

Water Resource Planning  
Systems Series

SUB-SERIES NO. WQP 1.5.3

# Resource Directed Management of Water Quality

Volume 3  
Institutional Arrangements

August 2006

Edition 1



**water & forestry**

Department:  
Water Affairs & Forestry  
**REPUBLIC OF SOUTH AFRICA**



**Water Resource Planning Systems Series**

SUB-SERIES NO. WQP 1.5.3

# **Resource Directed Management of Water Quality**

**Volume 3**

**Institutional Arrangements**



## **water & forestry**

---

Department:  
Water Affairs & Forestry  
**REPUBLIC OF SOUTH AFRICA**

August 2006

**Edition 1**



Published by

Department of Water Affairs and Forestry  
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. 0-621-36791-5

---

This report should be cited as:

Department of Water Affairs and Forestry, 2006. Resource Directed Management of Water Quality: Volume 3: Institutional Arrangements. Water Resource Planning Systems Series, Sub-Series No. WQP 1.5.3, Edition 1. ISBN No. 0-621-36791-5, Department of Water Affairs and Forestry, Pretoria, South Africa.

Co-ordinated by:

CSIR, Natural Resources and the Environment (NRE)  
PO Box 395  
Pretoria  
0001



## DOCUMENT INDEX

### **Reports as part of this project:**

REPORT NUMBER	REPORT TITLE
1.1	Inception Report
1.2	National and International Literature Survey and Contextual Review
1.3	Glossary of terminology often used in the Resource Directed Management of Water Quality
1.4	Volume 1: <i>Policy Document Series</i>
1.4.1	Volume 1.1: Summary Policy
1.4.2	Volume 1.2: Policy on the Resource Directed Management of Water Quality
1.5	<i>Strategy Document Series</i>
1.5.1	Volume 2.1: Summary Strategy
1.5.2	Volume 2.2: Strategy for the Resource Directed Management of Water Quality
1.5.3	<b>Volume 3: Institutional Arrangements for Resource Directed Management of Water Quality</b>
1.6	<i>1<sup>st</sup> Edition Management Instruments Series (Prototype Protocol)</i>
1.6.1	Conceptual Review of water use licence applications in the context of the Resource Directed Management of Water Quality
1.6.2	Guidelines on Catchment Visioning for the Resource Directed Management of Water Quality
1.6.3.1	Guideline for determining Resource Water Quality Objectives (RWQOs), water quality stress & allocatable water quality
1.6.3.2	Guideline on the conversion of the SA Water Quality Guidelines to fitness-for-use categories
1.6.3.3	Guideline for converting RWQOs to individual end-of-pipe standards
1.6.3.4	Decision-support instrument for the determination of RWQOs, water quality stress, allocatable water quality & end-of-pipe standards
1.6.4	Decision-support instrument for the Assessment of Considerations for Water Use Applications (ACWUA)
1.6.5	Guideline on pro-forma licence conditions for the Resource Directed Management of Water Quality
1.7	<i>Volume 4: 2<sup>nd</sup> Edition Management Instruments Series</i>
1.7.1	Volume 4.1: Guidelines on Catchment Visioning for the Resource Directed Management of Water Quality
1.7.2	Volume 4.2: Guideline for determining Resource Water Quality Objectives (RWQOs), water quality stress & allocatable water quality
1.7.2.1	RWQOs Model and User Guide
1.7.3	Volume 4.3: Guideline on Monitoring and for the Resource Directed Management of Water Quality
1.7.4	Project Document: Resource Directed Management of Water Quality: Philosophy of Sustainable Development
1.7.5	Project Document: Guidelines for Setting Licence Conditions for Resource Directed Management of Water Quality
1.7.6	Introduction to the Resource Directed Management of Water Quality
1.8	Implementation Plan

**Bold** type indicates this report





---

APPROVAL

---

**TITLE:** Resource Directed Management of Water Quality:  
Volume 3: Institutional Arrangements

**DATE:** August 2006

**AUTHORS:** Guy Pegram and Constantin von der Heyden

**REVIEWERS:** Peter Ashton

**EDITORS:** Hanlie Hattingh, Retha Stassen and Jurgo van Wyk

**LEAD CONSULTANT:** CSIR: Natural Resources and the Environment (NRE)

**SUB-SERIES NO.:** WQP 1.5.3

**ISBN NO.:** 0-621-36791-5

**FILE NO.:** 16/3/4/96

**FORMAT:** MSWord and PDF

**WEB ADDRESS:** [www.dwaf.gov.za](http://www.dwaf.gov.za)

Approved for CSIR, NRE:

---

Ms Hanlie Hattingh  
CSIR Project Leader and Manager

---

Dr Dirk Roux  
CSIR Project Co-Leader

Approved for the Department of Water Affairs and Forestry by:

---

Mr Pieter Viljoen  
Deputy Director: Water Resource Planning Systems: Water Quality Planning

---

Mr Chris Moseki  
Director: Water Resource Planning Systems



## ACKNOWLEDGEMENTS

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

### Project Management Committee

Pieter Viljoen	Department of Water Affairs & Forestry	Project Manager
Jurgo van Wyk	Department of Water Affairs & Forestry	Assistant Project Manager
Retha Stassen	Department of Water Affairs & Forestry	Project Co-ordinator
Hanlie Hattingh	CSIR NRE	Consultant Project Leader and Manager
Dirk Roux	CSIR NRE	Consultant Project Co-Leader

### Project Team

Guy Pegram	Pegram & Associates	Co-operative Governance
Constantin von der Heyden	Pegram & Associates	Co-operative Governance

### Stakeholders input

Harrison Pienaar	Department of Water Affairs & Forestry	Resource Directed Measures
Pieter Viljoen	Department of Water Affairs & Forestry	Water Resource Planning Systems
Jurgo van Wyk	Department of Water Affairs & Forestry	Water Resource Planning Systems
Neels Kleynhans	Department of Water Affairs & Forestry	Resource Quality Services
Tony Belcher	Department of Water Affairs & Forestry	Western Cape Regional Office
Riana Munnik	Department of Water Affairs & Forestry	Gauteng Regional Office
Bettie Conradie	Department of Water Affairs & Forestry	Northern Cape Regional Office

### Guideline for converting RWQOs to individual end-of-pipe standards

Pieter Viljoen	Department of Water Affairs & Forestry	Water Resource Planning Systems
Jurgo van Wyk	Department of Water Affairs & Forestry	Water Resource Planning Systems

### Members of Project Steering Committees

Althea van der Merwe	DWAF: Mpumalanga Regional Office
Anet Muir	DWAF: Water Abstraction and Instream Use (Environment & Recreation)
Anthony Turton	Gibb-Sera Chair in IWRM (CSIR)
Ashwin Seetal	DWAF: Water Allocation
Barbara Schreiner	DWAF: Policy and Regulation Branch
Barbara Weston	DWAF: Resource Directed Measures
Bettie Conradie	DWAF: Northern Cape Regional Office
Bill Rowlston	DWAF: Policy and Strategy Coordination
Carin Bosman	DWAF: Resource Protection and Waste
Chris Moseki	DWAF: Water Resource Planning Systems
Cornelius Ruiters	DWAF: Water Use
Danie Smit	Department of Environmental Affairs & Tourism
Dawie Maree	DWAF: Gauteng Regional Office
Derek Weston	DWAF: Water Management Institution Governance
Dirk Roux	CSIR: NRE
Eddie van Wyk	DWAF: Hydrological Information
Elize Swart (NC Khoza)	Department of Minerals & Energy
Ernita van Wyk	CSIR: NRE
Eustathia Bofilatos	DWAF: Water Management Institution Governance
Fanie Botha	DWAF: Water Resource Planning Systems
Frank Wimberley	Golder Associates: Source Directed Measures Consultant
Frans Stoffberg	DWAF: National Water Resources Planning
Gareth McConkey	DWAF: Western Cape Regional Office
Guy Pegram	Pegasus

Gys Hoon	DWAF: Free State Regional Office
Hanlie Hattingh	CSIR: NRE
Harrison Pienaar	DWAF: Resource Directed Measures
Henry Abbott	DWAF: Resource Protection and Waste (Waste Discharge & Disposal)
Herman Keuris	DWAF: Information Programmes
Hugh Dixon-Paver	DWAF: KwaZulu Natal Regional Office
Jaco Nel	DWAF: Hydrological Information
Jacob Matlala	DWAF: Limpopo Regional Office
Jean Msiza	DWAF: Stakeholder Empowerment
Jurgo van Wyk	DWAF: Water Resource Planning Systems
Kevin Murray	Insight Modelling Services
Liesl Hill	CSIR: NRE
Linda Godfrey	CSIR: NRE
Loraine Fick	DWAF: Water Abstraction and Instream Use
M Phaloane	Nunganie Development Consultant
Manda Hinsch	DWAF: Resource Protection and Waste (Waste Discharge & Disposal)
Maria Matooane	DWAF: Free State Regional Office
Marius Claassen	CSIR: NRE
Marius Keet	DWAF: Gauteng Regional Office
Marlese Nel	DWAF: Information Programmes
Martin van Veelen	BKS
Mike Warren	DWAF: Water Abstraction and Instream Use
Minolen Reddy	DWAF: Mpumalanga Regional Office
Mzuvukile Tonjeni	DWAF: Eastern Cape Regional Office
Nancy Gcwensa	Department of Health
Nicky Naidoo	Nemai Consulting
Niel van Wyk	DWAF: National Water Resources Planning
Obet Baloyi	DWAF: Water Abstraction and Instream Use
Peter van Niekerk	DWAF: Integrated Water Resources Planning
Petrus Venter	DWAF: North West Regional Office
Piet Pretorius	DWAF: Water Abstraction and Instream Use
Pieter Viljoen	DWAF: Water Resource Planning Systems
Priya Moodley	DWAF: Water Resource Planning Systems
Retha Stassen	DWAF Project Co-ordinator
Riana Munnik	DWAF: Gauteng Regional Office
Sakkie van der Westhuizen	DWAF: Resource Protection and Waste (Waste Discharge & Disposal)
Sebastian Jooste	DWAF: Resource Quality Services
Simon Moganetsi	DWAF: Water Abstraction and Instream Use
Solly Maluleke	Department of Land Affairs
Sonia Veltman	DWAF: Water Resource Planning Systems
Steve Mitchell	Water Research Commission
Suzan Oelofse	DWAF: Water Resource Planning Systems
Tinyiko Malungani	CSIR: NRE
Toni Belcher	DWAF: Western Cape Regional Office
Tlhagala R Mgogsheng	DWAF: Limpopo Regional Office

## EXECUTIVE SUMMARY

---

The past decade has seen significant changes to the institutional arrangements, water governance and organisational responsibilities in the water resources management sector. This is likely to continue for the next decade with the establishment of catchment management agencies (CMAs). The management of resource water quality within this dynamic environment requires clarity and strengthening of the institutional roles and responsibilities for the different elements of the water resource management process.

This report is part of a larger project that will develop a policy and strategy for resource directed management of water quality (RDM-WQ). It focuses on institutional and organisational issues, with the objective of clarifying roles and responsibilities. While the discussion is aligned with the specific areas of focus of the RDM-WQ project, it engages the broader water quality management environment, because organisational and institutional issues cannot be viewed in isolation.

Water quality management must be viewed against the management cycle of resource directed measures (RDM), catchment visioning, catchment planning and strategy, source directed controls (including authorisation, economic instruments and cooperation), ending with monitoring, evaluation and review.

When considering roles and responsibilities, it is important to distinguish the development of policies/regulation and “custodianship” of the systems from the implementation of these policies, systems and related processes. The responsibilities for the same elements of the management process above, differ fundamentally between the policy and implementation roles. Typically, DWAF Policy & Regulation (P&R) Branch would be responsible for policy and developing systems, while DWAF Regional Offices (and later on CMAs) would be responsible for implementation with support from P&R.

While the lead responsibility for the development of methodologies for RDM (including the development of RWQO) remains with D:RDM, the approaches, tools and models must be consistent with and interface with the tools and models used in catchment assessment and planning, because it is only through prudent catchment planning and water use management that these objectives can be achieved. It is therefore appropriate for Integrated WR Planning (specifically WRPS) to work in partnership and support RDM through the development of relevant catchment planning models that can be used both to develop RQOs and to conduct catchment level water quality assessments.

The implementation of these tools should be through the DWAF Regional Offices or CMA, but it is critical that P&R provide adequate support for this process. Here D:RDM should play a key role in supporting the implementation of the process, while D:WRPS should support the technical implementation of the models they have developed (in order to ensure organisational efficiency).

There is also an important interface between catchment level planning and the management of waste related water use (from both point and non-point sources). While the approaches and models for translation of RWQOs into management objectives and acceptable loads at a catchment level should be led by Integrated WR Planning (WRPS), the development of discharge standards and best practice at a source level should be led by Water Use (RP&W). There must however be close alignment and consistency in the catchment water quality models (for catchment planning) and those used to evaluate local source related impacts (for authorisation purposes).

A number of additional challenges will be faced with the decentralisation of functions to CMAs in cooperation with other water sector institutions, particularly those that are related to changing institutional structures and arrangements, and the associated shifting roles and responsibilities. Successfully addressing these challenges and surmounting the related hurdles requires significant institutional and personnel capacity building and the establishment of stable systems.

To facilitate this process, each approach to implementing RDM-WQ should be informed by capacity and resources and should strive to achieve maximum simplicity.



## TABLE OF CONTENTS

<b>DOCUMENT INDEX .....</b>	<b>I</b>
<b>APPROVAL .....</b>	<b>II</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>III</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>V</b>
<b>TABLE OF CONTENTS .....</b>	<b>IV</b>
<b>LIST OF FIGURES .....</b>	<b>IV</b>
<b>LIST OF TABLES .....</b>	<b>IV</b>
<b>ACRONYMS .....</b>	<b>V</b>
<b>SECTION 1: INTRODUCTION .....</b>	<b>1</b>
1.1 Background.....	1
1.2 Purpose of this Report.....	2
<b>SECTION 2: WATER QUALITY MANAGEMENT PROCESSES .....</b>	<b>5</b>
2.1 Integrated Water Quality Management.....	5
2.2 Catchment Based Water Quality Management .....	7
<b>SECTION 3: WQM ROLES AND RESPONSIBILITIES.....</b>	<b>11</b>
3.1 Introduction .....	11
3.2 DWAF Organisational Structure .....	12
3.3 Process of Institutional Decentralisation.....	13
3.4 Policy and Regulatory Framework Responsibilities.....	15
3.5 Implementation Responsibilities .....	17
3.6 Responsibilities for RDMWQ Management Instruments .....	22
3.7 Challenges during the Institutional Decentralisation.....	23
<b>SECTION 4: INSTITUTIONAL ROLES .....</b>	<b>25</b>
<b>SECTION 5: IMPLEMENTING THESE RESPONSIBILITIES.....</b>	<b>27</b>
5.1 Capacity Building .....	27
5.2 Key Institutional Considerations for Implementation.....	28
5.3 Mechanisms to Support Implementation .....	29
<b>SECTION 6: REFERENCES .....</b>	<b>31</b>

## LIST OF FIGURES

Figure 1.1: Decision-making framework and management instruments to operationalise Resource Directed Management of Water Quality. ....	3
Figure 2.1: Conceptual IWQM Process. ....	6
Figure 2.2: Catchment Water Resource / Quality Management Process. ....	8
Figure 3.2: Broad Responsibilities for WRM Policy Development and Regulation. ....	16
Figure 3.3: Broad Responsibilities for Catchment WRM Implementation. ....	18
Figure 3.4: Evolving responsibilities and resources for catchment based water quality management. ....	19
Figure 4.1: Primary institutional relationships related to RDMWQ. ....	25

## LIST OF TABLES

Table 3.1: Summary of roles and responsibilities for WRM functions (focus on RDMWQ). ....	20
-------------------------------------------------------------------------------------------	----

## ACRONYMS

---

AEV	Acute Effect Value
CAS	Catchment Assessment Study
CEV	Chronic Effect Value
CMA's	Catchment Management Agencies
DEAT	Department of Environmental Affairs & Tourism
DEMC	Desired Ecological Management Class
DME	Department of Minerals & Energy
DWAF	Department of Water Affairs & Forestry
Ecospecs	Ecological Specifications
EI&S	Ecological Importance and Sensitivity
EISC	Ecological Importance and Sensitivity Category
EMP	Environmental Management Plan
IDP	Integrated Development Plan
ISP	Internal Strategic Perspectives
IWQS	Institute for Water Quality Studies (now referred to as Resource Quality Services)
IWRM	Integrated Water Resource Management
NGO	Non Governmental Organisation
NWA (36:1998)	National Water Act
NWRS	National Water Resource Strategy
PESC	Present Ecological Status Category
PDEA	Provincial Department of Environmental Affairs
RC	Reference Condition
RDM	Resource Directed Measures
RDWQM	Resource Directed Water Quality Management
RDWQMP	Resource Directed Water Quality Management Policy
ROOs	Resource Quality Objectives
RWQOs	Resource Water Quality Objectives
RQS	Resource Quality Services (part of DWAF)
SDC	Source Directed Controls
SEA	Strategic Environmental Assessment
SIC	Standard Industrial Classification
TWQR	Target Water Quality Range
WMA	Water Management Area
WQM	Water Quality Management
WRC	Water Research Commission
WSA (108: 1997)	Water Services Act
WUA	Water User Association



## SECTION 1: INTRODUCTION

### 1.1 Background

#### **Changing Institutional Context**

The promulgation of the National Water Act (NWA: 36 of 1998) initiated considerable institutional change in the water resources management (WRM) sector. While many of the required changes have taken place, others are still ongoing. Importantly, the Act requires the progressive establishment of representative water management institutions (WMIs) for decentralised and participatory WRM decision making, particularly catchment management agencies (CMAs) and water user associations (WUAs).

#### **DWAF Restructuring**

The institutional changes and emerging functional responsibilities required by the NWA led to the organisational restructuring of the Department of Water Affairs and Forestry (DWAF) between 2000 and 2003. DWAF is also establishing a Branch for Infrastructure Management; this will lead towards the establishment of a National Infrastructure Agency in 2008. The DWAF regions are still aligning their organisational structures in the establishment of ongoing WRM, proto-CMA and infrastructure operations components. Proto-CMAs have been established for all of the 19 water management areas (WMA) that will lead to the establishment of CMAs over the next 5 years.

#### **Making IWRM Work**

The NWA is founded on the principles of sustainable, equitable and optimal water resources protection, development and utilisation, reflecting the international acceptance of the philosophy of integrated water resources management (IWRM). While this is conceptually elegant, IWRM poses some serious institutional, organisational and governance challenges. These are particularly evident in the integrated management of water quantity, quality and ecological health, as well as the coherent management of resource protection, resource planning and water use management.

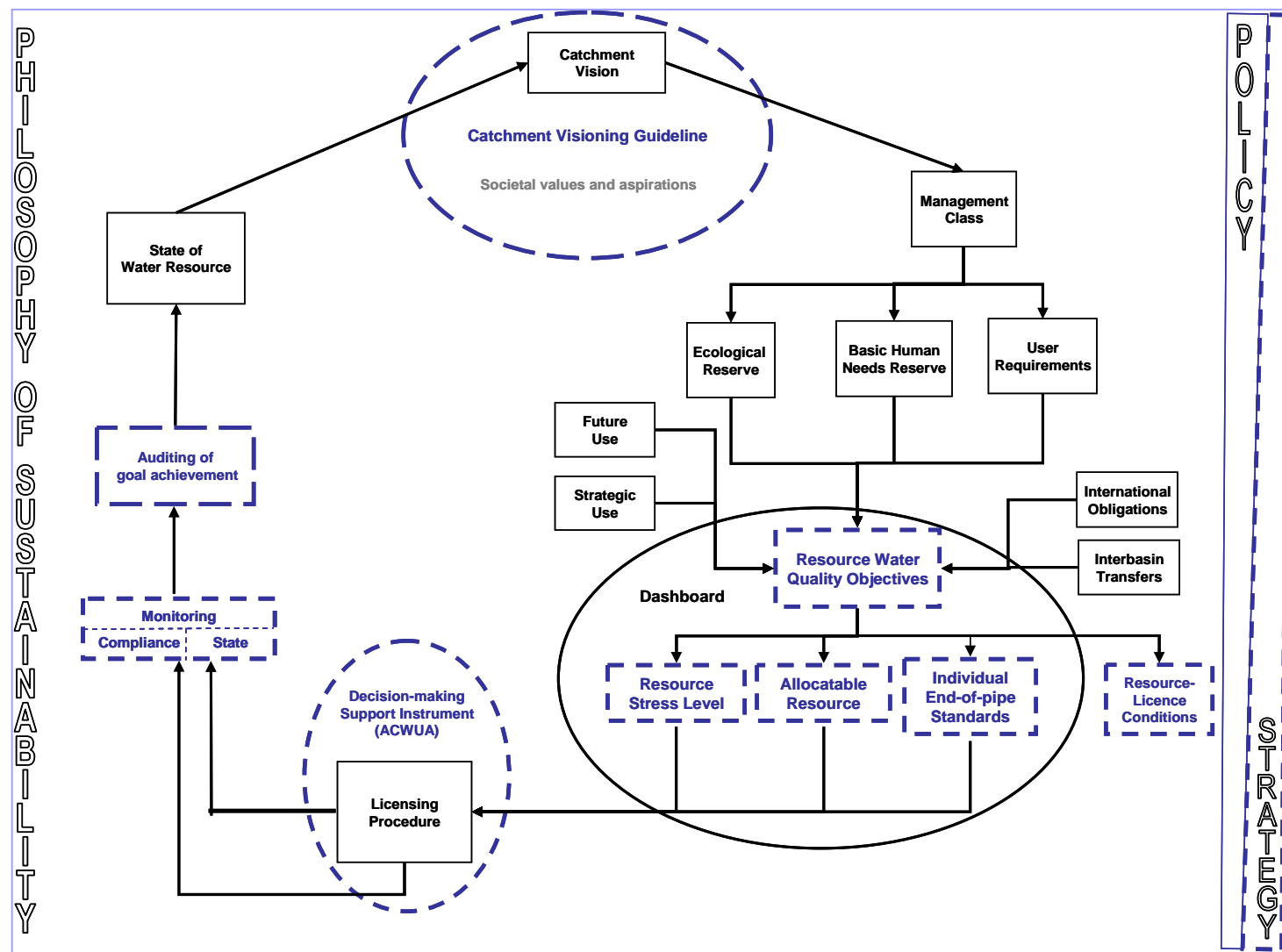
#### **Institutional and Organisational Arrangements**

Before going any further, it is important to recognise the clear distinction between institutions and organisations. Institutions refer to the set of rules and relationships between groups in society (or the WRM sector in this case), while organisations refer to the structured cooperation between groups and individuals (representing the players within these rules). Institutional arrangements in a sector therefore represent the combination of legislation and regulations, policies and guidelines, administrative structures and relationships, economic and financial arrangements, political processes, customs and key participants. An organisation consists of the strategy (mandate), structure (responsibilities), systems, skills and culture of a formal entity with a statutory legal persona, which acts within this institutional context.

<b>Water Governance</b>	Water governance refers to the range of political, social, economic and administrative systems (including institutions and organisations) that are in place to develop and manage water resources, and the delivery of water services, at different levels of society. Good water governance depends upon predictability, inclusion, representivity, accountability, efficiency, effectiveness, social equity and justice. It requires open and transparent policy making, a professional bureaucracy and a strongly engaged civil society.
<b>Cooperative Government</b>	Chapter 3 of the South African Constitution requires that the 3 distinctive, interdependent and interrelated spheres of government (and all organs of state) must conduct their activities in the national interest and within the spirit of cooperation.
<b>Cooperative Governance</b>	It is important to note then that cooperative government is only one part of the wider concept of governance, which includes civil society and the private sector. This is particularly important in the context of resource directed measures, where national provincial and local levels of government promulgate and administer legislation with wide-ranging impacts on water in the environment, resource quality and, specifically, water quality.
<b>Roles and Responsibilities</b>	It is apparent from the above that there is and will continue to be significant change of the institutional arrangements, water governance and organisational responsibilities in the water resources management sector. However, without clarity (and strengthening) in these areas, particularly around defined roles and responsibilities, the possibilities for effective management and decision making for water resources and their quality will be seriously jeopardised.

## 1.2 Purpose of this Report

<b>Objectives of the Report</b>	This report is part of a larger project that will develop a policy and strategy for resource directed management of water quality (RDMWQ). It focuses on institutional and organisational issues (acknowledging the dynamic nature of the sector), with the objective of clarifying roles and responsibilities. While the discussion is aligned with the specific areas of focus of the RDMWQ project, it has to engage the broader water quality (and in fact the water resources management) environment, because organisational and institutional issues cannot be viewed in isolation.
<b>Linkage to the Technical Tasks</b>	<p>Figure 1.1 provides the decision-making framework for resource directed management of water quality (RDMWQ). The associated management instruments to give effect to the policy on RDMWQ that were developed as part of the RDMWQ project, are indicated by the dotted blue lines.</p> <p>The RDMWQ management instruments are super-imposed on the management process of water resources as applied by DWAF in those areas where the management instruments were designed to be applied.</p>



**Figure 1.1: Decision-making framework and management instruments to operationalise Resource Directed Management of Water Quality.**



## SECTION 2: WATER QUALITY MANAGEMENT PROCESSES

### 2.1 Integrated Water Quality Management

#### Introduction

In order to clarify the roles and responsibilities around the resource directed management of water quality, it is necessary to examine the water quality management process and associated elements for which responsibilities may differ.

#### Integrated WQM within IWRM

Water quality management is a fundamental part of WRM, and as such the concept of IWRM may be focused into integrated water quality management (IWQM). This implies coherent analysis and decision making between water quality, quantity and ecological health, the adoption of decentralised decision making, effective stakeholder participation and engagement, and consideration of the technical, social and economic aspects in decisions around water resource quality.

#### Phases of IWQM

Figure 2.1 outlines four broad phases in the IWQM process, namely:

*Plan:* resource objectives and catchment strategies (including plans) are developed, based on catchment assessment and visioning processes.

*Do / Implement:* effect is given to the strategies through source directed controls and related instruments, according to a clear decision making hierarchy.

*Check:* water resources are monitored and the effects of the strategies (i.e. success or failure) are assessed.

*Act:* objectives, strategies and decisions are reviewed and adapted according to the needs and conditions within the WMA.

#### Plan

The planning component occurs at the national, regional and local level. The visioning process is integral to both the national and the local context, as it informs and sets the boundaries within which the strategy development occurs. Determination of the resource class, the Reserve and RQOs, establishes a basis for local and regional strategy development. The development of the CMS, an initial function of the CMA, is based on catchment visioning and informed by the RDM. Other important components of the CMS are plans for allocation (water allocation and allocatable water quality) and water management plans.

#### Implement (Do)

The strategy (and the plans contained therein) is given effect during the implementation component. The authorisation process, which involves application, evaluation and authorisation, and the specific licensing conditions that arise from the authorisation process, are informed by the CMS. Similarly, the CMS may require a Compulsory Licensing approach within the WMA to achieve the Class and RQOs, thereby giving effect to the CMS. Control and enforcement, regulation and the Waste Discharge Charge System (WDCS) flow out of the authorisation process, ensuring (control and enforcement, and regulation) or encouraging compliance with the authorisation conditions and ensuring achievement of the CMS water quality and water management objectives.

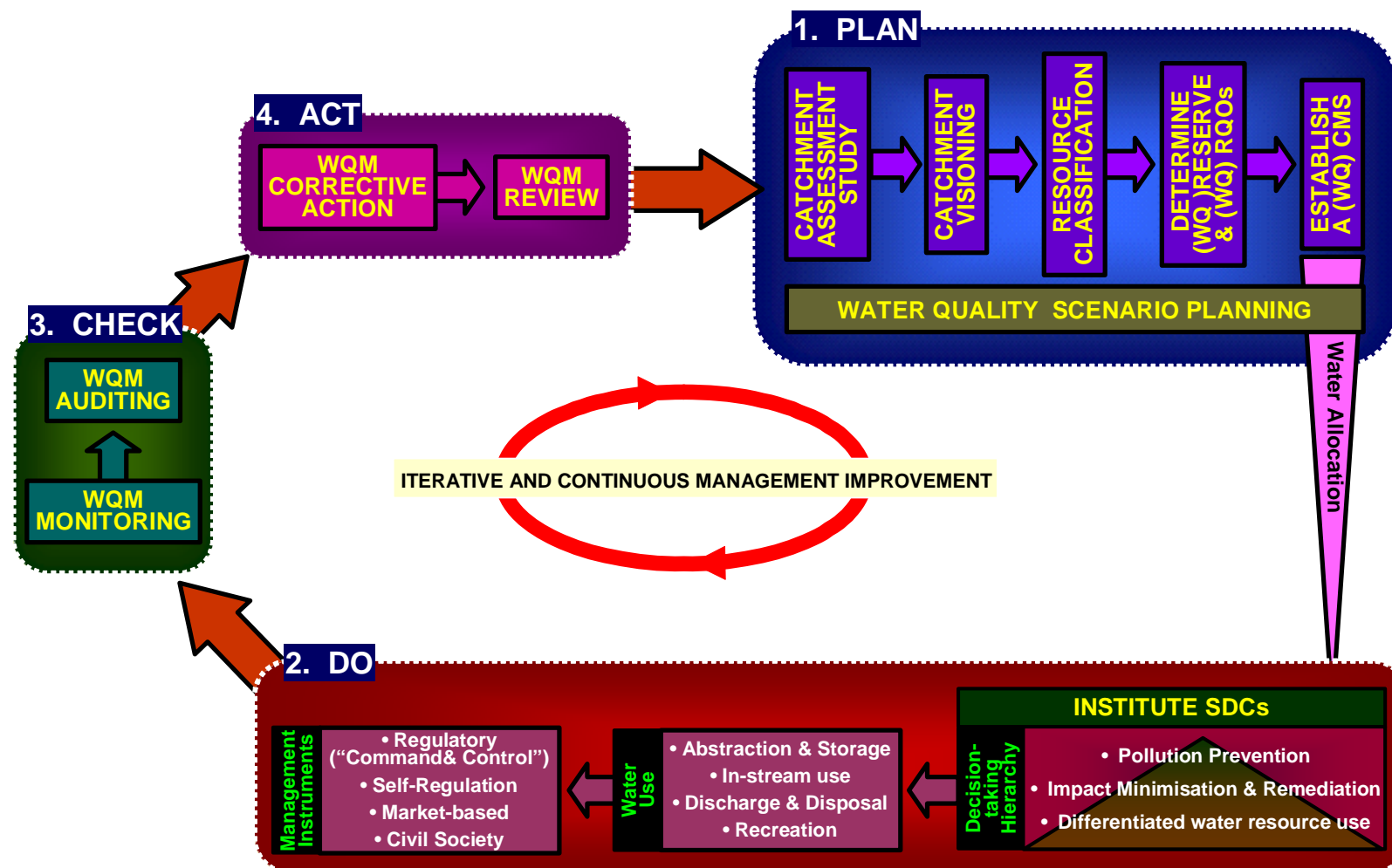


Figure 2.1: Conceptual IWQM Process.

### Check

The check process involves monitoring on a number of fronts. Sustainable development monitoring focuses on national strategy and the visioning process and assesses the sustainability, effectiveness and efficiency of the strategy. Water resource monitoring occurs at the level of the WMA and assesses the sustainability, efficiency and effectiveness of the CMS in achieving the catchment vision, and assesses the success and appropriateness of the authorisation, control and enforcement, and regulation processes. Compliance monitoring occurs at the sub-catchment level to ensure compliance of users and effluent dischargers with the authorisation stipulations and the conditions of licensing.

### Review (Act)

The adaptive process involves review of the outcomes of monitoring and adaptation of the requisite components of the management cycle. While the check component focussed on the issues of planning at national and local level and issues of implementation, the adapt component of the management cycle involves feed-back to all other parts of the cycle. The adapt component of the cycle also reviews the monitoring process (check component), feeding back to ensure consistency, sustainability, effectiveness and efficiency within the check component.

## 2.2 Catchment Based Water Quality Management

### Elements of the IWQM Process

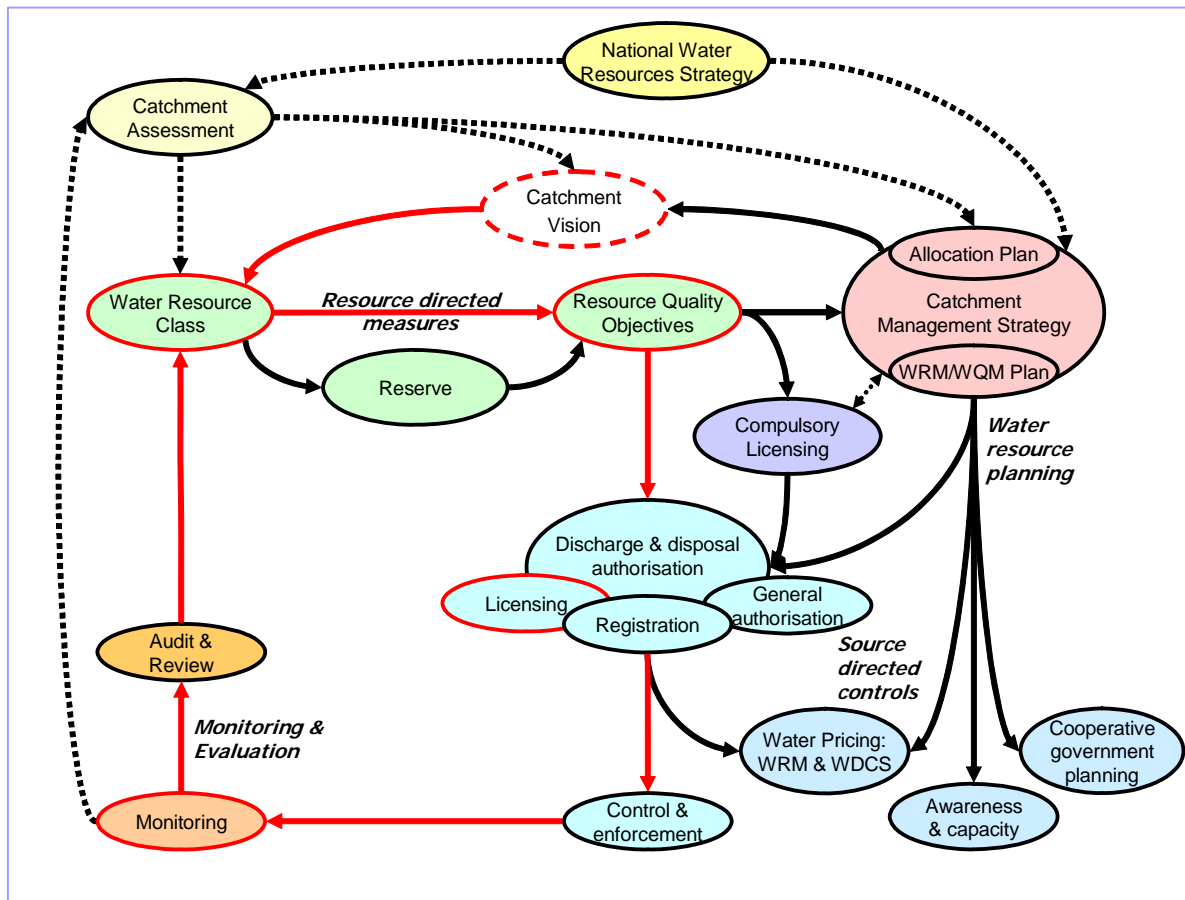
While the broad IWQM process provides a useful framework for adaptive management, a number of key elements and activities have institutional implications that are associated with each of these phases. The following discussion briefly highlights the more important elements from an institutional perspective.

### Resource Directed Measures

Resource directed measures (RDM) refer to water resources **classification**, **Reserve** determination and the establishment of **resource quality objectives** (RQOs). The purpose of water resources classification is to seek a balance *between the need to protect and sustain water resources on the one hand, and the need to develop and use them on the other*. Furthermore, classification must be achieved *through a process of consensus seeking amongst water users and other stakeholders, where the public trust places the responsibility on Government to make sure that environmental interests are represented*. Together, these clearly outline the spirit and intent of RDM, and imply significant institutional processes and responsibilities that will be re-examined in the next Chapter. In the following figure, colours represent the groups of functions described below.

### Catchment Visioning and Assessment

**Catchment Visioning** is a consultative approach that helps to reach agreement on an appropriate balance between protection and use, and is based on an understanding of the catchment characteristics gained through **catchment assessment**. It should create the link between RDM and catchment planning.



## Water Resources Planning

## Source Directed controls



Where a catchment is stressed or redress is required, **compulsory licensing** provides a process for reallocating entitlement (authorisation) to water or the disposal of waste, by requiring all users to reapply for licences within a new allocation framework. This links the catchment planning process to the authorisation process.

**Monitoring and Evaluation**

*Monitoring* and evaluation of water resource quality and the implementation of the CMS and regulatory requirements are critical to resource directed management of water quality. However, the **audit and review** process is fundamental to adaptive management in achieving realistic objectives.

**RDMWQ Project Focus**

The RDMWQ project has focused primarily on the development of policies and instruments for the management cycle highlighted by red arrows, namely visioning, classification (and RQOs), authorisation, monitoring and auditing.

**Broader Focus for Institutional Roles**

While this is appropriate and there are other projects developing policies and tools for the other elements of the cycle, the entire process must be conceptualised in order to fully understand the potential institutional and organisational roles and responsibilities. These responsibilities are explored in the next chapter.



## SECTION 3: WQM ROLES AND RESPONSIBILITIES

### 3.1 Introduction

#### **Distinction between Regulatory Framework and Implementation**

When considering roles and responsibilities, it is important to distinguish the development of policies/regulation and “custodianship” of the systems from the implementation of these policies, systems and related processes. The responsibilities for the same elements of the process described in the previous section differ fundamentally between the policy/regulation and implementation roles. A further important issue is that while the regulatory framework and associated systems (such as classification and compulsory licensing) are being developed, early (or pilot) implementation is part of the system development responsibility rather than the implementation responsibility.

#### **Initiators of Change**

The drivers of institutional change and restructuring are grounded in a number of high-level governing principles. Particularly important here are the principle of *Batho Pele* (which is both service orientated and user focussed), the high-level commitment to participatory management, and a general move within national government away from operations and towards strategic engagement, all result in the National Water Act centring on the principles of equitability, efficiency and sustainability.

#### **Catchment Management Agencies**

The purpose of establishing CMAs is to delegate water resource management to the regional or catchment level and to involve local communities in WRM decision making, within the framework of the national water resource strategy. They will take over the responsibilities for implementing WRM, except for WR infrastructure management that will still be done by other institutions. The Minister of DWAF acts on behalf of the CMA until a functioning CMA has been established.

#### **Role of DWAF within a Changing Environment**

As CMAs are progressively established and WRM implementation functions are decentralised, DWAF will increasingly focus on policy, regulation, sector coordination and institutional oversight, representing the Minister’s custodial role in WRM. The role of the DWAF Policy and Regulation (P&R) Branch will evolve over time, by delegating certain implementation functions, while the functions of the DWAF Regions will shift significantly from the current implementation through “proto-CMAs” to a more regulatory and support role once the CMAs are established.

## 3.2 DWAF Organisational Structure

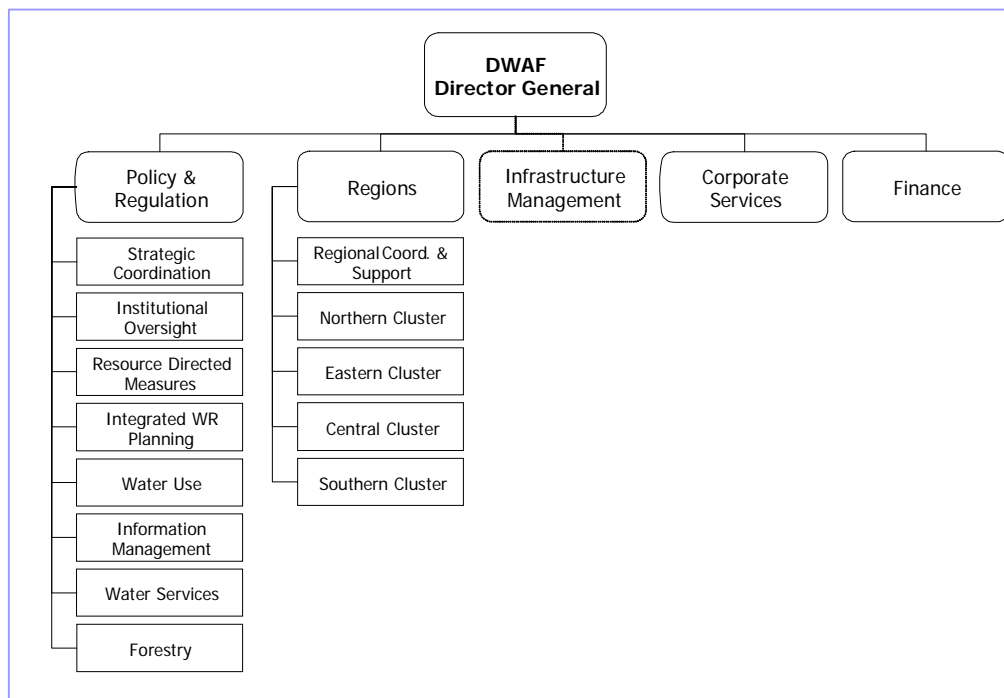
### DWAF Organisational Structure

Following the DWAF restructuring process, the organisational structure presented in Figure 3.1 has been established (although these are still undergoing some change). The relevant components in P&R have the following WRM responsibilities:

- **Strategic Coordination:** to promote coherence in the development of WRM policies and strategies, in line with DWAF priorities.
- **Institutional Oversight:** to ensure an enabling environment for water management institutions and stakeholder participation.
- **Resource Directed Measures:** provide a framework to ensure sustainable utilisation of water resources in order to meet ecological, social and economic objectives.
- **Integrated Water Resources Planning:** ensures the availability of adequate quality water through the prudent management and development of water resources.
- **Water Use:** provides an enabling environment for the management of all categories of water use, to meet the objectives of equity and efficiency.
- **Information Management:** to develop and maintains the systems and programmes for data and information acquisition, assessment and management.

The relevant components within the Regions Branch have the following WRM responsibilities:

- **Regional Coordination and Support:** promotes coherence, improves communication and ensures support to the DWAF regions in the implementation of WRM operations, in line with DWAF priorities.
- **Regional Offices:** ensure the implementation of WRM policy, strategies, regulations and programmes by DWAF and other institutions.
- **Proto-CMAs:** operate as the CMA until the CMA is properly established, performing the Initial CMA functions and water use management functions on behalf of the CMA.



**Figure 3.1: DWAF High Level Organisational Structure.**

### 3.3 Process of Institutional Decentralisation

#### Introduction

The process of institutional change and decentralisation in WRM can be viewed as having four generic phases, from the current situation to fully functional CMAs, as described below. While the phases imply a sequential process, in certain instances the DWAF decentralisation process may only occur once the CMA has already been established. This would indicate the need to adopt a “fast-track” approach from the current situation to an established CMA in these circumstances.

#### Phase 1: Current Situation / Status Quo

Phase 1 follows the reorganisation of DWAF. The P&R Branch maintains control over authorisation decision making, as well as the initial implementation of new processes while systems are being developed, such as classification and compulsory licensing. Proto-CMAs are being established in the Regions, distinct from the ongoing WRM Regulation and Support components. The intensive period of policy and methodology development can be expected to continue for the next 3 years.

The principal challenge during this phase is the establishment of stable systems and the piloting or testing of these systems. This involves an iterative process during which early systems are tested through targeted regional implementation, with increasing stabilisation through adaptation and consultation with stakeholders.

#### Phase 2: Decentralisation to the Clusters

As systems and approaches become more stable, implementation and decision making responsibility will be decentralised to the Regions at the lowest level possible. This would include RDM, compulsory licensing and water use authorisation (responsible authority) to be established in the Regions, though not necessarily the proto-CMAs.

The DWAF P&R Branch will retain the overall planning and regulatory functions and responsibilities. This process should take place over the next 2 to 5 years for most WRM functions in all Regions.

As the transfer of roles and responsibilities is initiated during this Phase, the key challenges to be overcome during Phase 2 are related to issues of capacity, coordination and management. Some Regions and the recently established proto-CMAs may not have sufficient capacity, and the institutional structures and arrangements may not be fully developed or sufficiently established to deliver on their new functions. Accordingly, institutional strengthening and capacity building within the fledgling subsidiary components becomes a key role of P&R. In this process, institutional cooperation and coordination are being developed and strengthened. Successful establishment becomes a key challenge as these systems and relationships will determine the success of decentralisation and the establishment of stable systems of information transfer and cooperation.

### **Phase 3: Establishment of CMAs**

A CMA (with an appointed Governing Board) will be established in each of the 19 water management areas (WMA), to which the proto-CMA functions (and staff) would be transferred within the first 2 years. The Cluster would continue to perform WRM implementation functions that have not been delegated to the CMA. At least 5 CMAs will be established in the next 12 months, but the last CMAs are only expected to be established in about 5 years, implying an uneven process of decentralisation and institutional development.

During Phase 3, the changing institutional arrangements and shifting roles and responsibilities result in a range of difficulties and challenges centred on coordination. Owing to their complex institutional arrangements during this Phase, strategy development and water use management can be ineffective and inefficient, and are particularly vulnerable to problems of coordination. The resulting gaps and overlaps, and the general complexity of institutional arrangements during this phase, are clearly demonstrated in the development of the CMS process and the water use management/authorisation process.

An initial function of the CMA, as stipulated by the Act, is the development of the CMS, which is a consultative and participatory process (driven through the visioning process). Developing the CMS involves the incorporation and expansion of the original Internal Strategic Perspective (ISP) for the WMA. These were developed by Integrated WR Planning (P&R) during Phase 1 or 2, also involving a consultative, participatory and "consensus-seeking" process (also through a visioning process). Particular attention still needs to be given to improving the water quality content of the different ISPs.

The roles and responsibilities of water use management are similarly widely distributed. The application process, which was a proto-CMA function during Phase 1 and 2, is transferred to the CMA in Phase 3. However, evaluation of authorisations and the authorisation process itself (Responsible Authority functions) are seated outside the CMA. It is likely that both of these functions will be transferred from Water Use (P&R) in Phase 1 and 2 to the Regions by Phase 3. These shifting roles and responsibilities are the result of the need to transfer the functions of the Responsible Authority from P&R to the CMA (which must be complete by Phase 4).

During Phase 3, this transfer process is most stretched across the institutions (i.e. there is still significant involvement of P&R at the one end of the institutional spectrum, some delegation of responsibilities to the CMA at the other end of the spectrum, and the Regional Clusters with shifting roles and responsibilities in-between).

#### **Phase 4: Fully functional CMAs**

Over the 5 to 10 years following establishment, the remaining WRM implementation functions will be transferred to the CMA, culminating with the CMA becoming the responsible authority. Certain WRM implementation functions will remain with DWAF, including the classification and compulsory licensing of catchments / water resources of national importance. Following the uneven establishment process, the development to full functionality across the country will also be very uneven. Those CMAs in capacitated WMAs will be able to accelerate their institutional development, while CMAs in less capacitated WMAs may lag in their development and still require support from DWAF Regions.

The principal challenge during this Phase is building and maintaining capacity within the subsidiary institutions, as these institutions and their engagement mature over time. Of particular significance is the need to maintain consistency and the development of the information transfers, review and feedback systems under the changing circumstances.

### **3.4 Policy and Regulatory Framework Responsibilities**

#### **Overview**

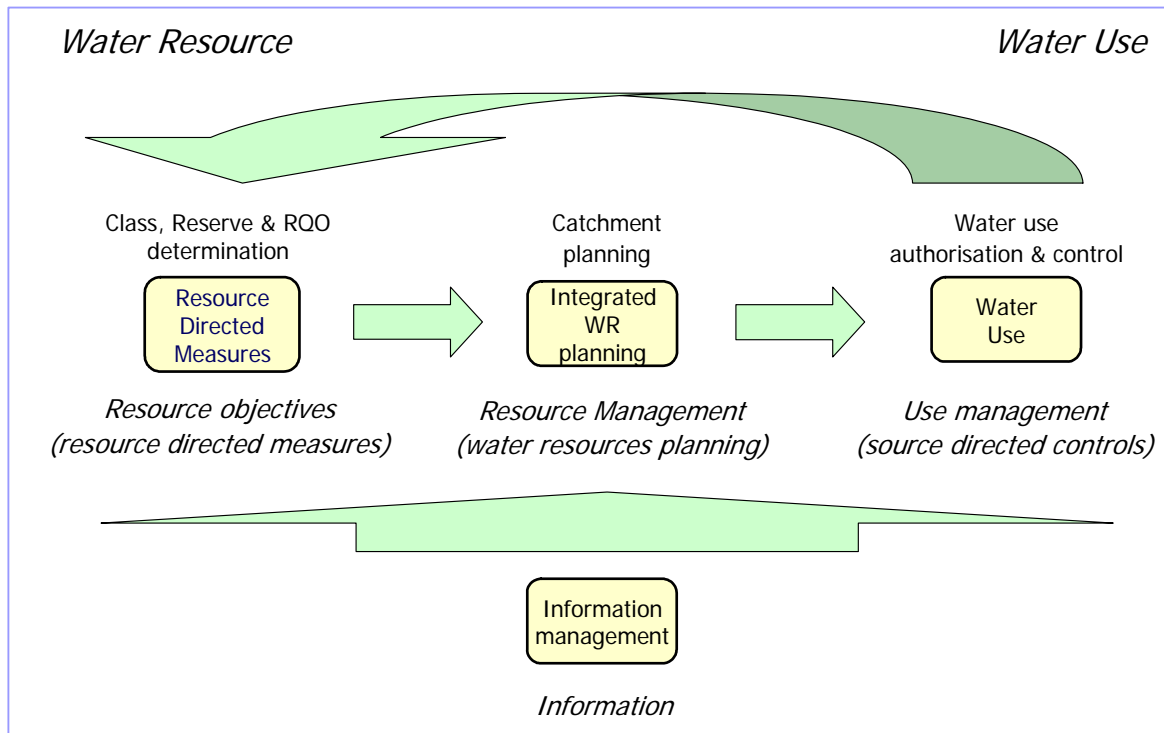
The responsibilities for developing the policy, regulations, guidelines, methodologies, auditing and review for the different parts of the catchment WRM cycle remains with the P&R Branch; the details of these responsibilities can be derived from the 2003 restructuring documents. These are broadly indicated in Figure 3.2, which distinguishes the setting of resources objectives (through class, Reserve and RQOs), from the resource management required to achieve these objectives (through catchment planning), from the management of water use (through source directed measures). All of these require water resources, water quality and related information, and involve an iterative process.

#### **Concept of lead and cooperative development**

It is quite apparent that, since these processes are fundamentally inter-dependent, the development of the regulatory frameworks associated with resource objectives, resource management, use management and information management must be developed in a cooperative manner. However, for pragmatic purposes, each must be led by a responsible component within the P&R Branch, which has overall organisation and financial accountability for the system.

#### **Policy & Regulation responsibilities**

The policy and regulatory responsibility (of the P&R Branch components) needs to be interpreted as a process of policy (and legislative regulations) development, strategy for national implementation (including prioritisation of catchments), capacity building and technical support for the implementation through Regions and CMAs, monitoring and evaluation of the implementation, and finally audit and review of the policies, strategies and/or systems. An organisational "champion" must drive each policy process, with input from a number of components in the spirit of IWRM. However, it is important to recognise that integration does not require all related functions to be combined in a single component.



**Figure 3.2: Broad Responsibilities for WRM Policy Development and Regulation.**

**Interim responsibilities**

In the short to medium term, the P&R Branch components may also be involved in functions that are related to implementation, either around authorisation or to support the development of the systems (through initial implementation / piloting / testing).

**Resource Directed Measures**

The Chief Directorate: RDM has primary responsibility for the development of the classification system, as well as the policies and methodologies for Reserve determination and determining RQOs. From a WQM perspective, RDM particularly involves determining water quality related RQOs, including Reserve requirements, linking these with the quantity, habitat and biotic requirements. This requires close alignment with the approaches and methodologies for water resources / catchment planning and system management, because in determining a balance between resource protection and resource development / use, it is necessary to understand the management implications of different classification scenarios. While the systems are in development, the CD: RDM will also play a significant role in the early implementation of the systems (with the DWAF Regions and possibly CMAs). Finally, the Minister establishes the class of a water resource and therefore CD: RDM is also responsible for making a recommendation to the Minister on a specific class for the resource in question (in consultation with other P&R Branch components).

**Water Resources / Catchment Planning**

In this regard, the various CD: IWRP directorates play a significant role with regards to input to the RDM processes driven by the CD: RDM as far as the appropriateness and achievability of resource objectives is concerned, *inter alia* through foresight and scenario analysis.

In addition, the primary responsibility for developing and supporting the implementation of approaches and tools for catchment planning to meet RQO lies with the various directorates in CD: Integrated WRM Planning.



From a water quality management perspective, this involves the determination of appropriate catchment management approaches that will achieve the water quality related RQOs, considering possible load reductions through source directed measures, changes in system operation and/or resource remediation. This must also consider the flow and system implications of various management alternatives.

All of these approaches must therefore align with both the RDM and SDM, in order to create the 'bridge' between the resource objectives and the water use management options that are necessary to achieve them. In the interim, Integrated WR Planning plays a significant role in catchment planning, together with the Regions, but this should evolve to a national planning and supporting role as local planning capacity is built in the CMAs.

#### **Source Directed Controls**

The primary responsibility for developing source directed controls that focus on the management of water use and related land activities lies with the various directorates in CD: Water Use (and particularly Dir: Resources Protection and Waste). For water quality management purposes, this involves the development and auditing of discharge standards, management practices, license conditions, general authorisations, cleaner technology requirements, registration conditions, directives, compliance monitoring and enforcement requirements. These may be general (national / regionally based) or may be catchment based to meet the resource quality and/or catchment management / planning opportunities. Because they may require the management of land use activities that are not registered or licensed by DWAF, it is also necessary to foster cooperative arrangements with local government and other sectors, as well as self regulatory and awareness approaches to mitigating impacts. In the interim, the licensing of water use will remain with CD: Water Use, until this is delegated to the DWAF Regions or CMAs (as responsible authority), based on a stable and clear regulatory framework.

#### **Monitoring and Evaluation**

The responsibility for developing and maintaining the water resources monitoring networks and information systems required to support catchment level water resources management lies with CD: Information Management. The other components represent their clients, so there is a clear interaction with the other groups within the P&R Branch as well as the DWAF Regions.

### **3.5 Implementation Responsibilities**

#### **Institutional Split and Transition**

Once policies, regulations, guidelines and methodologies are stable, their implementation is the responsibility of DWAF Regions and/or the CMAs. However, there are two complicating factors, namely (a) that not all functions will necessarily be delegated to a CMA (because some may remain with the Minister in the national interest as custodian of the resource), and (b) that delegation of some functions to a CMA will be phased to enable the CMA to build its capacity and legitimacy. Figure 3.3 presents the broad institutional responsibilities for the elements / functions of the catchment WRM process (from Figure 2.2), distinguishing those functions that will remain with DWAF, those "early" functions that the CMA will take responsibility for within the first 2 years, and those "later" functions that will be delegated to the CMA over the first 5 years.



Once established, the CMA has initial and early functions (taken up in the first 2 years) that include the CMS (and catchment visioning), institutional cooperation, stakeholder participation and empowerment (including awareness and capacity building), water use control and enforcement (including registration and initial processing of licence applications).

DWAF will continue to be primarily responsible for the classification of a water resource (together with the Reserve and RQO determination), compulsory licensing and reviewing the systems and their implementation. The CMA will support these processes and make recommendations, and may even completely drive the processes in those water resources that are not considered to be of national or strategic interest. However, the classification remains the Minister's responsibility as the trustee of the resource (but this will be achieved through a consultative "consensus seeking" process).

August 2006

## Transitional Management

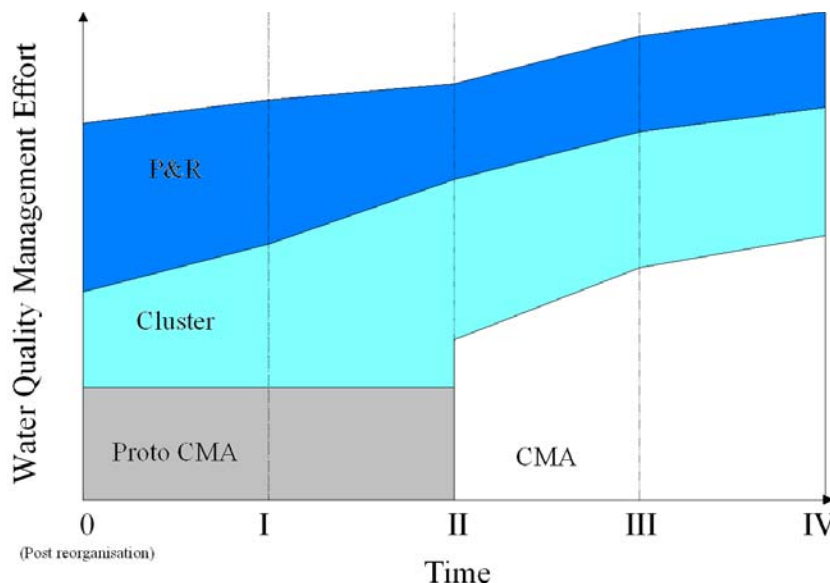
Figure 3.4 indicates the shift in water quality management resources required by different institutions during the transition process. Initially, the required resources are relatively evenly spread between P&R, Clusters and the proto-CMA. However, there will be a progressive transfer of responsibilities from P&R to the Regional Clusters as systems are stabilised.

Following the establishment of the CMA, all roles and responsibilities of the proto-CMA are transferred to the CMA along with a continuing shift of roles and responsibilities from P&R to Clusters and from Clusters to the CMA. As this decentralisation occurs, P&R takes on new responsibilities centred on auditing, support and coordination between CMA, Clusters and P&R.

Once the CMA is fully functional, it is responsible for the majority of water quality management effort. The roles and responsibilities of the Clusters have shifted further (some to the CMA, with new responsibilities coming down from P&R), with the Clusters taking on an increasing responsibility and capacity in collaboration, information transfer, review and assessment. The functions of P&R have been further focussed and narrowed, with roles and responsibilities now centred on oversight and support.

## Changing Responsibilities During Institutional Decentralisation

The preceding description has outlined the primary responsibilities for water resources management. Table 3.1 takes these broad areas and further disaggregates responsibilities for policy, regulation and implementation functions during the institutional decentralisation process.



**Figure 3.4: Evolving responsibilities and resources for catchment based water quality management.**

**Table 3.1: Summary of roles and responsibilities for WRM functions (focus on RDMWQ).**

		PHASE			
		I	II	III	IV
Visioning	Developing visioning guidelines [Catchment visioning guideline]	P&R: P&SC	P&R: P&SC	P&R: P&SC	P&R: P&SC
	Catchment level visioning	P&R: IWRP / RO	P&R: IWRP / RO	CMA / RO	CMA
Resource Directed Measures	RDM system/ methodology [RWQO method]	I P&R: RDM	II P&R: RDM	III P&R: RDM	IV P&R: RDM
	Developing catchment models [RWQO modelling]	P&R: RDM / WRPS	P&R: RDM / WRPS	P&R: RDM / WRPS	P&R: RDM / WRPS
	Classifying a water resource	P&R: RDM / RO	RO	RO	ROs/ CMA <sup>1</sup>
	Determining a Reserve	P&R: RDM / RO	RO	RO	CMA
	Assessing RQO	P&R: RDM / RO	RO	RO	RO/ CMA <sup>1</sup>
	Approving a Class, Reserve and RQO (Minister)	P&R: RDM	P&R: RDM	P&R: RDM	P&R: RDM
		I P&R: IWRP	II P&R: IWRP	III P&R: IWRP	IV P&R: IWRP
Water Resource Management Strategies	National Water Resource Strategy (NWRS)	P&R: P&SC (all)	P&R: P&SC (all)	P&R: P&SC (all)	P&R: P&SC (all)
	Developing the Internal Strategic Perspective	P&R: IWRP / RO	P&R: IWRP / RO	<i>replaced by CMS</i>	
	Developing Catchment Management Strategy (CMS)	<i>not developed yet</i>		CMA	CMA
	Water Resource / Quality Management Plan	P&R: IWRP/ RO	RO	CMA	CMA
		I P&R: Water Use RO: Proto- CMA	II P&R: Water Use RO Proto- CMA	III P&R: Water Use CMA	IV P&R: Water Use CMA
Authorisation	Authorisation methodologies [ACWUA DSS tool]	P&R: Water Use RO: Proto- CMA	P&R: Water Use RO Proto- CMA	P&R: Water Use CMA	P&R: Water Use CMA
	Application Process	P&R: Water Use P&R: Water Use	RO/ P&R: Water Use P&R: Water Use	RO/ P&R: Water Use RO	CMA
	Evaluation	P&R: Water Use P&R: Water Use	RO/ P&R: Water Use P&R: Water Use	RO/ P&R: Water Use RO	CMA
	Authorisation	P&R: Water Use P&R: Water Use	RO/ P&R: Water Use P&R: Water Use	RO/ P&R: Water Use RO	CMA
Compulsory Licensing		P&R: WA / RO	P&R: WA / RO	RO	RO/ CMA <sup>2</sup>

<sup>1</sup> For resources that are not of national or strategic significance, implementation of the Class and the setting of the RQOs can be delegated to the CMA

		I	II	III	IV
<b>Control and Enforcement</b>	Control and Enforcement strategies and tools	P&R: WU / OPS	P&R: WU / OPS	P&R: WU / OPS	P&R: WU / OPS
	Control	RO: Proto-CMA	RO: Proto-CMA	CMA	CMA
	Enforcement	P&R: WU / RO	ROs	ROs	CMA
	Directives	P&R: Water Use	P&R: Water Use	RO	RO / CMA
	Self Regulation	P&R: WU / RO	RO / Proto-CMA	CMA	CMA
<b>Monitoring</b>	Awareness creation	RO / Proto-CMA	Proto-CMA	CMA	CMA
	Monitoring methodologies [Guideline for review and monitoring]	I P&R: RDM / Info. Man.	II P&R: RDM / Info. Man.	III P&R: RDM / Info. Man.	IV P&R: RDM / Info. Man.
	Sustainable development monitoring	P&R: RDM Info. Man.	P&R: RDM, Info. Man. (with RO)	P&R: RDM, Info. Man. (with RO)	P&R: RDM, Info. Man. (with CMA)
	Water Resource monitoring	RO	RO	RO/ CMA	CMA
	Compliance monitoring	Self Reg./ RO	Self Reg./ RO	Self Reg./ CMA	Self Reg./ CMA
<b>Review</b>	Review and audit approaches [Guideline for review and monitoring]	I P&R	II P&R	III P&R	IV P&R
	Authorisation and licensing	P&R/ RO	RO	RO/ CMA	CMA
	CMSs (ISP) and CMAs	P&R	P&R	RO	RO
	Classification	P&R: RDM	P&R: RDM	P&R: RDM	P&R: RDM
	Strategic review	P&R	P&R	P&R	P&R

<sup>2</sup> Compulsory licensing may be delegated to the CMA if resources are not deemed to be of national significance.

## 3.6 Responsibilities for RDMWQ Management Instruments

### Responsibilities

Following the above allocation of responsibilities, the RDMWQ management instruments may be superimposed on the management process of water resources, as indicated in Figure 3.5. Ideally, the identified Directorates and/or Regional Offices, or in future the Catchment Management Agencies (CMAs), will be responsible for specific functions in either a lead or contributing role, and should take the responsibility of applying and implementing the relevant instruments.

Table 3.1 indicates (in red) the responsibilities for the policy process leading to the development of the different management instruments and then the implementation of those instruments, in accordance with the accepted DWAF structure, as approved by the Director General in 2003. While all of these instruments need to be developed and implemented jointly by a number of components within DWAF or the CMA, each process must have a lead individual or organisation that takes responsibility for ensuring cooperation and delivering the output.

While the lead responsibility may be clear, there are a number of subtle differences between the responsibilities and degree of involvement related to the development of RWQOs and the process of catchment planning to achieve them through water quality related source directed controls, particularly in terms of the interfaces between them. This further develops the lead responsibility discussion in Section 3.4 above, and addresses the implementation of the management instruments within this context.

### RDM tools and implementation

While the lead responsibility for the development of methodologies for RDM (including the development of RWQOs) remains with D:RDM, the approaches, tools and models must be consistent with and interface with the tools and models that are used in catchment assessment and planning. This is because it is only through effective catchment planning and water use management that these objectives can be achieved. It is therefore appropriate for Integrated WR Planning (specifically WRPS) to work in partnership and support RDM through the development of relevant catchment planning models that may be used both to develop RQOs and to conduct catchment level water quality assessments.

While implementation of these tools should be through the DWAF Regional Offices or CMA, it is critical that P&R should provide adequate support for this process. Here, D:RDM should play a key role in supporting the implementation of the process, while D:WRPS should support the technical implementation of the models they have developed (in order to ensure organisational efficiency).

### Catchment planning and authorisation

There is also an important interface between catchment level planning and the management of waste related water use (for both point and nonpoint sources). While the approaches and models for translation of RWQO into management objectives and acceptable loads at a catchment level should be led by Integrated WR Planning (WRPS), the development of discharge standards and best practice at a source level should be led by Water Use (RP&W).

There must however be clear alignment and consistency in the catchment water quality models (for catchment planning) and those used to evaluate local source related impacts (for authorisation purposes).

### 3.7 Challenges during the Institutional Decentralisation

#### Initial Phase

Initially, while the systems are being implemented and there are few CMAs, DWAF can effectively manage the implementation of RDMWQ. The management cycle involves RDM (classification system and implementation), Integrated Water Resource Planning (strategy development), Water Use (authorisation/ regulation) and Information Management (monitoring/ review), with Strategic Coordination assuming oversight of the process.

These P&R components that are responsible (supported by the Regions) are relatively well capacitated and resourced (generally supported by external service providers), and coordination is efficient.

#### Decentralisation with DWAF

As responsibilities shift to the DWAF Regions (including the proto-CMAs), problems may be introduced because capacity and expertise tends to be more limited at these levels. Although stable systems should have been established, detailed institutional processes and dynamics that are based on clear differentiation of roles and responsibilities may not yet have been fully developed.

The move from piloting to widespread implementation of policies, strategies and plans may therefore lead to some degree of institutional instability, unless this process is carefully phased and supported by broad institutional capacity building. However, as both the proto-CMA and the Regions are still contained within DWAF, collaboration, communication and capacity is more easily achieved.

#### CMA establishment

CMA establishment introduces a range of potential complications; for example, CMAs will be progressively established and will be taking on key planning responsibilities within the WMA linked to the CMS. In effect, the CMAs become the interface between the RDM and the high-level visioning process on the one hand, and authorisation on the other.

The CMAs will be new, young organisations with limited capacity and resources (although transfer of staff and resources from proto-CMA does strengthen the new CMAs). In addition, they will adopt a participative and cooperative approach to WRM, which needs to link into DWAF processes.

Particular challenges are related to: the establishment of capacity in, and the flow of resources to the new CMAs; the development of systems of mentoring, decision making and information flow between the CMAs and DWAF; and clarity on the roles and responsibilities of the CMA within DWAF's WRM process.

#### Fully functional CMA

Once CMAs are fully established, the systems, capacity and resources should become relatively stable. The staff within the CMA should have grown as capacity is improved, and roles and responsibilities are more clearly defined. Capacity building of the CMA staff over 5 years should ensure that the institution evolves and the roles and responsibilities are refined according to the management needs and requirements of the WMA.

The problems of the transitional phases should have been addressed. The major challenge is developing the capacity of enough people in the water sector to support 19 CMAs.

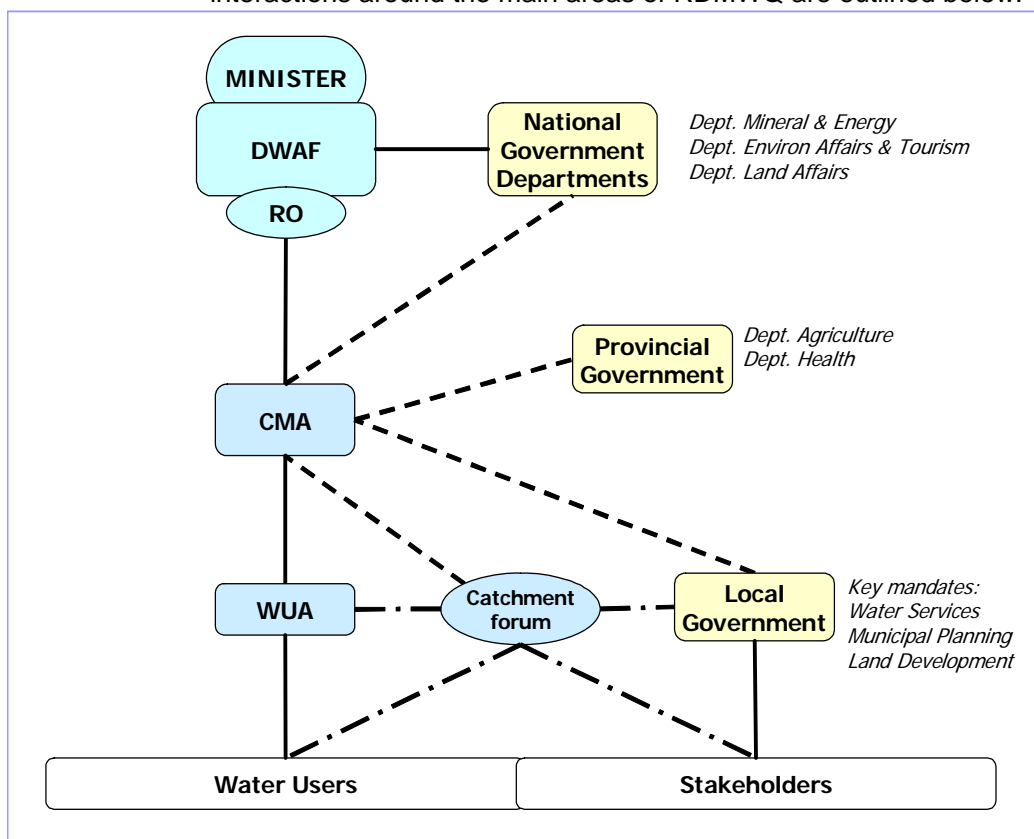




## SECTION 4: INSTITUTIONAL ROLES

### Introduction

Water quality management inherently requires the collaborative management of activities and resources that are within the mandate of other government departments or are the property of private sector entities. Figure 4.1 indicates the key institutions that are relevant for WQM-RD, with the CMA / DWAF as the focus of this management attention. Institutional interactions around the main areas of RDMWQ are outlined below.



**Figure 4.1: Primary institutional relationships related to RDMWQ.**

#### Key external Stakeholders

In addition to water users and stakeholders, key institutional role players include:

- National government departments
- Provincial Government
- Local Government
- Water User Associations (WUA)
- Catchment Forums

The following discussion indicates how these entities need to be brought into the RD WQM environment.

#### Resource Directed Measures

The process of classification is consultative (a “consensus seeking process”) and requires inputs from other national government departments and from interested and affected local and national agencies (e.g. WUA, Forums, national representative bodies). DWAF achieves this consultation through the CMA / proto-CMA, which functions as the locus for the consultation process.

## **Water Resources / Catchment Planning**

The development of a CMS is a participatory process that is based on catchment visioning. There is a legal requirement within the NWA that the CMS must take account of any relevant national or regional plans that have been prepared in terms of any other law, including any development plan adopted in terms of the Water Services Act. This implies a requirement for them to be consistent with Integrated Development Plans, Water Services Development Plans, and Provincial Growth and Development Strategies/Plans.

Accordingly, the involvement of regional and national government, and local agencies (e.g. local government, Water User Associations and Forums) must be an integral component of the process. Engagement with Provincial Government also forms an important component of the review, assessment and harmonisation of the CMS. Facilitation of this relationship is principally undertaken by the CMA.

## **Source Directed Measures**

The licence application process requires consultation at a local level with water users and dischargers (including local government). Similarly, license evaluation and authorisation functions require consultation and cooperation with local government, and with regional and national government departments. The authorisation process comments on, and is informed and influenced by, other processes such as the development of the Environmental Management Plan Reports within the mining sector as a requirement of the Department of Minerals and Energy (DME), or the requirements of the Environmental Conservation Act (ECA) of the Department of Environmental and Tourism (DEAT) for waste disposal (e.g. landfills).

In order to give effect to the water management directives of national / regional government, the enforcement and control functions of the CMA require the establishment of cooperative governance frameworks with the local agencies (local government, justice, law enforcement).

Establishment of the water management directives, and the harmonisation and consistency of these directives with other management and control instruments within the WMA requires close cooperation with the national and regional bodies responsible for development and implementing of management and control measures in the WMA (most commonly, these will consist of DEAT, Department of Agriculture (DoA), Local and Regional Government).

## **Monitoring**

Sustainable development monitoring requires consistency with and input from DEAT and various levels of national strategy in sustainable development.

Water Resource Monitoring requires close cooperation with Local Government, WUAs, forums and individual users/ dischargers.

Compliance monitoring and monitoring of the water management institutions are largely internal functions conducted at varying levels within the water resource management institutions (CMAs, Regional Clusters, P&R).

Development of cooperative governance relationships are not a pre-requisite, although the involvement of local, provincial and national government and other agencies in the appropriate review process could be beneficial.

## SECTION 5: IMPLEMENTING THESE RESPONSIBILITIES

### 5.1 Capacity Building

#### Interpretation of Capacity

Capacity is a complex issue that goes beyond simple human resources capacity, and includes both organisational capacity and institutional capacity. Institutional capacity includes:

- *Policy and legal capacity.* This capacity refers to the enabling framework of water related policy, legislation, regulations, and guidelines and tools flowing from these.
- *Planning and managerial capacity.* This is critical if proto-CMAs / CMAs are to make the right decisions and determine their own destiny. Planning has several dimensions including internal strategic planning and external service / functional delivery, planning and prioritisation.
- *Organisational and procedural capacity.* This capacity refers to the structure of an organisation and includes all of its internal processes. CMAs face the challenge of organizing themselves to perform the functions of the Responsible Authority and to harmonise, coordinate and ensure consistency of water management activities with Regional Clusters and P&R. These varying functions will require different structural responses, and different sets of procedures.
- *Financial capacity.* Without financial capacity, CMAs will be unable to act effectively on their plans, and will fail in the implementation of policy, with a consequent failure to deliver the services that are expected of them. Financial capacity refers to the processes that secure and manage funds, and the mobilization of the funds themselves to provide cost-effective services.
- *Human and infrastructural capacity.* Human capacity has to do with people filling posts, and having the correct mix of skills, abilities and experience to undertake their defined tasks effectively and efficiently. Infrastructural capacity refers to matters such as transport, offices, computers and IT services, telecommunications and security services. All of these are required to underpin the efficient and effective functioning of an organisation.
- *Networks and associations.* Very few organisations can operate in isolation, and CMAs are no exception to this rule. Networks provide support and coordination, information and experience, policy and mandate, and funds.
- *Stakeholders.* In the CMA case, stakeholders (users, effluent dischargers and affected parties) should take ownership of the resource through the catchment visioning process and the CMS. For CMAs, the users and dischargers are an important source of income, and hence sustainability. In effect they are the market for the services that the CMA provides. Importantly, this 'market' also helps to ensure that CMAs deliver the range of quality services that are needed by users.

### **Capacity Building and Institutional Change**

As described above, a wide range of significant capacity challenges are associated with the changing institutional structures and arrangements, and the shifting roles and responsibilities during the decentralisation of WMA functions with the establishment of CMAs. These are primarily related to the following areas of capacity:

- Development of new institutions and the concomitant development of new structures, relationships, operating systems and processes,
- Introduction of new people with associated issues of appropriate levels of skills, expertise, experience and attitude or approach, and
- Limited resources.

In order to successfully address these challenges and surmount the associated hurdles, there will be a need for significant institutional and personnel capacity building and the establishment of stable operating systems. Accordingly, the institutional change process should include:

- A carefully structured and phased plan for decentralisation;
- Coherent process of decentralisation linked to the development of comprehensive and effective new operating systems;
- The establishment of stable systems and procedures; and
- Implementation of simple administrative systems, introducing as much routine as possible.

## **5.2 Key Institutional Considerations for Implementation**

### **Institutionally Orientated Approach**

Importantly, the implementation of RDMWQ should be informed by the available capacity and resources within the WMA (DWAF or CMA) and should strive to achieve maximum simplicity. In those situations where RQOs are being met, the approach should be to: a) adopt a routine process to meet effluent standards at minimum cost, b) discourage exceptions and relaxation of requirements, and c) base water management processes and decisions on the hierarchy of WQM.

Where RQOs are threatened or exceeded, the strategy that is chosen to address these issues must be based on a clear assessment of the problem and its associated issues, followed by appropriate actions and/or interventions that are best suited to rectify the problem promptly. It is important to ensure that the processes of problem-solving and decision-making are transparent, prompt and cost-effective. It is not acceptable to allow problems to linger for long time periods without adequate management attention.

Typical sets of actions / measures could include:

- Compulsory licensing;
- Ad hoc licensing;
- Rehabilitation or mitigation;
- WDCS; and
- Increasing levels of cooperation and awareness.

The choice of which measures should be employed depends on the specific problem and the nature of the associated issues, on the economic, social and environmental nature and dynamics of the WMA, and on the institutional requirements and constraints. A particular approach can therefore not be prescribed, but the list provided above contains the necessary tools to address the issues under most circumstances.

## **5.3 Mechanisms to Support Implementation**

### **Institutional Cooperative Mechanisms**

The entrenchment of an effective institutional approach to RDMWQ requires the development of key institutional mechanisms, both within DWAF and with other institutions. These may include issues of:

- Governance accountability and representation;
- Policy alignment;
- Coordinated strategy development;
- Institutional structures;
- Organisational design;
- Delegations and contracting;
- Financial arrangements;
- Consultation and comment processes;
- Information sharing and exchange; and
- Awareness capacity building and support.



## SECTION 6: REFERENCES

- Department of Water Affairs and Forestry (DWAF) & Water Research Commission (WRC). 1996. *The Philosophy and Practice of Integrated Catchment Management: Implications for Water Resource Management in South Africa*. WRC Report No TT 81/96. Water Research Commission, Pretoria, South Africa. 139 pp.
- Department of Water Affairs and Forestry (DWAF). 1997. *White Paper on a National Water Policy for South Africa*. Department of Water Affairs and Forestry, Pretoria, South Africa. 37 pp.
- Department of Water Affairs and Forestry (DWAF). 2002a. *National Water Quality Framework Management Policy*. Water Quality Management Series MS 7. Department of Water Affairs and Forestry, Pretoria, South Africa. 68 pp. <http://www.dwaf.co.za>.
- Department of Water Affairs and Forestry (DWAF). 2002b. *National Water Resource Strategy: Summary*. Government Printer, Pretoria, South Africa.
- Department of Water Affairs and Forestry (DWAF). 2003a. *A Guideline to the Water Quality Management Component of a Catchment Management Strategy*. Water Quality Management Series, Sub-Series No. MS 8.2. Edition 1. Department of Water Affairs and Forestry, Pretoria, South Africa.
- Department of Water Affairs and Forestry (DWAF). 2003b. *A Guide to conduct Water Quality Catchment Assessment Studies: In support of the Water Quality Management Component of a Catchment Management Strategy*. Water Quality Management Series, Sub-Series No. MS 8.3, Edition 1.. Department of Water Affairs and Forestry, Pretoria, South Africa.
- Department of Water Affairs and Forestry (DWAF). 2003c. *Development of Resource Directed Water Quality Management Policies: Inception Report*. Water Resource Management Series, Sub-Series No. MS 1.1, Version 1. Department of Water Affairs and Forestry, Pretoria, South Africa.
- Department of Water Affairs and Forestry (DWAF). 2004a. *Development of Resource Directed Water Quality Management Policies: Generating a Catchment Vision and Associated Goals to Inform the Water Allocation Process in South Africa*. Water Resource Planning Systems, Sub-Series No. WQP 1.4.2, Draft. Department of Water Affairs and Forestry, Pretoria, South Africa.
- Republic of South Africa. 1996. *Constitution of the Republic of South Africa (Act No. 108 of 1996)*. ISBN 0-620-20214-9.
- Republic of South Africa. 1998. *National Water Act (Act No. 36 of 1998)*. Government Printer, Pretoria, South Africa.
- Van Wyk JJ, P Moodley, and P Viljoen, 2003. Towards Balancing Water Resources Protection with Water Resource Use and Development. Integrated Water Quality Management in South Africa. 2nd International Symposium on Integrated Water Resource Management (IWRM): Stellenbosch, South Africa.











ISBN No. 0-621-36791-5

RP181/2006