

# PART 1 – INTRODUCTION AND OVERVIEW

## CHAPTER 1: BACKGROUND TO THE INTERNAL STRATEGIC PERSPECTIVE

### 1.1 LOCATION OF THE BREEDE WMA

Figure 1.1 shows the location of the Breede WMA, which falls within the Western Cape Province.



**Figure 1.1: Location of the Breede WMA**

### 1.2 WATER LEGISLATION AND MANAGEMENT

Water is one of the most fundamental and indispensable of all natural resources. It is fundamental to life and the quality of life, to the environment, food production, hygiene, industry, and power generation. The availability of affordable water can be a limiting factor for economic growth and social development, especially in South Africa where water is a relatively scarce resource that is distributed unevenly, both geographically and through time, as well as socio-politically.

Prosperity for South Africa depends upon sound management and utilisation of our many natural and other resources, with water playing a pivotal role. South Africa needs to manage its water resources optimally in order to further the aims and aspirations of its people. Current government

objectives for managing water resources in South Africa are set out in the National Water Resources Strategy (NWRS) as follows:

- **To achieve equitable access to water.** That is, equity of access to water services, to the use of water resources, and to the benefits from the use of water resources.
- **To achieve sustainable use of water,** by making progressive adjustments to water use to achieve a balance between water availability and legitimate water requirements, and by implementing measures to protect water resources and the natural environment.
- **To achieve efficient and effective water use** for optimum social and economic benefit.

*The NWRS also lists important proposals to facilitate achievement of these policy objectives, such as:*

- Water will be regarded as an indivisible national asset. The Government will act as the custodian of the nation's water resources, and its powers in this regard will be exercised as a public trust.
- Water required to meet basic human needs and to maintain environmental sustainability will be guaranteed as a right, whilst water use for all other purposes will be subject to a system of administrative authorisations.
- The responsibility and authority for water resource management will be progressively decentralised by the establishment of suitable regional and local institutions, with appropriate community, racial and gender representation, to enable all interested persons to participate.

### **1.2.1 The National Water Act (NWA)**

The NWA of 1998 is the principal legal instrument relating to water resource management in South Africa. The Act is now being implemented incrementally. Other recent legislation which supports the NWA includes the Water Services Act (Act 108 of 1997) and the National Environmental Management Act (Act 107 of 1998).

### **1.2.2 The National Water Resource Strategy (NWRS)**

The NWRS is the implementation strategy for the NWA and provides the framework within which the water resources of South Africa will be managed in the future. All authorities and institutions exercising powers or performing duties under the NWA must give effect to the NWRS. This strategy sets out policies, strategies, objectives, plans, guidelines, procedures and institutional arrangements for the protection, use, development, conservation, management and control of the country's water resources. The purpose of the NWRS is to provide the following:

- The National framework for managing water resources;
- The framework for preparation of catchment management strategies in a nationally consistent way;
- Information, in line with current legislation, regarding transparent and accountable public administration; and

- The identification of development opportunities and constraints with respect to water availability (quantity and quality).

### **1.2.3 Catchment Management Strategies (CMS)**

The country has been divided into 19 Water Management Areas (WMAs). The delegation of water resource management from central government to catchment level will be achieved by establishing Catchment Management Agencies (CMAs) at WMA level. Each CMA will progressively develop a Catchment Management Strategy (CMS) for the protection, use, development, conservation, management and control of water resources within its WMA.

The Department's eventual aim is to hand over certain water resource management functions to CMAs. Until such time as the CMAs are established and are fully operational, the Regional Offices (ROs) of DWAF will have to continue managing the water resources in their areas of jurisdiction.

## **1.3 INTERNAL STRATEGIC PERSPECTIVES (ISPs)**

### **1.3.1 The Objectives of the ISP Process**

The objective of the ISP will be to provide a framework for DWAF's management of the water resources in each Water Management Area, until such time as the Regional Offices can hand over the management functions to the established CMA. This will ensure consistency when answering requests for new water licences, and informing existing water users (including authorities) on how the Department will manage the water resource within the area of concern. Stakeholders must be made aware of the bigger picture as well as the management detail associated with each specific water resource management unit.

### **1.3.2 Approach Adopted in Developing the ISP**

The ISP for the Breede WMA was developed in five stages as follows:

- i) Determining the current status of water resource management and relevant water resource management issues and concerns in the Breede WMA. This was achieved through interviews with individual members of DWAF's RO in Bellville and by collating information from the NWRS, WMA reports, Water Resource Situation Assessment (WRSAs) reports and other catchment study reports. The following topics were discussed with Regional Office staff and their issues and concerns documented:
  - Water Situation
  - Resource Protection
  - Water Use
  - Water Reconciliation
  - Water Infrastructure
  - Monitoring and Information

- Water Management Institutions
- Co-operative Governance
- Planning Responsibilities.

A starter document of the identified issues and concerns was produced as a discussion document for the first workshop.

- ii) The first workshop was held with attendees from the Regional Office, the Integrated Water Resource Planning (IWRP) Chief Directorate of the Department as well as the consulting team. The workshop focussed on the lists of general issues in the WMA as well as area-specific issues. The issues were clarified and refined during the workshop. Strategies were discussed and developed to address the issues.
- iii) The third stage involved the preparation of the second workshop document to be used for refining strategies to address the various issues and concerns, during the second workshop.
- iv) The fourth stage was the second workshop. During this workshop the overall management of the water resources in the catchment was discussed along with the ISP management strategies and the relevant issues and concerns. The priorities and responsibilities for carrying out the strategies were identified. First workshop attendees were again involved, as were representatives of several DWAF Head Office directorates.
- v) The fifth stage was the finalisation of the ISP document.

As can be deduced from the above this Breede ISP was prepared internally within the Department, and captures the Department's perspectives. Once approved by DWAF Management, it is intended that the Regional Office will make the ISP available to Water User Associations (WUAs), Water Service Providers (WSPs), Water Service Authorities (WSAs) and other forums for discussion and comment. These comments will be considered and worked into later versions of the ISP. By adopting this procedure this ISP becomes a working document, which will be progressively updated and revised by DWAF. Public participation forms part of the CMS process, for which the ISP serves as a foundation (see Paragraph 1.6).

The ISP does not formulate all the details pertaining to every strategy but provides a suggested framework for each strategy around which the details will be developed by the responsible authority. Where relevant and readily available, certain details have been included in the strategies. The responsible authority for the further development of each strategy is indicated. This is predominantly the Regional Office, which remains responsible for involving the relevant DWAF directorates.

### **1.3.3 Updating of the ISP Report**

The ISP strategies should not lag behind national developments, become outdated or differ from related ISPs regarding trans-boundary management. There is therefore a need to have a standard

process for updating strategies, and to prevent strategies becoming outdated by ensuring adequate feedback from national developments. Furthermore, the proposal and introduction of new strategies needs to be accommodated. It is suggested that each strategy has a version-control system. The following is necessary:

- Keep abreast of changes in national legislation and policy changes or refinements by keeping a list of all relevant legislation and supporting documents relevant to the ISP;
- Ensure consistency between the ISP strategies and national strategies through a regular review-and-update procedure;
- Annually review and ensure consistency and agreement regarding trans-boundary ISP management issues by liaising with the responsible managers of other areas and updating relevant ISP strategies if necessary;
- Annually review the priorities of required management actions and align budgets accordingly;
- Monitor the implementation of the ISP (review actions, progress, implementation and stumbling blocks);
- Incorporate feedback from stakeholders;
- Rigorously apply ISP version control.

#### Updating and Version Control

The actual frequency of ISP revision will be determined by the number and extent of revisions to management approaches as reflected in Strategy amendments. All updates to this report, particularly with respect to amendment to the Strategies, need to be passed on to and vetted by the Catchment Manager for the Breede WMA. The current incumbent is Mr J Roberts, who has been delegated the task of managing version control.

### **1.3.4 The Authority of Information Contained in the ISP**

The NWRS is a statutory document, subject to a high level of public scrutiny and input, and signed off by the Minister. The information contained in the NWRS is the best information and knowledge available at the time. The information in Chapter 2 and Appendix D of the NWRS on water requirements, availability and reconciliation was updated with comments received from the public participation process in the second half of 2002. To enable the finalisation of the NWRS, these figures were "closed" for changes in February 2003.

Underlying the figures in Chapter 2 and Appendix D is a set of 19 reports "Overview of Water Resources Availability and Utilisation", one for each WMA. These reports contain more detailed information on each WMA than was summarised for the NWRS and are referred to, in short, as "WMA Reports". The WMA reports were also finalised with the February 2003 information.

Still deeper in the background lies another set of reports (one per WMA), the so-called Water Resource Situation Assessment Reports. These reports contain a wealth of information on each WMA, but the figures on requirements, availability and reconciliation have been superseded by the WMA report and the NWRS.

The ISPs for all WMAs used the information contained in the NWRS and WMA reports as the point of departure. However, an inevitable result of the ISP process has been that better information has emerged in some cases. The reason is that the level of study is more detailed and intense for the ISP. This included very close scrutiny of the numbers used in the NWRS, and in some cases a reworking of base data and some re-modelling. In this WMA the Breede River Basin Study (Ref.8) has provided water resource information considered to be the most reliable to date for the Breede River catchment. Extensive use has been made of the information contained therein, in this ISP. Where the ISPs contain yield balance data which differs from the NWRS, these discrepancies are carefully explained. Where other differences from the NWRS are necessary these are also detailed in the ISP, with accompanying explanations.

It is required that the Department work with the best possible data so that the best possible decisions can be taken. Where the ISPs have improved upon the NWRS then this is the data that should be used. The new data contained in the ISP will also be open to public scrutiny as the ISP reports will be published on the Internet and in hardcopy, and will be presented and discussed at WMA forums. Comments received will be considered and worked into subsequent versions of the ISP on a regular (yearly) basis. The NWRS will be updated to reflect the latest understanding in each new edition.

## **1.4 INTEGRATED WATER RESOURCE MANAGEMENT (IWRM)**

It is imperative that the natural, social, economic, political and other environments and their various components are adequately considered when conducting water resources planning and management. Water as a strategic component also interacts with other components in all environments. For example, human activities such as the use of land, the disposal of waste, and air pollution can have major impacts on the quantity and quality of water which is available for human use and for proper life support to natural biota.

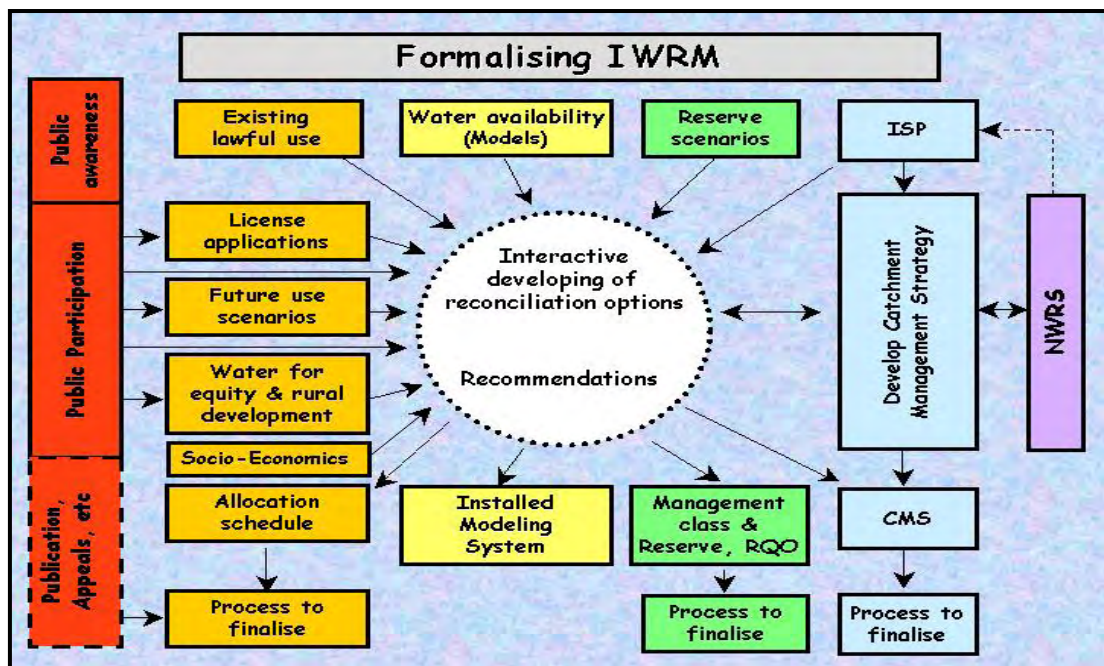
Taking an even broader view, water must also be managed in full understanding of its importance for social and economic development. It is important to ensure that there is conformity between the water-related plans and programmes of the CMAs, and the plans and programmes of all other role players in their management areas. The CMAs must therefore establish co-operative relationships with a wide range of stakeholders, including other water management institutions, water services institutions, provincial and local government authorities, communities, water users ranging from large industries to individual irrigators, and other interested persons.

This integrated planning and management approach is intended, through co-operative governance and public participation, to enable water managers to meet the needs of all people for water, employment, and economic growth in a manner that also allows protection and, where necessary, rehabilitation of aquatic ecosystems. Above all, Integrated Water Resource Management

(IWRM) will enable water managers to use our precious water resources to assist us in poverty eradication and removal of inequity.

One of the big opportunities to formally integrate a large number of actions in water resource management presents itself during the compulsory licensing process.

Compulsory licensing is identified in the NWRS as a very important action for implementing the NWA. However, it is not a simple action of issuing licences but a complex process of closely related and interdependent activities that will in itself formalise IWRM to a great extent. The process of IWRM is diagrammatically depicted in Figure 1.2.



**Figure 1.2: Diagram showing DWAF Integrated Water Resources Management approach**

Before an allocation schedule can be determined and the legal steps followed to finalise compulsory licensing (through the issuing of licences to all users), many other aspects must be addressed:

- Existing use and the lawfulness of that use must be verified, all users (existing and new) must apply for licences, a good understanding of future use scenarios must be developed and water required for equity purposes and rural development must be clearly understood.
- Water availability must be understood as thoroughly as possible with "best available" existing information used to model all possible reconciliation options.
- Reserve scenarios must be developed for all significant resources in the catchment, for instance, the river flow requirements for all possible classes that may be considered.
- The development of strategies for implementing the licensing (abstraction controls, for example), the Reserve and Resource Quality Objectives (i.e. incrementally over time)

must go hand in hand with the rest of the processes to ensure that practical, workable solutions are found.

The processes will then enter a very intensive, interactive phase of developing realistic reconciliation options. This would entail, for example, the selection of a specific management class to be scrutinised for its impact on the number of water use licences that could be issued, with its concomitant impacts on the social and economic structure of the catchment.

The active participation of stakeholders in this process will then hopefully crystallise clear recommendations on an allocation schedule, management classes for the various reaches of the rivers and the resultant ecological Reserve and Resource Quality Objectives, as well as strategies for the implementation.

Although the Department will play a very strong role in guiding this process, it is extremely important to have the CMA actively involved. Preferably, at least the Board of the CMA must be in place to drive the public participation for the process.

## **1.5 CARING FOR THE ENVIRONMENT**

DWAF is responsible for water resource development and management in terms of the NWA, and within the broader framework of other environmental legislation. The Department also strongly reflects the will to make sound decisions which ensure the development of society and the economy whilst maintaining, and where possible enhancing, ecological integrity. The concept of management of the environment has evolved from the exclusivity of protection of plants and animals to balancing the complex interaction of society, the economy, and ecology. "Environmental management is the integration of social, economic and ecological factors into planning, implementation and decision-making so as to ensure that development serves present and future generations" (NEMA).

The key legislative Acts to which DWAF is required to refer are the National Environmental Management Act (NEMA, Act 107 of 1998) and the Environment Conservation Act (ECA, Act 73 of 1989). DWAF has prepared a Consolidated Environmental Implementation and Management Plan (CEIMP) as a requirement of NEMA. This describes the Department's functions, policies, plans and programmes, and states how these comply with environmental legislation. Through the CEIMP, the Department has committed itself to developing and implementing an integrated Environmental Management Framework (EMF) to ensure that its approach is aligned with the principles prescribed in NEMA and the ECA. The EMF will inform the Department at a strategic decision-making level, bring about environmental legal compliance, and help in achieving environmental sustainability through the promotion of sound environmental management practices. Integrated Environmental Management is a co-operative governance effort with DWAF as a full partner in the process.



This ISP has the responsibility of raising and maintaining the environmental consciousness of the Department's water resource planners and managers. The control over water has a very broad range of influence and impact for which strategies and planning need to account. Impacts come from many different angles.

Some of these angles of impact which are considered through this ISP are noted below:

- The direct impact of physical structures (environmental constraints to construction e.g. of weirs or dams)
- The implications of allocating and licensing water for use. Forestry and irrigation are examples of users where development based on water can mean the transformation of extensive areas of otherwise 'natural' environments.
- The allocation of water for equity. Here we can include approaches towards the application of Schedule 1 Use, General Authorisations, the revitalisation of irrigation schemes, etc.
- Failure to support equity, or appropriate development – noting the consequential impacts of poverty.
- Sanitation systems and the impacts on groundwater quality.
- The implementation of the Reserve.
- The ability to monitor and manage compliance, thus protecting the resource and with it the environment.

All decisions regarding water are critical to the environment. Decisions must be made on a balance of social, economic and ecological costs and benefits, considering both the immediate and the long-term, and always with an eye out for the unintended consequence. It is the intention of the ISP to provide the basis for integrated decision-making. The principles of environmental management underpin every strategy developed in this document.

There are a number of strategic areas with a particularly strong biophysical/ ecological emphasis. These include:

- The Reserve (groundwater, rivers, wetlands and estuaries)
- Water quality - surface and groundwater
- The approach towards the clearing of Invasive Alien Plants
- The management of wetlands
- Land degradation. Erosion and sedimentation (land care)
- Land-use and especially how this is impacted on by land reform and the re-allocation of water.

The roles of Co-operative Governance and the need for awareness raising and capacity building are key strategic elements of many strategies.

In reality all strategies and all aspects of management have a strong interaction with the biophysical environment. This ISP endeavours to capture all of these concerns in discussion and through a strategic approach which emphasises the will of the Department to manage the environment to the best benefit of the country and its people.

The approach set out above applies to all Water Management Areas and associated ISPs, and is not repeated within the Strategies of this ISP. It reflects the way the Department views Integrated Water Resource Management and the importance of the biophysical aspects of decision-making. There may nevertheless be specific ecological and biophysical aspects of management which require specific attention and which may not be captured in the above-mentioned or other strategies. The ISP therefore still includes an Environmental Strategy which serves to make pertinent those issues of the environment which might not otherwise be covered.

## **1.6 THE SOCIAL ENVIRONMENT**

The utilisation of water resources is aimed at the benefit of society, and at society through the economy. As noted in Section 1.5 this should not be at undue cost to ecological integrity.

Impacts on society are a core element of this ISP, and decisions are often complicated by the risk of unintended consequence. As a typical example the over-zealous implementation of the ecological Reserve may benefit the river, to the intended benefit of society, but the cost of lack of use of that water for employment and livelihoods may lead to other strains on natural resources that undo the benefits.

The implementation of the NWA requires that society be kept at the forefront of all decision-making. This principle is now deep-seated within the Department and is integral to all strategies. Water resource allocation and use has critical social impact, as does water quality management. But pivotal to the social component is the question of equity. What can be done and what is being done to redress past inequities? Within this, strategies have been developed to consider the provision of water to resource poor farmers, Licensing and General Authorisations, etc. Whilst water supply and sanitation are not part of the brief of the ISP, the provision of water to meet these needs most certainly is. The urban poor, and the poor in rural villages, are as important in the consideration of the distribution and use of water resources as are the rural subsistence poor, and this should not be forgotten in the urgencies of land reform and the enthusiasm to establish a substantial class of farmer from amongst the previously disadvantaged.

This ISP aims to see water benefiting society. This can be through access to water in livelihood strategies, through small-farmer development programmes, through water supply and sanitation and especially the provision of good quality drinking water, and through the maintenance and growth of income-producing, job creating, and tax paying agricultural, commercial and industrial strategies.

Consultation and public participation are cornerstones of the social component of any strategic document. These requirements are repeatedly stressed throughout the National Water Act. This ISP has been prepared as DWAF's position statement with respect to the management of water resources and, although strategies and plans have been captured without consultation with the stakeholders, it remains an open and transparent document where the understanding of the Department, its visions and its principles are made clear for all to see and to interact with. This is amplified in the Implementation Strategy of this ISP.

## 1.7 WATER QUALITY MANAGEMENT

Much of the emphasis in water resource management has revolved around ensuring that users have sufficient quantities of water. However, as more water gets used and re-used, as quantities get scarce and feedback loops get even tighter, it is quality that begins to take on a dominant role.

Water availability is only as good as the quality of that water. Both quantity and quality need to be considered at the correct level of detail, and this can mean that at times they should be considered with similar emphasis and with similar expenditure of resources. Too often we have failed to integrate the issues of quantity and quality – both with regard to surface water and groundwater. The concept of Available Assimilative Capacity, the ability of the water resource to absorb a level of pollution and remain 'serviceable', is as important in water resource management as is the concept of Systems Yield.

Quantity and quality can no longer be managed in isolation of each other. Not that this isolation has ever been total. The importance of releasing better quality water from Brandvlei Dam for freshening the saline water in the lower reaches of the Breede River, and of the addition of freshening releases from Vaal Barrage to bring water back to an acceptable quality has, *inter alia*, long been standard practice. The consequences of irrigation, the leaching of fertilisers, and more importantly the leaching of salts from deeper soil horizons can render both the lands themselves and the receiving rivers unsuitable for use. Diffuse agricultural 'effluent' may be less visible than direct discharges of wastewater or industrial effluent, but are no less pernicious.

Direct discharges to rivers are licensed and managed on the basis of assimilative capacities of those rivers, and on Receiving Water Quality. Where these limits are exceeded, often through the cumulative impact of diffuse discharges, water becomes unavailable to some, or even all, users downstream. DWAF will license users to take water, and again to discharge it, recognising that there is generally a cost to the resource in terms of a reduction in quality and a reduction in its further assimilative capacity. It is for this reason, and in order to bring about additional management and a strong incentive, that the Waste Discharge Charge System is being developed. Discharge users will be obliged to pay, depending on the quantity and quality of their discharge.

Surface water quality is affected by many things including sediment and erosion, the diffuse discharges from irrigated farmland (both fertilisers and salinity through leaching), domestic and urban runoff, industrial waste, and wastewater discharges. Of these, industrial waste and wastewater discharges are the easiest to license and control, but this does not mean that this is problem-free. The Department has found that the situation with regard to wastewater discharges often far exceeds the standards and conditions demanded by licences. There is a problem of compliance with regard to local authorities and private operators responsible for waste management systems. Diffuse discharges only compound the problem by reducing the assimilative capacity until the water becomes unfit for use, very expensive to purify, and a danger to human health.

Groundwater quality requires equal attention, and more so as we recognise the importance of groundwater in supplementing our meagre resources, and providing water to remote communities. Although our groundwater resources are for the most part to be found at relatively deep levels (50-100m is quite typical) this water can easily be polluted by surface activity. The leaching of

fertilisers is one such problem but of greater concern is the increase of nitrates, primarily a consequence of human habitation and sanitation. Pit latrines are on the one hand necessary, and have the huge advantage of not requiring volumes of water, but disposal is 'on-site', and often responsible for the longer-term pollution of the underlying aquifers which feed and water the communities above.

Water quality is a very important aspect of strategy within this ISP – considered primarily within the Water Quality Strategy and also under Groundwater. Industrial wastewater discharge, diffuse agricultural discharges, wastewater treatment works, the location and management of solid waste disposal sites, the siting of new developments, informal settlements and the impacts of sanitation systems, are all elements considered with great concern in this and other ISPs. Despite this attention it may be that Water Quality has still not taken its rightful place in the integrated management of the water resource. But the Department is moving towards IWRM and the integration of quantity and quality issues. Managers have now been given cross-cutting responsibilities that will ensure a far more integrated approach in future.

**Actions recommended within the Department include:**

- The need to actively workshop the integration process. Resource Management, Planning and Allocations of Groundwater and Surface Water Quantity and Quality.
- The review and incorporation of knowledge from recent Water Research Commission Studies on both radioactivity and nitrates (groundwater quality issues).
- A review of all water quality literature reflecting situational knowledge and understanding within this WMA (and each and every WMA).
- Ensure that Water Quality monitoring is fully integrated into WMA water resources monitoring.

Refer particularly to the Water Quality Strategy in Chapter 8.

## **1.8 GROUNDWATER**

The ISP process in all of the Water Management Areas of South Africa has highlighted the role and importance of groundwater as part of the total water resource. Although groundwater has always been important in some areas, this overall vision is a significant advance on our previous understanding of the potential for groundwater use. With the surface water resources in many WMAs now fully utilised, almost the only opportunity left for further development lies in the exploitation of groundwater. More particularly it is recognised that many of the more remote towns and villages, far from surface supplies, can in fact supply or supplement existing sources through groundwater, and that this must become a priority option. So, too, many small communities and subsistence farmers can avail themselves of groundwater when it would otherwise be impossible or impractical to lay on piped supplies. This can also reduce the pressure on existing users and perhaps even circumvent the need for compulsory licensing. The Department will be developing its capacity to explore and encourage the use of groundwater.

Of obvious concern is the likelihood of an interaction between groundwater and surface water. If the interaction is strong then additional use of groundwater may simply be reducing the surface water resource already allocated to someone else. In some instances (such as in the case of dolomitic aquifers) this interaction can indeed be very strong, whilst across many areas of the country it is so weak as to be negligible. In the case of the Southern and South Eastern WMAs and especially where the Table Mountain Group Aquifer (TMG) predominates, the interaction is thought to be strong, with groundwater supplying a significant portion of baseflow. In these circumstances groundwater comprises a huge pool of available water which is only of benefit if it is utilised. Care must always be taken with the issuing of licences to ensure that both the Groundwater Reserve and other downstream users do not end up being the losers.

The realisation in this and other ISPs is that groundwater offers a huge resource of water which can be tapped, and that this can be a very significant supplement to the national water resource. The TMG which underlies parts of the Breede WMA is being specifically researched for its utilisation potential. See also the Groundwater Utilisation Strategy in Chapter 7.

## **1.9 PUBLIC RECREATION - THE USE OF DAMS AND RIVERS**

The use of water for recreational purposes is one of the 11 water uses regulated in terms of the NWA (Section 21 j). The Department is developing a national policy towards 'Recreation on Dams and Rivers' and this should, in the first instance, be adhered to. Recreational use can take many forms and only occasionally has any direct impact on the water resource. Most obvious are activities such as power-boating, sailing and swimming which can have quality/pollution impacts. Far more significant in terms of both quantity and quality is the release of water to allow for canoeing and other water sports downstream (the Berg, Breede, Dusi and Fish River canoe marathons being prime examples). These activities can bring very significant economic benefits to the WMAs concerned, and where water releases can be accommodated, particularly through alignment with the needs of the ecological Reserve or other downstream users, then so much the better.

It is noted in this ISP that water resources offer a very significant recreational outlet and that recreation is an important public and social asset necessary for national health and productivity. A central philosophy is that recreational opportunity should not be unreasonably and unnecessarily denied to users, and that the implementation of policy should ensure that disadvantaged and poor people should also be able to avail themselves of opportunities.

The Department has already transferred responsibility for the management of many public waters to local authorities and will continue with this process. Responsibility will therefore devolve upon these authorities, but within the broad principles as laid down by the Department.

In this ISP refer to the Recreational Use of Dams and Rivers Strategy in Chapter 14.

## **1.10 CO-OPERATIVE GOVERNANCE – the place of the ISP**

The ISP is DWAF's approach to the management of water resources within the WMA. This will, in the longer term, be replaced by a fully consultative Catchment Management Agency. What is

most important, in the medium term is that the ISP has a good fit with the Provincial Growth and Development Plan, with regional and other Environmental Management Plans, with plans and expectations of the Departments of Agriculture, Land Affairs, the Environment and others. It must also be aligned with the Integrated Development Plans and Water Services Development Plans now required for each District Municipality. Water is very often a constraining feature in development and co-operative governance planning and implementation is essential in matching what is wanted with what is possible.

## CHAPTER 2: INTRODUCTION TO THE BREEDE WMA

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### 2.1 INTRODUCTION

The Breede WMA is bounded by the Indian Ocean to the south, the Berg WMA in the west, the Olifants/Doorn WMA in the north-west and the Gouritz WMA in the east. It falls entirely within the Western Cape Province.

From a water resource management perspective, the Breede WMA can be sub-divided into two specific regions, as shown on Figure 2.1.1, namely:

- The Breede River component
- The Overberg component

This Chapter serves as an introduction to the Breede WMA and briefly describes the over-arching characteristics of the WMA. Thereafter the water resource management perspective for each of the two main regions and their respective sub-areas and catchments, is further addressed in detail in:

- Chapter 3: The Breede River component
- Chapter 4: The Overberg

There are a number of large water supply schemes in the Breede WMA. Locally, most of the water is used for irrigation. There are however a number of interbasin transfer (IBT) schemes from the Breede WMA into the Berg WMA, of which the following two are the most significant:

- Riviersonderend-Berg-Eerste River Government Water Scheme (RSE Scheme)
- The Palmiet Pumped Storage Scheme

These schemes feed into the Western Cape Water Supply System (WCWSS). The urban sector in the Berg WMA is dependent on both, whilst certain irrigators along the Berg and Eerste Rivers are dependent on the RSE Scheme. There is one small transfer out of the Breede WMA into the Olifants/Doorn WMA. The schemes are further described in some detail in Chapters 3 and 4.

#### 2.1.1 Topography, Rainfall and Land-use

The topography of the Breede WMA is characterised by mountain ranges in the north and west, the wide Breede River valley, and the rolling hills of the Overberg. The Breede valley is flanked by the Franschhoek and Du Toit's Mountains in the west, the Hex River Mountains to the north and the Langeberg Mountains in the east. The higher peaks reach an altitude of 1500m-2000m.



**Figure 2.1.1: The two Sub Regions within the Breede WMA**



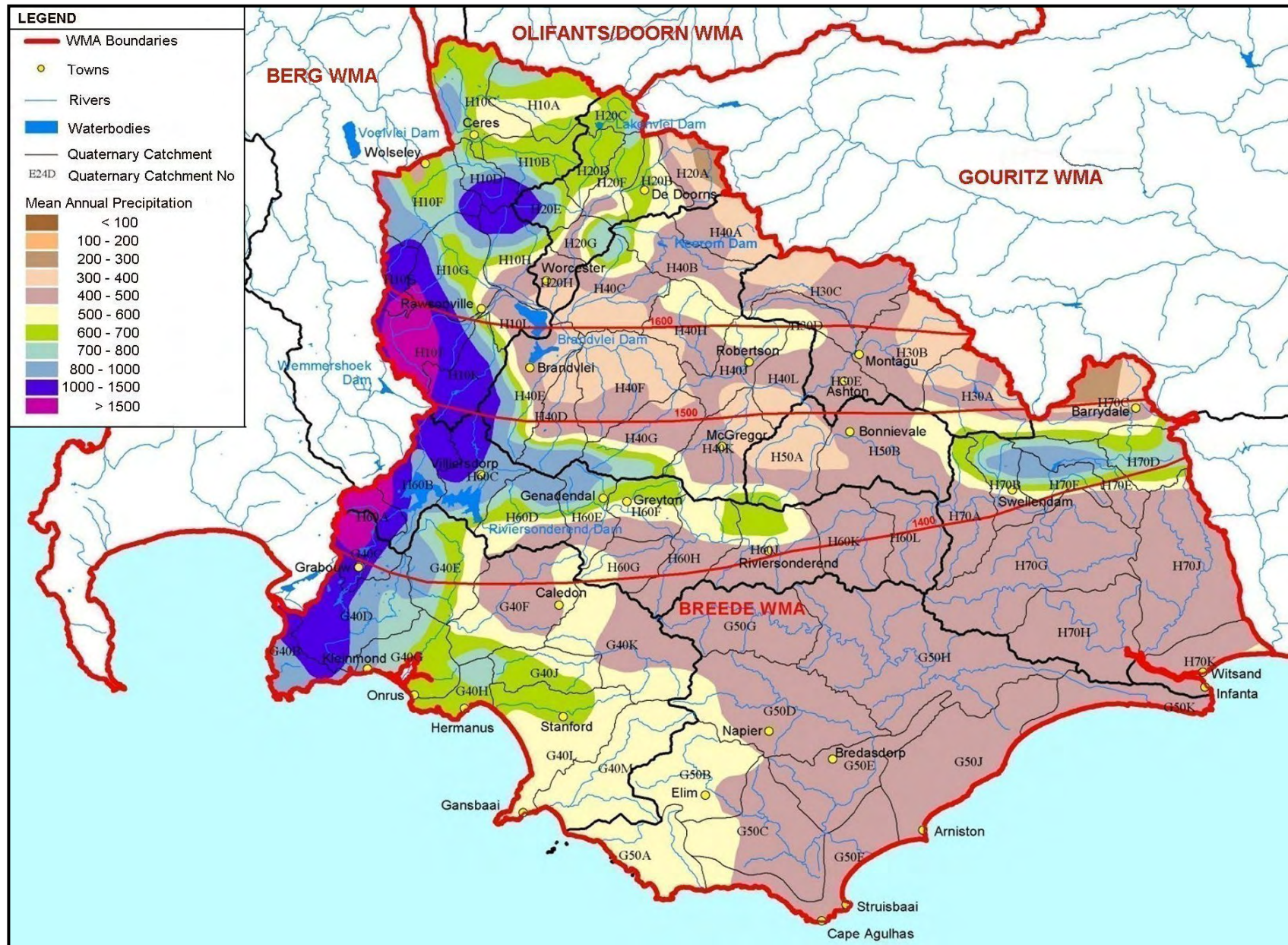


Figure 2.1.2: Rainfall in the Breede WMA

The mean annual temperature varies between 17°C in the east to 15°C along the south-west coast, with an average of 17°C for the whole WMA. Maximum temperatures are experienced in January (average daily max = 37°C) and minimum temperatures usually occur in July (average daily min = 0°C). Frost occurs throughout the WMA in winter, typically between mid-May and late August.

Most of the rain falls between the months of May and August over most of the WMA. An all year round rainfall pattern prevails in the far south-east. Occasional snowfalls occur on the mountains in the south-west and north-west of the WMA during most winters. The orographical influence of the high mountain ranges introduces a large spatial variability in the mean annual precipitation (MAP). Refer to Figure 2.1.2. In the high mountainous regions in the south-west, the maximum MAP exceeds 3 000mm, but rainfall is as low 250mm in the central and north-eastern Breede River valley and other interior valleys. The average potential mean annual evaporation (measured by S-Pan) ranges from 1200 mm in the south to 1700 mm in the north of the WMA.

Land-use is characterised by large expanses of dry land cultivation in the southern Overberg areas (Figure 2.1.1), where wheat is the predominant crop type. Intensive irrigation takes place along the Breede and Riviersonderend Rivers, in their tributary valleys, and in the Palmiet River catchment. Irrigated crop types include orchard crops, vineyards for wine and table grapes, citrus, as well as some cash crops and lucerne. Afforestation is confined to the high rainfall mountainous areas, almost entirely in the Palmiet River and Upper Riviersonderend River catchments.

### **2.1.2 Economic Activity**

The following information is based on the recent DWAF report: Breede Water Management Area: Overview of Water Resources, Availability and Utilisation Report (Ref.9) of September 2003.

Less than 1% of the national Gross Domestic Product (GDP) originates from the Breede WMA, which is amongst the lowest of all WMAs in the country. In 1997, the main drivers of the local economy in the Breede WMA in terms of the Gross Geographic Product (GGP) were:

- Agriculture 32%
- Trade 19%
- Manufacturing 12%
- Finance 10%
- Government 10%

Geographically, most of the economic production is from the areas where irrigation is practised and where processing and packaging plants are located. The agricultural sector in the WMA is fairly diversified, providing for a relatively stable economic base. Production of fruit and wine is of specific importance, while substantial wheat production comes from the Overberg grain belt. Since there is a strong domestic and international demand for agricultural products from this region, it is expected that the agricultural sector will remain important. Some products have met with temporary declines in the market and many farmers are diversifying their activities, aimed at higher value niche markets.

Trading activities are concentrated on wholesale wine, fruit and wheat, local retail services, and on tourism. The manufacturing sector is also strongly linked to the region's agricultural activities. The majority of manufacturing activities are in the food and beverage sub-sectors. A few manufacturing concerns which operate in other products are also located in the WMA.

Financial services are closely linked to other economic activities in the region, and the sector is also supported by a relatively strong property market. The government sector is supported by a variety of provincial, regional and local public institutions.

Of the work force of 155 000 people in the WMA in 1994, 62% were active in the formal economy and 19% were unemployed. These figures are significantly better than the national unemployment average of 29%. Of those formally employed, 43% were active in the agricultural sector, 22% were involved in the government sector and 13% in manufacturing.

Agriculture is the only sector in which the economy of the Breede WMA is highly competitive in the South African context. This can largely be attributed to the Mediterranean climate of the region which is different to most other parts of the country, and the large domestic and international demand for products from this region. Subject to price fluctuations, the exchange rate and trade agreements, this sector is likely to remain in a favourable position and has potential for growth. However at a regional level, the scope for further irrigation development is directly related to the availability of water in this WMA.

Growth is also expected in tourism and the development of coastal properties, which are likely to be stimulated by the proximity of Cape Town. No minerals or precious metals have been found to support the establishment of mining operations in the WMA, other than a limestone mine near Robertson.

### **2.1.3 Population**

The total population of the Breede WMA was estimated at 382 400 in 1995 (ref: Breede WMA Report). The population of the urban and peri-urban areas was 254 200 (66%), with the remaining 34% in the rural areas. In 1995 approximately 60% of the total population lived in the Upper Breede sub-area (refer to Figure 3.1 of Chapter 3), also the area of highest economic activity.

Some increase in population as well as migration from the rural to the urban sector is expected to take place for a period, after which a levelling off or even a slight decline could be experienced. Coastal developments, particularly along the Overberg West coast will result in a further small increase in the urban population in that region, with seasonal peaks during the summer holiday periods. The population in the eastern parts of the WMA may show some decline due to the lack of strong economic stimulus in that area.

#### **2.1.4 Conservation Features**

The Breede River itself, and most of the coastal rivers of the central Overberg, contain sensitive aquatic ecosystems and support ecologically important wetlands and estuaries. An important example is the Papenkuils Wetland in the Upper Breede. This wetland contains a variety of wetland and terrestrial flora that are worthy of conservation and are not conserved elsewhere. The Papenkuils is particularly vulnerable due to reduced water availability and retention, as a consequence of local disturbances and activities within the catchments upstream. These activities include the re-direction of water into Greater Brandvlei Dam from the influent rivers feeding the wetland.

All the estuaries in the Breede WMA are of ecological importance. The Estuaries and Wetlands Strategy (8.2) identifies the need to confirm their relative importance. In view of the impacts already taking place in the Papenkuils Wetland, this is already considered to be a very modified system. On the other hand some of the estuaries within the Breede WMA are considered to be conservation worthy systems of extreme importance. The Breede River estuary is one of the most valuable in the country but also the most threatened in terms of upstream development (UCT, 2003). Furthermore the Heuningnes estuary at De Mond (declared a RAMSAR site 1986) is under stress, particularly due to the negative impacts on the hydrological flow regime as a result of invasive alien plants.

Other important protected natural areas include the Kogelberg and Agulhas Biosphere Reserves, mountain catchments, and other natural heritage sites also occurring within the Breede WMA.