these is not complete but is well advanced. This is important as it creates the potential for the income base for catchment management work. The history of cost recovery in the area is patchy. The urban areas have generally performed well but the record in rural areas is very poor. The record of Irrigation Boards is also mixed.

The biggest user of water in the WMA, by some margin, is commercial agriculture in the form of irrigation, forestry and sugar cane. Transfers out of the WMA and industrial/mining are the next biggest users. The water requirements of the Environmental Reserve are very significant and will necessitate a higher profile and priority in future.

There are currently few proposals for major water resources infrastructure augmentation projects in the WMA. Major projects completed in recent years include the Middledrift scheme to transfer water from the Thukela to the Mhlathuze system and Paris Dam on the Bivane River designed to supply irrigation and domestic needs. There is significant growth in water demand in the Richards Bay area due to expansion of the mining and industrial sectors. This is likely to result in further augmentation from the Thukela, probably via a new scheme located close to the coast. Few water conservation initiatives are under way in the WMA although a major study of the Mhlathuze catchment is currently nearing completion.

This WMA is a net exporter of water via the two transfer schemes from the upper Usutu into the Vaal system. In terms of the new DWAF raw water pricing policy, this will ultimately provide the facility for the CMA to gain additional income for its catchment management efforts. By the same token however the WMA will become responsible to pay for the water transfer from the Thukela WMA.

As was mentioned in the introduction, this situational assessment has identified that there are significant gaps in the information regarding the WMA. A programme to address this will be important, as good decision-making will not be possible without it. Key areas include the following:

- Comprehensive Environmental Reserve Determinations for important rivers
- More extensive water quality data for the rivers north of the Mhlathuze
- More detailed evaluation of the extent and impact of alien plant infestation for most catchments
- The extent and impact of erosion problems generally

- More hydrological information for the rivers north of the Mhlathuze

The water resources of KZN have been identified by the provincial government as being a potential source of competitive advantage for the Province. This is because they have significant potential to stimulate growth in agriculture, wet industries and tourism. This again emphasizes the importance of protecting the water resources of the province and managing them as effectively as possible. The full potential of the WMA will not be able to be realised if the condition of our water resources is allowed to deteriorate.



## 14. References

- Department of Water Affairs and Forestry, *Criteria for the Evaluation of a Proposal for the Establishment of a Catchment Management Agency* (2000)
- Department of Water Affairs and Forestry, *Establishing a Catchment Management Agency* (1999)
- Department of Water Affairs and Forestry, *Establishing a Water User Association* (1999)
- Department of Water Affairs and Forestry, *National Microbial* (1999)
- Department of Water Affairs and Forestry, *Proposal for the Establishment of a Catchment Management Agency for the Inkomati Basin: Final Draft* (2000)
- Department of Water Affairs and Forestry, *Public Participation for CMA's and WUA's* (1999)
- Department of Water Affairs and Forestry, *South African Water Quality Guidelines (second edition). Volume 7: Aquatic Ecosystems* (1996)
- Drennan, Maud and Partners, Groundwater Consulting Services, E. Martinelli and Associates, VSA Earth Science Consultants, *Kwazulu-Natal Groundwater Characterization and Mapping Project* (1995)
- Government of South Africa, *National Water Act* (1998)
- Government of South Africa, *Water Services Act* (1997)
- KwaZulu-Natal Provincial Cabinet, *The Provincial Growth and Development Strategy* (1996)
- Statistics South Africa, *Census* (1996)
- MBB Consulting Engineers, *Riparian Zone Alien Vegetation Studies* (1998)
- Umgeni Water, *An Evaluation of the Feasibility of Implementing Riparian Corridor Rehabilitation* (2000)
- WRC Project K5/824/01, *Monitoring Implementation Manual. Final Report.*

- Acock's, JPH, 1953. Veld types of South Africa; Union of South Africa, Department of Agriculture. Division of Botany, Botanical Survey Memoir, No. 28.
- Archibald CGM, Coetzee OJ, Kemp PH, Pretorius SJ, Sibbald RR 1969. Water quality and abatement of pollution in Natal rivers. The rivers of northern Natal and Zululand. Town and Regional Planning Report 13 (iv) 1-51.
- Basson, MS, van Niekerk, PH and van Rooyen, JA. 1997. Overview of water resources availability and utilisation in South Africa. Department of Water Affairs and Forestry, Pretoria. 72 pp.
- Department of Environmental Affairs and Tourism, 1999. *Nomination Proposal for The Greater St Lucia Wetland Park to be Listed as World Heritage Site.*
- Department of Water Affairs and Forestry, 1999. *National Microbial Monitoring Implementation Manual. Final Report. WRC Project K5/824/01.*
- Department of Water Affairs and Forestry, 1996. *South African Water Quality Guidelines (second edition). Volume 1: Domestic Use.*
- Department of Water Affairs and Forestry, 1996. *South African Water Quality Guidelines (second edition). Volume 4: Agricultural Water Use.*
- Department of Water Affairs and Forestry, 1996. *South African Water Quality*
- Department of Water Affairs and Forestry, 2000. *Water quality monitoring programme data and information.*
- Goodman P.S. 2000. *Determining the conservation value of land in KwaZulu-Natal. KZN NCS Biodiversity Division Draft Report.*

Heeg, J and CM Breen, 1982. *Man and the Pongola floodplain. South African National Scientific Programmes, report No. 56.*

Macdonald, IAW and ML Jarman (editors), 1985. *Invasive alien plants in the terrestrial ecosystems of Natal, South Africa. South African National Scientific Programmes. Report No. 118.*

Natal Parks Board Year Book 1995-96.

Porter R.N. 1981. *A preliminary impact assessment of the environmental effects of proposed dams in the Mfolozi catchment, Natal. Natal Parks, Game and Fisheries Preservation Board.*

KwaZulu-Natal Department of Traditional and Environmental Affairs, 1998. *Preliminary State of the Environment Report for KwaZulu-Natal.*

Umgeni Water, 2000. *Water quality monitoring programme data and information.*

Water Research Commission, 1998. *Alien invading plants and water resources in South Africa: A Preliminary assessment. WRC report No. TT 99/98.*

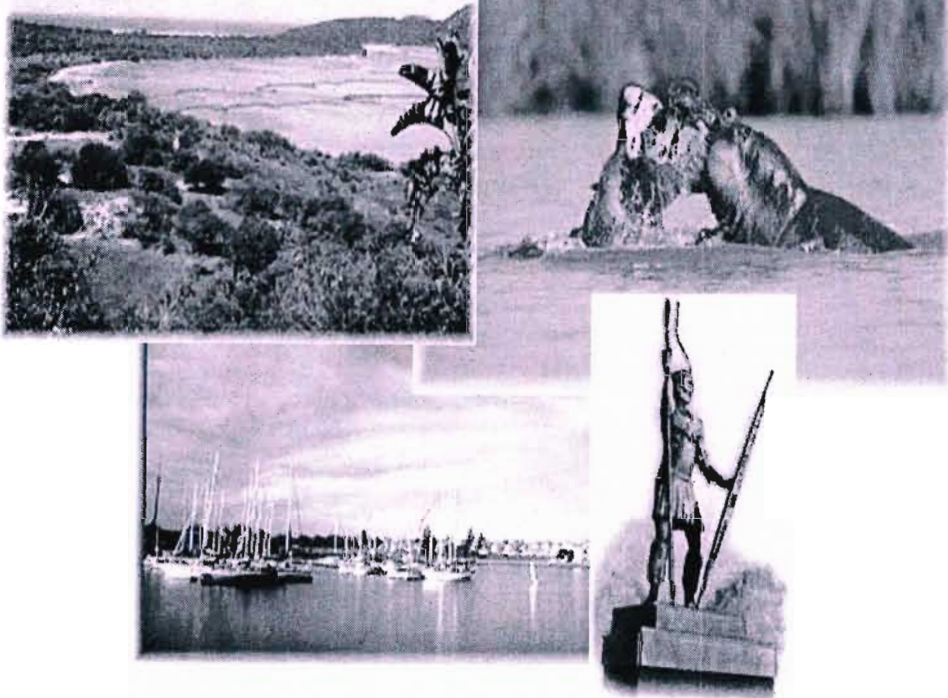
**APPENDIX 2**

**THE PROPOSAL TO ESTABLISH THE USUTHU-MHLATHUZE CATCHMENT  
MANAGEMENT AGENCY**



DEPARTMENT OF WATER AFFAIRS AND FORESTRY  
REPUBLIC OF SOUTH AFRICA  
KwaZulu Water Regional Office

# Proposal to Establish the Usutu to Mhlathuze Catchment Management Agency



A.J. Wilson & Associates International cc  
Management Consultants

Reg No: 2209/14/1/23

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Reg No: 43901/80/30

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## LIST OF ABBREVIATIONS

CEO	-	Chief Executive Officer
CMA	-	Catchment Management Agency
CMC	-	Catchment Management Committee
CMF	-	Catchment Management Fora
CMP	-	Catchment Management Plan
CMS	-	Catchment Management Strategy
CSIR	-	Council for Scientific and Industrial Research
DM	-	District Municipality
DWAF	-	Department of Water Affairs and Forestry
IDP	-	Integrated Development Plan
INR	-	Institute for Natural Resources
KZN	-	KwaZulu-Natal
NGO	-	Non-government organisation
NWA	-	National Water Act
ORI	-	Oceanographic Research Institute
PDI	-	Previously Disadvantaged Individual
PDWG	-	Proposal Development Working Group
SA	-	Situational Assessment
SEA	-	Strategic Environmental Assessment
TLC	-	Transitional Local Council
UND	-	University of Natal Durban
WMA	-	Water Management Area
WRM	-	Water Resource Management
WSAM	-	Water Systems Assessment Model
WSDP	-	Water Service Development Plan
WUA	-	Water User Association

## GLOSSARY OF TERMS

Alien plants	-	plants not indigenous to (not found naturally in) South Africa
Aqueduct	-	artificial pipe or channel for conveying water
Aquifer	-	any rock formation containing water in recoverable quantities
Bacteriology	-	the study of bacteria; a class of micro-organisms, which are often parasitic, agents in putrefaction and the cause of many diseases
Catchment	-	the area from which a river is fed i.e. the area draining into a river
Conurbation	-	dense cluster of neighbouring towns considered as a single unit in some respects
Demography	-	the study of population
Ecological Status Classification	-	a system developed to define the ecological health of a river
Ecology	-	the study of plants, animals, peoples and institutions in relation to their environment
Effluent	-	liquid industrial waste or outflow from a sewer
Environmental Reserve	-	the volume and pattern of water releases required to maintain the health of ecological systems associated with a river
Faecal	-	emanating from human or animal excrement
Hydrogeology	-	the branch of geology dealing with groundwater
Hydrology	-	the study of water resources in land areas
Impoundment	-	in this context, a reservoir of water
Institution	-	an organization established for some object
Jurisdiction	-	extent of power or area over which authority extends
Nutrients	-	in this context, chemical compounds in water which sustain and feed plants; normally nitrates and phosphates emanating from fertilizers and detergents
Riparian	-	in the floodplain of a river or stream
Runoff	-	that part of rainfall, which finds its way into watercourses
Social Reserve	-	the basic water requirement set aside for human consumption based on 25 litres per capita per day
Socio-economics	-	study of the relationship between economics and social factors
Statutory	-	enacted or recognized by statute
Stochastic	-	statistically random
Topography	-	the detailed study, description or features of a specific area
Water demand management	-	a programme of measures undertaken to reduce the consumption of water

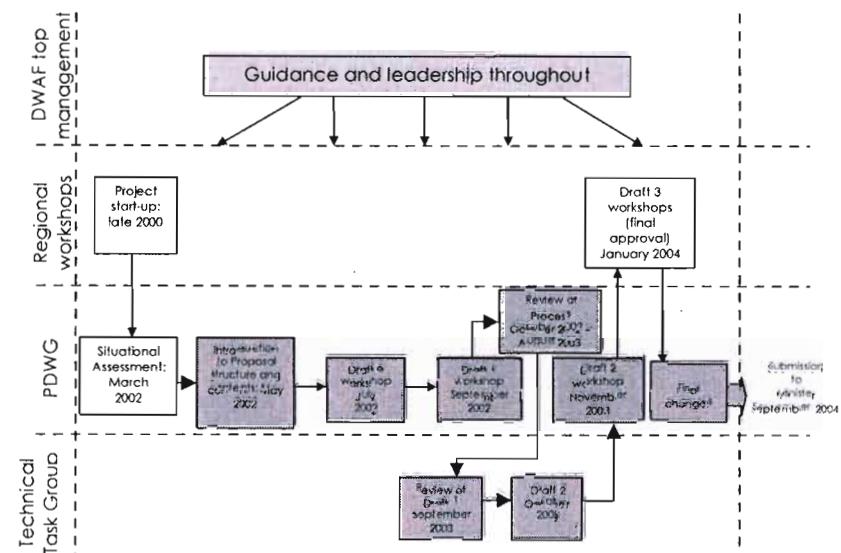
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- Mr Graham Muller of Muller Associates who undertook the Financial Viability assessment.

## 1.0 INTRODUCTION

This document represents the culmination of a process that commenced in July 2000. The process has incorporated three distinct components, which have been essential prerequisites to the compilation of this proposal. These were the situational assessment, the stakeholder participation process and the feasibility study. The overall process is illustrated in the diagram below:<sup>1</sup>



**Figure 1: CMA Development Process**

Figure 1 illustrates that the more technocratic aspects of the process, namely the situational assessment and the feasibility study, have been run in conjunction with a substantial stakeholder participation process. This has been an essential part of the process design in order to optimize on opportunities for capacity building, public participation and information dissemination. As can be seen, the Proposal development process underwent a major realignment and rethink between October 2002 and August 2003. This involved several PDWG and other stakeholder meetings and culminated in a major reconstitution of the PDWG and the establishment of a Technical Task Group to take the process forward (this is discussed further in Section 2). This also resulted in major changes in the proposal content.

The style of this document is very much that of an executive summary. In terms of the length of the document, a genuine attempt has been made to adhere to the guidelines in the document entitled "CMA Proposal Development: Proposal Framework and Evaluation Criteria", although the brevity of these are extremely challenging. In a similar vein, the structure outline in the guideline has generally been adhered to. Where this was not the case, it was because, in the view of the authors, the flow of the document benefited from an amendment to the structure. More detail is incorporated in the attached Appendices covering the

<sup>1</sup> Note that this diagram is a simplified representation of a more complex process.

Situational Assessment, the Stakeholder Participation Process and the Financial Feasibility study. The key outputs of the latter are also summarized in sections 2 and 3.4 respectively.

A key challenge in the process has been the need to enquire about, and speculate on, a range of important characteristics of the new organization. This has been necessary in order to address many of the key issues that are regarded as essential components of this proposal. This is challenging in any circumstances but is substantially more complex in this instance because there is no real template to evaluate against; as there are no existing CMAs in the country at the time of writing. On the other hand, if this is not done, the proposal simply becomes too generic with no sense gained of what the key issues and challenges will be and how this CMA will differ from any other. A process of making intelligent surmises has thus been necessary. This has been greatly informed by extensive participation of key external stakeholders, as well as the Regional Office. Both of these groups have very valuable insights on how the new organization will develop.

### 1.1 The Situational Assessment

The Situational Assessment (SA) is not covered in any other area of the report so it is briefly summarized at this point (the full report is attached as Appendix A). This is appropriate as it gives context to much of the discussion that follows. At the outset, it should be noted that the brief of the SA was not to gather any new data but to make the best use of what existed at that point in time. Due to time and resource constraints, the SA was also necessarily superficial and high level.

A general layout of the WMA is shown in Figure 2 on page 11. Key findings to emerge from the SA were as follows:

- By South African standards, this WMA is well endowed with water resources. This implies that in normal circumstances there is little competition for water in the WMA, with the possible exception of the Mhlathuze catchment. From experience however this position can change dramatically in a severe drought situation! Water shortages inevitably result in conflict between users and these situations will become more prevalent as demand increases in the future.
- The estimated population of the WMA is 2,2 million. The socio-economic analysis reveals great disparities in terms of income, education and access to services, as is common in many parts of South Africa. The Ingwavuma district has in fact the second highest poverty index in the whole of the country. The most impoverished areas are generally situated in rural parts of the WMA. The National Water Act dictates that addressing past inequities must be a primary consideration of the CMAs. In addition, it is relevant to note that the areas in question are often the most vulnerable with respect to water quality problems, the most susceptible to flooding, the least well endowed with safe sanitation (resulting in severe faecal pollution) and the most susceptible to poor agricultural practices. All of these facts emphasize the importance of these communities being represented on appropriate structures and being the focus of significant upliftment and capacity building efforts.
- With respect to groundwater potential, this is, generally speaking, under-utilised. The coastal plain has the best potential for primary aquifers and in the hinterland there is an extensive system of structural features such as dykes, joints and faults that have good potential for groundwater.
- Water quality in the rivers in the WMA is generally good. There are however areas of concern which will need to be carefully monitored and hopefully improved over the course of time.
- In view of its tremendous environmental (and tourism) assets, which include the World Heritage Site of the Greater St Lucia Wetland Park, environmental concerns are of critical importance. In this regard, it is encouraging that, in terms of the Ecological Status Classification, some 81 of the quaternary catchments are classified as "A" or "B". As was noted above however there are areas of concern. In some cases, the ecological classification of sections of a river have deteriorated to "E/F" (the lowest possible).
- Although there are a number of well-established and resourced institutions within the WMA, these tend to be concentrated in the Richards Bay/Empangeni area. There are also relatively few Water User Associations and Catchment Management Fora and they are geographically widely dispersed. The presence of effective institutions is extremely important as it relates directly to the capacity within the area to address catchment management in a meaningful way.

- Apart from the tremendous diversity and size of the WMA, a particular challenge relates to the fact that a substantial area of the WMA in another province (Mpumalanga) and there are two international boundaries. This not only makes the institutional environment more complex but also renders the difficult task of effective catchment management substantially more challenging. The international boundaries also result in very specific requirements in terms of downstream obligations to neighbouring countries.
- There is a broad spectrum of water users in the WMA but not a particularly large number. The process for registering these is not complete but is well advanced. This is important as it creates the potential for the income base for catchment management work. The history of cost recovery in the area is patchy. The urban areas have generally performed well but the record in rural areas is very poor. The record of Irrigation Boards is also mixed.
- The biggest user of water in the WMA, by some margin, is commercial agriculture in the form of irrigation, forestry and sugar cane. Transfers out of the WMA and industrial/mining are the next biggest users. The water requirements of the Environmental Reserve are very significant and will necessitate a higher profile and priority in future.
- There are currently no proposals for major water resources infrastructure augmentation projects in the WMA. Major projects completed in recent years include the Middledrift scheme to transfer water from the Thukela to the Mhlathuze system and Paris Dam on the Bivane River designed to supply irrigation and domestic needs. There is significant growth in water demand in the Richards Bay area due to expansion of the mining and industrial sectors. This is likely to result in further augmentation from the Thukela, probably via a new scheme located close to the coast. Few water conservation initiatives are under way in the WMA although a major study of the Mhlathuze catchment is currently nearing completion.
- This WMA is a net exporter of water via the two transfer schemes from the upper Usutu into the Vaal system. In terms of the new DWAF raw water pricing policy, this will ultimately provide the facility for the CMA to gain additional income for its catchment management efforts. Similarly, however the WMA will become responsible to pay for the water transfer (in) from the Thukela WMA.







- Farmers Associations
- Foresters and forestry organisations

Civil society

- Trade Unions
- Non governmental organisations active in the area
- Interest groups (e.g. organised recreational bodies with an interest in the water body)
- Communities who depend on the resource for their daily existence
- Ratepayers associations
- Other directly affected individuals

Importantly, key stakeholders had to be able to bring the perspectives of their sectors to this process, as well as be in a position to feed back to their various constituencies. It must be noted that this process was not exclusive, and any interested parties who wished to meaningfully contribute towards the establishment of a CMA in the Usutu to Mhlathuze WMA were welcome to make inputs into the process.

In accordance with the "representative democracy" approach, key stakeholders were also identified and invited, by fax or posted invitation, to attend the first round of workshops. Sources of data included consulting the following databases:

- Demarcation board stakeholder identification process,
- Irrigation Boards in KwaZulu Natal database,
- District Agricultural Council database,
- Regional Tribal Authorities (Department of Traditional Affairs)
- Regional Authorities
- The SEA [DWAF]
- Department of Health database

In addition, to inform stakeholders who may not already have been identified, adverts were placed in national and local newspapers prior to the first round of workshops.

For the purposes of making workshops as accessible to as many people as possible, it was decided to hold the first round of meetings in four locations within the WMA (Melmoth, Piet Retief, Vryheid and Mkuze). These were held in November 2000. Although each workshop had its own dynamics in terms of the number of people who attended the workshop, and issues discussed, the presentations to all workshops remained the same.

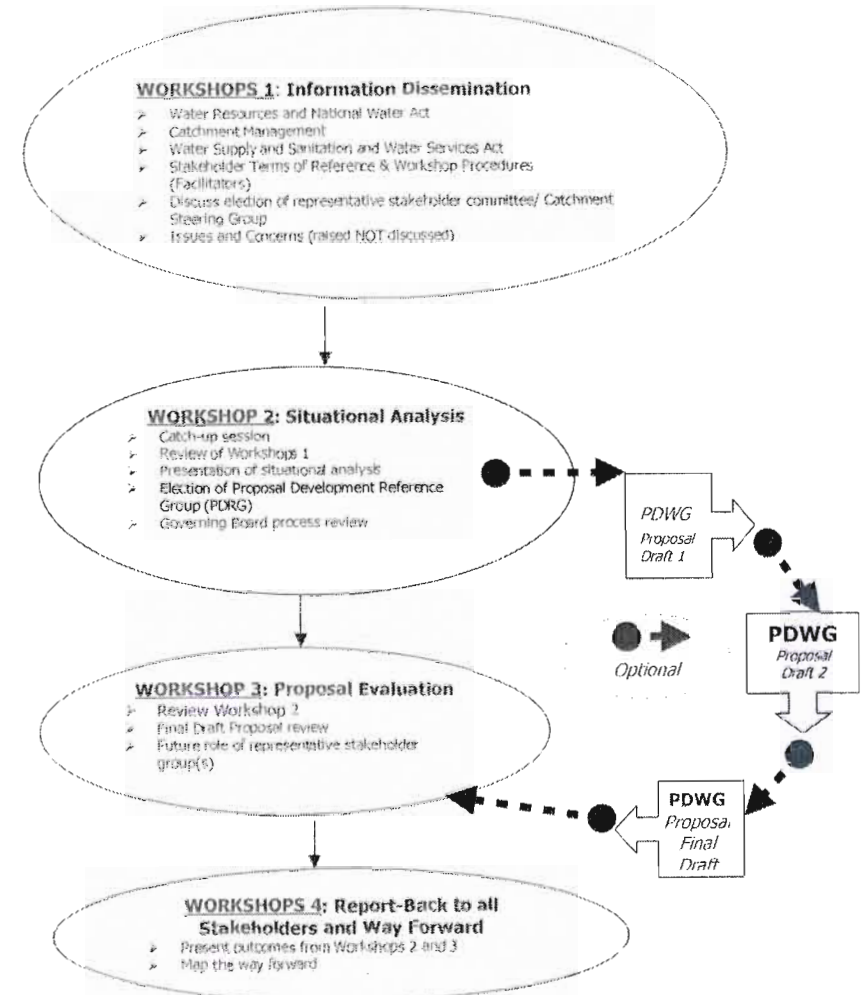
The primary objectives of this round of workshops were as follows:

- To inform stakeholders of the global and national water situation and to present aspects of South Africa's National Water Act
- To introduce the concept of Catchment Management Agencies (CMAs) to stakeholders, including:
  - Why CMAs are necessary
  - The legislative framework that makes provision for CMAs (National Water Act)
  - How CMAs are legally established (CMA Proposal development and CMA Governing Board appointment)
  - The role of stakeholders in the CMA Proposal development
- To discuss with stakeholders the public participation process to be followed in order to develop a CMA Proposal and ways to achieve representation of all stakeholder groups in the process.
- The functions that CMAs would carry out.
- The process of developing the Situational Assessment and progress made in this regard (Appendix A to this document).

These meetings were successful in that they were relatively well attended (although sometimes patchy) and that they secured the following from those present:

- Buy-in to the list of stakeholders identified as crucial to the process and suggestions as to additional stakeholders
- In-principle agreement as to the necessity for the CMA and the role that it would play
- A list of issues, claims and concerns from the stakeholders.

The conceptual participation process outlined in Figure 3 was proposed at the first round of meetings and accepted as a viable process.



**Figure 3: Public Participation Format Proposed at the First Round of Workshops**

Evaluating the process, it was noted that:

- During the first series of workshops, some critical role-players involved in the management of water resources were not part of the process as originally envisaged. These included both Tribal Authorities and the local sphere of government. The first workshops coincided with the dawn of the wall-to-wall municipality elections in 2000.
- The turn out was very poor for both political reasons and workshop logistics.

A management decision was made to re-schedule the same workshops at the same venues and new attempts were made to attract a greater number of participants. The aim of the second round of workshops, held in June 2001, was to share information with stakeholders and seek their collective wisdom in the establishment of the CMA in their area. Whereas the first workshops needed to identify the stakeholders, the second round required the identification of stakeholders that would be willing to work with the technical team in the CMA proposal development process that would be ratified at a series of workshops and thereafter submitted to the Minister for approval. The workshops therefore were an additional attempt to get the co-operation, agreement and full participation of all stakeholders in the process.

The invitation process included accessing existing databases as applied in the previous workshops and updating this database with new stakeholders who came on board because of a public awareness campaign that had been ongoing during the full CMA stakeholder participation process. In addition, three public addresses were made to the various Regional Tribal Authority Meetings (Nseleni, Ngoya and Ingwavuma). A number of government departments (Department of Health, Public Works and Welfare) were consulted and asked to attend the workshops. As part of a public campaign, notices were prepared and posted at all proposed venues two weeks prior to the meeting. Letters of invitation accompanied by the first workshop proceedings report were mailed to all stakeholders on the databases. Telephone and faxes were used to contact known stakeholders to attend the meetings.

Four workshops were held at four different venues (Melmoth, Vryheid, Piet Retief, and Jozini). Once again, although the material presented was similar, each workshop had its own dynamics in terms of the make-up and number of people who attended and the issues discussed.

The primary objectives of this set of workshops were as follows:

- Re-visit and confirm the in-principle agreement to continue with the process to develop a proposal for the establishment of the Usutu to Mhlathuze Catchment Management Agency.
- Engage stakeholders in the feasibility study to establish the Usutu to Mhlathuze Catchment Management Agency.

The workshops decided that a Proposal Development Working Group (PDWG) should be established to make recommendations and to assist in the formulation of the proposal. Members were nominated by the plenary stakeholder meetings.

The following stakeholders attended the first PDWG workshop held in March 2002.

**Table 1: Attendance at the First PDWG Workshop**

NAME	ORGANISATION
B.J. Ashburner	Felixton Planter
W. Brook	Nkwalini Irrigation Board
M. Bowler	SAPPI
A. Campbell	Mtunzini Estate
G. Chamberler	Self
A. Church	SA Cane Growers Association
B.P. Dunge	Mdlelanga Water
M.W. Gama	Mondi Khulanathi
P.Gardiner	Mondi Forests
B.M. Gurray	Tortein Timbers
S.C. Horace	DWAF – SEA
J. Joubert	C.T.C.

NAME	ORGANISATION
Boy Khuzwayo	Mfanefile
L. Khuzwayo	Mfanefile
D.N.E. Leitch	Melmoth Farmer
R. G. Labusulangwe	R.G. Labusulangwe Trust
W.P. Lotter	Forest Industries Association
R. Mcherray	Melmoth Farmers Association
W. Mnyandu	Khulanathi Mondl
B.M. Mthembu	DWAF – SEA
H. Percival	Self
C. Qwabe	Mfanefile P.O. Box 153, Melmoth, 3835
R.S. Schetter	Melmoth Farmer Association
Sifiso Shandu	Mondi Greef
N.E. Shezi	Mdlelanga Water Community
M.E. Shandu	Imbizo Water Supply
S. Sibiya	Mfanefile
N. L. Sterfontein	Mhlathuze Water
J. Thompson	VGR for Uthungulu Regional Council
S. Thomas	Mondi Forest
D.M. van Eden	UmSekeli
F.D.R. Wiseman	Eshowe/Entumeni
Arthur S.F. Nyaka	Community member
B. Oehme	N.T.E
B.V.A Xhakaza	Councillor
Charles Hughes	Councillor
D. N. Nxumalo	Community member
E.T. Myeni	NGO
Inkosi M.A Khanyile	Nkandla
K. J. Fourie	Springfield FMG
Kelello Ntoampe	Mhlathuze Water
M. Biyela	Nkandla
M. L. Sibiya	Councillor, Phongola
M.C.J. Mtshali	TLC
Muzi Ngcobo	Teacher
N. J. Mavuso	ANC
N. T. Shabangu	Community leader
Nelisiwe Dlamini	ANC WL member
Njabuliso Dlamini	ANC YL member
O. Steeneveldt	ESKOM
O.A.Ntshangase	TLC
Phumzile Sukazi	WL Chairperson
S. G. Venter	Town Engineer - Vryheid
S. R. Mhlongo	Councillor
S.E. Qwabe	Councillor
Sebenzile Mthimkhulu	WL member
Sipho Shabangu	Councillor
Steven Cindi	Treasurer
Thembi Ngcobo	Teacher
Thembi Shabangu	ANC WL Secretary
Vusi Mdluli	Vryheid Municipality
William Mhlanga	Youth League
Z. O. Zulu	Nkandla
Zenzele Buthelezi	CLLR-Abaqulusi

The stakeholder process followed throughout the various meetings is summarised in Table 2 on Page 17.

**Table 2: PDWG Process**

Meeting/Event	Emphasis-Outputs	Draft	
PDWG	27 March 2002	Situational Assessment	-
PDWG	29 May 2002	Distribution of the CMA proposal	0
PDWG	26 June 2002	Institutional Design, Governing Board, Co-operative Governance	
PDWG	31 July 2002	Organisational Development and Delegation of functions. Location of functions	1
PDWG	21 August 2002	Distribution of CMA Proposal Draft 2: CMA Options	1
<p>At the 21 August meeting, concern was raised regarding the representivity of all stakeholders' groupings. It was felt that the formal sector had been under-represented and it was decided to revert to a process whereby the PDWG was split into geographical groupings.</p>			
PDWG	17 October 2002 - Piet Retief; 18 October - Richards Bay	Comments and concerns from the various stakeholders per geographical area. These meetings were not very well attended and it was decided to return to the single PDWG format. However the meetings decided that the process of decision making to date had not been sufficiently robust and required a complete review of documentation and recommendations made. The process was revisited and had to be re-established. This led to a hiatus in the holding of PDWG meetings.	1
PDWG	05 January 2003 Richards Bay	This meeting began with a re-visit of issues and confirmed the in-principle agreement to continue with the process of developing the Usuthu to Mhlathuze CMA Proposal.	1
PDWG	06 February 2003 Richards Bay	The representivity of the PDWG as re-established was agreed upon. Strategic issues were discussed and it was agreed that those that were taken up in the document represented the feelings of the PDWG group.	1
PDWG	13 March 2003 Vryheid	At this meeting, the CMA proposal development process was re-explored and agreed upon.	1
PDWG	21 August 2003 Vryheid	Institutional Design, Governing Board, Co-operative Governance was discussed. With the amount of discussion being generated, it was decided to elect a Technical Task Group to work through the remaining elements of the proposal.	1
Technical Task Group	10 September 2003	Institutional Design, Governing Board, Co-operative Governance was re-visited and discussed. Delegation and location of functions was also worked through and recommendations for the proposal agreed upon.	1
Technical Task Group	15 October 2003	Viability, sustainability, risk management and the inception phase was worked through and recommendations for the proposal agreed upon.	2
PDWG	17 November 2003	Report back to the main PDWG group. The recommendations made by the Task Group were workshoped and the PDWG agreed	2

Meeting/Event	Emphasis-Outputs	Draft
Plenary	28 January 2004	that it was happy with what was proposed. It was agreed that the document was ready to go to the stakeholder plenary. Report back to meeting of stakeholders held in Paulpietersburg. The draft proposal was presented to the stakeholders who were given the opportunity to comment. Particular comment around the recommendations made with regard to the Governing Board
Plenary	29 January 2004	Report back to meeting of stakeholders held in Hluhluwe. The draft proposal was presented to the stakeholders who were given the opportunity to comment.
Written Comment	February/March 2004	Written comment on the draft document was received from Forestry South Africa, City of uMhlathuze and the Umfolosi Cane Growers Association.
Written response to stakeholders	March 2004	A written response was sent to stakeholders, responding to the queries raised and indicating how their concerns had been dealt with in the updated proposal document (see also discussion on the make up of the Governing Board in section 3.3.3).

**2.3 Involvement of Previously Disadvantaged and Currently Marginalised Groups**

One of the keys to the involvement of previously disadvantaged and currently marginalised groups has been the manner in which they have been incorporated through the principle of representative democracy. It should be noted that the representation at the first set of workshops was such that 41 out of 70 people who attended, or 56%, were from the previously disadvantaged sectors.

Evaluation of the first set of workshops indicated that representation from the previously marginalised sectors was not sufficient. As such, the second set of workshops was effective in remedying this problem. Later workshops were dominated, dependant of geographical location, by stakeholders from previously disadvantaged groups. For example, all workshops held in Piet Retief and to a lesser extent Vryheid, tended to be predominantly made up of people from these groups. Meetings held in Richards Bay tended to be more convenient for formal farmers and the local municipal representatives. In order to ensure that the message was spread around the catchment and that people were given an opportunity to comment, the meetings were held in a variety of locations. Furthermore, the CMA Proposal document made available to stakeholders for the January 2004 plenary sessions, was translated into isiZulu.

**2.4 Issues Raised by Stakeholders**

The following issues, comments and questions were raised at the various workshops:

- The need for water supply and delivery in the rural areas was stressed. Stakeholders queried the sense of forming the CMA if some communities do not even have water. The focus of the CMA should be pro poor and on addressing poverty related needs associated with water issues.
- Concern was raised about the character of the Governing Board that would oversee the CMA. The representivity of stakeholders on the CMA and achieving a power balance was deemed critical.
- Stakeholders were concerned about capacity building and empowerment as part of the CMA process and felt that all communities had to be included.
- It was stressed that District Municipalities must be involved and that political parties must be represented in the CMA development process. Equally it was essential that tribal authorities and traditional structures be seen to be involved in the CMA process.



- The creation of Catchment Management Fora and Catchment Management Committees in order to ensure that there was good communication with the grass roots, was deemed to be of paramount importance.
- Concern was expressed around the period required for this CMA process. The need for properly including all sectors was stressed even if this meant that the process had to proceed more slowly.
- Stakeholders asked how they would be involved in the process on an ongoing basis. It was stated that this would be achieved via a process of information sharing and, where necessary, capacity building, as outlined in the relevant legislation. In addition, new policy guidelines that are being formulated concurrently would be followed. Stakeholders asked what will happen to ensure that people understand what is going on in terms of the process of establishing the CMA and how will this be checked?
- Stakeholders wanted to know what is going to happen with the current Water Boards?
- Stakeholders were concerned with who pays for the CMAs? The potential high cost of running a CMA in a relatively poor area was raised. Allied to this, the issue of water use charges was a concern. Stakeholders were concerned as to how much they will be charged, how affordable tariffs would be in the context of the poverty in the area and can CMAs determine their own tariffs? The potential problem of non-payment and high costs to recover charges was also raised.
- There was a feeling that the CMA should be concerned with ensuring that part of the water resource was made available for small scale irrigation and in encouraging the development of emerging farmers.
- Stakeholders wanted clarity as to the role of DWAF during and after CMA establishment. Of particular concern is the staffing of CMAs and potential employment opportunities provided by a CMA. There was a feeling that the CMA should be staffed, as far as possible, from within the WMA and that capacity building was required to ensure that suitable people from within the area could be trained to take up appropriate positions.
- There was concern that the DWAF did not have sufficient capacity to run the CMA. The need to outsource where viable was stressed. Stakeholders did however feel that DWAF was doing a good job of resource management in the area.
- The issue of HIV/AIDS was raised. This was seen to be an important consideration in the catchment and stakeholders wanted to know if planning for the water resource included consideration of this issue.

### 3.0 FEASIBILITY STUDY

#### 3.1 Description of Water Management Area

The major rivers in the WMA are the Pongola River, the Mhlathuze, the Mkuze and the Mfolozi. A particularly important issue with respect to the Pongola is that it is an international river with its catchment area shared with both Lesotho and Mozambique. The various Usutu tributaries in Mpumalanga drain into Swaziland and thus also have international implications.

The Pongola River rises at some 2 200 m above mean sea level near Wakkerstroom (in Mpumalanga) and descends steeply through the major portion of its catchment to the west of the Lebombo Mountains. It has an area of 7081 km<sup>2</sup>. It has a mean assured yield of 862 million m<sup>3</sup> per annum sufficient to provide an assured annual duty of 1220mm to approximately 48 000 ha (Heeg and Breen, 1982).

The Mhlathuze River catchment has a surface area of 4,209 km<sup>2</sup>. It rises in the west at an altitude of 1,519m and flows over 100km eastwards to the sea. There are nine quaternary catchments and the coastal area is characterised by several freshwater lakes. By South African standards this is a high rainfall catchment, with rainfall generally ranging between 800 to 1400 mm along the coastal belt. There are some rain-shadow pockets where rainfall is between 700-800 mm. The Goedertrouw Dam was constructed on the Mhlathuze River in 1980. It currently has a capacity of 300 million m<sup>3</sup> and is principally for provision of water to the industrial complex at Richards Bay.

The high rainfall coastal belt is heavily afforested to the north, includes agriculture, and, most importantly, heavy industry. The deep-sea port of Richards Bay is situated at the mouth of the Mhlathuze River and all industrial development is focused within the Empangeni/Richards Bay complex. This is one of the most important industrial complexes in South Africa, based on the export of coal from Northern KZN and Mpumalanga, and on heavy industrial development, notably aluminium smelting, pulp and paper, and fertilisers. Power, water, and export facilities are the generators of the industrial sector and there are expectations that this sector may double in size over the next 20 years.

This WMA supports large coalmines in the Vryheid area (Hlobane Collieries) and there is also mining activity around Piet Retief and at Richards Bay (Richards Bay Minerals). The majority of land is used for agriculture with areas of grassland. There are large amounts of forestry around Richards Bay up to the St. Lucia wetland areas, as well as around Melmoth, Nongoma and the northern areas from Paulpietersburg up to the top of the WMA in the west.

The agriculture found in this WMA includes large areas of beef pastures, wheat and maize cropping with sugar cane (irrigated and dry-land) along the coast and up towards Pongola. Cotton and citrus are also grown in the coastal areas up to Pongola, with vegetables, nuts, soya and other crops and dairy pastures being spread from the coast to the inland regions. The majority of irrigation is carried out using sprinkler irrigation systems, but micro irrigation is also used in the western areas. About 30% of the irrigation water losses occur in the canals below and coastward from Pongolapoort Dam.

The Usutu to Mhlathuze WMA supports large natural park and wetland areas. The entire coastline from St Lucia up to the Mozambique border at Kosi Bay is a wetland sanctuary. Other reserves include Tembe Elephant Park, Umfolozi, Ndumo, Itala and Hluhluwe reserves.

The total population of the WMA is approximately 2.16 million, of which 80% is in KwaZulu-Natal and the remaining 20% in Mpumalanga province. Much of the area is rural in nature, containing several large conservation areas. The principal urban area is the Richards Bay/Empangeni conurbation, which has a population of nearly 250,000 people.

The districts with the lowest populations are Ngotshe and Wakkerstroom, both of which have less than 35,000 people. Several rural farming districts in the interior have populations of less than 50,000 including Piet Retief, Paulpietersburg and Utrecht.

The two most heavily populated districts are Lower Umfolozi (241,000), which includes both Richard's Bay and Empangeni, and Eshowe (215,000)<sup>2</sup>. The Usutu to Mhlathuze WMA has an average population density of 39 people per square kilometre, which is among the lowest of all WMAs on the eastern side of South Africa. Fifty-three percent of the total WMA area is settled at a density of less than 10 people per square kilometre.

The districts of Ermelo and Wakkerstroom (which occupy the northern portion of the WMA in Mpumalanga) are both sparsely populated. Low population densities are also found in KwaZulu-Natal, in the districts of Ngotshe and Ubombo and in the Umfolozi, Hluhluwe and St Lucia reserves. The highest population densities, which average more than 350 people per square kilometre, occur in the coastal strip adjacent to and including Richard's Bay and Empangeni. Other pockets of relatively dense settlement occur around inland towns such as Ulundi, Eshowe, Vryheid, and Paulpietersburg.

Income levels in the WMA are low. The average per capita income for the entire WMA is R5,300 per annum, which is significantly below the national average of R9,520. The highest average income of R6,500 is found in the Mhlathuze catchment, which includes Richards Bay and Empangeni. The Mfolozi catchment is second highest with R5,300. The sparsely populated Mkuze catchment, with no major industrial or commercial centres, has a per capita income of R3,400 per annum, which equates to a subsistence level of R285 per month. The remaining tertiary catchments have an average income of R5,300.

The poverty index for the entire WMA is 0.63, which is significantly higher than the national average of 0.41 (a higher score denotes comparatively more poverty). The districts of Ingwavuma, Ubombo and Nongoma, in the northeast, as well as Nquthu, Nkandla and Babanango in the south of the WMA, are particularly impoverished. Ingwavuma, for example, has the second highest poverty score in South Africa. Much of the Apartheid legacy of inequitable service provision and low government spending is evident here.

Rainfall is strongly seasonal in this WMA with in excess of 80 % of rain occurring as thunderstorms during the period October to March. The peak rainfall months are December to February in the inland areas and November to March at the coast.

### 3.1.1 Water Requirements and Water Availability

Much work has been carried out by the Department over the last two years to determine the position of water resources in the country as a whole. The initiative to assess and analyse this is known as the National Water Resource Strategy (August 2002). The outputs of the study are pitched at a strategic level and are designed specifically to assist CMAs with decision making with respect to the key water resource concerns in their areas of jurisdiction. The primary outputs cover the areas of water use, water availability and the water balance. The latter issue is the crux of the matter as it relates directly to the question of water availability in catchments and particularly those rivers experiencing water stress.

In terms of water requirements, the current global estimates for the WMA are given in Table 3. It illustrates that the greatest 'use' in the WMA is for the ecological reserve. This is the water requirement estimated to maintain the ecosystems related to the river in good condition. The next greatest use is for irrigation. It should be noted at this point that the analysis carried out for the National Water Resource Strategy is coarse-grained and cannot be used for decision making at a more detailed level. This is illustrated by the fact that the authors have acknowledged that there were significant problems with modelling of the ecological reserve, the impact of afforestation and alien plant usage, river losses and return flows from irrigation. It should also be noted that the determination of the ecological reserve requirements, even though it constitutes by far the greatest water usage, was calculated utilising very crude methods.

A breakdown of estimated water use by catchment is given in Table 3 and illustrated in Figure 4 on the following page.

Table 3: Water Requirements for the Year 2000 (million m<sup>3</sup>/a)

Catchment(s)	Irrigation	Jrbar	Rural	Mining and bulk industrial	Power generation	Afforestation	Ecological Reserve	Total local requirements
Upper Usutu	13	8	5	0	0	43	328	397
Pongola	213	1	6	1	0	34	200	455
Mkuze	61	1	10	0	0	6	218	296
Mfolozi	23	12	11	4	0	2	275	327
Mhlathuze	94	32	8	86	0	19	171	514
Total for WMA	404	54	40	91	0	104	1 192	1 855

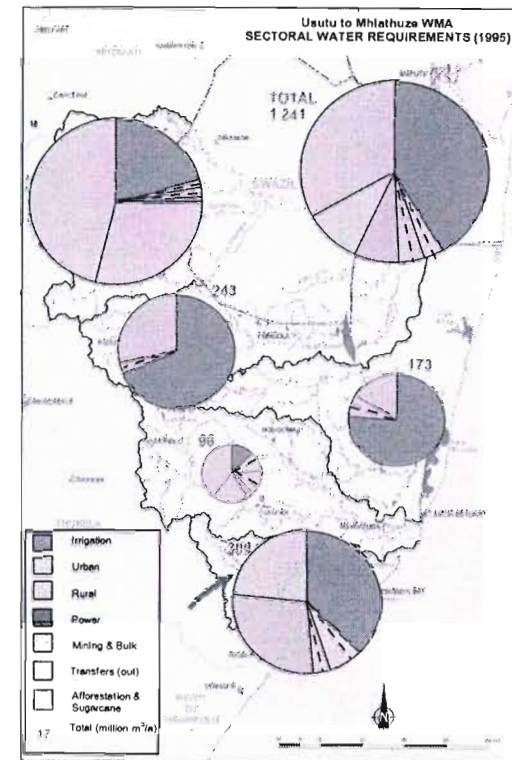


Figure 4: Water Requirements in the WMA

The Virgin Mean Annual Runoff (MAR) figures for the catchments in the WMA is given in Table 4 on page 23.

<sup>2</sup> It should be noted that some stakeholders contested these figures.



**Table 4: Mean Annual Runoff Figures for the WMA**

Component / Sub-area	Total Local Requirements	Virgin MAR
<b>Upper Usutu</b>	69	<b>901</b>
<b>Pongola</b>	255	<b>1 344</b>
<b>Mkuze</b>	78	<b>635</b>
<b>Mfolozi</b>	52	<b>962</b>
<b>Mhlathuze</b>	239	<b>938</b>
Total for WMA	<b>693</b>	<b>4 780</b>

A quick comparison between the MAR and the water requirements indicate that the water resources are more than adequate to satisfy the demands. This is particularly the case in the Mfolozi and Usutu catchments. In terms of current water resource availability, the Pongola has a very large available resource in the form of the Pongolapoort Dam. This superficial assessment of water availability is nevertheless misleading. The reason being that the MAR, as the name implies, is the mean figure; this implies therefore that in a "normal year" the water resources will be more than adequate but it says nothing about "abnormal years". To carry out a more thorough assessment it is necessary to carry out sophisticated statistical analysis to determine what is the assurance of supply. This is particularly important for domestic and industrial development, which requires high levels of assurance. Usage such as irrigation can tolerate lower levels of assurance. In particular, it is of note that it has been claimed that the Mhlathuze system is under stress and thus relies on augmentation from the Thukela River.

The water balance for the catchments in the WMA, at a 1 in 50 level of assurance, is given in Table 5 below

**Table 5: Water Balances for Usutu to Mhlathuze Catchments (for 1 in 50 year assurance)**

Sub-Catchment	Local Resource	Transfer In	Local Requirements	Transfers Out	Reserve Requirements	Balance
<b>Mhlathuze</b>	204	78	239	3	16	24
<b>Umfolozi</b>	106	0	84	18	25	-21
<b>Mkuze</b>	88	32	78	0	45	-3
<b>Pongola</b>	806	0	332	37	160	277
<b>Upper Usutu</b>	273	0	67	130	79	-3
Total for WMA	<b>1 477</b>	<b>56</b>	<b>800</b>	<b>188</b>	<b>325</b>	<b>274</b>

Table 5 reveals a significantly different picture to that implied by table 3 with the upper Usutu, Mkuze and Umfolozi catchments under significant stress in a 1:50 year drought scenario.

### 3.1.2 Water Resource Planning and Projected Water Demand Scenarios

Water resource planning work depends intimately on demand growth scenarios. These in turn are dependent on a whole host of factors but probably the most important are population growth and economic growth. In addition, in recent times, water conservation and water demand management initiatives are starting to have a significant impact in those areas where they have been implemented aggressively. The Mhlathuze Catchment has recently undertaken a major water conservation and demand management study. In many ways this approach represents a new paradigm for South Africa but this is wholly appropriate if one considers the water resource constraints that the country is facing in the not too distant future. Of course the water resources of the Usutu to Mhlathuze WMA are relatively abundant however, because of their international importance, they certainly cannot be looked at from a parochial perspective.

The raw water supply to the Mhlathuze system supplying the Richards Bay/Empangeni complex has recently had a major augmentation in the form of the Middledrift scheme (capacity of 134 million cubic

metres per annum). This supplies water via a weir on the Thukela River and a major pumping scheme and pipeline. This should provide sufficient capacity for the next 10 to 15 years.

A major dune-mining project is currently being planned by Ticom at Fairbreeze, just south of Mtunzini. This will require between 0,5 and 1,5 cumecs, depending on whether it is also utilized for irrigation and urban purposes. This project will be supplied with water from either the Thukela direct or the Mhlathuze. If it is from the latter, then the Middledrift scheme will need to be augmented substantially earlier. A more likely scenario however is that a new pipeline will be developed closer to the coast. If this proceeds, then it will be sized to provide further augmentation capacity to the Mhlathuze system.

Significant expansion plans are being considered by both Richards Bay Minerals and Mondi Kraft. The water requirements for these have been allowed for in the Mhlathuze augmentation plans outlined above.

Mhlathuze Water is planning to upgrade their Nsezi waterworks by 35 Ml/day in 2003 and by a further 30 Ml/day within ten years.

Major existing and proposed water resources infrastructure is shown in Figure 5 on Page 25. A number of significant transfers in and out of the WMA are also identified.

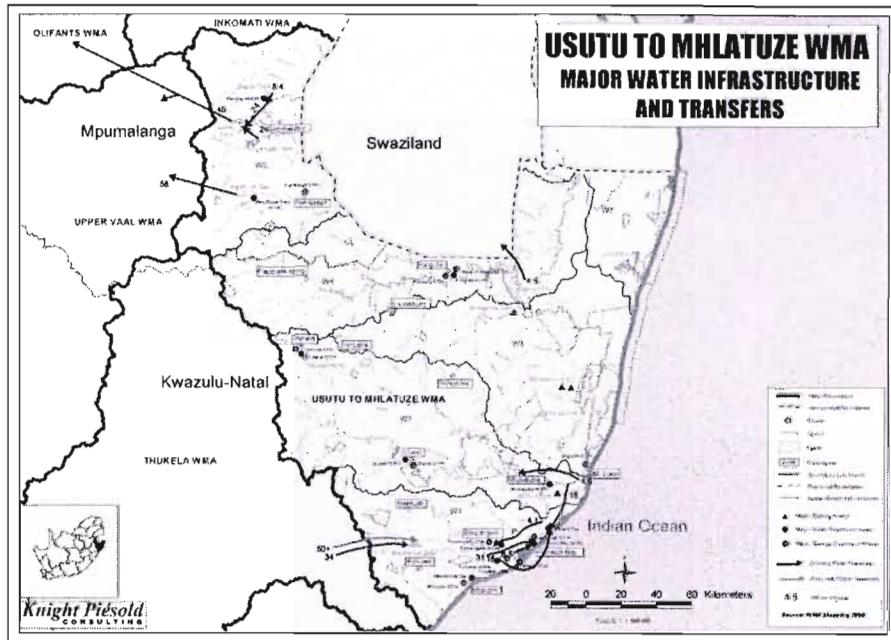
Potential expansion of water demand in the agricultural sector is difficult to estimate. Under the new National Water Act, a comprehensive programme of registration of water users is taking place. This process involves the registration of an estimated 5000 water users in the WMA. This is a substantial logistical undertaking but is critically important because it will impact directly on the revenue base for catchment management. Furthermore it is important that as many users are "brought into the net" as possible as this will reduce the unit cost. Nothing like this has been undertaken in the past and the final results are not completely clear. Provisional results, as of June 2004, are presented in Table 6 below.

In the final analysis, the potential growth in the agricultural sector could be closely linked to the outcomes of the registration, licensing, and ultimately, tariffing process. Furthermore, national and international price trends, in particular those associated with dairy and sugar cane, will also affect growth in demands for water for irrigation.

A critical issue that will have a major impact on water use assessment in the WMA will be the requirements of the Environmental and Social reserve. This, generated by means of a Reserve Determination Study, gives an estimate of the water requirements to maintain, in a healthy condition, the ecosystems associated with the river. A detailed reserve study for the Mhlathuze system, below Goedertrouw Dam, has been undertaken. No other detailed assessments have been undertaken in this WMA.

**Table 6: Registration in the Agricultural and Forestry Sectors**

Sector	Number of registrations	Area (HA)	Consumption (million m <sup>3</sup> /annum)
Irrigation	<b>1 375</b>	<b>71 517</b>	<b>615</b>
Forestry	<b>2 492</b>	<b>443 279</b>	<b>318</b>
Other Agricultural Users	<b>98</b>	<b>1 700</b>	<b>2</b>
Totals to Date	<b>3 965</b>	<b>516 496</b>	<b>935</b>



**Figure 5: Major Water Infrastructure and Transfers**

### 3.1.3 Cost Recovery Issues

The Department of Water Affairs (Regional Office) currently has two different groups of major water users in the province as a whole. The first group consists of Water Boards, Regional Councils, TLCs and certain major industries such as Iscor. There are 19 of these and they are billed monthly. The second group consists mainly of Irrigation Boards and some farmers. There are 76 of these and they are billed every 6 months. Overall cost recovery for these customers is excellent with 100% achieved in the year 1999/2000. This yields an amount of R70 million.

Once the registration process referred to in section nine is complete, then it is estimated that there will be an amount of between 12 000 and 16 000 users throughout the Province. In the new dispensation these will all have to be billed by the CMAs and possibly in the interim by the DWAF Regional Office. In certain cases these can be administered by an intermediary institution, which will reduce the numbers dealt with directly by the CMA to some extent. It nevertheless clearly represents a significant logistical challenge and a completely different scenario from the current situation.

Cost recovery amongst other institutions in the WMA varies greatly. It would appear that most of the local authorities are coping reasonably well although many are experiencing problems in the townships incorporated from the former KwaZulu administration. In the rural areas the situation is much more problematic with virtually all the local government institutions, as well as DWAF, achieving very low levels of cost recovery.

### 3.1.4 Water Quality Issues

Potential problems with managing the pollution occurring in this WMA are its size, multiple-catchments and dispersed nature, inclusion of part of Mpumalanga province, and river catchments that drain into (and out of) Swaziland and Mozambique. Local area catchment and pollution management offices will probably be essential to be able to cover this very large WMA, and significant inter-provincial and international problems will have to be dealt with. Several industrial towns may cause point source pollution, but erosion-related and agricultural pollution problems dominate.

The Mhlathuze is a relatively small catchment with quite large areas of formal agriculture. Around Babanango, this is generally extensive livestock production, with forestry further downstream in the Melmoth area. Some erosion problems are likely, particularly in the steep topography of the central valley area, which is predominantly subsistence agriculture. Some areas of intensive vegetable production exist. Towards the coast, the gradient flattens out, and sugar cane production is dominant, with soil loss and some nutrient and biocide contamination possible. Waste and bi-products from the milling of cane are potentially and historically (e.g. Archibald et al. 1969) sources of significant organic pollution. Close to the coast, urban and industrial problems from Empangeni, eSikhawini and the Richards Bay complex are significant, and includes issues related to the harbour and shipping. The newly developing Iscor heavy minerals mining operation may also contribute to mineral and sediment pollution in this area.

Small adjacent catchments include the Mlalazi, with Eshowe and Mtunzini towns, and the Matigulu, with Gingindlovu and Amatikulu towns. These catchments include quite significant rural populations with erosion problems predominant. Small-scale crop and vegetable production may exacerbate this. Localised faecal and related pollution is likely from some of the denser settlements, and extensive areas of sugarcane close to the coast may cause related pollution problems.

Faecal and nutrient pollution is likely at times in the upper Mfolosi catchment from Vryheid and settlement areas such as Emondolo. Mine related pollution problems are also possible with Archibald et al. (1969) having identified elevated sulphate levels from the upper Black Mfolosi River, attributable to coal mining in that catchment. Erosion related issues are associated with predominantly cattle farming, both formal and subsistence, from the source to below Ulundi. Besides local faecal pollution, the latter town is not significant. The Hluhluwe Umfolozi Game Reserve complex is a well-managed land use area with limited pollution potential. Below this, limited erosion related sediment and nutrient problems, and some localised faecal problems are likely in the flatter coastal margin where there are quite large areas of subsistence rural agriculture (including several other small catchments in the Nongoma area), commercial sugar cane (large and small scale), other plantation crops and some forestry. Mtubatuba has some faecal/nutrient pollution potential, and a large sugar mill is located here, with attendant historical records of organic enrichment from wastes (e.g. Archibald et al. 1969). The river occasionally ceases to flow during the dry season (significant as the self-purifying ability of the river will be impaired). Based on the report of Porter (1981) the water quality in the Mfolosi system appears to be relatively unchanged between 1969 and 1979.

The upper Pongola catchment is in reasonable condition, with predominantly extensive formal agriculture. A number of wetland areas in the upper catchment help maintain quality. A section of the upper catchment falls within the Mpumalanga province. In the Paulpietersburg area, there is some localised faecal and mining related pollution likely from human settlements and mining related activities, respectively. Archibald et al. (1969) notes "gross pollution" (high TDS, low pH, high sulphate and iron concentrations) in the Mkuze River from coalmines in the Vryheid area. The latter is also possible in the upper Mkuze catchment at Hlobane. Quite large areas of timber plantations also exist in this area. The central areas of both catchments are quite dissected and have some erosion potential, but in general is utilised reasonably well by commercial livestock farming and game reserves. Close to the Swaziland border, there are some population concentrations including Pongola town, but pollution problems are limited, localised and faecal in nature. Historical records (Archibald et al. 1969) note high organic pollution immediately below the town of Pongola but that the river recovered quite quickly below the town. The coastal flats below the Umboyo mountains have significant irrigation schemes, which may cause problems. The water table is very high, with salinity an issue. The remainder of the plain is poorly drained and used for subsistence agriculture for the most part, with large wetlands. Populations are generally low. There are some areas of forestry, and due to the very flat terrain, erosion problems are minor. The Pongola River drains into Mozambique, and thus international quality and quantity issues must be met.

The Assegai River falls entirely within Mpumalanga. The upper catchment resembles that of the Pongola, but the Heyshope dam is a notable feature. Downstream of this are large areas of forestry and the town of



Piet Retief, a possibly significant pollution source at times. Populations elsewhere are low and dispersed. The river flows into Swaziland, and again international quality and quantity issues must be met.

The Ohlelo, Ngwempisi, and Usutu Rivers for the most part drain gently undulating terrain used for formal agriculture, predominantly timber. Amsterdam is the only town of any size, and elsewhere population numbers are low and dispersed. In general, few serious pollution problem sources are known to exist.

### 3.1.5 Name for the CMA

The name for the CMA was not actively debated by stakeholders and therefore at this stage remains as the Usutu to Mhlathuze Catchment Management Agency.

### 3.1.6 Water Resource Management Priorities and Management Issues

The following have emerged from discussion with the stakeholders (PDWG) and from the Situational Assessment study as the key strategic water resource management issues in the catchment:

- By South African standards, this WMA is well endowed with water resources. This implies that in normal circumstances there is not undue competition for water in the WMA, with the possible exception of the Mhlathuze catchment. From experience however this position can change dramatically in a severe drought situation! Water shortages inevitably result in conflict between users and these situations will become more prevalent as demand increases in the future. The CMA will have to adopt a strategic vision and plan for these eventualities. The stakeholders considered that conservation of water resources was a crucial issue.
- The socio-economic analysis reveals great disparities in terms of income, education and access to services, as is common in many parts of South Africa. The average per capita income for the area is R5 300 which is well below the national average of R9 520. In addition, the poverty index of the WMA is very high. It has been stated that in the Mhlathuze catchment, around 10 percent of the people, typically the better off, use 99 percent of available water resources (Steyl et al. 2000). The CMA will have to actively adopt a pro-poor stance in order to address the water related issues associated with inequitable distribution of the resource and access to the resource.
- Water quality in the rivers in the WMA is generally good. There are however areas of concern which will need to be carefully monitored and hopefully improved over the course of time. One of the focus areas that the CMA will have to concentrate upon will be addressing these water quality problems.
- In view of its tremendous environmental (and tourism) assets, which include the World Heritage Site of the Greater St Lucia Wetland Park, environmental concerns are of critical importance. In this regard, it is encouraging that, in terms of the Ecological Status Classification, some 81 of the quaternary catchments are classified as "A" or "B". As was noted above however there are areas of concern. In some cases, the ecological classification of sections of a river has deteriorated to "E/F" (the lowest possible). This is clearly unacceptable and programmes need to be put in place to ensure that this situation improves in the future. Appropriate reserve determination studies are also required.
- In much of the WMA, the information on the extent of alien plant infestation is rather sketchy. The information available indicates that there are significant problems in the Mhlathuze catchment. The rivers to the north of this would appear to have relatively minor problems.
- Although there are a number of well-established and resourced institutions within the WMA, these tend to be concentrated in the Richards Bay/Empangeni area. These institutions should play a key role in supporting the CMA. The services of the Water Board in the area should also be used where possible to support the CMA.
- There are also relatively few Water User Associations and Catchment Management Fora and they are geographically widely dispersed. The nature of the CMA model relies implicitly on a cooperative and collaborative approach, so the capacity of the various potential partner institutions is of considerable interest. The CMA will probably have to set up additional Catchment Management Fora and Catchment Management Committees, particularly in the rural areas.

- The CMA will have to be aware that apart from the tremendous diversity and size of the WMA, a particular challenge lies with respect to the substantial area of the WMA in another province (Mpumalanga) and (two) international boundaries. This not only makes the institutional environment more complex but also renders the difficult task of effective catchment management substantially more challenging. The international boundaries also result in very specific requirements in terms of downstream obligations to neighbouring countries.
- The WMA is subject to a range of political tensions. The CMA will have to manage these tensions in carrying out its mandate. As such, it will have to ensure that it is seen to be part of a broader co-operative governance approach and be seen to be consulting widely, and in good faith.
- There is a broad spectrum of water users in the WMA but not a particularly large number. The history of cost recovery in the area is patchy. The urban areas have generally performed well but the record in rural areas is very poor. This has financial implications for the CMA.
- This WMA is a net exporter of water via the two transfer schemes from the upper Usutu into the Vaal system. In terms of the new DWAF raw water pricing policy, this will ultimately provide the facility for the CMA to gain additional income for its catchment management efforts. Similarly however, the WMA will become responsible to pay for the water transfer from the Thukela WMA.
- There are significant gaps in the information regarding the WMA. A programme driven by the CMA to address this will be important, as good decision-making will not be possible without it. Key areas include the following:
  - Comprehensive Environmental Reserve Determinations for important rivers
  - More extensive water quality data for the rivers north of the Mhlathuze
  - More detailed evaluation of the extent and impact of alien plant infestation for most catchments
  - The extent and impact of erosion problems generally
  - More information on the status of wetlands
  - More hydrological information for the rivers north of the Mhlathuze
- The WMA should be "marketed" so as to attract donor funds which could be used to top-up any budget shortfall and empower local communities to manage water resources.
- The Governing Board needs to be representative of a broad cross section of sectors in the WMA.
- It is important to educate and empower all communities.
- The creation of the CMA should ensure that all sectors are involved at a local level.
- The Tribal Authorities must be involved in the CMA process.
- Sound developmental principles should be established for the WMA.

### 3.2 Proposed Delegation of Functions

The delegation of functions to a new CMA is, as outlined in the National Water Act and amplified in Guide 2 of the CMA/WUA series, clearly an evolutionary process. An obvious factor in this is the progressive development of capacity of the organisation however there is also an argument for setting timescales and thus facilitating a proactive process. There is also clearly a "chicken and egg" dynamic in this process.

In terms of Guide 2 in the CMA/WUA series, the evolution of responsibility, and hence delegation, should be guided by the following hierarchy:

1. Initial functions
2. The powers and duties set out in Schedule 3 of the Act
3. The powers and duties of a "responsible authority"
4. "Other powers and duties"

The initial functions are conferred by virtue of the establishment of the CMA and are thus, in a sense, "automatic". Their focus is on planning, co-ordination and public participation as opposed to the more "operational" aspects which it will carry out, in the latter stages of its development. In the case of the Usethu to Mhlathuze CMA, the stakeholders have proposed that this initial phase should last for at least the first two years. The emphasis is seen to be very much on establishing communication and advisory linkages with the relevant stakeholders and government departments as well as on internal and external capacity building. Developing a strategic vision forms the third part of the initial phase.

In years three to five, the emphasis will be on extending the activities into assuming Schedule 3 powers and duties. This includes water resources monitoring, management and protection, as well as the implementation of the catchment management strategy. The powers and duties of a responsible authority have more of a legal flavour and cover the facets of licensing, authorization and registration.

Other powers and duties that may be delegated are at the discretion of the Minister and include overseeing the activities of a WUA.

The delegation of functions and responsibilities referred to above is couched in general and somewhat abstract terms. There is thus a need to translate this into practical activities, deadlines and resource implications if development is to occur in an orderly manner. One way of doing this is to consider what would be a reasonably logical evolution of the organization. A conceptual programme for development of the functional capability of the CMA is shown in Figure 6. It follows that the delegation of responsibilities to the CMA should be aligned to this type of evolutionary process.

The activities identified in Figure 6 include items, which would be required at the inception of any new organization, activities to be taken over from DWAF and some completely new functions. Where the responsibility is to be taken over from DWAF, the duration shown refers to the time required to successfully achieve the transition.

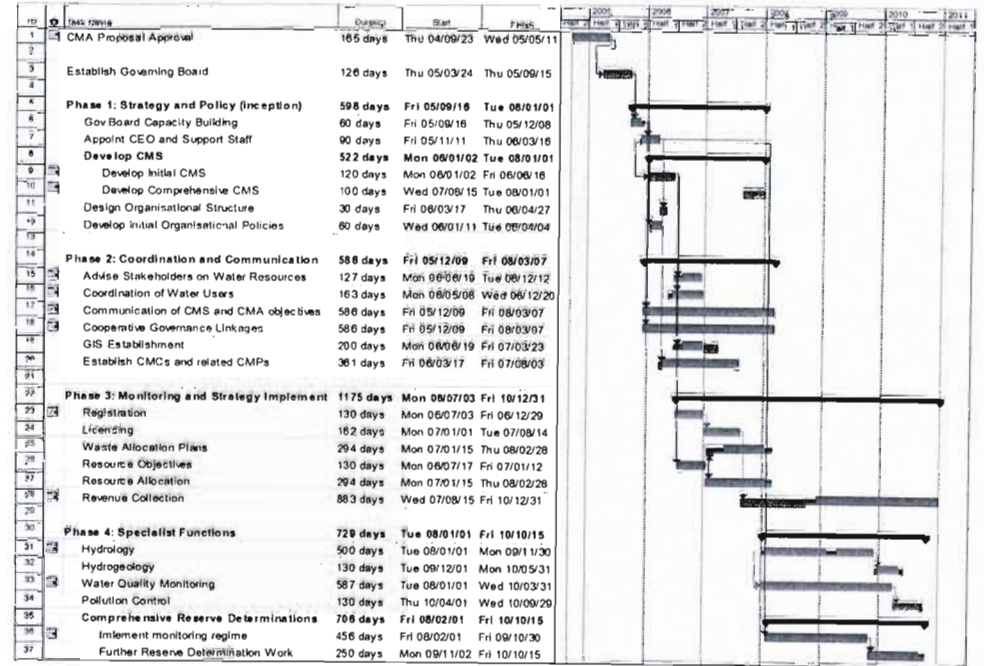


Figure 6: Conceptual Programme for Organisational Evolution

Figure 6 illustrates that the proposed order of functions and activities to be carried out by the CMA is as follows:

- Phase 1: Strategy and Policy
- Phase 2: Coordination and Communication
- Phase 3: Monitoring and Strategy Implementation
- Phase 4: Specialist Functions

The above plan is guided largely by the requirements of CMAs in terms of the Act as well as practical considerations that will impact on the establishment of a new water resources institution e.g. the need to establish a sound income base at an early point. It should nevertheless clearly be regarded as indicative only at this stage as it will be greatly informed by the CMS/organizational strategy that will be developed in the first phase of the institution's evolution. As has been recommended by the stakeholders, the focus in the first 2 to 3 years is very much on coordination, communication, strategy and policy. Only thereafter does work start seriously on monitoring, strategy implementation and specialist functions. The Gantt chart nevertheless illustrates that each of the 4 phases are overlapping and are interrelated in many instances. This emphasises the systemic and dynamic nature of the organizational development process. The Gantt indicates that it may take until 2009 or 2010 before the CMA starts to reach a reasonable level of capacity. This is considered to be realistic, and may even be optimistic.

Another input which should typically have an influence on the evolution of the organization (and hence delegation of functions) is the strategic priorities within the WMA. These were outlined in section 3.1.6.

There are thus at least 3 significant areas of influence on the evolution of the organization and hence the order of delegation; the DWAF guidelines (and of course the Act), the organizational evolution process and the strategic priorities.

This was discussed with the PDWG and it was considered that, due to the complexity of the subject matter and the paucity of information at this stage, it was unrealistic to develop a numerical list in terms of delegation. As a result, it was agreed that it would be more appropriate to look at broad groupings of functions and activities, which would develop in an evolutionary manner, attached to a broad timescale. This discussion culminated in the proposals outlined in Figure 7 below.

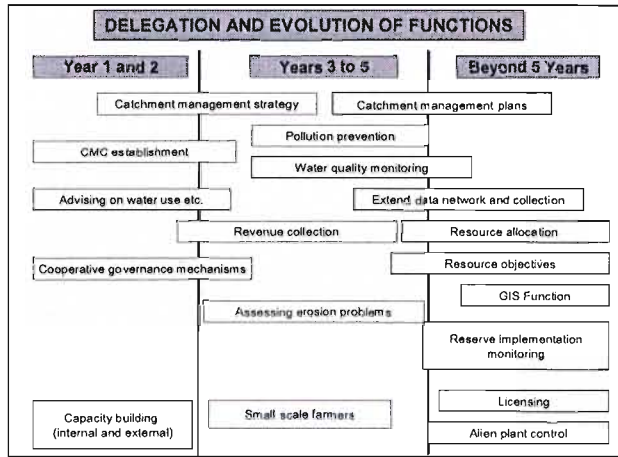


Figure 7: Development and Delegation of CMA Functions and Activities

Initial functions of a CMA are as follows:

- Investigate, and advise interested persons on, the protection, use, development, conservation, management and control of the water resources, in its Water Management Area
- Develop a Catchment Management Strategy
- Coordinate the related activities of water users and of water management institutions within its Water Management Area
- Promote the coordination of the implementation of its Catchment Management Strategy with the implementation of any applicable development plan in terms of the Water Services Act
- Promote community participation in its functions

The organization must thus gear up so that it is able to perform these functions as soon as it is able. The emphasis of these activities is clearly on coordination, management and strategy as opposed to the more operational elements. Practical considerations will dictate that the CMA will have to make a slow start to its life, although the secondment of Regional Office staff will certainly help in the initial phase. The initial establishment phase is discussed in more detail in section 4.0.

### 3.3 Proposed Institutional Evolution and Organisational Viability

#### 3.3.1 Overview

The functions required of the CMA are outlined in the section above. However in order for the CMA to (a) carry out its functions mandated in terms of the Water Act (b) be a credible organisation in the eyes of stakeholders and those who will pay for the organisation and, (c) be viable, effective and efficient, requires the following:

- That it recruit the appropriately qualified staff,
- That it proactively engage in co-operative governance
- That it be seen to be acting in accord with the NWA in ensuring a sustainable and more equitable distribution of water resources (pro poor)
- That it actively assess how it will best make use of the existing institutional strengths in the WMA
- That it be organisationally and geographically positioned to make the best possible contribution to the protection and development of the water resources under its auspices

Although the above are generic to all proposed CMAs, the pro poor stance has been identified by stakeholders as being particularly important in the Usutu to Mhlathuze WMA.

It should be noted that it is the intention of DWAF to restructure their regional presence to only a handful of officials who will attend largely to control, audit and key support activities. The proposed Usutu to Mhlathuze CMA, in conjunction with the other CMAs that will operate in KwaZulu Natal, will need to attend to all of the WRM functions that are currently being attended to by the existing Regional Office of DWAF. In addition, the CMA will have to attend to a number of functions that have not yet been delegated from DWAF in Pretoria to its Regional Office.



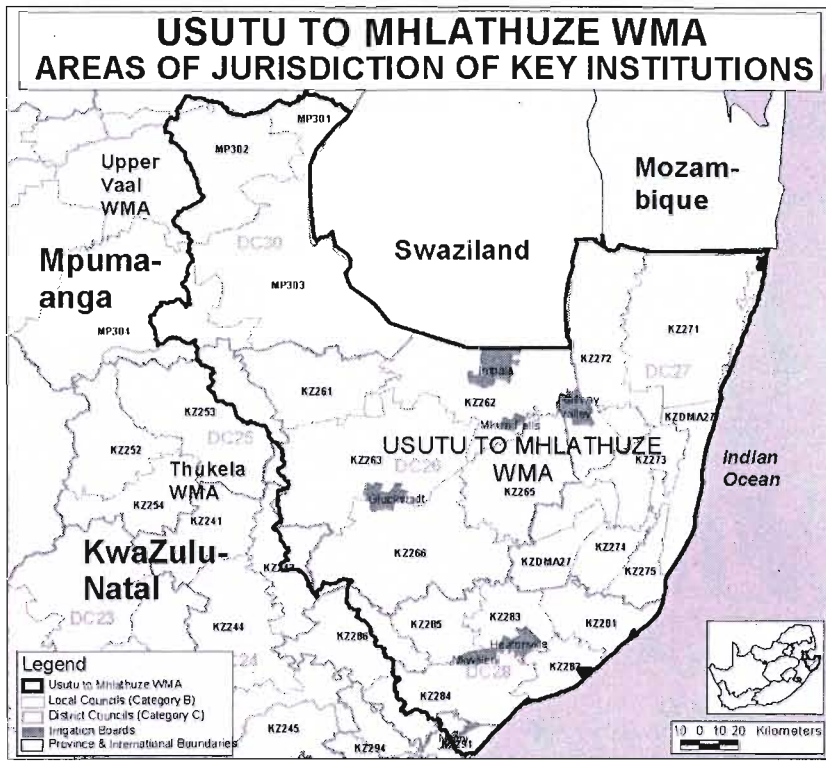


Figure 8: Areas of Jurisdiction in the CMA

In order to ensure that the CMA is able to deliver upon its mandate and avoid potential pitfalls, both the organizational and the institutional design will have to be carefully considered. These issues are considered in more detail in the sections below.

The broad subject of what this CMA should look like and how it will evolve, generated much debate with the stakeholders in this WMA (far more in fact than in the other two KwaZulu Natal WMAs). Much of this centred around concerns of the possible development of an expensive bureaucracy which could have serious economic impacts on water users. The fact that this WMA is relatively underdeveloped, with a small base of users, tended to heighten these concerns. In these deliberations, it was emphasised that the Department of Water Affairs's thinking was that CMAs would, in general, be "lean and mean" with extensive emphasis on outsourcing to both the private sector and other government institutions. In spite of this, stakeholders favoured an even "leaner" approach with absolutely minimal staffing at the outset. This subsequently became known as the "bare bones" model and would develop on a gradual, evolutionary manner over a number of years. These sentiments colour much of the discussion in sections 3.3.2 to 3.3.5 and 3.4.

In a related, although somewhat different discussion, the question of access to (and affordability of) key specialist skills was highlighted as potentially a significant risk to the organisation. In this regard, it was noted that a number of the skills required by the new CMAs are of an esoteric nature and thus will not only be difficult to access but will also be expensive. This is likely to be even more difficult in a less developed

and somewhat remote area such as this. Given this background, it was considered that the possibility of pooling or sharing key skills between the three KwaZulu Natal CMAs should seriously be considered. Various mechanisms to achieve this could be a possibility but these were not explored in any depth as it was recognised that this was beyond the scope of this exercise. It was agreed however that further consideration of this option should be included as a recommendation in this proposal.

### 3.3.2 Institutional Design

The complexity of the institutional environment is illustrated in Figure 8. This is a simplification of reality but emphasizes the diverse range of institutions which will have an impact on catchment management in the WMA.

A proposed conceptual institutional design for the Usutu to Mhlathuze CMA is outlined in Figure 9.

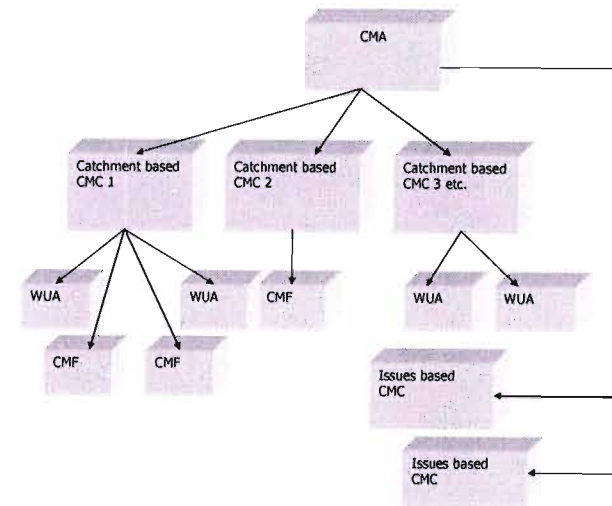


Figure 9: Outline of CMA Institutional Design

At PDWG meetings held in Vryheid in June and July 2002 as well as with the Task Team in September 2003, and within a framework presented by the consulting team, the stakeholders were asked to workshop the institutional design and make recommendations in this regard. As such it was proposed, and accepted, that the CMA would exist within the institutional context as set out in Figure 9. This context would require the CMA to relate, in a hierarchical manner, to Catchment Management Committees (CMCs), Catchment Management Fora (CMF) and Water User Associations (WUA).

As can be seen, CMCs are a crucial element in the proposed design. Their presence recognises the fact that the area is too large and diverse for the CMA to effectively manage by itself. The CMCs will thus "bridge the gap" between other water resource bodies, such as WMAs and CMFs, as well as for the broader stakeholders as a whole, and the CMA Governing Board. The CMCs are not statutory although Section 85 of the NWA refers to their establishment. The CMCs would have the following as their main functions:

- Act as the local "eyes and ears" of the CMA at a catchment/collective of catchments level.
- Act as an additional body of stakeholder representation.
- Help to determine priorities in terms of water resource management for the CMA. This would be particularly critical in drawing up Catchment Management Plans and the Catchment Management Strategy.
- Give specialist input, particularly in the case of issues-based CMCs, to the CMA.

The matter of the precise number of CMCs was a matter of some vigorous debate but the recommendation is that there be a manageable number so as not to burden the CMA with unnecessary administration; the ideal number being between 3 and 5, catchment based CMCs. There was no precise consensus as to the division of the WMA into CMCs. However, in general, it is proposed that these are structured along the following lines:

- A Mhlathuze CMC: some stakeholders indicated that the importance of this catchment means that it justifies its own CMC and it could also deal with the smaller catchments south of the Mhlathuze e.g. Amatikulu. There was however also a case made out for the inclusion of the neighbouring Mfolosi Catchment into this CMC. The argument made for this was that the Mhlathuze catchment has a great deal of capacity available. The Mfolosi, by contrast, consists largely of the rural poor. By "twinning" the two catchments, some of the capacity available to the Mhlathuze would also be made available to the Mfolosi. Either model could be adopted.
- A St Lucia CMC: this CMC would take responsibility for catchments draining into the St Lucia estuary including the Mkuze. The Mfolosi, if not included with the Mhlathuze, could be incorporated into this CMC.
- A Pongola-Maputaland and Northern Catchments CMC: this would be made up primarily of the Usutu/Mpumalanga rivers within the WMA, together with the Pongola and Maputaland. Should the management of an area of this size become too complex and diverse, then the CMC could be split between the Usutu and Pongola catchments.

In terms of issues based CMCs, the stakeholders were of the opinion that these should be developed when required and would probably only operate for a limited time span. The issues that may need to be considered would be:

- Water and health
- Pollution
- Developing the water resource for poverty alleviation - critical here was water for small scale irrigation
- Flood control and emergency preparation
- There was also some acknowledgement that the issue of alien infestation was very important in some areas and might require an issues-based CMC.

The Gantt chart below sets out the process of establishment and integration of each of the catchment based CMCs. Critical to this process is a review of the existing water based institutions in the area, particularly the CMFs and WUAs. In this regard, it is envisaged that the establishment of CMCs might take some time. The Gantt chart allows for the development of the Mhlathuze CMC as the "pioneer project" and then the Usutu/Pongola CMC. Should it become necessary to establish an Usutu CMC separate from the Pongola CMC, then this will be done at the appropriate time

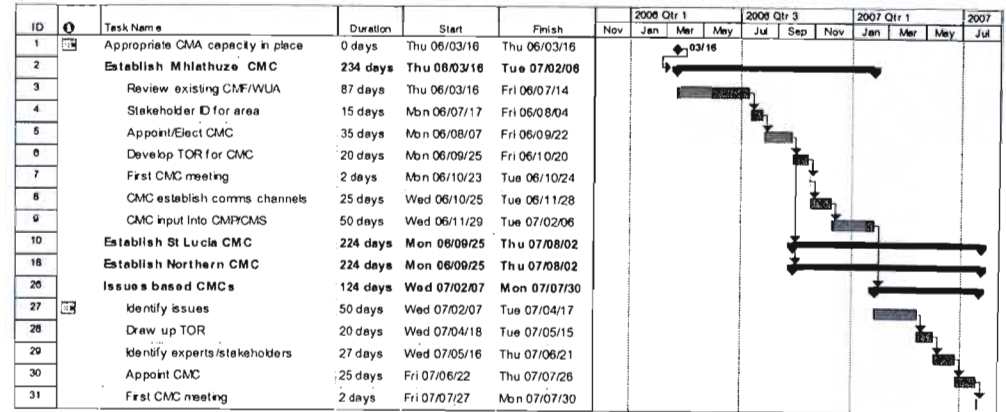


Figure 10: Process for Establishment of CMCs

### 3.3.3 Governance Structures

The make up of the Governing Board was discussed at the June 2002 PDWG held in Vryheid as well as with the Task Group in September 2003. The NWA sets out the procedure for appointing/electing the Governing Board and stakeholders discussed potential membership within these parameters. There was a strong feeling that appointments of overtly politically allied parties should be kept to a minimum.

In terms of the make-up of the Board, stakeholders were of the view that the following institutions and constituencies should be considered:

- A DWAF representative
- A member of the Provincial government, preferably from the Premier's Office. This is key in ensuring inter-governmental co-ordination and in fulfilling the aims of cooperative governance.
- Members from the various District Municipalities (DM's) within the WMA. It is envisaged that all five District Municipalities would potentially be represented on the Board (possibly through SALGA nominated representatives).<sup>3</sup>
- Bulk industrial water users in the area (the representative could be nominated by the various Chambers of Commerce as well as Nafcoc)
- Agriculture (KwaNalu should nominate a representative. Nominations from representatives of emerging farmers and farm workers should also be sought)
- Mhlathuze Water
- Forestry SA
- Sugar SA
- A representative from the NGO sector.
- Amakhosi/House of Traditional Leaders
- Conservation Authorities - (KwaZulu Wildlife to be asked for nomination)
- Eskom
- Tourism - (KZN Tourism Authority to be asked for nominations)

<sup>3</sup> This approach was contested by some stakeholders. They felt the DMs should be approached to make a joint nomination.

- Rural water supply structures

The nominations from local government on the Governing Board will ensure that they are well represented. This is critical, as local government needs to ensure that the pro-poor mandate is carried out. Furthermore, local government acts as the cornerstone of representative democracy and they should communicate decisions of the Board to their constituents.

The representation on the Governing Board should reflect the diversity of the population of the WMA and should also strive to promote gender equity. It is recommended that at least a third of the Board be made up of women.

It is envisaged that the Governing Board, as well as the CEO of the CMA, would play a key advocacy role in setting the vision for the organisation and in terms of ensuring stakeholder buy in. As usual, the executive and operational functions would be carried out by senior management and their subordinates. The CEO would report to the Governing Board. Line management functionaries would assist the CEO in carrying out the mandate of the CMA.

Stakeholders also debated the composition of the Catchment Management Committee (CMCs). Although there was some debate as to the exact representation, there was support for the following ideals:

- CMC members should be based, as far as possible, in the catchment on whose committee they serve.
- They must be dedicated to a philosophy of maximising transparency and participation.
- CMC members should be knowledgeable about water issues or at least prepared to be exposed to capacity building.
- CMC members should have a demonstrated mandate from the constituency they represent.
- CMC members should act in the interest of the catchment, over and above any party political allegiance.
- CMC members should be of good standing in the community.
- CMCs should also be restricted to a maximum of 15 members.

In terms of representation, the stakeholders were of the opinion that the following bodies should be considered in the makeup of the CMC:

- Local (category B) municipalities as Water Services Providers, preferably in the form of a representative with technical skills
- At least one person from the CMA Governing Board so as to foster coordination and alignment between the 2 bodies
- Elected members of ward committees/forums as representatives of communities.
- Water user and interest groups
- Agriculture (commercial, and previously disadvantaged), emerging representatives, possibly someone from KwaNalu)
- Industry/mining – possibly from the Chamber of Commerce and Industry in the CMC area
- Environmental interest groups
- Traditional Leaders/Regional Authorities
- Department of Health
- Tourism
- CBOs
- Key organisations with skills and capacity

At the final stakeholder plenary sessions held in January 2004 to discuss the final draft proposal, the issue of the governance structures again produced considerable debate. In particular, the stakeholders considered this matter to be of such critical importance, that much more specific proposals should be included in the proposal document than the more general requirements outlined above. It was pointed

out to stakeholders, that ultimately the composition of the Governing Board would be the responsibility of an Advisory Committee appointed by the Minister. The stakeholders acknowledged this but still insisted that more specific proposals be included in the proposal document.

In order to address the above concerns, a proposal was put together which was very broadly circulated to all stakeholders. The content of the proposal is outlined in columns 1 to 4 of Table 7. This document also gave stakeholders the opportunity to comment on the proposals, and the comments received are summarized in columns 5 to 7.

**Table 7: Proposals for the Make-up of the Usutu to Mhlathuze Governing Board**

PROPOSAL CIRCULATED FOR DISCUSSION				COMMENTS FROM STAKEHOLDERS		
1 Category	2 Proposed Representation	3 Possible Make up (where relevant)	4 Rationale/comments	5 Is proposal acceptable or not? (Yes/No)	6 Alternative proposal?	7 Comments (where relevant)
Government	4 to 6	DWAF: 1 Province: 1 Local government: 2 to 4	It is proposed that local government is represented by District Municipalities as they have a constitutional obligation to play a key role in planning and coordination and there are simply too many local municipalities for them all to be represented. Local government has a crucial role in terms on planning and hence land use and is also a major user. It should therefore be well represented.	<ul style="list-style-type: none"> <li>• No</li> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• DWAF: 1 Province: 1 Local government: 2</li> <li>• Local government: 2</li> </ul>	<ul style="list-style-type: none"> <li>• Experience with the make up of for example water boards, has shown that too many representatives from local government result in major problems as politics come into play where it is not needed.</li> <li>• You cannot let local government dominate water resource management as well as water services</li> </ul>
User Sectors	3 to 5	Agriculture: 1 to 2 Forestry: 1 Industry: 1 Tourism: 0 to 1 Mining: 0	Both established and emerging groups should be represented in the total number.	<ul style="list-style-type: none"> <li>• No</li> <li>• No</li> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture: 2 Forestry: 1 Industry: 1 Tourism: 0 Mining: 0</li> <li>• Mining: 1</li> <li>• Agriculture: 2 Forestry: 2</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture is the biggest user of water and should have at least two representatives. All representatives must be non-governmental.</li> <li>• Major water user and investor in water network (infrastructure)</li> <li>• Forestry is both a large industrial and agricultural water user. The spirit of the Act in that water user sectors make up the CMA not politicians.</li> </ul>
Civil Society	1		Civil society will invariably present an independent viewpoint, which will often add value in governance structures	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• 1</li> <li>• 1</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> <li>• Give this slot to emerging farmers</li> </ul>
Environmental	1		The environment is the biggest "user" of all and thus should be represented! Obviously important in all WMAs but particularly crucial in this WMA with its major environmental and tourism assets.	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Provincial Nature Conservation: 1</li> <li>• NGO Environmental Groups: 1</li> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• As the biggest user of the system there is a need for Provincial conservation to be represented as well as non-governmental environmental organisations. This is imperative for Catchment Management</li> <li>• None</li> </ul>
Tribal Authorities	1		Tribal Authorities represent a highly influential grouping in this WMA and should thus be represented.	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Yes</li> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• 1</li> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Non governmental representatives.</li> <li>• None</li> </ul>



PROPOSAL CIRCULATED FOR DISCUSSION			COMMENTS FROM STAKEHOLDERS			
1 Category	2 Proposed Representation	3 Possible Make up (where relevant)	4 Rationale/comments	5 Is proposal acceptable or not? (Yes/No)	6 Alternative proposal?	7 Comments (where relevant)
Utilities	1	Mhlathuze Water: 1	As well as being a very large consumer, Mhlathuze also represent one of the few institutions in the WMA that have significant water sector capacity.	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• 1</li> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> <li>• None</li> </ul>
<b>Total Representation</b>	11 to 15			<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• 13</li> </ul>	<ul style="list-style-type: none"> <li>• NB: It is extremely important to balance the government/non-government representation on a CMA. The proposed make up here will achieve this.</li> </ul>

At first glance, the comments received from stakeholders would appear to be at odds with the proposal circulated. A closer examination however reveals that there is in fact a 80 to 90% agreement. The primary concerns would appear to be around the extent of representation from local government and also the "mix" of user sectors. With regard to the latter, agriculture and forestry have requested stronger representation. This is debatable, although it can certainly be argued that water use in this WMA is dominated by these sectors.

### 3.3.4 Organizational Design

The Project Aquarius Report undertaken for the Department of Water Affairs and Forestry and entitled "Guidelines: The CMA Structure" (dated January 2001) recommends that, as a general rule of thumb, the CMA should adopt a flat management structure i.e. have as few levels of management as possible as a flat organisational structure will enable quicker and more responsive control over the activities of the CMA. It further recommends that CMAs should also have minimal staffing and outsource all work that other service providers can provide more efficiently. This is recommended, as outsourcing is a useful way of promoting efficiency through minimising staff costs, and indirectly, management costs. It is also in line with global trends in terms of efficiency.

The report envisages a generic four-phase approach to the development of the CMAs. These four phases that could evolve either into a functional line management organisation or a geographically devolved organisation are the following:

Structure A is expected of CMAs in the initial phase of development. This phase is associated with the initial functions of a CMA.

Structure B would be expected in a CMA in the financial phase of development. The financial phase is associated with making and recovering water use charges, and thus requires financial competence, as well as the co-ordination and water resources planning requirements for the initial phase.

Structure C is expected in the Management Phase in the development of CMAs. This phase is associated with performing the water resource management activities outlined in Schedule 3 of the NWA. Technical water resource planning and management, scientific and engineering competencies will be required to function effectively, as well as financial and co-ordination skills.

Structure D is expected during the final phase in the development of the CMA. This phase is associated with the authorisation and control of water use, which requires a legal competency, supported by the technical, financial and co-ordination skills required for the other phases.

In order to address the size, diversity and complexity of the WMA, the Usutu to Mhlathuze CMA might have a number of Regional Offices. This was discussed during the PDWG and Task Group meetings. The feeling was that the CMA would only develop Regional Offices once capacity was at a sufficient level, i.e. probably in the post Year 5 era. Stakeholders felt the organisation should be based around a central head office in the first few years.

Key concepts discussed were that the core/head office may have a more substantial number of personnel if key specialist functions are centralised and shared across the catchments in the WMA. Critical to the structure would be its three key managers.<sup>4</sup> These would be:

- Water Resource Manager who would oversee overall strategic and water resource management/planning (including quality and quantity aspects), hydrology and geo-hydrology, etc. It is envisaged that this would be the key appointment to the CMA. Stakeholders felt that the CEO should also have this skill set (amongst others) and would act in tandem with the Water Resources Manager to ensure that they covered the requisite functions adequately.
- Corporate Service Manager who would oversee the information systems, liaison and public relations as well as cover the capacity required to deal with environmental issues. The administrative functions of the CMA would also fall under the corporate services manager although he/she would be assisted by a relatively senior HR manager.
- Operations Manager who would oversee dam operation (if relevant) and relevant water resource development infrastructure. The working for water aspects of the CMA would also be managed from this department.

Stakeholders felt that functions, wherever possible, would be outsourced and organisations with existing capacity should play a major role in providing expertise across the catchments within the WMA. A possible example would be in water quality assessment. Some functions necessary to the CMA may not be intensive enough to justify full time employment. The Reserve Determination is probably one such aspect. Here capacity might be shared among a number of WMAs with a "Reserve Determination team" roving between areas as and when needed. It should be noted that this WMA is fortunate in that it includes Mhlathuze Water Amanzi. Mhlathuze Water Amanzi has considerable internal capacity that it could make available to the CMA.

The location of satellite offices was discussed. No consensus was reached but the following ideas were mooted:

- The Head office would be either in Vryheid or Empangeni/Richards Bay. A case could be made for either.
- An office to look after the Pongola/Usutu catchments could be located in Paulpietersburg.
- An office located in Matubatuba could be responsible for the St Lucia and Southern Maputaland rivers
- An office in Empangeni would be responsible for the Mhlathuze and southern catchments, if the head office was not in Richards Bay/Empangeni.

The precise location of the offices needs more discussion but will probably be driven by demands in the catchment as well as by logistical criteria. The geographical structure that proposes the establishment of a number of offices is favoured for the following reasons:

- One of the *raison d'être* for the coming into being of the CMA is to devolve water management functions to a local level. By developing a series of centres within the WMA, this principle is made more explicit.
- The presence of satellite offices within various catchments of the WMA will raise the local visibility of the organisation and act to reassure stakeholders that the CMA has a local focus.
- By allowing CMA staff to take responsibility for specific catchment(s), the concept of ownership is inculcated. In addition, it will allow staff to gain an in-depth knowledge of the resource they are charged with protecting and managing.
- The geographically devolved organisation with satellite offices will be better placed to make appropriate use of the CMF structures that DWAF has put so much effort into developing and supporting.
- The geographically spread organisation will be better suited to local campaigns designed to address capacity building and empowerment. This is a more effective "pro poor" approach.

- Geographically based offices can probably identify and react to poverty based water issues related to their areas more effectively.

The satellite offices would need to be resourced at an appropriate level to be effective. The growth of these to an appropriate size would also be demand driven to some extent. Critical functions in the satellite offices would probably include licensing, revenue collection, capacity building, water quality monitoring, data collection and catchment liaison.

The proposed conceptual organisational design is illustrated in Figure 11 below.

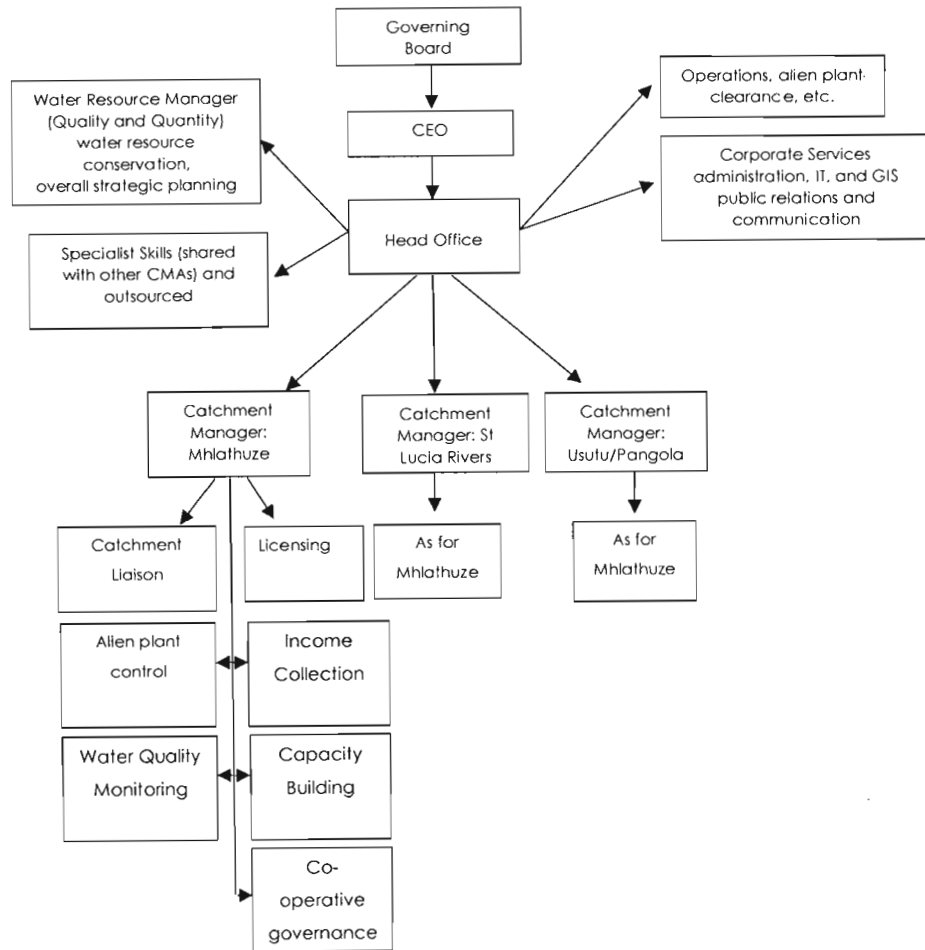


Figure 11: Notional CMA Organogram in Latter Stages of Development (beyond 5 years)

### 3.3.5 Staffing Issues

South Africa is not well endowed with specialist water resources skills and as a result, the CMA is likely to struggle when it comes to specialist areas and top-level management positions. The CMA should however be able to source a significant portion of the generic and lower/middle management positions without too many problems. One of the keys to staffing the CMA is obviously to transfer relevant personnel from existing DWAF line functions to the CMA. According to senior DWAF personnel, after the CMAs are in place, the Regional Office would probably shrink to between 8 and 30 people. The Project Aquarius Report entitled "Guidelines: The CMA Structure" (dated January 2001) indicates that as part of the recruitment process, the secondment and transfer of DWAF employees must be carefully considered. The report then sets out some of the parameters around staffing and outlines the following options:

- The secondment of DWAF employees:** for the most part it is envisaged that these would be from the Regional Office (although this could also be from the national office).
- The transfer of DWAF employees:** again for the most part it is envisaged that these would be from the Regional Office (again it could also be from the national office). The process design for the transfer will need to be very carefully thought through, as these issues can be extremely sensitive. For example; would staff transfer be automatically aligned with transfer of functions or would relevant personnel be expected to apply for similar positions in the CMA?
- In-house CMA capacity:** the CMA will recruit the personnel and acquire the infrastructure necessary to perform its functions.
- Shared CMA capacity:** neighbouring CMAs may "share" certain personnel or infrastructure, especially where there are capacity constraints and limited resources, or the need for significant cooperation between WMAs (see also discussion under section 3.3.1).
- Re-delegation:** certain functions may be re-delegated to other water management institutions (or even other organs of state) in the WMA that have the necessary administrative or technical ability and resources.
- Outsourcing:** various functions may be outsourced under a management or service contract, to private companies, public institutions or organisations. While legally functions such as setting water user charges and issuing licences cannot be contracted out, there are a range of functions that legally can, such as identifying significant water management issues within the WMA and potential means of addressing them; spring and source protection; flood prevention; construction and operation of waterworks; monitoring the performance of water users; monitoring the condition of water resources (including collection and analysis of information); education on water resource management; training and capacity building within the CMA and amongst other stakeholders; collection of water use charges; debt collection; financial and non-financial audits; engineering, security and cleaning services; operation of workshops; communication and public relations and recruitment of CMA staff. Selective outsourcing is generally regarded as global best practice and has been pursued effectively in both the public and private sectors.

The staffing strategies pursued by the Usutu to Mhlathuze CMA are likely to be key issues of a sensitive nature. This is so as:

- The Usutu to Mhlathuze CMA is only one of three CMAs in KwaZulu Natal and should not be prejudiced in terms of access to qualified DWAF personnel by the establishment of the other CMAs.
- The stakeholder lobby group, who will pay for the CMA, may resist what they might perceive as an expansionist drive from the public sector. This will become particularly sensitive if the CMA struggles to provide a service which is more efficient, in terms of protection and management of the water resource, than that which is already in place.
- The WMA is relatively poorly endowed in terms of existing capacity and attracting suitably skilled people into the region, particularly with competition from other CMAs could be difficult.

The staff numbers costed in the financial model are projected to increase from 19 at inception to 90 in ten years time. The initial numbers are very low but this is in line with the "bare bones" philosophy described earlier. This implies of course that the CMA will have minimal capacity in the first few years. An aggressive cooperative governance approach, coupled with extensive outsourcing, will thus be necessary if desired objectives are to be achieved.



### 3.3.6 Co-operative Governance

The issue of co-operative governance will be key to the efficacy of the CMA. In order to ensure this, the CMA should pursue the following strategies:

- The make-up of the Board, with particular emphasis on representation from all the relevant spheres of government, will ensure that the spirit of co-operative governance is pursued in the organisation's highest echelons (see 3.3.3). In this regard, representation from local and provincial government is particularly important.
- A highly participative approach to the development of the Catchment Management Strategy and river based Catchment Management Plans (CMPs). The latter should also preferably be demand driven.
- Co-operative agreements with neighbouring CMAs around sharing of resources and the resolution of cross and inter-basin issues and concerns.
- Co-operative agreements with bodies in the WMA that are likely to be able to play a significant role in supporting the CMA.

It is very important that the development of the CMS and ancillary CMPs will be undertaken concurrently, and in cooperation with, the development of local government planning. Local Government's key planning mechanism is of course the Integrated Development Plan (IDP). Although IDPs are generated at a local level and approved by local government councils, the provincial government has input in that it provides a checklist and line departments review the various IDPs. A key element of these are the Water Services Development Plans (WSDPs). These spell out the water requirements, as well as resource protection, conservation and development plans within the local government area.

The interrelationship between these two multi-layered and multi-faceted processes will be complex. There is likely to be the need for a number of iterations and the recognition that it will take some time for the output to become well integrated. A conceptual process diagram for this is given in Figure 12 below.

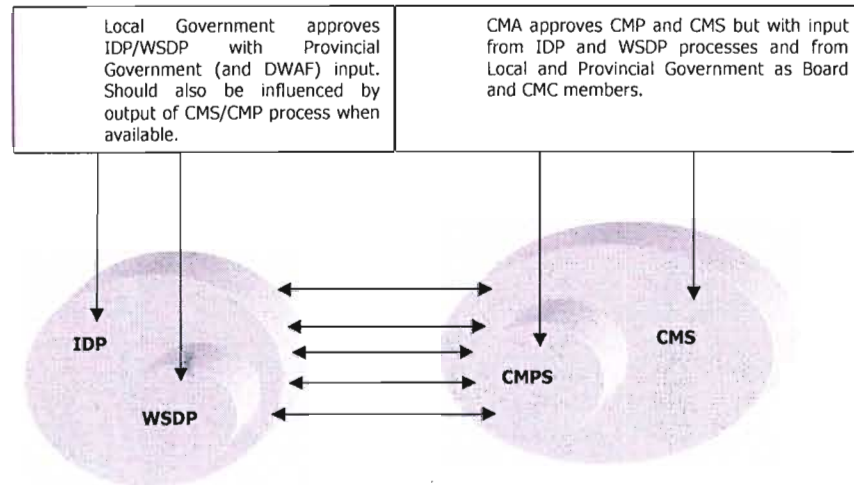


Figure 12: Integration of Local Government and CMA Planning Processes.

### 3.4 Financial Viability

#### 3.4.1 Proposed Sources of Funding

There are 7 primary sources of ongoing funding for this WMA. These are irrigation, urban use, non-urban industrial use, forestry, water transfers to other WMAs, DWAF subsidies and DWAF seed funding. The estimated proportion of income generated by these income sources are shown in Table 8 below.

Table 8: Funding Sources for the Usutu Mhlathuze CMA

Funding Source	Year 1 (%)	Year 10 (%)
Forestry	16	16
Irrigation	8	17
Urban and Industrial	4	5
Water Transfers (out of WMA minus those in)	2	4
DWAF Subsidies	59	58
DWAF Seed Funding	12	0
Totals	100	100

As can be seen, the income is initially heavily weighted towards DWAF subsidies, although the agriculture and forestry sectors are also significant. The income from other sources is nevertheless expected to increase over time. The DWAF subsidies are made up of the following items:

- Irrigation
- Forestry
- Underdevelopment
- Discharge Levy
- Catchment Management Strategy

The first 2 were negotiated with the sectors concerned and their purpose is to assist these sectors to adjust to the phasing in of catchment management charges. The underdevelopment subsidy addresses the fact that the water use in some WMAs is very low in relation to the water available, although it is zero in this WMA.

The funding from water transfers is from 2 sources:

- The Upper Vaal – Heyshope transfer of some 63 million cubic metres of water per year.
- The Morgenstond/Jericho/Westoe scheme of some 71 million cubic metres of water per year.

These are largely offset by a transfer in from the Thukela WMA and water transfers are thus not a significant funding source for this CMA.

The, initial DWAF seed funding is extremely important in the early years. It comes at a point in the fledgling CMA's history when it will be at its most vulnerable. Its primary purpose is to assist with funding significant capital items in the first few years, prior to establishment of a sound income base. It is spread over 3 years and will total R6 million. A list of some of the major capital items in question is given in Table 9 on Page 45 and briefly described thereafter.

**Table 9: Summary of Major Capital Items for the new CMA**

Expenditure Item	Year 1 (R M)	Year 2 (R M)	Year 3 (R M)	Year 4 (R M)
<b>Information Systems</b> (including GIS)	1,0	0,7	0,5	0,5
<b>Head Office Building</b>	0	0	2,5	0
<b>Water Monitoring Equipment</b>	0,5	0,5	0,5	0,5
<b>Hydrology Network</b>	1,25	1,25	1,25	1,25
<b>Totals</b>	<b>2,75</b>	<b>2,45</b>	<b>4.75</b>	<b>2,25</b>

It is clear that the CMA will require significant capability in information systems to be able to operate effectively. This will need to address basic management support functions such as Internet access, E-mail, billing, debtors, asset management, amongst others. These systems are fundamental for the operation of virtually any business today. In addition however, it is clear that a GIS is a core system for a CMA because of the great diversity of information which is relevant to a CMA's operation and the spatial nature of its distribution. At the outset, a significant amount of information can be transferred from the existing DWAF GIS, both regionally and nationally. It will not be possible to transfer the Department's regional system in total because of its need to continue to support the balance of the Province, as well as the remaining functions. As a result, the CMA GIS will be a major system with significant costs. Progress on the development and implementation of this will need to be rapid if the CMA is to start playing a meaningful role in its area of jurisdiction.

Continuing on the theme of information, the Situational Assessment has highlighted the serious lack of information on a number of the significant rivers. To rectify this, it will be necessary to implement a more extensive monitoring programme, both in terms of quantity and quality issues. This will require an investment in suitably qualified staff while at the same time introducing a number of new monitoring points. These new monitoring points will require equipment and, in some cases, substantial civil works, hence the inclusion in the model of large items for expansion of the hydrology network and monitoring equipment.

### 3.4.2 Financial Viability Analysis

The Financial Viability Study for the CMA is attached as Annexure B. This includes a financial model for a period of 10 years. Important points to note in the viability assessment are as follows:

- The income sources are as outlined in section 3.4.1 above
- The organizational structure and functions which have been assessed in the financial feasibility study are described and amplified in Annexure B. These are discussed in more detail in section 3.3 of this report. Staffing and budgets have been set at very low levels, in line with the "bare bones" philosophy described earlier.
- Budgets have been allowed for a range of overheads and administrative items

As has been noted, most of the expenditure in the model is for ongoing operating costs, primarily in the form of staffing (or alternatively for outsourcing contracts/appointments). Limited capital and one-off items have been allowed for as the income stream does allow a limited amount of discretionary expenditure in these areas. The following are some of the items that have been included under expected expenditure:

- Ongoing Reserve Determination Work.
- Expansion, upgrading and necessary replacements for the hydrology and water quality monitoring programmes (including very significant chemical analysis costs)
- Ongoing CMS and CMP work

- Continuation, and possibly expansion of, the Working for Water programme
- Some expenditure on IT (and GIS)
- Hydrological modeling analysis
- Ongoing support to both new and existing institutional structures addressing water resources

The feasibility assessment has revealed that the establishment and ongoing operation of this CMA can be achieved at a reasonable cost to the water users in the area. The primary reason for this is the DWAF funding support. This will account for over 70% of the income of the CMA in its early years. The estimated tariff for urban consumers in Year 1 is 1,4 c/kl rising to 2,4c/kl by Year 5. Tariffs for the other sectors and users are given in Table 10 below.

**Table 10: Proposed Sector Tariffs**

Tariff Type	Tariff for years 1 to 5 (c/kl)	Tariff for years 6 to 10 (c/kl)
<b>Urban Domestic and Industrial</b>	<b>1,4</b>	<b>2,4</b>
<b>Irrigation</b>	<b>1,0</b>	<b>1,0</b>
<b>Forestry</b>	<b>1,0</b>	<b>1,0</b>
<b>Wastewater Discharge</b>	<b>1,4</b>	<b>2,4</b>

### 3.4.3 Financial Model of the CMA's Cash Flow

The financial model is included in the feasibility study attached as annexure B. As with all models dealing with projections for the future, it is important to list the key assumptions. These are as follows:

- Discharge levies will only become payable by year 4
- No loan funding is assumed to be required
- Registration and collection efficiency will improve over time as shown in the projections
- Manning levels are summarised in the model. For further details see Appendix B.

### 3.4.4 Possible Risk Areas and Risk Management Strategies

From the discussion above regarding financial viability, it is clear that by far the largest source of income for this CMA come from outside of the catchment in the form of subsidies. The DWAF subsidies and seed funding will initially make up 70% of the income of the CMA. This will remain significant to CMA income even after ten years, eventually falling to 58%. Although this would enable the catchment to benefit from a structure largely funded externally, there are some risks associated with this situation. Any threat of removal of the subsidy would have dire consequences for the viability of the organisation.

The record of cost recovery of monies for water use from domestic and industrial consumers in the WMA is relatively good. Some urban areas have a record of default but they are not large enough consumers of water to threaten the financial viability of the CMA. The logistics of collection of levies from the forestry and agricultural sectors may be substantially more difficult. It will nevertheless be very important for the CMA to pursue these in a vigorous and efficient manner. Apart from the obvious benefits in terms of broadening the income base, it will be important for the CMA's image, particularly in the urban areas (and hence with local government). The CMA will thus be seen as spreading the load in terms of revenue generation for the institution.

Concern has been raised that it would be difficult to attract "quality" staff to work for the CMA. The perception is that the Mvoti to Mzimkhulu CMA will attract the best of the DWAF regional staff and that the Usutu to Mhlathuze might have to make do with second (or third) best. Again, in order to manage this it is imperative that the CMA be seen to be a credible organization, with local support, and one that is regarded as attractive to work for.



In order for the CMA to meet its core mandate, it will have to have a pro-poor and a developmental agenda. Failure to do so will almost certainly result in rejection of the CMA by the majority of the stakeholders. Means by which this might be addressed are spelled out in more detail in section 3.5 and 3.6.

### 3.5 Social Viability

#### 3.5.1 Mandate and Support from Stakeholders

Support from the stakeholders has been difficult to gauge. Although there is fairly broad acknowledgement that a CMA is necessary it is evident that some of the sectors only conditionally support the CMA establishment. Threats to stakeholder support include perceived lack of added value as well as concerns around additional financial burdens being placed upon water users.

#### 3.5.2 Risks Associated with Proposed Institutional and Organisational Evolution

The model currently being proposed by the stakeholders is based on a "bare bones" organisation that would grow slowly as it demonstrates its effectiveness and efficiency and as the perceived need for its expansion increases. The major risk associated with this model is that the relatively small organisation and large size of the WMA means that it will be difficult to make its impact felt. Critical to the ability of the CMA to demonstrate success will be the quality of the initial staff that it employs. Highly motivated staff with a desire to forge co-operative governance linkages will be of the utmost importance. This implies that multi skilling is a key requirement.

#### 3.5.3 Perceptions about the Service the CMA will Provide and Cost of Service to Users.

Although there is a degree of consensus that protection of the water resources in the CMA is important, there may be a feeling among some stakeholders, particularly the irrigators and domestic urban sectors, that the CMA could result in an organisation that adds little value. The concept of the regionally based office with local liaison officers, allied to WUAs and CMFs that actively promote catchment management and police implementation will go some way towards dispelling this notion. Actively demonstrating that the CMA is "lean and effective" will further help to promote the view that the organisation is cost effective.

#### 3.5.4 Perceptions about the CMA's Ability to Facilitate Meaningful Stakeholder Participation

After some initial problems, the PDWG meetings have subsequently been well attended and have resulted in vigorous debate. Stakeholders generally appear to be supportive of the process and it is hoped that this spirit of positive engagement and support will accompany the CMA in its establishment phase. The CMA will however have to comply with stakeholder demands around accessibility, accountability and representation in order to maintain the good will generated to date.

#### 3.5.5 Understanding of the Purpose and Need for the CMA amongst Stakeholders

There appears to be a reasonable understanding of the purpose of the CMA among stakeholders. This has been developed as a result of intensive capacity building during the PDWG meetings. Meetings have regularly started with a "capacity building – catch up session" for stakeholders who feel they needed additional information and/or discussion to clarify issues pertaining to the role and function of the CMA.

#### 3.5.6 Pro Poor Emphasis

The National Water Act (1998) of South Africa is internationally recognized as a most promising formal legal framework to address the key challenges in water management. One of the major issues in South Africa and in many developing countries, is to manage its water resources for the benefit of poor people and thus to contribute to poverty alleviation. Sectoral and specialized agencies have a mandate to make interventions that affect particular aspects of human wellbeing. In the case of the Department of Water Affairs, and in the near future at least partially CMAs and WUAs, domestic water supply and water pollution prevention are directly related to an overall programme of addressing issues of poverty. Water used for productive purposes in rural areas improves poor people's incomes from self-employment in cropping,

livestock, forestry, fisheries, small industries, etc. Wage employment is created by large-scale irrigated farming, mines, forestry, and environmental tourism that depend upon the aesthetic value of water and water provision for the flora and fauna at the tourist sites. For productive water uses, DWAF is exclusively mandated to allocate water and ensure that poor people get their share of this natural resource.

One of the drivers for the establishment of the CMA is the need to ensure that the water resource is developed in a manner that is both sustainable and promotes equity. Allied to this, is the need to develop the resource at a level that is accessible to those who have a stake in it. Given these parameters, it is critical that the CMA embraces a philosophy that is both "pro poor" and "grass roots". Both concepts tend to be readily endorsed but implementation is sometimes problematic. In order to ensure that the CMA has a pro-poor stance and is receptive to grass-roots demands, it is imperative that key aspects of the development of the CMA are accompanied by intensive public participation.

The National Water Act emphasises inclusive, representative public participation, community involvement in decisions that affect people's lives, redress of race and gender inequities and accommodation of local needs in the CMAs and WUAs. The new institutions should also facilitate implementing water for poverty eradication agenda and establish sustainable links with other development agencies. The design of water governance institutions that can achieve this at a local and catchment level is an unprecedented challenge.

Ample international experience has shown that the early phases in which new institutions are designed are extremely critical. Once institutional arrangements start crystallizing, the forces within or outside the institution that can reorient the basic structure and functioning of the young organisation start to dissipate (Shah 1996). For example, contacts that are established during the formative phase of the CMA's establishment, create certain expectations regarding longer-term and permanent relationships between communities and the organisation. As a result, and ideally at an early stage, the location and structure of long-term public participation and community involvement units in the future CMAs, needs to be designed and planned. This has been recommended in this proposal. Furthermore, the aspect of co-operative governance, also spelled out in more detail in this document, will act to ensure a greater degree of public accountability at grass roots level as well as giving the CMA a presence in the historically disadvantaged areas. In addition, appropriate representation on the Governing Board, through the ideal of representative democracy, will serve to give the voices of the poor a say in the running of the CMA. Within this WMA, and as soon as possible, it is proposed that the CMA should act on the following to ensure that a pro-poor stance is entrenched:

- Set up appropriate CMFs and CMCs with the necessary broad level of representation from previously disadvantaged communities.
- Ensure that these CMFs and CMCs are populated with people who have a mandate from the communities that they represent and are able to effectively communicate with those that they represent.
- If required, embark on a capacity building exercise within the CMFs and CMCs to ensure that members understand their role within water management.
- Develop a "Water for Poverty Alleviation Agenda" and ensure that this is a key concept within the catchment management plans and strategies that are developed.

### 3.6 Summary of Requirements for a Viable CMA

#### 3.6.1 Risks

From the previous discussion, a range of significant areas of risk to the new CMAs have been identified. The most critical of these, together with the recommended response to adequately address them, is summarised in Table 11 below.

Table 11: Key Areas of Risk and Responses

Area of Risk	Context	Response(s)
Funding stream dependent on sources from outside of catchment	Most funds will be acquired from water users located outside the catchment and from subsidies from DWAF	1. "Outside payees" must be convinced of benefit of CMA and willingness to pay inculcated 2. Active involvement of outside payees in governance structures 3. Subsidies need to be guaranteed.

Area of Risk	Context	Response(s)
<b>Establishment process lacks credibility</b>	This will certainly be a very bad way to start the life of an important new institution!	<ol style="list-style-type: none"> <li>1. Process must clearly be highly transparent with no hidden agendas</li> <li>2. Exceptional efforts must be made to allow all stakeholders to participate in the process and particularly the marginalised sectors of society</li> </ol>
<b>Perception of lack of added value</b>	A number of sectors have expressed significant concerns around this issue.	<ol style="list-style-type: none"> <li>3. Clear communication with respect to the (unique) role of the CMA</li> <li>4. Emphasis on local issues, addressed locally, using local money</li> <li>5. Emphasis on co-operative governance</li> <li>6. Emphasis on utilisation of existing resources in existing organisations N.B. Mhlathuze Water, WUAs, CMFs, etc.</li> </ol>
<b>Perception of empire building</b>	This is a risk if the new organisation is perceived to not add value and/or to be too heavy.	<ol style="list-style-type: none"> <li>1. Utilisation of "lean and mean" approach to structure/strategy</li> <li>2. Extensive use of outsourcing</li> <li>3. Extensive use of existing capacity</li> </ol>
<b>Governing Board lacks credibility</b>	The choice of leadership for the new organisation will set the tone for everything that follows. The public will watch this carefully.	<ol style="list-style-type: none"> <li>1. Very careful consideration by the Advisory Committee</li> <li>2. High quality and credible persons on Advisory Committee</li> <li>3. Transparent process as far as possible</li> </ol>
<b>Non-payment of levies by key local authorities</b>	The implications of this are obvious. This could result from either a crisis within the LA or lack of confidence or credibility of the CMA.	<ol style="list-style-type: none"> <li>1. Once again, emphasis of role of CMA</li> <li>2. Use of existing institutions wherever possible</li> <li>3. Lean and mean approach</li> </ol>
<b>Perception of organisation being too distant from stakeholders</b>	Very large area in WMA and over 2 million residents. Special efforts and strategies will be needed to disseminate the catchment management "gospel"	<ol style="list-style-type: none"> <li>1. Major emphasis on communication and capacity building</li> <li>2. Critical to structure organisation along geographic (catchment) lines plus develop a culture of delegation to the catchments, wherever possible</li> </ol>
<b>Accessing key skill sets</b>	Obvious risk to organisation if it cannot get the human resources it needs. Catchment management is a new discipline and some of the key skills are esoteric in nature.	<ol style="list-style-type: none"> <li>1. Lean and mean approach will allow packages to be more competitive</li> <li>2. This is one of the first CMAs, so resources will be easier to access.</li> <li>3. Outsourcing of specialist skills</li> </ol>
<b>Demand curves need to be accurately predicted</b>	Income is dependant on continued demand in certain key sectors. Financial planning is dependent upon these being accurately predicted. Failure to do so could result in financial failure of the organization.	<ol style="list-style-type: none"> <li>1. Water Resource Manager will require good data sets from which to make predictions.</li> <li>2. Ongoing interaction with key consumer bodies is critical</li> </ol>
<b>Building financial reserves will be difficult.</b>	The organization runs on a money in-money out basis and the scope for accumulating capital reserves is limited.	<ol style="list-style-type: none"> <li>1. Sound financial management and awareness of overextending financial risk is of paramount importance.</li> </ol>
<b>CMA capacity is unevenly spread</b>	Although some areas of the WMA are well resourced with capacity, much of the WMA is not. This means that equitably spreading advocacy and advisory functions of the CMA will be difficult.	<ol style="list-style-type: none"> <li>1. Development of regional/satellite offices to extend capacity is critical.</li> <li>2. Support from well resourced catchments to poorly resourced catchments, via the CMC structures, is required.</li> </ol>
<b>Failure of co-operative governance type of approach</b>	Co-operative governance is quite theoretical at this stage and will need to be developed into practical implementation approaches. Government often pays lip service to this but the track record is not a good one.	<ol style="list-style-type: none"> <li>1. Appeal to higher levels of government in worse case scenario</li> <li>2. Develop practical methods and strategies to undertake co-operative governance</li> <li>3. Very important for the Board of the CMA to set the right example</li> </ol>
<b>Failure of advocacy type of approach</b>	Approach of CMAs emphasizes advocacy; convincing, persuading, communicating, etc.	<ol style="list-style-type: none"> <li>1. CMA will have to acquire the powers to enforce for those (hopefully rare) cases when it will need them.</li> <li>2. The CMA should have some resources at its disposal available to initiate measures and programmes "off its own bat", even if this is regarded only as seed money.</li> </ol>

### 3.6.2 Conditions to Ensure Viability and Sustainability

First and foremost in terms of viability is the funding stream. This will depend on the ability and willingness to pay of water users, particularly the range of intermediary institutions in the area. As was noted above, the image and perceptions of the organization will have an impact on this.

The other key-funding stream is the seed/subsidy funding from DWAF at the inception of the CMA. The importance of this cannot be underestimated. The early days will be critical in terms of establishing the organization. There will be a tremendous amount of work to be undertaken and adequate resources must be made available to facilitate this process.

Information is the currency of effective management. Catchment management is an eclectic subject spanning many disciplines. The ability to access good information and to analyze it effectively will be crucial to the CMA's functioning. The CMA will need the ability to track a vast array of developments and plans of a range of development institutions. In addition, because it is a new discipline, there will be a need to access and develop new information sources. Powerful information systems are thus mission critical for this type of organization.

The ongoing support of the Regional Office is another prerequisite to success, for obvious reasons. For the transfer of functions to occur in a well-managed manner, good relations and support will be essential. In addition, the transfer of key human resources to the CMA is obviously of great importance in the early stages of its existence. The acquired experience and local knowledge available in the Department will be extremely valuable to the new organization. Having said this, transfer should not be regarded as if it is a "fait accompli". The new organization will have a different mandate, new functions, a different way of operating and a different culture. This implies that for some staff, transfer will not be appropriate.

The cooperation and support of the full range of water institutions is very important. Ultimately the CMA is designed to provide leadership to the sector but it can only do this with the assistance of the full range of WUAs, CMFs, Water Boards, Water Services Institutions, etc. etc.. To achieve this, the Act prescribes that the style of leadership must be participative; the old days of prescriptive top-down government institutions has been confined to the history books. In the early stages of its existence, the CMA will clearly not be in a position to provide much in the way of leadership and at this point it will be even more dependent on the assistance and support of the other institutions.

The comment above with respect to the support from water institutions applies equally to the range of other institutional stakeholders that are somehow involved, or have an impact on, water resources and/or water quality. As we have noted repeatedly, this covers a broad range of organizations. The catchment management efforts will fail or succeed on the back of the philosophy of cooperative governance since it will be impossible to merely exert "line authority" in a simplistic manner. The cooperation and support of these institutions is thus essential.



#### 4.0 IMPLEMENTATION PLAN FOR CMA ESTABLISHMENT

The inception period for a new institution is a challenging time in any circumstances. It is a time of great excitement, enthusiasm and idealism but by the same token, a time when there will be very little in the way of capacity. Because of the number of unknowns, it is a time when it is impossible to predict precisely how events will unfold in the early months. It is also a time of vulnerability for a new organization about to embark on uncharted waters, undertaking a complex and difficult task, in a new and developing discipline with little in the way of precedent, particularly in the South African context. It is therefore incumbent on us to be as thorough as possible in our planning of the inception, in order to prepare the way as well as we can.

There will be a number of conflicting demands on the organization at this point. One of the key areas of conflict will be the need to follow the correct processes while at the same time attempting to build capacity at the earliest point. To overcome this it will be necessary to implement strategies designed to provide interim institutional capacity during the critical first steps. A good example is the appointment of the CEO. People of this calibre are not easily available and, as a result, the recruitment process is likely to take anything between 3 and 6 months. This is a long period for the new organisation to be doing nothing, so consideration will have to be given to what, in practical terms, can be achieved during this period. Another simpler example relates to the inception of the Governing Board. It will not be possible for them to function without the services of a secretariat and the resulting logistical issue is; by whom and how will this be undertaken?

#### 4.1 Timeframes

A Gantt chart is set out below which illustrates the first steps necessary to establish the CMA. This illustrates that, in broad terms, there are 3 phases to the initial establishment process namely; consideration of the Proposal, establishment of the Governing Board and the initial organizational establishment phase.

Following consideration of the proposal by the Minister and agreement to proceed with establishment, the next step is to set up the Advisory Committee required in terms of the Act to advise the Minister on membership of the Governing Board. They will need a reasonable period to deliberate and to decide on what their recommendations will be. This process will be demanding, taking into account the complexity of the subject and the diverse and extensive range of stakeholders. This is made more complex by the need to determine how best to represent the people resident in the WMA. In addition to representivity, it will also be essential to assemble a team in the Board that can adequately address the governance issues for such an important organization. This means that certain skill sets will be crucial in the composition of the Board. Examples that come to mind are financial, water resources, environmental, legal and scientific.

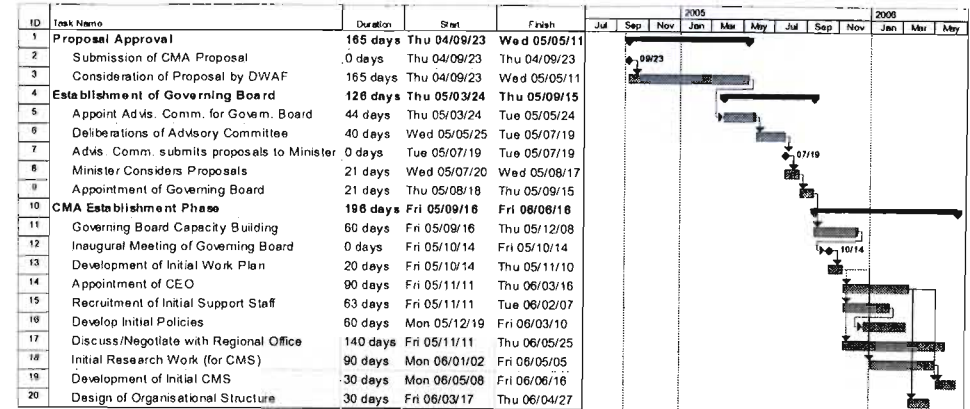


Figure 13: Timeframe for the CMA Inception Phase

Once the Minister has considered the recommendations on the composition of the Governing Board, and has possibly had an opportunity to confer with the Advisory Committee on some aspects, the process of appointing the Board will then proceed. A reasonable period will need to be allowed for this to deal with the logistics involved.

When the Board meets for the first time, its initial deliberations will have to focus on the fundamental issues of how it is going to operate such as:

- What will its agendas look like?
- How often will it meet?
- Election of office bearers
- Establishment of sub-committees
- Etc. etc.

The other crucial aspect at this early stage is to develop an initial work plan setting out actions, timescales etc. for what the Board hopes to achieve in the first year. As was noted above, at this point the CEO will not yet be appointed and the support staff will be minimal. The objectives set out in this plan will therefore need to be realistic and make use of the Regional Office, where possible. In broad terms, it is suggested that the key considerations will need to be as follows (not in order of priority):

1. Process to recruit the CEO
2. Process to develop the Catchment Management Strategy (CMS)
3. Recruitment of initial support staff
4. Research work to support initial activities and CMS work
5. Development of initial organizational policies
6. Discussions/negotiations with the Regional Office regarding delegation of functions, transfer of staff etc.
7. Development of the organizational design (following the CMS process)

These are discussed in more detail below.

As was noted earlier, the process to recruit the CEO will realistically take between 3 and 6 months. People of this calibre are not easily available and it makes sense to take the time and effort to follow a rigorous process. Some work will need to be undertaken on the requirements of the CEO (leading to a job description) together with conditions of service. The process to secure recruitment will need to be discussed and agreed. It is proposed that specialist consultants should be secured to assist with this process.

One of the first tasks of the new CMA is to develop a CMS. It is debatable however as to whether it is advisable to undertake this at the inception of the Board. A fundamental problem is the lack of institutional capacity to support this process. Again, it is an option for DWAF to facilitate this but will they have the capacity and is this desirable anyway? A further problem is that of development of the strategy without the CEO yet having been appointed. From an ownership point of view, this is certainly not ideal! It is thus proposed that the planning of the process, essential background research and data gathering is undertaken initially. This will then prepare the way for the process proper to be started as soon as the new CEO is appointed.

While the process to recruit the CEO is proceeding it makes sense to recruit some of the other staff in a parallel process. Ideally the CEO should be heavily involved in the recruitment of the top management team. It should be noted that stakeholders were of the opinion that all of the top management structure should be placed on performance based contracts. These contracts should run for a period of 3 to 5 years.

Following the dictum that "form follows function", the organizational design should only be undertaken after the CMS is developed. The focus initially should thus be on support and administrative functions. These will be relatively low risk and will be important to the initial functioning of the organization.

As was noted above, to expedite the very important process of developing the initial CMS, it is a good idea to carry out some initial research work on those aspects that will inform the CMS. The situational assessment identified that there are very significant gaps in the information that the CMA will need. In addition, much of the existing information is in different formats, numerous different locations and refers to differing areas and boundaries. Information gathering should thus commence almost immediately. This is a very good task to outsource as in many cases it involves specialist and sometimes esoteric skill sets. Typical examples of areas of key information are as follows:

- Water quality
- Demographics
- Extent of alien plant infestation
- Extent of erosion problems
- Extent, location and condition of wetlands
- Hydrology
- Institutional roles, responsibilities, capacity and current activities
- Water use
- Continuation/ completion of the registration process

All of these were looked at in the situational analysis to some extent but the level of analysis was necessarily superficial due to time and budgetary constraints. Of course it will not be possible to undertake major new studies in the initial period of 6 months but collection and assimilation of existing data will be a significant achievement in its own right. Thereafter analysis can be carried out which will be an extremely useful input into the CMS process.

It is also proposed that some initial work is done on the development of organizational policies. These should focus on the basics such as finance, administration, human resources etc. More sophisticated work should be delayed until the stage when there is more capacity available. Many of the areas of policy mentioned are of a generic nature and thus the policies of other similar organizations can be adapted.

An ongoing interaction, discussion and negotiation can be commenced with the DWAF Regional Office. This relationship is of vital importance since, in many respects, the CMAs are the "children" of DWAF, albeit with an amended role, mandate, responsibilities, and a closer relationship with stakeholders. These discussions

will need to cover the full ambit of issues, although the following will be of particular relevance in the early stages:

- Transfer and/or secondment of staff
- Delegation of functions
- Funding and budgets
- Registration of water users and income base
- Seed funding

#### 4.2 Resource Requirements

As can be noted from Figure 13, this initial establishment phase is anticipated to last for a period of approximately 12 months (please note that this does not imply that the organisation will be fully capacitated at the end of this period). A summary of the funding requirements for this phase is given in Table 12 below.

This would undoubtedly form part of the initial seed funding from DWAF.

**Table 12: Summary of Funding Requirements for the Start-up Phase of the CMA**

Item	Monthly Cost (R)	Number of Months	Funding Requirement (R)
<b>Board Stipends</b>	40 000	9	360 000
<b>Secretariat</b>	10 000	10	100 000
<b>Administration</b>	100 000	9	900 000
<b>Hire of offices</b>	20 000	9	180 000
<b>Operational Costs</b>	20 000	9	180 000
<b>CMS Research Work</b>	NA	NA	500 000
<b>Recruitment of CEO</b>	NA	NA	100 000
<b>CEO</b>	50 000	4	200 000
<b>Other Recruitment Costs</b>	NA	NA	80 000
<b>Office Furniture</b>	NA	NA	100 000
<b>IT</b>	NA	NA	150 000
<b>Miscellaneous Consulting Services</b>	NA	NA	300 000
<b>Totals</b>	<b>240 000</b>		<b>3 150 000</b>

## REFERENCES

Department of Water Affairs and Forestry, Criteria for the Evaluation of a Proposal for the Establishment of a Catchment Management Agency (January 2001)

Department of Water Affairs and Forestry, Departmental Policy guideline: Transfer of personnel from the Department of Water Affairs and Forestry to other Institutions/Organisation ( undated)

Department of Water Affairs and Forestry, Draft Outline for Proposal Submissions to the Minister on the Establishment of a CMA (May 2001)

Department of Water Affairs and Forestry, Establishing a Catchment Management Agency (1999)

Department of Water Affairs and Forestry, Guidelines: The CMA Structure (January 2001)

Department of Water Affairs and Forestry, Public Participation for CMAs and WUAs (1999)

Department of Water Affairs and Forestry, The Catchment Management Agency as an Organisation (1999)

Department of Water Affairs and Forestry/Danced, Institutional Rules and linkages : Draft 2 (November 2001)

Government of South Africa, National Water Act (1998)

Government of South Africa, Water Services Act (1997)

KwaZulu-Natal Provincial Cabinet, The Provincial Growth and Development Strategy (1996)

Statistics South Africa, Census (1996)

## APPENDICES

A: Situational Assessment

B: Feasibility Study

C: Stakeholder Participation Process

**APPENDIX 3**

**THE LEGAL REVIEW ON CATCHMENT MANAGEMENT AGENCIES**





Draft 2:  
For discussion purposes

*Towards an alignment of the roles and responsibilities of regulatory authorities in KwaZuluNatal Province vis-à-vis the establishment and operation of catchment management agencies*

LEGAL REVIEW

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## EXECUTIVE SUMMARY

The project for which this review has been written is called *Towards an alignment of the roles and responsibilities of regulatory authorities in the KwaZulu-Natal province vis-à-vis the establishment and operation of catchment management agencies*. In the Republic of South Africa institutions involved in water resource management are found at all three tiers, or spheres, of government.<sup>1</sup> In the context of water resource management in KwaZulu-Natal province in South Africa, a sometimes bewildering array of institutions play a role. These institutions are invariably created by statute but in some cases, merely confirmed by statute (for example tribal authorities' powers and obligations), which were first established by virtue of customary law provisions and are now codified in law. Other organs of state also play a substantive role.<sup>2</sup>

In the context of this review, relevant organs of state include the Provincial Planning and Development Commission ("the Commission"), other organs of state within provincial government, district and local municipalities, and water boards.

Private actors, whether corporate or non-governmental bodies, or individuals, are also enabled<sup>3</sup> to involve themselves in managing water resources. The relevant laws actually encourage institutional alignment. The National Water Act does so by proposing mechanisms and institutions that have as two of their main objectives, the effective achievement of co-operative governance, and non-duplication of functions. The catchment management agency (or CMA) concept proposed by the Act involves the assimilation of interest groups that seek to manage KwaZulu-Natal's water resources as a whole, by adopting appropriate management strategies in the different catchments.

The process of establishing and operating CMAs in KwaZulu-Natal province is in its relative infancy but the lessons that can be gleaned from proposals to establish the different CMAs are instructive, particularly regarding facilitating and/or ensuring institutional alignment. Those documents record that stakeholders were largely drawn from different groupings within four primary sectors. The four primary sectors were government and the public sector; the parastatal and utility sector; the private sector; and civil society.<sup>4</sup> Government and the public sector was represented by national and

<sup>1</sup> Chapter 3 of the Constitution (which regulates co-operative government) describes government as being constituted as "national, provincial and local spheres of government which are distinctive, interdependent and interrelated" (section 40(1)).

<sup>2</sup> The term "organ of state" is widely defined in the Constitution (section 239), as follows:

"organ of state means –

(a) any department of state or administration in the national, provincial or local sphere of government; or

(b) any other functionary or institution –

(i) exercising a power or performing a function in terms of the Constitution or a provincial constitution; or

(ii) exercising a public power or performing a public function in terms of any legislation, but does not include a court or a judicial officer.

<sup>3</sup> By legislation and primarily the National Water Act (36 of 1998) but also the Water Services Act (107 of 1998) and other relevant legislation.

<sup>4</sup> See for example the *Proposal to establish the Thukela Catchment Management Agency (draft 3)* prepared

provincial government departments as well as representatives of local government (district municipalities, local councils and metro councils) as well as traditional authorities. The parastatal and utility sector was invariably represented by water boards; irrigation boards and water-user associations; conservation bodies; universities and technikons with relevant research interests; and statutory research organisations (for example, the Council for Scientific and Industrial Research and the Oceanographic Research Institute. The private sector representatives were drawn from large individual corporations; chambers of business; agri-business; farmers associations; and foresters and forestry organisations. Civil society was represented by trade unions; non-governmental organisations; interest groups; communities who depend on the resource for their daily existence, ratepayers associations; and other directly affected individuals.<sup>5</sup>

In our view, the most important conclusion that must be drawn from the documents recording the proposals to establish CMAs in KwaZulu-Natal's different water management areas, which conclusion can also be drawn from our work in this project (and particularly the workshop component) is that institutional alignment should not necessarily require a formal structure or framework within which to develop or be developed. (In fact the emphasis must be on the latter verb, which describes accurately the requirement for human energy and dialogue in order to achieve the advantages of institutional alignment. That energy should be reflected in all relevant players involving themselves fully and substantively in the formation and then operation of the CMAs most relevant to them).

The benefits of all parties' involvement in the establishment phase include, most obviously:

- 1) non-duplication of institutional and personnel effort or resources;
- 2) the tangible achievement of co-operative governance;
- 3) the achievement of other legislative imperatives like those imposed on organs of state by relevant environmental legislation; and
- 4) in some instances, inducements or "rewards" for meeting the legislative requirements.

It is noteworthy that at the time that the then-Town and Regional Planning Commission's erstwhile steering committee conceived of the terms of reference for the project brief in this project<sup>6</sup> there were no examples yet available of how the institutional model for a CMA and the participation process that would culminate in the establishment of the institutional fora within the agency, would or could work in practice. Since then, proposals for the establishment of CMAs for each of KwaZulu-Natal's three water

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by A.J. Wilson and Associates International CC.

<sup>5</sup> In each of the proposals to establish the different CMAs within KwaZulu-Natal (respectively, the *Proposal to establish the Usutu to Mhlathuze Catchment Management Agency (draft 1)*; the *Proposal to establish the Thukela Catchment Management Agency (draft 3)*; and the *Proposal to establish the Mvoti Catchment Management Agency (draft 4)*. A summary of the participation process in each proposal lists these sectors and representation within them.

<sup>6</sup> In April 2001.

management areas have been prepared in draft.<sup>7</sup>

Regarding the need for institutional alignment and the achievement of co-operative governance at regional and local level, a report entitled "*Roles and functions of institutions involved in the management of water resources*"<sup>8</sup> summarises appropriately the links between effective CMAs and properly aligned institutions, as follows:

"Proper functioning of the CMAs is dependent on its ability (*sic*) to forge co-operative governance relationships with all relevant stakeholders and particularly around environmental management, spatial (land-use) planning and management, infrastructure development and service provision. This necessitates good relationships particularly with local authorities and provincial government departments involved in implementing these functions. The development of the catchment management strategy and its implementation will indicate who need (*sic*) to be involved. The focus of these co-operative relations should according to DWAF (July 2000), be primarily on the alignment of policies, programs, and procedures, with the aim to improving the efficiency and consistency of implementation. (Emphasis supplied). The important relationship between the CMAs (and) local government also stems from the latter's primary responsibility. Overlaps between goals or strategies of different departments must be identified and efforts in those directions co-ordinated to optimise benefits, avoid duplication and minimise costs.

A draft final report entitled *Institutional Roles and Linkages: Phase I Report (Integrated Water Resources Management Strategies, Guidelines and Pilot Implementation in Three Water Management Areas, South Africa)* is also helpful in regard to understanding institutional alignment.<sup>9</sup> Both of these reports have been summarised by us and the summaries respectively form annex "A" and annex "B" to this review.

The structure of this review is to introduce the topic, and then to provide the policy and legislative context within which integrated water resources management should be achieved in South Africa in order to meet legislative imperatives; the review then describes and analyses CMAs in some detail. Having addressed a range of questions regarding the powers, rights and duties of CMAs, it considers the roles and responsibilities of other institutions relevant to catchment management (those established by the National Water Act and others) as well as the role of other organs of state or institutions that impact on catchment management at the national, provincial and local spheres of government. The review then reports back on the workshop convened at Cedara Agricultural College's premises on 31 October 2002 and explains the issues that were canvassed and/or arose with participants at that workshop.

The next portion of this review (which will be finalised after the proposed second workshop on institutional alignment) makes relevant recommendations regarding the development of an institutional framework. The last portion of this report contains conclusions and recommendations. **Note to reader: the last sections of this draft will**

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<sup>7</sup> See footnote 5 above.

<sup>8</sup> Dated January 2002.

<sup>9</sup> It is dated 10 February 2002 and was prepared by the Danish Ministry of the Environment and Energy.



**be finalised after the completion of the second workshop and the writing up of its findings.**

## 1. INTRODUCTION

One of the overarching aims of the National Water Act<sup>10</sup> ("the NWA") is the incremental decentralisation of water resource management in South Africa. The purpose of decentralisation is primarily to delegate water resource management to the regional or catchment level,<sup>11</sup> and to involve the communities that are most directly affected in the management, use and conservation of the resource. By communities, we mean all role players (public and private) which or who choose to involve themselves, or are obliged by law to involve themselves, in water resource management, in this instance, in KwaZulu-Natal.

The most important statutory institutional vehicles proposed under the National Water Act that are being established to realise this aim in KwaZulu-Natal and the other eight South African provinces are catchment management agencies ("CMAs"). The roles and functions of CMAs are set out in some detail in the NWA. In light of the broad spectrum of legislation and institutions which impact in one respect or another on water resource and catchment management, integration and alignment of the roles and responsibilities of all role players must be achieved (or at least its benefits substantively understood) before the establishment and effective operation of CMAs in the KwaZulu-Natal Province can be achieved.

The *EnAct* consortium<sup>12</sup> has been instructed<sup>13</sup> to assist the KwaZulu-Natal Province's Planning and Development Commission<sup>14</sup> ("the Commission") in this regard. The overall project goal is to find ways to assist in achieving institutional integration in the management of terrestrial and water resource impacts in the three water management areas in KwaZulu-Natal, in order to facilitate and achieve effective catchment management.

One of the key deliverables of the project is a comprehensive legal review of all policy and legislation that impacts on integrated catchment management in the province. The legal review must address the following issues:

- identification of the institutions that regulate land use and resources in the KwaZulu-Natal Province and which, in exercising their powers or performing their duties, impact on water resource quality and/or quantity;
- assessment of the roles and responsibilities, as well as the resources and capacity, of those institutions;

<sup>10</sup> 36 of 1998.

<sup>11</sup> Which should result in more effective resource management if the devolution is properly and carefully considered and executed.

<sup>12</sup> Which consists of *EnAct* International and GAEA Projects, the successor-in-title to the consultancy styled Weerts Butler Bulman CC, which was part of the project team with which (the-then) Town and Regional Planning Commission (the predecessor-in-title to the Commission) concluded the agreement to undertake this work.

<sup>13</sup> In terms of an agreement entered into between *EnAct* International and the Commission dated 14 May 2001.

<sup>14</sup> The Commission is discussed in more detail in part 1.1.4 of this report.



- identification of actual or potential weaknesses in the legal framework; and
- development of a framework to integrate and harmonise institutional arrangements.

This legal review is set out in 8 parts. This part<sup>15</sup> comprises an introduction to the relevant issues. The second part<sup>16</sup> describes the broad policy and legislative context. The third and fourth parts<sup>17</sup> focus on catchment management agencies and other water management institutions. The fifth part<sup>18</sup> identifies organs of State whose activities impact on catchment management in terms of statutes that they administer. In the sixth part,<sup>19</sup> weaknesses and potential weaknesses in current institutional arrangements are identified. The final substantive part of this review<sup>20</sup> makes recommendations regarding the development of an institutional framework.

## 2. POLICY AND LEGISLATIVE CONTEXT

Before reviewing the detailed provisions of the laws that impact on institutional arrangements in relation to catchment management, it is necessary to describe and consider the wider context within which those laws should be considered and assessed.

### 2.1 Policy background

Catchment management has been described as simultaneously a philosophy, a process and an implementation strategy to achieve a sustainable balance between utilisation and protection of water resources in a particular catchment.<sup>21</sup> This can only be achieved by the consensual participation of stakeholders, communities and organs of State in the catchment to be managed. The success of CMAs will also require the collaboration of, and linkages between, a range of other statutory water institutions, as well as other authorities and organs of State. In order to achieve this, a number of guiding principles were developed by policy-makers. The principles include those that follow.<sup>22</sup>

- Catchment management must be consistent with the South African Constitution, including its provisions regarding co-operative governance.
- The relationship between catchment managers and other organs of State should reflect the spirit of national water policy, in that integration should be reflected:
  - (i) vertically, to outline roles and functions of organisations involved in water

<sup>15</sup> i.e. section 1 of this review.

<sup>16</sup> i.e. section 2 of this review.

<sup>17</sup> i.e. sections 3 and 4 of this review.

<sup>18</sup> i.e. section 5 of this review.

<sup>19</sup> i.e. section 6 of this review.

<sup>20</sup> i.e. section 7 of this review.

<sup>21</sup> Document entitled "A Strategic Plan for the Department of Water Affairs and Forestry to Facilitate the Implementation of Catchment Management in South Africa" (DWAF, April 1998).

<sup>22</sup> *Ibid* at page 54.

management; and

- (ii) horizontally, between authorities or organisations with interests in and needs for a role in catchment management;
  - (iii) co-operatively, within water sectors with a joint interest in particular resources;
  - (iv) coherently, between organisations active in the development, management and use of scarce environmental resources; and
  - (v) geographically, between areas connected through the water cycle and human activity (emphasis supplied).
- Land use planning and management must reflect the needs of the water resource. In this regard, CMAs should be able to influence or prevent land use planning decisions which could lead to unacceptable impacts on water resources.
  - CMAs should interact and/or integrate with other planning and development initiatives in South Africa. In this regard, catchment management initiatives should be consistent with and influence the strategies and plans of social, economic, spatial, infrastructural and environmental resource programmes, planning, development and management initiatives, or processes which occur at different national, provincial, regional, local or project levels.
  - CMAs' operations must foster co-operative governance and integrate functions related to catchment and water resource management. The achievement of this aim is a long-term process.

There are numerous policy documents relating to integrated water resource management and integrated catchment management,<sup>23</sup> including three White Papers. Much of the policy articulated there is reflected in the NWA and the Water Services Act.<sup>24</sup> A new Water Services White Paper, which will review the role of all government institutions and organs of State in relation to water services and will focus on the relationship between the full spectrum of water supply and sanitation services as well as the overarching policy issues pertaining to *inter alia* the institutional framework, is also in

<sup>23</sup> Including, for example, the following documents: White Paper on Water Supply and Sanitation (November 1994); White Paper on National Water Policy (April 1997); Policy document re: "Towards a Water Services White Paper" (May 2002); Water Research Commission's Guidelines for Catchment Management: DWAF's Strategic plan to facilitate the implementation of catchment management in SA (DWAF, 1998); National Water Resource Strategy; Midmar Policy Document (TRPC); Umgeni Catchment Management Plan (DWAF/UW, 1996); Towards a Planning and Development and Management Policy on and around Regional Dams in KwaZulu-Natal (TRPC). We have also been furnished with a copy of a draft report commissioned by DANCED (Ref. J. No. 123/138-0154) dated 10 February 2002 and entitled "Institutional water resources management: Phase 1 report. Integrated water resources management strategies, guidelines and pilot implementation in three water management areas", and a phase one report dated January 2002 compiled by Afrosch on behalf of the Department of Water Affairs and Forestry entitled "Roles and Functions of Institutions Involved in the Management of Water Resources". We have made reference to those reports where appropriate.

<sup>24</sup> 108 of 1997.

the pipeline.<sup>25</sup> In developing the institutional integration framework described in Part 7 below, we have considered all legislation relevant to this review against the backdrop of the policy considerations outlined above.

## 2.2 Constitutional context

The Constitution of the Republic of South Africa Act<sup>26</sup> ("the Constitution") is the supreme law in South Africa. It is relevant to the issue of alignment of institutions whose functions impact on catchment management in at least three material respects. We will discuss each in turn.

### 2.2.1 Bill of Rights

The Constitution provides that everyone has a right of access to sufficient water, and obliges the State to take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of each right that relates to the provision of life's basic necessities.<sup>27</sup> The right to sufficient water must, however, be interpreted against the backdrop of other rights in the Bill of Rights, including *inter alia* the environmental right, which provides that every person has a right to an environment that is not harmful to his or her well-being, and to have the environment protected through legislative and other means to prevent pollution and environmental degradation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.<sup>28</sup>

### 2.2.2 Legislative competence

Because water is not listed as a functional area of concurrent legislative (i.e. law-making) competence in the Schedules to the Constitution,<sup>29</sup> it is an area of exclusive national legislative competence. In other words, only the national tier of government may promulgate laws that regulate water. Therefore should the provincial government, for example, pass legislation regulating water resource use or management, it would be acting unlawfully. However, there are other functional areas that impact on catchment management, in respect of which both national and provincial levels of government may pass laws. These include the environment; pollution control; and regional planning and development.

In relation to provincial planning and provincial cultural matters, on the other hand, the provinces have the exclusive right to pass laws.

<sup>25</sup> A document entitled "Invitation to Submit Written Comments on Towards a Water Services White Paper" was published for comment on 3 May 2002 (GN 538 in *Government Gazette* 23377).

<sup>26</sup> 108 of 1996.

<sup>27</sup> Section 27(1) and (2).

<sup>28</sup> Section 24.

<sup>29</sup> The relevant schedules are 4 and 5.

There are also certain functions which fall to be administered by local authorities. These include stormwater management systems in urbanised areas; and water and sanitation services (but limited to potable water supply systems and domestic waste-water and sewage disposal systems). Local authorities are empowered to pass by-laws in respect of the functional areas that they are empowered to administer.<sup>30</sup>

Notwithstanding the provisions of the Constitution, in relation to environment-related functions, in many instances more than one sphere of government has legislative and/or executive and administrative authority. This authority, in practice, is often exercised concurrently by different government agencies.

### 2.2.3 Co-operative governance

Chapter 3 of the Constitution deals with co-operative governance. It obliges all spheres of government and organs of State,<sup>31</sup> among other things:

- to respect the constitutional status, institutions, powers and functions of other spheres of government;
- to exercise powers and perform functions in a manner that does not encroach on the geographical, functional or institutional integrity of government in another sphere;
- to co-operate with one another in mutual trust and good faith by assisting and supporting one another; informing one another of, and consulting one another on, matters of common interest; co-ordinating their actions and legislation with one another; and adhering to agreed procedures,<sup>32</sup> and
- not to assume any power or function unless it has been conferred on them in terms of the Constitution.

These obligations, which apply to all national, provincial and local government, and to organs of State (which include parastatals, such as Umgeni Water), must be borne in mind in relation to any effort to realign institutional roles. They also apply to any conflict that may arise between organs of State in relation to catchment management. In this regard, an organ of State involved in a dispute with another organ of State must make every reasonable effort to settle the dispute, and must exhaust all other remedies before approaching a court to resolve a dispute.<sup>33</sup>

<sup>30</sup> Section 156(2).

<sup>31</sup> "organ of state" is defined in section 239 of the Constitution as: "(a) any department of state or administration in the national, provincial or local sphere of government; or (b) any other functionary or institution – (i) exercising a power or performing a function in terms of the Constitution or a provincial constitution; or (ii) exercising a public power or performing a public function in terms of any legislation, but does not include a court or judicial officer".

<sup>32</sup> Section 41(1) (e), (f), (g) and (h) respectively.

<sup>33</sup> Section 41(3).

## 2.3 National legislative context

It is vital that the integration and alignment of institutional roles be considered against the backdrop of the purpose section of the NWA and the principles set out in the National Environmental Management Act<sup>34</sup> ("NEMA").

### 2.3.1 Purpose of the NWA

Notwithstanding that certain provisions in the NWA will be considered in detail in the parts following this one, the general purpose of the Act should be borne in mind at all times when interpreting or applying any provision of the Act, or exercising any power under the Act. The general purpose of the NWA is:

"... to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors - meeting the basic human needs of present and future generations; promoting equitable access to water; redressing the results of past racial and gender discrimination; promoting the efficient, sustainable and beneficial use of water in the public interest; facilitating social and economic development; providing for growing demand for water use; protecting aquatic and associated ecosystems and their biological diversity; reducing and preventing pollution and degradation of water resources; ...and for achieving this purpose, to establish suitable institutions to ensure that they have appropriate community, racial and gender representation."<sup>35</sup>

### 2.3.2 Principles in NEMA

Any organ of State that takes any action (which includes considering and/or making an administrative decision) that may have a significant effect on the environment must apply the principles set out in NEMA.

The NEMA principles also serve as guidelines by reference to which any organ of State must exercise any function when taking any decision in terms of any statutory provision concerning the protection of the environment, and they must guide the interpretation, administration and implementation of any law concerned with the protection or management of the environment.<sup>36</sup> The principles include the following:

- development must be socially, environmentally and economically sustainable;<sup>37</sup>
- pollution and degradation of the environment must be avoided, or, where they cannot be altogether avoided, must be minimised and remedied;<sup>38</sup>
- the development, use and exploitation of renewable resources, which includes water

<sup>34</sup> 107 of 1998.

<sup>35</sup> Section 2.

<sup>36</sup> Section 2(1).

<sup>37</sup> Section 2(3).

<sup>38</sup> Section 2(4)(ii).

resources, and the ecosystems of which they are part must not exceed the level beyond which their integrity is jeopardised;<sup>39</sup>

- a risk-averse and cautious approach must be applied, which takes into account the limits of current knowledge about the consequences of decisions and actions;<sup>40</sup>
- equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination;<sup>41</sup>
- the participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured;<sup>42</sup>
- decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge;<sup>43</sup>
- community well-being and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means;<sup>44</sup>
- the social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment;<sup>45</sup>
- there must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment;<sup>46</sup>
- actual or potential conflicts of interest between organs of State should be resolved through conflict resolution procedures;<sup>47</sup> and
- sensitive, vulnerable, highly dynamic or stressed ecosystems, such as estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human

<sup>39</sup> Section 2(4)(a)(vi).

<sup>40</sup> Section 2(4)(a)(vii).

<sup>41</sup> Section 2(4)(d).

<sup>42</sup> Section 2(4)(f).

<sup>43</sup> Section 2(4)(g).

<sup>44</sup> Section 2(4)(h).

<sup>45</sup> Section 2(4)(i).

<sup>46</sup> Section 2(4)(l).

<sup>47</sup> Section 2(4)(m).



resource usage and development pressure.<sup>48</sup>

### 3. CATCHMENT MANAGEMENT AGENCIES

We have presented the law relating to CMAs in a thematically structured question and answer format, as opposed to bland statements of the law as set out in the NWA. Our opinion is that the former format is more user-friendly and accessible than the latter, and hence that the Commission, and any person to whom the Commission and/or the project's steering committee makes this legal review available, will obtain more value from it.

Chapter 7 of the NWA is devoted entirely to CMAs. The explanatory note to the chapter states that:

"[the] Chapter provides for the progressive establishment by the [Water] Minister of catchment management agencies. The purpose of establishing these agencies is to delegate water resource management to the regional or catchment level and to involve local communities, within the framework of the national water resource strategy established in terms of Chapter 2. Whilst the ultimate aim is to establish catchment management agencies for all water management areas, the Minister acts as the catchment management agency where one has not been established. Where the necessary capacity does not exist to establish a catchment management agency, an advisory committee may be appointed under Chapter 9 to develop the necessary capacity as a first step towards establishing an agency."

#### 3.1 Establishment of CMAs

No CMAs have yet been established in KwaZulu-Natal, or any other province for that matter. DWAF anticipates that the first CMA will be established in April 2003. The first proposal to establish a CMA, namely the proposed Inkomati CMA, is currently being processed by DWAF.<sup>49</sup> The proposal submitted by the Inkomati CMA Reference Group, which may be of interest to the Commission, is available on DWAF's website.<sup>50</sup>

##### 3.1.1 Who may establish a CMA?

A CMA may be established either by the Minister of Water Affairs and Forestry ("the Water Minister") on his or her own initiative, or pursuant to a proposal submitted to him or her by the relevant stakeholders in a particular catchment area. The Act does not specify in any detail who those stakeholders should be, although, in light of various obligations (contained in a variety of South African statutes) relating to consultation and public participation, it is anticipated that they will in the ordinary course be fairly representative of organs of State and communities.

<sup>48</sup> Section 2(4)(r).

<sup>49</sup> Email from Derek Weston (who works in DWAF's Directorate: Catchment Management) to EnAct's Belinda Bowling on 17 July 2002.

<sup>50</sup> <http://www-dwaf.pwv.gov.za>.

#### 3.1.2 How do stakeholders go about establishing a CMA?

The community and stakeholders concerned must submit a proposal to the Water Minister that contains at least the following minimum information:

- the proposed name and a description of the proposed water management area of the proposed CMA;
- a description of the significant water resources in the water management area, and information about the existing protection, use, development, conservation, management and control of those resources;
- the proposed functions of the CMA, including functions to be assigned and delegated to it;
- details relating to how the proposed CMA will be funded;
- the feasibility of the proposed CMA in respect of technical, financial and administrative matters; and
- an indication whether there has been consultation in developing the proposal and the results of the consultation.<sup>51</sup>

#### 3.1.3 In respect of what area can a CMA be established?

The geographical area in respect of which a CMA can be established ordinarily accords with the boundaries of the water management areas established in terms of the National Water Resource Strategy.<sup>52</sup> If established, the proposed Inkomati CMA, for example, will have jurisdiction over the Inkomati water management area, which in turn is made up of three catchment areas.<sup>53</sup>

Water management areas are defined in the NWA as areas within which a CMA will conduct the protection, use, development, conservation; management and control of water resources.<sup>54</sup> The boundaries of the water management areas are based on resource factors, not political factors, hence some of the water management areas fall in more than one province. The water management areas that fall completely or partially within KwaZulu-Natal include:

- the Thukela water management area;<sup>55</sup>
- the Usutu to Mhlatuze water management area;<sup>56</sup> and

<sup>51</sup> Section 77.

<sup>52</sup> GN R1160 in *Government Gazette* 20491 dated 1 October 1999.

<sup>53</sup> Namely, the Sable-Sand, Crocodile and Komati River catchments.

<sup>54</sup> Section 1(1)(xxv) of the NWA.

<sup>55</sup> Which has as its major river the Thukela.

<sup>56</sup> Which is partially in Mpumalanga Province, and has as its major rivers the Usutu, Pongola, Mhlatuze.



- the Mvoti to Umzimkulu water management area.<sup>57</sup>

It is likely that separate CMAs will be established in respect of each of these water management areas, in other words that there will be three CMAs operating wholly or partially within the province of KwaZulu-Natal.

### 3.1.4 What must the Water Minister do before establishing a CMA?

There are certain public participatory provisions which the Water Minister must fulfil before establishing a CMA.<sup>58</sup> These include:

- publishing a notice in the *Government Gazette* that sets out the basic information relating to the proposed CMA (rather than the proposal itself) and inviting comments within a specified period, but not less than 60 days;
- considering what further steps need to be taken, if any, in relation to bringing the proposal to the attention of interested parties; and
- considering any comments received.

The Water Minister has a discretionary power to request further information, and to instruct the Director-General to investigate any issue relating to the establishment of a CMA.<sup>59</sup>

## 3.2 Structure and governance issues

Structure and governance issues are important in a number of respects. For example, they are central to defining the parameters of a CMA's decision-making powers and procedures. In addition, contravention of any of the provisions relating to governance may render resulting decisions *ultra vires* and unlawful.

### 3.2.1 What is the corporate structure of a CMA?

CMAs are bodies corporate. Like other water management institutions, corporate governance issues should be addressed in terms of Schedule 4 of the NWA, which sets out the requirements in relation to:

- board proceedings;
- institutional planning (including business plans, financial matters and ministerial notification procedures);

Mfolozi and Mkuze.

<sup>57</sup> Which is partially in the Eastern Cape Province, and has as its major rivers the Mvoti, Umgeni, Umkomazi and Umzimkulu.

<sup>58</sup> Section 78(3).

<sup>59</sup> Section 78(2).

- monitoring of activities, including the Water Minister's right to intervene;
- record-keeping and reporting requirements;
- the governing board (including terms and conditions of appointment, and vacancies, resignations and removal from office); and
- board members (including duties and disclosure of interest).

The governing board is also regulated in terms of Part 2<sup>60</sup> of Chapter 7 of the NWA, which has detailed provisions regarding the appointment of board members, its constitution, election and nomination procedures, and the ministerial powers in relation to the removal of board members.

### 3.2.2 Who is represented on the governing board of a CMA? How are they appointed?

The board members of a CMA are appointed by the Water Minister, who is given broad powers in this regard.<sup>61</sup> The Water Minister's decision-making powers are, however, fettered in that the Water Minister must, when making the appointments, aim to achieve a balance between the interests of existing and future waters users, the different spheres of government, and environmental interest groups. Furthermore, the Water Minister must take into account the recommendations of an advisory committee,<sup>62</sup> which the Water Minister must establish for the purpose of recommending, after consultation with the relevant organs of State and interest groups:

- which organs of State and bodies representing different sectors and other interests within the water management area of the CMA should be represented or reflected on the governing board; and
- the number of persons which each of them should be invited to nominate.<sup>63</sup>

### 3.2.3 What substructures may the governing board establish?

The governing board may establish committees, including an executive committee and consultative bodies, to perform any of its functions within a particular area or to act in an advisory capacity. It is up to the governing board to determine how such committees or bodies function.<sup>64</sup>

<sup>60</sup> Sections 81 – 83.

<sup>61</sup> For example, the Minister has powers to appoint additional board members in order to achieve representation of previously disadvantaged persons or communities (under section 81(10)(e)).

<sup>62</sup> Which must be established in terms of section 99.

<sup>63</sup> Section 81.

<sup>64</sup> Section 82(5).

### 3.3 Powers, duties and functions of CMAs

The NWA recognises that most proposed CMAs will not have the capacity or resources to effectively exercise all of their statutory powers and functions immediately after being established. The NWA accordingly provides for the incremental and progressive devolution of powers and duties from the Water Minister to CMAs. Initially, in respect of areas where CMAs have not been established or are not functional, the powers and duties of CMAs vest in the Water Minister.<sup>65</sup>

#### 3.3.1 What are the initial functions of a CMA?

Subject to, among other things, the national water resource strategy, the initial functions of a CMA are:

- to investigate and advise interested persons on the protection, use, development, conservation, management and control of the water resources in its water management area;
- to develop a catchment management strategy;
- to co-ordinate the related activities of water users and of the water management institutions within its water management area;
- to promote the co-ordination of its implementation with the implementation of any applicable development plan established in terms of the Water Services Act,<sup>66</sup> and
- to promote community participation in the protection, use, development, conservation, management and control of the water resources in its water management area.<sup>67</sup>

The initial functions of the CMA are a good indication of the preparatory work that should be undertaken prior to the establishment of a CMA, in order for the CMA to be effective from the outset. In this regard, prior to its establishment, a CMA should:

- have access to consolidated information relating to the protection, use, development, conservation, management and control of the water resources in its water management area;
- be familiar with the activities of all water users, particularly communities, in the water management area; and
- be familiar with the activities of all water management institutions in the water management area, which includes the Water Minister (who, in the absence of a CMA, performs the functions of such an agency) and any water user associations.

<sup>65</sup> Section 72(1).

<sup>66</sup> 108 of 1997.

<sup>67</sup> Section 80.

The development of a catchment management strategy must be undertaken in accordance with Part 2 of Chapter 2 of the NWA, the explanatory note of which provides that catchment management strategies, which must be in harmony with the national water resource strategy and must be developed with the co-operation and agreement of stakeholders and interested persons.

It is clear that the proposed realignment of rules and responsibilities within KwaZulu-Natal should, as far as possible, be undertaken prior to the establishment of the CMA, failing which the CMA will not be in a position to meaningfully or adequately perform its initial functions.

#### 3.3.2 How does a CMA exercise powers that are initially vested in the Water Minister?

After consultation with the CMA concerned, and after considering whether or not the CMA has the requisite capacity and whether assignment is desirable, the Water Minister may assign to that CMA, by publication in the *Government Gazette*, a power or duty of a responsible authority,<sup>68</sup> or any power listed in Schedule 3 of the NWA.<sup>69</sup>

The assignment may be limited to a certain geographical area and may be subject to whatever conditions the Water Minister attaches to it.

#### 3.3.3 What specific powers may a CMA exercise?

As was stated in the previous section, a CMA may exercise any power or perform any duty delegated to it by the Water Minister, subject to the Water Minister complying with certain formalities (such as publishing the relevant delegation). Certain powers have, however, been identified as those that a CMA should perform, once it has the necessary capacity and once all other statutory requirements have been fulfilled. These are listed in Schedule 3 to the NWA. They include the following:

- general powers relating to management, monitoring, conservation and protection of water resources and implementation of catchment management strategies;<sup>70</sup>
- the power to make rules to regulate water use, which rules must be published in the *Government Gazette* and which are binding on water users;<sup>71</sup>
- the power to require water users to establish management systems regarding the monitoring of water use;<sup>72</sup>

<sup>68</sup> Which is defined to mean a CMA, if the power or duty in question has been assigned by the Minister to a CMA, or the Minister, if the power or duty has not been so assigned. In this instance, it would clearly mean the Minister.

<sup>69</sup> Section 73(1) read with 73(3).

<sup>70</sup> Section 2 of Schedule 3.

<sup>71</sup> Section 3 of Schedule 3.

<sup>72</sup> Section 4 of Schedule 3.

- the power to require persons that own or are in control of a waterworks to make alterations to such a waterworks if it is not constructed, maintained or operated in accordance with the provisions of the NWA;<sup>73</sup> and
- the power to temporarily control, limit or prohibit the use of water during periods of water shortage.<sup>74</sup>

A CMA is also a "responsible authority" in relation to certain specific powers and duties under the Act, where such powers or duties have been assigned to it by the Water Minister.<sup>75</sup> Examples of powers and duties that vest in the responsible authority, which may or may not include a CMA, include the following:

- the power to dispense with the requirement for a licence for water use in certain circumstances;<sup>76</sup>
- the power to promote, in the interests of co-operative governance, arrangements with other organs of State to combine their respective licence requirements into a single licence requirement;<sup>77</sup>
- the power to authorise the use of water before a national water resource strategy has been established, a catchment management strategy in respect of the water resource in question has been established, a classification system for water resources has been established, the class and resource quality objectives for the water resource in question have been determined, or the Reserve for the water resource in question has been finally determined;<sup>78</sup>
- the power to issue a general authorisation, as well as water use licences;<sup>79</sup>
- the power to declare a water use an existing lawful water use,<sup>80</sup> and
- the power to review, amend, suspend or withdraw water licences.<sup>81</sup>

Another important role that CMAs play is in relation to pollution control and the conservation and protection of water resources. In this regard, in addition to the powers relating to licences which are outlined above, CMAs are vested with certain enforcement and rehabilitation powers relevant to pollution control and dealing with emergency incidents.<sup>82</sup>

<sup>73</sup> Section 5 of Schedule 3.

<sup>74</sup> Section 6 of Schedule 3.

<sup>75</sup> Section 1.

<sup>76</sup> Section 22(3).

<sup>77</sup> Section 22(4).

<sup>78</sup> Section 22(5).

<sup>79</sup> Section 27, section 40.

<sup>80</sup> Section 33.

<sup>81</sup> Section 49, section 54.

<sup>82</sup> Section 19 and 20.

A CMA may perform any of its functions outside its water management area, provided that it does not detrimentally affect another water management institution or have the effect of limiting its ability to perform its functions in its own water management area.<sup>83</sup> As discussed in part 2.2.3 of this legal review, the CMA must also be mindful of the constitutional principles of co-operative governance in this regard.

### 3.3.4 What other factors affect the exercise of powers by the CMA?

The general principles which a CMA must apply in performing its functions include the following:

- mindfulness of the need to redress historical racial and gender discrimination and to achieve equitable access to the water resources under its control;
- striving towards achieving co-operation and consensus in managing the water resources under its control; and
- acting prudently in relation to financial matters.<sup>84</sup>

The principles outlined in relation to co-operative governance (see part 2.2.3 of this review), the purpose provisions of the NWA (see part 2.3.1), and the NEMA principles (see part 2.3.2) must always be borne in mind by decision-makers within the CMA. Any decision must also be consistent with the basic tenets of administrative law, as developed under our common law and now codified in the Promotion of Administrative Justice Act ("PAJA").<sup>85</sup> These include, among others, the decision-maker's duty to properly apply his or her mind (in terms of the substance of the decision), and not to act unreasonably or unfairly.

Any decision made by a CMA in the course of exercising or performing a statutory power or duty is an administrative action in terms of PAJA if the decision adversely affects the rights of any person and has a direct, external legal effect.<sup>86</sup> Any administrative action which materially and adversely affects the rights or legitimate expectation of any person must be procedurally fair.<sup>87</sup> Although the Act recognises that what is procedurally fair depends on the circumstances of each case, the Act prescribes that, as a minimum, procedurally fair administrative action must include:

- adequate notice of the nature and purpose of the proposed administrative action;
- a reasonable opportunity to make representations;
- a clear statement of the administrative action;
- adequate notice of any right of review or internal appeal, where applicable; and

<sup>83</sup> Section 79(3).

<sup>84</sup> Section 79(4).

<sup>85</sup> 3 of 2000.

<sup>86</sup> Section 1 of PAJA.

<sup>87</sup> Section 3 of PAJA.



- adequate notice of the right to request reasons for the decision taken in terms of section 5 of PAJA.

### 3.3.5 To whom may a CMA delegate its powers?

Except for the power to delegate and the power to make water use charges, a CMA may delegate any of its powers to:

- a member of its governing board;
- an employee of any water management institution (including the CMA in question), by name, or to the holder of an office in that institution; or
- any committee established by the CMA which consists only of members of the governing board or employees of the CMA; or
- any other person or body, provided that the Water Minister has consented to such delegation.<sup>88</sup>

Any delegation under the NWA does not prevent the person who made the delegation from exercising the power or performing the function him- or herself. Furthermore, delegations may be made subject to whatever conditions or limitations the person making the delegation specifies.<sup>89</sup>

### 3.3.6 What are the Water Minister's powers in relation to the due performance of the functions of a CMA?

The Water Minister is empowered to issue directives to any water management institution, which includes a CMA, in relation to the exercise of a power by that institution.<sup>90</sup> Prior to publishing the directive in the *Government Gazette*,<sup>91</sup> the Water Minister must give the CMA fourteen days notice and an opportunity to comment on the directive. The CMA must comply with any such directive.<sup>92</sup> Non-compliance with a section 74 directive is not an offence under the Act,<sup>93</sup> however, it does trigger the Water Minister's intervention powers, described below.<sup>94</sup>

The Water Minister is empowered to direct a CMA<sup>95</sup> to take any action he or she specifies, or to withhold any financial assistance pending compliance, if a CMA:

<sup>88</sup> Section 86.

<sup>89</sup> Section 159.

<sup>90</sup> Section 74.

<sup>91</sup> Failure to so publish the directive, or a summary of it, will not render the directive invalid (section 74(4)).

<sup>92</sup> Section 74(5).

<sup>93</sup> In terms of section 151.

<sup>94</sup> Section 87(1)(c).

<sup>95</sup> The directive must state the nature of the deficiency, the steps that must be taken to remedy the situation, and a reasonable period within which those steps must be taken (section 87(2)).

- is in financial difficulties or is being otherwise mismanaged;
- has acted unfairly or in a discriminatory or inequitable way towards any person within its water management area;
- has failed to comply with any directive given by the Water Minister in terms of the NWA;
- has obstructed the Water Minister or any other water management institution in exercising a power or performing a duty in terms of the NWA;
- is unable to exercise its powers or perform its duties effectively due to dissension among the members of the board or water users within its water management area;
- has failed to comply with the NWA; or
- has become redundant or ineffective.<sup>96</sup>

If the CMA fails to remedy the situation within the period in question, the Water Minister (after giving the CMA a reasonable opportunity to be heard and affording the CMA a hearing in respect of any submissions received) may take over the relevant power or duty of the CMA, to the exclusion of the CMA which may not exercise any of its powers or perform any of its duties relating to the power or duty in question.<sup>97</sup>

Once the Water Minister is satisfied that the CMA is able once again to exercise its powers or perform its duties effectively, the power or duty reverts back to the CMA. The Water Minister is, however, entitled to recover any reasonable costs incurred.<sup>98</sup>

## 3.4 Disestablishment of a CMA

### 3.4.1 How is a CMA disestablished?

The Water Minister is empowered to disestablish a CMA by notice in the *Government Gazette* if it is desirable for the purposes of reorganising the water management institutions in the area, because the CMA doesn't operate effectively, or because there is no longer a need for a CMA.<sup>99</sup> Prior to exercising his powers in this regard, the Water Minister is required to publish his or her intention to do so in the *Gazette*, invite written comments on his or her proposal within a specified timeframe, and consider all comments received.

### 3.4.2 What happens to the assets and liabilities of a CMA after it is

<sup>96</sup> Section 87(1).

<sup>97</sup> Section 87(3) and 87(4)(b).

<sup>98</sup> Section 87(4)(d) and (e).

<sup>99</sup> Section 88.



### disestablished?

The Water Minister is empowered to direct the CMA to transfer all or some of its assets to another water management institution.<sup>100</sup> Before issuing such a directive, the Water Minister must consider the interests of creditors and the users of water within the CMA's jurisdiction, as well as any financial contributions made by such parties towards the CMA's infrastructure.

Where a CMA's assets and liabilities are not transferred to another water management institution, they vest in the Water Minister, who is responsible for the CMA's winding up.<sup>101</sup>

## 3.5 Financial matters

### 3.5.1 How are CMAs to be funded?

A CMA may be funded by the State, through water use charges, or through money obtained from any other lawful source,<sup>102</sup> which would presumably be obtained as a result of fund-raising activities undertaken by the CMA in terms of section 84(1).

### 3.5.2 What financial planning obligations are imposed on CMAs?

As discussed in part 3.2 of this review, CMAs are obliged to prepare business plans. The financial matters that must be included in the business plan, and the matters to be considered in setting financial targets, are set out in Schedule 3 to the NWA.<sup>103</sup> Certain record-keeping and accountability requirements are also set out in the Act.<sup>104</sup>

## 4. OTHER WATER MANAGEMENT INSTITUTIONS RELEVANT TO CATCHMENT MANAGEMENT

As discussed in this review, CMAs are the primary institution created under the NWA. They are also defined as "water management institutions" under the Act. Other institutions that fall within that definition include: water user associations ("WUAs"); bodies responsible for international water management; or any other person<sup>105</sup> who fulfils the function of a water management institution under the Act.<sup>106</sup> Because this review is limited to a consideration of institutional arrangements related to catchment

<sup>100</sup> Section 89.

<sup>101</sup> Section 89(4).

<sup>102</sup> Section 84(2).

<sup>103</sup> Section 23 and 24.

<sup>104</sup> Section 32 of Schedule 3.

<sup>105</sup> Defined to include a natural person, juristic person, association, unincorporated body, organ of State and the Minister in terms of section 1 of the NWA.

<sup>106</sup> Section 1.

management, as opposed to the provision of water services, the only institutions we will consider under the Water Services Act<sup>107</sup> are water boards, which, for the purposes of this review, will also be referred to as water management institutions. We will not consider in any detail the respective roles of water services providers<sup>108</sup> and water service committees.<sup>109</sup> The role of water service authorities (i.e. local authorities) is discussed in part 5.3 below.

Insofar as any person or group of persons proposing to establish a CMA is required to submit information regarding the use, development, management and control of existing water resources to the Water Minister (to enable him or her to reach a decision regarding the establishment of a CMA), an understanding of the roles of other water management institutions within the area in question is vital. Such an understanding is also necessary for a CMA to discharge its initial duty to co-ordinate the related activities of water users and of the water management institutions within the CMA's water management area.<sup>110</sup>

## 4.1 Structure and governance of water management institutions (excluding Water Boards)

All water management institutions as defined in the NWA (therefore excluding Water Boards), must be structured and managed in accordance with the provisions of Schedule 4 of the NWA, which, as described in part 3.2 above, sets out the requirements in relation to:

- board proceedings;
- institutional planning (business plans, financial matters and ministerial notification procedures);
- monitoring of activities, including the Water Minister's right to intervene;
- record-keeping and reporting requirements;
- the governing board (terms and conditions of appointment, and vacancies, resignations and removal from office); and
- board members (duties and disclosure of interest).

<sup>107</sup> 108 of 1997.

<sup>108</sup> Defined in section 1 of the Water Services Act to mean "any person who provides water services to consumers or to another water services institution, but does not include a water services intermediary". A "water services intermediary" is "any person who is obliged to provide water services to another in terms of a contract where the obligation to provide water services is incidental to the main object of that contract".

<sup>109</sup> Which are established by the Minister in terms of section 51 of the Water Services Act, and which provide water services to consumers within a particular service area in terms of chapter VII of the Act.

<sup>110</sup> In terms of section 80(c).

## 4.2 Water user associations (WUAs)

### 4.2.1 What is the purpose of a WUA?

According to the explanatory note to Chapter 8 of the NWA, the primary purpose of WUAs, unlike CMAs, is not water management. Instead WUAs operate at a restricted localised level, and are in effect "co-operative associations" of individual water users which wish to undertake water-related activities for their mutual benefit.

### 4.2.2 Who may be a member of a WUA?

The NWA does not specify who may be a member of a WUA, but presumably it is any water user within the water management area. A water user would presumably include any person who engages in one of the activities that define water use (listed in section 21 of the NWA).

The NWA envisages that irrigation boards, subterranean water control boards and water boards for stock watering purposes that existed at the commencement of the Act will be restructured as WUAs.<sup>111</sup>

### 4.2.3 How is a WUA established?

Like a CMA, a WUA may be established by the Water Minister on his or her own initiative or further to a proposal received from an interested person.<sup>112</sup> In the case of the latter, the proposal must include at least the following:

- a proposed name and area of operation for the WUA;
- the proposed activities of the WUA;
- a description of any existing or proposed waterwork within the proposed area of operation which is relevant to the proposed activities of the WUA;
- a description of the water use licences or any other authorisations which the proposed members hold or intend applying for;
- the proposed constitution of the WUA, together with an explanation for any provisions which differ from those of the model constitution contained in Schedule 5 of the NWA;
- a list of the proposed members or categories of members of the WUA; and
- an indication whether there has been consultation in developing the proposal, and the results of the consultation.

<sup>111</sup> Section 98.

<sup>112</sup> Sections 91 and 92.

There are certain public participation provisions which the Water Minister must fulfil before establishing a WUA.<sup>113</sup> These include:

- publishing a notice in the *Government Gazette* that sets out the basic information relating to the proposed WUA (rather than the proposal itself) and inviting comments on the proposal within a specified period, but not less than 60 days;
- considering what further steps need to be taken, if any, in relation to bringing the proposal to the attention of interested parties; and
- considering any comments received.

The Water Minister also has a discretionary power to request additional information further to a proposal submitted by stakeholders, and to instruct the Director-General to investigate any issue relating to the establishment of a WUA.<sup>114</sup>

### 4.2.4 What is the structure of a WUA?

A WUA is an association that is governed in terms of its constitution. A model constitution is set out in Schedule 5 to the NWA. The minimum requirements for any other constitution are set out in the Act.<sup>115</sup>

In addition, all WUAs must comply with the management and planning provisions for water management institutions set out in Schedule 4 of the NWA.

### 4.2.5 What powers and functions does a WUA have?

A WUA may only exercise water management powers and duties if such powers are delegated to it. Powers may, for example, be delegated to it by the CMA (as described in part 3.3.5 above) or the Director-General.<sup>116</sup> The other powers of a WUA will be circumscribed in its constitution, but must at least be consistent with the national water policy framework, particularly the national water resource strategy and catchment management strategy for the area in which the WUA is situated.

The nature of the functions that a WUA may perform is set out in the model constitution. They include the following:

- preventing water from any water resource being wasted;
- protecting water resources;
- preventing any unlawful water use;

<sup>113</sup> Section 92(3).

<sup>114</sup> Section 92(2).

<sup>115</sup> Section 93.

<sup>116</sup> Section 75(c).

- removing or arranging to remove any obstruction unlawfully placed in a watercourse;
- preventing any unlawful act likely to reduce the quality of water in any water resource;
- exercising general supervision over water resources;
- regulating the flow of any watercourse by clearing its channel, reducing the risk of damage to the land in the event of floods, and changing a watercourse back to its previous course where it has been altered through natural causes;
- investigating and recording the quantity of water at different levels of flow in a watercourse, the times when; and the places where water may be used by any person entitled to use water from a water resource;
- constructing, purchasing or otherwise acquiring, controlling, operating and maintaining waterworks considered to be necessary for draining land, and supplying water to land for irrigation or other purposes; and
- supervising and regulating the distribution and use of water from a water resource according to the relevant water use entitlements, by erecting and maintaining devices for measuring and dividing, or controlling the diversion of the flow of water.

#### 4.2.6 What powers may the Water Minister exercise over a WUA?

The Water Minister may exercise control over a WUA by issuing directives or by temporarily assuming its functions under certain circumstances. In relation to the first of these powers, the Water Minister is empowered to issue a directive, or alternatively withhold financial assistance, if a WUA:

- is in financial difficulties or is being otherwise mismanaged;
- has acted unfairly or has discriminated against any member of the WUA;
- has failed to admit persons to membership unfairly or on discriminatory grounds;
- has failed to comply with any directive given by the Water Minister under the NWA (such as one issued in terms of the Water Minister's general power to issue directives to water management institutions in terms of section 74);
- has obstructed the Water Minister or any other water management institution in exercising a power or performing a duty in terms of the NWA;
- is unable to exercise its powers or perform its duties effectively due to dissension among the management committee or its members;
- has failed to comply with its constitution or the NWA; or

- has become redundant or ineffective.<sup>117</sup>

The Water Minister may only exercise the second of the abovementioned powers if the WUA fails to remedy the situation within the given period pursuant to the directive, after having been afforded an opportunity to be heard.<sup>118</sup>

#### 4.2.7 How is a WUA disestablished?

The Water Minister may disestablish a WUA by publication of a notice in the *Government Gazette*:

- in circumstances provided for in the constitution of the particular WUA;
- if the functions of the WUA are, by agreement with another water management institution, to be combined with, or taken over by, that water management institution;
- if it is in the best interests of the WUA or its members;
- if an investigation of the WUA's affairs or financial position reveals that disestablishment is appropriate;
- if the Water Minister has taken over a power or duty of the WUA as a result of dissension among the management committee or its members; or
- if the WUA is no longer active or effective.

#### 4.3 International bodies

The Water Minister is empowered under the NWA to establish bodies to implement international agreements in respect of the management and development of water resources shared with neighbouring countries, and on regional co-operation over water resources.<sup>119</sup> The powers and duties of those bodies are determined by the Water Minister in accordance with the provisions of the relevant international agreement. The Water Minister may, however, also vest in such bodies any additional functions.<sup>120</sup>

#### 4.4 Water Boards

A Water Board is broadly defined as an organ of State established or regarded as having been established in terms of the Water Services Act to perform, as its primary activity, a public function. Chapter VI of the Water Services Act is devoted to their establishment, powers and functions, management and disestablishment.

<sup>117</sup> Section 95.

<sup>118</sup> Section 95(5).

<sup>119</sup> Section 102.

<sup>120</sup> Section 103(2).



### 1.1.1 What is the purpose of a Water Board?

The primary function of a Water Board is to provide water supply and sanitation services to other water services institutions in its service area. A Water Board is also, however, empowered to provide catchment management services to or on behalf of the "responsible authorities".<sup>121</sup>

### 1.1.2 Water powers and obligations does a Water Board have?

Water Boards are vested with certain statutory powers that are relevant to catchment management. In this regard, they are required:

- to provide management services, training and other support services to water services institutions;
- to supply untreated or non-potable water to end users who do not use the water for household purposes;
- to provide catchment management services to or on behalf of the responsible authorities;
- in certain circumstances, to accept industrial effluent, and act as a water services provider to consumers; and
- to perform water conservation functions.<sup>122</sup>

## 5. ORGANS OF STATE WHOSE ACTIVITIES IMPACT ON CATCHMENT MANAGEMENT

South Africa's current water regulatory regime attempts to manage anthropocentric impacts on water resources, as well as protect the ecological integrity of the hydrological cycle. Because human impacts are varied and diverse, and because integrated protection of the hydrological cycle is necessarily cross-sectoral, there are a variety of organs of State and other public and private institutions whose activities, and the exercise of whose powers and performance of whose functions, have an impact on catchment management. We shall discuss each in turn.

### 5.1 National sphere of government

#### 5.1.1 DWAF

In addition to powers and duties under the National Water Act, the Water Minister and

<sup>121</sup> Section 30(2)(c). The term is undefined, but could presumably include CMAs.

<sup>122</sup> Section 31.

certain officials within DWAF, such as the Director-General, are vested with powers and duties impacting on catchment management under the Water Services Act, the National Forests Act<sup>123</sup> and the Environment Conservation Act.<sup>124</sup>

Because it is likely that the Water Minister will delegate some or most of his or her administrative powers and duties to officials within DWAF under these three Acts, the role of DWAF's regional and local offices is likely to be particularly prominent in relation to catchment management. Further investigation of precisely which of the Water Minister's powers and duties are performed by which of DWAF's offices in KwaZulu-Natal will be necessary in this regard.<sup>125</sup>

#### 5.1.1.1 Institutional arrangements under the NWA

As explained in this review, DWAF is the primary implementing agency for the NWA, hence its role in relation to catchment management is critical, even more so because the powers and duties of CMAs vest in the Water Minister until such time as the CMAs in question have the capacity and resources to assume those powers and duties themselves.<sup>126</sup>

As a starting point, it should be borne in mind that the Water Minister effectively acts as an agent for the public trustee of the nation's water resources, namely the national government, in relation to discharging the duties to protect, use, develop, conserve, manage, and control those resources in a sustainable and equitable manner for the benefit of all persons.<sup>127</sup>

The Water Minister is also responsible for ensuring that water is allocated equitably and used beneficially in the public interest. In this regard, the Water Minister has the power to regulate the use, flow and control of all water in the Republic. While *de facto* management of water resources and administration of the Act are intended to devolve to the regionally-based CMAs, the Water Minister's primary obligations will remain unaffected. It is for this reason also that the Water Minister is empowered to intervene and assume certain roles and functions performed by CMAs, where appropriate.<sup>128</sup>

The Water Minister and Director-General's general powers and duties, most of which may be assigned to CMAs or delegated to CMAs and other water management institutions, are set out in Chapter 6 of the NWA.<sup>129</sup>

<sup>123</sup> 84 of 1998.

<sup>124</sup> 73 of 1989.

<sup>125</sup> In relation to the NWA, DWAF has published a document dated 11 June 1999 entitled "Delegations of Powers and Duties in terms of the National Water Act, 1998". It is available on the DWAF website (URL: [www.dwaf.gov.za/Documents/Notices/DELEGATIONS\\_NWA.html](http://www.dwaf.gov.za/Documents/Notices/DELEGATIONS_NWA.html))

<sup>126</sup> Section 72 of the NWA.

<sup>127</sup> Section 3 of the NWA.

<sup>128</sup> See section 87, for example.

<sup>129</sup> Sections 63 to 76.



### 5.1.1.2 Institutions under the Water Services Act

Under the Water Services Act, the Water Minister is vested with the following relevant powers and duties (most of which the Water Minister is empowered to delegate to officials within DWAF<sup>130</sup>):

- the power to set standards in relation to, among other things, the effective and sustainable use of water resources for water services;<sup>131</sup>
- the power to establish various institutions under that Act, including water boards and water services committees;
- the duty, with the relevant province concerned, to monitor the performance of every water services institution<sup>132</sup> to ensure compliance;<sup>133</sup>
- the power to intervene in certain prescribed circumstances;<sup>134</sup> and
- various general powers listed in the Water Services Act,<sup>135</sup> such as the power to issue guidelines to water services institutions on performing their functions under the Act and prescribing measures to be taken by water services institutions to conserve water.

### 5.1.1.3 Institutional arrangements under the National Forests Act

The preamble to the National Forests Act recognises that "plantation forests have an impact on the environment and need to be managed appropriately". The most significant of these impacts in relation to catchment management is the depletion of water resources, because of the quantity of water abstracted by trees in these plantations. It is for this reason that commercial afforestation is, to date, the only identified stream-flow reduction activity under the NWA.<sup>136</sup>

The Act sets out various principles which must be applied by decision-makers when, among other things, issuing a water use licence or general authorisation relating to the use of water for afforestation or forestry in terms of the NWA.<sup>137</sup> Because they may be empowered to issue licences and general authorisations,<sup>138</sup> CMAs will be required to apply these principles when exercising such powers. The principles include that forests

<sup>130</sup> In terms of section 74.

<sup>131</sup> Section 9(1)(c).

<sup>132</sup> Defined to mean a water services authority, a water services provider, a water board and a water services committee.

<sup>133</sup> Section 62.

<sup>134</sup> Section 63.

<sup>135</sup> Section 73.

<sup>136</sup> Section 36(1)(a). Section 36(1)(b) allows the Water Minister to declare any other activity as a stream flow reduction activity. He has not yet exercised this power.

<sup>137</sup> Section 3(1)(d).

<sup>138</sup> Sections 40 and 27 respectively.

must be developed and managed so as to:

- conserve natural resources, especially soil and water;
- conserve biological diversity, ecosystems and habitats;
- sustain the potential yield of their economic, social and environmental benefits;
- promote the fair distribution of their economic, social, health and environmental benefits;
- promote their health and vitality; and
- advance persons or categories of persons disadvantaged by unfair discrimination.<sup>139</sup>

The Water Minister is obliged to develop and implement appropriate policy for forests and their management.<sup>140</sup> In light of the impact of forests on water resources, forestry officials should consult with catchment management officials in the development of such policy.

The Water Minister is empowered to assign most of his or her powers under the Act to the relevant provinces or any other organ of State.<sup>141</sup> Similarly, the Water Minister is empowered to delegate most of his or her powers to officials within DWAF, or other organs of State.<sup>142</sup>

### 5.1.1.4 Institutional arrangements under the Environment Conservation Act

DWAF is responsible for administering the waste management provisions<sup>143</sup> of the Environment Conservation Act. The regulation of waste landfill sites is of particular relevance to catchment management because of the high risk of groundwater contamination.

The Water Minister is also empowered to issue directions concerning stipulated aspects around the management and control of waste disposal sites. The Water Minister has exercised this power in relation to small and communal waste disposal sites.<sup>144</sup> DWAF has also published non-binding "minimum requirements" in relation to waste disposal by landfill, monitoring at waste management facilities, and the handling and disposal of hazardous waste.<sup>145</sup>

<sup>139</sup> Section 3(3)(c).

<sup>140</sup> Section 46.

<sup>141</sup> Section 47(1)(a)(i).

<sup>142</sup> Section 48(1).

<sup>143</sup> Section 20.

<sup>144</sup> GN 91 in *Government Gazette* 23053 of 1 February 2002 (by virtue of the power granted to the Water Minister under section 20(5)(b) of the ECA).

<sup>145</sup> Second edition dated 1998, and contained in a 3 volume set of documents. A fourth volume is proposed.

### 1.1.2.1 The Working for Water Programme

The Working for Water programme, established in 1995, is a multi-departmental initiative led by DWAF. The programme aims to enhance water security, improve ecological integrity, restore the productive potential of land and promote sustainable use of natural resources and invest in the most marginalised sectors of South African society.<sup>146</sup> It accordingly has an important impact on the maintenance and/or improvement of the quality and quantity of water resources in catchment areas.

The programme is operated within the parameters of existing legislation including the NWA, NEMA and the Conservation of Agricultural Resources Act,<sup>147</sup> among others.

## 5.1.2 The Department of Environmental Affairs and Tourism

The Department of Environmental Affairs and Tourism ("DEAT") administers a number of Acts which impact on catchment management.<sup>148</sup>

### 5.1.2.1 Institutional arrangements under NEMA

NEMA contains a duty of care provision which is relevant to catchment management. It requires every person who causes, has caused or may cause significant pollution or degradation of the environment to take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.<sup>149</sup>

Both DEAT's Director-General and the provincial head of department responsible for the environment are empowered to enforce the provision. The primary enforcement tool in this regard is a compliance notice procedure.

### 5.1.2.2 Institutional arrangements under the World Heritage Convention Act

The World Heritage Convention Act<sup>150</sup> ("the Convention Act") was enacted in accordance with South Africa's obligations under the 1972 United Nations World Heritage Convention, which South Africa acceded to in 1997. A number of world heritage sites have since been declared, including KwaZulu-Natal's Greater St Lucia Wetland, and the uKhahlamba/ Drakensberg Park. The former is comprised of a number of important estuarine and wetland ecosystems in the coastal zone of northern KwaZulu-Natal, and

<sup>146</sup> Working for Water: Mission Statement (see <http://www.dwaf.gov.za/wfw>).

<sup>147</sup> 43 of 1983.

<sup>148</sup> One of the relevant Acts that DEAT administers is the National Parks Act, 1976. However, as there are no national parks in KwaZulu-Natal, we will not consider the provisions of this legislation. The National Parks Act will be repealed by the National Environmental Management: Protected Areas Bill, when it is promulgated.

<sup>149</sup> Section 28(1).

<sup>150</sup> 49 of 1999.

the latter is a mountain habitat which, among other ecological functions, performs an important catchment-related function.

The Convention Act is largely a principle-based piece of framework legislation. The substance of the Act can be divided into four parts: the first sets out the objectives of the Act and the principles which apply to the actions of all organs of State and institutions created under the Act in relation to world heritage sites; the second part creates a number of implementing institutions; the third part is focused on the development of integrated management plans; and the fourth part relates to administration.

The principles set out in the Convention Act reflect, to a large extent, the NEMA principles. There are sixteen principles in total in the former statute. Those that are particularly relevant to catchment management are listed below:

- participation by vulnerable and historically disadvantaged persons in South Africa must be ensured;<sup>151</sup>
- the social, economic, cultural and natural heritage consequences of activities, including disadvantages and benefits, must be considered;<sup>152</sup>
- there must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the cultural and natural heritage;<sup>153</sup>
- policy, administrative practice and legislation and the interpretation of existing legislation relating to the cultural and natural heritage must promote the integration of these resources in provincial, urban and rural planning and social and economic development;<sup>154</sup> and
- co-operative governance is a requirement.<sup>155</sup>

The Minister of Environmental Affairs and Tourism is responsible for the enforcement and implementation of the Act.<sup>156</sup> However, *de facto* management of world heritage sites is undertaken by Authorities appointed under the Act. The Minister is empowered either to appoint an existing organ of State that is already lawfully managing or involved in a World Heritage Site as an Authority,<sup>157</sup> or alternatively establish a new Authority.<sup>158</sup> In relation to the Greater St Lucia Wetland Park, an Authority has been established by Minister.<sup>159</sup> The Authority is described in more detail in part 5.4 of this review. In relation to the more recently declared uKhahlamba/ Drakensberg Park, on the other hand, no

<sup>151</sup> Section 4(1)(f).

<sup>152</sup> Section 4(1)(i).

<sup>153</sup> Section 4(1)(k).

<sup>154</sup> Section 4(1)(m).

<sup>155</sup> Section 4(1)(f).

<sup>156</sup> Section 5.

<sup>157</sup> Section 8.

<sup>158</sup> Section 9.

<sup>159</sup> GN R4477 dated 24 November 2000.

authority, to our knowledge, has yet been appointed.<sup>160</sup>

The Minister is empowered to "give" certain powers and duties to Authorities (it is not clear whether this is a power to delegate or assign).<sup>161</sup> The powers, which reflect the objectives of the Convention, are fairly extensive. In relation to the Greater St Lucia Wetland Park (which is situated in an economically depressed part of the country), regulations have also been promulgated. These set out the powers, duties and functions of relevant stakeholders in relation to that Park.<sup>162</sup>

### 5.1.2.3 Proposed legislation

We wish to draw to the Commission's attention that drafts of the proposed National Environmental Management: Coastal Management Bill,<sup>163</sup> the National Environmental Management: Biodiversity Bill and the National Environmental Management: Protected Areas Bill<sup>164</sup> are currently circulating within government. All three bills will, if promulgated in their present forms, be administered by DEAT. They promote an integrated approach to environmental management, and accordingly will impact on integrated catchment management.

## 5.1.3 Department of Land Affairs

Land use has a very significant impact on catchment management. However, land use is for the most part regulated at the provincial or local levels of government, hence the role of the national Department of Land Affairs ("DLA") is fairly restricted. That being said, the DLA is responsible for the implementation of three relevant Acts.

### 5.1.3.1 Development Facilitation Act

The Development Facilitation Act<sup>165</sup> is a framework statute that lays down the general principles that govern land development throughout South Africa. The principles include that policy, administrative practice and laws should promote efficient and integrated land development in that they should, among other things:

- promote the integration of the social, economic, institutional and physical aspects of land development;
- promote integrated land development in rural and urban areas in support of each other;

<sup>160</sup> Our understanding is that the KwaZulu-Natal Nature Conservation Board, described in more detail in part 1.1.4, manages the area at present.

<sup>161</sup> Section 13.

<sup>162</sup> GN R1193 dated 24 November 2000.

<sup>163</sup> Which will *inter alia* repeal the Sea Shore Act, 21 of 1935.

<sup>164</sup> Which will repeal the National Parks Act 57 of 1976.

<sup>165</sup> 67 of 1995.

- optimise the use of existing resources including resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;
- promote a diverse combination of land uses, right down to the level of individual erven or subdivisions of land;
- contribute to the correction of the historically distorted spatial patterns of human settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs; and
- encourage environmentally sustainable land development practices and processes.<sup>166</sup>

A further relevant principle is that competent authorities at national, provincial and local government level should co-ordinate the interests of the various sectors involved in or affected by land development so as to minimise conflicting demands on scarce resources.<sup>167</sup> This principle should be borne in mind in relation to institutional alignment of roles and functions in KwaZulu-Natal.

### 5.1.3.2 The Physical Planning Act

The Physical Planning Act<sup>168</sup> was enacted to promote the orderly physical development of the Republic, and for that purpose divided the country into regions, and provided for the preparation of national development plans, regional development plans, regional structure plans and urban structure plans by the various authorities responsible for physical planning. The Act is particularly relevant because it imposes an obligation on the Minister of Land Affairs to ensure that physical planning is promoted and co-ordinated on a national and regional basis.<sup>169</sup>

### 5.1.3.3 Communal Property Associations Act

The Communal Property Associations Act<sup>170</sup> was enacted to enable disadvantaged communities to form juristic persons, known as communal property associations, in order to acquire, hold and manage property on a basis agreed to by members of a community in terms of a written constitution. The associations are also used as a vehicle for effecting land redistribution. The Act is relevant in so far as some of the land which has an integral water catchment function may be owned by such an association.

### 5.1.3.4 Proposed legislation

A Land Use Bill is currently being drafted by the DLA. It will repeal the Development

<sup>166</sup> Section 3(1).

<sup>167</sup> Section 3(1)(l).

<sup>168</sup> 125 of 1991.

<sup>169</sup> Section 2(2).

<sup>170</sup> 28 of 1996.



Facilitation Act and the Physical Planning Act, referred to in parts 5.1.3.1 and 5.1.3.2 above respectively. The draft bill<sup>171</sup> is principle based,<sup>172</sup> and contains chapters dealing with (national, provincial and municipal) spatial planning frameworks, land use schemes, land use regulation and municipal land use regulation. The draft bill also proposes to establish Land Use Tribunals in each province to consider all land use applications.

#### 5.1.4 National Department of Agriculture

The Department of Agriculture is responsible for administering two Acts which, in our view, impact on catchment management in KwaZulu-Natal. Alien invasive vegetation is regulated under one of these Acts.<sup>173</sup> In this regard, it is important to bear in mind that DWAF's pilot community empowerment project, Working for Water, discussed in part 1.1.2.1 above, is primarily focussed on the removal of alien invasive vegetation because of the adverse impact such vegetation has on the nation's water resources. It is therefore important that the role of the Department of Agriculture, as well as that of Working for Water, is considered.

##### 5.1.4.1 Institutional arrangements under the Conservation of Agricultural Resources Act

The Conservation of Agricultural Resources Act ("CARA") is the primary statute dealing with agricultural resources. It is intended to promote conservation of soil, water resources and vegetation, as well as combat weeds and alien invasive plants. The Act does not apply to any land under the control of a local authority,<sup>174</sup> or to any land declared as a mountain catchment area under the Mountain Catchment Areas Act<sup>175</sup> (which is discussed in part 5.2.2.2 below).

The most far-reaching power granted to the Minister of Agriculture under the Act in relation to catchment management is the power to prescribe control measures with which all land users must comply. These measures may relate to, among others:

- the cultivation of virgin soil;
- the utilization and protection of cultivated land;
- the irrigation of land;
- the prevention or control of waterlogging or salination of land;
- the utilization and protection of vleis, marshes, water sponges, water courses and water sources;

<sup>171</sup> Dated 6 April 2002.

<sup>172</sup> And includes the principle of environmental sustainability.

<sup>173</sup> Namely, the Conservation of Agricultural Resources Act.

<sup>174</sup> The alien invasive regulations do however apply in urban areas.

<sup>175</sup> 63 of 1970.

- the regulation of the flow pattern of run-off water;
- the utilization and protection of vegetation;
- the grazing capacity of veld, expressed as an area of veld per large stock unit;
- the prevention and control of veld fires;
- the utilization and protection of veld which has burned;
- the control of weeds and invader plants;
- the restoration or reclamation of eroded land or land which is otherwise disturbed or denuded; and
- the protection of water sources against pollution on account of farming practices.<sup>176</sup>

The Minister has exercised this power in a number of instances, and has published control measures in relation to, among other things: prevention of waterlogging and salination of irrigated land, utilisation of vleis, marshes, water sponges and water courses, regulating the flow pattern of water, and the restoration and reclamation of eroded, disturbed or denuded land.<sup>177</sup>

The specific regulations dealing with weeds and invader plants were substantially amended in March 2001.<sup>178</sup> The amended regulations create a duty on land users (being land owners and others such as tenants and share croppers) to control invasive alien plants occurring on the land under their control. Due to the deleterious impact that such flora has on water resources, CMAs will be required to consider and take account of management of alien invasive species by the Department of Agriculture.

The weeds and exotic species listed in the recent CARA Regulations are divided into three categories:

**Category 1** are species that may not occur on any land or inland water surface and must be controlled by the land user using one of the prescribed methods of control. To "control" means to combat plants by means of the prescribed methods to the extent necessary to prevent or to contain the establishment, growth, or spread of those plants.

**Category 2** are generally species that have been introduced into the country for commercial cultivation (such as certain acacia and eucalyptus species) and may now only be grown in an area demarcated for that purpose. Application for demarcation must be submitted to the Department of Agriculture. The application will only be granted if:

- the plants are cultivated under controlled circumstances;
- the land user has been authorised to use water in terms of the NWA;

<sup>176</sup> Section 6(2).

<sup>177</sup> R1048 dated 25 May 1984.

<sup>178</sup> In terms of GN R280 dated 30 March 2001.



- the plants or products of the plants are demonstrated to serve a commercial purpose or other beneficial functions; and
- all reasonable steps are taken to curtail the spreading of the plants outside the demarcated areas.

Unless authorised by the NWA, no land user may allow Category 2 plants to occur within 30 metres of the 1:50 year flood line of a river, stream, lake, dam or wetland. There is provision for exemption from compliance with certain of the requirements on application.<sup>179</sup>

**Category 3** consists of species that have been introduced into the country for use in domestic gardens (such as jacaranda and syringa). Existing plants of these species may continue to grow but any new seedlings must be destroyed.

#### 5.1.4.2 Institutional arrangements under the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act

The Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act<sup>180</sup> is the cornerstone of South Africa's pesticide regulatory regime. Pesticides are possibly the primary cause of groundwater pollution in agricultural rural areas in South Africa. While this Act does not have any general duty of care or pollution prevention provisions,<sup>181</sup> it does regulate the importation, sale, acquisition, disposal and use of fertilizers, farm feeds, agricultural remedies and stock remedies by means of a registration and permitting procedure.<sup>182</sup>

Although most of the administration of the Act is undertaken by a Registrar appointed by the Minister of Agriculture, the Minister retains important regulation-making powers, as well as powers relating to the prohibition or restriction of certain substances.<sup>183</sup>

#### 5.1.4.3 Proposed legislation

The Sustainable Utilisation of Agricultural Resources Bill is currently being drafted.<sup>184</sup> The long title of the draft currently circulating internally<sup>185</sup> is "to regulate the sustainable utilisation of natural agricultural resources and the utilisation of prime and unique agricultural land, and for that purpose to provide for the designation and functions of an executive officer, the establishment of land care committees, the prescribing of standards and control measures and the establishment of schemes and trusts; to provide for control over the spreading of weeds and invader plants; and to provide for

<sup>179</sup> Cite authority for this statement.

<sup>180</sup> 36 of 1947.

<sup>181</sup> One would look to section 19 of the NWA in this regard.

<sup>182</sup> All of these terms are defined in the Act (section 1).

<sup>183</sup> Section 7bis.

<sup>184</sup> At the Department of Agriculture's instruction.

<sup>185</sup> Draft 7 dated 28 April 2002.

incidental matters". The draft legislation will repeal the Conservation of Agricultural Resources Act, referred to in part 5.1.4.1 above, on promulgation.

### 5.1.5 Department of Minerals and Energy

The Department of Minerals and Energy ("DME") is responsible for the administration and enforcement of mining and energy-related legislation. Three Acts in particular are relevant to catchment management.

#### 5.1.5.1 Institutional arrangements under the Minerals Act

Mining activities can have a serious impact on water resources, including disturbance of drainage patterns (often resulting in waterlogging and soil erosion), and contamination of surface and groundwater systems through run-off from mine residue dumps or tailings dams. Water pollution in the mining context is in fact primarily regulated under the NWA, not the Minerals Act,<sup>186</sup> in terms of the Regulations on Use of Water for Mining and Related Activities Aimed at the Protection of Water Resources<sup>187</sup> promulgated under the NWA. Those regulations, which acknowledge the respective roles of DWAF, DEAT and DME in regulating pollution from mining activities, are administered by DWAF. Nonetheless, DME retains its status as lead agent in relation to all mining-related activities and, in practice, often tends to wield its political power in this regard.

#### 5.1.5.2 Institutional arrangements under the Nuclear Energy Act

DME is also the lead agent in relation to certain energy-related legislation which may impact on catchment management. The Nuclear Energy Act<sup>188</sup> is relevant in that it empowers the Minister of Minerals and Energy to make regulations for the management, storage and discharging of radioactive waste and irradiated nuclear fuel. The Minister has not properly or adequately exercised this power yet, however.

#### 5.1.5.3 Institutional arrangements under the Electricity Act

The generation and supply of electricity are both activities that have significant impacts on catchment management. The Electricity Act,<sup>189</sup> which does not pay much regard to environmental considerations, is administered largely by Eskom (a parastatal which is discussed in more detail in part 5.4 of this review) and a statutory body created under the Act, namely the National Electricity Regulator. Nonetheless, DME plays a role in its administration in that the Minister has important regulation-making powers,<sup>190</sup> as well as other subsidiary or related powers.

<sup>186</sup> 50 of 1991.

<sup>187</sup> N704 dated 4 June 1999.

<sup>188</sup> 46 of 1999.

<sup>189</sup> 41 of 1987.

<sup>190</sup> Section 28.

## 5.1.6 Department of Health

The role of the Department of Health is relevant because it is the organ of State primarily responsible for implementing two Acts that may impact on catchment management.

### 5.1.6.1 Health Act

The Health Act<sup>191</sup> obliges the Department of Health to take steps for the promotion of a safe and healthy environment. As regards water pollution, it obliges every local authority to take necessary and reasonably practical measures to prevent the pollution of water intended for the use of the inhabitants of the area under its jurisdiction.<sup>192</sup> It is therefore anthropocentric, rather than ecological, in focus.

### 5.1.6.2 Hazardous Substances Act

The Hazardous Substances Act<sup>193</sup> is indirectly relevant to water pollution, and accordingly to catchment management, in that it regulates the manufacture, use and disposal of hazardous substances. Water pollution caused by such substances is, however, regulated primarily by the NWA.

## 5.2 Provincial sphere of government

KwaZulu-Natal Province is competent to legislate in relation to the functional areas listed in Schedules 4 and 5 of the Constitution. It is also competent to administer the national Acts that have been assigned to it, such as the Sea Shore Act<sup>194</sup> and the Mountain Catchment Areas Act,<sup>195</sup> or delegated to it. The Departments of Traditional and Local Government Affairs ("DTLGA") and Agriculture and Environment Affairs ("DAEA") are likely to be the most significant provincial departments in relation to catchment management.<sup>196</sup>

### 5.2.1 Department of Traditional and Local Government Affairs

The DTLGA is responsible for administering land use and planning legislation in KwaZulu-Natal. As has already been stated, the impact of land use on catchment management is often considerable.

<sup>191</sup> 63 of 1977.

<sup>192</sup> Section 20(1)(c).

<sup>193</sup> 15 of 1973.

<sup>194</sup> 21 of 1935.

<sup>195</sup> 63 of 1970.

<sup>196</sup> Due to the repeated changes in provincial governmental responsibilities, our Mr Smith will clarify whether indeed each of the departments identified below administers each of the pieces of legislation that have been grouped under it at the upcoming workshops/ consultations.

### 5.2.1.1 Natal Town Planning Ordinance

The Natal Town Planning Ordinance<sup>197</sup> regulates the establishment of private townships, the sub-division and lay-out of land for building purposes or urban settlement and the preparation and camping out of town planning schemes. The Commission is established in terms of section 2 of the Ordinance. The Ordinance, which was promulgated in 1949 and accordingly takes little account of environmental or socio-economic considerations, has been repealed by the KwaZulu-Natal Planning and Development Act.<sup>198</sup> However, because the latter provincial Act has not yet commenced, town planning continues to be governed in the province by repealed legislation.

### 5.2.1.2 KwaZulu-Natal Planning and Development Act

KwaZulu-Natal was the first of the provinces to promulgate its own planning law in accordance with the provisions of the Development Facilitation Act. The KwaZulu-Natal Planning and Development Act<sup>199</sup> has not, however, commenced yet. Nonetheless, in light of the fact that it has already been promulgated, its provisions should be borne in mind in relation to catchment management forward-planning. Unlike the Ordinances that currently regulate land use planning, the proposed Act provides for various environmental considerations, including the application of the following planning principles in decision-making:

- procedures for the adequate assessment of the impacts of proposed policies and land uses on the environment must be integrated into the approval and development processes in such a way that they are economic, as expeditious as circumstances permit and are effected at the earliest stage; and
- an environmental ethic of sustainable use must be promoted through policy measures, financial provisions, guidelines and policy plans, thereby contributing to the creation and maintenance of an environment which promotes the health and well-being of the inhabitants.<sup>200</sup>

The MEC is also given various powers in relation to environmental management, including powers relating to environmental impact assessment and the prescription of measures in relation to declared special areas or features.<sup>201</sup> The exercise of such powers could have a direct effect on catchment management.

### 5.2.2 Department of Agriculture and Environmental Affairs

The DAEA is responsible for administering both national legislation that has been assigned or delegated to it, and certain provincial Acts that impact on catchment

<sup>197</sup> 27 of 1949.

<sup>198</sup> 5 of 1998.

<sup>199</sup> 5 of 1998.

<sup>200</sup> Principles 12 and 14 of Schedule 1.

<sup>201</sup> Section 31.

management. We shall review the provisions of the national legislation that has been assigned to it before examining the provincial legislation.

### 5.2.2.1 Environmental Impact Assessment Regulations

The DAEA is responsible for the administration and implementation of the environmental impact assessment ("EIA") regulations<sup>202</sup> promulgated under the Environment Conservation Act.<sup>203</sup> Authorisation or an exemption from the obligation to obtain authorisation is required from the DAEA in terms of section 22 of the Act prior to the undertaking of any activity that has been identified by the Minister of Environmental Affairs and Tourism as having a substantial detrimental effect on the environment in terms of section 21 of the Act. The following activities, among others, have been identified as such:

- the construction, erection or upgrading of:
  - (i) marinas, harbours and associated structures on inland waters;
  - (ii) canals and channels, including structures causing disturbances to the flow of water in a river bed, and water transfer schemes between water catchments and impoundments;
  - (iii) dams, levees and weirs affecting the flow of a river;
  - (iv) reservoirs for public water supply; and
  - (v) schemes for the abstraction or utilisation of ground or surface water for bulk supply purposes;
- the reclamation of land, including wetlands, in inland waters;
- the disposal of waste as defined in section 20 of the Environment Conservation Act, excluding domestic waste, but including the establishment, expansion, upgrading or closure of facilities for all waste, ashes and building rubble; and
- the cultivation or any other use of virgin ground.

In making its decision on whether or not to authorise or exempt the undertaking, the DAEA is likely to consider the impact of such an activity on water resources.

### 5.2.2.2 Mountain Catchment Areas Act

Mountain catchment areas are particularly important in relation to catchment management because they yield 50% of the nation's water resources, notwithstanding

<sup>202</sup> GNR 1182 and 1183 of 5 September 1997.

<sup>203</sup> In terms of GN R1184 of 5 September 1997.

that they comprise only 10% of the total area of the country.<sup>204</sup> Proper management of them will also impact positively on water quality. The purpose of the Mountain Catchment Areas Act<sup>205</sup> is therefore to provide for the conservation, use, management and control of land situated in mountain catchment areas.

The Act grants broad powers to the Water Minister to make directions in relation to:

- the conservation, use, management and control of specific mountain catchment areas;
- the prevention of soil erosion, the protection and treatment of the natural vegetation and the destruction of intruding vegetation; and
- any other matter necessary for the achievement of the objects of the Act.

The Act was initially administered by DWAF. However, in 1986 the declaration and management of most mountain catchment areas was delegated to the provinces. Accordingly, the powers granted to the Water Minister may now be exercised by the MEC for Agriculture and Environmental Affairs.<sup>206</sup>

### 5.2.2.3 Water Services Act

The Water Services Act imposes monitoring and intervention functions on the provinces, in addition to the Water Minister.<sup>207</sup> In this regard, the KwaZulu-Natal provincial government must monitor the performance of every water services institution in order to ensure compliance with:

- all applicable national standards;
- all norms and standards for tariffs under the Act; and
- all applicable development plans, policy statements or business plans adopted in terms of the Act.

This duty vests in the DAEA in KwaZulu-Natal.<sup>208</sup>

### 5.2.2.4 NEMA

As discussed in part 5.1.2.1 above, both DEAT's Director-General and the provincial head of department responsible for the environment are empowered to enforce the duty

<sup>204</sup> Rabie, Bignaut and Fatti, quoted in Glazewski, J. *Environmental Law in South Africa* (Butterworths, 2000) (see footnote 228 of chapter 11).

<sup>205</sup> 63 of 1970.

<sup>206</sup> DAEA to confirm that KwaZulu-Natal's Administrator, to whom the Act was assigned, has delegated this power to the MEC.

<sup>207</sup> Section 62.

<sup>208</sup> DAEA to confirm that this is indeed the case.

of care provision in NEMA by issuing a compliance notice, and implementing certain rehabilitative measures. That power would be exercised by the appropriate official within the DAEA in KwaZulu-Natal.

#### 5.2.2.5 Provincial nature conservation legislation

None of the protected areas in KwaZulu-Natal are national parks, hence its provincial protected areas legislation is important. In this regard, a number of catchment areas fall within protected areas.

Two pieces of legislation are relevant. The first is the Natal Nature Conservation Ordinance,<sup>209</sup> which established the Natal Parks Board, which has provisions that are relevant to species and habitat protection. The second, and more important Act from an institutional perspective, is the KwaZulu-Natal Nature Conservation Management Act.<sup>210</sup> The Act establishes the KwaZulu-Natal Nature Conservation Board, which currently manages provincial nature reserves in the province.<sup>211</sup> Nonetheless, the MEC for Agriculture and Environmental Affairs remains responsible for nature conservation policy in the province. He or she is also empowered to declare protected areas and to implement the Act.<sup>212</sup> The MEC is also empowered to establish local boards for protected areas or a group of protected areas, on which all stakeholders will be represented.

The proposed National Environmental Management: Protected Areas Bill, mentioned in part 5.1.2.3 of this review, is likely to impact on the management of protected areas in the province. The draft that is currently in circulation<sup>213</sup> makes provision for the appointment of management authorities in relation to the various provincial and local protected areas. It is likely that the existing institutions will be appointed as management authorities. However, they will be obliged to manage protected areas in accordance with the principles, powers and obligations set out in the proposed Bill.<sup>214</sup>

#### 5.2.2.6 Natal Prevention of Environmental Pollution Ordinance

The Natal Prevention of Environmental Pollution Ordinance<sup>215</sup> prohibits people from wilfully or negligently performing any act of littering or pollution on, in or into any land or inland waters. The Ordinance is enforced by inspectors appointed by the Administrator.<sup>216</sup> The Administrator, whose enforcement powers have presumably been

<sup>209</sup> 15 of 1974.

<sup>210</sup> 9 of 1997.

<sup>211</sup> The powers granted to the Board are discussed in part 1.1.4 below.

<sup>212</sup> Sections 2(1) and 3.

<sup>213</sup> Draft 8 dated 31 July 2001.

<sup>214</sup> In this regard, the draft Bill provides that in the event of a conflict between the proposed Bill and provincial legislation, the conflict must be resolved in terms of section 146 of the Constitution.

<sup>215</sup> 21 of 1981.

<sup>216</sup> Section 3.

delegated to the DAEA,<sup>217</sup> is also empowered to make regulations relating to the prevention of pollution, although these powers have not to date been exercised.

## 5.3 Local sphere of government

The role of local government has been considerably enhanced in recent years, both in terms of the status accorded to this sphere of government under the Constitution, and due to the demarcation of municipal boundaries such that all land within the Republic is now subject to the authority of one or other organ of local government, which was previously not the case. The power of local authorities to make by-laws in relation to the functional areas which they are competent to administer<sup>218</sup> is particularly relevant.

### 5.3.1.1 Local Government: Municipal Structures Act and Local Government: Municipal Systems Act

One of the objectives of local government in terms of the Constitution is to "promote a safe and healthy environment".<sup>219</sup> The Local Government: Municipal Structures Act<sup>220</sup> endorses this in providing that each local authority must "strive within its capacity to achieve the objectives set out in section 152 of the Constitution".<sup>221</sup> The Act, which defines the manner in which municipalities are to be established, distinguishes between metropolitan, local and district municipalities, the latter being a municipality that has municipal executive and legislative authority in an area that includes more than one municipality.<sup>222</sup> The Act provides that each district municipality must seek to achieve the integrated, sustainable and equitable social and economic development of its area as a whole by:

- ensuring integrated development planning for the district as a whole;
- promoting bulk infrastructural development and services for the district as a whole;
- building the capacity of local municipalities in its area to perform their functions and exercise their powers where such capacity is lacking; and
- promoting the equitable distribution of resources between the local municipalities in its area to ensure appropriate levels of municipal services within the area.<sup>223</sup>

The Municipal Structures Act makes provision for dispute resolution concerning the performance of functions or exercise of powers by and between district and local

<sup>217</sup> DAEA to confirm that KwaZulu-Natal's Administrator, to whom the Act was assigned, has delegated this power to the DAEA.

<sup>218</sup> i.e. those listed on Schedules 4 and 5 to the Constitution.

<sup>219</sup> Section 152(1)(d).

<sup>220</sup> 117 of 1998.

<sup>221</sup> Section 19(1).

<sup>222</sup> Section 1.

<sup>223</sup> Section 83.



municipalities.<sup>224</sup> The relevant provisions of the Act read as follows:

"If a dispute arises between a district and a local municipality concerning the performance of a function or the exercise of a power, the MEC for local government in the province, after consulting them, may, by notice in the *Provincial Gazette*, resolve the dispute by defining their respective roles in the performance of that function or in the exercise of that power."

District municipalities are allocated the water service authority function.<sup>225</sup> If authorised by the Minister of Provincial and Local Government, local authorities may also perform that function. The Act also obliges local authorities to prepare integrated development plans ("IDPs") for the areas falling under their jurisdiction. This obligation is fleshed out in chapter 5 of the Local Government: Municipal Systems Act.<sup>226</sup> The minimum requirements for the preparation of IDPs include the following, among others:

- the local authority's vision for the long term development of the local authority with special emphasis on the local authority's most critical development and internal transformation needs;
- an assessment of the existing level of development in the local authority, which must include an identification of communities which do not have access to basic municipal services;
- the local authority's development priorities and objectives for its elected term, including its local economic development aims and its internal transformation needs;
- the local authority's development strategies which must be aligned with any national or provincial sectoral plans and planning requirements binding on the local authority in terms of legislation;
- a spatial development framework which must include the provision of basic guidelines for a land use management system for the local authority;
- the local authority's operational strategies; and
- applicable disaster management plans.<sup>227</sup>

### 5.3.1.2 Water Services Act

Certain obligations are imposed on local authorities, which fall under the definition of "water services authorities", in the Water Services Act. These include the duties to:

- provide efficient, affordable, economical and sustainable access to water services in each local authority's area of jurisdiction;<sup>228</sup>

<sup>224</sup> Section 86.

<sup>225</sup> i.e. potable water systems and domestic sewage and wastewater according to the Water Services Act.

<sup>226</sup> 32 of 2000.

<sup>227</sup> Section 26.

<sup>228</sup> Section 11(1).

- prepare a draft water services development plan;<sup>229</sup>
- comply with the reporting requirements relating to the implementation of development plans;<sup>230</sup> and
- make by-laws that contain conditions for the provision of water services.<sup>231</sup>

### 5.3.1.3 Natal Local Government Ordinance

The Natal Local Government Ordinance<sup>232</sup> is relevant to the issue of catchment management in that it vests in local authorities various powers and duties relating to water supply;<sup>233</sup> the levying of water charges;<sup>234</sup> the installation and management of water reticulation, sewage and drainage systems;<sup>235</sup> and the making of by-laws regarding water supply and drainage.<sup>236</sup> Local authorities are also empowered to "eradicate swamps" in terms of the Ordinance.<sup>237</sup> As reclamation of a wetland is an activity that triggers the application of the EIA regulations, authorisation to do so would have to be sought from DEAT.

### 5.3.1.4 By-laws

As has already been stated above, local authorities are empowered under the Constitution to make by-laws in regard to the functional areas they administer. In terms of the Water Services Act, the exercise of this power in relation to the provision of water services is mandatory.

The content of water supply by-laws differs from local authority to local authority.<sup>238</sup>

## 5.4 Statutory bodies

There are a number of statutory bodies whose activities impact on catchment management in one way or another.<sup>239</sup> These bodies should accordingly be involved in developing a catchment management framework for the province.

<sup>229</sup> Section 12(1)(b)(i).

<sup>230</sup> Section 18.

<sup>231</sup> Section 21.

<sup>232</sup> 25 of 1974.

<sup>233</sup> Section 24 1.

<sup>234</sup> Section 243.

<sup>235</sup> Section 249.

<sup>236</sup> Section 266.

<sup>237</sup> Section 261.

<sup>238</sup> *The Commission to furnish us with sample by-laws for discussion purposes.*

<sup>239</sup> *The Commission to advise whether or not there are further relevant statutory bodies, e.g. SAFCOL.*

### 1.1.3 ESKOM

Eskom is a parastatal established in terms of the Eskom Act.<sup>240</sup> Its object is to provide the system by which the electricity needs of consumers may be satisfied in the most cost-effective manner, subject to resource constraints and the national interest. Its activities impact on catchment management in two material respects: the construction of dams for the purposes of creating hydroelectric power, and environmental degradation resulting from the construction of infrastructure related to the supply of electricity.

### 1.1.4 The Commission

The Commission was constituted in terms of the Natal Town Planning Ordinance, discussed in part 5.2.1.1 above. Among the Commission's functions are the following:

- to formulate in general terms a town and regional planning policy for KwaZulu-Natal Province, with special reference to the spatial distribution of various types of physical development, communication and services in such a way as to promote the economic, social and environmental well-being of its inhabitants and the efficient and economical use of financial resources; and
- to ensure as far as practicable that local authorities in the exercise of their powers in respect of town planning make use of their powers to the best advantage.<sup>241</sup>

The Commission therefore performs both policy development and supervisory functions in relation to planning and development in KwaZulu-Natal. It is noteworthy that the Commission is also a provincial body recognised in terms of section 11(1)(b) of the Development Facilitation Act as the KwaZulu-Natal Province's provincial development and planning commission.

### 1.1.5 Kwazulu-Natal Nature Conservation Board

The primary function of the KwaZulu-Natal Nature Conservation Board<sup>242</sup> is to direct the management of nature conservation within the province, protected areas and the development and promotion of ecotourism facilities within the protected areas.<sup>243</sup> As many catchment areas fall within protected areas, a role for the Board must be integrated into the catchment management strategy for the area.

### 1.1.6 Greater St Lucia Wetland Park Authority

As was stated above in part 5.1.2.2, the Greater St Lucia Wetland Park Authority has been established to manage KwaZulu-Natal's Greater St Lucia Wetland Park. The

<sup>240</sup> 40 of 1987. The Act has been repealed by the Eskom Conversion Act 13 of 2001, which will come into operation on a date to be fixed by the President by publication in the *Government Gazette*.

<sup>241</sup> Section 5.

<sup>242</sup> Which was established in terms of the KwaZulu-Natal Nature Conservation Management Act, 1997

<sup>243</sup> Section 5(1).

Authority is broadly representative and multidisciplinary, and includes representatives from the KwaZulu-Natal Nature Conservation Service and KwaZulu-Natal Tourism Authority. The Authority's powers are set out in the World Heritage Convention Act and the regulations under it. One of the duties imposed by the Act is the obligation to prepare an integrated management plan, according to which the world heritage site falling under its control will be managed.

### 1.1.7 KwaZulu-Natal Tourism Authority

The KwaZulu-Natal Tourism Authority was established in terms of the KwaZulu-Natal Tourism Act.<sup>244</sup> The Authority has a wide-range of powers relating to the development of tourism in the province. Tourism results in an increased demand for water, hence impacts on catchment management.

### 1.1.8 Ingonyama Trust

The KwaZulu Ingonyama Trust Act<sup>245</sup> establishes a corporate body, the Ingonyama Trust, to be administered for the benefit, material welfare, and social well-being of the members of the tribes and communities that are contemplated in the KwaZulu Amakhosi and Iziphakonyiswa Act.<sup>246</sup> Both pieces of legislation are primarily aimed at land reform, and addressing historical injustices. In terms of the KwaZulu Ingonyama Trust Act, all land which formerly vested in the KwaZulu government was transferred to the Ingonyama Trust. A substantial part of KwaZulu-Natal is therefore under the control and administration of His Majesty the King, in his capacity as Ingonyama.

## 5.5 Non-statutory bodies

Various non-statutory bodies such as non-governmental organizations, civic associations, traditional authorities, farmers' associations, sectoral groupings (such as the Forest Owners' Association) and environmental groups, are also catchment management stakeholders. Their rights, powers and duties are not, however, prescribed in terms of a statute,<sup>247</sup> hence they will not be considered in any detail in this review. That being said, because such organisations have a right to participate in relation to certain decision-making processes,<sup>248</sup> they should be consulted and invited to participate in the institutional realignment process.

<sup>244</sup> 11 of 1996.

<sup>245</sup> 3KZ of 1994.

<sup>246</sup> 9 of 1990.

<sup>247</sup> Most of these organisations are voluntary associations. The affairs of a voluntary associations are conducted in terms of its constitution. Other organisations may be constituted as trusts, in which event the organisation's affairs will be conducted in terms of a trust. If the members of an association or trustees of a trust act beyond the powers of the constitution or trust deed, they will be acting unlawfully.

<sup>248</sup> See parts 3.1.2 and 3.1.4 of this review, for example.

## 6. IDENTIFICATION OF WEAKNESSES AND POTENTIAL WEAKNESSES

A workshop was held on 31 October 2002, at the Cedara Agricultural College complex, where the DAEA has offices. The workshop was preceded by the project's second steering committee meeting, which was convened the day before. At the steering committee meeting the joint chairperson of the committee, Mr Graham Atkinson, confirmed that the crux of the project was addressing the "legal mix of national and provincial legislation" and he also reaffirmed that the starting point for the workshop was to ensure that all participants had an understanding of the legislative framework within which they are (or ought to be) operating. The main aim of the workshop, as articulated by Mr Atkinson in his opening address on 31 October, was for participants to identify problems particular to their roles and responsibilities and to suggest ways to align the different bodies in which they worked in such a way that these problems could be addressed and hopefully resolved. As Mr Atkinson put it, the workshop was "about how the relevant institutions align – what do they need to do to ensure their involvement in helping establish CMAs, and then to assist where necessary in their operation in a way that reflects, among other positive benefits, alignment of the roles and responsibilities of the different institutions". Some of the supplementary aims of the workshop were:

- to report back on the work already done on the project (in the form of the legal review and the other work required by the project brief); and
- to obtain general feedback from participants.
- The structure of the workshop comprised a welcome and introduction, a summary of the proposed structure for the workshop, an indication of its aims and objectives, and a closing section.

The workshop was attended by 41 recorded attendees. One of the central issues that needed to be established with workshop participants, was the level of their understanding of the legal regime that applies to the way in which they conduct themselves currently as public officials, most particularly in the context of decision-making on topics, issues or questions that will or could impact negatively on water resource management in the province.

The post-1994 legal dispensation creates an enabling framework that emphasises the best tenets of constitutional democracy including entrenched human rights, a co-operative governance imperative, codified rules for administrative justice and myriad other appropriate provisions for the achievement of participative democracy in decision making in communities. This legal framework is fleshed out in an array of legislation, which essentially sets the rules by which officials in public institutions must approach the substance of their work. The policy and legislative context for water resource management in South Africa and the framework for the achievement of a catchment management-oriented approach to water resource management are explained in the legal review of which this workshop report-back forms part. The content of the review was summarised and presented to the workshop participants to ensure that they could respond to and clarify any issues that impacted upon their understanding of the legislative context in which they operate day to day. As was pointed out the day before the steering committee meeting, the institutions responsible for water resource management in South Africa are confronted what was described at that meeting as a legal mix (or "mish-mash") of legislation. It is imperative therefore as a starting point, to explain in an ordered and

logical manner, the design and operation of relevant South African legislation. The aims of the workshop in respect of this component were explained to the participants as follows:

- 1) To explain the law and relevant extra-legal developments relevant to the management of South Africa's fresh water resources under the National Water Act and specifically, in this instance, the management of KwaZulu-Natal's water resources. This was achieved by considering and explaining all relevant legal instruments, and considering recent reporting on institutional arrangements that are relevant to the management of freshwater resources. The workshop participants were guided through the "big picture" of the South African legislative framework and the scope of the examination was then refined to consider how the current institutional arrangements set up by the legislation operate; and
- 2) To demystify and/or reinterpret the meaning of some relevant terms and/or definitions and/or expressions relevant to the project.

Other focus areas at the workshop included attempting to answer the question of whether institutional alignment is happening at catchment level in those water management areas where proposals for the establishment of CMAs are advancing (and the Inkomati CMA's proposal was considered in some detail as an example of institutional arrangements in other parts of South Africa; and whether the roles of traditional leaders and the local authority tier of government are or have been aligned or can be aligned in the context of water resource management.

In summary, the workshop presentation was geared to ensuring a common understanding of the following:

- what a CMA is;
- what the move to catchment management is about in the South African context;
- how the devolution of responsibility, to CMAs, is to be effective;
- substantive participation to ensure that all factors which influence water resources quality in a given catchment area are taken into account when authorities take decisions that could or might reasonably impact on the resource; and
- an understanding of how the achievement of equitable allocation and distribution of the (water) resource could result in more sustainable results in areas as diverse as institutional alignment; and actually making more of the resource.

In our view, the workshop was successful both from the perspective of reaching a good proportion of its target audience (although the lack of representation of tribal authorities and the private sector was a cause for concern) and also because the workshop participants had the opportunity to raise concerns and/or queries about the relevant legislative framework, as it was analysed and put to them in a summarised presentation. As part of that presentation, our Mr Smith also reiterated the relevant components of the project brief including the issues to be addressed and the project outcomes. However, he stressed that in order to ensure that appropriate recommendations on institutional alignment could be made, it was imperative for the consultants to understand the level of



understanding of workshop participants regarding the existing legal framework and the opportunities for institutional alignment that it already provides.

It was decided that one of the appropriate ways to assess whether or not institutions are properly represented and effective in their governance in regard to water resource management issues, was to consider a case study relevant to the establishment and in time, operation of a CMA. The most advanced of the draft proposals for the establishment of a CMA in South Africa is the Inkomati water management area. The process of meetings and interactions in the build-up to the proposal provided some interesting lessons on the achievement of institutional alignment. The Inkomati basin comprises three catchments and it was at meetings at catchment level (on the Komati, Crocodile, and Sabi-Sand Catchment Areas) that all stakeholders represented there were able to articulate issues and concerns. Out of catchment forum meetings grew the catchment steering committees for each of the three catchments which ultimately became the Inkomati reference group. That group will be represented on the CMA, once established. Another important component of the workshop was the consideration of powers, duties and functions of CMAs against the backdrop of institutional roles and responsibilities at the three spheres of government.

In the context of exploring the possibility of an institutional framework for institutional alignment, participants were requested to furnish inputs on the founding tenets for such a framework. In terms of practical requirements, its preamble, for example, should focus on the imperative for co-operative governance and in addition should reflect that legislation that seeks to achieve that imperative includes the National Water Act. It was reiterated that section 22(4) provides that co-operative governance interests can entitle a responsible authority to promote arrangements with other organs of state to combine their respective licence requirements into a single licence requirement. This legislative provision reflects the dynamic nature of the resource to be managed and used sustainably. This was also an appropriate component of the workshop to emphasise extra-legislative developments in the context of administrative decision-making and institutional alignment with the focus primarily on the case of *Sasol Ltd and Another v Save the Vaal Environment and Others*.<sup>249</sup> The recognition of linkages between planning processes and reporting on them (for example, the legislative requirements on impact assessment; strategic environmental assessment; reporting on planning and environmental process and substance and various others that impose obligations on different levels of government,<sup>250</sup> private stakeholders,<sup>251</sup> other aspects that must underpin any institutional framework must involve community participation and its correlative, capacitation. Workshop participants also emphasised the need for simple information dissemination so that what is already known and understood by, for example, officials in DWAF, can be passed on to other stakeholders. A good example of how this has been effectively achieved is the short summary document on the national water resources strategy which itself gives valuable information regarding CMAs in a user-friendly and uncomplicated way.

In the course of the workshop it became clear that the relationship between all of the

<sup>249</sup> 1999 2 SA LR 729 (SC).

<sup>250</sup> For example the IDP report and requirements under the Development Facilitation Act, 67 of 1995.

<sup>251</sup> For example the environmental impact assessment provisions in myriad South African laws including the Environment Conservation Act, NEMA, the National Water Act, and the National Heritage Resources Act.

different laws that make up the legal framework that regulates water resource management in one way or another, needed to be properly understood and that this understanding would inform workshop participants' considerations on how to achieve institutional alignment in the context of water resource management. This had been foreseen by the steering committee of this project at the preceding steering committee meeting and it was agreed at that meeting that the focus of the workshop would appropriately be directed at ensuring a common understanding of the legal framework by those attending. Allied to this was the requirement for a further workshop that will have as its main focus substantive representations by all parties regarding the requirement for a formal institutional framework, given the possibilities for institutional alignment that already exist in law.

Some of the constraints to achieving institutional alignment (and its likely result, better co-operative governance) are explained in the DWAF institutional report. Lack of communication, the failure of existing mechanisms and limited resources are identified as most problematic.<sup>252</sup> The findings of this report are summarised in annex "A" to this review.

## 7. RECOMMENDATIONS REGARDING THE DEVELOPMENT OF AN INSTITUTIONAL FRAMEWORK

[To be developed in detail further to the second workshop attended by the project team]

## 8. CONCLUSION

[to be drafted further to consultations and the second workshop attended by the project team]

Should those instructing us have any questions, they should not hesitate to contact us.

Dated at CAPE TOWN on the            day of            2003.

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NICHOLAS SMITH & BELINDA BOWLING  
ENACT INTERNATIONAL



ANNEX "A"

**SUMMARY OF THE PHASE ONE DOCUMENT DATED JANUARY 2002 PREPARED BY AFROSEARCH ON BEHALF OF DWAF AND ENTITLED "ROLES AND FUNCTIONS OF INSTITUTIONS INVOLVED IN THE MANAGEMENT OF WATER RESOURCES" (JANUARY 2002)**

1. The report is divided into ten chapters. They deal respectively with: identification of the relevant problems; analysis of the legislative and regulatory framework; overview of the institutional composition; institutional analysis and overarching considerations; analysis of functional responsibility; implications for selections of an appropriate options for catchment management; specific requirements for Phase II; references; and an appendix sets out detailed functions and role players.
2. The terms of reference in relation to Phase One of the project were to provide a comprehensive description of the different types of institutions relevant to catchment management in South Africa.
3. The legislative and regulatory framework is set out in four pages. It is a very brief overview of some of the relevant legislation, including the Public Finance Management Act,<sup>1</sup> and the Division of Revenue Act, 1 of 2001.

4. **INSTITUTIONAL COMPOSITION**

This section of the report contains an overview of the functions and responsibilities of proposed and existing structures whose activities impact on catchment management. A useful organogram is set out on page 22 of the report which demonstrates the relationship between a catchment forum and other relevant institutions.

Below are certain comments made in relation to specific institutions which are of relevance to the legal review to which this document forms an appendix.

4.1. **DWAF**

The report points out that the role and functions of DWAF will show significant change over the next ten years, based on the institutional changes that are required for water resource management.

DWAF, at a national level, will focus on the fulfilment of its regulatory and support functions in water resource management, including the functions of planning, monitoring and evaluation. The regional offices will function as part of a central office and will respond to the priorities set by it. The focus therefore of the regional office will be on strengthened regulatory functions, support to the sector at the regional level, the transfer of resources and schemes where local

<sup>1</sup> 1 of 1999.

government is functional, the operation and maintenance of existing schemes which are yet to be transferred, as well as monitoring and evaluation.<sup>2</sup>

The report points out that the catchment management role of DWAF's head office will include:

- developing policy and formulating a national water resources strategy;
- specifying resource directed measures such as the water resource class, the reserve and resource quality objectives;
- providing support with technical water resources management aspects of the CMA's delegated functions;
- auditing DWAF regional office's regional objectives and possibly CMAs in terms of their compliance with national policies, the national water resource strategy, resource directed measures and catchment management strategy;
- building capacity in the DWAF regional offices and CMAs.<sup>3</sup>

Once all relevant catchment management functions have been assigned or delegated to the CMA, the primary catchment management role of DWAF's regional office would be to audit the implementation of catchment management strategy by the CMAs.

4.2. **Catchment management committees**

These are not mentioned by name in the Act. However, they may be established by a CMA in terms of section 82(5). Such a committee would be established to perform specific delegated functions in a specified area, and to broaden the CMAs technical management, capacity and/or stakeholder representation.<sup>4</sup>

4.3. **Catchment management fora**

Catchment management fora form a link between stakeholders and the CMA. They are voluntary, non-statutory, participatory associations of stakeholders representing various viewpoints to guarantee stakeholder involvement in the management of water resources at catchment and/or sub-catchment level. They may also evolve into more formal representative bodies, such as CMCs or catchment steering committees. The main areas of activity of such fora are recognised to be:

- supporting the CMA by serving as vehicles for consultation on catchment management issues;

<sup>2</sup> G. Schoeman, page 23.

<sup>3</sup> Schoeman, page 24.

<sup>4</sup> Schoeman, page 25.

- assisting with the development of catchment management institutional capacity;
- playing an institutional co-ordinating role and providing support to the catchment management activities;
- playing an information dissemination and watchdog role;
- fostering co-operative governance (with the focus on local government), and encourage integrated planning and co-operative resource management.<sup>5</sup>

#### 4.4. Catchment steering committees

These are also non-statutory bodies. DWAF has recommended that once the consultation process associated with the establishment of a CMA has progressed, it may be appropriate to constitute a formal and representative non-statutory stakeholder body. Such a committee could evolve from an existing structure such as a CMF. The main area of activity of a CSC is to investigate and develop the proposal for establishing a CMA in consultation with DWAF.

#### 4.5. The Department of Provincial and Local Government

This is a national department. According to the report, it is responsible for developing and promoting the following:

- facilitation of co-operative governance at provincial and local government levels;
- creation of an enabling environment for the devolution of power to provincial and local spheres of government and the delivery of services within this context; and
- building the capacity of municipalities.

It would appear that these obligations arise generally from the Constitution as opposed to any specific national legislation.

#### 4.6. NGOs generally

The report recognises that NGOs may become involved in a number of areas of activity related to catchment management. These include:

- awareness creation and information dissemination about issues related to catchment management, as well as the role and purpose of CMAs;
- consultation with stakeholders, and particularly with previously disadvantaged and disempowered organisations and individuals, such as

<sup>5</sup> Schoeman *op cit* page 29.

subsistence farmers;

- advocacy and advisory functions to or on behalf of stakeholders with DWAF, the CMA and other organisations;
- building capacity as stakeholders in groups around catchment management and institutional development, particularly in relation to previously disadvantaged groups;
- facilitating the participation of stakeholders and the development of a catchment management strategy and other catchment management activities and co-ordinating co-operation between stakeholders; and
- involvement in monitoring of activities related to catchment management and/or assisting communities or stakeholder groups in the implementation of appropriate monitoring activities.

## 5. INSTITUTIONAL ANALYSIS

This section of the report deals primarily with co-operative governance. Among other things, it identifies certain mechanisms that promote inter-governmental relations. These include:

### 5.1. The Inter-Governmental Forum

This was established in 1994 to promote dialogue between the national and provincial government, as well as their co-operation, consultation and consensus on matters of common concern. It is empowered to consider questions and/or act in relation to the following:

- acting as a multilateral inter-governmental, policy planning and implementation directive body; and
- providing an opportunity for consultation and joint decision making between national government ministers, provincial premiers and the South African Local Government Association (SALGA).

The report points out that the effectiveness to date of the IGF has been very limited.<sup>6</sup>

### 5.2. South African Local Government Association

This institution has also not been particularly successful. The reasons cited include lack of capacity for facilitation co-operation at the different levels of provincial, national and local government, as well as political and financial reasons.

## 6. CO-OPERATIVE GOVERNANCE The report recognises that institutions like

<sup>6</sup> Page 40.

DWAF, the DPLG and DEAT have central roles to play in relation to catchment management and co-operative governance.

The report recognises that CMAs embody the principle of decentralised management and co-operative governance. Proper functioning of a CMA is dependent on its ability to forge co-operative governance relations with all relevant stakeholders, particularly around environmental management, spatial or land use planning and management, infrastructure, development and service provision. This necessitates good relationships particularly with local authorities and provincial government departments involved in implementing these functions. The report states that the development of the catchment management strategy and its implementation will indicate who needs to be involved in the process. According to DWAF, the focus of these co-operative relations should be on the alignment of policies, programmes and procedures, with the aim of improving the efficiency and consistency of implementation. It is also recommended that overlaps between goals or strategies between different departments be identified, and those overlaps should be co-ordinated in order to optimise benefits, avoid duplication and minimise costs.<sup>7</sup>

The report refers to an institutional development strategy and a spatial planning strategy developed by DWAF in June 2000. It queries whether CMAs will be able to foster co-operative governance where other institutions (such as SALGA and the IGF) have had little success. This question becomes more pressing if it is considered that co-operative governance as envisaged in terms of CMAs includes not only established structures such as municipalities and provincial authorities, but also disadvantaged grassroots structures or individuals, who pose particular challenges as regards participation and capacity. It is questionable whether the creation of new structures will be effective, particularly given the sheer number and potentially confusing array of structures and sub-committees involved in water management. Two issues of concern are accordingly, firstly, whether it will be possible to establish effective, clear cut and sustainable co-operative governance linkages and institutional arrangements which do not result in "stakeholder fatigue" (i.e. the same stakeholders being involved in too many structures) and confusion and, secondly, an identification of who will fulfil the monitoring and co-ordination function to ensure effective structures in compliance with the Act (committees shouldn't, for example, monitor themselves).

The report makes further reference to the two DWAF reports referred to above, namely the institutional development strategy and the spatial/land use planning strategy. The former is aimed at:

- establishing the nature, scope and extent of existing institutions and their role and capacity;
- developing plans for fostering growth and involvement in existing

<sup>7</sup> Schoeman *op cit* at page 45.

<sup>8</sup> Schoeman *op cit* page 47.

institutions;

- deciding on the number of new institutions that are desirable at different levels and facilitating their establishment and sustainable activities;
- establishing communication mechanisms to address the problem of geographic scale and remoteness; and
- clarifying roles and relationships between statutory and non-statutory institutions, water management institutions, government departments and stakeholders;

The latter strategy provides for linkages with the Department of Land Affairs, DEAT, the Municipality Demarcation Board and Regional Services, and is aimed at:

- establishing layout and connectivity between the municipal boundaries, provincial regional council, provincial and regional councils and catchment boundaries;
- identifying land, existing land use and trends in land use patterns;
- identifying existing urban, industrial and other growth nodes and corridors; and
- investigating spatial compatibility between development and resource availability and liaising with the Department of Land Affairs regarding land redistribution.<sup>8</sup>

In light of the commencement of the Municipal Structures Act, which introduced a new structure for municipalities and local government, it would appear that the provisions of this section of the report are outdated.

The legislative functions and the role of stakeholders are set out in detail in a table which is appended to the report. A short abbreviated form of that table is set out on page 51 of the report. It identifies five separate functions, namely developing policy and strategy, school institutions, regulating water use, physical implementation, and managing information.

The report then sets out the responsible institutions as well as other institutions that need to be involved. We may wish to adopt a similar approach in relation to our recommended framework section in due course.

#### 7. IMPLICATIONS FOR SELECTING AN APPROPRIATE OPTION FOR CATCHMENT MANAGEMENT

The report recognises that the ability of a CMA to delegate certain functions to the institutions is important where there are resource constraints within the CMA. A fairly sparse institutional structure will thereby be bolstered by the presence of alternative agents that can engage in specific activities on behalf of the CMA in a cost effective manner. The report makes reference to



section 86(1) of the National Water Act which states that a CMA may delegate any power to an employee of any water management institution by name or to the holder of an office in that institution or to any other person or body with the written consent of the Minister.

The Guidelines for the Financing of Catchment Management in South Africa dated 2000 says that there are four management models for the institution of duties by a CMA. They are:

- in-house CMA capacity;
- shared CMA capacity (enables CMAs to share certain highly skilled personal, particular whether they have capacity constraints or the need for significant co-operation between water management areas);
- re-delegation (i.e. of functions delegated to the CMA to other water management institutions which have the necessary capacity);
- outsourcing.

8. **THE APPENDIX TO THE REPORT**

The appendix, which is over 70 pages long, sets out in detail the functions and role-players for CMA implementation and operation. The columns are entitled respectively: functional area (in which column is included the legislative reference where appropriate); functions; specific tasks; duration; responsible person or organisation; responsibility; action; and alternative agents.

Appendix B is a thorough presentation of how the different institutions responsible for different activities are meant to fulfil their work, including consulting with one another and harmonising their roles where possible.

**SUMMARY OF THE REPORT DATED 10 FEBRUARY 2002 PREPARED BY DANCED FOR DWAF ENTITLED "INSTITUTIONAL ROLES AND LINKAGES: STAGE ONE REPORT"**

1. The report is divided into six sections. The first is the introduction. The second section deals with creating an enabling environment for integrated water resource management ("IWRM"). The third section considers institutional functions and experiences in pilot study areas, one of which is the Mvoti to Umzimkulu water management area in KwaZulu-Natal. The other have not yet been drafted, but are intended to deal with vehicles for establishing an enabling environment for IWRM, the importance of engaging marginalised groups, and tools for monitoring the establishment of IWRM. The appendix to the reports is a legal review of sorts which looks at enabling legislation both for water resources management and for water services. I will summarise each of the substantive parts below.

2. **Creating an enabling environment for IWRM**

The drafters correctly point out that successful implementation of IWRM requires policy and legislation to be harmonised in all spheres of government. Other key factors recognised include accountability, good governance, committed civil society and institutions that have the capacity to implement policies. The type of collaboration necessary for such successful implementation comprises two broad steps. The first is an identification of roles and responsibilities for each institution. The second is to develop strategies and plans for collaboration to avoid duplication of effort and to ensure that all gaps are covered.

Four broad categories of institutions are recognised. They are:

- regulatory bodies and enforcement agencies (including those regulating land use and waste generation);
- water services institutions;
- facilitators (i.e. civil society organisations that play a role in the management of water resources or in the protection of them whether directly or indirectly);
- conflict resolution bodies, such as the water tribunal.

Figure 2.1 on page 13 of the report contains an organogram of the institutions involved in IWRM and their broad functional categories.

3. **IWRM functions and experiences in the pilot study areas**

(a) *Institutional supports and developments*



In creating its organogram-like institutional model, the drafters make reference to various statutory and non-statutory institutions, including CMAs, WUAs, International Water Management bodies, water services institutions, advisory committees, catchment management committees and catchment management forums. (The latter two are not statutory institutions. I presume that they are referred to under various DWAF policies.)

The drafters of the report correctly identify that institutions may have overlapping jurisdictions in terms of objectives and spatial distribution. Because roles are not always clearly defined in legislation, friction could arise. Accordingly, the drafters recognise that relationships can be one of three types:

- statutory relationships, which are based on the assignment of delegation of powers, duties or functions between statutory organisations;
- contractual relationships, which are based on a legal agreement between the CMA and a services provider; or
- non-contractual/mutually beneficial relationships, which exist between an organisation and other stakeholders providing the opportunity for public participation in decision-making.

The relationship with which we are concerned in the drafting of our report is really only the first one.

In the relevant pilot study area the proposed CMA structure and linkages are set out in figure 3.1.2.1(b) on page 18.

- In that water management area, 14 WUAs/irrigation boards are recognised.
- In terms of water services institutions involved, they are four types: district municipalities (of which there are six), Umgeni Water, eThekweni Metro, and local municipalities.
- The catchment management committees are divided into two broad groups. The first is the relevant sub-catchment, of which there are six. The second is water user and interest groups, which include forestry (S.A. Timber Growers Association and Forestry Industries Association), minerals and energy, industry (PCCI, BCCI and KZN Chamber of Business), environment (KZN Wildlife), local government (Kwanaloga), civil society (regional consultative forum, KZN rural forum), tourism and agriculture (S.A. Sugar Association, Kwanalu, and KZN Irrigation Association).

Perceived gaps in that water management area included the fact that many key stakeholders that are not working in the water related field, were not represented in forums. They also pointed out that facilitators for the establishment of the CMA process were often not aware of the structural make-up and protocols for dealing with traditional leaders. As a result, many influential leaders and institutions were left out. A further gap identified was the lack of autonomy of CMAs. The report recommends that CMAs will need to

work with other government departments at a national and provincial level. Also capacity within those departments will have to be developed in order that the officials think of water management areas spatially rather than administratively. This will make it easier for the CMA to respond to user concerns.

The report sets out a checklist for "institutional development functional areas". The following items appear on the checklist:

- creation of statutory and non-statutory consultative participative bodies;
- identifying water resources management and related stakeholders;
- co-ordination of the activities and relationship for water management institutions in the water management area;
- fostering co-operative governance in creating partnerships;
- building capacity in the water management institutions and forums;
- resolution of water conflicts between organisations;
- support and advise on water resource planning and management activities;
- supportive of emergency organisational interventions; and
- ensuring appropriate stakeholder participation in these bodies.

#### 4. Development of strategy and policy

The relevance of this chapter to our legal review is limited in that it is concerned with policy, in particular the development of catchment management strategies.

#### 5. Water use regulation

Again, this chapter addresses issues of policy, and is not particularly relevant to the topic that is the subject of our legal review.

#### 6. Critical implementation

This chapter deals predominantly with the development of infrastructure to store and transport water and wastewater, and the development, operation and maintenance of water and wastewater treatment works and articulation systems. Its relevance is limited.

#### 7. Manage information and knowledge

Again, this chapter addresses issues of policy, and is not particularly relevant to the topic that is the subject of our legal review.

#### 8. Appendix: Enabling legislation

The three-page appendix is a very brief overview of some of the legislation that regulates water resource management and water services, including the Constitution, the NWA, NEMA, the ECA, the Water Services Act, the Municipal Structures Act and the Municipal Systems Act.

9. **Conclusions**

The document is essentially a policy one and does not, in my opinion, introduce any new substance to the issues that are the subject of our review. Although it does provide more detail in relation to the factual scenario, particularly in relation to the water management area concerned, the relevance of the document to the legal review is limited. I do think perhaps that we can make some use of the organograms and structures, which are thematically arranged, when designing our proposed framework. The way in which we have undertaken the review is to arrange our comments and analyses on the basis of the nature of the institution as opposed to its function. Perhaps we could introduce a more functional overview too.

**APPENDIX 4**

**AUSTRALIAN DOCUMENTATION ON CATCHMENT MANAGEMENT  
INSTITUTIONS**

### 3. Key Catchment Issues

The natural resources of the Northern Adelaide and Barossa catchment are valuable to the catchment community and to the State of South Australia. The catchment provides land and water resources that feed an economy based upon a significant agricultural industry and associated manufacturing activities. Vegetable production is the key agricultural activity on the Northern Adelaide Plains, while grape growing for the production of premium wines dominates the Barossa landscape. These agricultural activities are heavily dependent upon water for irrigation purposes, and a significant tourism and hospitality industry is based upon the rural character and high quality produce, particularly in the Barossa. While the catchment's water resources are used extensively for irrigation, they also provide water supply to large urban and industrial areas, particularly in the suburbs of Adelaide located in the south of the catchment. Despite the value of the catchment's water resources – the natural capital upon which the catchment's economy and society is based – they have been degraded and their condition is expected to decline further if action is not taken.

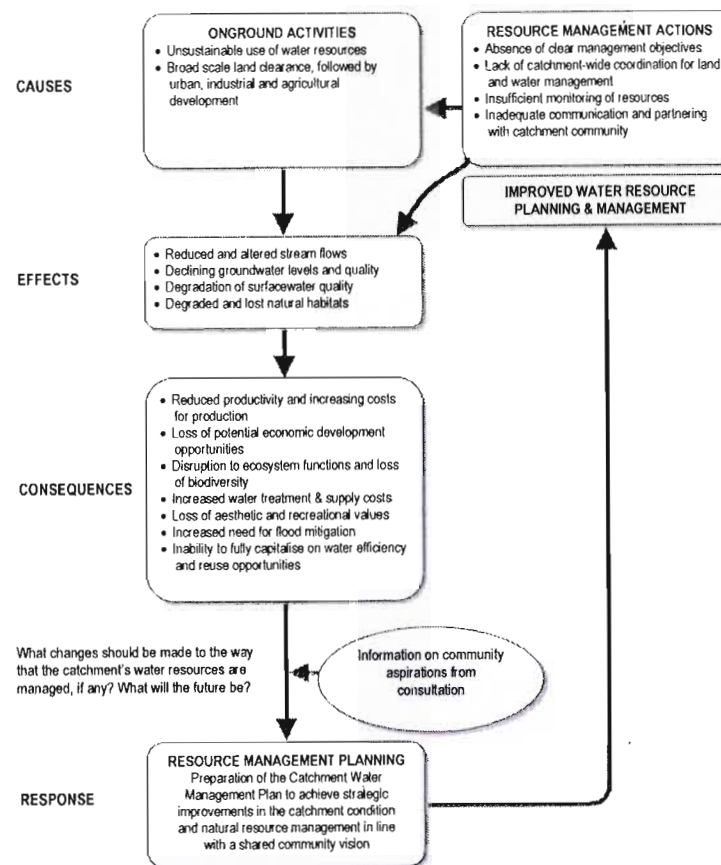
This section provides a concise summary of the key issues that the Board must address in order to maintain and improve the health and prosperity of the catchment for existing and future generations. It outlines the economic, environmental and social considerations relating to management of the water resources in the Board's area (fulfilling Section 92(3)(d) of the Act), and in doing so, provides the fundamental basis for the Board's action plan. The issues have been confirmed by technical investigations (the findings of which have been consolidated in the State of the Catchment Report – Volume 5) and feedback from the community obtained through consultation during preparation of this Catchment Plan.

#### 3.1 Primary causes of natural resource degradation in the catchment

Basically, there are three primary causes of the degradation in the catchment, which lead to a range of complex and inter-related effects (illustrated in Figure 8). The causes are:

- extensive land clearance followed by agricultural, urban and industrial development
- the consumptive use of surfacewater and groundwater resources at unsustainable rates
- the lack of a co-ordinated, regional approach to the management of the catchment's natural resources.

Figure 8 - Causes and effects of catchment degradation, providing the basis for action by the Board





### 3.2 Effects of unsustainable development practices in the catchment

Although not visible from the land surface, one of the most striking impacts of agricultural and urban development within the Northern Adelaide and Barossa catchment is the decline in pressure in the Tertiary aquifers beneath the Northern Adelaide Plains. The use of groundwater at a rate that exceeds the aquifer's rate of natural replenishment has caused a dramatic reduction in pressure levels in the aquifer, the consequences of which are higher costs of pumping the water from the aquifer, and a decline in water quality due to the intrusion of saline groundwater from the overlying Quaternary aquifers. The rate of groundwater use in the Barossa has also exceeded the rate of natural recharge, but now under licensing and strict controls, is thought to be near the rate of replenishment.

In areas where the salinity of groundwater is elevated, the potential also exists for soil salinisation as a result of the direct and sustained application of that groundwater by irrigation. Soil salinisation could emerge in the dryland areas where large scale clearance of native vegetation has occurred, removing deep-rooted native vegetation and replacing it with perennial shallow-rooted crops.

Improvement in property management practices and the efficiency of irrigation is important to reduce the demand on both surfacewater and groundwater resources, and to reduce the potential for waterlogging or salinisation of the irrigated land. A thorough understanding of the mechanisms and rates of replenishment of the aquifer systems is equally important, so that the impacts of ongoing pumping, use of imported water or aquifer storage and recovery can be assessed, and action taken to manage the resources in the most effective and sustainable way.

The development of viticulture in the upper reaches of the Board's catchment area has contributed to increasing pressure on the available surfacewater resources. Roughly half of the supply of water for irrigation in the Barossa is sourced from surfacewater, much of which is captured in farm dams. Studies have shown that farm dams have the potential to significantly reduce the volume of water available to downstream users and the environment, particularly during the dry summer months. Currently, the rate of surfacewater use in the Barossa is thought to be at a sustainable level, but requires careful management to avoid unacceptable impacts in the future. Activities that impact on streamflow will also impact on downstream water quality, the salinity of watercourses being a concern in the Barossa in particular. Other factors that have contributed to a decline in stream water quality include the discharge of stormwater, sewage wastes, and wastewater from wineries, and poor agricultural land management practices associated with irrigation, ploughing, tilling and pest control. There have been adverse effects upon the survival of aquatic fauna, particularly during periods of low flow.

Maintenance of streamflow and the quality of surfacewater is also important for the security of public water supplies. The catchment incorporates a portion of the Mount Lofty Ranges Watershed in which the water supply reservoirs for metropolitan Adelaide are located; those reservoirs in the catchment are the Warren, South Para, Little Para and Barossa reservoirs. It is essential that the security of supply to these reservoirs and the water quality is not undermined by uncontrolled development and inappropriate land management practices in that area of the catchment upstream of the reservoirs.

Management of the reservoirs is an important consideration with respect to the minimisation of flood risk. Poor management of releases from the reservoirs during flood events can exacerbate the downstream flood risk, particularly on the Gawler River. The Gawler River between the township of Gawler and the Gulf St Vincent is perched and has a history of floodwaters breaking out onto the floodplain. Minimisation of future flood risk, and improved floodplain management for environmental

benefits, requires urgent attention. The lack of a single co-ordinating authority has been perhaps the biggest barrier to developing an integrated solution to floodplain management on the Gawler River. Flooding is also an issue in the Little Para and Dry Creek catchments. Flood management strategies were developed in the early 1980s, but it is important that these flood studies be reviewed in light of subsequent catchment development and new design standards and guidelines.

Ecological considerations must be an integral component of any strategy to reduce the impacts of flooding, ensuring that adequate provisions of water are made for the environment. While there is a lack of streamflow gauges in the catchment, particularly in the Dry Creek catchment and in the lower reaches of the Little Para River, concerns have been raised as to the impact of the gauging stations that exist on the passage of fish. The presence of numerous barriers, such as weirs, gauging stations and dams, has interrupted the migration of fish and their breeding cycles. The levees at Buckland Park hinder the migration of some species of fish between the sea and the Gawler River. Thus, the design of flow gauges and flood mitigation structures must also be sensitive to ecological requirements.

Indeed, the ecological health of the catchment has suffered since European settlement and the commencement of land development. With clearance of over 90 percent of the native vegetation from the catchment, there has been a significant loss of biodiversity within the region. Remnant vegetation is fragmented and, in the absence of linking vegetation corridors, has relatively low value as habitat. The ecological viability of small, disconnected vegetation or habitat fragments is generally poor as movement and subsequent reproduction of fauna is restricted. Many of the remnants are also infested by weeds and exotic trees, which provide poor habitat and tend to displace native flora and fauna.

Furthermore, regeneration of native vegetation, to replace ageing trees and shrubs, is poor due to the effects of grazing by stock. Clearance of riparian vegetation and unrestricted access to streams by stock has resulted in destabilisation and erosion of some sections of stream banks and beds within the catchment. Significant amounts of sediment are deposited within the streams, resulting in increased water turbidity which has had adverse effects upon some species of aquatic flora and fauna. The spaces between rocks have become filled with sediment and lost as habitat. Further erosion of stream banks and beds has been caused by sand mining, fallen trees and poorly designed structures such as levee banks, weirs, gauging stations and bridges. The use of watercourses for rubbish dumping and stream crossings also contributes to the general impairment of quality and ecology.

The streamflow regimes have been modified by the construction of reservoirs and farm dams in the upper catchments, the installation of flood mitigation schemes, and groundwater extraction which has resulted in reduced levels of spring-fed flows. The altered flow regimes, together with the drainage of wetlands and removal of snags, have contributed further to the reduction in habitat diversity. Flows generally cease for longer periods during summer than would have naturally occurred and flora and fauna diversity decline as a result. In addition, flow regulation creates habitat which favours invasion by exotic species such as mosquito fish.

Clearance of catchment vegetation has also had significant effects on hydrology, with increased rates of runoff after rainfall, resulting in greater likelihood of flooding and decreased duration of flows within streams. Modification of the watercourses by the construction of levees and introduction of express drainage for flood mitigation purposes results in cutting of linkages between the watercourses and

their floodplains, and substantial alteration to flow patterns. This results in poor recruitment of some species that breed on floodplains, and lowered primary productivity within the watercourses.

Land reclamation and the establishment of levee banks have impacted significant areas of coastal wetlands, including mangrove and samphire communities at the mouth of the catchment watercourses. The marine environment of the Barker Inlet and Gulf St Vincent, and the seagrass communities in particular, has been severely degraded primarily through the input of nutrients. The principal source of nutrients entering the marine environment has been discharges from wastewater treatment plants rather than stormwater from the urban areas of the catchment.

The intermittent availability of the stormwater resource as well as its highly variable water quality generally precludes its reuse at a regional scale. Many options have, however, been considered for storage of stormwater (including urban ponds and wetlands and aquifer storage and recovery), these options have greatest potential at a local level. The reuse of treated sewage effluent at a regional level is more promising due to greater reliability in quality and availability (Fleming, 1996). To facilitate an increase in the use of stormwater, an urban stormwater monitoring program is needed to provide better information on water quality. The issue of rights to access and use of the stormwater resource must also be clarified to ensure certainty for potential investors.

These impacts are occurring for several reasons. Primary causes, however, are the lack of adequate planning controls in terms of policies for natural resource management; inadequate resources for inspection and enforcement of the existing regulations; and an overall lack of integration between agencies and legislation. In addition, there is a low level of knowledge amongst land owners about water resource issues and the impacts of various land uses on water quality, and a clear lack of knowledge of planning principles and regulations. In many instances, insufficient monitoring is occurring to provide information for planning or evidence of the impacts of various activities (such as the construction of farms dams), although the science is often sufficiently developed to be confident of cause and effect relationships. Clearly, there is a need for improved communication and co-ordination of activities at all levels.

### 3.3 Consequences of catchment degradation

The consequences of the cause and effect relationships described above are varied, but will essentially contribute to the ongoing decline in the health of the catchment and the quality of its water resources, unless intervention and action is taken. Without action, the ongoing trends are likely to be:

- disruption to ecosystem functions and the loss of catchment biodiversity
- reduced productivity and increased production costs (such as the productivity losses that can occur when irrigating crops with saline water)
- loss of potential economic development opportunities associated with more efficient use of the existing resources, the development of alternative water resources, and the option to develop other natural resources within the catchment that are presently undeveloped
- increased costs of water treatment and supply
- loss of aesthetic and recreational values
- increased need for flood mitigation
- inability to capitalise on water efficiency and reuse opportunities.

Failure to improve the management of catchment water resources could undermine existing and future developments that would have widespread benefits for the community and environment.

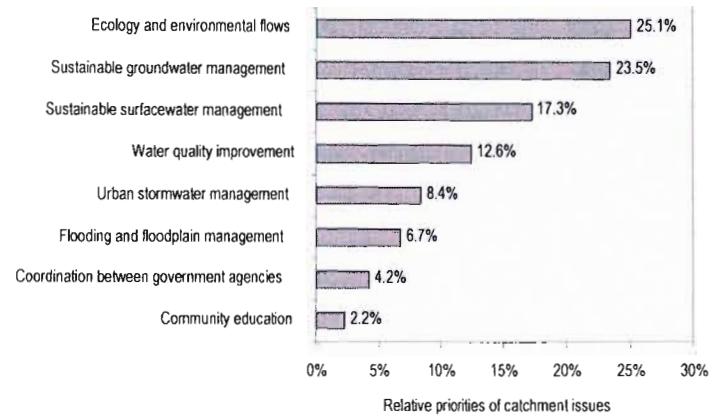
### 3.4 What catchment values should be protected?

With the knowledge that the catchment has been degraded, the question is, what should be done about it? An understanding of the responses that are needed to maintain and improve the condition of the catchment water resources is held by the Board. However, a high level of community support is required for effective implementation of the Catchment Plan. The condition of the catchment is dependent on the community, the values it holds, and the decisions it makes. Therefore, it is essential that the Board take into consideration the community's views on action that should be taken within the catchment in relation to water resources.

In line with requirements of the *Water Resources Act 1997*, the Board conducted a thorough program of consultation in preparation of the Catchment Plan. A series of interviews were held with key stakeholders, as well as several public workshops to assist the Board in identifying key issues of concern to the community. The main categories of issue that were raised by stakeholders are illustrated in Figure 9. Specific issues included:

- the need to undertake watercourse rehabilitation
- the need for improved management of surfacewater and groundwater resources, including imported water
- the need to investigate alternative sources of water to supplement traditional sources, and the technologies to enable their productive use (such as aquifer storage and recovery, and artificial wetlands)
- equitable policies for water allocation and conditions on use
- the Board's position in respect to the importation of water and its use
- the need for pollution prevention and water quality improvement
- the impacts of urban development and changing land uses on land and water resources
- the need for co-ordinated flood mitigation and floodplain management
- the need for effective communication on catchment issues via community education programs
- the lack of co-ordination between state and local government agencies involved with natural resource management, land use planning and development
- the need for revision of planning laws and legislation to adequately address catchment management issues and mechanisms for enforcement.

Figure 9 - Community views on the priority catchment issues to be addressed



Those members of the community who participated in the consultation program have demonstrated a clear understanding of the key issues and broad support for the actions that the Board considers necessary to address those issues. In essence, there is a clear need to:

- provide water to meet environmental needs
- identify and protect ecologically significant areas
- pursue sustainable water sharing and efficient water use
- pursue opportunities for productive use of alternative water sources
- achieve improvements in land management practices
- improve community awareness to underpin behavioural change
- improve monitoring and evaluation of key catchment processes
- facilitate the implementation of floodplain management strategies.

## 4. The Catchment Management Strategy

This section of the document describes the Board's plan for action, the projects and methods that will be implemented to achieve an improvement in the condition of the catchment and in the use of its land and water resources. It is based upon the synthesis of key catchment issues previously described in Section 3, the outcomes of technical investigations, and the values, aspirations and recommendations of the catchment community that were collected during the period of consultation in preparation of the Catchment Plan.

### 4.1 Meeting the object of the *Water Resources Act 1997*

The Northern Adelaide & Barossa Catchment Water Management Board has been established to improve the management of the water resources of its area in accordance with the *Water Resources Act 1997*. As such, the Board must act consistently with and seek to further the object of the Act. Section 6(1) of the Act states:

*'The object of this Act is to establish a system for the use and management of the water resources of the State -*

- (a) that ensures that the use and management of those resources sustain the physical, economic and social well-being of the people of the State and facilitate the economic development of the State while -*
  - (i) ensuring that those resources are able to meet the reasonably foreseeable needs of future generations; and*
  - (ii) protecting the ecosystems (including their biological diversity) that depend on those resources; and*
- (b) that, by requiring the use of caution and other safeguards, reduces to a minimum the detrimental effects of that use and management.'*

Furthermore, in accordance with Section 6(2) of the Act, the Minister for Water Resources and the Catchment Water Management Boards together with all other bodies and persons involved in the administration of the Act -

- '(a) must act consistently with, and seek to further, the object of this Act set out in section 6(1);'*

This Catchment Plan and the Board's Water Allocation Plans have been developed to pursue these objectives and are entirely consistent with the object of the Act.

### 4.2 The Board's vision and goals for the catchment

When developing a plan for the future management of the Northern Adelaide and Barossa catchment, the Board carefully considered its role in developing and implementing the Catchment Plan, the actions that would be required, and the necessary roles and responsibilities of other groups and individuals in the community. In doing so, the Board developed a vision for the catchment to inspire its planning, as well as the community in pursuit of a common goal. The Board envisages that through implementation of its water plans it will contribute to the fulfilment of the object of the Act, working towards its vision of;

***A community working in partnership for clean waterways, sustainable water use and a biologically diverse catchment.***

The *Water Resources Act 1997*, Section 92(e), requires that the Board defines goals in relation to water resource management in its catchment, and how the achievement of those goals will implement the object of the Act. The Board's goals for the catchment are listed below in no particular priority order:

#### G

Goal 1	To protect and improve the water quality of the resources in the catchment to meet the needs of users of the resource.
Goal 2	To ensure that water use within the catchment is efficient, equitable and sustainable.
Goal 3	To provide a regional approach to innovative management of water to maximise its beneficial use and minimise adverse environmental impacts.
Goal 4	To improve catchment biodiversity and ecosystem health.
Goal 5	To increase the rate of adoption of catchment care practices by government, industry and the community.
Goal 6	To integrate land and water management practices and activities at all levels.
Goal 7	To monitor and assess the water resources and ecological health of the catchment.
Goal 8	To co-ordinate floodplain management, providing for the needs of river health while minimising property damage and the threat to public safety.

The achievement of these goals will require careful planning and the implementation of a series of integrated work programs involving activities such as scientific investigations, engineering, onground works, amendment of legislation and associated plans, and community education and awareness raising. Most of these activities are provided for through the Catchment Plan. The Water Allocation Plans enable the adoption of new policies and regulations for water allocation and use, to encourage greater efficiency in water use and accountability for any impacts that arise from that use. Progressive modification of water allocation regimes, improvement in water use efficiency, greater use of non-traditional water sources (such as treated effluent and urban stormwater), and reduction in the impacts of that use will all contribute to an environment in which water is used in a more sustainable way. The water needs of current and future generations can be provided for, while also meeting the natural environment's need for water. Coupling these activities with programs to revegetate priority areas of the catchment will provide suitable conditions for maintenance and improvement of the catchment's biodiversity. In doing so, the Board will have made a substantial contribution to the catchment community, the State, and fulfilment of the object of the *Water Resources Act 1997*.

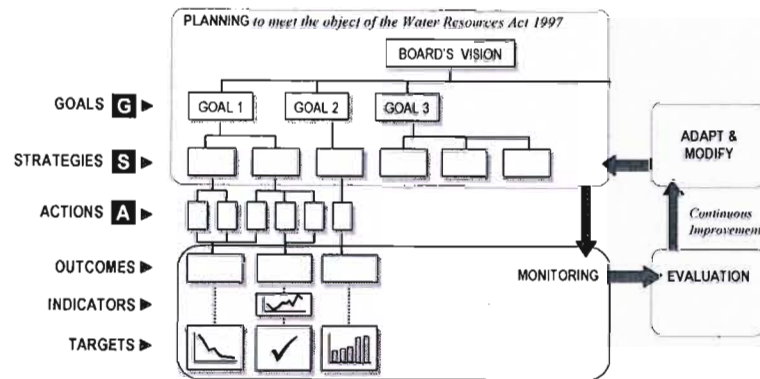


### 4.3 Strategic framework of the Catchment Plan

The broad strategic framework of this Catchment Plan is illustrated in Figure 10, which describes the links between goals, strategies and actions, while also providing some insight into the use of indicators and targets in the evaluation of the success of the Catchment Plan. The figure illustrates the process and planning links in the preparation, implementation and review of the Catchment Plan.

As mentioned above, a set of eight key catchment goals has been developed. These goals form the umbrella for a series of underlying strategies and actions that are targeted to make efficient and effective progress towards those goals. One or more strategies have been developed for each goal. The strategy is a carefully conceived approach to assist the achievement of its parent goal. The approach that forms each strategy is comprised of a series of related actions or projects.

Figure 10 - Process and planning links in preparation and review of the catchment plan



The strategies that fall under each goal are in priority order as are the actions under each strategy. This does not necessarily mean, however, that all the actions under a strategy of a particular goal are lower in importance than all the actions in another strategy under the same goal. Although funding and resources have been allocated for completion of most actions within the five year life of this Catchment Plan, it may be necessary from time to time to prioritise the completion of certain actions due to resource constraints or changed circumstances. It may also be necessary to modify or add to the actions listed as more information is made available and partnership opportunities emerge. The broad ranking of strategies and actions will assist the Board's decision making in this regard.

When implemented, each action will result in an output (not illustrated), such as a report from a scientific investigation, a construction design from an engineering project, a section of fenced riparian zone from onground works, or an information brochure from a community education project. Outcomes are generally the result of a package of projects, and might include improved knowledge to assist future planning, a cost-effective and 'fish friendly' approach to streamflow gauging,

improvement in the condition and habitat value of the riparian zone, and heightened awareness of the catchment community to their role in water management.

A series of targets have been established by the Board; the targets are closely linked with the goals and represent a set of priority outcomes that the Board is seeking to achieve during the life of the Catchment Plan. The targets do not include all of the important outcomes that the Board would wish to achieve, but a key set which if met would demonstrate that the Board has been successful in improving the condition of the catchment.

Evaluating the Board's success in implementing this Catchment Plan and in achieving its goals involves the comparison of outcomes against targets. Data collected from monitoring a variety of catchment and administrative processes will assist in this comparison. In some cases, it is very difficult to quantify outcomes or targets, in which case indicators can be used as surrogate measures of performance. Targets and indicators are discussed in more detail in Section 6 of this Catchment Plan, and are listed against each goal in the sections immediately following.

The evaluation process helps the Board and community to assess the success of the Board's Catchment Plan, and to guide the modification and adaptation of the Catchment Plan and its actions for the next 5 years. This completes the 'plan, implement, check and adapt' loop on the Board's cycle of continuous improvement in catchment management.

### 4.4 Principles for water resource management

The Board's catchment management initiatives are driven by the object and requirements of the Water Resources Act 1997, and the Catchment Plan. The goals in the Catchment Plan and the overarching set of resource management principles below will assist the Board to further the object of the Act, lead the Board closer to realising its vision, and effectively address key catchment issues. In implementing the Catchment Plan and in its operation the Board will act consistently with and have regard to the following principles pursuant to section 6(2) of the Act:

- (i) to maintain or improve the quality of naturally occurring water with resulting benefits to other natural resources of the State including the land and its soil, native vegetation and native animals; and
- (ii) to protect watercourses, lakes, surface and underground water from degradation and, where practicable, to reverse degradation that has already occurred; and
- (iii) to protect and enhance ecosystems that depend on naturally occurring water; and
- (iv) to keep the state and condition of the water resources of the State under review; and
- (v) to identify alternative sources of water and facilitate the use of water from those sources; and
- (vi) to encourage members of the community to take an active part in planning the management of water resources and in managing those resources; and
- (vii) to promote public awareness of the importance of the State's water resources and the use and management of those resources in accordance with the Act; and
- (viii) to integrate, as far as practicable, the administration of the Act and other legislation dealing with natural resources.'

In addition to the principles in the Act, the Board will consider:

- short and long-term impacts; cumulative impacts; and both local and regional impacts
- the need for ongoing monitoring of potential impacts from an activity
- synergies with current or ongoing projects
- the requirement for long-term commitment from the Board
- how to minimise the risk of adverse impacts to natural resources and their dependent ecosystems or communities.

#### 4.5 Partnerships with key stakeholders

The Board recognises the fundamental need to achieve a more integrated approach to natural resource management, including greater integration of organisations and their activities. The Board will work with a variety of groups in pursuit of the catchment goals. To be effective, co-operation between all public and private land and water managers is required and will be actively encouraged by the Board. State government agencies, local councils, and special interest groups will be important partners of the Board in implementing the Catchment Plan or particular projects. The Board does not have the resources nor should it undertake activities (such as monitoring or enforcement of license conditions) that are presently the responsibility of others, most often state government agencies. A close working relationship with these organisations is therefore very important.

Partnerships with other organisations are also important for the purpose of cost sharing on projects. The Board receives the majority of its income from a levy on licensed water users and property holders in the catchment. It is generally the case for Catchment Boards that the income derived from the levy is relatively small when compared to the scale of the issues that need to be addressed and the cost of doing so. To achieve the greatest benefits from the implementation of its Catchment Plan, the Board will aim to leverage each dollar it spends by obtaining additional funds. Where possible, these partnerships and cost sharing arrangements will be progressively negotiated prior to implementation of the Catchment Plan.



#### 4.6 Goal 1 Improve water quality

<b>G</b>	<b>Goal</b>	To protect and improve the water quality of the resources in the catchment to meet the needs of users of the resource.
<b>S</b>	<b>Strategies</b>	1.1 – Identify point and diffuse pollution sources, including land use practices, and prioritise and implement actions to minimise their impacts on water quality. 1.2 – Develop and protect wetlands. 1.3 – Control erosion and minimise sediment inputs to streams.
	<b>Targets</b>	Restoration of the priority areas of the riparian zone across the catchment. Improvement in urban stormwater quality. Minimise development impacts on water resources.
	<b>Indicators</b>	Extent of fencing / restoration of the riparian zone each year. Number of Property Management Plans developed for priority properties adjacent to riparian zones. Number of businesses with improved stormwater practices. Effective control of water affecting activities. Development Plans that incorporate water resource issues.

#### Discussion

The prosperity of the Northern Adelaide and Barossa regions is dependent upon the availability of good quality water for a wide range of uses including irrigation, industry, stock, domestic, recreation and tourism. Water quality is an important component in the management of catchments used to harvest public water supplies and in determining the health of aquatic ecosystems in streams and rivers and Gulf St Vincent.

The rapid expansion in horticulture and residential development in the catchment over the last forty years has required significant manipulation of the natural water regimes in the catchment. A wide variety of activities including increased consumptive demand for water, flood mitigation works, increasing stormwater run-off and pollutant loads, removal of riparian vegetation, construction of artificial channels etc, have all contributed to the degradation of riverine habitats and water quality.

Changing water and land use throughout the catchment has resulted in an increase in stream and river salinity in the Barossa Valley watercourses and in the groundwater resources of the Northern Adelaide Plains and the Barossa Valley. Further development and urbanisation in the Northern Adelaide Plains and Gawler areas is likely to increase stormwater run-off volumes and pollutant loadings. Strategic policies are required to promote practices that will ensure the long-term sustainability of water quality throughout the catchment, including groundwater and surfacewater bodies.



**Goal 1 : Continued**

Currently, there is only limited water quality data for watercourses within the Northern Adelaide and Barossa catchment. The available data is also varied in quality and quantity and is only suitable for a broad depiction of catchment issues and the likely trends. A review of this data has shown that water quality within the catchment generally declines with distance downstream from the headwaters in the Mount Lofty Ranges. The Little Para, Dry Creek and Gawler River systems are all currently stressed.

Nutrient and heavy metal concentrations are above aquatic ecology guidelines throughout most of the catchment (PPK, 1996 & 1997, EPA, 1998). The high rate of surface and groundwater extraction in the Barossa Valley is increasing the salinity levels of both resources (PPK, 1996). Dryland salinity and its effects on natural resources and infrastructure is an issue that requires the focused attention of all levels of government, industry and the community.

It is considered unlikely that the median pollutant concentrations in all but the headwaters of most rivers and streams would meet all of the relevant water use and environmental values. This has impacts on water treatment processes as well as ecosystems.



**Strategy 1.1  
Identify point and diffuse pollution sources, including land use practices, and prioritise and implement actions to minimise their impacts on water quality**

Determining appropriate use and environmental values for watercourses and water bodies in consultation with the community and other stakeholders will provide a basis for setting water quality targets. Steps will be taken to achieve these targets including on-ground works, education, programs for industry and business and the development and implementation of Watercourse Management Plans for each of the main catchment watercourses. It is intended that these plans will link closely to Stormwater Management Plans.

Pollution from point sources such as urban stormwater drains, industrial stormwater run-off, effluent and intensive agricultural operations and diffuse sources (including run-off from agricultural land and erosion) contain contaminants that will degrade the water quality of the receiving waters. Up to date information on the location and pollutant loads generated by these sources is required to assess the impacts on water quality and ecosystem health and to prioritise where funds should be invested for the greatest returns.



**Action 1.1.1  
Establish environmental values for water resources within the catchment and set appropriate improvement targets**

Determining appropriate use and environmental values for water resources within the catchment is the critical first step in improving water quality. The Board and community will then be in a position to set specific water quality improvement targets for each major watercourse. The approach will be consistent with the *National Water Quality Management Strategy* (1992) which requires water quality to meet appropriately determined local values. The new *Environment Protection Policy (Water Quality)* sets the initial values for all water bodies in the State and the process for amending these values.



**Goal 1 : Continued**

Some of the values that are applicable within the catchment are:

- potable use in the upper reaches of the South Para and Little Para systems
- agricultural (irrigation and stock watering) use in the Barossa Valley region
- protection of aquatic ecosystems in the river and riparian zones throughout the catchment
- protection of receiving water (Barker Inlet) aquatic ecosystems in lower reaches of the main watercourses
- potable and irrigation use from aquifers.



**Action 1.1.2  
A catchment audit of pollution sources**

The Board will commission a catchment-wide audit of point and diffuse pollution sources. The audit will identify key sources and provide a prioritised list of actions to assist the Board to progressively decrease pollutant loads. The identification and management of areas of risk in public water supply catchments and the implementation of a range of strategies to protect water quality will be an important focus for the Board.

A program to identify and decommission leaking bores is underway in the Northern Adelaide Plains - this program should be expanded to other areas of the catchment. The vulnerability of aquifers to contamination from land-based activities should also be determined. Areas of high vulnerability can then be appropriately managed to protect groundwater quality. The Minister and the Board will act to ensure that all wells are properly maintained to prevent degradation of the resource. Construction of a well is a water affecting activity requiring a permit from the Minister and the obligation to maintain a well is set out specifically in section 27 of the *Water Resources Act 1997*.



**Action 1.1.3  
Works to address point and diffuse source pollution**

Focus will be placed on the implementation of measures to control pollution at the source. However this is not always practical and a range of additional on-ground works including the construction of litter separators, pollution interception devices and the provision of buffer strips will be required on streams and stormwater systems within the catchment.



**Action 1.1.4  
Implement programs to reduce industrial water pollution**

Within the catchment there are a number of large industries and major retail centres, in addition to thousands of small and medium enterprises, in both the rural and urban areas of the catchment. All of these have the potential to act positively to improve the quality of water leaving their premises and therefore the quality of stormwater entering our waterways.

The Board will seek to engage these members of the catchment community through targeted awareness raising and education programs. These will include:



Goal 1 : Continued

- Continued support of the Pollution Prevention (Be Stormwater Smart) Program. This program currently involves the Board funding project officers who are located at the Playford, Salisbury and Tea Tree Gully councils.
- Working with other organisations to develop information packages for the retail sector, major industries, including the housing and construction industry.
- Investigating a series of workshops and seminars enabling discussion on best practice stormwater management and the sharing of information.
- Development of demonstration sites that promote best practice environmental management.
- Co-ordination with other Boards, state and local governments on these programs.
- Investigation of relevant incentives to encourage and reward improved management practices which lead to enhanced water quality.
- Continued support for the Pesticide Use in the Mount Lofty Ranges Watershed project which aims to significantly reduce off-site impacts of chemical use within the watershed.

It is acknowledged that while promoting improved water quality management via education campaigns can be extremely effective, enforcement is often required to back this up. The Board will work with other government agencies to ensure the correct balance between education and enforcement.

Table 4 - Program for the implementation of Strategy 1.1

Strategy		Cost over 3 years		
1.1	Identify point and diffuse pollution sources, including land use practices, and prioritise and implement actions to minimise their impacts on water quality			\$1,280,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
1.1.1	Establish environmental values for water resources within the catchment and set appropriate improvement targets	Determination of appropriate values and targets for the water resources throughout the catchment	Years 1-3	State Water Monitoring Committee (SWMC), DWR, EPA, MRHI, local government
1.1.2	A catchment audit of pollution sources	Identification of point and diffuse pollutant sources throughout the catchment	Years 1-3	SA Water, EPA, DWR, PIRSA, SWMC, MRHI, Landcare, community groups, local government
1.1.3	Works to address point and diffuse source pollution	Pollution prevention	Ongoing	Local government, DWR, SWMC, EPA, MRHI, community groups
1.1.4	Implement programs to reduce industrial water pollution	Promote best practice stormwater management	Ongoing	Local government, EPA, community, other catchment boards



Goal 1 : Continued



Strategy 1.2  
Develop and protect wetlands

Through a combination of physical, chemical and biological processes, wetlands can improve water quality. Wetlands also provide fauna and flora habitat and may offer significant amenity, recreation and educational opportunities. Incorporation of wetlands into linear parks provides ecological corridors, which are important in sustaining regional biodiversity. Wetlands can also provide storage for flood mitigation. Detention basins perform several of the same functions as wetlands, but do not provide the amount of habitat or water quality treatment capabilities.

Historical drainage and reclamation of wetlands across the catchment has resulted in the loss of biodiversity within the region and has also significantly degraded the aesthetic appeal of some areas. To reverse this trend, the Board will assist in the preservation of ecologically significant wetlands and the construction of new wetlands which will aid in the restoration of watercourse environmental values. Normally wetlands will be developed to achieve one or two primary functions (such as water quality improvement or habitat restoration), however careful planning may enable several objectives to be accommodated by a constructed wetland.

Key wetland locations to be considered in the catchment include:

- the Little Para River
- the "transition" and "incised" zones of the North Para River
- the old loam pits and disused sand mines on the Gawler River
- the Defence Science Technology Organisation precinct.



Action 1.2.1  
Investigate opportunities for artificial wetlands

A program to investigate the establishment of wetlands at key sites will be undertaken. Priorities are the Gawler River, Helps Road/Smith Creek and Little Para River catchments, as described above. A good model for off-stream wetlands is the Greenfields wetland on Dry Creek. The investigations for wetland location and layout should be undertaken once the environmental flow regime for the particular watercourse and stream system is adequately understood. This strategy therefore needs to link very closely with Strategy 4.3 for determining environmental flow requirements throughout the catchment.



Action 1.2.2  
Onground works for wetlands

The Board will support on-ground works to protect and enhance existing wetlands, and to establish new wetlands. In partnership with other agencies, on-stream and off-stream wetlands will be developed to meet multiple objectives wherever this is possible (e.g. flood mitigation, improve water quality, provision of habitat and recreation values).





Goal 1 : Continued

Table 5 - Program for the implementation of Strategy 1.2

Strategy		Cost over 3 years		
1.2	Develop and protect wetlands			\$330,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
1.2.1	Investigate opportunities for artificial wetlands	Water quality, degradation of riparian vegetation, recreation and amenity	Ongoing	State Water Monitoring Committee, DWR, EPA, PIRSA, National Monitoring River Health Initiative, local government
1.2.2	Onground works for wetlands	Water quality, degradation of riparian vegetation, recreation and amenity	Ongoing	Local government, DWR, SA Water, community groups

**S**

**Strategy 1.3**

**Control erosion and minimise sediment inputs to streams**

Erosion of stream banks and beds can result in sediment loads entering streams and rivers in the catchment, resulting in higher turbidity levels (ie. reduced light for instream plants and animals) and changes to the form of stream beds. Another source of sediment entering watercourses is broad acre sheet and gully erosion resulting from changes in land management and land use practices. Infrastructure within a watercourse may also contribute to bed and bank erosion and sedimentation.

The key references for determining the extent and significance of stream bank and bed erosion within the Gawler River catchment are the Riparian Zone Management Project (RZMP) watercourse surveys (EPA 1999a, b) undertaken by the Department for Environment and Heritage (DEH, formerly DEHAA). These studies locate the most significant areas of bank and bed instability within the North and South Para River catchments and give cost estimates for stabilising erosion heads. Stream bed and bank erosion is perceived to be a widespread issue within the upper reaches of the Gawler River catchment. Little information on erosion, however, is available for the Little Para River and Dry Creek catchments.

Land capability mapping by PIRSA provides broad-scale information on the high water erosion risk areas within the catchments. Watercourse surveys incorporating detailed erosion assessment have been undertaken by DEH (formerly DEHAA) for parts of the North and South Para River systems. Limited data on erosion points currently exists for the Little Para and Dry Creek systems.



Goal 1 : Continued

**Action 1.3.1**

**A**

**Assessment of main erosion points**

The Board will commission a catchment wide audit to expand upon existing surveys of erosion points along main watercourses. Investigations previously undertaken will be reviewed and partnerships formed with any agency or group, such as DWR, DEH, PIRSA, Landcare groups and Soil Conservation Boards with allied objectives. The audit will also identify structures causing bank and bed erosion (such as weirs, bridges, and gauges) as well as the effect of erosion and siltation on instream structures.

**A**

**Action 1.3.2**

**Onground works to stabilise waterways**

The Board will provide assistance to landowners, local councils and other agencies or groups to undertake works to stabilise waterways and reduce sheet and gully erosion. The involvement of local councils, and state agencies in the modification of existing structures, where these are contributing to erosion, will be essential. The Board will continue to co-ordinate this work and set priorities through its water course management program.

**A**

**Action 1.3.3**

**Management of stock access to key areas**

Unrestricted stock access is often a major cause of bed and bank instability in rivers and streams. The Board acknowledges that it is a sensitive issue, and will work with landholders to encourage best practice property planning and management. This action will be complemented by works to improve bank stability where this is an issue and to revegetate the riparian zone with native species. The Board will provide assistance to landholders through its watercourse management program to better manage stock access to watercourses, particularly in ecologically sensitive areas. Involvement in this program will be voluntary.

(See also Action 6.3.1 - Support development of Property Management Plans, and Strategy 4.1 - Protect and rehabilitate riparian and estuarine vegetation)



Goal 1 : Continued

Table 6 - Program for the implementation of Strategy 1.3

Strategy		Cost over 3 years		
1.3	Control erosion and minimise sediment inputs to streams			\$150,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
1.3.1	Assessment of main erosion points	Reducing sediment loads and stabilisation of watercourses	Years 1-2	Landcare groups, Soil Conservation Boards, Mt Lofty Ranges Catchment Program, PIRSA, DWR, EPA, local government
1.3.2	Onground works to stabilise waterways	Reducing sediment loads through minimising sheet and gully erosion and stabilising watercourses	Ongoing	Landcare groups, Soil Conservation Boards, Mt Lofty Ranges Catchment Program, PIRSA, Transport SA, SA Water DWR, landholders, local government
1.3.3	Management of stock access to key areas	Stabilisation of watercourses	Years 1-3	Landholders, local government



4.7

Goal 2 Sustainable Water Use

G  
S

Goal	To ensure that water use within the catchment is efficient, equitable and sustainable.
<b>Strategies</b>	2.1 – Implement management initiatives resulting from Water Allocation Plans. 2.2 – Improve knowledge of the availability of groundwater for use in irrigation. 2.3 – Improve water use efficiency and management practices. 2.4 – Define policies for sustainable land and water management. 2.5 – Determine the economic benefits of the use of water in prescribed areas.
<b>Targets</b>	More sustainable groundwater use. Better management of dams. Maximise irrigation efficiency. Minimise development impacts on water resources.
<b>Indicators</b>	Increase in aquifer pressures or levels. Development of effective policies with criteria that ensure sustainable catchment yields are established. Implementation of permit system to control dam construction. Reduction in the variability of application rates for selected crops. Effective control of water affecting activities. Development Plans that incorporate water resource issues.

Discussion

The surfacewater, water in watercourses and groundwater of the Northern Adelaide and Barossa catchment are extensively developed, with irrigation being the largest water consumer. At present, irrigators on the Northern Adelaide Plains rely primarily on groundwater (accounting for 94% of all extracted groundwater), while irrigators in the Barossa rely on groundwater, surfacewater and water in watercourses.

Unfortunately, the development of these water resources in some areas has been allowed to occur in a relatively uncontrolled manner. As a result, the rate of water use is near to, or has exceeded, the natural rate of replenishment of aquifers and the yield of surfacewater catchments. Exploitation has led to a decline in the availability and quality of surfacewater, as well as falling groundwater levels. This means that pumping costs increase, further development is limited, and ultimately, water resources may become unsuitable for irrigation. Ecosystems dependent upon water resources have also been severely impacted.

The *Water Resources Act 1997* provides three levels of management to ensure that water use is sustainable. Different management levels are applied in response to the level of use and the impacts of that use on water dependent ecosystems and other users.



## Goal 2 : Continued

The three main management levels are:

- management of water affecting activities through a permit system
- restrictions on use of a specified resource
- prescription and subsequent licensing of water extractions.

The lowest level of management control is provided by section 9 of the *Water Resources Act 1997* which lists several activities, some of which are land management or riparian zone management activities, all of which have the potential to affect either the quality or the quantity of a particular water resource. These activities include the construction of dams or the obstruction of watercourses, and the activities can be controlled via a permit system.

The activities that the Board will control via a permit system are addressed in section 4.14 of this Catchment Plan. The area affected by these controls includes the whole of the Northern Adelaide and Barossa catchment.

Section 16 of the *Water Resources Act 1997* provides that the Minister for Water Resources may prohibit or restrict the rate at which water is taken from a specific resource (such as a lake, groundwater resource or watercourse or an area of land where surfacewater is being collected). Restrictions allow existing users to continue to take water, but generally prohibit new development of the resource. The restrictions are used where it is evident that continued use of the resource at the existing rate will (or is likely to) result in any of the following:

- insufficient resources to meet the demands of existing or future users (including use by dependent ecosystems)
- the quality of the water resource is affected
- a serious effect on another resource dependent upon the restricted resource.

Restrictions are generally applied by the Minister to control development so that an assessment can be made of existing water use, the water needs of the environment and the sustainable limit of the water resource. Once the assessment has been made, management controls may be applied to ensure that future development of the resource occurs at a sustainable level. Currently, a restriction on the taking of surfacewater and water from watercourses is in place in the Greenock Creek subcatchment.

The third and most rigorous management level is prescription of a water resource. Section 8 of the *Water Resources Act 1997* provides that the Governor, on recommendation by the Minister, may prescribe a watercourse, lake or well or may declare an area of the State as a surfacewater prescribed area. Once a resource is prescribed, a person must obtain a licence to extract water. Licences, and the associated water allocations, are granted, varied or transferred in accordance with a water allocation plan, which must be developed through an extensive community consultation process. Currently, the Northern Adelaide Plains and the Barossa are the only prescribed resources within the Board's area that have water allocation plans associated with them.



## Goal 2 : Continued

The aim of this goal is to redress adverse impacts through initiatives that promote the sustainable use of land and water resources. Strategies to achieve this outcome are listed below.



### Strategy 2.1 Implement management initiatives resulting from Water Allocation Plans

The policies relating to the allocation of and transfer of water licences, and the taking and use of water resources in the prescribed areas are defined within the Water Allocation Plans for the Northern Adelaide Plains Prescribed Wells Area and the Barossa Prescribed Water Resources Area.

The Water Allocation Plans have been developed by the Board and will be administered by DWR on behalf of the Minister for Water Resources. A number of significant management initiatives that result from the Water Allocation Plans are outlined below, however reference should be made to the relevant Water Allocation Plans for information on the policies and management requirements in the prescribed areas.



#### Action 2.1.1 Ensure water use is measured

An important prerequisite for efficient water use and good water resources management practice is to be able to accurately measure how much water is being used. The State Water Plan includes metering of all licensed extractions as one of the management goals for the State. Likewise, the Water Allocation Plans for the Northern Adelaide Plains and the Barossa include metering of all licensed extractions as a management target. The Board will provide technical assistance to irrigators who are required to install water meters to ensure accurate information is collected.



#### Action 2.1.2 Promote planning for water extractions

Information such as the volume of water used, the source of water, and application rates should be recorded by all irrigators taking water from a prescribed resource or using water from other sources. This information will enable the Board to compile information on trends in water use and trends in water resources development across the catchment. Specific details on the information required is provided in the Water Allocation Plans for each prescribed area.



#### Action 2.1.3 Annual reporting of water use

The information provided annually by irrigators in prescribed areas will enable the estimation of water use efficiency using a water balance approach and known or measured climate, soil and crop parameters. This data will be stored on a central database to enable the analysis of irrigation performance and historical trends, to inform the Board and government agencies of the success of their programs and those areas that require additional attention and support.



Goal 2 : Continued

Table 7 - Program for the implementation of Strategy 2.1

Strategy		Cost over 3 years		
2.1	Implement management initiatives resulting from Water Allocation Plans	\$43,000		
Action	Action description	Issues being addressed	Timing	Partner Agencies
2.1.1	Ensure water use is measured	Monitoring of water usage	Years 1-2	DWR
2.1.2	Promote planning for water extractions	Management plans for water related developments in the catchment	Ongoing	DWR
2.1.3	Annual reporting of water use	Monitoring of irrigation efficiency	Ongoing	DWR

**S**

**Strategy 2.2  
Improve knowledge of the availability of groundwater for use in irrigation**

**A**

**Action 2.2.1  
Undertake groundwater resource investigations**

Understanding the groundwater resource is fundamental to sustainable water management and to providing security of supply to all users, including irrigators and the environment. Research projects are underway in both the Northern Adelaide Plains and the Barossa, and these will be complemented by further focused investigations. The Board will collaborate with DWR to undertake priority investigations, including the following:

- *Determination of the sustainable yield of major aquifers* – Determine the sustainability of groundwater resources in regions where high rates of irrigation and resource development are either occurring or are expected.
- *Investigation and management of groundwater in non-prescribed areas* – With ongoing expansion of irrigated horticulture and viticulture, it will be necessary to plan for the management and use of all groundwater resources. Permitting of water affecting activities, licensing, management, monitoring and reporting requirements will be extended to areas of intense or intensifying groundwater use in the non-prescribed areas as required.
- *Aquifer Storage and Recovery (ASR)* – Limited ASR is already in progress in the Northern Adelaide Plains and in the Barossa. The Board, together with DWR and EPA, will provide direction for future ASR projects by identifying regions or projects that would benefit from ASR.



Goal 2 : Continued

Table 8 - Program for the implementation of Strategy 2.2

Strategy		Cost over 3 years		
2.2	Improve knowledge of the availability of groundwater for use in irrigation	\$125,000		
Action	Action description	Issues being addressed	Timing	Partner Agencies
2.2.1	Undertake groundwater resource investigations	Knowledge gaps regarding groundwater resources	Years 1-3	DWR, EPA, universities

**S**

**Strategy 2.3  
Improve water use efficiency and management practices**

The Board will assist the whole catchment community to be more aware of the part all people play in reducing the amount of water used and ensuring its use is as productive as possible. It is therefore essential that water users understand the nature of the catchment's water resources, why they must be better managed and how this can be done.

Irrigation is the major water user within the catchment, maximising irrigation efficiency and the effective supply and use of water is a high priority. Supporting initiatives range from education and training, to the provision of on-farm technical support for irrigators, through to research and investigations.

**A**

**Action 2.3.1  
Support programs to promote irrigation efficiency**

Effective water management requires the goodwill and participation of all users. The Board will support projects throughout the catchment to promote irrigation efficiency. This will require the Board to develop partnerships with PIRSA, industry groups or associations to raise awareness, enhance knowledge and management skills and promote the adoption of best practice. The Board will use, and provide support for, existing networks and programs such as property management planning, soil, plant and irrigation management and industry research and development.

**A**

**Action 2.3.2  
Support programs to improve water use efficiency for domestic and industrial users**

The Board will promote the need for improved water use efficiency amongst the whole catchment community. Existing networks, information and educational resources and programs will be fully utilised. The Board will also investigate opportunities to encourage the installation and use of domestic water savings systems such as rainwater tanks.





**Goal 2** : Continued

**Table 9 - Program for the implementation of Strategy 2.3**

Strategy	Cost over 3 years			
2.3	Improve water use efficiency and management practices			\$300,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
2.3.1	Support programs to promote irrigation efficiency	Increased efficiency in irrigation practices	Years 1-3	PIRSA, DWR, industry, River Murray Urban Users Local Action Planning Committee, WaterWise
2.3.2	Support programs to improve water use efficiency for domestic and industrial users	Promoting efficient water use by households and industry	Ongoing	Local government, DEH, DWR, other catchment boards, community, SA Water



**Strategy 2.4**  
**Define policies for sustainable land & water management**

The Water Allocation Plans provide for the sustainable management of the prescribed resources, including groundwater within the Northern Adelaide Plains and groundwater, surfacewater and watercourses within the Barossa. The Catchment Plan must address the sustainable management of water resources that are not prescribed, including surfacewater and watercourses that exist within the Northern Adelaide Plains, South and Little Para catchments.



**Action 2.4.1**  
**Review farm dam development controls**

In areas where surfacewater or watercourses are not prescribed and are not part of the Mount Lofty Ranges Watershed, the construction of a farm dam requires a development authorisation from local council where the dam is considered development. State and local government agencies are currently considering declaring any new dam with a proposed volume greater than 2 megalitres as development. The Board supports this simplification of the farm dam approval process.

To ensure equity and sustainability of water resources, the Board has declared dam construction to be a water affecting activity requiring a permit (refer section 4.14). The Board will work with local councils to ensure that the approval process for farm dam construction can be administered efficiently.



**Goal 2** : Continued



**Action 2.4.2**  
**Implement management controls for surfacewater and watercourses in the Greenock Creek Restricted Area**

A restriction on further surfacewater and watercourse development has been in place in the Greenock Creek catchment since 18 February 1999. Management controls must be developed to protect existing users and the environment prior to the expiration of the restrictions in August 2002. The Board will consult the community and determine the most appropriate controls on the future development and use of surfacewater and watercourses in the area.



**Action 2.4.3**  
**Investigate and manage watercourses and surfacewater in non-prescribed areas**

In areas of the catchment where surfacewater and watercourses are not prescribed, there is a lack of information on water use patterns and the water needs of ecosystems. The Board will address this gap in information through investigations and the establishment of monitoring programs where appropriate. Where monitoring indicates that action must be taken, the Board will advise the Minister on its view of appropriate water resources management.

Particular attention will be paid to the catchments surrounding public water supply storages, including the South Para and Little Para catchments. Issues to be addressed in these areas include:

- land management practices and their impacts on water quality and quantity
- construction of dams, which have a cumulative impact on the quantity of water available for public water supplies and for water dependent ecosystems
- the interdependence of groundwater and surfacewater
- the appropriate level of management that should be applied to these catchments to achieve sustainable outcomes.

Recent investigations have shown that the lower South Para catchment is particularly important in providing environmental flows and is consequently an area where further investigation and management controls may be required.



Goal 2 : Continued

Table 10 - Program for the implementation of Strategy 2.4

Strategy		Cost over 3 years		
2.4	Define policies for sustainable land & water management outside prescribed areas			\$75,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
2.4.1	Review farm dam development controls	Management of farm dam developments to ensure equity and sustainability of water resources	Year 1	DWR, local government
2.4.2	Implement management controls for surfacewater and watercourses in the Greenock Creek Restricted Area	Protection of existing users and the environment prior to expiration of current restrictions	Years 1-2	DWR
2.4.3	Investigate and manage surfacewater and watercourses in non-prescribed areas	Knowledge gaps regarding water use patterns and ecosystem requirements in non-prescribed areas	Years 1-3	DWR, universities, local government



Strategy 2.5

Determine the economic benefits of the use of water in prescribed areas

The real challenge of sustainable water management lies in balancing the environmental, economic and social needs for water. Environmental sustainability is paramount and underpins the very health of our society and economy. Economic and social sustainability is also critical. While equity and fairness should underpin all water resource management policies and decisions, the Board acknowledges that achieving equity amongst water users is extremely difficult.

Limited information exists on input costs for industries that use significant amounts of water, or on the costs to the environment as a result of water use and wastewater disposal. Information about these costs is necessary if the relative environmental, economic and social issues are to be assessed and debated and to ensure more informed decision making. Further investigations are required into the economics of water dependent industry, where possible in partnership with other Boards and/or agencies.



Action 2.5.1

Monitor the effects of substitution of alternative sources of water on the value of the prescribed water resources

In the Northern Adelaide Plains, the Virginia Pipeline Scheme is providing reclaimed water from the Bolivar Wastewater Treatment Plant to irrigators for use in horticulture. In some instances, the reclaimed water is being used as a substitute for groundwater resources while in other instances the reclaimed water will be used to support new development.



Goal 2 : Continued

It has been suggested that the substitution of the reclaimed water for groundwater will have two effects: first, it will increase the number of transfers driving groundwater use to the areas where the reticulated water is not available; and second, it will change the price of water on the private market. Changes in the value of water as a result of substitution will be monitored so that policies can be developed to ensure that the transfer of entitlements is not limiting the drive for improved efficiency.



Action 2.5.2

Investigate the value of water as an input to a range of industries

A recent study on the value of water as an input to industry (mainly agriculture) has indicated that the aspect of water charging and cost recovery has yet to be fully explored. Cost recovery is one of the three key elements of sustainable water development, according to the COAG water reform agenda. The Centre for Economic Studies found little evidence in South Australia that higher unit costs for water are imposing enterprise-threatening situations except for pasture. Water based levies alone do not meet the total costs involved in the management of the prescribed resources, and no water based levy exists outside of the prescribed areas. Investigations will be carried out in partnership with other agencies to quantify the cost of water as a component of the total cost of production for a range of crops or industries.

Table 11 - Program for the implementation of Strategy 2.5

Strategy		Cost over 3 years		
2.5	Determine the economic benefits of the use of water in prescribed areas			\$ In-kind
Action	Action description	Issues being addressed	Timing	Partner Agencies
2.5.1	Monitor the effects of substitution of alternative sources of water on the value of the prescribed water resources	Determination of the sustainability of alternative water sources	Year 4	DWR, PIRSA, Industry
2.5.2	Investigate the value of water as an input to a range of industries	Identification of the commercial value of water and the effects of cost recovery	Years 4-5	DWR, universities, PIRSA, Industry



4.8

**Goal 3****Support innovative water use****G**

**Goal** To provide a regional approach to innovative management of water to maximise its beneficial use and minimise adverse environmental impacts.

**S**

**Strategies**

3.1 – Facilitate the productive use of alternative water sources.

3.2 – Aid local government to develop and implement plans for integrated stormwater management.

**Targets** Greater productive use of alternative water sources.

**Indicators** Increase in the volume of water used from alternative water sources.

**Discussion**

Sustainable water management involves the efficient use of traditional water sources such as groundwater and surfacewater, as well as the use of alternative water resources such as stormwater and treated wastewater (or reclaimed water). Utilisation of reclaimed water is already widespread in both the Northern Adelaide Plains and the Barossa, the use of reclaimed water from Bolivar WWTP providing an example. Urban stormwater is being used in innovative ways in some areas of the catchment (such as Salisbury and Playford), although stormwater harvesting is not practised widely throughout the catchment.

Water imported from other basins (such as from the River Murray) may also be used as an alternative water source. The impact that this may have on water quality and the land within the catchment needs to be thoroughly investigated before the implementation of such schemes. Furthermore, all new water development projects should proceed only after appropriate investigations into their merit and potential impacts, with suitable measures provided to avoid unacceptable impacts.

The role of Catchment Water Management Boards in relation to urban stormwater management is not clearly defined in the *Water Resources Act 1997* or the State Water Plan. Historically, stormwater drainage has been the responsibility of local government. However, the need exists to adopt a new and strategic approach, managing stormwater within a regional framework to achieve consistency and best practice, maximising the potential benefits for the Northern Adelaide and Barossa catchment. The Board has an opportunity to lead the development and implementation of a regional plan for urban stormwater, while maintaining and enhancing the traditional role of local government in stormwater management and on-ground works. To enable the effective and equitable use of these alternative water resources, it is necessary to clarify access rights and to develop a consistent management framework.



Goal 3 : Continued

**S****Strategy 3.1****Facilitate the productive use of alternative water sources****A****Action 3.1.1****Investigate opportunities for economic development based on alternative water sources**

Non-traditional water sources are becoming progressively more important as their resource value is recognised, and as the cost to access and use water rises. Use of alternative water sources can enable expansion or development of areas otherwise dependent on surfacewater and groundwater, or the reduction of unsustainable demands on these resources and extension of the productive life of water infrastructure. Alternative water sources not currently utilised, or under-utilised, will be investigated to determine the potential for their development and productive use. The Board will promote the sustainable development of alternative water resources in a responsible way, taking into consideration the relevant economic, social and environmental issues associated with their use.

**A****Action 3.1.2****Support research into technologies for the use of alternative water sources**

To ensure alternative water sources are used in a sustainable way, research is required to determine the most effective methods and technologies. Further work is required to build upon the existing information on the impacts of reclaimed water use upon soil structure, as well as the potential effects of reclaimed water discharge to streams or aquifers. The methods and technologies currently employed by industry may also need to be modified to enable the use of alternative water sources, where economically viable. The information obtained through research will feed into strategies and policies aimed at minimising any potentially detrimental effects of reclaimed water use. The Board will support research, which is likely to facilitate the greater use of alternative water sources.

**A****Action 3.1.3****Prepare a regional Stormwater Management Plan**

The Board will develop a strategic Stormwater Management Plan for the catchment. The project will involve:

- Identification of the regional opportunities for stormwater reuse throughout the catchment.
- Setting of achievable targets for stormwater reuse and water quality for the region, undertaken in conjunction with local government.
- Identification of areas of regional ecological significance, strategies that should be adopted to ensure their ongoing viability and future actions that should be taken by the Board.
- Policies in relation to access and use of stormwater (Action 3.2.1).
- Future directions for integrated stormwater management (including drainage and local flood mitigation).
- Prioritising the need for development of local Stormwater Management Plans (or Local Water Management Plans) through collaborative action with local councils.



**Goal 3** : Continued

Two water management studies have recently been completed for portions of the catchment, and these have addressed stormwater issues. Stormwater management strategies have been reviewed for the Munno Para Outfall and Helps Road Drain catchments (BC Tonkin, 1999), as well as the Dry Creek and Little Para River catchments (Rust PPK, 1997). These reports will be reviewed as part of the development of a regional strategic plan, to build upon existing information where it remains relevant and to help ensure consistency in approach.

Table 12 - Program for the implementation of Strategy 3.1

Strategy		Cost over 3 years		
3.1	Facilitate the productive use of alternative water sources			\$510,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
3.1.1	Investigate opportunities for economic development based on alternative water sources	Use of alternative water resources	Ongoing	SA Water, local government, Planning SA, Centre for Economic Studies
3.1.2	Support research into technologies for the use of alternative water sources	Use of alternative water resources	Ongoing	SA Water Corporation, universities
3.1.3	Prepare a regional Stormwater Management Plan	Need to strategically plan and increase utilisation of urban stormwater resources	Year 3	Local government, DWR, EPA

**Strategy 3.2**

**Aid local government to develop and implement plans for integrated stormwater management**

**Action 3.2.1**

**Develop policies for access to, and use of, stormwater**

The Board will take a proactive role together with state and local government to clarify the issue of rights to stormwater, to ensure certainty for potential investors in stormwater reuse schemes. With state and local government agencies (possibly under the local and state government Partnership Committees), the Board will develop regional policy and practice in relation to the rights to access and use stormwater. As part of the mandate for this committee, investigate a range of options for managing reuse schemes, one of which could be a system of permits for stormwater extraction.

**Action 3.2.2**

**Participate in the development of impact assessment and planning guidelines**

The Board together with state and local government will investigate and develop policies to aid the planning and management of schemes involving the use of non-traditional water resources or imported water.



**Goal 3** : Continued

Potential users of such resources will need to consider all existing land and water resource users, act to minimise any adverse impacts to users and natural resources, and seek approval from the relevant authority for any scheme. Criteria applying to the use of imported water, effluent and a range of other water affecting activities are described further in Section 4.14.

**Action 3.2.3**

**Provide technical support to local government**

The Board will assist local councils by providing technical advice and input to the preparation of development plans and other local strategies, particularly in relation to priorities identified in the regional strategic plan for stormwater management (Action 3.1.3).

**Action 3.2.4**

**Encourage stormwater recycling at a local level**

The Board's regional Stormwater Management Plan will identify the priorities for development of local stormwater management plans and recycling schemes. The Board will work collaboratively with local councils to encourage the implementation of the regional and local plans, thereby providing environmental, social and economic benefits to the local community, commerce and industry.

Table 13 - Program for the implementation of Strategy 3.2

Strategy		Cost over 3 years		
3.2	Aid local government to develop and implement plans for integrated stormwater management			\$30,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
3.2.1	Develop policies for access to, and use of, stormwater	Need to strategically plan and increase utilisation of urban stormwater resources	Years 1-3	Local government, DWR, Planning SA
3.2.2	Participate in the development of impact assessment and planning guidelines	Use of alternative water resources	Years 1-3	Planning SA, local government
3.2.3	Provide technical support to local government	Need to strategically plan and increase utilisation of urban stormwater resources	Ongoing	Local government
3.2.4	Encourage stormwater recycling at a local level	Need to strategically plan and increase utilisation of urban stormwater resources	Ongoing	Local government





4.9

**Goal 4**  
**Improve catchment biodiversity**

**G**

**Goal** To improve catchment biodiversity and ecosystem health.

**S**

**Strategies**

- 4.1 – Protect and rehabilitate riparian vegetation.
- 4.2 – Protect and rehabilitate aquatic habitat
- 4.3 – Provide water for the environment

**Targets**

- Restoration of the priority areas of the riparian zone across the catchment.
- Improvement in urban stormwater quality.
- Better management of dams.
- Environmental water flow requirements determined for all major watercourses.

**Indicators**

- Extent of fencing / restoration of the riparian zone per year.
- Number of Property Management Plans developed for priority properties adjacent to riparian zones.
- Number of businesses with improved stormwater practices.
- Development of effective policies with criteria that ensure sustainable catchment yields are established.
- Implementation of permit system to control dam construction.
- Percentage of streams with environmental flow requirements determined.

**Discussion**

The Board is committed to implementing programs to improve the biodiversity and ecological health of the catchment, as a fundamental requirement of the *Water Resources Act 1997*.

The ecological health of the catchment has been degraded since European settlement with the commencement of land development. There has been a significant loss of biodiversity and fragmentation of habitats within the region through various pressures such as clearance of native vegetation, infestation of exotic flora and fauna and pollution of streams. The major threats to the aquatic habitat within the catchment include altered flows, physical changes to watercourse morphology/habitat structure and poor water quality. Therefore to provide aquatic habitat there is a need to ensure both quantity and quality of water are adequate and that processes degrading physical habitat are identified and managed.

The Board has made an assessment of the need for water of the ecosystems in the catchment and the strategies, actions and policies in this Catchment Plan will ensure that water is provided for the environment. The Scientific Panel for the Gawler River Environmental Flows project has provided detailed recommendations on the water requirements for the water-dependent ecosystems in this catchment and the Board is committed to implementing these recommendations. In the Little Para and Dry Creek catchments there is limited data on the specific needs of the water-dependent ecosystems, although parts of these watercourses are known to be degraded. A number of the recommendations in the Gawler River Environmental Flows study will be applicable to these systems.



**Goal 4 : Continued**

To assist the Board in negotiating to provide for the needs of these systems, more detailed studies will be undertaken to quantify the requirements in a practical form that can be implemented where appropriate.

The riparian zone is a critical link between watercourses and their associated catchments and plays a key role in stabilising banks, acting as buffer zones by filtering diffuse source pollutants, providing habitat links between streams and floodplains, as well as the provision of habitats by the riparian zone itself. The Board recognises this and has developed a number of actions to address the protection of the riparian zone in the catchment.

Water quality is also a fundamental issue associated with ecological health and biodiversity. Actions to improve water quality are specified in Goal 1.

**S**

**Strategy 4.1**  
**Protect and rehabilitate riparian and estuarine vegetation**

Clearing, grazing and the invasion of exotic weeds and trees have degraded much of the riparian vegetation throughout the catchment. A number of remnants of high quality natural riparian vegetation remain. These sites are an important source of seed and provide reference sites for revegetation programs. It is imperative that these remnants are mapped and management plans are developed to protect them from further degradation. The status of mapping and development and implementation of management plans vary widely from sub-catchment to sub-catchment. The Board will seek to provide appropriate support according to the status of the management plan in a particular sub-catchment. These actions are discussed below.

**A**

**Action 4.1.1**  
**Map remnant riparian vegetation**

There is a need to identify, prioritise and map key sites of remnant riparian vegetation within the Gawler, Little Para and Dry Creek catchments. Mapping is an important component of effective riparian vegetation management and will be undertaken as part of the watercourse management program. This program links and provides for the strategic management of a number of related actions in the Catchment Plan that address stream condition, water quality, biodiversity and general catchment health.

**A**

**Action 4.1.2**  
**Develop site management plans for remnant riparian vegetation**

The watercourse management program and SA Urban Forests Biodiversity Program (1999) are existing initiatives that develop and implement management plans for priority riparian vegetation in the catchment. This work will continue to be supported and further developed, in co-operation with landholders and other stakeholders, through the production of management plans for significant sites. Local priority actions suitable for a site may include fencing, removing exotic trees and woody weeds and planting additional vegetation.



**Goal 4 : Continued**

**Action 4.1.3**

**A**

**Establish strategic corridor links and improve management of existing terrestrial vegetation**

There is a need to establish strategic ecological corridors to link riparian and terrestrial habitats to allow animals to migrate from one area to the other. The Board will also support initiatives to improve the management of existing terrestrial vegetation within the catchment. Whilst these systems may be some distance from streams and rivers many species move over a wide geographic range and rely on both riparian and terrestrial habitat for their survival. Priority actions for terrestrial vegetation may include weed removal, fencing and replanting.

**Action 4.1.4**

**A**

**Support initiatives to provide public access to major watercourses**

The effects of land management practices along major watercourses is an important issue for biodiversity and catchment health. The Board will seek opportunities to co-ordinate land use planning and management practices and investigate opportunities to link with linear park and open space strategies, e.g. the Metropolitan Open Space Scheme and Adelaide 21 Parklands. It is recognised that this process is a long term strategy.

Table 14 - Program for the implementation of Strategy 4.1

Strategy		Cost over 3 years		
4.1	Protect and rehabilitate riparian vegetation			\$490,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
4.1.1	Map remnant vegetation	Baseline data on the health of remnant riparian vegetation	Years 1-3	DEH (e.g. SA Urban Forests Biodiversity Program), landholders
4.1.2	Develop site management plans for remnant riparian vegetation	Protection and management of priority areas of remnant vegetation	Ongoing	DEH, landholders, local government, Urban Forests Biodiversity Program
4.1.3	Establish strategic corridor links and improve management of existing terrestrial vegetation	Providing habitat links between riparian and terrestrial areas	Ongoing	DEH, Trees for Life landholders, Forestry SA, landholders, local government, Urban Forests Biodiversity Program
4.1.4	Support initiatives to provide public access to major watercourses	Improving catchment biodiversity, water quality and public amenity	Ongoing	Local government, Planning SA



**Goal 4 : Continued**

**S**

**Strategy 4.2**

**Protect and rehabilitate aquatic habitat**

Threats to the aquatic habitat within the catchment include altered flows, physical changes to watercourse morphology/habitat structure and poor water quality. Therefore, to provide aquatic habitat there is a need to ensure both the quantity and quality of water are adequate and that processes degrading physical habitat are identified and managed. Actions to improve water quality are provided in Goal 1 while the provision of water for the environment is addressed in Strategy 4.3.

Physical changes to watercourse morphology/habitat structure that cause degradation include:

- poor linkages with the floodplain through levee construction and reduced flood peaks and frequency
- drainage of wetlands
- the presence of physical barriers to fish migration caused by dams, weirs and gauging stations
- removal of snags from watercourses and channelisation of watercourses to improve drainage during floods
- the deposition of silt within some habitats
- insufficient flows to maintain the requisite range of aquatic habitats.

The key actions to address these are:

**A**

**Action 4.2.1**

**Investigate hyporheic (river bed) habitat**

The first stage in this action is to investigate the location, extent and ecological function of hyporheic (within riverbed) habitat. This will then lead to the development of strategies for managing this habitat. Preservation of hyporheic habitat during dry periods when there are no surface flows ensures the preservation of aquatic invertebrates and semi-aquatic plants. This habitat is likely to be important in many of the streams in the catchment, given that the rivers and streams often cease to flow in summer. Therefore, several streams will be investigated as part of this action. The extent of hyporheic habitat has probably been significantly reduced since European settlement through reduced groundwater flows and siltation. This is a key recommendation of the Scientific Panel for the Gawler River environmental flows.

**A**

**Action 4.2.2**

**Investigate drought refuges**

Given the heavily modified state of the catchment and in particular the loss of wetland habitat, the remaining sites that provide drought refuge for water birds are of greater significance. Drought refuge is also important for other species such as fish, and is particularly important for the long-term survival of biota in arid and semi-arid environments. It is unclear whether the existing drought refuge provided in the catchment is sufficient and how this is likely to change in the longer term as more of the catchment is developed. Therefore, a study is required to examine these questions and will need to include the determination of the location, size and status of the existing drought refuge sites.



Goal 4 : Continued



**Action 4.2.3  
Identify and remove fish barriers**

The Gawler River environmental flows report identified that the stream flow gauging weirs at Gawler Junction, Turretfield, Yaldara and South East of Gawler were acting as barriers to fish migration. A study to identify fish barriers and investigate opportunities for their removal and/or modification with replanting of aquatic vegetation where appropriate will be undertaken, at least in part, via partnerships with university research projects.



**Action 4.2.4  
Optimise habitat value at Buckland Park**

The Gawler River floodplain has been severely modified through development on the floodplain and construction of levees. The result has been a loss of natural wetland and floodplain habitats and the communities they support. Despite the man made nature of Buckland Park it has now become an important wetland complex at the bottom of the Gawler River and provides habitat for migrating freshwater and marine fish and is also important for waterbirds. Therefore, the ecological value of Buckland Park should be maximised. This may be achieved through modification of the levee banks to provide more frequent connection with the sea for the migration of 'sea-run' fish, such as congoli, lampreys and jollytail and the preservation of wetland areas within Buckland Park. The Board will support co-operative approaches to improve the functioning of this wetland complex.

Table 15 - Program for the implementation of Strategy 4.2

Strategy		Cost over 3 years		
4.2	Protect and rehabilitate aquatic habitat	\$ in-kind		
Action	Action description	Issues being addressed	Timing	Partner Agencies
4.2.1	Investigate hyporheic (river bed) habitat	Increase the level of understanding of specific habitat requirements	Year 4	DWR, universities, National Monitoring River Health Initiative
4.2.2	Investigate drought refuges	Providing sufficient habitat for birds and other fauna during drought	Year 4	DWR, universities, local government
4.2.3	Identify and remove fish barriers	Removing barriers to fish migration	Year 4-5	DWR, universities, SA Water (where applicable), local government
4.2.4	Optimise habitat value at Buckland Park	Increasing the available habitat for fish and birds	Year 4-5	DWR, universities, DEH, local government, community



Goal 4 : Continued



**Strategy 4.3  
Provide water for the environment**

Extraction of surface and groundwater resources together with dam operation, catchment clearing, urbanisation and flood mitigation has resulted in altered flows for many of the streams in the catchment. Although little information exists on the specific impacts of changed flow a recent study in the Gawler River found the following (DEHAA 1999):

- a 60 percent reduction in flow volume in the Gawler River catchment
- zero or little flow during summer
- changes in seasonal flow patterns
- dampening of flow variability
- changes in flood frequency, peaks and duration.

These types of changes to the flow regime are also likely to be experienced by other rivers in the catchment. The type of ecological effects experienced by aquatic communities include:

- a reduction in drought refuge habitat over summer
- poor connective flows for fish migration and breeding
- insufficient over-bank flows for linkages with the floodplain for fish breeding and primary production
- insufficient flood flows for habitat maintenance.

Appropriate provision for environmental flows is therefore required to:

- enable the sustainable ecological functioning of the aquatic communities within the catchment
- preserve and/or enhance the biodiversity of the aquatic system
- provide for specific flows to encourage breeding cycles of native biota
- provide sufficient habitat quality and type
- allow movement of fish through river systems.

The Barossa and Northern Adelaide Plains Water Allocation Plans provide the legislative and policy framework for the provision and maintenance of environmental water requirements in the prescribed areas.

Actions to ensure that water is provided for the environment are outlined below:



**Action 4.3.1  
Comprehensive hydrologic modelling**

Over the next five years hydrological models will be developed, generally as part of other projects, to enable a better understanding of catchment yields and stream flow in the Gawler, Little Para and Dry Creek catchments. These models will assist in determining the impact of water storage and abstraction activities on the natural flow regimes of these watercourses.



**Goal 4 : Continued**

In particular, critical flow disparities such as the lack of flows over summer, which may have profound ecological consequences, can be highlighted. The relative contributions from surfacewater and groundwater needs to be investigated, as does the impact of further development of either resource on the flow regime. Furthermore, hydrological modelling of these catchments will enable the sub-catchments that provide the major environmental flows for downstream habitat zones to be determined, and targeted for protection. For example, the contribution of the Tenafeate Creek sub-catchment to South Para River flows will be determined.

**Action 4.3.2  
Implement the recommendations of the report on environmental water requirements of the Gawler River**

The recommendations of the DEHAA (1999) report investigating environmental water requirements of the Gawler River will be evaluated and where appropriate translated into changes in management practices. This will include modelling or testing alternative strategies, in consultation with key stakeholders.

**Action 4.3.3  
Identify environmental flow requirements for Little Para and Dry Creek systems**

A study will be undertaken to determine the environmental flow requirements for the Little Para River and Dry Creek. The scientific panel approach, as was used for the Gawler River catchment, is an appropriate model to apply to these systems.

**Action 4.3.4  
Review the operation of water supply reservoirs**

The Board will work with SA Water to review the operation of the water supply reservoirs in the catchment to determine and test environmental flow release strategies, with South Para reservoir being the highest priority. This action is consistent with the recommendations of the Scientific Panel for the Gawler River Environmental Flows. The implementation of this action may include the development of a formal water allocation system. (See Action 2.4.3 – Investigate and manage watercourses and surfacewater in non-prescribed areas)

**Action 4.3.5  
Preserve existing flows in priority tributaries of the Gawler River**

Several tributaries in the Gawler River catchment maintain moderate to high environmental values and are important flow inputs to the Gawler River. These watercourses include Jacobs Creek, Tanunda Creek and the Flaxman Valley. The Barossa Water Allocation Plan will provide the policy framework for ensuring that water resource development in these sub-catchments does not compromise the ecological integrity of these streams.



**Goal 4 : Continued**

**Table 16 - Program for the implementation of Strategy 4.3**

Strategy		Cost over 3 years		
4.3	Provide water for the environment	\$85,000		
Action	Action description	Issues being addressed	Timing	Partner Agencies
4.3.1	Comprehensive hydrologic modelling	Determination of the hydrological parameters for environmental water provisions	Years 1-3	DWR, local government
4.3.2	Implement the recommendations of the report on environmental flows for Gawler River	Environmental water needs of the Gawler River system	Years 1-3	DWR, SA Water, PIRSA, local government, community
4.3.3	Identify environmental flow requirements for Little Para and Dry Creek systems	Environmental water needs of the other key water systems in the catchment	Years 4-5	DWR, SA Water, local government, community
4.3.4	Review the operation of water supply reservoirs	Impacts and opportunities for improved water management to provide water for the environment without significantly undermining water supply security	Years 1-2	SA Water
4.3.5	Preserve existing flows in priority tributaries of the Gawler River	Environmental water needs of the Gawler River system	Ongoing	DWR, SA Water, PIRSA, community





4.10

**Goal 5**

**Adoption of catchment care**

**G**

**Goal** To increase the rate of adoption of catchment care practices by government, industry and the community

**S**

**Strategies**

- 5.1 – Promote the adoption of best practices in catchment management through targeted communication and education initiatives.
- 5.2 – Encourage and assist the community and industry to take an active role in catchment management.
- 5.3 – Coordinate and provide support for the delivery of education and training activities.

**Targets** Improvement in urban stormwater quality.  
Increased awareness and participation in best practice catchment management.

**Indicators** Number of business with improved stormwater practices.  
Number of onground catchment projects undertaken with community/school involvement  
Percentage of community awareness through market survey.

**Discussion**

The Board will take a leadership role in raising community and stakeholder awareness of best catchment management practices through co-ordination, developing partnerships with a range of interest groups and by community education and promotional activities. The Board wishes to foster a greater sense of community pride and responsibility for the health of our waterways and catchment.

The Board recognises the essential role of information and education in changing the practices and attitudes of individuals and organisations in order to improve water quality and the health of our river systems and the marine environment. The Board will also support community to broaden the number of individuals and groups involved in caring for our catchment. Funds allocated to community education and involvement programs focus on promoting 'best practice' water resources management across every sector of the community. Wherever possible, linkages will be made between community education, involvement and communications programs and the Board's program of on-ground works. The use of demonstration sites and the promotion of best practice through active involvement will be strongly encouraged.

The most effective way to achieve the Board's objective in this area is to recognise the significant contribution made by existing organisations. In order to deliver effective programs and projects, the Board intends to maintain and strengthen existing partnerships, as well as develop new partnerships across the catchment.



**Goal 5 : Continued**

**S**

**Strategy 5.1**  
**Promote the adoption of best practices in catchment management through targeted communication and education initiatives**

The Board's role in communicating catchment issues is very important. The Board will prepare and disseminate information designed to inform, educate and promote behaviour which contributes towards sustainable water use, improved water quality and a healthy river and marine environment.

The Board will initiate programs which target key sectors within the community in order to increase awareness and support changes in behaviour to meet catchment objectives. Such sectors will include, but not be limited to, schools, specific industries, irrigators, councils, watercourse managers, householders and cultural groups. The Board will also identify opportunities to enter into partnerships with other organisations involved in education programs or to provide support for their development and/or delivery by others.

This program will involve:

- developing a catchment care culture
- identifying key target sectors, including schools, industry groups, cultural groups, the general community and local government
- the development of appropriate information kits to meet each target audience's specific requirements, including signage, fact sheets, speakers kits and displays
- ensuring consistent messages and themes to communicate the catchment care message
- exploring the use of existing venues and networks for distributing information including libraries, service clubs, schools and community groups.

**A**

**Action 5.1.1**  
**Develop a Communication Strategy**

The Board will prepare a Communication strategy which promotes best practice, the role of the Board and community involvement and responsibility in sustaining a healthy catchment. This strategy will:

- identify key target sectors, including schools, industry groups, irrigators, cultural groups, local government and the general community
- develop appropriate communication methods to meet each target audience's specific requirements
- identify partners.

**Goal 5** : Continued

This Strategy will include, but will not be limited to:

- a pro-active local media campaign featuring on-ground works, partnerships, etc
- promoting Board activities through launches, events, displays and signage
- continued development and promotion of the website
- development of best practice kits
- tours of the catchment to demonstration sites
- development of a catchment workshop series.

**Action 5.1.2****Maintain the Northern Adelaide and Barossa website**

The Board will develop and maintain a database of all existing relevant programs and activities operating in the catchment which promote and support community and industry involvement in improving the catchment. The database will include:

- Board activities and works
- the State of the Catchment
- resources available including grants and reports
- useful contacts.

The Board will maintain and regularly update the Board website and use the website to make information from the catchment database available to the wider community. The Board will also develop stronger linkages with other catchment boards and relevant environmental websites and databases.

**Action 5.1.3****Develop targeted newsletters, fact sheets and other promotional material**

The Board will review the existing newsletter and other promotional material to ensure it matches the needs of the specific target audiences. The Board will continue to distribute a catchment-wide newsletter incorporating any changes recommended by the review.

The Board will investigate the development of targeted newsletters and information brochures to certain sectors of the catchment community, for example: irrigators, home builders and manufacturing industries.

**Action 5.1.4****Develop and co-ordinate an education and involvement strategy**

The Board will develop an education strategy which links existing programs and targets key areas not currently being addressed. The strategy will focus on important sectors within the catchment and deliver programs and resources relevant to their needs.

**Goal 5** : Continued

The Board believes that it is essential to empower the community to become and stay involved in activities that improve the state of our catchment.

This may be as simple as adopting stormwater smart practices around the home, or may involve setting up a group to care for a local waterway or choosing to use public transport instead of owning a car. As a result, educational activities translate into on-ground benefits to catchment health.

Therefore, education programs will focus on raising awareness and promoting attitudinal and behavioural change through best practice demonstration sites and 'learning through action.' The Board is also committed, within its budget constraints, to providing the human, technical and financial resources necessary to support groups and individuals who want to make a difference. Specific activities aimed at important target audiences are outlined below.

For programs focused on industry see Action 1.1.4 – Implement programs to reduce industrial water pollution, and for water users see Action 2.3 - Improve irrigation efficiency and management practices.

Broad based generic awareness-raising messages will be developed with other Boards through the WaterCare campaign. (See Action 5.3.2 - Ensure education and communication initiatives are co-ordinated).

**Schools**

The Board will ensure a continued and expanded school-based program which involves teachers, students and parents from schools in the catchment. The Board will:

- continue to support the Waterwatch Program, and expand as appropriate
- review available programs, resources and educational materials to identify gaps and overlaps and develop, through appropriate partnerships, material which is suitable for programs for school children of all ages
- support professional development for teachers as appropriate
- promote integration of 'catchment care' into the school curriculum
- build effective working relationships with other organisations involved in schools based environmental education, for example:
  - Department Education Training and Employment (DETE)
  - Australian Association for Environmental Education (AAEE)
  - Urban Forests Biodiversity Program
  - KESAB
  - Environmental Landcare Education Network
  - Investigator Science and Technology Centre.

**Landholders and Community Groups**

The support of landholders and community groups is essential if the Board is to meet its goal of enhancing the ecology and appearance of watercourses as well as improving water quality.



**Goal 5** : Continued

The Board will undertake a range of actions to assist in this work, including:

- continued support and expansion of a Catchment Care program (Our Patch) to promote and support community involvement in catchment care activities
- support the employment of appropriately qualified and experienced Project Officers to be based at suitable locations in the catchment to assist in the on-ground implementation of actions to rehabilitate watercourses
- preparation of extension materials on topics such as:
  - re-establishing riparian vegetation
  - weed control
  - practices which increase flooding risks
  - fencing techniques for stock exclusion
  - creating wetlands
  - erosion control.
- promotion of Educational Field Days to enable demonstration to landholders and other interested people of the techniques and outcomes of rehabilitation projects and good watercourse management on identified properties.

**Action 5.1.5**

**Market Research**

Market research is an important component in the delivery of targeted education and communication campaigns. The Board will regularly assess the effectiveness of its catchment community education programs to ensure that the Board's investment is delivering expected outcomes. The Board will want to know to what extent its education programs are making a difference to people's attitudes and behaviours. To assist in this review process the Board will:

- undertake periodic market research surveys to identify the level of awareness of the community of specific issues related to water use and quality and to test their understanding of their potential to contribute to improvements in the catchment
- periodically conduct an independent survey or conduct focus groups with those directly involved as target audiences for the Board's programs such as schools, industries, retail and housing sector to obtain feedback on the process and outcomes of the program
- ensure that the findings of market research and targeted surveys are used to inform the development of material and refocus the message to better reach the audience where this is required.



**Goal 5** : Continued

**Table 17** - Program for the implementation of Strategy 5.1

Strategy		Cost over 3 years		
5.1	Promote the adoption of best practices in catchment management through targeted communication and education initiatives			\$1,050,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
5.1.1	Develop a communication strategy	Promotion of best practice and catchment care culture	Ongoing	Other catchment boards, local government, DWR, community
5.1.2	Maintain the Northern Adelaide and Barossa website	Community access to catchment information	Ongoing	Other catchment boards, local government, community
5.1.3	Develop targeted newsletters, fact sheets and other promotional material	Information dissemination	Ongoing	Other catchment boards, DWR, PIRSA, community
5.1.4	Develop and co-ordinate an education strategy	Education and awareness	Ongoing	DWR, PIRSA, other catchment boards, DETE, community, local government
5.1.5	Market research	Effectiveness of education and communication programs	Ongoing	Other catchment boards, DWR, local government



**Strategy 5.2**

**Encourage and assist the community and industry to take an active role in catchment management**

The Board will support community and industry based catchment activities and continue to develop partnerships. Through community ownership of water resource issues, and active involvement in catchment management and rehabilitation, the goals of healthier river and marine environments can be realised. The Board can play a positive role in facilitating community involvement through the provision of relevant information, grants and incentives. In undertaking this role, the Board respects the independence of community groups, and values the immense local knowledge of this catchment.

The Board will also endeavour to develop partnerships with a broad cross-section of the community, including art/craft groups, historical societies, churches, drama groups, ethnic groups, etc.



**Action 5.2.1**

**Community partnership and incentive scheme**

Currently (2000-01), the Board provides approximately \$80,000 per annum in community grants to undertake small scale community driven initiatives and a further \$15,000 through the sponsorship scheme.



**Goal 5 : Continued**

The Board will review its current activities and develop a revised community incentive scheme which will:

- provide performance targets to enable the measurement of program effectiveness on an ongoing basis
- establish the basis for allocation of funds consistent with the objectives of the Catchment Plan
- identify priority groups or activities for support
- investigate participation in WaterCare Awards.

The Board will involve key community groups and other founders of land and water care initiatives in the conduct of this review process. In addition, the Board will investigate opportunities to identify and support community members who play a leadership role in encouraging the community to care for their local catchment.

**Action 5.2.2**



**Develop partnerships to implement projects of cultural or heritage significance within the catchment**

The Board recognises that the diversity of interests of different cultural groups, including indigenous groups, necessitates a good understanding of specific cultural issues. Therefore the Board will seek to develop partnerships with relevant government agencies and organisations to ensure that any projects of cultural or heritage significance are undertaken in an appropriate manner.

Table 18 - Program for the implementation of Strategy 5.2

Strategy		Cost over 3 years		
5.2	Encourage and assist the community and industry to take an active role in catchment management	\$320,000		
Action	Action description	Issues being addressed	Timing	Partner Agencies
5.2.1	Community partnership and incentive scheme	Support for community to adopt best practice and catchment care culture	Ongoing	Community, other catchment boards
5.2.2	Develop partnerships to implement projects of cultural or heritage significance within the catchment	Recognition of cultural and heritage issues	Ongoing	DEH, local government, community



**Goal 5 : Continued**



**Strategy 5.3**

**Co-ordinate and provide support for the delivery of education and training activities**

The Board has a key role to play in ensuring that education and training information and programs relating to catchment management are delivered in a co-ordinated and consistent manner. An important aspect of this is clarifying roles and responsibilities with other service providers.

To do this the Board will play a leadership role in developing partnerships with a range of institutions and groups in order to promote research and education in land and water management to raise community and stakeholder awareness.



**Action 5.3.1**

**Establish reference groups**

The Board will establish specific purpose reference groups from local government, industry and the community where appropriate, to encourage community input into Board decisions, the co-ordination of services and promotion of the Board's programs. The groups will discuss specific actions and programs and identify and review responsibilities.



**Action 5.3.2**

**Ensure education and communication initiatives are co-ordinated**

The Board will:

- Work closely with other Catchment Boards to ensure consistent and co-ordinated education and communications programs and campaigns (such as the WaterCare campaign piloted by the Torrens and Patawalonga Catchment Boards).
- Participate in regular forums to enable those involved in the fields of community and industry education to review current programs and plan for future programs in a way which reduces overlaps, addresses gaps and ensures the best use of resources.
- Establish and maintain links with the Universities, TAFE Colleges, key community and industry groups and relevant Commonwealth and state government agencies.
- Promote and support, where appropriate, research into best catchment care works and educational campaigns.



**Action 5.3.3**

**Catchment forums**

A range of groups and individuals are committed to working for improved land and water management within the catchment. It is important that all those groups who are working in these programs have an opportunity to meet regularly to exchange ideas and investigate ways to work more effectively together.

The Board will support these processes by co-ordinating regular catchment forums for representatives of groups working in the catchment to enable discussion of co-operative approaches to seeking and using funds available from a range of sources.





**Goal 5** : Continued

The Board will also facilitate regular meetings of program co-ordinators and funded Project Officers to exchange information, identify barriers to achieving project outcomes, provide a forum for discussion of successful resolutions to problems and to explore ways to work together.

**Table 19** - Program for the Implementation of Strategy 5.3

Strategy		Cost over 3 years		
5.3	Co-ordinate and provide support for the delivery of education and training activities			\$159,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
5.3.1	Establish reference groups	Integration of stakeholder views and skills for specific issues	Years 1-2	Industry, community
5.3.2	Ensure education initiatives are co-ordinated	Effective education strategies	Ongoing	Other catchment boards, DWR, DEH, DETE
5.3.3	Catchment forums	Information exchange	Ongoing	Other catchment boards, DWR, PIRSA, community, DEH



**4.11**

**Goal 6**  
**Integrate land and water management**

**G**

**S**

<b>Goal</b>	To integrate land and water management practices and activities at all levels.
<b>Strategies</b>	<ul style="list-style-type: none"> <li>6.1 – Clarify responsibilities and, where necessary, formalise relationships with all authorities managing water resources in the catchment.</li> <li>6.2 – Develop a land use and planning regime that enables better water management.</li> <li>6.3 – Develop methods for monitoring and controlling land management practices that may have significant effects on the water resources of the catchment</li> <li>6.4 – Incorporate cultural and heritage issues in land and water management.</li> </ul>
<b>Targets</b>	<ul style="list-style-type: none"> <li>Restoration of the priority areas of the riparian zone across the catchment.</li> <li>Better management of dams.</li> <li>Minimise development impacts on water resources.</li> <li>Maximise investment in catchment management.</li> </ul>
<b>Indicators</b>	<ul style="list-style-type: none"> <li>Extent of fencing/restoration of riparian zone per year.</li> <li>Number of Property Management Plans developed for priority properties adjacent to riparian zones.</li> <li>Development of effective policies with criteria that ensure sustainable catchment yields are established.</li> <li>Implementation of permit system to control dam construction.</li> <li>Effective control of water affecting activities.</li> <li>Development Plans that incorporate water resource issues.</li> <li>Ratio between levy funds and external investment.</li> </ul>

**Discussion**

Beneficial change in the condition of the catchment can be achieved if land and water management policies, programs and practices are appropriate to catchment conditions and are effectively integrated. The Board can act in a number of ways to improve integration including using the powers and tools provided in the *Water Resources Act 1997*. The Board can also lobby for legislative change where it considers this appropriate. The Board's main influence however will be through its ability to co-ordinate and resource activities, advocate for change, educate and raise awareness of catchment issues and the benefits of change, and to devolve responsibilities to the most effective level (in line with the COAG water reform agenda).

To deliver appropriate, workable and timely solutions to the catchment issues, the Board will need to work in association with a variety of organisations. The Board will seek to work co-operatively with, and will need the support of, many state government agencies including, Department for Water Resources, Planning SA, Department for Environment and Heritage, Primary Industries & Resources SA, Environment Protection Authority, and the SA Water Corporation. The active support of local government will also be critical to the effective implementation of this Catchment Plan and the improvement of the condition of the catchment.


**Goal 6** : Continued

Although inroads have been made to better integrate the management of land and water resources, a number of deficiencies remain to be addressed. These are:

- A lack of co-ordination between the several agencies and institutions that are involved in regulating activities that affect water resources, often acting in the absence of a common, clearly defined objective.
- The instruments through which the controls are exercised have apparent gaps which would, if remedied, provide a better platform for integrated action and control.
- The removal of watercourse management responsibilities from the *Local Government Act 1999*, leaving a gap in programs for local environmental management. This responsibility now resides with the Board, and the question of the most effective method of implementation remains to be resolved.
- There are no formal requirements of other statutes, such as the *Development Act 1993*, to link with or have regard to the *Water Resources Act 1997*, and limited emphasis is placed on water resource issues in development control. The Board is required to be consulted only as an interested stakeholder in any Development Plan amendment.

The management of watercourses by local government has traditionally been, and remains, an important activity. In some cases, such as in Salisbury, effective watercourse management is a priority as ongoing improvements in water quality are important to local environmental objectives and innovative water uses. Local government has managed several water-related issues in the past, including dams, watercourse obstruction and realignment, adjacent development, water quality and reuse, and flood protection. Local governments within the catchment have also expressed their desire to manage linear park development, effluent reuse, the protection of Barker Inlet, riparian clean-up and restoration, and control of loam pits in association with the Board.

The *Water Resources Act 1997* makes it possible for the Board to take a significant role in several, if not all, of these areas. In relation to flood management, the Board has decided that it will have a co-ordinating role. However, in relation to many other issues, the Board can directly control 'water affecting activities' (for which a permit must be obtained; refer to Section 4.14). While quite wide powers of regulation and enforcement are available to the Board, the most effective implementation may be achieved by devolving the responsibility to local government (including the issue of permits and enforcement powers). In doing so, local government can move closer toward integrating land and water management with planning and public health. The scope of possible 'water affecting activities' and associated delegations has been canvassed with senior staff of councils in the catchment. Agreement to this course of action will require further negotiation.


**Goal 6** : Continued

**Strategy 6.1**
**Clarify responsibilities and, where necessary, formalise relationships with all authorities managing water resources in the catchment**

To effect delivery of this Catchment Plan and the Water Allocation Plans, the Board will enter into partnerships with relevant state and local government agencies, providing financial and in-kind support for catchment activities of mutual benefit or responsibility.

The Board will not assume responsibility for actions that are currently the responsibility of other agencies (such as monitoring, licensing or enforcement), or actions that would be better delegated to other agencies, unless it is clearly in the interests of the catchment and its community and adequate resource transfers are provided.

**Action 6.1.1**
**Establish a state government reference group**

The Board will establish a forum of representatives from relevant agencies for the purpose of developing clear powers, responsibilities and actions to assist the Board with the implementation of its responsibilities. Issues for resolution could include:

- integrating the Catchment Plan with agency plans for natural resource management
- education and training
- catchment monitoring
- licensing and enforcement of regulations
- resource sharing
- access to funding.

Regular meetings are required at the outset of the forum to provide direction, establish roles and clarify responsibilities. After these proceedings, meetings will be held as required to maintain effective integration and efficient delivery of services and catchment improvements.

**Action 6.1.2**
**Establish a local government reference group**

The Board will establish a local government forum for the purpose of developing clear powers, responsibilities and actions to assist the Board with the implementation of its responsibilities. Issues for resolution could include:

- delegations and continuing review of responsibilities (including water affecting activities)
- effective and co-ordinated planning policy and administration respecting catchment philosophies
- floodplain management and works programs
- resource sharing
- education and training.



**Goal 6** : Continued

Regular meetings are required at the outset to provide direction, establish roles and clarify responsibilities. After these proceedings, meetings can be held as required to maintain effective integration and efficient delivery of services and catchment improvements.



**Action 6.1.3**  
**Working with local government**

Councils play a major role in the management of land and infrastructure and in initiatives to improve water quality and reduce reliance on traditional sources of water.

The Board will seek to facilitate appropriate co-ordination to ensure council staff are in a position to implement best practice. The Board will also continue to provide funding for the employment of the Catchment Officers.



**Action 6.1.4**  
**Devolve agreed responsibilities for water affecting activities**

The Board believes that local government is best placed to implement a system to effectively manage water affecting activities but recognises that resources and technical advice will be required. The Board will commence negotiations with each council in the catchment to define and agree on the scope and extent of delegation of the Board's powers and appropriate resource assistance or other conditions that may be required. The Board will undertake the necessary work to ensure that an effective administrative system can be implemented at Board or local government level.

Table 20 - Program for the implementation of Strategy 6.1

Strategy		Cost over 3 years		
6.1	Clarify responsibilities and, where necessary, formalise relationships with all authorities managing water resources in the catchment.			\$269,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
6.1.1	Establish a state government reference group	Roles and Responsibilities Consistency between Board and state government	Year 1	DWR, PIRSA, SA Water, Planning SA, DEH
6.1.2	Establish a local government reference group	Roles and Responsibilities Consistency between Board and local government	Year 1	Local government
6.1.3	Working with local government	Facilitate appropriate coordination to ensure the implementation of best practice	Ongoing	Local government
6.1.4	Devolve agreed responsibilities for water affecting activities	Roles and Responsibilities Consistent and integrated policy on water affecting activities	Years 1-2	Local government, DWR, Planning SA, DEH



**Goal 6** : Continued



**Strategy 6.2**  
**Develop a land use and planning regime that enables better water management**



**Action 6.2.1**  
**Develop urban stormwater policies**

The Board will work with local government and other stakeholders to develop policies for land use planning and development and, where appropriate, implement urban stormwater management policies for established and new urban areas. The Board recognises that the Torrens and Patawalonga Catchment Water Management Boards are currently developing a policy to this effect.

This may also involve amendments to council Development Plans through a Ministerial Plan Amendment Report (PAR). In developing urban stormwater policies the Board will recognise the Stormwater Pollution Prevention Codes of Practice prepared by the South Australian EPA.



**Action 6.2.2**  
**Ensure development legislation and planning mechanisms adequately address matters affecting water resources**

A variety of activities will be undertaken by the Board in collaboration with local government and the relevant Ministers to ensure that development legislation and planning mechanisms appropriately recognise and address matters affecting water resources. These activities are likely to include, but may not be limited to the following:

- A submission to the Minister overseeing the *Development Act 1993* advocating change to the development regulations such that environmental assessment and referral to Catchment Water Management Boards are required for water affecting activities; and that advisory or directive powers, particularly for water affecting activities, are given to Catchment Water Management Boards.
- A submission to the Minister overseeing the *Development Act 1993* formally requesting local government to consider water resources in their Section 30 Reviews of the Development Plan. Also, the benefits of the Minister formally seeking comments from the Board regarding plan amendments and reviews will be encouraged.
- A submission to the relevant Ministers, which advocates the amendment of legislation and strategic plans, effectively requiring legislation related to land and water management to be consistent with the *Water Resources Act 1997*, just as this Act requires conformance with other Acts and associated plans.
- A program to monitor and comment on changes to planning policy, legislation and other development activities.
- A program to review rural, residential and industry related planning bulletins for adequacy in water management and advocate amendments where necessary.



**Goal 6** : Continued



**Action 6.2.3**

**Controls on land developments with the potential to affect water resources**

The Board will implement a system of permits for water affecting activities associated with land development. The relevant water affecting activities are described in Section 4.14. The Board will also undertake investigations at the catchment and sub-catchment level to revise existing and establish new guidelines for the effective and consistent administration of water affecting activities.

Table 21 - Program for the implementation of Strategy 6.2

Strategy		Cost over 3 years		
6.2	Develop a land use and planning regime that enables better water management	\$ in-kind		
Action	Action description	Issues being addressed	Timing	Partner Agencies
6.2.1	Develop urban stormwater policies	Water affecting activity	Years 2-4	Local government, other catchment boards
6.2.2	Ensure development legislation and planning mechanisms adequately address matters affecting water resources	Assessment of development that may affect water resources	Ongoing	Planning SA, local government
6.2.3	Controls on land developments with the potential to affect water resources	Controls on water affecting activities	Ongoing	Planning SA, local government, DWR



**Strategy 6.3**

**Develop methods for monitoring and controlling land management practices that may have significant effects on the water resources of the catchment**



**Action 6.3.1**

**Support development of Property Management Plans**

The Board will support the development and implementation of property management plans in priority areas, develop appropriate incentives to increase participation in property management planning, and explore the potential for linkages with water affecting activities, water allocation strategies and the planning system. As it presently stands, a property management plan is not supported by statute. The preparation of such plans will generally arise from co-operative arrangements between the Board, landowners and relevant agencies. In the pursuit of its strategy to facilitate the progressive implementation of property management plans, the Board intends to:

- give priority to properties which require riparian zone improvements
- develop incentives for landowners to become part of the property management regime
- develop links between water allocation strategies, water affecting activities and property management plans



**Goal 6** : Continued



**Action 6.3.2**

**Water affecting activities relating to land management**

The Board will implement a system of permits for water affecting activities associated with land use and management. The relevant water affecting activities are described in Section 4.14. The Board will also undertake investigations at the catchment and sub-catchment level to revise existing and establish new guidelines for the effective and consistent administration of water affecting activities.

Table 22 - Program for the implementation of Strategy 6.3

Strategy		Cost over 3 years		
6.3	Develop methods for monitoring and controlling land management practices that may have significant effects on the water resources of the catchment	\$100,000		
Action	Action description	Issues being addressed	Timing	Partner Agencies
6.3.1	Support development of Property Management Plans	Influencing and controlling land practices that affect water resources	Ongoing	PIRSA, landholders, LandCare
6.3.2	Water affecting activities relating to land management	Influencing and controlling land practices that affect water resources	Years 1-3	DWR, PIRSA



**Strategy 6.4**

**Incorporate cultural and heritage issues in land and water management**



**Action 6.4.1**

**Investigate opportunities to include cultural and heritage issues, including Indigenous issues, in biodiversity planning and management**

The Northern Adelaide and Barossa catchment comprises a diverse range of cultures and the Board is committed to developing partnerships across the whole community. The Board also recognises that catchment projects may impact on the fabric of local indigenous cultural heritage and that it is important that cultural and spiritual values are taken into account in the planning process.

The Board will work closely with appropriate cultural groups, including indigenous representatives, to investigate opportunities for incorporating cultural and heritage issues into the catchment programs. This may involve the development of reference groups (Action 5.3.1). The Board recognises that the diversity of interests of Aboriginal peoples and other cultural groups requires flexibility and adaptability, and appropriate staff training.





**Goal 6** : Continued

Table 23 - Program for the implementation of Strategy 6.4

Strategy		Cost over 3 years		
6.4	Incorporate cultural and heritage issues in land and water management			\$25,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
6.4.1	Investigate opportunities to include cultural and heritage issues, including indigenous issues, in biodiversity planning and management	Recognition of cultural and heritage issues	Ongoing	DEH, local government



**Goal 7**

**Monitor catchment health**

4.12

**G**

**Goal** To monitor and assess the water resources and ecological health of the catchment

**S**

**Strategies**

- 7.1 - Link with existing monitoring programs
- 7.2 - Develop targeted monitoring programs for ecological health at key locations throughout the catchment
- 7.3 - Undertake investigations to fill knowledge gaps and provide information for improved catchment management
- 7.4 - A performance review of the Catchment Plan.

**Targets** Increased awareness and participation in best practice catchment management.  
Increase knowledge of the state of the catchment.

**Indicators** Number of onground catchment projects undertaken with community/school involvement  
Percentage of community awareness through market survey.  
Maintenance of monitoring network.  
Number of investigations carried out to fill knowledge gaps.

**Discussion**

The measurement of physical, chemical and biological parameters is necessary to assess the quantity and quality of the water resources of the catchment and the health of its water dependent ecosystems. An important component of any monitoring program is the acquisition of baseline information against which to assess change over time. At present there are a number of knowledge gaps regarding the existing conditions of the catchment, which need to be addressed in order to provide the Board with sufficient information to effectively manage the water resources within the catchment.

An effective mechanism for undertaking the necessary monitoring activities is to link with (and extend where appropriate) existing monitoring programs in the catchment. This is a cost effective means of collecting information and using resources. Likewise, community participation in monitoring should be encouraged since the Catchment Plan is largely to be implemented by, and for, the community.

In establishing any monitoring program, whether it involves water quality, groundwater or ecological parameters, the program must be designed to specifically address a series of clearly articulated objectives. Depending on the objectives of the program, it may be more effective to spread monitoring locations along each watercourse for greater coverage or to target certain 'hotspots' where impacts are greater under certain conditions. It is also important that appropriate Quality Assurance/Quality Control procedures are followed in order to have confidence in the validity of the monitoring results. This should involve all aspects from sample collection procedures, containers, laboratory analysis, through to data management and record keeping.



**Goal 7** : Continued

Statistical analysis of data should be undertaken where possible, rather than relying on subjective judgements of patterns and trends that may not be significant, particularly where the data is highly dependent on climatic variability. It should also be recognised that there is often a time lag between implementation of actions and measured improvements in catchment condition.

It is important that both the monitoring objectives and the performance of the program in meeting these objectives are reviewed at regular intervals and the program adapted where necessary.

Further discussion regarding the monitoring and evaluation requirements of the Catchment Plan is provided in Section 6.



**Strategy 7.1**  
**Link with existing monitoring programs**

There are already a number of monitoring programs being undertaken by other agencies within the catchment. To some extent, however, the existing data is inadequate for identifying or quantifying specific trends or issues and there is insufficient coverage in certain regions. Linking to and extending upon the existing programs (e.g. AUSRIVAS) will provide a cost-effective means of addressing specific knowledge gaps and to monitor the effectiveness of successive Catchment Plans in improving catchment health. It is also important that there is scope to extend existing monitoring programs in areas as resources become developed, e.g. groundwater in the Barossa region.



**Action 7.1.1**  
**Design and implement a surfacewater, groundwater and biological monitoring program for the catchment**

The suggested approach for the implementation of this task is presented below and will be finalised in consultation with the EPA, State Water Monitoring Committee and DWR. In general, the Board will:

- Undertake a review with the State Water Monitoring Committee to identify suitable monitoring sites within the catchment.
- Through consultation, define roles and responsibilities in accordance with the requirements and recommendations of the State Water Monitoring Committee.
- Provide funding in conjunction with EPA and State Water Monitoring Committee to establish strategic monitoring stations for flow and/or sampling of chemical parameters where appropriate.
- Link water quality monitoring with in-stream biological indicators (Strategy 7.2).
- Liaise with EPA to expand and support the Monitoring River Health Initiative throughout the catchment.
- Support Community Groups involved in monitoring through co-ordination of resources and funding.



**Goal 7** : Continued

In general, the Board is supportive of increased emphasis for monitoring of:

- water quantity, quality and biological monitoring in the upper catchment
- water quality monitoring in urban areas and the lower reaches of the catchment
- additional groundwater level and quality monitoring
- water quality and sediment sampling in wetlands to determine levels of treatment efficiency
- quantity and quality of the inflows to the catchment reservoirs.



**Action 7.1.2**  
**Data management**

The Board will establish an information management system for all monitoring data for which it has responsibility. This is likely to include the development of a GIS database for all spatial information. All data sets will be updated on a regular basis.



**Action 7.1.3**  
**Data analysis, reporting and review**

A core component of the long-term success of any monitoring program is the ongoing review of the data to assess trends and changes in catchment conditions. The frequency of this assessment will vary depending on the monitoring program and it should take into account seasonal or 'background' variation wherever possible. Periodic changes to the sampling frequency, locations and parameters may be required to continue to meet the program objectives.

**Table 24** - Program for the implementation of Strategy 7.1

Strategy		Cost over 3 years		
7.1	Link with existing monitoring programs			\$360,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
7.1.1	Design and implement a surfacewater, groundwater and biological monitoring program for the catchment	To provide baseline data on the quantity and quality of the water resource and biological health of the catchment and the long term trends in catchment and resource health.	Years 1-4 to establish  Ongoing monitoring	State Water Monitoring Committee, DWR, EPA, PIRSA, SA Water, Waterwatch, community groups, local government
7.1.2	Data management	Provide easy access to time series and spatial data sets.	Ongoing	Planning SA, DWR, SA Water, EPA
7.1.3	Data analysis, reporting and review	Review the effectiveness of the monitoring programs	Ongoing	State Water Monitoring Committee, EPA, DWR



Goal 7 : Continued



**Strategy 7.2**  
**Develop targeted monitoring programs for ecological health at key locations throughout the catchment**

Targeted ecological monitoring programs are necessary to establish the long-term effectiveness of the successive catchment plans in improving the 'health' of water dependent ecosystems. These data will also assist decision-makers in making more informed planning decisions within the catchment.

Whilst some water quality data exists, there is little baseline ecological information on the health of the watercourses within the catchment. The only comprehensive data is that of Hicks and Sheldon (1999) on fish and invertebrates within the Gawler River catchment, which may provide a useful basis for future monitoring. SA Waterwatch data on stream water quality may also provide a useful basis for future monitoring.

Environment Australia (1998) have provided a review of environmental indicators for inland waters and the AUSRIVAS component provides a comprehensive protocol for monitoring stream habitat quality using invertebrates as indicators (Environment Australia, 1998).

Linkages will be established with existing programs such as the Monitoring River Health Initiative and the Urban Forest Biodiversity Program to provide greater understanding of ecological conditions. It is important for ecological monitoring programs to be consistent with the requirements of the State Water Monitoring Committee and the ANZECC/ARMCANZ National Water Quality Guidelines.



**Action 7.2.1**  
**Key environmental indicators**

The Board will develop a set of key ecological/environmental indicators of catchment health. This may include certain key macroinvertebrate and fish species whose presence or absence indicates the health of the waterway or the Index of Stream Health. The EPA has also successfully used frogs as a general indicator of catchment health for a number of years.



**Action 7.2.2**  
**Riparian health audits**

The Board will support periodic audits of remnant vegetation, erosion and riparian health across the catchment. Monitoring photo points will be established in strategic locations to assess long term changes in riparian vegetation, bank and bed stability and stream morphology. The EPA has successfully used a similar methodology in the North and South Para River Watercourse Surveys.



Goal 7 : Continued

Table 25 - Program for the implementation of Strategy 7.2

Strategy		Cost over 3 years		
7.2	Develop targeted monitoring programs for ecological health at key locations throughout the catchment	\$53,000		
Action	Action description	Issues being addressed	Timing	Partner Agencies
7.2.1	Key environmental indicators	Determination of appropriate indicators of catchment health	Key indicators Years 1-2 Monitoring ongoing	EPA and the National Monitoring River Health Initiative, community groups, Waterwatch, National Land and Water Audit, Barker Inlet Port Estuary Committee
7.2.2	Riparian health audits	Long term data on the health of riparian vegetation	Establish photo points in Years 1-2 Monitoring ongoing	Community groups, Landcare groups, National Land and Water Audit, Barker Inlet Port Estuary Committee



**Strategy 7.3**  
**Undertake investigations to fill knowledge gaps and provide information for improved catchment management.**

At present there are a number of knowledge gaps that need to be addressed on the current condition of the catchment and the severity of some of the impacting activities. Greater knowledge and understanding of these issues will assist the Board in managing the water resources within the catchment.



**Action 7.3.1**  
**Further studies to address specific knowledge gaps**

The Board will support or undertake studies to address specific knowledge gaps. Investigations or further research will be required to provide information on the condition of water resources or water dependent ecosystems and the impacts of land management or development. Examples may include but will not be limited to: an assessment of the potential for dryland salinity, the impact of development (for example, farm dams) and water use in non-prescribed areas, or studies to identify opportunities for ecologically sustainable economic development.



**Action 7.3.2**  
**Provide the community with access to catchment monitoring information**

The community plays a major role in monitoring the catchment via programs such as Waterwatch.



**Goal 7 : Continued**

The Board will co-ordinate monitoring information from its own programs as well as partner groups, and make these results available to the community via its webpage and other technologies. This action will make use of the broad experience and knowledge of the community.

**Table 26 - Program for the implementation of Strategy 7.3**

Strategy		Cost over 3 years		
7.3	Undertake investigations to fill knowledge gaps and provide information for improved catchment management	\$ in-kind		
Action	Action description	Issues being addressed	Timing	Partner Agencies
7.3.1	Further studies to address specific knowledge gaps	Existing and future knowledge gaps	Ongoing	Community, DWR, PIRSA, Landcare groups, universities, other catchment boards
7.3.2	Provide the community with access to catchment monitoring information	Co-ordinate monitoring information and make available to the community	Ongoing	Community, DEH, Local government, PIRSA, Planning SA, DWR

**Strategy 7.4  
A performance review of the Catchment Plan**

The Board is required to undertake regular reviews of the Catchment Plan under the *Water Resources Act 1997*. To assess the effectiveness of the Catchment Plan, the Board will assess each of the strategies and actions against their respective performance targets in the Catchment Plan. Further discussion regarding the evaluation of the Catchment Plan is provided in Section 6.

**Action 7.4.1**



**Goal 7 : Continued**

**Table 27 - Program for the implementation of Strategy 7.4**

Strategy		Cost over 3 years		
7.4	A performance review of the Catchment Plan	\$ in-kind		
Action	Action description	Issues being addressed	Timing	Partner Agencies
7.4.1	Review of the Catchment Plan	Effectiveness of the Catchment Plan	Annually	





**Goal 7** : Continued

The Board will co-ordinate monitoring information from its own programs as well as partner groups, and make these results available to the community via its webpage and other technologies. This action will make use of the broad experience and knowledge of the community.

**Table 26** - Program for the implementation of Strategy 7.3

Strategy		Cost over 3 years		
7.3	Undertake investigations to fill knowledge gaps and provide information for improved catchment management	\$ in-kind		
Action	Action description	Issues being addressed	Timing	Partner Agencies
7.3.1	Further studies to address specific knowledge gaps	Existing and future knowledge gaps	Ongoing	Community, DWR, PIRSA, Landcare groups, universities, other catchment boards
7.3.2	Provide the community with access to catchment monitoring information	Co-ordinate monitoring information and make available to the community	Ongoing	Community, DEH, Local government, PIRSA, Planning SA, DWR

**S**

**Strategy 7.4**  
**A performance review of the Catchment Plan**

The Board is required to undertake regular reviews of the Catchment Plan under the *Water Resources Act 1997*. To assess the effectiveness of the Catchment Plan, the Board will assess each of the strategies and actions against their respective performance targets in the Catchment Plan. Further discussion regarding the evaluation of the Catchment Plan is provided in Section 6.

**A**

**Action 7.4.1**  
**Review of the Catchment Plan**

The Board will undertake an annual review of the Catchment Plan (goals, strategies and actions) to assess its effectiveness in improving the condition of the catchment. Each of the eight goals in the Catchment Plan has a set of performance targets and indicators that will assist the Board in reviewing its progress and effectiveness in implementing the Catchment Plan. The annual review will provide the Board with an opportunity to alter its implementation program to better achieve the outcomes outlined in the Catchment Plan if it is necessary.



**Goal 7** : Continued

**Table 27** - Program for the implementation of Strategy 7.4

Strategy		Cost over 3 years		
7.4	A performance review of the Catchment Plan	\$ in-kind		
Action	Action description	Issues being addressed	Timing	Partner Agencies
7.4.1	Review of the Catchment Plan	Effectiveness of the Catchment Plan	Annually	



**4.13 Goal 8  
Coordinated floodplain management**

<b>G</b>	<b>Goal</b>	To coordinate floodplain management providing for the needs of river health while minimising property damage and the threat to public safety.
<b>S</b>	<b>Strategies</b>	8.1 – Co-ordination of floodplain management strategies. 8.2 – Support implementation of the floodplain management strategies. 8.3 – Participate in development of associated plans and policies.
	<b>Targets</b>	Integrated management of floodplains at a regional level.
	<b>Indicators</b>	Implementation of Regional Floodplain Management Strategies.

**Discussion**

In the past, the Gawler River catchment has experienced major flooding that has severely impacted the catchment community. The plains downstream of Gawler have been most affected and in some areas more than others. The levees that were constructed to reduce the occurrence of floodplain inundation have, in some instances, exacerbated flooding because they deflect the floodwaters onto areas unprotected by levees. In many respects, the impacts of flooding have resulted from a lack of co-ordination, as the management of floods and the floodplain has largely occurred on an ad-hoc and local basis, in the absence of an integrated regional plan. There is an urgent need for the Board to play a leading role in co-ordinating floodplain management within the catchment.

In addition, the historical focus of flood management has been on minimisation of flood risk and community impacts. There is now a better understanding of the role and value of flooding in maintaining the health of in-stream ecosystems, riparian vegetation and floodplain communities. Thus, flooding should be managed to provide the largest net benefit to the catchment, simultaneously considering the environment, social and economic implications.

The Board will adopt the role of facilitator, in line with the roles and responsibilities identified in the *Explanatory Documents to State Water Plan 2000* (refer Appendix A), bringing about long overdue action to mitigate flood hazard in the Gawler catchment. The Board is leading discussions with local government in the Gawler catchment on its role and responsibilities and in determining the most appropriate long-term management structure for floodplain management. The Board has established a steering committee with representatives from the councils concerned to ensure that, as far as possible, a consensus approach will prevail. The Board's view is that it will not construct or own flood mitigation infrastructure, but rather facilitate the establishment of an appropriate local government entity to act as the 'controlling authority' for the construction and operation of the preferred flood mitigation scheme.



**Goal 8 : Continued**

It is important to note the distinction between floodplain management (associated with major watercourses) and the management of localised flooding which occurs when the capacity of stormwater drainage pipes is exceeded. The Board will focus its contribution to floodplain management of what are largely rural rivers, as the management of localised flooding is considered the responsibility of local government.



**Strategy 8.1  
Co-ordination of floodplain management strategies**

**Action 8.1.1**



**Develop and implement a floodplain management strategy for the Gawler River**

In August 1999, a review was completed of the 1994 Flood Management Plan for the Gawler River (BC Tonkin, 1999). The review confirmed previous work and concluded that flood protection could be achieved by providing a flood mitigation storage on the North Para River, modifying the South Para Reservoir to incorporate additional flood mitigation storage and by clearing vegetation and obstructions in the lower Gawler River to improve flood conveyance. Two options for the flood mitigation storage on the North Para River were presented; the first was a 'combined flood and water storage', while the second option provided only flood mitigation storage. Given the reduction in natural flows in the Gawler River system and an improved understanding of its environmental water requirements, the Board's preferred approach is to provide for flood mitigation only. This approach embodies the community's views and represents a balanced compromise regarding how best to manage the floodplain in an objective, sustainable and equitable way. The Board will, in partnership with the councils concerned, contribute to the development of strategies and on-ground works that are consistent with the Board's role and responsibilities in catchment and floodplain management.

**Action 8.1.2**



**Facilitate establishment of a controlling authority for the Gawler River flood mitigation scheme**

The design, construction, operation and maintenance of the Gawler River flood mitigation scheme is best undertaken by a regional local government entity. A regional subsidiary, as envisaged by the *Local Government Act 1999*, is considered the most appropriate model for the flood mitigation scheme's 'controlling authority'. The Board will facilitate the establishment of an appropriate controlling authority.

**Action 8.1.3**



**Pursue funding opportunities for the Gawler River flood mitigation scheme**

The implementation of the best-planned strategies will not be possible without significant state and Commonwealth funding. The Board as a regional authority, and acting on behalf of local councils, is best placed to negotiate funding and cost-sharing in support of implementation of the Gawler River flood mitigation scheme; the Board will assume this negotiating role.



**Goal 8 : Continued**

**A**

**Action 8.1.4  
Flood mapping for Dry Creek catchment**

Flood management strategies were developed for the Little Para River and Dry Creek catchments in the early 1980s. The majority of the high priority works identified have been completed to provide protection for a 100 year average recurrence interval flood event. Numerous flood control dams have been constructed along the hills face, particularly in Salisbury.

Further works may be required in the Dry Creek catchment to achieve an acceptable degree of flood protection while maintaining a suitable water environment for ecosystems. The Board will therefore contribute to a flood study and the preparation of inundation maps for the Dry Creek catchment.

**A**

**Action 8.1.5  
Develop a floodplain management plan for Dry Creek and Little Para Catchments**

Once the extent and frequency of flooding has been determined, the Board will contribute to the preparation of a floodplain management plan for the Dry Creek and Little Para catchments.

Table 28 - Program for the implementation of Strategy 8.1

Strategy		Cost over 3 years		
8.1	Co-ordination of floodplain management strategies			\$ in-kind
Action	Action description	Issues being addressed	Timing	Partner Agencies
8.1.1	Develop and implement a floodplain management strategy for the Gawler River	Integrated floodplain management	Years 1-3	Local government, Gawler River Floodplain Management Steering Committee
8.1.2	Facilitate establishment of a controlling authority for the Gawler River flood mitigation scheme	Integrated floodplain management	Years 1-2	Local government
8.1.3	Pursue funding opportunities for the Gawler River flood mitigation scheme	Integrated floodplain management	Years 1-2	Local government, DWR, SA Water Corporation
8.1.4	Flood mapping for Dry Creek catchment	Knowledge gaps	Years 4-5	Local government, DWR
8.1.5	Develop a floodplain management plan for Dry Creek and Little Para catchments	Integrated floodplain management	Years 4-5	Local government, DWR



**Goal 8 : Continued**

**S**

**Strategy 8.2  
Support Implementation of the floodplain management strategies**

Wherever possible, the Board will leverage its investment potential, seeking contributions from those stakeholders that directly benefit from implementation of the plans. The Board will consider investing in projects that relate directly to the management of the floodplain. For projects that relate more to flood mitigation, the Board will provide a facilitating role and will consider in-kind contributions.

**A**

**Action 8.2.1  
Contribute to riparian zone management initiatives**

The capacity of the Gawler River channel generally diminishes downstream of the Gawler township as it makes its way across the plains to Gulf St Vincent. Previous studies have indicated that improvements in flood conveyance can be made without significant changes to land use or land form. Any work undertaken will recognise the environmental assets that currently exist and contribute to improvements in biodiversity and ecosystems health while improving channel capacity. The Board, in partnership with local government, will develop and implement a riparian zone management program for the lower Gawler River to improve flood conveyance and stream condition.

**A**

**Action 8.2.2  
Investigate installation of ephemeral wetlands**

The Board will investigate the installation of ephemeral wetlands with an aim to providing habitat and biodiversity value in areas that are suitable. Channel works will, where appropriate, incorporate opportunities to rehabilitate abandoned sand mining sites and develop ephemeral wetlands.

**A**

**Action 8.2.3  
Provide support to local government**

Where appropriate the Board will provide technical and other assistance to local government in the management and ongoing maintenance of floodplain management strategies, to ensure the natural resources management goals of the Catchment Plan are met.

Table 29 - Program for the implementation of Strategy 8.2

Strategy		Cost over 3 years		
8.2	Support implementation of the floodplain management strategies			\$250,000
Action	Action description	Issues being addressed	Timing	Partner Agencies
8.2.1	Contribute to riparian zone management initiatives	Habitat rehabilitation	Ongoing	Local government, DWR
8.2.2	Investigate installation of ephemeral wetlands	Water quality improvement and habitat creation	Years 1-3	Local government, DWR, SA Water Corporation
8.2.3	Provide support to local government	Integrated floodplain management	Ongoing	Local government



Goal 8 : Continued

**S**

**Strategy 8.3**  
Participate in development of associated plans and policies

A range of policies and plans need to be developed at the state level to provide for consistency in the management of flood risk and floodplains for economic, social and environment benefit, as well as to ensure efficiency in response of these issues.

**A**

**Action 8.3.1**  
Participate in the development of State floodplain management policy

The Board will participate as a stakeholder in the development of state plans and policies related to floodplain management. The Board will contribute to the development of the State Floodplain Management Policy along with other stakeholders including DWR, DEH, DTUPA and local government.

**A**

**Action 8.3.2**  
Liaise with the Flood Warning Consultative Committee

The catchment boards in South Australia currently have representation on the State's Flood Warning Consultative Committee. It is important that the Board ensure that they continue to play an active and influential role to aid the achievement of this objective. The Board will maintain ongoing liaison with this committee and seek opportunities to participate and represent the interests of the catchment and its community.

Table 30 - Program for the implementation of Strategy 8.3

Strategy		Cost over 3 years		
8.3	Participate in development of associated plans and policies			\$ in-kind
Action	Action description	Issues being addressed	Timing	Partner Agencies
8.3.1	Participate in the development of State floodplain management policy	Integrated floodplain management	Ongoing	DWR, DEH, DTUPA, local government
8.3.2	Liaise with Flood Warning Consultative Committee	Integrated floodplain management	Ongoing	Flood Warning Consultative Committee

**4.14 Water affecting activities**

Section 9 of the *Water Resources Act 1997* provides that a permit is required for the various water affecting activities listed in section 9(3) of the Act, and those activities in section 9(4) of the Act that are identified in this Catchment Plan.

A permit is required for water affecting activities listed in section 9(3)(a)-(d) of the Act. This Catchment Plan specifies the activities in table 31 below as the activities in Section 9(4) of the Act for which a permit is also required. This requirement applies to water affecting activities across the entire catchment.

Section 9(3)(a)-(d) includes activities for which the Minister is the relevant authority. Permit approval must be obtained from the Minister prior to undertaking any of those activities. Table 31 indicates the relevant authority for activities in Section 9(4) of the Act.

Table 31 - Water affecting activities and delegations

Water Resources Act 1997 Section 9(4)	Brief Description of the Activity (Catchment wide)	Relevant Authority
9(4)(a)	Erection, construction or enlargement of a dam (outside Mt Lofty Ranges Watershed areas)	Minister for Water Resources
9(4)(b)	Erection, construction or placement of a building or structure in a watercourse or lake.	Board
9(4)(c)	Draining or discharging water into a watercourse or lake.	Board
9(4)(d)	Depositing an object in a watercourse or lake.	Board
9(4)(e)	Obstructing a watercourse or lake.	Board
9(4)(f)	Placing an object on the flood plain of a watercourse or near a bank or shore.	Board
9(4)(g)	Destroying vegetation growing in the watercourse or lake or flood plain.	Board
9(4)(h)	Excavating/removing rock, sand or soil from a watercourse or lake or flood plain.	Board
9(4)(i)	Using imported water for carrying on a business exceeding a specified rate.	Minister for Water Resources
9(4)(j)	Using effluent for carrying on a business exceeding a specified rate.	Minister for Water Resources

Some of these activities are already controlled to some extent by other legislation and regulation referred to in Section 12 of the *Water Resources Act 1997*. These include activities already controlled by the *Environment Protection Act 1993*, the *Native Vegetation Act 1991*, and local council Development Plans formed in accordance with the *Development Act 1993*. Only activities that are not controlled by other legislation will be controlled via this Catchment Plan and subject to a permit application.

In some instances, a permit authorises a single event or activity (such as construction of a dam or well) whereas other permits may authorise an ongoing activity (such as the use of effluent in the course of carrying on a business or draining water into a watercourse or lake). A permit is subject to conditions specified in the permit and in some instances, conditions may remain in force even after the activity authorised by the permit has been completed. For example, if a permit is granted to use effluent in the course of carrying on a business, a condition on that permit may be that the proponent



must monitor the level of underground water to ensure that water level does not rise at an unacceptable rate.

The decision of a relevant authority to grant a permit for a water affecting activity in the Board's area must be consistent with the Catchment Plan. This applies whether the relevant authority is the Board, the Minister or local government. When considering an application for a permit, the relevant authority will consider whether the potential impacts of the activity are reasonable given the possible benefits to the applicant and to the wider community.

The following objectives and principles apply to all water affecting activities within the boundary of the Board. They are additional to the objectives and principles applying to the specific activities set out below.

Where any of the water affecting activities from section 9(4) of the Act identified for the purposes of section 9(3)(e) of the Act in this Catchment Plan are also identified for the purposes of section 9(3)(e) within a Water Allocation Plan for prescribed water resources within the Board's catchment area, the objectives and principles within the Water Allocation Plan apply to any such activity to be undertaken within the area and in relation to the prescribed resource to which the Water Allocation Plan applies. Where water affecting activities are to be undertaken outside of the areas to which Water Allocation Plans apply, the objectives and principles below apply to those activities.

### Objectives

1. Protection of the quantity and quality of water resources and the maintenance of natural hydrological systems and environmental flows.
2. Prevention of deterioration in the quality of surfacewater, groundwater or water in a watercourse or lake.
3. Protection and restoration of the natural character of watercourses and floodplains
4. Protection of the ecological functions of water resources and dependent biological diversity

### Water Storage and Diversions (Dams)

#### Introduction

The following objectives and principles apply to an activity under section 9(3)(d) or section 9(4)(a) comprising the erection, construction or enlargement of a dam, wall or other structure that will collect or divert –

- (i) water flowing in a prescribed watercourse; or
- (ii) water flowing in a watercourse in the Mount Lofty Ranges Watershed that is not prescribed; or
- (iii) surfacewater flowing over land in a surfacewater prescribed area or in the Mount Lofty Ranges Watershed; or
- (iv) water flowing in a watercourse that is not in the Mount Lofty Ranges Watershed and that is not prescribed or flowing over any other land that is not in a surfacewater prescribed area or in the Mount Lofty Ranges Watershed.

These objectives and principles are additional to those expressed for all water affecting activities.

### Objectives

1. Maintain and improve the quality and quantity of water flowing in public water supply catchments.
2. Ensure that dams, walls or other water collection or diversion mechanisms in watercourses and drainage paths are constructed and managed in a manner which:
  - (a) protects the needs of downstream users
  - (b) protects water quality and quantity
  - (c) protects ecosystems dependent on these resources.

### Principles

#### Siting

1. Dams should not be located:
  - (a) in ecologically sensitive areas
  - (b) in areas prone to erosion.

#### Flow Regime

2. Collection or diversion of water flowing in a watercourse or over land should not adversely affect downstream water dependent ecosystems by causing reduced stream flow duration, lengthened periods of no or low flow, or other such impacts.
3. In order to minimise impacts on downstream water dependent ecosystems:
  - (a) water collected from a watercourse should be diverted to an off-stream dam
  - (b) any on-stream dam should incorporate a low flow by-pass mechanism.
4. Any overflow from a dam, or water diverted by a low flow bypass mechanism, should be allowed to flow naturally and not be recaptured or diverted.
5. For the purposes of clause 3 an on-stream dam means a dam, wall or other structure placed on, or constructed across, a watercourse or drainage path for the purpose of holding back and storing the natural flow of that watercourse or the surfacewater run-off flowing along that drainage path.
6. For the purposes of clause 3 an off-stream dam means a dam used to store water that is diverted or collected from a watercourse or surfacewater run-off, by a wall or other structure. Off-stream dams will normally capture a limited volume of surfacewater from the catchment above the dam.

#### Capacity

7. Dams shall not adversely affect the environmental flow requirements of ecosystems dependent on surfacewater or watercourses.
8. The capacity of all dams in a catchment shall not exceed 50% of the mean annual run-off of that catchment.
9. Subject to clause 10, the combined capacity of all dams on an allotment shall not exceed 50% of the annual run-off for that allotment.

### Discussion

The mean annual rainfall will be determined for each allotment using data obtained from the Bureau of Meteorology. Rainfall statistics will be based on rainfall stations distributed throughout the catchment where long term averages are available.

10. Where a dam ('the new dam') is to be constructed on an allotment created by a land division (or series of divisions) of a larger allotment ('the original allotment') that contains a dam or dams ('the old dam') the combined capacity of the new dam (or dams) and the old dam (or dams) shall not exceed 50% of the annual run-off of the original allotment.
11. For the purposes of clauses 8, 9 and 10, 'annual run-off' is a volume (in megalitres) derived from 10% of the mean annual rainfall for the allotment (in millimetres) multiplied by the area (of the catchment on the allotment) in square kilometres.
12. For the purposes of clauses 8, 9 and 10, the term 'allotment' means an allotment delineated on a certificate of title under the *Real Property Act 1886* and includes two or more contiguous allotments owned or occupied by the same person and operated as a single unit for the purpose of primary production.
13. For the purposes of clause 10, the term 'land division' means a land division requiring approval under the *Development Act 1993* and includes circumstances where contiguous allotments cease to be owned or occupied by the same person, and/or cease to be operated as a single unit for the purpose of primary production.

### Water Quality and Biodiversity

14. Dams should be sited and constructed to:
  - (a) minimise the loss of soil from the site through soil erosion and siltation
  - (b) minimise the removal or destruction of in-stream or riparian vegetation.
15. Dam construction should be undertaken in a manner which prevents silt or sediments entering the watercourse including, but not limited to the use of erosion and sediment control measures such as catch/diversion drains, re-vegetation, hay bale barriers, filter fences, sediment traps and basins.
16. Dams should be designed and constructed to incorporate a range of features to improve water quality and enhance biodiversity. To improve water quality and habitat value dams should:
  - (a) have a surface area of at least 0.1ha.
  - (b) have an irregular edge
  - (c) have a variety of depths to increase habitat to a variety of plants and animals
  - (d) be well vegetated at their edges
  - (e) have minimal stock access
  - (f) include a silt trap (one-tenth the size of the dam) upstream of the dam to trap incoming silt and nutrients.
17. A dam should not be located where it is likely to adversely affect the migration of aquatic biota.
18. The design, construction and maintenance of a dam should not result in watercourse erosion.
19. A dam should not contribute to dryland salinity.

### Building or Structure in a Watercourse, Lake or on a Floodplain

The objectives and principles that follow apply specifically to an activity under section 9(4)(b) comprising the erection, construction or placement of any building or structure in a watercourse or lake or on the floodplain of a watercourse. They are additional to those expressed for all water affecting activities.

#### Objectives

1. Buildings or structures constructed and managed to protect the ecology of a watercourse or lake.

#### Principles

1. A building or structure should not be located where it is likely to adversely affect the migration of aquatic biota.
2. The design and construction of a building or structure should not result in watercourse, lake or floodplain erosion.
3. Structures that impede the flow of water, such as weirs, should be designed to provide low flow bypass mechanisms.

### Draining or Discharging Water into a Watercourse or Lake

The objectives and principles that follow apply specifically to an activity under section 9(4)(c) comprising the draining or discharging of water directly or indirectly into a watercourse or lake. They are additional to those expressed for all water affecting activities.

#### Objectives

##### General

1. Discharged water of suitable quality to:
  - (a) sustain the existing uses of the water
  - (b) protect ecosystems dependent on these resources.

##### Urban Stormwater

2. Stormwater collected and conveyed from a catchment to its receiving waters with minimal adverse impact on the watercourse and ecosystems.
3. Contain and manage pollution on site, to minimise conveyance of pollution downstream.

#### Principles

##### General

1. Discharge of water into a watercourse or lake should not cause erosion or adversely affect ecosystems or the quality of receiving water.
2. The drainage or discharge of water should not adversely affect the migration of aquatic biota.

**Urban Stormwater**

3. Watercourses should be retained in their natural state to promote natural filtering and pollutant removal processes.
4. Impacts of stormwater pollutants should be minimised by planting indigenous species along watercourses and by replacing exotic plants, which contribute to stormwater pollution, with indigenous species.
5. The volume of stormwater discharged into a watercourse or lake should be reduced by:
  - (a) use of detention mechanisms and detention in a detention basin
  - (b) retention for reuse.
6. Detention basins should be designed and constructed to allow sediments to settle, prior to discharge.

**Object or Solid Material in a Watercourse or Lake**

The objectives and principles that follow apply specifically to an activity under section 9(4)(d) comprising depositing or placing an object or solid material in a watercourse or lake. They are additional to those expressed for all water affecting activities.

**Objectives**

1. Ensure that watercourses and lakes are protected against:
  - (a) destruction and pollution
  - (b) erosion
  - (c) habitat destruction.

**Principles**

1. Depositing or placing an object or solid material in a watercourse or lake may only occur where it includes:
  - (a) the construction of an erosion control structure, for example, but not limited to a rock chute or rip rap
  - (b) devices or structures used to extract or regulate water flowing in a watercourse, for example, but not limited to, diversion weirs
  - (c) activities authorised for scientific purposes, for example, but not limited to, flow measuring devices.
2. Any object or solid material used in the control or prevention of watercourse erosion should be designed on a reach basis and not:
  - (a) increase erosion up or down stream
  - (b) cause detrimental offsite impacts.

3. The depositing or placing of an object or solid material in a watercourse or lake should not adversely affect the migration of aquatic biota.

**Obstructing a Watercourse or Lake**

The objectives and principles that follow apply specifically to an activity under section 9(4)(e) comprising obstructing a watercourse or lake in any other manner. They are additional to those expressed for all water affecting activities.

**Objectives**

1. Watercourses or lakes free of obstructions that may:
  - (a) impede natural stream flow
  - (b) cause unnecessary flooding.

**Principles**

1. Obstructing a watercourse or lake should not adversely affect:
  - (a) the migration of aquatic biota
  - (b) the natural flow regime.
2. Obstructing a watercourse or lake should not cause erosion.

**Object or Solid Material on the Floodplain**

The objectives and principles that follow apply specifically to an activity under section 9(4)(f) comprising depositing or placing an object or solid material on the floodplain of a watercourse or near the bank or shore of a lake to control flooding from the watercourse or lake. They are additional to those expressed for all water affecting activities.

**Objectives**

1. Objects or solid material on the floodplain that provide appropriate flood protection.
2. Natural flows of a watercourse retained.

**Principles****General**

1. Depositing or placing an object or solid material on the floodplain of a watercourse or near the bank or shore of a lake to control flooding from the watercourse or lake should not:
  - (a) adversely impact upon the natural flow of a watercourse
  - (b) increase the risk of flooding (including upstream or downstream)
  - (c) result in watercourse erosion.

### Levee Development

- For the purposes of this Catchment Plan the following definition applies to the construction of a levee:

An artificial embankment built to accelerate or redirect flow or to prevent the overflowing of a watercourse or lake.

- The design, construction and location of levees should:
  - provide for the needs for ecosystem processes, including the migration of aquatic biota
  - minimise the impact or risk of flooding on human communities
  - not cause or increase watercourse erosion.

### Destroying Vegetation

The objectives and principles that follow apply specifically to an activity under section 9(4)(g) comprising destroying vegetation growing in a watercourse or lake or growing on the floodplain of a watercourse. They are additional to those expressed for all water affecting activities.

#### Objectives

- Retention of native vegetation of watercourses, lakes and associated riparian zones and floodplains to:
  - maintain bed and bank stability
  - protect biodiversity
  - protect habitat
  - maintain water quality
  - minimise flooding.

#### Principles

##### Erosion/Sedimentation

- Vegetation should only be destroyed in such a way that does not cause or increase erosion or sedimentation.

##### Biodiversity

- Native vegetation should not be destroyed if it:
  - has significance as a habitat for wildlife
  - has a high level of diversity of plant species or has rare or endangered plant species or plant association(s).

##### Water Quality

- Vegetation should not be destroyed if the destruction is likely to lead to the deterioration in the quality of groundwater or water in watercourses, lakes or surfacewater run-off.

### Flooding

- Vegetation should only be destroyed if its destruction will not increase the incidence or intensity of flooding.

### Excavation or Removal of Rock, Sand or Soil

The objectives and principles that follow apply specifically to an activity under section 9(4)(h) comprising the excavation or removal of rock, sand or soil from a watercourse or lake or the floodplain of a watercourse or an area near to the banks of a lake so as to damage, or create the likelihood of damage to the banks of a lake. They are additional to those expressed for all water affecting activities.

#### Objectives

- Preservation of the geomorphic characteristics of a watercourse, lake or floodplain.

#### Principles

- Alteration to the alignment of a watercourse may only occur where it is for the protection of existing development and infrastructure or rehabilitation of a watercourse and the realignment does not result in any of the following:
  - increased erosion
  - increased flooding
  - bed and bank instability
  - downstream sedimentation
  - loss of riparian vegetation
  - reduction in water quality
  - alteration to the natural flow regime of a watercourse.
- The excavation and removal of rock, sand or soil should not adversely impact on the migration of aquatic biota.

### Importation of Water

The objectives and principles that follow apply specifically to an activity under section 9(4)(i) comprising the use of water in the course of carrying on a business in a catchment area at a rate that exceeds 1 kilolitre/hectare/year if the water has been brought into the catchment area by means of a pipe or other channel ('use of imported water'). They are additional to those expressed for all water affecting activities.

#### Objectives

- Use of imported water in a manner which does not adversely affect water resources within the catchment.



2. Ecologically sustainable use of imported water.

#### Principles

1. Use of imported water should not cause a rise in the groundwater level sufficient to detrimentally affect structures or ecosystems.
2. Use of imported water should not adversely affect the natural flow of water or the quality of surfacewater, groundwater or water in a watercourse or lake.
3. Use of imported water should not adversely affect the productive capacity of the land by causing salinity, waterlogging or perched watertables or other such impacts.
4. Imported water should not adversely affect those qualities of the receiving water that ecosystems depend on.

#### Use of Effluent

The objectives and principles that follow apply specifically to an activity under section 9(4)(j) comprising the use of effluent in the course of carrying on a business in a catchment area at a rate that exceeds 1 kilolitre/hectare/year. They are additional to those expressed for all water affecting activities.

#### Objectives

1. Use of effluent in a manner which avoids adverse impacts on the water resources within the catchment, other natural resources and ecosystems that depend on water resources.

#### Principles

1. Use of effluent should not cause a rise in groundwater level sufficient to detrimentally affect structures or ecosystems.
2. Use of effluent should not adversely affect the natural flow of water or the quality of surfacewater, groundwater or water in a watercourse or lake.
3. Dams used to store effluent should be constructed:
  - (a) to prevent leakage of the effluent downward through the soils
  - (b) to prevent overflows from the dam to the surface of the land surrounding the dam
  - (c) to prevent overflow from the dam into a watercourse.

#### Draining or Discharging Water into a Well

The objectives and principles that follow apply specifically to an activity under section 9(3)(c) comprising the draining or discharging of water directly or indirectly into a well ('artificial recharge'). They are additional to those expressed for all water affecting activities.

#### Objectives

1. Draining or discharging water directly or indirectly into a well in a manner which does not adversely affect the groundwater quality, the aquifer or any ecosystem that depends on that water.

#### Principles

1. Subject to clause 3 water may be drained or discharged into a well for the purpose of aquifer storage and recovery where the concentrations, levels or amounts of the substances, materials or characteristics set out in clause 4 below, in the water to be drained or discharged, do not exceed the concentrations, levels or amounts of those substances, materials or characteristics in the native underground water.
2. For the purposes of clauses 1 and 3, the relevant concentrations, levels or amounts shall be measured by sufficient representative samples of:
  - (a) the water to be drained or discharged, collected either from an existing dam or directly from the source
  - (b) native underground water collected from the proposed point of injection, or as near as possible to the proposed point of injection, and from the same aquifer as that in which storage is proposed

where 'sufficient representative samples' means suitable samples, collected with equipment appropriate for the substance, material or characteristic to be measured and taken at suitable locations and times to accurately represent the quality of the relevant water.
3. Where the water is to be drained or discharged to a well for the purpose of storage for later extraction, the water may (despite clause 1) be drained or discharged where the concentrations, levels and amounts of the substances, materials or characteristics of or in the water set out in clause 4 will not exceed the relevant concentrations, levels and amounts in the native underground water:
  - (a) by the time the water reaches the boundary of the allotment on which the well is located
  - (b) throughout the aquifer within a year of cessation of the drainage or discharge.
4. For the purposes of clauses 1 and 3 above, the list of substances, materials and characteristics comprises:
  - (a) pH, TDS, turbidity, ammonia, nitrate, nitrite, total phosphorous, sodium, chloride, sulphate, calcium, magnesium, bicarbonates, iron, total arsenic, total boron, total cadmium, total chromium, total lead, total manganese, total zinc, total coliforms and faecal coliforms
  - (b) where the water to be drained or discharged comes from a source likely to contain pesticides, *Giardia*, *Cryptosporidium*, volatile organic compounds and petroleum hydrocarbons (including but not limited to water from land used for intensive agriculture or industrial purposes) those substances, materials and characteristics
  - (c) trihalomethanes where the water to be drained or discharged has been treated by chlorination.

5. For the purposes of this Catchment Plan the term 'native underground water' means the underground water (as that term is defined in the Act) that exists in the relevant aquifer absent any such water drained or discharged to that aquifer by artificial means.
6. For the purposes of this Catchment Plan the term 'aquifer storage and recovery' means the process of drainage or discharge of water directly or indirectly to a well for the purpose of recharging the aquifer or of recharging the aquifer for subsequent extraction.
7. Draining or discharging water directly or indirectly into a well may only occur where:
  - (a) the headworks of the well are constructed such that both recharge and recovery operations can be metered without interference
  - (b) continued recharge of water at the site will not result in detrimental impacts on water quality or on the integrity of the aquifer, for example, but not limited to, unacceptable interference with the water supply from neighbouring wells, or an increase in salinity of the groundwater.

#### 4.15 Other matters considered by the Board

##### Amendments to Development Plans

Section 92(3)(i) of the *Water Resources Act 1997* requires the Board to identify the changes (if any) that are necessary or desirable to:

- a Development Plan under the *Development Act 1993* or any Act or subordinate legislation
- or any activity of a constituent council or controlling authority or to the manner in which, or the means by which, a constituent council or controlling authority performs its functions or exercises its powers
- the activities of any other person,

to further the object of the Act.

At this stage, the Board does not consider that specific changes to the Development Plans relevant to the catchment area are required as a matter of priority, but that local councils will be encouraged and assisted to amend their plans to ensure that they conform with the Catchment Plan.

##### Vestment of land and infrastructure in the Board

Sections 92(3)(j)-(k) of the Act requires that the Board:

- identify land that adjoins or is adjacent to a watercourse or lake, the use of which should be vested in the Board by proclamation
- identify the infrastructure the use of which should be vested in the Board by proclamation.

At the time of preparation of this Catchment Plan, the Board is not aware of the need to acquire any land or infrastructure within the catchment to enable or assist implementation of the Catchment Plan.

##### Preservation and maintenance of water resources for recreation

Sections 92(3)(c) of the Act requires that the Board identify the water resources, if any, in the Board's catchment area that are suitable for recreational use that should be preserved or enhanced for that purpose.

Limited opportunities exist for primary or secondary contact recreational activities (such as swimming or boating) within the catchment. Catchment wetlands and riparian zones are considered valuable resources for passive recreational use. The catchment watercourses are ephemeral and swimming and boating is not permitted in the few large bodies of permanent water, those being the public water supply reservoirs operated by SA Water. Anecdotal evidence indicates that school children swim in isolated waterholes during spring, summer and autumn, however there are no water resources formally set aside for primary or secondary contact activities. Recreational use of water resources and their adjacent parks and reserves is therefore predominantly limited to passive pursuits, such as walking and hiking.

Watercourses within the various conservation parks and reserves within the catchment are generally considered to have significant recreational and aesthetic value. Recreational and educational opportunities have been recognised and incorporated in the development of artificial wetlands in the catchment such as Buckland Park and Greenfields. The creation of linear parks in urban areas, such as the project under development by the City of Playford for Smith Creek, has the potential to provide environmental benefits through the provision of natural corridors linking habitats, improved water quality and drainage, in addition to improved aesthetic and recreation benefits.

At this time, the Board is not aware of any specific water resources that must be preserved specifically for the purpose of recreation, nor are any special initiatives required beyond those contained in this Catchment Plan to preserve and enhance water resources for recreation. The initiatives contained in this Catchment Plan are adequate to maintain and improve the values of catchment water resources that are used for recreational purposes.

**APPENDIX 5**

**MHLATHUZE WATER'S CONSULTANTS APPOINTMENT PROCEDURES-  
INFRASTRUCTURE-PROJECTS AND STUDIES**



# PROCEDURE

**Document no:** PD-2003/00      **Version:** 2.00      **Date:** 19 May 2003  
**Description:** **CONSULTANTS APPOINTMENT PROCEDURES  
 (INFRASTRUCTURE – PROJECTS AND STUDIES)**

## 1. OBJECTIVE

To ensure:

- a) That the selection and the appointment of consultants, for any infrastructure projects or studies, is based upon fair and equitable principles, with particular emphasis on affirmative action through the use of historically disadvantaged firms.
- b) That the payment of consultants, for services rendered, complies with accepted norms and parameters and that rates for time basis fees and disbursements are compatible with those currently in use in the market place.

## 2. PURPOSE AND SCOPE

This document has been compiled to establish the procedures to be followed in selecting and appointing consultants of all the pertinent disciplines required to assist with the planning and development of water/effluent services infrastructure in the service area of Mhlathuze Water. The word "infrastructure" is used in the wider sense and includes the activities related to:

- a) The regional planning of water/effluent services
- b) Catchment management planning
- c) Water conservation
- d) The development of new water/effluent services
- e) Upgrading or extensions to existing water/effluent services

Although the civil, geotechnical, hydrogeological, electrical and mechanical engineering; project management; quantity surveying; social (community facilitation and training) and environmental disciplines have specifically been listed, it needs to be stressed that consultants for any other discipline which may be involved with infrastructure planning and development (as defined above) are covered by this procedure. The panel could therefore be extended in due course to provide for additional disciplines.

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In compiling this panel, the membership directories of professional engineering associations (SAACE and SABTACO) have been used, as well as available information on each firm. The number of SAACE consultants established in KwaZulu-Natal and pertinent to the engineering profession, currently stands at 180. no. Approximately 25 no. SABTACO engineering consultants are established in the province.

Where consultants disciplines do not have such a representative body, public invitations will be issued, requesting submission of information. The latest count indicates that 22 no. firms specialising in social matters are located in KwaZulu-Natal, while 6 no. environmental specialist firms are listed (these figures exclude multi-disciplinary firms with social and/or environmental sections).

The number of studies and projects generated by Mhlathuze Water for consultants is relatively small and the number of available consultants, large. Therefore the main criterion for the grading of consultants is to ensure that the best available expertise in KwaZulu-Natal is short-listed. This obviously has led to a panel where a large portion of consultants are not deemed to be suitable to work for the Board. The panel will however, be reviewed (and revised where applicable) every three years, thereby ensuring that all consultants (existing and new) are considered on an equitable and a regular basis.

Where grant funds for projects are supplied by national government institutions, such as the Department of Water Affairs and Forestry, the national panel of the institution will be used.

Specific mention is also made of how historically disadvantaged firms (HDFs) will be provided for by Mhlathuze Water with the opportunity to develop their skills in the water services sector. This should occur without compromising the high standard of workmanship and professionalism required by Mhlathuze Water. It will be seen that not all "non-white" firms are considered "historically disadvantaged", but only those which concentrate on the provision of water services and which are at the lower end of the scale in developing their skills.

These procedures describe:

- a) The compilation and maintenance of a consultants panel
- b) How consultants are to be selected and appointed
- c) The evaluation of the work performed by consultants
- d) The standard forms of agreement to be used
- e) The principles behind the use of fees and disbursement schedules

### 3. **ABBREVIATIONS**

SAACE	South African Association of Consulting Engineers
SABTACO	South African Black Technical and Allied Careers Organisation
HDF(I)	Historically Disadvantaged Firm (Individual)

#### 4. **RELATED PROCEDURES**

Nil

#### 5. **CONSULTANTS PANEL**

##### 5.1. **Basic Principles**

5.1.1. Consultants will be listed under the following different disciplines:

a) Engineering sector:

- i) Civil and Multi-disciplinary
- ii) Hydrogeological
- iii) Geotechnical
- iv) Electrical/Mechanical
- v) Project Management
- vi) Quantity Surveying

b) Non-Engineering sector:

- i) Social (community facilitation & training)
- ii) Environmental

5.1.2. Consultants must have an established office in KwaZulu-Natal, which is run by a resident principal of the firm. This needs to be confirmed with every submission received from consultants, as should the workload of the consultant.

5.1.3. The full list of all consultants considered, as well as the initial panel is available from the Planning and Development Department.

##### 5.2. **Grading of Engineering Consultants**

5.2.1. The civil and multi-disciplinary consultants will be evaluated and graded into A, B and HDF categories which are as follows:

A Firms with extensive water services and water resources expertise, a proven track record and suitable for large or medium sized projects/studies.

B Firms with good water services and water resources expertise and suitable for smaller projects/studies.

HDF Historically Disadvantaged Firms who do not qualify for A or B categories. These are defined as firms that are managed, owned and/or controlled by predominantly Asian, Coloured or African Black persons whose main field of in-house expertise lies within the water services sector.

5.2.2. It should be noted that the ownership and management of many of the A and B category firms has changed significantly since 1994. The majority shareholding of

many firms now rests with those defined as previously disadvantaged, and there are also many historically disadvantaged employees within these firms. In these cases the empowerment and transfer of skills is considered as being applied 'in-house'. The treatment of these firms is more fully dealt with under Para 6 (Appointment Procedures).

5.2.3. The Planning & Development Department will invite, by means of public advertisement, all consultants who wish to be included on the panel, to complete a standard application form. This form will contain all the detailed information necessary to carry out a comprehensive evaluation of each consultant .

5.2.4 These consultants will be evaluated and graded using, as a basis, the following criteria:

Size of firm	-	number of offices, local office
Years in practice	-	date established
Expertise/experience	-	split into sub-sections of pump stations, bulk mains, reticulation, reservoirs, water treatment plants, sewage treatment plants, history of projects undertaken and previous experience/expertise of key personnel
SAACE or SABTACO	-	Membership
HDI shareholding & staff	-	The percentage of HDIs having shares in the firm, as well as the percentage of employees who are HDI.

5.2.5. All firms who complete and submit application forms will be evaluated. Details of the grading criteria for these firms will be available from the Planning and Development Department.

5.2.6. For all engineering firms, information on their expertise in the geotechnical, electrical/mechanical, project management and environmental fields will also been summarised and will be available from the Planning & Development Department.

5.2.7. Using the above criteria, all the above-mentioned firms will then be graded using a weighting system which summates to a maximum of 100 points. The ratings for the different categories are:

- A: More than 70 points
- B: Between 50 and 70 points
- HDF: Less than 50 points and a minimum score of 20 points for the water services section of the weighting system.

- 5.2.8. Should any of the HDFs which are evaluated in accordance with the adopted weighting system, qualify for A or B categories, they will then be subject to the same appointment procedures as other firms.
- 5.2.9 Evaluation and grading of the geotechnical, hydrogeological and electrical/mechanical consultants is still outstanding.
- 5.2.10. Evaluation and grading of the project management consultants has been extracted from the multi-disciplinary 'A' and 'B' categories.

### **5.3. Grading of Non-Engineering Consultants**

- 5.3.1. Consultants from the non-engineering sector will be evaluated and graded in a manner similar to the above and appropriate to the specific discipline.

### **5.4. Review of the Consultants Panel**

- 5.4.1. The Consultants Panel will be reviewed and revised where applicable in accordance with the system described above, by the Planning and Development Department on a three yearly basis.
- 5.4.2. On completion of an appointment, a performance evaluation will be carried out for each consultant. These results will be taken into account with each three yearly review of the consultants panel.
- 5.4.3. Where applicable, the performance evaluation process will measure the skills transferred from the principal consultant to the HDF with which it has been working. A lack of skills transfer will adversely reflect on the performance evaluation outcome.
- 5.4.4. During the three year validity period of the panel, an independent consultant will be requested to comment on the performance evaluation system used. Such a body will also be required to review on some of the actual evaluations completed on a spot check basis.
- 5.4.5. Consultants who have performed at a particularly low standard may be transferred into the 'Cooler' category where they will not be considered for any appointments for a prescribed period (normally three years). The criteria for demotion to this category are set out in a standardised performance evaluation document.

## **6. APPOINTMENT PROCEDURES**

### **6.1. Basic Principles**

- 6.1.1. Appointment procedures are based on the document compiled by the SAACE "GUIDELINES FOR THE ENGAGEMENT OF CONSULTING ENGINEERS – AUGUST 1997".



- 6.1.2. A **STUDY** is the planning stage, which may identify one or more projects to be implemented, the construction of which may be simultaneous or phased.
- 6.1.3. A **PROJECT** is the implementation stage, which normally arises out of a study, or can be identified separately without a study being undertaken.
- 6.1.4. Consultants appointed for the initial phase of a project or study, will be appointed for subsequent phases, except in cases of sub-standard performance. (Refer also 6.1.9. below).
- 6.1.5. Appointment procedures vary according to the **ESTIMATED FEE VALUE (excluding VAT)** of the project or study to be undertaken. The estimated fee value (total cost of appointment) of projects/studies has been split into three groups:

DISCIPLINE	PROJECT/STUDY FEE VALUE (R million)		
	Group 1	Group 2	Group 3
Civil / Multi-disciplinary	$R \leq 0,50$	$0,50 > R \leq 1,50$	$R > 1,50$
Geotechnical	$R \leq 0,10$	$0,10 > R \leq 0,50$	$R > 0,50$
Hydrogeological	$R \leq 0,10$	$0,10 > R \leq 0,50$	$R > 0,50$
Electrical/Mechanical	$R \leq 0,10$	$0,10 > R \leq 0,50$	$R > 0,50$
Project Management	$R \leq 0,25$	$0,25 > R \leq 0,75$	$R > 0,75$
Quantity Surveying	$R \leq 0,25$	$0,25 > R \leq 0,75$	$R > 0,75$
Social	$R \leq 0,10$	$0,10 > R \leq 0,50$	$R > 0,50$
Environmental	$R \leq 0,10$	$0,10 > R \leq 0,50$	$R > 0,50$
Combination *	$R \leq 0,80$	$0,80 > R \leq 2,50$	$R > 2,50$

\*: A 'Combination' of disciplines may be two or more, but regarded as one appointment.

- 6.1.6 Where a study/project comprises of more than one discipline, consultants independent of each other will be appointed for each discipline. MANCO may waive this provision for smaller studies.
- 6.1.7 The appointment procedures to be followed for borderline fee value estimates, will be at the discretion of MANCO.
- 6.1.8 Consultants will be appointed after a selection or a rotation process (fee value Groups 1 and 2), or a competitive bidding process (fee value Group 3), as defined below:
- Selection:** This process will be applied in the initial selection of consultants. Those consultants who have had no previous work for Mhlathuze Water will be appointed in weighting order, starting with the one having highest points first and moving down the scale until such time that all consultants in a particular category have been appointed. Thereafter, the consultants will be appointed on a rotation basis.
  - Rotation:** The selection of consultant on a rotation process involves selecting each one in accordance with their allocated weighing (grading), starting with the one having the highest points and moving down the scale of subsequent

appointments. The number and value of previous appointments will also be taken into account in this process.

- c) **Competitive Bidding:** Consultant for studies or projects with fee values in Group 3, will always be appointed as a result of a competitive bidding process, as described hereafter.

6.1.9. Any consultants may be considered for a subsequent stage appointment if they have been involved in the project during the previous ten years, and provided that they are on the current Mhlathuze Water panel. This applies particularly to large (Group 3) projects where several consultants may have been involved in different preliminary studies.

6.1.10 On externally funded projects the use of consultants prescribed by the funder will be accepted provided that the consultant is on the current Mhlathuze Water panel.

## 6.2. **Appointment Procedure**

The procedures to be followed for the appointment of consultants, is described below. The final appointment of the recommended consultant(s) will be in-line with the authority delegated by the Board:

### 6.2.1. Smaller Projects

#### a) *Project/Study Fee Value – Group 1*

- i) Appoint only B category consultants on a selection/rotation basis, except where circumstances require a specialist consultant, in which case a properly motivated specialist consultant (who may not necessarily be on the panel) will be appointed.
- ii) During the interim, for disciplines that have not yet been graded, consultants will be selected by taking into account previous appointments in the past five years, as well as their performance. Consultants not previously used will be given preference, until such time that the appropriate discipline group has been completely graded. Thereafter, the defined selection/rotation process will commence.
- iii) HDFs are excluded from this Fee Group, due to the fee value being too small to share. Furthermore, it would not be cost effective to include training of HDFs as part of the appointment.

#### b) *Project/Study Fee Value – Group 2*

- i) Appoint only B category consultants on a selection/rotation basis, with a requirement that a previously disadvantaged firm (HDF) is appointed as a sub-consultant to the main consultant. However, should a Category B consultant have historically disadvantaged shareholders with a shareholding of greater than 50% and HDIs

comprise more than 50% of the firm's staff complement, the further appointment of a HDF sub-consultant will not be required.

- ii) The choice of HDF is the main consultant's prerogative, provided the proposed firm is on the Mhlathuze Water Consultants Panel and their appointment is also based on the accepted selection/rotation basis.
- iii) The method of dividing the scope of work will again be left to the main consultant provided their proposal is acceptable to Mhlathuze Water. The HDF is to receive a minimum of 20%, up to a maximum of 40% of the appointment value. Where practicalities dictate, MANCO may reduce the entry level to a minimum of 10%.
- iv) During the interim, for disciplines that have not yet been graded, consultants will be selected by taking into account previous appointments in the last five years, as well as their performance. Consultants not previously used will be given preference, until such time that the appropriate discipline group has been completely graded. Thereafter, the defined selection/rotation process will commence.

#### 6.2.2. Large Projects

Only Group 3 project/study fee values apply in this case :

Appoint only A category consultants based on the SAACE 'GUIDELINE 1 – QUALITY BASED COMPETITIVE SELECTION OF CONSULTING ENGINEERS'.

##### a) *Pre-selection*

- i) Mhlathuze Water will prepare a project scope and delivery brief setting out the nature and objectives of the project, details of design parameters, deliverables and timing of the service required of the consultant and an indication of the criteria and weightings to be used in the evaluation of proposals.
- ii) Mhlathuze Water will then invite three firms (selected on suitable expertise and rotation basis – following the processes described above) to participate in the competitive bidding process.
- iii) The short listed consultants will then provide detailed proposals on:
  - How the project will be executed
  - A programme schedule for this execution
  - A resource/staff schedule and organogram
  - Methods of reporting to Mhlathuze Water
  - CV's of principals and staff assigned to the project
  - Firm's recent experience on similar projects
  - Details of HDF's to be involved, taking note that the HDF is to receive a minimum of 20%, up to a maximum of 40% of the appointment value. Where practicalities dictate, MANCO may reduce the entry level to a minimum of 10%. (This clause

excludes firms with HDI shareholding greater than 50% and a HDI staff complement exceeding 50%).

- Any special observations
- Separately detailed fee proposals

b) *Selection*

- i) This will be based on an evaluation of proposals using the following weighting procedure:

<b>CRITERIA</b>	<b>WEIGHTING</b>
Specific project applicable expertise	15-25
Approach and methodology	10-20
Project management	10-20
Expertise of key personnel	10-20
Empowerment	10-20
Track record	5-15
<b>TOTAL</b>	<b>100</b>

- ii) After completion of the above technical evaluation, the comparative fee proposals should be opened and given a relative weighting of 20% of the total marks allocated to the whole proposal, and the above weightings adjusted to a total of 100%.

This 20% to be split as follows:

<b>Fee Proposal Details (max. 12%):</b>	
Sum total only	0%
Detailed breakdown	12%
<b>Fee Value (max. 8%) :</b>	
Highest	0%
2 <sup>nd</sup>	4%
Lowest	8%

- iii) Final negotiations should now take place with the selected consultant to conclude the appointment.

## **7. LETTER OF APPOINTMENT AND FORM OF AGREEMENT**

### **7.1. Letter of Appointment**

7.1.1. The letter of appointment should be concise and to the point and preferably be accompanied by the relevant Form of Agreement.

7.1.2. A framework for the letter of appointment is available from the Planning & Development Department.

### **7.2. Form of Agreement**



7.2.1. If the Form of Agreement is not appended to the letter of appointment, the specific type of agreement to be used should be mentioned. This will be one of the following documents:

- a) *Engineering Disciplines (as defined in the consultants panel)*
  - i) Abridged Conditions of Appointment for Consulting Services – 1995 as prepared by the SAACE (To be used for fee GROUP 1 appointments).
  - ii) Form of Agreement for Consulting Engineering Services – April 1998, as prepared by the SAACE (To be used for fee GROUPS 2 or 3 appointments).
  - iii) Professional Services Contract for use with the New Engineering Contract (NEC) Document – 1994 as prepared by the UK Institution of Civil Engineers (Alternative to be used for fee GROUPS 2 or 3 appointments).
- b) *Non-engineering Disciplines (as defined in the consultants panel)*
  - i) Mhlathuze Water form of agreement - Abridged edition (fee GROUP 1 appointments)
  - ii) Mhlathuze Water form of agreement - Full edition (fee GROUP 2 or 3 appointments).

## **8. FEES AND DISBURSEMENTS**

### **8.1. Fees (Engineering)**

8.1.1. For SMALLER PROJECTS (fee GROUPS 1 and 2 appointments), the professional fee structure will be based on the SAACE 'Form of Agreement for Consulting Engineering Services' Appendix B (Remuneration of Consulting Engineer B1 – All Disciplines) – as amended/updated by the SAACE from time to time.

8.1.2. For SMALLER PROJECTS (fee GROUPS 1 and 2 appointments), the categories and pertinent hourly rates published from time-to-time in the Government Gazette, will be taken as the maximum time basis fees for each category.

8.1.3. For LARGE PROJECTS (fee GROUP 3 appointments), professional and time basis fees will all be determined through negotiation.

8.1.4. Engineering specialist fees and/or rates will be negotiated.

8.1.5. All travel time will be paid for at 50% of the normal hourly rate and only for a return journey exceeding 50 km in distance.

8.1.6. Adjustment of fees during the term of appointment:

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- a) The time basis rates for any appointment of duration longer than a year, can be adjusted, if revised in the Government Gazette during the term of the appointment and if such revision is provided for in the agreement.
- b) The professional fee structure for all appointments shall remain fixed for the duration of the appointment.

8.1.7. For externally funded projects the fee scales as specified by the funder will apply, if required by the funder.

## **8.2. Fees (Non-Engineering)**

8.2.1. No professional fee structure or fixed time basis rates for these disciplines are published in the Government Gazette at this stage, but benchmark figures for different disciplines and levels of expertise will be formulated initially from historical records. These will be used when negotiating rates prior to appointment.

8.2.2. These benchmark rates will be applicable to all fee GROUPS.

8.2.3. Adjustment of fees during the term of appointment:

Time basis rates will only be adjusted if the appointment exceeds one year in duration and if provided for in the agreement.

## **8.3. Disbursements**

### **8.3.1. Travel**

- a) Standard Mhlathuze Water rates will be applicable for all approved travel and will only be adjusted during the term of appointment, if this exceeds one year in duration and if provided for in the agreement.
- b) Rates only applicable for return journeys exceeding 50 km in distance.
- c) Air travel, rented cars, parking and road tolls will be reimbursed at cost.
- d) Costs will be apportioned between other (outside) appointments of a consultant, where applicable.

### **8.3.2. Subsistence**

- a) Overnight costs will be reimbursed up to a maximum of a 3 star establishment, or equivalent.
- b) Meals will be reimbursed at approved cost (excluding alcoholic beverages).

### **8.3.3. Other**

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Other costs such as for typing, printing, copying, communications and computers will be paid for at the standard rates of Mhlathuze Water. These will only be adjusted during the term of the appointment, if this exceeds one year in duration and if provided for in the agreement.

**8.4. Revision of Rates**

MANCO will review and revise all standard rates (fee structure and disbursements) for Mhlathuze Water on an annual basis at the start of each fiscal year.

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## **APPENDIX 6**

### **THE PROFILE OF MHLATHUZE WATER MAJOR COMPETITORS**



## **COMPETITIVE ANALYSIS**

**FOR**

**SCOTT WILSON**

### **NAME AND ADDRESS**

Name: Scott Wilson SA (Pty) Ltd

Address: Pencarrow Park La Lucia Ridge

Office Estate Umhlanga Rocks

4320 South Africa

P O Box 1899 Umhlanga Rocks

4320 South Africa

Tel. No.: 031 - 566 2201

Fax No.: 031 – 566 2370

e-mail: [scottwilsondbn@iafrica.com](mailto:scottwilsondbn@iafrica.com)

### **YEARS IN BUSINESS**

The involvement of Scott Wilson in water resources is through the joint venture with DMM Development Consultants. DMM Development Consultants was formed in 1997. All members of the firm are previously disadvantaged, qualified and competent engineers and scientists, who have gained their vast experience in South Africa and limited chemistry experience in the United States of America. DMM is a multi-disciplinary firm and offers services in the following fields:

- Environmental investigations
- Waste management
- Water resources planning and management
- Community development

The firm has secured strategic alliances with other consulting firms, both established and emerging, in order to ensure the provision of high quality services to its clients.

## **STRENGTHS**

Catchment Management is important for the protection, use, development, conserving, management and control of water resources. DMM is able to manage the full process in an integrated manner by development strategies, objectives, plans, guidelines and procedures for the catchment management agency to implement.

- Feasibility studies
- Hydrological investigations
- Systems analysis
- Sediment studies
- Water quality assessment and management
- River hydraulics and flood studies
- Conceptual design of major structures
- Water resources management

## **WEAKNESSES**

- Scott Wilson has no track record in water resources management
- No experienced personnel in Water Resources Management except with the joint venture with DMM.

**COMPETITIVE ANALYSIS  
FOR  
BKS (PTY) LTD**

**NAME AND ADDRESS**

Name: BKS (PTY) LTD Consulting Engineers

Address: P O Box 748  
Richards Bay, 3900

Tel. No.: 035 – 789 7602

Fax No.: 035 – 789 5669

e-mail: [bksrbaai@iafrica.com](mailto:bksrbaai@iafrica.com)

Internet: <http://www.bks.co.za>

**YEARS IN BUSINESS**

BKS (Pty) Ltd was established in 1965 and is now one of the leading engineering and project management firms in Southern Africa. In response to identified client needs, BKS offers a comprehensive service throughout the following market focused divisions:

- Water, Dams and Environmental
- Transportation
- Buildings, structural and support facilities
- Urban and Rural Development
- Environmental Sciences
- Oil and Gas Pipelines

BKS focuses on technical excellence in feasibility studies, design, construction, supervision, operation, rehabilitation and maintenance. It also has diversified to provide assistance management services, including institutional capacity building and training of clients' staff, financial and accounting services, social development services and community based facilitation. BKS has been involved in various forms of BOT projects.

## **STRENGTHS**

BKS is very strong in water quality:

- BKS recently did a water quality situation assessment to provide information on the current quality of water of the Mhlathuze River, an investigation that included the gathering of all relevant available data, analyzing the data and identifying problems.
- Water quality: Evaluation of the water quality of the Algoa Water Resources to determine and prioritise augmentation, water quality situation analysis and water quality modelling on the Mgeni River System, the Crocodile River Catchment, including the Pienaars and Jukskei Rivers and Vaal River System.

## **WEAKNESSES**

BKS doesn't have black professionals and scientists in key specialist functions in line with the transformation initiative of the country. According to BKS, they engage in programmes focused on affirmative action through their subsidiaries in the Usuthu-Mhlathuze WMA.

Despite their claimed involvement in Water Resources Management, BKS has only one traceable experience in water quality work done in the Mhlathuze Catchment.



**COMPETITIVE ANALYSIS  
FOR  
JEFFARES & GREEN CONSULTING ENGINEERS**

**NAME AND ADDRESS**

Name: Jeffares & Green Inc.

Address: P O Box 260  
Richards Bay, 3900

Tel. No.: 035 – 789 9931

Fax No.: 035 – 789 2566

e-mail: [jeffares@iarfrica.com](mailto:jeffares@iarfrica.com)

**YEARS IN BUSINESS**

Jeffares & Green Inc can trace it's origins back to 1922 when J L S Jeffares started a consultancy practice specializing primarily in railways in various countries in Southern Africa. He was later joined by H. H. Green and the firm Jeffares & Green came into being in 1947 and broadened the range of expertise into water resources (which included the original Oxbow Water Scheme, Lesotho) and then roads.

**STRENGTHS**

At present, the firm has offices in Johannesburg (Head Office), Pietermaritzburg, Durban, Richards Bay, Pretoria, East London, Port Elizabeth, Cape Town, Middleburg (Mpumalanga), Bellville and Mafikeng. In addition, there are also about a dozen site offices countrywide and the firm is thus represented in 7 of the country's 9 provinces. In addition, the firm has associated practices in Namibia, Botswana, Swaziland and recently in Zambia.

The firm employs some 254 personnel nation-wide including Civil, Structural, Geotechnical, Hydrological Engineers, Geophysicist, Environmentalists, Engineering

Geologists, Development and Project Managers, Materials and Labour Intensive Specialists, Surveyors, Technical Drafting and Administration Support Staff.

Geohydrological investigations have been completed for the identification of aquifers, location of boreholes for drinking water supply and for use as monitoring boreholes for mines and landfill waste disposal sites (to determine the impact of operations on groundwater). Catchment studies have been completed. Hydrological and Geohydrological studies have been undertaken to determine pollution control solutions such as that for Richards Bay Coal Terminal. Geohydrological studies include the interpretation of geological setting, extensive use of geophysical methods and groundwater modelling.

Jeffares & Green has in-house GIS facilities and considerable expertise. In addition, the firm also offers expertise in the following aspects of social engineering in relation to projects: Capacity Building; Community Development and Management; Empowerment, especially of Women; Facilitation, Project Evaluation and Monitoring; Training and Research.

Over the years, the firm has formed joint ventures/ consortia with most of the major, and some of the smaller consulting engineering firms countrywide.

## **WEAKNESSES**

Jeffares & Green Inc.'s key personnel and principals have experience and expertise in Environmental Engineering and no proven record in Water Resources Management except in Geohydrology to a lesser extent.

Their key personnel and principals are almost all white and do not reflect the demographics of the society in which they do business. This will disadvantage the firm in terms of winning business from Government Institutions.

**COMPETITIVE ANALYSIS**  
**FOR**  
**WATER RESOURCE PLANNING AND CONSERVATION CONSULTING**  
**ENGINEERS (Pty) Ltd**

**NAME AND ADDRESS**

Name: Water Resource Planning and Conservation Consulting Engineers (Pty) Ltd

Address: PostNet Suite 104  
Private Bag X6  
Cascades, Pietermaritzburg, 3202

Tel. No.: 033 - 196 6242

Fax No.: 033 - 196 6242

e-mail: [wrppmb@pmb.lia.net](mailto:wrppmb@pmb.lia.net)

**YEARS IN BUSINESS**

WRP (Pty) Ltd was formed in Pretoria 1998 by three former directors of the consultancy BKS (Pty) Ltd, namely Messrs Ronnie McKenzie, Pieter van Rooyen and Willie Potgieter. The purpose of the formation of the new consulting group is to consolidate the expertise of a smaller and more manageable group of specialists to provide quality services in water resources planning and management, water conservation, and environmental management. In June 1999, Mr. Wayne Schäfer is to focus on the development of the water conservation and environmental management areas of the business.

**STRENGTHS**

WRP was formed with the specific purpose of providing specialists Water Resources Management services. This is an extensive discipline that covers a variety of fields, and services offered include:

- Rainfall/ runoff modelling:
- Flood hydrology:
- Hydrological analysis: and
- Stochastic stream flow generation

Another primary focus area of WRP, therefore, is that of Water Conservation. Services in this regard fall into the two broad categories of Integrated Catchment Management and Water Demand Management. Specific services offered are:

- Land-use management and monitoring;
- Water resources basin studies and allocation planning;
- Development of integrated catchment management plans;
- River engineering;
- Flood management planning
- Groundwater development planning
- Pressure management;
- Determination of the optimal economic level of leakage;
- Night flow analysis;
- Water audits and water balances;
- Management of unaccounted-for water.

#### **WEAKNESSES**

They are more of engineering experts than hard-core professional scientist that specialize with water resources management. Be it as it may, they have one or two professionals with experience in water quality.

They don't offer a suite of water resources management specialists' functions and only water conservation.



**COMPETITIVE ANALYSIS  
FOR  
NINHAM SHAND CONSULTING ENGINEERS**

**NAME AND ADDRESS**

Name: Ninham Shand (South) (Pty) Ltd

Address: P. O. Box 1347  
Cape Town, 8000

Tel. No.: 021 – 424 5544

Fax No.: 021 – 424 5588

**YEARS IN BUSINESS**

With 66 years of experience, Ninham Shand consulting Engineers is an established leader in the engineering profession, providing a comprehensive consulting service in virtually every field of civil and environmental engineering. Ninham Shand has its Head Office in Cape Town, twenty-two offices throughout Southern Africa, and a staff complement of over 600 professionals, technical personnel and support staff.

Ninham Shand believes that development should be accompanied by a commitment to environmental responsibility for the benefit of society. This belief led them to establish an environmental section in 1982 with staff capable of undertaking wide-ranging work in the natural, the built and the social environments.

In addition, the environmental sections is supported by expertise from other sections within Ninham Shand in the following broad categories:

- Water Resources and Supply
- Water and Wastewater Treatment
- Urban and Rural Development
- Heavy Civil Engineering
- Geographic Information Systems (GIS)

## **STRENGTHS**

Their specialist experience is applied to:

Core areas:

- Environmental Impact Assessments (EIA)
- Environmental Management Programme Reports (EMPR)
- Environmental Management Plans (EMP)
- Integrated Environmental Management
- Environmental Site Investigations
- Environmental Planning and Project Management
- Environmental Frameworks
- Catchment Management
- Strategic Environmental Assessments (SEA)
- Strategic Environmental Management Plans (SEMP)
- Review of Environmental Reports
- Water Resource Assessment
- Wastewater Assessment
- Riverine Management
- Public participation Processes

## **WEAKNESSES**

- They are more of engineering experts than hard-core professional scientist that specialize with water resources management. Be it as it may, they have one or two professionals with expertise in water quality.
- They don't offer a suite of water resources management specialist functions.

**COMPETITIVE ANALYSIS  
FOR  
SCOTT WILSON  
NAME AND ADDRESS**

Name: Scott Wilson SA (Pty) Ltd

Address: Pencarrow Park La Lucia Ridge

Office Estate Umhlanga Rocks

4320 South Africa

P O Box 1899 Umhlanga Rocks

4320 South Africa

Tel. No.: 031 - 566 2201

Fax No.: 031 – 566 2370

e-mail: [scottwilsondbn@iafrica.com](mailto:scottwilsondbn@iafrica.com)

**YEARS IN BUSINESS**

The involvement of Scott Wilson in water resources is through the joint venture with DMM Development Consultants. DMM Development Consultants was formed in 1997. All members of the firm are previously disadvantaged, qualified and competent engineers and scientists, who have gained their vast experience in South Africa and limited chemistry experience in the United States of America. DMM is a multi-disciplinary firm and offers services in the following fields:

- Environmental investigations
- Waste management
- Water resources planning and management
- Community development

The firm has secured strategic alliances with other consulting firms, both established and emerging, in order to ensure the provision of high quality services to its clients.

**STRENGTHS**

Catchment Management is important for the protection, use, development, conserving, management and control of water resources. DMM is able to manage the full process in an integrated manner by development strategies, objectives, plans, guidelines and procedures for the catchment management agency to implement.

- Feasibility studies
- Hydrological investigations

- Systems analysis
- Sediment studies
- Water quality assessment and management
- River hydraulics and flood studies
- Conceptual design of major structures
- Water resources management

#### **WEAKNESSES**

- Scott Wilson has no track record in water resources management
- No experienced personnel in Water Resources Management except with the joint venture with DMM.



**COMPETITIVE ANALYSIS  
FOR  
BKS (PTY) LTD**

**NAME AND ADDRESS**

Name: BKS (PTY) LTD Consulting Engineers

Address: P O Box 748  
Richards Bay, 3900

Tel. No.: 035 – 789 7602

Fax No.: 035 – 789 5669

e-mail: [bksrbaai@iafrica.com](mailto:bksrbaai@iafrica.com)

Internet: <http://www.bks.co.za>

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## **WEAKNESSES**

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- They don't offer a suite of water resources management specialist functions.



**APPENDIX 7**

**PROJECTS AND STUDIES UNDERTAKEN BY MHLATHUZE WATER IN THE  
LAST FIVE YEARS**

## **MHLATHUZE WATER'S MAJOR WATER RESOURCE PROJECTS AND STUDIES IN THE LAST FIVE YEARS**

- A & B Effluent Strategic Planning : Abef/B
- Alien Vegetation Assessment Study: Mhls/D
- Empangeni Bulk Water Supply Phase 2 : Emp/B
- Hlabisa Water Project : Hla/A
- Hluhluwe Phase 3 : Hlu/G
- Indian Ocean Fertilizer : Clarified Water Supply : Iof/A
- Jozini, Ubombo. Mkhuze Water Supply Scheme : Joz/A
- Kwangwanase Phase3 : Kngw/C
- Makhathini Irrigation Scheme : Joz/C
- Management Potential Study : Mhls/D
- Mhlathuze Ecological Reserve Study : Mhls/B
- Mhlathuze Operating Rules & Future Phasing : Mhls/C
- Mhlathuze River Channel Meander : Mhls/H
- Mhlathuze System Water Conservation And Demand Study
- Mhlathuze Weir Fishway : Mhls/E
- Mhlathuze Weir Study : Mhls/G
- Nkandla Bulk Water Supply : Mhls/F
- Nsezi Wtp Extensions & Augmentation : Nsez/C
- Richards Bay Minerals At Zulti-South Water Supply : Rbm/A
- Shemula Community Water Supply Phase 3 : Shem/C
- Somile Community Water Supply Scheme Phase 2 : Som/B
- Transfer Of Dwa&F Bulk Water Services : Dwaf/A
- Tugela/Mhlathuze Permanent Transfer Scheme : Tmpt/A
- Mhlathuze Water, 2003, Alien Vegetation Assessment Study (Mhlathuze Catchment: W12B). Prepared by Multi-Consult and Gaea Projects.
- Mhlathuze Water's Draft Five Year Business Plan, 2004 - To be submitted to DWAF.