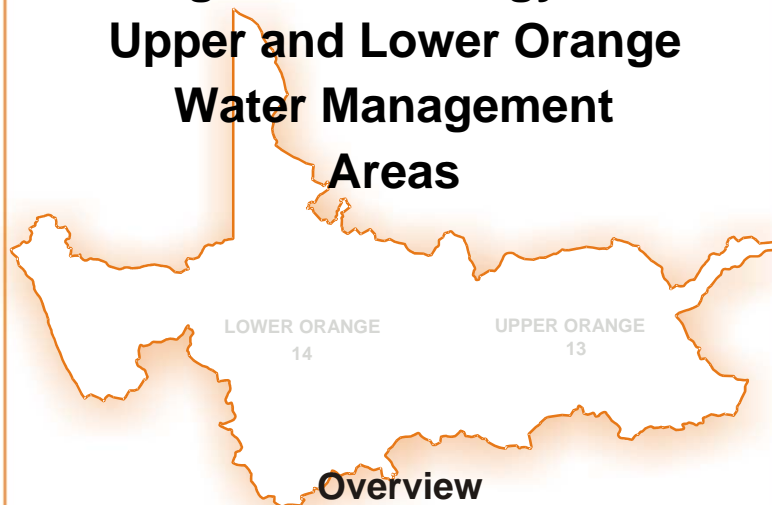




Water Resource Planning Systems

Water Quality Planning

Development of an Integrated Water Quality Management Strategy for the Upper and Lower Orange Water Management Areas

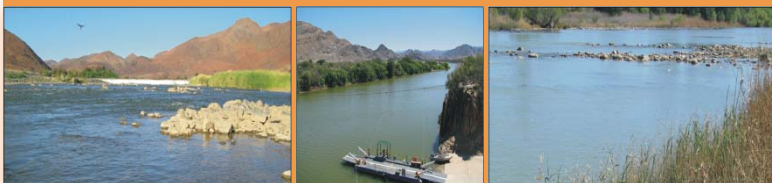


Overview
Overarching Catchment:
Context: Upper and Lower Orange
Water Management Areas
(WMA 13 and 14)

Report No.: 1
(P RSA D000/00/7909/1)

August 2009

Edition 1



DEPARTMENT OF WATER AFFAIRS

Water Resource Planning Systems

**Development of an Integrated Water Quality Management
Strategy for the Upper and Lower Orange WMAs**

**Overview: Overarching Catchment Context:
Upper and Lower Orange Water Management Areas
(WMAs 13 and 14)**

Report No.: 1

P RSA D000/00/7909/1

August 2009

Edition 1

Published by

Department of Water Affairs
Private Bag X313
PRETORIA, 0001
Republic of South Africa

Tel: (012) 336 7500/ +27 12 336 7500

Fax: (012) 336 6731/ +27 12 336 6731

Copyright reserved

No part of this publication may be reproduced in any manner
without full acknowledgement of the source

ISBN No. 978-0-621-38686-8

This report should be cited as:

Department of Water Affairs (DWA), 2009. Development of an Integrated Water Quality Management Strategy for the Upper and Lower Orange Water Management Areas, Overview: Overarching Catchment Context: Upper and Lower Orange Water Management Areas (WMAs 13 and 14). Report No. 1, Edition 1, August 2009. P RSA D000/00/7909/1.

DOCUMENT INDEX

Reports as part of this project:

REPORT NUMBER	REPORT TITLE
1*	Overview: Overarching Catchment Context: Upper and Lower Orange Water Management Areas (WMAs 13 and 14)
2.1*	Desktop Catchment Assessment Study: Upper Orange Water Management Area (WMA 13)
2.2*	Desktop Catchment Assessment Study: Lower Orange Water Management Area (WMA 14)
3**	Water Quality Monitoring and Status Quo: Upper and Lower Orange Water Management Areas (WMAs 13 and 14)
4.1*	Catchment Visioning: Upper Orange Water Management Area (WMA 13)
4.2*	Catchment Visioning: Lower Orange Water Management Area (WMA 14)
5**	Resource Water Quality Objectives (RWQOs): Upper and Lower Orange Water Management Areas (WMAs 13 and 14)
6**	Towards a Monitoring programme: Upper and Lower Orange Water Management Areas (WMAs 13 and 14)

* Reports produced by the Directorate, Water Resource Planning Systems, Sub-Directorate Water Quality Planning as part of the study titled “*Development of an Integrated Water Quality Management Strategy for the Upper and Lower Orange Water Management Areas*”.

** Reports produced by Zitholele Consulting on behalf of the Department of Water Affairs as part of the study titled “*Assessment of Water Quality Data Requirements for Water Quality Planning Purposes in the Upper and Lower Orange Water Management Areas*”.

APPROVAL

TITLE: Development of an Integrated Water Quality Management Strategy for the Upper and Lower Orange Water Management Areas – Overview: Overarching Catchment Context: Upper and Lower Orange Water Management Areas (WMAs 13 and 14)

DATE: August 2009

AUTHORS: S Boshoff

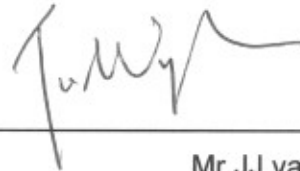
REVIEWERS: R Stassen and JJ van Wyk

REPORT NO.: P RSA D000/00/7909/1

FORMAT: MS Word and PDF

WEB ADDRESS: www.dwaf.gov.za

Approved for the Department of Water Affairs by:



Mr JJ van Wyk
Project Manager



Mr P Viljoen
Deputy Director: Water Quality Planning



Dr B Mwaka
Director: Water Resource Planning Systems

ACKNOWLEDGEMENTS

The following individuals are thanked for their contributions to the document:

Project Management Committee

Jurgo van Wyk	Department of Water Affairs	Project Manager
Retha Stassen	Department of Water Affairs	Project Co-ordinator
Samantha Boshoff	Department of Water Affairs	Project Co-ordinator
Pieter Viljoen	Department of Water Affairs	Project Director
Seef Rademeyer	Department of Water Affairs	Member
Mike Mokgwabone	Department of Water Affairs	Member
Sam Dywili	Department of Water Affairs	Member
Jackie van Bosch	Department of Water Affairs	Member
Henry Abbott	Department of Water Affairs	Member
Willem Grobler	Department of Water Affairs	Member

EXECUTIVE SUMMARY

This report forms the first report in a series of reports collated for two study initiatives for both the Upper and Lower Orange Water Management Areas. The first is working towards the “Development of an Integrated Water Quality Management Strategy” and the second is an “Assessment of Water Quality Data Requirements for Water Quality Planning Purposes”. This report provides an overarching overview for both these two studies, considering that the Upper Orange Water Management Area and the Lower Orange Water Management are part of one drainage basin, the larger Orange River Basin.

In order for these two studies to be effective and relevant, they should give effect to international obligations, existing planning and management frameworks, and relevant legislative frameworks. This report serves as a reference to these frameworks.

Pertinent legislation, e.g. the National Water Act, (Act No. 36 of 1998), and international obligations, where South Africa is a signatory, e.g. Agenda 21, are discussed. Applicable planning and management frameworks are discussed according to their respective relevance of scale: **International**, including bilateral agreements and management committees due to the fact that the Orange River Basin is shared amongst South Africa, Botswana, Namibia and Lesotho; **National** (e.g. the National Water Resource Strategy); **Regional**, such as Water Resource Situation Assessments (the discussion is addressed separately for the Upper and Lower Orange Water Management Areas); **Local** (i.e. planning and management mostly implemented via District and Local Municipalities); and **Source Specific**, such as water use licences.

The overall objective of this report is to give the first step towards providing a consolidated document that will inform future water quality planning initiatives in both the Upper and Lower Orange Water Management Areas.

TABLE OF CONTENTS

DOCUMENT INDEX	I
APPROVAL.....	III
ACKNOWLEDGEMENTS.....	V
EXECUTIVE SUMMARY	VII
TABLE OF CONTENTS.....	VIII
LIST OF TABLES.....	IX
LIST OF FIGURES	IX
LIST OF ACRONYMS	X
1 INTRODUCTION	1
2 SCALES OF MANAGEMENT AND PURPOSE OF THE DOCUMENT	2
3 PERTINENT LEGISLATION AND INTERNATIONAL OBLIGATIONS.....	3
4 PLANNING AND MANAGEMENT AT AN INTERNATIONAL SCALE.....	6
4.1 Upper Orange WMA.....	9
4.2 Lower Orange WMA.....	9
5 PLANNING AND MANAGEMENT AT A NATIONAL SCALE	10
5.1 Water Resource Availability and Utilisation.....	10
5.2 National Water Resource Strategy.....	10
5.3 State of the nation address	11
5.4 Water for Growth and Development Framework.....	11
5.5 National Spatial Development Perspective (NSDP).....	12
6 PLANNING AND MANAGEMENT AT A REGIONAL SCALE.....	13
6.1 Water Resources Situation Assessment	13
6.2 Internal Strategic Perspective	14
6.3 State-of-Rivers Reporting.....	14
6.4 Sources of Information Pertinent to the UOWMA.....	15
6.4.1 Free State Growth and Development Strategy.....	15
6.4.2 Orange River Basin – The Resource Symposium	15
6.5 Sources of Information Pertinent to the LOWMA	16
6.5.1 Northern Cape Growth and Development Strategy.....	16
6.5.2 Lower Orange River Management Plan	17
6.5.3 Arid Areas Programme	17
7 PLANNING AND MANAGEMENT AT A LOCAL SCALE	18
7.1 Integrated Development Plans (IDPs).....	18
7.2 Water Service Development Plans (WSDPs).....	19
7.3 Land Development Objectives (LDOs).....	23
8 SOURCE SPECIFIC PLANNING AND MANAGEMENT	23
8.1 Water Service Authorities (WSAs).....	23
8.2 Water Use Licenses	24
9 CONCLUSION.....	26
10 REFERENCES	27

APPENDIX A: DIAGRAMATIC OVERVIEW OF IDP AND WSDP PROCESSES	29
APPENDIX B: DIAGRAMMATIC OVERVIEW OF COMPULSORY LICENSING PROCESS.....	30

LIST OF TABLES

TABLE 1: PROVINCIAL SUMMARY OF SUPPLIED FREE BASIC WATER.....	24
---------------------------------------------------------------	----

LIST OF FIGURES

FIGURE 1: DIAGRAMMATIC OVERVIEW OF SCALES OF WATER MANAGEMENT.....	3
FIGURE 2: ORANGE RIVER BASIN	7
FIGURE 3: MAP OF THE UPPER ORANGE WMA SHOWING BOUNDARIES OF LOCAL AND DISTRICT MUNICIPALITIES	21
FIGURE 4: MAP OF THE LOWER ORANGE WMA SHOWING BOUNDARIES OF LOCAL AND DISTRICT MUNICIPALITIES	22

LIST OF ACRONYMS

CAS	Catchment Assessment Study
CDS	Centre for Development Support
CMA	Catchment Management Agency
CMS	Catchment Management Strategy
COD	Chemical Oxygen Demand
DFA	Development Facilitation Act
DMS	Dissolved major salts
DS	Dissolved solids
DWA	Department of Water Affairs
DWAE	Department of Water and Environmental Affairs
DWAF	Department of Water Affairs and Forestry
EC	Electrical Conductivity
FSGDS	Free State Growth and Development Strategy
GVA	Gross Value Added (per region)
IDP	Integrated Development Plan
ISP	Internal Strategic Perspective
IWQMS	Integrated Water Quality Management Strategy
LDOs	Land Development Objectives
LHWC	Lesotho Highlands Water Commission
LOWMA	Lower Orange Water Management Area
NCGDS	Northern Cape Growth and Development Strategy
NSDP	National Spatial Development Perspective
NWA	National Water Act
NWRS	National Water Resource Strategy
ORASECOM	Orange-Senqu River Commission
OSF	Open Society Foundation
PWC	Permanent Water Commission
RDM	Resource Directed Measures
RQO	Resource Quality Objectives
RWQO	Resource Water Quality Objectives
SADC	South African Development Community
SSI	Source Specific Interventions
TCTA	Trans-Caledon Tunnel Authority
WGDF	Water for Growth and Development Framework
WMA	Water Management Area
WMS	Water Management System
WQCAS	Water Quality Catchment Assessment Study
WRAU	Water Resource Availability and Utilisation
WRSA	Water Resources Situation Assessment

WSA	Water Service Authority
WSDP	Water Services Development Plan
WQCMS	Water Quality Catchment Management Strategy

1 INTRODUCTION

It is generally accepted that South Africa is a semi-arid country with a limited supply of water resources with a diverse array of user requirements. In an effort to ensure sustainable and equitable use of South Africa's water resources, it is stated in Part 2 of the National Water Act (Act No. 36 of 1998) (NWA), that Catchment Management Agencies (CMAs) need to establish Catchment Management Strategies (CMSs). Typically, these should set the principles for allocating water to existing and prospective users, taking into account all matters relevant to the protection, use, development, conservation, management and control of water resources at the catchment and Water Management Area (WMA) scale.

However, when large river systems fall in more than one WMA, co-ordination of management direction becomes problematic. This dilemma is not readily solved at the level of the National Water Resource Strategy, necessitating integrating strategies that are appropriate at the level of all relevant WMAs collectively. As the water quality in the Orange River is inter alia influenced by land use activities and by what happens upstream, an Integrated Water Quality Management Strategy is a prerequisite to integrate and consolidate all water quality management actions in the larger basin.

Section 2, Part 2 of the NWA states that the contents of a catchment management strategy must "take account of any relevant national or regional plans prepared in terms of any other law, including any development plan adopted in terms of the Water Services Act, 1997 (Act No. 108 of 1997)". Hence, this requirement stands central to an overarching overview such as this one and implies that effect must be given to such plans or frameworks. Furthermore, cognisance must be taken of their contents, and pro-active planning promoted by influencing the process of formulating such plans. Conversely, existing plans would influence the process of formulating a CMS for the Orange River Basin. Such interactions would require formal mechanisms, in order to be successfully achieved.

A Catchment Assessment Study (CAS) typically deals with water-related natural resources in a catchment as well as human impacts on those resources and human needs regarding those resources. It involves defining the systematic assembly and processing of appropriate data and information to yield a knowledge system. As a holistic process, this knowledge system considers all water-relevant physical, developmental and administrative attributes and characteristics of the catchment, in relation to catchment specific water-related issues and problems. This can and does include the use of predictive tools or models.

The CAS is important for developing an understanding of the anthropogenic changes in the catchment and what user needs are in the catchment so as to guide the decision making process of water resource management. It is for this reason that the CAS for the Upper and Lower Orange Water Management Areas (WMAs) can achieve the following:

- Provide an information or knowledge system suitable for supporting the development of a CMS for the Upper and Lower Orange WMAs respectively, and hence, enable the requirements of Section 9 of the NWA to be met;
- Provide an information or knowledge system to:
 - Sustain the implementation of an Upper Orange and Lower Orange CMS
 - Support source-specific management interventions;
- Inform the National Water Resource Strategy (NWRS) iteratively, i.e. the CAS upgrades the level of understanding of catchment resources as well as pollution sources and human and environmental needs.

The nature of a CAS is that, because it is issue driven and strategic, it is variable. This variability can be observed within sub-catchment boundaries, spatial and temporal scales, the level of management focus and assessment tasks can be iterative.

Compiling a CAS is further advantageous as it contributes to the information input requirements of a Water Quality Catchment Management Strategy (WQCMS) by providing a localized understanding and description of the catchment, as well as contributing to catchment management decision support.

2 SCALES OF MANAGEMENT AND PURPOSE OF THE DOCUMENT

This document serves as the overarching overview for the individual CASs for the Upper and Lower Orange WMAs. In order to gain a holistic overview of the principles of catchment management which occur at a WMA and sub-catchment scale, it is important to first consider the various scales of water management (Figure 1). The highest scale to consider is that of any international obligations that management of the Orange River Basin might be subject to. Thereafter, national obligations should be considered, proceeded by the WQCMS, which is the level of management occurring at the WMA and catchment scales. Desktop CASs are discussed in finer detail in reports 2.1 and 2.2, for the Upper and Lower Orange WMAs respectively. The most bottom level of management is at the scale of Source Specific Interventions (SSI), which usually exists in the form of water use authorisations, such as a water use licence.

This report will mostly focus on national and regional scale plans. In order to provide a coherent context, planning and management at the international, local and SSI scales will also be addressed. This report will further emphasise the need to integrate across all scales and to give effect to management interventions at the source specific level.

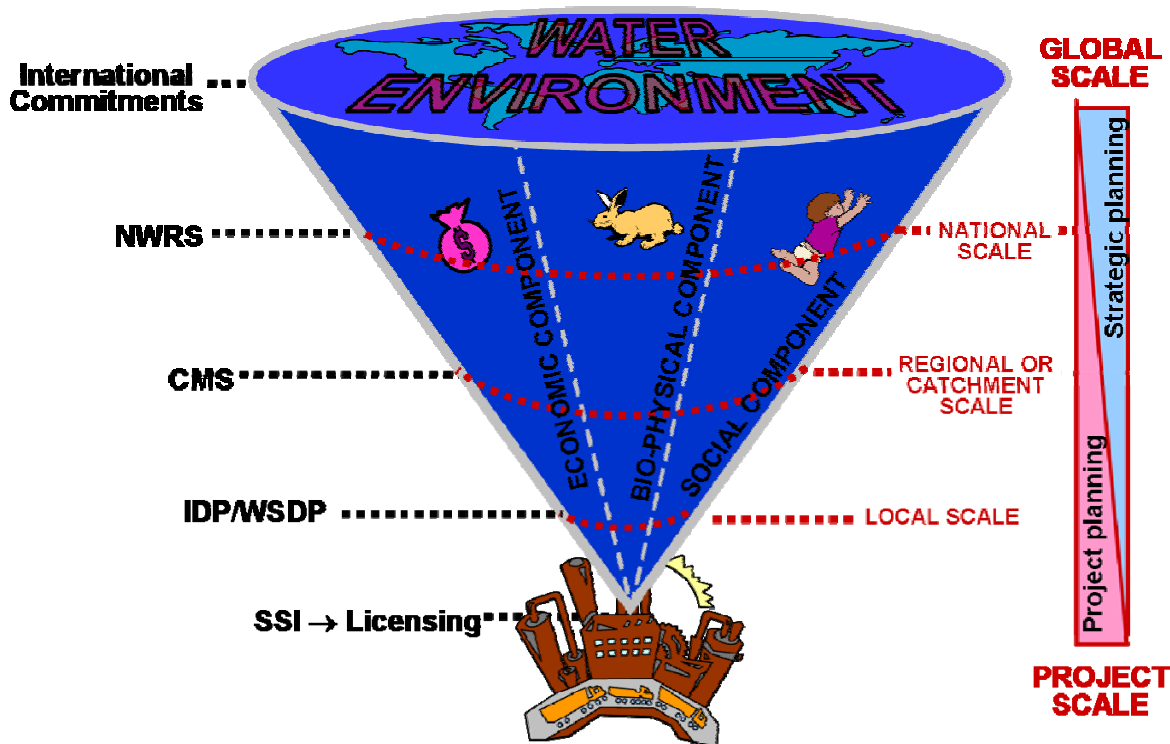


Figure 1: Diagrammatic overview of scales of water management

Naturally the planning frameworks that exist on the international and national scales are far more strategic in nature, and operate less so on a project planning scale (Figure 1). Contrastingly, as the focus shifts to a more regional or catchment specific scale, the need for specific project planning becomes more evident and less strategic. None-the-less, the level of management that occurs at a project or local scale must always give effect to the higher level frameworks. For example, licence conditions (source specific interventions) must align with the relevant CMS (regional planning) which must in turn accommodate national planning frameworks such as the National Water Resource Strategy. Lastly, national planning frameworks must give effect to higher level international commitments such as water-sharing treaties. The discussion below follows this thread of scales of water management and planning frameworks relevant to the Upper and Lower Orange WMAs, from an international level, down to source specific interventions or controls. As Figure 1 illustrates, in order to maintain a holistic and sustainable approach to water management, the economic, bio-physical and social components of the water environment should ideally transcend all the scales of management at all times.

3 PERTINENT LEGISLATION AND INTERNATIONAL OBLIGATIONS

Right-based reform is one of the key characteristics of South Africa's policy and legal framework for water. Our constitution, the highest law, states 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” (Chapter 2, Section 24). Sustainability and equity are key threads common to all government’s policies and legal documents. This is especially true to those pertaining to water resource management, such as the NWA and the National Water Resource Strategy, in an aim to ensure there is fair and equitable water available for all South African’s in a manner that is both humanly and ecologically sustainable.

The NWA is the principal legal instrument in relation to water resource management in South Africa. The purpose of the NWA is to ensure that South Africa’s water resources are used, controlled, managed, conserved, developed and protected in a sustainable and equitable manner, for the benefit of all.

The principles of sustainability, equity and efficiency in the NWA further recognize the basic human needs of present and future generations as well as the need to redress any historical discrimination. These principles also recognize international obligations in sharing water resources, the need to promote social and economic development through water use, the need to ensure participation of stakeholders in decision-making and hence, the need to establish representative water management institutions.

A key governing framework provided by the NWA for this study is that which is outlined in Part 2 of Chapter 2 of the NWA, which outlines the development and establishment of catchment management strategies (CMSs). It is the responsibility of catchment management agencies (CMAs) to develop their respective CMSs. The Desktop Catchment Assessment Studies that follow in reports 2.1 and 2.2 (for the Upper and Lower Orange WMAs respectively) of this report series will, ideally, form the building blocks for a Catchment Management Strategy for each of these WMAs and address water resource planning at the regional scale.

A further realization of the NWA is the delicate balance between water use and water resource protection. Water resource protection is to transpire through Resource Directed Measures (RDM) which includes the classification of the country’s water resources, determining Resource Quality Objectives (RQOs) and by setting the Reserve.

In terms of international obligations, in 1992, the United Nations Conference on Environment and Development (UNCED) took place in Rio de Janeiro, Brazil. It was represented by 179 heads of governments focusing on critical issues of sustainability and natural resources. The UNCED as a whole have identified the need to balance economic and social development and environmental protection, recognising that these components are independent and mutually reinforcing components of sustainable development. The Rio conference produced five key documents of international importance:

- the Rio Declaration on Environment and Development

- a statement of principles to guide sustainable management of forests
- United Nations Framework Convention on Climate Change
- The Convention on Biological Diversity
- Agenda 21

Agenda 21 serves as the plan to implement the agreements of Rio and stands for “Agenda for the 21st Century”. It highlights the need to reduce wasteful and inefficient consumption patterns and promotes sustainable development of natural resources while recognising the role of all key stakeholders, i.e. business, trade unions, scientists, teachers, indigenous people, women, youth and children. The degradation of water resources are just one of the concerns addressed in this document. The four countries that border and share the resources of the Orange River Basin, South Africa, Namibia, Botswana and Lesotho are all signatories to Agenda 21 and therefore have internationally expressed their commitment to adopt national strategies for sustainable development.

Section 18.5 of Agenda 21 proposes integrated water resources development and management in the freshwater sector, together with the protection of water resources, water quality and aquatic ecosystems. Section 18.6 highlights that the fragmentation of responsibilities for water resources development among sectoral agencies proves to be a great “impediment to promoting integrated water management than had been anticipated. Effective implementation and coordination mechanisms are required”. Agenda 21 also proposes that integrated water resources management should be carried out at the level of the catchment or sub-catchment. Catchment management strategies (CMSs) provide the perfect framework for this to happen and those CMSs developed in South Africa should demonstrate South Africa’s commitment to accommodate relevant and appropriate needs of these co-basin states into the CMS. This is especially significant as South Africa, Namibia, Botswana and Lesotho are all signatories to Agenda 21, all sharing the resources of the Orange River Basin.

Agenda 21 stipulates four principal objectives that should be pursued in the process of integrated water resources management (from Section 18.9 of Agenda 21):

- (a) To promote a dynamic, interactive, iterative and multisectoral approach to water resources management, including the identification and protection of potential sources of freshwater supply, that integrates technological, socio-economic, environmental and human health considerations;
- (b) To plan for the sustainable and rational utilization, protection, conservation and management of water resources based on community needs and priorities within the framework of national economic development policy;

(c) To design, implement and evaluate projects and programmes that are both economically efficient and socially appropriate within clearly defined strategies, based on an approach of full public participation, including that of women, youth, indigenous people, local communities, in water management policy-making and decision-making;

(d) To identify and strengthen or develop, as required, in particular in developing countries, the appropriate institutional, legal and financial mechanisms to ensure that water policy and its implementation are a catalyst for sustainable social progress and economic growth.

The implications of these principles for the Orange River Basin are that these principles should be accommodated when working towards a final Integrated Water Quality Management Strategy for the Upper and Lower Orange WMAs.

4 PLANNING AND MANAGEMENT AT AN INTERNATIONAL SCALE

Due to the fact that the Orange River Basin is shared by Botswana, Namibia, Lesotho and South Africa (figure 2), an interesting hydro-political scenario presents itself. Botswana, Namibia and South Africa are the most economically powerful countries in the Southern African region and future economic development in both Namibia and South Africa are largely dependant on the resources of the Orange River (Earle, *et. al.*, 1995).






All four of the countries sharing the Orange River Basin are members of the Southern African Development Community (SADC). SADC has in existence a Protocol on Shared Watercourse Systems which recognises “the need for coordinated and environmentally sound development of the resources of shared watercourse systems in the SADC Region in order to support sustainable socio-economic development” (SADC, 2008). This protocol which was adopted in 1995 and revised in 2000, is SADC’s legal tool to develop bilateral and multilateral agreements between watercourse states and essentially promotes Integrated Water Resources Management.

The primary institution promoting regional co-operation across borders and integrated water resource management in the wider Orange-Senqu River Basin is ORASECOM or the Orange-Senqu River Basin Commission established in 2000. Underlying the commission is the Protocol for Shared Watercourse Systems with an agreement entered into by the Kingdom of Lesotho, the Republic of Botswana, Republic of South Africa and the Republic of Namibia. The commission not only endeavours towards greater international co-operation between the four countries, but it also strives to strengthen regional solidarity and enhanced socio-economic development (Pyke, 2007). It aims to achieve this by: exchanging information and allowing a free flow of data; consulting on basin-related projects and provide advice for national governments; developing a Water Resource Master Plan for the whole basin; Implementing co-operative projects; and participating in River Basin Organisation networks.







FIGURE 2
Orange River Basin



LEGEND

-  Major City / Town
-  Town
-  dam_orange
-  River
-  Drainage Basin
-  International Boundary
-  Provincial Boundary

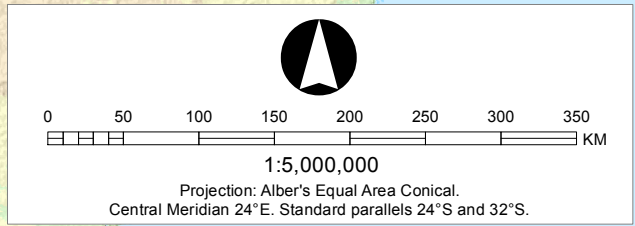
Elevation

-  < 0 ft a.m.s.l
-  0 - 1000 ft a.m.s.l
-  1000 - 3000 ft a.m.s.l
-  3000 - 7000 ft a.m.s.l
-  7000 - 11000 ft a.m.s.l
-  > 11000 ft a.m.s.l

Data sources:
 Department: Land Affairs, Chief Directorate: Surveys and Mapping (Towns, Rivers, Dams and International Boundaries)
 Municipal Demarcation Board (Provincial Boundaries)
 Department: Water Affairs & Forestry



Locality Map: Orange River Basin



Map produced by:
 Department: Water Affairs
 Directorate: Spatial & Land Information Management
 September 2009 (Ref: GM09_151)

4.1 Upper Orange WMA

The Orange River (or Senqu River as it is also known in Lesotho) originates in the Maluti mountains of Lesotho. The Lesotho Highlands Water Project was an initiative which began in 1986 and sought to provide water for South Africa's increasing demand while at the same time boost Lesotho's predominantly rural economy and provide hydro-electro power in the process of water transfer to South Africa. It attracted funding from the World Bank, the African Development Bank, European Investment Bank and many other bilateral donors which funded the building of 2 major dams (Katse and Mohale) and several connecting and delivery tunnels. A treaty underlying the project was entered into in October 1986 between the governments of the Kingdom of Lesotho and the Republic of South Africa. This treaty considers the mutual benefits for the two countries through enhancing, conserving and sharing equitably the water resources of Lesotho, and also promotes good neighbourly relations and peaceful co-operation between the two parties.

The Lesotho Highlands Water Commission (LHWC) established in 1986 is the official channel of collaboration between the governments of both countries and is jointly responsible for the management and technical cooperation of the treaty. The main implementing agencies within each country are the Trans-Caledon Tunnel Authority (TCTA) within the borders of South Africa, and the Lesotho Highlands Development Authority (LHDA) within the borders of Lesotho.

4.2 Lower Orange WMA

A large portion of the Lower Orange River forms a border with Namibia. In 1992, a bilateral agreement between Namibia and South Africa saw the establishment of the Permanent Water Committee (PWC) which was to act as a technical advisor on matters relating to the development and utilisation of water resources in the Orange River Basin (Mohammed, 2002). In the same year, and under the auspices of the PWC, both countries signed another agreement establishing the Joint Irrigation Authority, a parastatal authority, responsible to oversee the Noordoewer/Vioolsdrift Irrigation Scheme located on both sides of the Orange River.

The two countries are also joint custodians of the RAMSAR wetland site at the Orange River mouth, which was placed on the Montreaux Record in 1995 due to the severely degraded state of salt marsh on the south bank (ARTP JMB, 2008).

In an effort to work towards an Integrated Water Quality Management Strategy for the Orange River Basin, all the above-mentioned international stakeholders will need to be engaged and partnerships formed. This will help ensure that for future work done within the Orange River basin, management actions are jointly discussed and decided upon to ensure successful interventions.

5 PLANNING AND MANAGEMENT AT A NATIONAL SCALE

5.1 Water Resource Availability and Utilisation

The overview of water resource availability and utilization (WRAU) for both the Upper and Lower Orange Water Management Areas (DWAF, 2003a and 2003b) form two of the 19 reports compiled for each WMA in the country and was intended to be a pre-cursor to the first edition of the National Water Resource Strategy released in the following year. The document provides a broad-scale national perspective in terms of mean annual runoff, population and economic activity. It also details more WMA-specific information in terms of the regional economy and demography, water requirements and surface and groundwater resources, all based on the year 2000. It further provides a reconciliation of requirements versus availability and documents a water balance, addressing key issues, strategic perspectives and issues of transfers and reservation of water for the same year.

The main issues identified in the WRAU report for the Upper Orange relate to cultivation and overgrazing, mainly in the north eastern parts of the WMA and western Lesotho causing high rates of erosion and respectively high instream sediment loads. Surface water resources are already well developed in this WMA as it contains two of the largest reservoirs in the country (Gariiep and Vanderkloof) with several smaller dams (including Armenia, Ergmont, Welbedacht, Knellpoort, Rustfontein, Mockes, Krugersdrift, Tierpoort, Kalkfontein). In the drier parts of the UOWMA groundwater of a naturally good water quality constitutes the main source of water for rural and domestic supplies as well as stock watering. Some peri-urban areas are characterised by over-exploitation of groundwater, sometimes due to increasing irrigation from groundwater.

In the LOWMA the main issues identified are characterized by an arid climate with limited potential for water resources. Surface and groundwater are already fully developed and utilised. The LOWMA is totally dependant on releases from the Upper Orange WMA and hence, can be heavily affected by any poor water quality received from this WMA. Large scale irrigation in the LOWMA exacerbates water quality issues and water use efficiency in this sector is subject to improvement. This WMA is in need of more efficient management of dam releases (mainly Vaderkloof Dam), cross-country management (with Namibia), control of flood releases in conjunction with the Upper Orange WMA and also poverty relief efforts and water availability for settlement of emerging irrigation farmers (DWAF, 2003b).

5.2 National Water Resource Strategy

The NWA makes provision for the development of a National Water Resource Strategy (NWRS). The NWRS can be considered as the implementation strategy for the NWA and provides the framework within which South Africa's water resources are managed and will be managed in the future. The NWRS gives effect to integrated water resources management at a national, strategic level, by providing a framework for water resources management between and within Water Management Areas. Hence, the NWRS makes

provision for the water quality and quantity requirements of strategically important water users and identifies water-related development opportunities and constraints. An IWQMS that is derived for the Upper and Lower Orange WMAs must give effect to the NWRS and the NWRS provides the framework within which such a strategy should be developed.

5.3 State of the nation address

This year saw the inauguration of South Africa's fourth democratically elected president. On 3 June 2009, President Jacob Zuma delivered his state of the nation address to the country. Ensuing from former President Mbeki's recognition of the government's obligation to international initiatives and treaties in the 2008 State of the Nation Address, President Zuma also highlighted the need to enhance international co-operation (together with African advancement) so as to ensure sustainable resource management and use.

On a national scale, the president's speech further echoed the principles underlying the NWA, stating that South Africa is a "dry country" requiring "urgent action to mitigate adverse environmental changes and to ensure the provision of water to citizens". In an effort to achieve this, the newly elected government has committed to implementing various programmes, of which the Water for Growth and Development Framework was highlighted as a key programme to strengthen water management in the country. It is envisaged that DWA will be the implementing agent for this Framework once action plans have been derived to implement this strategic program.

This speech further echoes some of the key principles of the NWRS, i.e. the principles of ensuring water for all and alleviating poverty through effective water resource management. The president, in concluding his speech highlighted the need for each citizen to take responsibility for making a contribution to improve the country and to make it a personal priority for all.

5.4 Water for Growth and Development Framework

The Water for Growth and Development Framework (WGDF) is a recent venture by DWA to guide the department's actions and decisions relating to water security (for both quantity and quality of water) to support economic growth and social development. It is a national framework to ensure sufficient water supply in order to achieve economic growth targets, without compromising ecological sustainability, and has now become a ministerial priority due to its specific mention in the State of the Nation Address. In support of this initiative, six rigorous water assessment studies or Reconciliation Strategies were commissioned in 2008 for major urban centres in the country that anchor the country's economy.

Furthermore, the framework has the following foci (DWAF, 2009b):

- Water conservation and demand management to ensure improved returns on investments made on water supply.
- Anomalies in water distribution and assurance of safe and reliable drinking water for all.
- Addressing service backlogs through both short-term and long-term interventions, prioritising areas with resource development potential.
- Balanced implementation of both bulk and small-scale infrastructure projects.
- The need for strategic and integrated planning to address the relationship between water availability and economic activities that rely on specific supply levels of water quantity and quality.
- Mitigate water use behaviour that negatively impacts water resources via regulatory instruments, market-based instruments, self-regulation and awareness and education.
- Ensure reliable information to support cross-sectoral planning and development initiatives.

Both the WGFD and the NWRS serve as implementation strategies for water resource management. The Key difference between the two, however, is that the WGFD addresses the specific area of economic development and growth, whereas the NWRS remains a broad-based strategy for the management of water resources in South Africa.

The following discussion provides an overview of existing sources of information that can contribute towards a greater understanding of Water Quality Planning in the Upper and Lower Orange WMAs. These include the National Spatial Development Perspective, Internal Strategic Perspectives, Water Resource Situation Assessments, Integrated Development Plans, Water Service Development Plans, Land Development Objectives and State-of-Rivers Reports. Other relevant sources of information such as reports for projects particular to both the Upper and Lower Orange WMAs were reviewed. Where relevant, the legislative framework relevant for each is discussed and the explicit link that these reports, plans and perspectives may have on current and future water quality catchment management for each WMA are also discussed.

5.5 National Spatial Development Perspective (NSDP)

To date, two National Spatial Development Perspectives have been produced, one in 2003 and the other in 2006. The aim of the National Spatial Development Perspective (NSDP) is to identify key localities throughout the country where growth and development performance are crucial to attainment of national objectives. Its purpose is three-fold:

- To provide common principles and mechanisms to guide infrastructure investment and development spending across government;
- To provide a description of the spatial manifestations of the main social, economic and environmental trends which should form the basis for a shared understanding of the national space economy; and
- To provide an interpretation of the spatial realities and the implications for government interventions.

It provides the framework for guiding future development of the national space economy and recommends mechanisms to bring about optimum alignment between infrastructure investment and development programmes. It provides the backdrop against which, national investment and spending decisions should be considered and made.

The town of Bloemfontein falls within the Upper Orange WMA and has been noted in the NSDP as an area having a high Gross Value Added (GVA) by region. A GVA is a measure of the contribution by an individual, industry or sector, to the country's economy. For example, it can be the measure of the value of goods and services produced and the cost of raw materials and inputs used up in production (NSDP, 2006). Despite this, it has also, along with several other metropolises and secondary cities, been classified as having some of the greatest depth of poverty of those living below the Minimum Living Level (i.e. the minimum monthly income needed to sustain a household). Furthermore, it is an area not devoid a rising water demand coupled with limited water availability. The NSDP has identified it as one of the areas that will face severe water deficits in the future (both on low and high growth trajectories) and hence, "water resource management and policy emphasis on water resource protection, conservation, water demand management and improved efficiency of use should be intensified" (NSDP, 2006).

Importantly, the town of Upington which falls within the Lower Orange WMA, has been classified as a core economic area according to the NSDP. This implies that Upington is characterised by a high level of economic potential, with a diverse economy and relatively high levels of formal infrastructure, transport nodes, education and health services.

In light of the above, it is crucial that local water supply authorities within both the Upper and Lower Orange WMAs align Water Service Development Plans and Land Development Objectives with the NSDP.

6 PLANNING AND MANAGEMENT AT A REGIONAL SCALE

6.1 Water Resources Situation Assessment

The Water Resources Situation Assessment (WRSA) can be considered a national level management tool. However, WRSAs were compiled for all WMAs, and hence, the resolution at which the WRSAs were compiled is such that it becomes regional specific. The WRSA for the Upper and Lower Orange WMAs (DWAf, 2002a and 2002b respectively) is based on a desktop level assessment of the availability and quality of water resources existing in 1995.

It does not address water requirements beyond this year but does provide estimates of utilizable potential of water resources. The main purpose of this report was to highlight principle water related issues in each WMA, identify existing water shortages and provide information needed to formulate future water management strategies, such as the National Water Resource Strategy (NWRS). Although the information contained in the WRSA is relevant, the information contained in the NWRS would be more up to date.

6.2 Internal Strategic Perspective

Broad WMA strategic perspectives give indications of possible developments for which available water might be used. Possible opportunities and constraints are investigated in more detail as catchment management strategies are developed and refined. In 2003, DWAF updated water supply and demand data from the NWRS and thereafter published ISP reports for each of the 19 WMAs. Individual ISPs exist for both the Upper and Lower Orange WMAs (DWAF, 2003c and DWAF, 2004a respectively), as well as an overarching ISP for the Orange River System (DWAF, 2004b).

The ISP represents DWA's views and plans on how Integrated Water Resource Management should be practiced in each of the WMAs. Hence, it forms the first step in formulating a CMS. It provides the framework for DWA's management of water resources in the Orange River basin and until such time the DWA's regional offices can hand over management functions to an established Catchment Management Agency (CMA). The ISP document recognises that it is based on the prevailing situation and conditions at the time that the document is compiled, and it is the intention of DWA to regularly update the document to keep the information and strategies of the ISP relevant.

Broadly, the ISPs for the Upper and Lower Orange WMAs provide background to the document (Chapter 1) and a broad perspective of the water situation in these WMAs and related water resource management strategies (Chapter 2).

6.3 State-of-Rivers Reporting

In 1994, DWAF launched the Rivers Health Programme to gather information on the health of South Africa's river systems. It is a co-operative venture between government and non-government organizations, both in the public and private sector. The State-of-Rivers Reports track the progress of the RHP towards river health goals. They also provide information for better decision-making, increase public awareness of environment and development issues, and empower stakeholders to improve their environment for themselves and future generations.

The State-of-Rivers Report for the Free State Region River Systems was produced in 2003 (RHP, 2003) and covers mainly the Vaal and Upper Orange River Systems, up until the Confluence of the Vaal and Orange Rivers, just below the town of Douglas. The current ecological status of the rivers will significantly guide the decision making process for further

work towards an IWQMS and constructively inform the catchment assessment component of an IWQMS.

6.4 Sources of Information Pertinent to the UOWMA

6.4.1 Free State Growth and Development Strategy

A large proportion of the UOWMA falls within the boundaries of the Free State province. Hence, the Free State Growth and Development Strategy (FSGDS) is a relevant document, highlighting development objectives and targets that need alignment with planning objectives. It represents input from a range of stakeholders following an informed consultative process and outlines that the Free State is a province characterised by 39% unemployment level with 55% of its population living in poverty (2002 figures, FSGDS 2005). Furthermore, the Free State has 72% level of urbanisation and contributes receiving only 7% of the country's national budget allocation (1999-2002).

Based on these social and economic development challenges, the FSGDS outlines primary development objectives which focus on areas such as stimulating economic growth and social development, as well as infrastructure for economic growth, decreasing poverty and disease, ensuring a safe environment for all in the province, and free basic services to all households. In order to achieve these objectives, the FSGDS details strategies and programmes, of which the following would have direct impact on any water resource planning initiatives (FSGDS, 2005):

- Implement a Local Economic Development programme, maintain business support infrastructure and establish development zones and corridors.
- Optimise agricultural production, support farmers through a Comprehensive Agriculture Support Programme and support small scale farmers.
- Optimise tourism opportunities.
- Facilitate the provision of a conducive environment to accelerate infrastructure development.
- Address the backlog of providing social infrastructure (specifically the provision of water).
- Improve integrated development planning and intervention, including aligning and co-ordinating with IDPs.
- Implement integrated environment management.

6.4.2 Orange River Basin – The Resource Symposium

The “Orange River Basin – The Resource” Symposium is an initiative spearheaded by the University of the Free State, initiated in 2008. The university is involved in research in water

management in water-scarce areas, of which the Orange River Basin is the focus catchment for this research, and forms one of the six Strategic Academic Clusters at the university. Last year's symposium presented four focus areas, which included aquatic ecosystems, water scarcity in agriculture, climate change and variability and optimal water-use for development – all with the context of a water-scarce area. This year's symposium include the following focus areas: Governance and planning; Climate change; Environmental management; Water quantity; Water quality, Human health, and Operations and Processes.

Such symposiums provide a vital platform for the sharing of information and knowledge in the UOWMA. This would include identifying and networking with key stakeholders in the catchment for future visioning and stakeholder engagement processes, and identifying foci areas for future planning work.

6.5 Sources of Information Pertinent to the LOWMA

6.5.1 Northern Cape Growth and Development Strategy

Provincial government across the country is faced with the challenge of promoting economic growth and job creation, while concurrently ensuring social development and addressing poverty. The Northern Cape Growth and Development Strategy (NCGDS) is an effort to engage all stakeholders across public, private and parastatal sectors to determine a plan for sustainable growth and development of the Northern Cape's economy. It is also an output of development planning for the Northern Cape Province and is produced by the Northern Cape provincial Department of Economic Affairs.

The strategy has identified the following foci:

- Sector specific economic development strategies with identified roles for public, parastatal and private sectors.
- Programme and project level opportunities and interventions.
- Appropriate institutional delivery mechanisms and review procedures.
- Integration and alignment with municipal IDPs (discussed below) and national government programmes that reinforce development in the province.

The Lower Orange CAS needs to take into consideration strategic plans and budgets outlined in the NCGDS, as must the NCGDS potentially take into considerations any water quality constraints outlined in the CAS that might dictate or limit the level of strategic development. Furthermore, it is the vision of the Northern Cape Economic Department to "build a prosperous, sustainable growing provincial economy to reduce poverty and improve social development". Any local level planning for the LOWMA needs to align with such a strategy.

6.5.2 Lower Orange River Management Plan

The Lower Orange River Management Plan (LORMP) is a document compiled for the /Ai-/Ais-Richtersveld Transfrontier Park and is a product of a trans-border, inter-governmental initiative including stakeholders such as the Joint Management Board of the /Ai-/Ais-Richtersveld Transfrontier Park, the Department of Water Affairs (Environment and Recreation Component), the South African Environmental Affairs and Tourism and the Namibian Environment and Tourism Departments. The purpose of this initiative was to ensure management, protection and utilisation of the Lower Orange River that is “judicious, sustainable and co-ordinated”. It was further intended to advance the South African Development Community’s (SADC) agenda of regional integration and poverty alleviation (ARTP JMB, 2008).

Issues highlighted in this management plan include the increased intensity of recreational use of the Lower Orange River with limited restrictions, increased mining and tourism activities, livestock grazing and bush burning threatening endangered and unique riverine bush, and sensitive borderline disputes between Namibia and South Africa. It aims to address the impacts of current use and propose a phased approach to developing a comprehensive River Management Plan for the entire Lower Orange River as the Transfrontier Conservative initiative expands. It has two foci: (i) unlocking ecotourism potential (focusing on the area from Augrabies Falls to the Orange River Mouth) and; (ii) addressing conservation imperatives of the Transfrontier Conservation Area. Hence, any future Integrated Water Quality Management Strategy would need to account for the strong conservation priorities in this area as well as the weight of these existing trans-boundary initiatives.

6.5.3 Arid Areas Programme

The Arid Areas Programme focuses on socio-economic development in the arid areas of South Africa, including the underdeveloped hinterland of South Africa, Botswana and Namibia. Historically, research in these areas, particularly in Namibia and the Namaqualand, has focused on ecological research concerns. The aim of the Arid Areas Programme is to focus on the social sciences, but also actively promote linkages with natural scientists. The Programme is housed at the Centre for Development Support at the University of the Free State in Bloemfontein, with close collaboration with Rhodes University in Grahamstown. It receives research funding from the National Research Foundation and the Open Society Foundation (OSF) (further information accessible at www.aridareas.co.za).

The Arid Areas have been divided into four key zones: (1) the Western Zone (Succulent Karoo) which comprises the Namakwa District Municipality (including Pofadder, Springbok and Port Nolloth), (2) the Central Zone (including the Pixley ka Seme District (Karoo) Municipality and the towns of Douglas and Prieska), (3) the Eastern Zone (including the Gariiep Local Municipality) and (4) the Northern Zone (including the Siyanda and Kalahari-Kgalagadi District Municipalities).

Six documents were produced by the Centre for Development Support (CDS) at the University of the Free State, in December 2007. These include:

Volume 1: Doreen Atkinson and Lochner Marais, *District Socio-Economic Profile and Development Plans* (accessible online at <http://www.aridareas.co.za/pdf%20documents/Volume%201%20-%20%20Economic%20profile%20with%20pictures.pdf>)

Volume 2: Doreen Atkinson and Lochner Marais: *Provincial Development Policies and Plans* (accessible online at <http://www.aridareas.co.za/pdf%20documents/Volume%202%20-%20provincial%20strategies%20-%20final%203.pdf>)

Volume 3: Mark Ingle, *Economic Potential in South Africa's Arid Areas: A Selection of Niche Products and Services*

Volume 4: *Analytical Papers*, containing: Etienne Nel: "South Africa's Karoo: A study of economic marginalisation and demographic change", and Doreen Atkinson, "Towards soft boundaries: International cross-border tourism development in Southern Africa's arid areas"

Volume 5: *Case studies* by Deidre van Rooyen, Kholisa Sigenu and Nanine Kruger

Volume 6: Proceedings: Arid Areas Workshop, Sutherland, 13 September 2007.

7 PLANNING AND MANAGEMENT AT A LOCAL SCALE

7.1 Integrated Development Plans (IDPs)

The Integrated Development Plan (IDP) is the document that seeks to guide citizens and municipality staff in terms of the strategic direction of city councils and how resources are to be allocated. According to the Municipal Systems Act, 2000 (Act No. 32 of 2000), all municipalities have to undertake an Integrated Development Planning process to produce an IDP. Due to this legislative requirement, it has a legal status which supersedes all other plans that guide development at a local government level.

According to Section 26 of the Municipal Systems Act, 2000 (Act No. 32 of 2000), the core components of an IDP must reflect the following:

- (a) the municipal council's vision for the long term development of the municipality with special emphasis on the municipality's most critical development and internal transformation needs:

- (b) an assessment of the existing level of development in the municipality, which must include an identification of communities which do not have access to basic municipal services;
- (c) the council's development priorities and objectives for its elected term, including its local economic development aims and its internal transformation needs;
- (d) the council's development strategies which must be aligned with any national or provincial sectoral plans and planning requirements binding on the municipality in terms of legislation;
- (e) a spatial development framework which must include the provision of basic guidelines for a land use management system for the municipality;
- (f) the council's operational strategies;
- (g) applicable disaster management plans;
- (h) a financial plan, which must include a budget projection for at least the next three years; and
- (i) the key performance indicators and performance targets determined in terms of section 41.

In accordance with the Municipal Systems Act, 2000 (Act No. 32 of 2000), municipalities are obliged to review their IDPs on an annual basis in order to measure implementation of the plan, as well as the relevance thereof in light of changing circumstances. In the spirit of co-operative governance, any development priorities and land use management initiatives stemming from an IDP should be aligned with the aims of water management as such initiatives will be dependant on water being available and accessible. In the UOWMA, three district municipalities fall within this WMA, i.e. Motheo, Xhariep and Ukhahlamba (figure 3). Respectively three district municipalities fall within the LOWMA, i.e. Namakwa, Siyanda and Pixley Ka Seme (formerly Karoo) District Municipalities (figure 4), each with their respective local municipalities.

7.2 Water Service Development Plans (WSDPs)

With the publication of the Water Services Act, 1997 (Act No 108 of 1997) all water services authorities are required to prepare a Water Services Development Plan (WSDP) as part of the process of preparing an Integrated Development Plan (or separately where no IDP process has been initiated).

The purpose of the WSDP is to provide a business plan for setting out the way in which a water services authority plans and delivers water services to individuals and businesses in

its area of jurisdiction. It must also describe consumer profiles, types of services provided, and infrastructure requirements. It must also contain a water balance, organisational and financial arrangements to be used, a viability assessment of the approach, and an overview of environmental issues. Hence, the WSDP can highlight important issues impacting on the provision of effective and sustainable water and sanitation services and identify strategies to improve service provision.

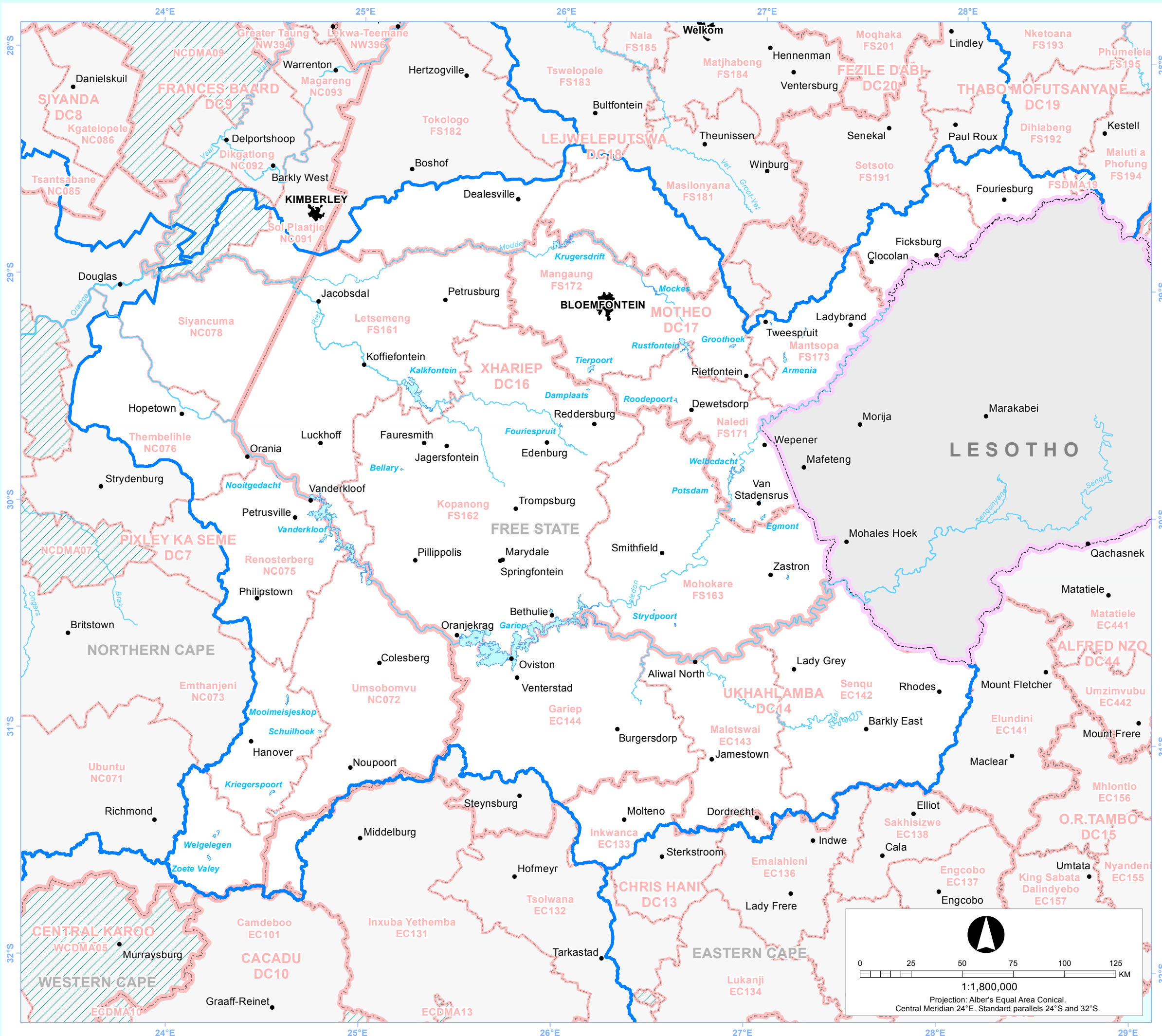
According to Section 3 of the Water Services Act, a WSDP must provide for measures to realize the right of access to basic water supply and basic sanitation. Section 13 states that the contents of a WSDP must include details such as:

- The physical attributes of the area of concern.
- The size and distribution of the population within this area.
- A time frame and implementation programme for the WSDP.
- Any existing water services and existing industrial water uses and industrial effluent disposal.
- A detailed overview regarding the future provision of water services and water for industrial use and the future disposal of industrial effluent.
- The number and location of persons within the area not being provided with basic water supply and sanitation.
- Existing and proposed water conservation, recycling and environmental protection measures.

The WSDP can be viewed as the guiding tool for water service delivery on a local and municipal level. Both processes of producing the IDP and WSDP are phased and ideally, the two are run parallel to each other. A diagrammatic overview of the two phases is provided in Appendix A.

In the Free State province, of the 20 Water Service Authorities (WSAs), 14 have not yet started the process of formulating a WSDP, 2 have adopted a WSDP, 2 are in the process of adopting a WSDP and 2 have appointed consultants to assist with the process (DWA, 2009a). In the Northern Cape, the DWA Kimberley Regional Office, in an effort to fast track the current status reporting for WSDPs, this year contracted Professional Service Providers to assist with the status reporting process. This process is currently ongoing and the data are in a process of being updated. Current statistics reveal that 24 out of the 29 WSAs have an interim or draft WSDP, and 5 WSAs have yet to have their WSDP status verified or do not have an interim WSDP available due to a lack of available budget.

FIGURE 3
WMA 13 : UPPER ORANGE
Municipal Demarcation
Boundaries



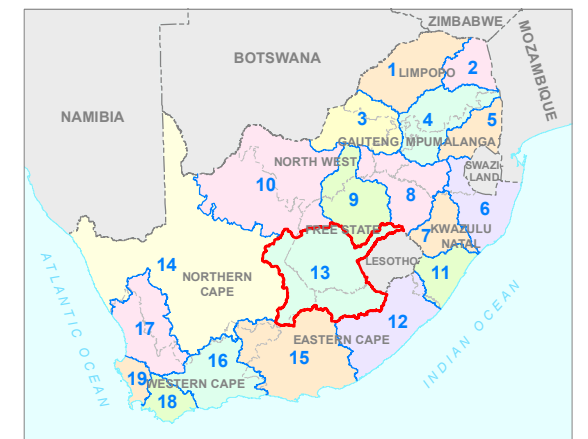
LEGEND

- Major City / Town
- Town
- Water Management Areas
- River
- Water Management Areas
- Provincial Boundary
- International Boundary

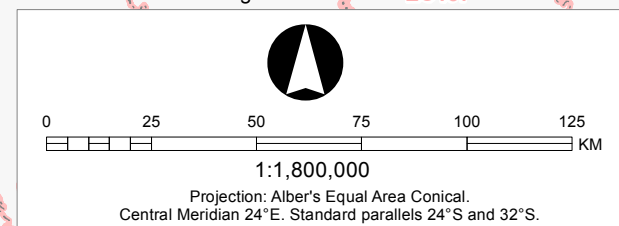
Municipal Demarcation Boundaries

- District Municipality
- DMA (District Management Area)
- Metropolitan Municipality
- Local Municipality

Data sources:
 Department: Land Affairs, Chief Directorate: Surveys & Mapping
 (Cities, Towns & International Boundaries)
 Municipal Demarcation Board
 (Provincial, District Municipal & Local Municipal Boundaries - Feb '06)
 Department: Water Affairs & Forestry
 (Water Management Areas)

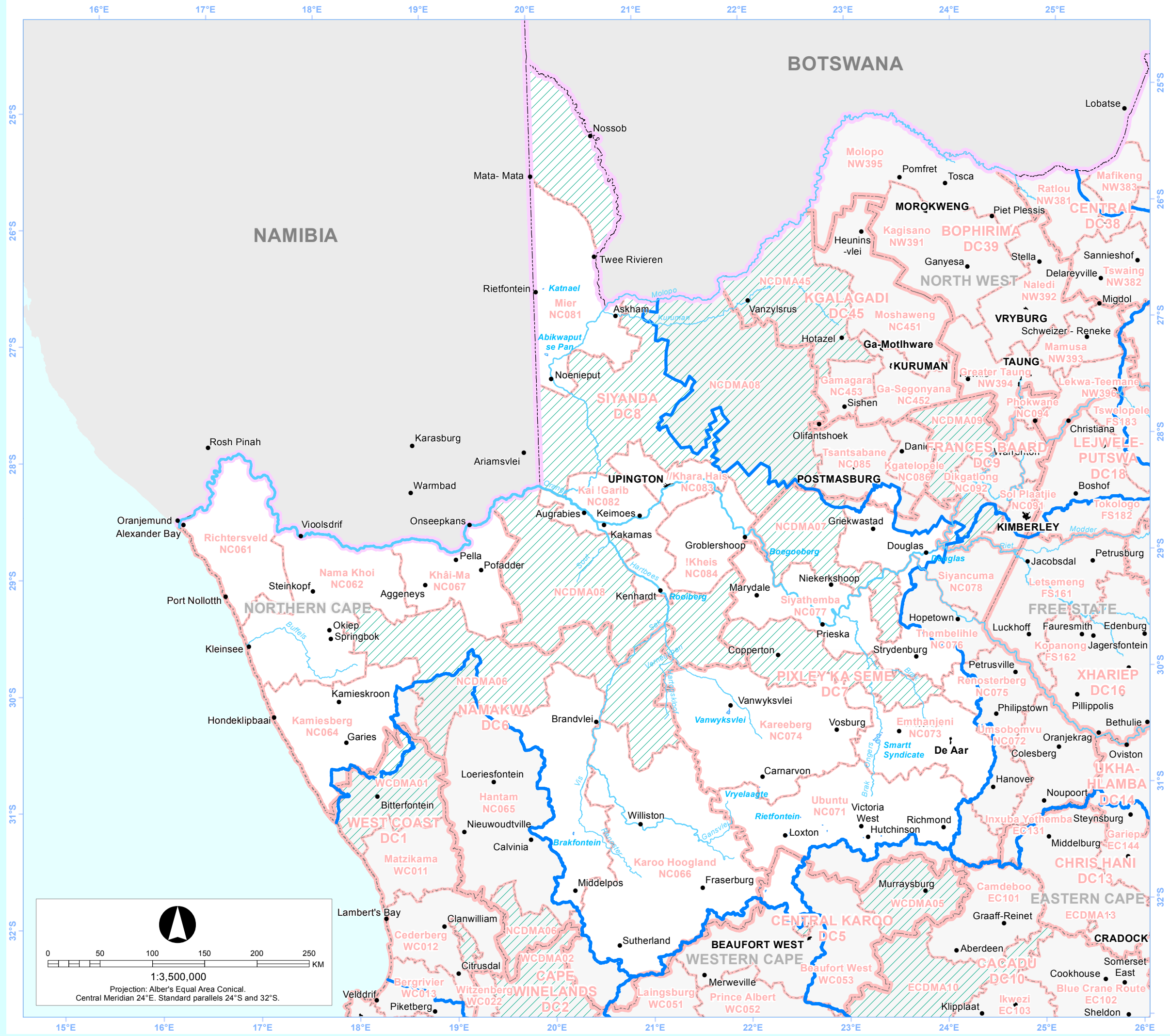


Locality Map: WMA 13 (Upper Orange)



Map produced by:
 Department: Water Affairs and Forestry,
 Directorate: Spatial & Land Information Management
 June 2009 (Ref: GM09_087)

FIGURE 4
WMA 14 : LOWER ORANGE
Municipal Demarcation
Boundaries



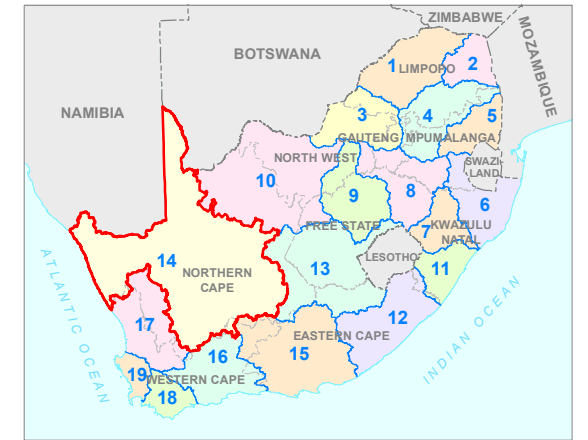
LEGEND

- Major City / Town
- Town
- Water Management Areas
- River
- Provincial Boundary
- International Boundary

Municipal Demarcation Boundaries

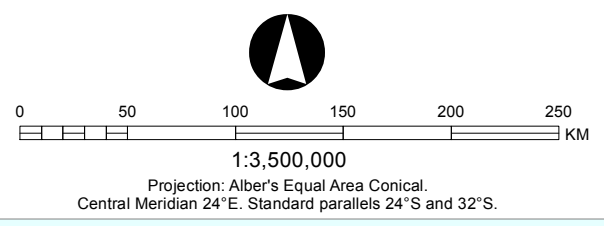
- DMA (District Management Area)
- Metropolitan Municipality
- Local Municipality
- District Municipality

Data sources:
 Department: Land Affairs, Chief Directorate: Surveys & Mapping
 (Cities, Towns & International Boundaries)
 Municipal Demarcation Board
 (Provincial, District Municipal & Local Municipal Boundaries - Feb '06)
 Department: Water Affairs & Forestry
 (Water Management Areas)



Locality Map: WMA 14 (Lower Orange)

Map produced by:
 Department: Water Affairs and Forestry,
 Directorate: Spatial & Land Information Management
 June 2009 (Ref: GM09_088)



It is imperative that local level planning such as the developing of IDPs and WSDPs take into cognisance regional and national level planning before plans are drafted, and likewise source specific planning such as formulating water licence conditions, must take into consideration local level planning. These links need to be formalised in future integrated planning initiatives.

7.3 Land Development Objectives (LDOs)

The Development Facilitation Act, 1995 (Act No.67 of 1995) (DFA) was formulated in an effort to facilitate and speed up the implementation of reconstruction and development programmes and projects in relation to land. The specific purpose of Chapter 4 of this act is to facilitate the formulation and implementation of land development objectives by reference to which the performance of local government bodies in achieving such objectives may be measured.

Section 28 of the DFA states that the subject matter of land development objectives shall relate to:

- the standard of services for land development
- urban and rural growth (relating to, for example, the planning of transportation and bulk infrastructure, sustained utilization of the environment and land use control, or the co-ordination of land development in consultation with other authorities).
- the development strategies of the relevant authority in relation to, for example: the optimal involvement of sectors of the economy in land development; access to finance for land development; or administrative structures to deal with land development.

The numbers of housing units, sites or other facilities planned for and the nature and production rate thereof.

Taking into consideration that surface and groundwater has been described as already highly developed and utilised (DWAF, 2002a and 2002b), any future land development has the potential to increase unmanageable pressure on water resources in both WMAs. Hence, the setting of LDOs should be aligned with the relevant Integrated Development Plans as well as broader scale water resource planning initiatives such as a CAS.

8 SOURCE SPECIFIC PLANNING AND MANAGEMENT

8.1 Water Service Authorities (WSAs)

The Water Services Act, 1997 (Act No. 108 of 1997) stipulated the establishment of Water Services Authorities throughout the country. It was envisaged that WSAs were to take over some of the functions of the Department of Water Affairs, and over the recent years several district and local municipalities have been given the status of the WSA. The Act stipulates the WSAs must make bylaws which provide the conditions for the provision of water

services. These include conditions for items such as the standard of services, technical conditions of supply, operation of water services works, tariff structures and payment collection, and unlawful connections to water services works.

One of the key responsibilities of any WSA is to supply a good and reliable potable water supply and it is the prerogative of the WSA whether or not to appoint a Water Service Provider in order to meet these responsibilities. In 2008, DWAF launched its Blue and Green Drop Certification Programme – an incentive based regulation programme to evaluate WSAs compliance to drinking and waste water legislation, as well as other best practice requirements (DWAF, 2008). The first Blue Drop Report was launched by the Minister of Water Affairs and Forestry, Ms Buyelwa Sonjica at the Drinking Water Quality Conference held in May 2009 in Port Elizabeth, and the initial focus of the programme has been focused on the Eastern Cape and Western Cape provinces.

The Free State is comprised of a total of 21 WSAs, and the Northern Cape 32 WSAs, both made up of local and district municipalities. These WSAs have achieved high rates of water service provision in terms of free basic water, summarised in Table.1 below.

	Total No WSAs	% households supplied with free basic water	% poor* households supplied with free basic water
Northern Cape WSAs	32	94.90%	93.47%
Free State WSAs	21	92.89%	99.60%

*A household who has a total income of >R800 p/m

Table 1: Provincial summary of supplied free basic water

8.2 Water Use Licenses

The water use licensing process is one which is stipulated by the NWA (Act No. 36 of 1998) and provides DWA with the source specific management tool for planning and management of sources of impacts. It is envisaged that this process should ensure rightful allocation among water users, minimise pollution and ensure sustainable use of the country's water resource. Water use licenses are issued in accordance with Section 21 water uses set out in the NWA and ideally, planning should influence licence conditions so as to confirm sustainable land and water use activities.

If after thorough planning, it is determined that a catchment is over-allocated, in terms of quantity and/or quality, then the management approach would probably revert to one of compulsory licensing. Compulsory licensing is a mechanism provided for in the NWA allowing DWA to review all allocated water use after determining the extent of existing lawful water use. The process is typically guided by a Water Allocation Plan (developed by the Catchment Management Agency) which could be considered as a regional planning tool.

However, due to the fact that all water users (including those with existing lawful uses) in the catchment have to re-apply for a water use license as part of a compulsory licensing process, the implications become very source specific as they affect each and every water user on a very local level. A diagrammatic overview of the compulsory licensing process is provided in Appendix B.

Effective water management can only prove to be efficient when water use licenses align with set Resources Water Quality Objectives, and where available, Resource Quality Objectives. This effectively should ensure coherent management and sustainable use of the country's water resources.

9 CONCLUSION

It can be noted that, given all of the above-mentioned existing planning and water management related documents, programmes, strategies and legal frameworks, that a good overarching planning and management context already exists for both the Upper and Lower Orange Water Management Areas. Some of these have both international and national implications which extend beyond the boundaries of the Upper or Lower WMA's, whereas others have a regional, local and source specific focus. Any planning initiatives within the Upper and Lower WMAs, whether they are in the form of an Integrated Water Quality Management Strategy or an Assessment of the Water Quality Data Requirements for Water Quality Planning Purposes, need to give effect to these contexts. This overarching catchment context is the product of a desktop assessment of existing literature sources and is by no means exhaustive.

10 REFERENCES

ARTP JMB (/Ai-/Ais-Richtersveld Transfrontier Park Joint Management Board), 2008. Lower Orange River Management Plan: Unlocking the Ecotourism Potential of the River, xiii + 153 pp, Draft Report, August 2008.

Department of Water Affairs and Forestry (2002a). Upper Orange Water Management Area (UOWMA): Water Resources Situation Assessment – Main Report – Volume 1 of 3. Report No: P 1300/00/0101. August 2002.

Department of Water Affairs and Forestry (2002b). Lower Orange Water Management Area (LOWMA): Water Resources Situation Assessment – Main Report – Volume 1 of 2. Report No: P 1400/00/0101. March 2002.

Department of Water Affairs and Forestry (2003a). Upper Orange Water Management Area Overview of Water Resources Availability and Utilisation. Report No: P WMA 13/000/00/0203. September 2003.

Department of Water Affairs and Forestry (2003b). Lower Orange Water Management Area Overview of Water Resources Availability and Utilisation. Report No: P WMA 14/000/00/0203. September 2003.

Department of Water Affairs and Forestry (2003c). Internal Strategic Perspective for the Upper Orange Water Management Area. Report No. P WMA 13/000/00/0304. Compiled by PDNA, WRP & WMB as part of the development of the National Water Resources Strategy, 2003.

Department of Water Affairs and Forestry (2004a). Internal Strategic Perspective: Lower Orange Water Management Area. Prepared by PDNA, WRP Consulting Engineers (Pty) Ltd, WMB and Kwezi-V3 on behalf of the Directorate: National Water Resource Planning. DWAF Report No P WMA 14/000/00/0304.

Department of Water Affairs and Forestry (2004b). Internal Strategic Perspective: Orange River System Overarching. Prepared by PDNA, WRP Consulting Engineers (Pty) Ltd, WMB and Kwezi-V3 on behalf of the Directorate: National Water Resource Planning. DWAF Report No P RSA D000/00/0104.

Department of Water Affairs and Forestry (2008). Water Quality Regulation: A Strategy for Incentive-Based Regulation Blue and Green Drop Certification. Draft, September, Accessed online 8 June 2009 at <http://www.dwaf.gov.za/events/MunicipalIndaba/Regulatory/Documentation/WDQBlueGreenDropStatusDraft.pdf>

Department of Water Affairs and Forestry (2009a). Personal communication with M Sediko, DWAF Free State Regional Office, June 2009.

Department of Water Affairs and Forestry (2009b). Water for Growth and Development Framework, Version 7. Available online at: http://www.dwaf.gov.za/Documents/Notices/WFGD_Framework_v7.pdf.

Earle, A., Malzbender, D., Turton, A. and Manzungu, E. (2005). A Preliminary Basin Profile of the Orange/Senqu River. Published by AWIRU, University of Pretoria, South Africa. ISBN: 1-86854-618-7.

FSGDS (Free State Province Growth and Development Strategy), 2005-2014. May 2005. Accessed online: <http://www.fs.gov.za/FSGDSChapters.htm>, 26/08/2009.

Mohamed, A.E. Institutional Arrangement for International Water Resources: The Case of the Limpopo and Orange River Basins in Southern Africa. <http://www.riob.org/ag2002/LimpopoOrange.pdf>. Accessed: 10/09/2009. Host website: International Network of Basin Organisations.

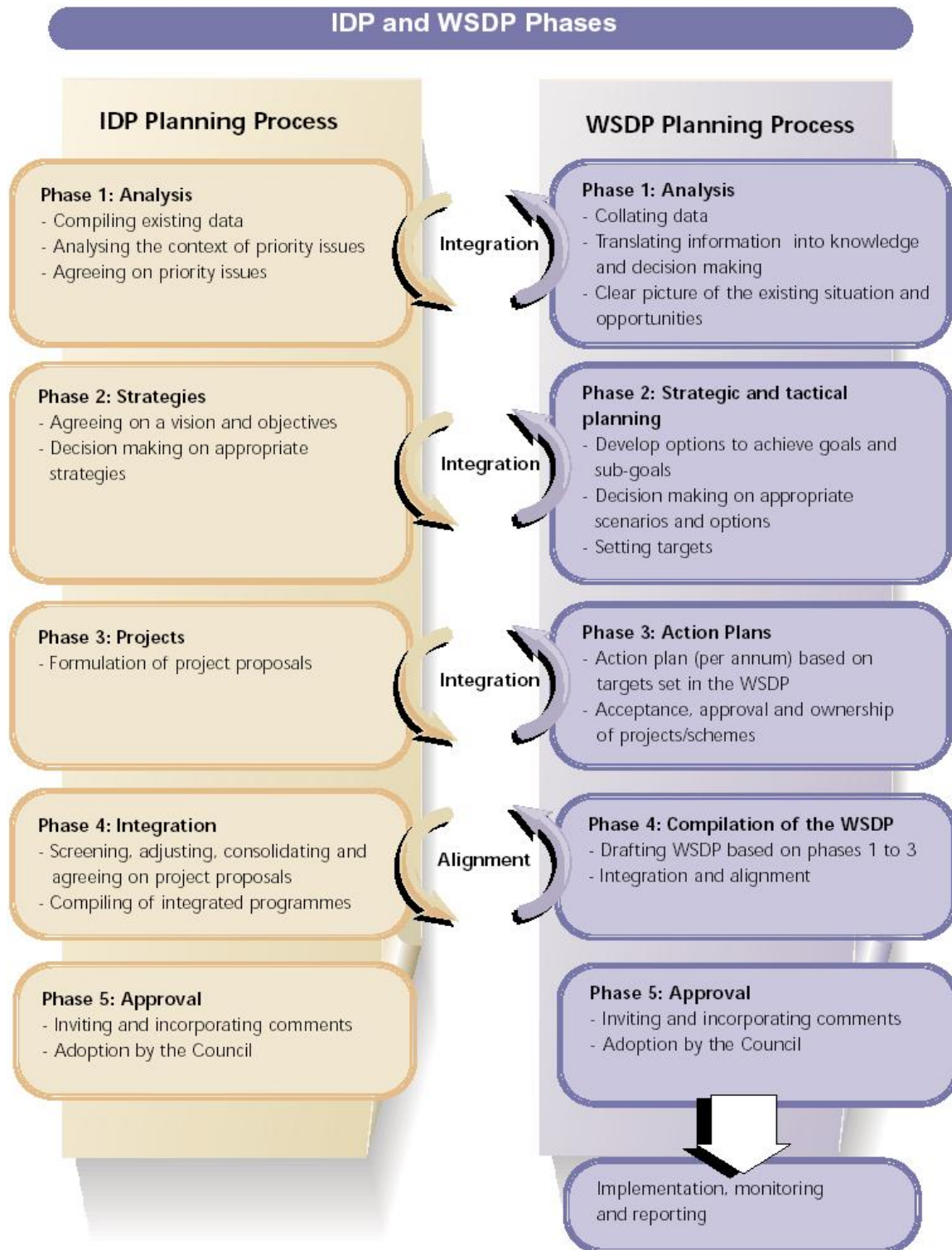
NSDP (National Spatial Development Plan) 2006. Publication of The Presidency of South Africa. Accessed at <http://www.thepresidency.gov.za/main.asp?include=docs/pcsa/planning/nsdp/main.html> on 29 July 2008.

River Health Programme (2003). State-of-Rivers Report: Free State Region River Systems. Department of Water Affairs and Forestry, Pretoria. ISBN No: 0-620-31794-9.

Pyke, P. (2007). Best Practices in Trans-boundary River Basin Management. Presentation to ANBO on the Orange-Senqu River Commission on behalf of the ORASECOM Technical Task Team. Accessed online at <http://www.riob.org/robao/communications/orange-sangu.pdf>, 1 June 2009.

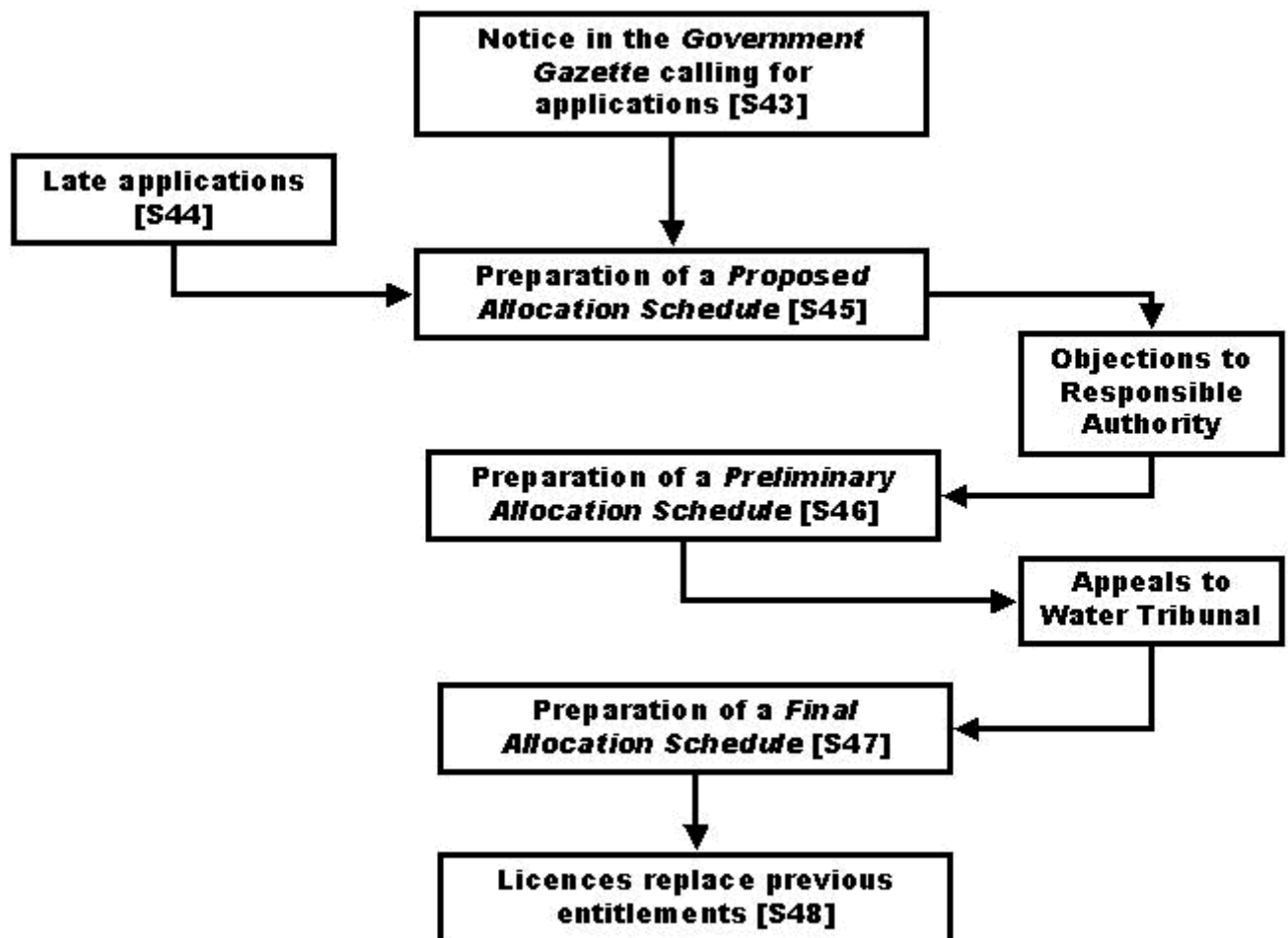
SADC (Southern African Development Community) (2008). Protocol on Shared Watercourse Systems. <http://www.sadc.int/index/browse/page/158#article11>. Accessed: 10/09/2008.

APPENDIX A: DIAGRAMATIC OVERVIEW OF IDP AND WSDP PROCESSES



Source: http://www.dwaf.gov.za/dir_ws/WSDP/default.asp?nStn=introduction

APPENDIX B: DIAGRAMMATIC OVERVIEW OF COMPULSORY LICENSING PROCESS



Source: <http://www.dwaf.gov.za/WAR/compulsorylicensing.asp>