Guidelines for CATCHMENT MANAGEMENT STRATEGIES

Towards equity, sustainability and efficiency

First Edition

Department of Water Affairs and Forestry
In conjunction with the Association for Water and Rural Development (AWARD), Zinkwazi Consulting & Water for Africa.

water & forestry
Department
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REPUBLIC OF SOUTH AFRICA

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Guidelines for the development of Catchment Management Strategies: Towards equity, efficiency and sustainability

Department of Water Affairs and Forestry

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Acronyms

BHNR	Basic Human Needs Reserve
CAS	Catchment Assessment Study
CD	Chief Directorate
CDF	Community Development Forum
CMA	Catchment Management Agency
CMC	Catchment Management Committee
CMF	Catchment Management Forum
CMS	Catchment Management Strategy
CSC	Catchment Steering Committee
DDG	Deputy Director General
DEAT	Department of Environmental Affairs and Tourism
DMC	Disaster Management Centre
DME	Department of Minerals and Energy
DoA	Department of Agriculture
DPLG	Department of Provincial and Local Government
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EIP/EMP	Environmental Implementation Plan/ Environmental Management Plan
ER	Ecological Reserve
FBW	Free Basic Water
GA	General Authorisation
GIS	Geographic Information System
GL	Guideline
HDI	Historically Disadvantaged Individual
I&AP	Interested and Affected Parties
IAP2	International Association for Public Participation
IBT	Inter-Basin Transfer

ICM	Integrated Catchment Management
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IWMP	Integrated Waste Management Plan
IWRM	Integrated Water Resources Management
IWRMP	Integrated Water Resource Management Plan
LG	Local Government
MAIS	See WRMAIS
MC	Management Class
MCDA	Multi-Criteria Decision Analysis
MSA	Municipal Systems Act (No 32 of 2000)
NDMC	National Disaster Management Centre
NDWAF	National Department of Water Affairs and Forestry
NEMA	National Environmental Management Act (No. 107 of 1998)
NEPAD	New Partnership for African Development
NGO	Non-Governmental Organisation
NPS	National Pricing Strategy or Non Point Sources
NWA	National Water Act (No. 36 of 1998)
NWRCS	National Water Resource Classification System
NWRMC	National Water Resource Monitoring Committee
NWRS	National Water Resource Strategy
PAIA	Promotion of Access to Information Act (No. 2 of 2000)
PAJA	Promotion of Administration Justice Act (No. 3 of 2000)
PDI	Previously Disadvantaged Individual
PGDS	Provincial Growth and Development Strategy
RDM	Resource Directed Measures
RHP	River Health Programme
RO	Regional Office
SADC	Southern African Development Community
SDC	Source Directed Controls
SFRA	Stream Flow Reduction Activities
STEEP	Social, Technological, Environmental, Economic and Political
WAP	Water Allocation Plan
WARMS	Water Authorisation and Registration Management System
WAS	Water Allocation Schedule
WC/WDM	Water Conservation and Water Demand Management
WDCS	Waste Discharge Charge System
WDM	Water Demand Management
WMA	Water Management Area
WMI	Water Management Institution
WRC	Water Research Commission
WRFMC	Water Resource Functional Management Committee
WRIM	Chief Directorate: Water Resources Information Management
WRM	Water Resources Management
WRMAIS	Water Resources Monitoring and Assessment Information Systems
WRSAS	Water Resource Situation Assessment Study
WSA	Water Services Act (No. 108 of 1997)
WSDP	Water Services Development Plan
WSP	Water Service Providers
WUA	Water User Association

Foreword

The establishment of catchment management agencies is an important building block in the institutional arrangements for managing South Africa's water resources. The main aim of setting up catchment management agencies is to decentralise responsibility for managing water resources so that water users and the public at large can play their part. The Department of Water Affairs and Forestry is making good progress with these new water management institutions. The Governing Board of the Inkomati Catchment Management Agency is already in place and working. A further seven agencies have been established through formal announcement in the Government Gazette, and we are expecting many to have their governing boards in place during the 2007/08 financial year.

The preparation of a catchment management strategy is described in section 80 of the National Water Act, 1998 (Act No 36 of 1998) (the Act) as one of the initial functions of each catchment management agency. This means that the authorisation and instruction for the agencies to prepare their strategies comes directly from the Act. However, the Act also allows me to prepare guidelines for the preparation of catchment management strategies. I see the establishment of these guidelines as an essential measure to ensure that all the new institutions - some of which will have staff that are relatively new in the Water Sector - work from the same platform of understanding, and so that consistency can be achieved among all the strategies in all water management areas throughout the country.

It is crucial that these catchment management strategies align with the key programmes of Government, particularly in support of job creation, poverty eradication and sustainable social and economic development.

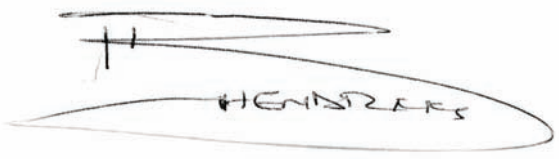
The publication of these guidelines comes at exactly the right time to guide the work of the eight new agencies in preparing their first catchment management strategies. The guidelines provide a description of the overall framework for integrated water resource management, and much effort has been put in to capture all the water resources management processes and aspects into one document.

Although the guidelines have been prepared in extensive consultation with staff of my Department and a range of external stake holders, it would be naïve to believe that they are now carved in stone. The guidelines are not a set of rigid prescriptions and recipes that must be slavishly followed, because I am well aware that new issues will arise as the agencies begin to prepare their strategies and, after all, we live in a country characterised by variability and extremes. We should therefore regard this publication as the first generation guidelines, and accept that there will be more editions to come as we learn from our experiences.

I would, however, like to emphasise that the preparation of a catchment management strategy should be a collaborative process - in the first place between the agency and its stake holders, as the Act requires and as the guidelines explain. The strategy must also address the water use requirements covered in other planning instruments such as Integrated Development Plans and Water Services Development Plans which Local Authorities are obliged to prepare, as well as the Provincial Growth and Development Strategies prepared by Provincial Governments. Collaboration between the agency and my Department is equally important. Each strategy will describe some activities that will have to be performed jointly by my Department and the catchment management agency, especially during the early days as the agency is progressively empowered and authorised to take on more responsibilities.

This transitional period will have to be carefully described, managed and timed but, irrespective of who is responsible for the various activities when the strategy is prepared, I shall expect each strategy to be a comprehensive and integrated account of everything that needs to be done to ensure that our precious water resources are optimally managed.

I trust that these guidelines will equip the group of recently-established catchment management agencies to prepare their first catchment management strategies. I look forward to hearing about the issues that arise as the guidelines are used in earnest, so that we can refine and improve them, and so that the agencies that will be established in the years to come can profit from our learning experiences.



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MINISTER OF WATER AFFAIRS AND FORESTRY
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1

Introduction and Orientation

Guidelines for the development of Catchment Management Strategies in South Africa

1.1 Introduction:
The reason for these guidelines and what this chapter sets out to describe

In South Africa, a vital component of Integrated Water Resources Management (IWRM) is the progressive devolution of responsibility and authority over water resources to Catchment Management Agencies, or CMAs. The scale of operation for the CMAs is that of Water Management Areas, or WMAs (National Water Act (NWA); Act 36 of 1998). In terms of the National Water Resource Strategy, 19 WMAs have been delineated in South Africa (Figure 1.1), with CMAs in various stages of establishment (see Appendix 1). The management of water resources is to be detailed in Catchment Management Strategies (CMS) that must be developed for each of the 19 WMAs. Section 10(1) of the NWA makes provision for the drafting of guidelines to facilitate the development of these strategies (see Box 1.3).

Over the past decade, the Department of Water Affairs & Forestry (DWAF) has developed a suite of guideline documents aimed at facilitating IWRM in South Africa (Appendix 2). The following guidelines for the development of a CMS are part of this process. However, they differ somewhat from many of the existing guidelines in that they do not deal with a single issue or topic. In effect they draw on all aspects of IWRM and aim to present an overview of the different strategic processes associated with managing water resources at the level of the WMA.

The aims of the CMS guidelines are:

- to provide an overview of IWRM in South Africa and how it can be implemented at the level of the WMA;
- to provide a framework for developing a CMS;
- to create an understanding of the contents and level of detail needed in a CMS;
- to support an understanding of the processes for developing the CMS (sequence, potential time frames and potential resource requirements); and
- to provide an overview of the approval process (the criteria, process and time frames)

This chapter introduces the guidelines by providing an orientation to the concept of strategic planning and the legislative requirements for a CMS, as well as a route map for finding one's way around these guidelines.

1.2 Why strategic planning?

Strategies have immense power in that they shape how things can and will be done. A strategy is not just about steps to achieve something but also about creating shifts in the way things are done. In South Africa this means explicitly addressing the transformation ideals of achieving **equity, sustainability** and **efficiency**.

Strategies should set the scene, and ask the questions (1) what does this mean? And, (2) what can be done about it? For example, a particular strategic approach is required to bring about equitable water allocation to ensure that the available water is used to reduce the current gap in equity. Potentially, a number of strategic approaches (such as Water Conservation and Demand Management described in Guideline 6.6) can achieve this prior to undertaking compulsory licensing. The authority to do this needs to be given by the CMS. This discussion illustrates that strategic approaches are aimed at creating the shifts necessary to bring about the intentions of the National Water Act (1998). The definition of a strategy, as used in this guideline, is given in Box 1.1.

Strategic planning is needed to honour our commitment to "Some, for all, forever, together". This means addressing issues of equity, sustainability and efficiency.

Figure 1.1
Map of the 19 Water Management Areas – or WMAs – in South Africa. Each WMA will be administered by a Catchment Management Agency to whom IWRM functions will be progressively delegated.

1.3 What is a Catchment Management Strategy in the South African context?

It is important to note from the outset that the development of a CMS by a CMA is a legislative requirement as set out in the NWA (most of the legislative framework for the CMAs is given in Chapter 7 of the National Water Act, and for the CMS in Chapter 2, Part 2 of the National Water Act). In accordance with Chapter 2, Part 2 of the NWA, the CMAs are responsible for the protection, conservation, development and management of the water resources at the WMA level. One of the first functions of water resource management for the CMA will be the development of a CMS, described in Box 1.2. Indeed, S 8(1) of the NWA states: "*A catchment management agency contemplated in Chapter 7 must, by notice in the Gazette, establish a catchment management strategy for the protection, use, development, conservation, management and control of water resources within its water management area*"

Initial functions of CMAs

The NWA S 80 describes the initial functions of a catchment management agency as:

1) *to investigate and advise interested persons on the protection, use, development, conservation, management and control of the water resources in its water management area;*
2) *to develop a catchment management strategy;*
3) *to co ordinate the related activities of water users and of the water management institutions within its water management area;*
4) *to promote the co ordination of its implementation with the implementation of any applicable development plan established in terms of the Water Services Act, 1997 (Act No. 108 of 1997); and*
5) *to promote community participation in the protection, use, development, conservation, management and control of the water resources in its water management area.*

Legislation

What is a strategy? **Box 1.1**

- Strategies are high-order plans that set the strategic action to be followed to achieve medium-to-long-term goals. They should complement a policy and be given effect through detailed plans (such as business plans and work schedules).
- The working definition used in this guide is that a strategy is a means of translating policy into action. The practical application of the concept of a strategy for water resources management varies widely. This guide defines a catchment management strategy as a set of medium- to long-term action programmes to support the achievement of sustainability, equity and efficiency through Integrated Water Resources Management.
- In this sense, the CMS is the interface between policies and projects. Although strategic plans developed at national (National Water Resources Strategy (NWRS)), regional (CMS) and sectoral levels might differ in detail, coherency must be sought. Thus, there should be common thread from the local level strategy to the national strategy.

1.4 Some issues of terminology:
Water Management Areas, catchments, water resources and their interlinkages

At times the use of different terms regarding water resources management contained in the various policies, acts and guidelines can be confusing. In South Africa, some documents refer to catchments (the geographical unit including the water resources and the land that they drain), whilst others use the term "*water resources*", which implies just the rivers, groundwater resources, estuaries, lakes, wetlands and dams and not the surrounding lands. This we see in the terms Catchment Management Agencies, Catchment Management Strategies, Catchment Management Plans and Integrated Water Resources Management. These differences partly reflect documents being developed at different times as ideas evolved but more importantly it underscores the fact that IWRM cannot be de-coupled from the surrounding land uses. Thus whilst strictly speaking the CMA is in the business of IWRM, this cannot be achieved without consideration for land- and water-based activities that impact on the resource base. Indeed, this is recognised in the NWA (S 6(1)) which states that the NWRS must "*promote the management of catchments within a water management area in a holistic and integrated manner.*" The CMS is the tool to do this. Thus we suggest that a rational approach is taken so that such terms are interpreted with a view to meaningfully achieve wise water use.

What may be confusing for some is that a CMS is developed as a strategy for a whole WMA, including all its constituent catchments and sub-catchments. In the case of a coastal WMA we may find various small river systems all draining independently into the sea. We still refer to the strategy for the whole WMA as a catchment management strategy. However, dealing with this situation may vary from the approach used for catchments in which rivers converge into one (see Section 2.6 and GL 6.4).
(note: Abbreviation GL refers to the Guideline numbers in Chapter 6)

Catchment Management Strategies in South Africa Box 1.2

A CMS, developed by a CMA, is a statutory document which provides the vision and the strategic actions to address integrated water resources management. It is based on the best available information. A framework for the CMS is given by the National Water Resource Strategy (NWRS, 2004).

What must the CMA do with respect to the CMS? (see also Box 1.3 and 2.2)

- Part 2 of the NWA requires every CMA to progressively develop a CMS for the water resources within its water management area.
- In the process of developing this strategy, a CMA must seek co-operation and agreement on water related matters from the various stakeholders and interested persons.

T**he CMS must:**

- not be in conflict with the NWRS;
- be reviewed from time to time;
- include a water allocation plan. In this respect, a CMS must set 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.

1.5 An overview of the overall process

In accordance with the NWA, Chapter 2, Part 2 (S9), a CMS must achieve certain things (see Box 2.2). In view of these legislative requirements, the overall sequence for the development of a strategy was conceptualised in three parts (Figure 1.2). This does not necessarily imply that they have to follow strictly in order but it provides the view that the CMS needs to consider what things are like now, what they might be in the future, what the vision is of the catchment inhabitants and strategic ways of getting there.

It is important to note right from the start that the NWA (S 10(2)) clearly stresses the need for consultation with various role-players and stake holders in the development of the CMS (Box 1.3). This section of the Act also emphasizes the role of the Minister, as custodian of the nation's water resources. Note also that the Act (S 11) requires that "*The Minister and the catchment management agency concerned must give effect to any catchment management strategy established under this Part when exercising any power or performing any duty in terms of this Act*".

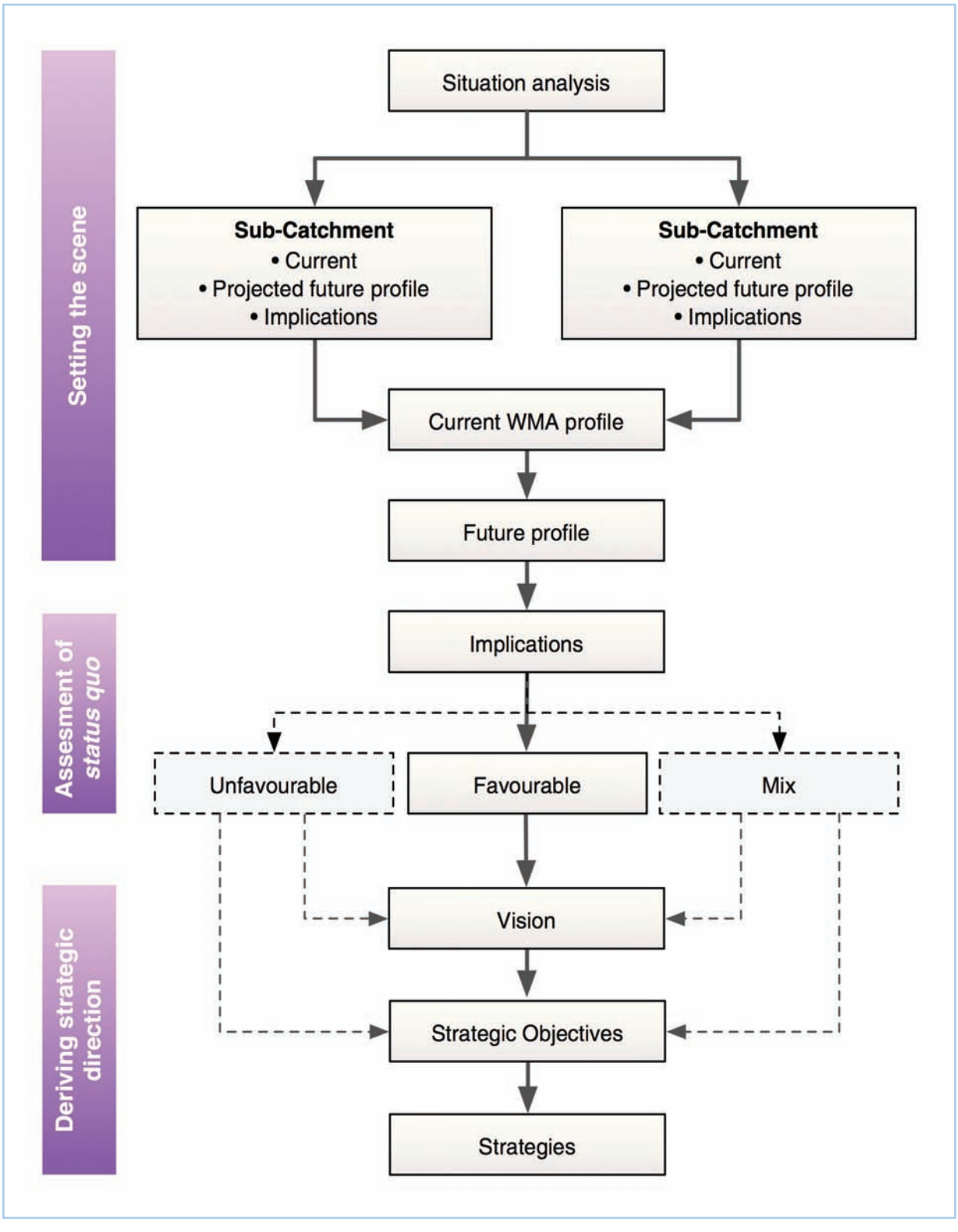


Figure 1.2
An overview of the development of a CMS. In order to develop appropriate context-specific strategies, the wider context in the WMA must be understood and assessed. It is in developing a common understanding of the state of the WMA and where it is going that a future vision can be developed. This vision — effectively a high-order strategic statement — provides the basis for the CMS.

Guidelines for and consultation on Catchment Management Strategies ***(NWA, No 36 of 1998)*** **Box 1.3**

1) The Minister may establish guidelines for the preparation of catchment management strategies.

2) In developing a catchment management strategy, a catchment management agency must consult with
   a) the Minister;
   b) any organ of state which has an interest in the content, effect or implementation of the catchmentmanagement strategy; and
   c) any persons, or their representative organisations
      i) whose activities affect or might affect water resources within its water management area; and
      ii) who have an interest in the content, effect or implementation of the catchment management strategy.

1) A catchment management agency must, before the publication of a notice in terms of section 8(5)(a), refer to the Minister for consideration and determination, any proposed component of a catchment management strategy which in the opinion of the catchment management agency

   a) raises a material question of policy; or
   b) raises a question concerning
      i) the relationship between the Department and other organs of state; or
      ii) the relationship between organs of state and their respective roles in developing or implementing a catchment management strategy.

1.6 Generational Catchment Management Strategies

Although more fully addressed in Chapter 4, it is extremely important to note that the catchment management strategies will be **generational** in nature meaning that no CMS will be complete from the start. Moreover, the CMS is not a static planning instrument as it will be reviewed and improved over time. These issues are clearly recognised in S 8(3) of the NWA, which notes the following:

A catchment management strategy

a) may be established in a phased and progressive manner and *in separate components over time*; and
b) must be reviewed at intervals of not more than five years.

An important issue to note here is that the CMA will be responsible for functions that are **delegated and assigned progressively** over time. This clearly signals that the CMA will oversee the development of the CMS in **collaboration** with DWAF. The extent of responsibilities will thus change over time as functions are delegated or assigned.

The contents of these guidelines were developed based on the engagement and generous inputs of national and regional stakeholders at various contact sessions held over 14 months. This included a collaborative session with the newly-established Inkomati CMA Board. The structure of the document and chapter contents reflect many of the issues and questions that participants felt should be addressed in a guideline of this nature.

In summary, this guideline presents the CMA with background for developing a CMS (Chapters 2 – 5), and a framework for preparing core strategies of the CMS (Chapter 6). The guideline should be used in conjunction with the series of DWAF guidelines that have been produced over the past decade (see Appendix 2). Reference to these documents is also made in Chapter 6. An overview of the structure of the guideline is presented in Figure 1.3.

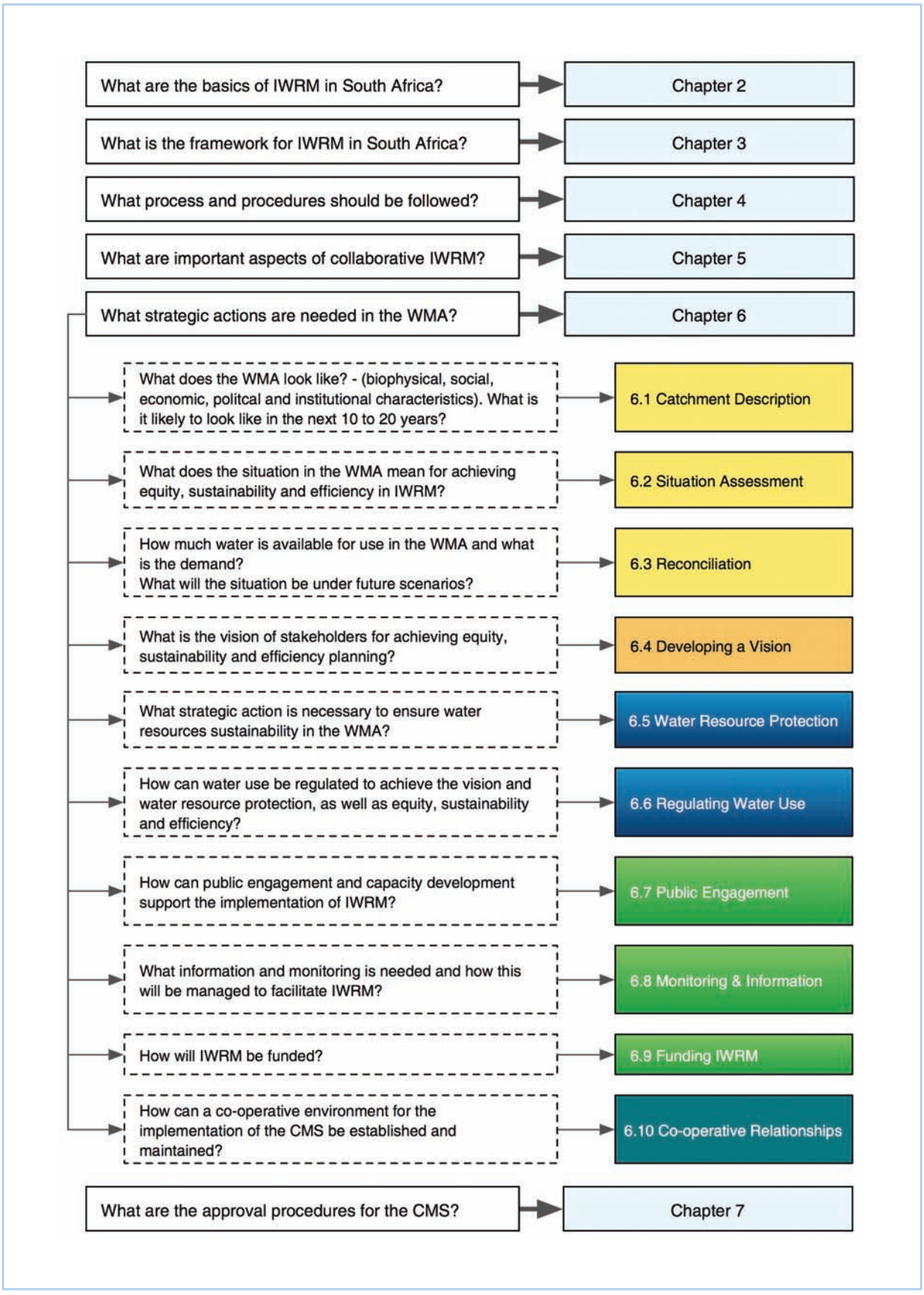


Figure 1.3
Road map to the CMS guidelines. The scheme shows how the guidelines are structured. Colour-coding is maintained throughout for easy reference.

The underlying principles, contents and roles and responsibilities are dealt with in **Chapter 2**. Additionaly, how the CMS can address specifically the issues of sustainability, equity and efficiency is also elaborated. **Chapter 3** provides the overall framework for the CMS and the objectives and outcomes associated with each component of the strategy. The issue of timing and sequence are the subject of **Chapter 4.**

Chapter 5 addresses the very important issues of collaboration, participation and capacity development. Much of the information in this chapter provides the basis for stakeholder engagement. **Chapter 6** is the essence of the guideline. It is here that the core sub-strategies that comprise a CMS are provided. The chapter thus consists of **ten guidelines** (see Guidelines 6.1 – 6.10).

Each guideline follows the same format:

1) Introduction
2) Objective and outcome
3) What you need to know to develop the sub-strategy
4) Potential contents of the sub-strategy
5) Checklist; and
6) A procedural diagramme which offers a summary of the process needed to develop the sub-strategy.

They have been written in such a way that the "Objective and outcome", together with the sections "Contents of the sub-strategy" and "Checklist" can serve, we hope, as part of a terms of reference for a drafting team. **Chapter 7** addresses the approval process of the CMS by DWAF.

Finally, it is important to note that this guideline cannot be a comprehensive guide, nor can it be everything to everyone. Its contents will be informed and refined as CMAs experiment with different options and mechanisms for implementing their IWRM.

2

Catchment Management Strategies

The Basics: An overview of principles, contents and roles and responsibilities for IWRM in South Africa

2.1 Introduction: What this chapter sets out to describe

As noted in Chapter 1, the Catchment Management Strategy is a transformation strategy for Integrated Water Resources Management (IWRM) in South Africa. However, this will not occur in a vacuum – Indeed, this change is supported by a range of principles and existing or planned initiatives. Moreover, true IWRM is a collaborative effort reflecting multiple role-players with various roles and responsibilities. It is these issues that are elaborated in this chapter.

2.2 The National Water Resource Strategy (NWRS), the Internal Strategic Perspectives (ISP) and the Catchment Management Strategies (CMS)

Two levels of strategic planning for water resources exist: the **National Water Resource Strategy** and the **Catchment Management Strategies**. Part 1 of the NWA of 1998 requires the progressive development, by the Minister, after consultation with civil society at large, of a National Water Resource Strategy (NWRS). The NWRS provides the framework for the protection, use, development, conservation, management and control of water resources for the country as a whole. It also provides the framework within which water will be managed at a regional or catchment level in defined water management areas (see Figure 1.1). The NWRS, which must be formally reviewed from time to time, is **binding** on all authorities and institutions exercising powers or performing duties under the NWA. The central objective of managing water resources is to ensure that water is used to support equitable and sustainable social and economic transformation and development. The first edition of the NWRS was published in 2004.

Essentially the NWRS provides the basis for the **Catchment Management Strategies** (CMS) and is thus a key source document for the Catchment Management Agencies (CMAs). Undoubtedly, more detailed and updated information will go into each CMS. Added to this is the information provided through the documents known as the ISPs or **Internal Strategic Perspectives.** In anticipation of the delegation of responsibilities to the CMAs, the Department recognised that it was important to capture and synthesise available information as well as their own understanding of the strategic needs and direction for each Water Management Area (WMA), so as to support the incumbent CMAs. The ISPs, developed for each of the WMAs were the product of such thinking. The studies, undertaken between 2003 and 2004, provided an up-to-date account of water resources and related issues from a departmental perspective (see Bibliography).

The key difference between an ISP and a CMS is that the CMS must be undertaken in consultation with stake holders. Although the ISP is not a strategic plan in the same sense as the CMS, it can function as a guiding document in the absence of a CMS. The following points in this regard are noted: 1) until the CMS is in place, the ISP will be used by the proto-CMA (Department of Water And Forestry (DWAF)) as the guiding document for managing the water resources, 2) the CMA may also follow the ISP to perform certain delegated functions while the CMS is in preparation, and 3) the ISP will be a useful source document for the CMA for the development of their first CMS.

Alignment

The NWA states that the CMS must "not be in conflict with the National Water Resource Strategy (NWRS)" (S 9 (b)). However the challenge is greater than this in that the CMAs and DWAF will need to harmonise and align the development and review of the various catchment strategies with the NWRS. Both the NWRS and CMS (including the majority of water-use licences) are to be reviewed at least every 5 years. This means that the DWAF and the CMA should attempt to ensure that the review processes are harmonised and aligned. Furthermore, the appointment of CMA board members needs to be staggered in order to ensure continuity and to support the development of institutional memory.

2.3 Underlying principles of Integrated Water Resource Management in South Africa

2.3.1 Founding principles for transformation

In South Africa, the intentions of the National Water Policy for South Africa (1997) and the NWA are captured in the slogan **"some, for all, for ever, together"**. This summarises the intention of redress underscored by three key principles: **equity, sustainability** and **efficiency**. These principles (detailed in Box 2.1), and supporting principles, underlie all the subsequent sub-strategies that comprise the CMS and will not be repeated for each sub-strategy. They are also dealt with in the NWRS (2004).

Importantly, Chapter 1 of the NWA states: "*Sustainability and equity are identified as central guiding principles in the protection, use, development, conservation, management and control of water resources. These guiding principles recognise:*

- *the basic human needs of present and future generations;*
- *the need to protect water resources;*
- *the need to share water resources with other countries;*
- *the need to promote social and economic development through the use of water; and*
- *the need to establish suitable institutions in order to achieve the purpose of the Act*".

National Government, acting through the Minister, is responsible for the achievement of these fundamental principles in accordance with the Constitutional mandate for water reform. Being empowered to act on behalf of the nation, the Minister has the ultimate responsibility to fulfil certain obligations relating to the use, allocation and protection of, and access to, water resources.

***Founding principles for the CMS** (NWRS, 2004)* **Box 2.1**

The founding principles that run throughout all policies and legislation associated with water resources management are outlined below

- **Sustainability:** Over the past few decades we have increasingly come to understand the interdependence between humans and ecosystems. Thus we now recognise that the more we compromise the quality and quantity of available water, the more we compromise our own livelihoods. Moreover, our obligation to protect the natural environment must take into account the needs of future generations as well. Thus, since ecological and socio-economic sustainability depend on water resources, this should be a guiding principle evident in all allocation decisions.

- **Equity:** Historically, meaningful access to water lay in the hands of a minority of South Africans. With democratisation, a cornerstone of transformation is the need to ensure that this situation is reversed so that all South Africans share in our water resources. Equally, the imperative to fair access is also true for neighbouring countries with which we share rivers. Thus allocation of water should address the issue of fair access to water resources. A special focus should be on those who have historically not benefited from water resources management, such as women and the poor.

- **Efficiency/optimal beneficial use:** With an average annual rainfall of little more than half of the world average, South Africa is a water-scarce country, vulnerable to floods and droughts. Despite this, water use efficiency was given little emphasis until recently. Given that our water resources are limited and limiting, it is essential that we use them efficiently and in the best interests of all our people. Thus, the allocation of water to users should be guided by the need to encourage and support efficient, optimal and beneficial use of water. The aim of this principle is to allocate water to a broad range of uses in a variety of sectors so that a diverse, robust and stable economy can be supported.

2.3.2 Supporting principles

Principle 1: Coherence between national and local water-resource related strategies and plans

The CMS is developed at a different scale and level of detail to the NWRS and the sectoral development plans such as the Water Service Development Plans. Alignment must be sought to achieve coherence between these instruments.

Principle 2: Collaboration with key institutions

The success of the CMS depends upon collaboration with its stake holders and beneficiaries. The vision and objectives set for the CMS should be inclusive, and should reflect the principles of IWRM.

Principle 3: Stake holder engagement and capacity building

Stake holder involvement should be seen not as a constraint in the development and implementation of the CMS but rather an opportunity, because:

- it ensures that alternative options are considered;
- stake holders can assist in gathering data and information, and can identify gaps;
- participation provides transparency, accountability and implementation;
- participation familiarizes stake holders with the difficult choices that have to be made and the trade-offs necessary to ensure sustainable water resource management of the WMA.

Principle 4: Transparency

Information and decisions should be open to public scrutiny so as to foster co-operation and support for decisions.

2.4 What must a CMS address?

Chapter 2 (S 9) of the NWA provides an outline of what the contents of the CMS should contain, Box 2.2.

Requirements for issues to be addressed
as set out by the NWA (1998) Chapter 2, Part 2 (S 9).

Box 2.2

A CMS must:

a) take into account the class of water resources and resource quality objectives contemplated in Chapter 3,the requirements of the Reserve and, where applicable, international obligations;
b) not be in conflict with the NWRS;
c) set out the strategies, objectives, plans, guidelines and procedures of the CMA for the protection, use, development, conservation, management and control of water resources within its WMA;
d) take into account the geology, demography, land use, climate, vegetation and waterworks within its WMA;
e) contain water allocation plans which are subject to S 23, and which must set out principles for allocating water, taking into account the factors mentioned in S 27(1);
f) 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);
g) enable the public to participate in managing the water resources within its water management area;
h) take into account the needs and expectations of existing and potential water users; and
i) set out the institutions to be established.

A key approach to ensuring equity, sustainability and efficiency is through the regulation of water use. Notably, the NWA provides a broad definition of water use. Eleven water uses, listed in Box 2.3, are defined by the NWA.

Water uses as defined by the NWA (S 21 (a-k)) Box 2.3

The NWA defines 11 different water uses that will need to be authorised by the CMA. The entitlement to use water may or may not require a licence depending on the conditions set by the CMA.

Water use
For the purposes of the Act, water use includes:

a) taking water from a water resource;
b) storing water;
c) impeding or diverting the flow of water in a watercourse;
d) engaging in a stream flow reduction activity contemplated in section 36;
e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
g) disposing of waste in a manner which may detrimentally impact on a water resource;
h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
i) altering the bed, banks, course or characteristics of a watercourse;
j) removing, discharging or disposing of water found underground if it is necessary or the efficient continuation of an activity or for the safety of people; and
k) using water for recreational purposes.

2.5 How does the CMS deal with sustainability, equity and efficiency?

Stake holders frequently ask how the CMS can address, specifically, the three key goals of sustainability, equity, and efficiency. The answer lies not in one sub-strategy alone (see Chapter 6) but in the expression of these as cross-cutting themes throughout the CMS. Below is a summary of how and where these issues should be addressed in a CMS. This section needs to be read in conjunction with the framework presented in Chapter 3, (note: Abbreviation GL refers to the Guideline numbers in Chapter 6).

1. Sustainability

The issue of sustainability is addressed through resource protection and water-use regulation. This is most clearly captured in Resource Directed Measures (GL 6.5), together with Source Directed Controls (GL 6.6) which are measures to regulate water use so that the water resources are used sustainably. Additionally, the principle of sustainability is also given effect in the description and assessment of the WMA (GL 6.1 and 6.2), and in the vision (GL 6.4). In the former case, this is because the assessment clearly calls for a holistic approach, using sustainability criteria (amongst others). The vision is required to talk specifically to the issue of sustainability through the creation of a desired long term view for the water resource that captures the idea of sustainable development. Monitoring (GL 6.8) is an essential component for achieving this goal.

2. Equity

Various tools exist to address the commitment to redress and equity, mainly held by the CMS sub-strategies for water-use authorisation and licensing (GL 6.6). These tools, some of which are still being developed, include Schedule 1, General Authorisations, water allocation reform and compulsory licensing, as well as financial incentives/ subsidies for emerging farmers, and support for augmentation options (e.g. rainwater collection). The basis for equity is provided by the situation assessment and visioning (GL 6.2; 6.4). The former

requires an assessment based on criteria pertaining to equity; the latter requires a vision that talks to equity, redress and transformation. Additionally, the ideal of securing water for basic human needs is provided for by the Basic Human Needs Reserve that is part of Resource Directed Measures (GL 6.5). Multiple stake holder platforms and plans for engaging the public (GL 6.7) are also important means for addressing equity through democratic decision-making processes. Monitoring (GL 6.8) is again an essential component for assessing the achievement of this goal.

3. A focus on the poor and vulnerable

While the principle of equity aims to adjust the imbalances and inequities of decades of skewed water access it is unlikely to adequately emphasise the need to provide water for the most vulnerable groups in society. The CMA has a central role to play, essentially through the CMS, to ensure that special attention is given to water for vulnerable and poor members of society. These groups include rural and urban poor, landless/ homeless people, rural women, HIV/ AIDS affected, the disabled and pensioners. Working hand-in-hand with water services providers, NGOs and social welfare institutions can make a valuable contribution to ensure that water reaches the poor and the vulnerable.

4. Efficiency

The need to use water wisely will be captured in the CMS through the assessment (GL 6.1 and 6.2), reconciliation (GL 6.3) and visioning (GL 6.4) sub-strategies. Various instruments such as Water Conservation & Demand Management, Waste-Discharge Charge-System (GL 6.7) and conditions set out in licences are all important means to realise efficiency - as are financial mechanisms for reducing inefficiencies. Monitoring (GL 6.8) is an essential component for achieving this goal.

2.6 How does the CMS deal with the issue of scale?

It is important to note that different scales of planning may be needed for different circumstances. In the case where catchments within a WMA vary markedly, it will be essential to draft Catchment Management Plans that will address issues relevant to a specific catchment or sub-catchment. The Catchment Management Plans are then consolidated into a CMS for the WMA. The consolidation process should be based on seeking commonality whilst recognising catchment diversity. This situation applies where there are distinct river systems or rivers that drain directly into the sea, such as in the Usutu-Mhlatuze, Crocodile-West/ Marico, and Amatole-Kei and Gouritz WMAs.

2.7 Who is responsible for IWRM and the CMS?

A key aspect of IWRM transformation in South Africa is the progressive decentralisation of many of the responsibilities and authority for water resources management to CMAs (Figure 2.1) and assisted by, at a local level, Catchment Management Committees, Water User Associations and Catchment Management Forums. These responsibilities relate mainly to allocatable water within the WMA. Certain components of the CMS will remain national responsibilities although they will involve liaison between DWAF and the CMA (see Table 2.1; see also p.140 of the NWRS). In some cases, operational aspects will be taken on by the CMA. For example, although Reserve determinations are the responsibility of the national DWAF, the role of identifying needs, and ensuring monitoring and compliance rests with the CMA.

The drafting, approval, implementation and monitoring of the CMS is the joint responsibility of the Minister, DWAF national office, and the CMA together with the DWAF regional office. The Department's role however, will progressively change as regional and local water management institutions are established and the responsibility and authority for water resources management are delegated and assigned to them. The Department's eventual role will be mainly to provide the national policy and regulatory framework within which other institutions will directly manage water resources, and to maintain general oversight of the activities

and performance of these institutions. The Department will continue to manage South Africa's international relationships in water matters through institutions established with neighbouring countries. The delegation and assignment of duties and responsibilities will include the financial and administrative responsibilities of setting and collecting water use charges, the technical water resources management functions based on the CMS, and the functions related to the authorisation of water use. The timing of the delegations and assignments will depend on the capacity of the agency to undertake the functions.

Where Local Government already fulfils a number of IWRM functions, appropriate institutional arrangements need to be made to formalise the co-operation. It is not possible for Local Government to fully take over the role of IWRM from a CMA as is does not have the legal mandate to do so. It is important to note a number of points in this regard. Firstly, Local Government, albeit an extremely important role player, is a water user and one of a number of sectors that need to be regulated, together with mining and agriculture for example. For it to regulate would be to place it in the conflicting role of "*referee and player.*" Secondly, its roles and function as either a Water Services Authority or Water Services Provider are clearly defined in the Water Services Act (WSA) of 1997. This function does not include authorisation of water use, or the wider aspects of IWRM, such as water resources protection. However, Local Government plays a very important role in regulating use within its allocation. Finally, issues of boundary mismatch between catchments and municipalities are likely to complicate the management of water on a catchment basis (see Pollard & du Toit, 2005).

As far as funding the **development** of the CMS is concerned, 'seed-funding' will be provided by DWAF with subsequent editions of the CMS being funded by the CMA or, in special cases, with funds from parliament.

Table 2.1
A summary of Integrated Water Resources Management Responsibilities

as set out in the NWA (1998) and NWRS (2004)

Responsibilities of the Minister of Water Affairs and Forestry (NWRS 3.5.2.1)	The Minister, as the public trustee of water resources on behalf of the national government, has overall responsibility for all aspects of water resources management in South Africa. All water management institutions are subject to the Minister's authority. For practical reasons the Act allows the Minister to delegate most of her or his powers and duties to departmental officials or office holders, water management institutions (such as CMAs) as they progressively build capacity, advisory committees and water boards. The Minister will, however, retain the responsibility for: 1) Determining the **class of water resources** in accordance with the prescribed classification system, and determining the **Reserve** in accordance with the class. 2) Specifying water requirements for **international** rights and obligations. 3) Specifying a **"contingency"** to meet projected future water needs. 4) Authorising any **transfers** of water between Water Management Areas. 5) Authorising other water uses of **strategic importance**. It is the **CMA's responsibility** to ensure that these determinations and authorisations can be met, and that they are implemented and monitored. Four of the minister's responsibilities may not be delegated (see NWA S 63(2)). These include the responsibility to: 1) make a regulation; 2) authorise a water management institution to expropriate property; 3) appoint a member of the governing board of a CMA; and 4) appoint a member of the Water Tribunal.

Development of CMS	CMA, together with the stake holders, and supported by the regional and national DWAF office.
Approval of CMS	The Minister of DWAF.
Authorisation of water use	The Act's provisions for authorisation of a water use make it clear that only the Minister, or a CMA to which the appropriate powers and duties have been assigned, may authorise the use of water. Other water management institutions may not authorise water use. There are, however, limits to a CMA's power to authorise water use. The Minister retains responsibility for authorising certain uses at national level (see above) and a CMA may not issue a licence to itself without the Minister's consent (NWA, S27).
Clearing of alien vegetation (S 3.3.5 NWRS)	In future land owners, custodians and managers, both private and public, should take responsibility for the control of alien vegetation in their areas (NWRS, 2004). DWAF or a CMA will be able to control invasive alien plants in certain areas and recover the cost through the water resource charges. This may only be done in consultation with, and with the agreement of the affected stake holders. The activity is also listed in Table 6.2 of the proposed Pricing Strategy (in prep.; S 6.5.7) as an activity that could be taken into account for charge setting i.e. the "*control of invasive alien plants with acknowledged negative impacts on water resources; e.g. riparian zones, mountain catchment areas, wetlands and in areas where there could be an impact on aquifers*".
Public consultation and participation (S 4.3 NWRS)	The CMAs must promote participation by water users and other stake holders in all aspects of water resources management in their areas of operation.
Monitoring and enforcement: RDM and SDC	Will be delegated to the CMA.
Monitoring and the National Information Management System (S 3.6WRS)	CMAs will be able to take an appropriate level of responsibility for managing information relevant to their water management areas and, where necessary and feasible, have access to information from adjacent areas with which there are links. Information systems in a WMA will nevertheless remain part of the national system so that coherency in available information exists. It is likely that the CMA will be remunerated for monitoring activities that form part of the national network.
Charges for funding water resource management (NWRS S 3.4.2.3) **Note: The National Pricing Strategy still requires approval from Minister of Finance see S56(1) NWA**	The charges will be based on the budgeted annual costs that include the following activities, which will eventually become the responsibility of CMAs: • The planning and implementation of CMS. • The monitoring and assessment of water resource availability and use, and resource quality. • The management of water allocation and utilisation. • Water quality management, including waste control and pollution control in respect of mines, industries, agriculture and dense settlements. • Dam safety control. • Water conservation and demand management, including the control of invasive alien vegetation, education and awareness creation.
Disaster management (S 3.7 NWRS)	The Department, in common with all other organs of State that hold disaster management responsibilities, will be required to prepare a disaster management plan within the National Disaster Management Framework (DPLG, 2004). The Department will also need to ensure that disaster management planning is included in the CMS and the business plans of Water User Associations. It will have to see to it that provisions for water-related disasters in respect of water services are incorporated into the WSDPs of Water Services Authorities and the business plans of Water Boards. At present all pollution incidents must be reported to the Department so that appropriate responses can be co-ordinated, in conjunction with the National Disaster Management Centre, with the relevant emergency services and disaster management centres. Ultimately this responsibility will be passed to the CMA.v
Operating and maintaining schemes	The responsibility for operating and maintaining schemes that are of local importance, or mainly serve one user sector, such as agriculture or a single municipality, are being transferred to the appropriate water user associations and water services institutions. Subject to the agreement of National Treasury, the schemes may eventually be transferred into the ownership of the operating institution. A CMA may only take on these responsibilities if their regulatory role is not prejudiced (NWRS, S 3.5.2.2).

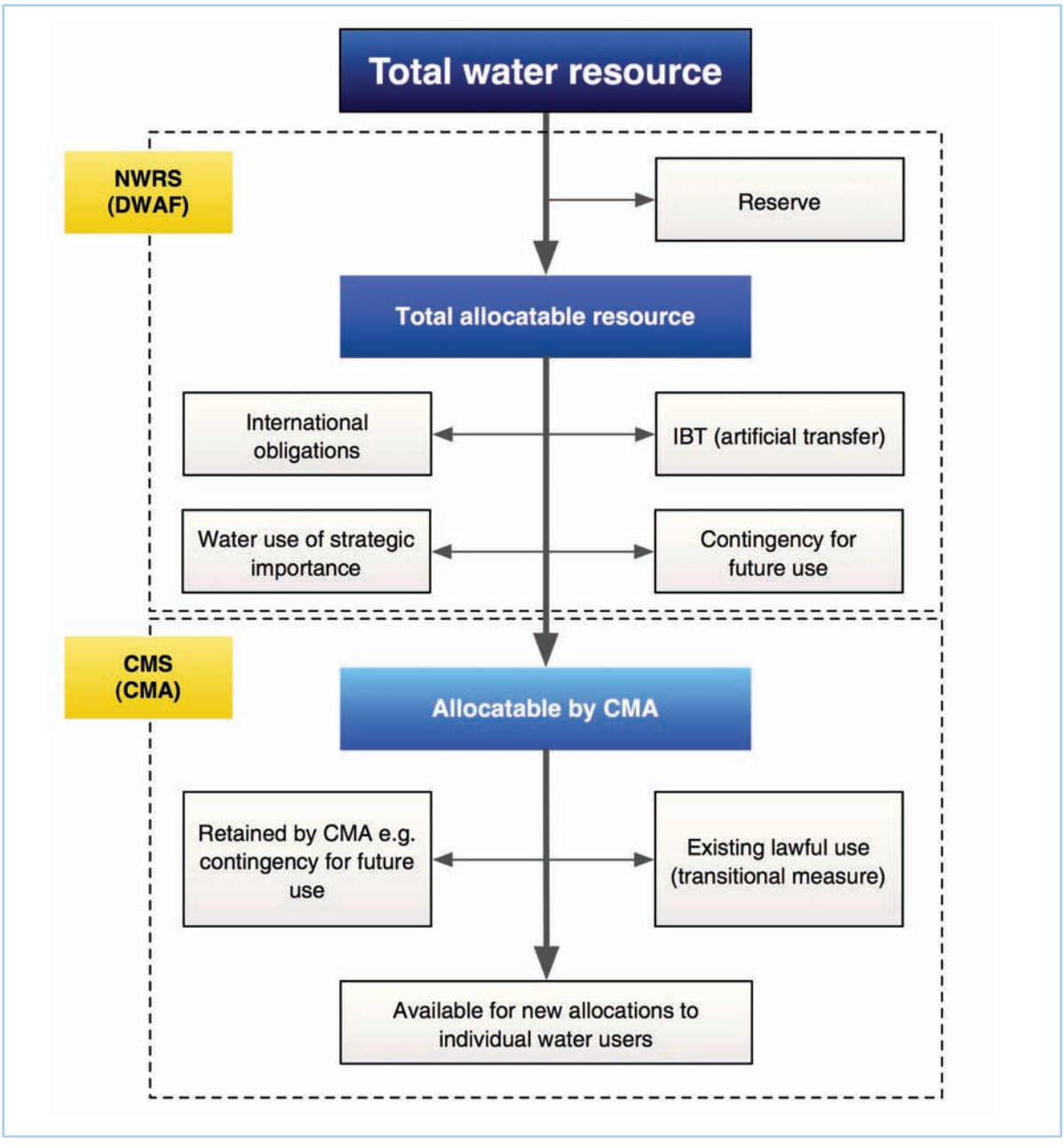


Figure 2.1
Overall water-use allocation responsibilities. The figure summarises strategies from which responsibilities derive and the institution responsible for exercising this responsibility (after DWAF 1999). Existing lawful use gives temporary entitlements until all users are licensed through compulsory licensing (see GL 6.6) [IBT = Interbasin Transfer].

3

Guiding Framework

A Framework for Guiding the Development of a Catchment Management Strategy

3.1 Introduction: What this chapter sets out to do

This chapter sets out to provide and describe an overall framework for the Catchment Management Strategies (CMS). The CMS is not one single strategy but comprises a suite of sub-strategies which provide the basis for business and operational plans. A number of things must be noted in this regard.

- Firstly, Catchment Management Strategies **will differ between Water Management Areas (WMAs)**. Some WMAs have an imperative to deal with rapid urbanisation for example, whilst others may have priorities such as securing water for agricultural production or tourism. Clearly then, the CMS should appropriately reflect the realities of its WMA. However, in order to achieve a holistic strategic intent that captures the legislative requirements (see Chapter 1) there are certain **core strategies, or clusters of strategies**, that must be included. These are described below.
- Secondly, strategy development is a strongly iterative process and **strategies will evolve** as CMAs assume more and more responsibilities and as they learn. Thus not all issues can be developed as part of the first CMS (see Section 1.6).
- Thirdly, different components of the CMS will be developed at **different scales of space and time.** In order to avoid confusion that this can create, these scales – which must be meaningfully and appropriately selected – must be made explicit.

3.2 A framework for IWRM in South Africa

Clusters of strategies of the CMS and what these aim to do

As described in Chapter 2, a CMS must achieve certain things (see Box 2.2). In view of these legislative requirements, an overall framework for a CMS is provided in Figure 3.1. The framework presented here forms the basis for the remainder of the guideline. Integrated Water Resource Management (IWRM) in South Africa is conceptualised as four clusters, Parts A to D, of information and strategies, which collectively comprise the CMS. A number of these deal specifically with the 'business' of IWRM whilst others facilitate the operation of the CMA and roll-out and operation of the strategies. This outline does not imply that no further strategies are needed; they represent what have been called the **core sub-strategies**.

Also, it must be noted that the clusters do not fall into a sequence or order in which they should be implemented. There may be an issue of priority in respect of some clusters being conducted earlier than others (e.g. Part A) but the framework does NOT indicate sequence (this issue is elaborated in Chapter 4). **Guidelines for the specific sub-strategies are detailed in Chapter 6**.

Part A: Important foundational information

Part A does not involve strategy development *per sé* but provides the foundation for strategic action. In support of this key component, guidelines have also been developed for this cluster although it is important to note that a substantial amount of water-related information is contained in the National Water Resource Strategy (NWRS), as well as the WMA-specific studies including the Water Resources Availability and Utilisation, Water Resources Situation Assessment and the Internal Strategic Perspectives, also known as ISPs (see Chapter 2). Additional information, such as demographics, agricultural development and so on is available from the relevant institutions (e.g. Statistics South Africa).

Prior to developing any strategic intent or action, the current and projected situation in the WMA needs to be described and assessed. In essence, Cluster A comprises a holistic assessment of the *status quo* and potential future scenarios, against the background of water availability versus requirements (reconciliation), and the vision for the WMA. Part A thus provides an (a) overview and (b) assessment of the current and future situation as well as (c) a vision for the future.

a) The **profile** of the current situation in the WMA (with a clear focus on water resources), as well as major anticipated trends (for example, mine closure or the impact of HIV/ Aids) on water resource availability are described. This section should also assess a number of realistic, potential future scenarios which allow for an analysis on the impacts for sustainability, equity and efficiency (some, for all, forever).
b) This is followed by an **assessment** of the *status quo* and of the future. In considering the implications, it asks the question "*what does this mean for IWRM*"? This includes assessing the results of the water balance of the various scenarios.
c) Central to a CMS is the proposed vision since this provides the overarching strategic intent. The vision is complemented by a suite of sub-strategies that give effect to this intention. Based on an understanding of the current situation and potential future directions (with and without management interventions), a stake holder **vision** is defined.

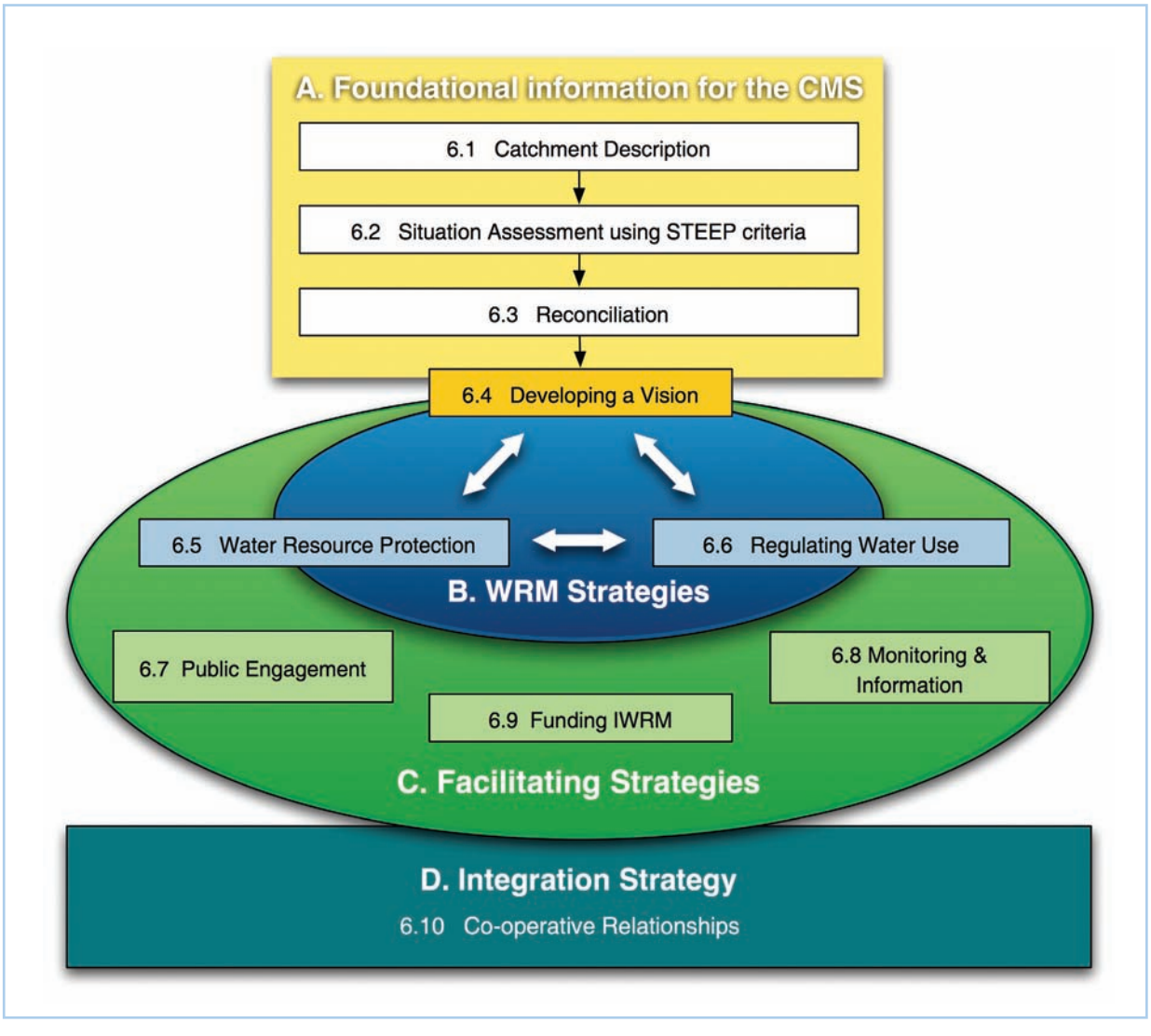


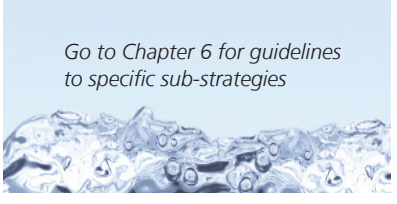
Figure 3.1
The framework for IWRM and hence the CMS in South Africa (adapted from DWAF 1999). Clusters of contextual information and sub-strategies for the CMS fall into four parts: A, B, C & D. It is important to note that this framework does not suggest that the steps of IWRM are sequential. Rather much of the process is iterative, as is shown in Figures 6.3.1, 6.7.1, 6.8.1 and 6.9.1. (STEEP = Social, Technological, Environmental, Economic and Political).

Part B: Water Resources Management sub-strategies

Once a vision has been set for a WMA, two key strategic areas have been identified by the NWRS to achieve the vision. Importantly, these two areas, known as Resource Directed Measures (RDM) and Source Directed Controls (SDC), are the overarching strategies for IWRM in South Africa. The RDM are directed at protecting the water resources base whilst SDC are controls for water use. **The SDC cannot be undertaken without RDM and *vice versa***. It is essential to note that Part B strategies apply to **both** surface water and ground water resources, and to issues of quantity and quality.

Part C: Facilitating sub-strategies

The facilitating strategies are not directly linked to IWRM. Rather they are the 'oil' that keeps the 'engine' of IWRM going. In other words without strategic plans for stakeholder engagement and communication, information management and monitoring, and finances, the intentions of IWRM cannot be achieved.



Part D: Integration strategy

As is well recognised by now, IWRM requires collaboration. This is because many institutions are involved with various aspects of water-related activities, either directly or indirectly (see Section 2.3.1). Moreover, given our international agreements, the imperative for collaboration extends beyond our national borders. Therefore the CMA must set out strategic plans for ensuring integration and this sub-strategy is effectively the 'glue' that holds together IWRM.

Finally, it must be noted that certain constraints existed with respect to developing these guidelines. For instance, some projects were still underway at the time of writing, including the Classification System, the Water Allocation Reform process and the National Water Resources Information Management Service, amongst others.

3.3 Using objectives to guide strategic planning

In order to assist in developing sub-strategies, both objectives and outcomes have been developed for each sub-strategy. As explained in Chapter 1, these are meant to guide their development and have been written in such a way that they can serve – together with the sections "*Contents of the sub-strategy*" and "*Checklist*" for each sub-strategy (see Guidelines 6.1 – 6.10) - as part of a terms of reference for a drafting team. These objectives together with their outcomes are provided in Table 3.1.

Table 3.1
Objectives and outcomes for sub-strategies of the CMS

PART A: Objectives of the situation assessment and evaluation, the vision and reconciliation

These are not strategies but foundation information

6.1 Situation description

The **objective** of describing the *status quo* is to provide a holistic contextual profile of the key characteristics of the WMA (biophysical, social, technical, economic, political and institutional), as related to water, and the likely future profile, in order to provide a sound basis for the development of appropriate and effective strategic direction.

The intended **outcome** is a synopsis of (a) the best available information regarding the biophysical, social, economic, political and institutional characteristics for the WMA and, (b) the likely future scenario(s). This contextual profile for a WMA will be assessed, and then used to inform the vision and subsequent strategies.

6.2 Situational assessment

The **objective** is to provide a holistic assessment of the current situation and likely future profile within the WMA (biophysical, social, economic, political and institutional), as related to water, in order to provide a sound basis for the development of appropriate and effective strategic direction.

The intended **outcome** is an assessment of the current situation and the likely future profile according to appropriately derived criteria. This information will be used to inform the vision and subsequent catchment management strategy (CMS).

6.3 Reconciliation

The **objective** of reconciliation is to provide a comprehensive water balance of beneficial, effective and efficient water requirements with water availability (quality and quantity) for the current situation and for potential future scenarios within a WMA, taking into account the water situation assessment, the vision, water required to meet special provisions and the implications of resource classification.

The intended **outcome** is a geographically-based reconciliation of availability versus requirement for the current situation and for the state articulated in the vision and management class. Priority strategic actions must be outlined to ensure the beneficial, effective and efficient use of water.

6.4 Vision

The **objective** of the vision is to present a collective, medium-to-long term vision for the desired future state (STEEP) of the WMA and its sub-catchments that can be used to derive strategies that are realistic and locally attainable.

The intended **outcome** is a statement of the desired state for the WMA that has been arrived at through public participation, which provides a medium-to-long-term direction that can be used as a basis for deriving sub-strategies.

PARTS B, C & D: Objectives of Sub-strategies

These sub-strategies should outline strategic, comprehensive measures to achieve the desired water balance within a particular WMA, taking into account the water situation assessment, the vision and water required to meet special provisions.

This will result in a holistic suite of strategies that will synergistically and progressively work towards achieving an articulated desired state and water balance for a WMA.

6.5 Resource Directed Measures: Water resource protection

The **objective** of the water resources protection sub-strategy is to ensure water resource sustainability of the WMA through protection of the water resources using a suite of statutory and non-statutory tools. Based on the principles of sustainability, equity and efficiency, the sub-strategy must give effect to the Class, Reserve and Resource Quality Objectives (RQO) of the water resources and associated protection measures.

The intended **outcome** is a sub-strategy that addresses the holistic, incremental protection (including rehabilitation) of the water resources of the WMA through:

a) water resource classification;
b) determination and implementation of the Reserve;
c) determination and implementation of the Resource Quality Objectives for water resources; as well as
d) associated protection measures (either governmental or civil society).

6.6 Source Directed Controls : Water-use regulation

The **objective** of the sub-strategy for water-use regulation is to define the limits and constraints, incentives and disincentives that must be imposed on the use of water resources to achieve the desired vision and water resources protection for the WMA. Based on the principles of equity, sustainability and efficiency, the strategy must address allocation, re-allocation, authorisation and licensing, water management and pollution control, augmentation measures, and compliance and enforcement.

The intended **outcome** is a comprehensive sub-strategy for water use regulation for a WMA that will draw on incentives and disincentives, verification, allocation planning, re-allocation, authorisation and licensing, water management and pollution control, augmentation measures, and compliance and enforcement to realise the ideals of equity, sustainability and efficiency.

6.7 Public engagement and capacity development (note: collates details from other sub-strategies)

The **objective** of the sub-strategy is to provide the basis for public engagement in the various aspects of IWRM (as addressed in the sub-strategies of the CMS) through co-operation, collaboration and agreement. It must address (a) appropriate capacity building, (b) the provision of opportunities for collaborative action, and (c) communication and access to information.

The intended **outcome** is a sub-strategy that ensures that all role-players in a WMA are adequately represented and that they participate in the formulation, implementation and review of the CMS (and its sub-strategies) on a sustained basis.

6.8 Information management and monitoring (note: collates details from other sub-strategies)

The **objective** of the information management and monitoring sub-strategy for a CMA is to provide a strategic plan that:

a) will provide a CMA with the water resources information and related information required to meet their responsibility towards effective water resources management as well as their reporting requirements regarding the health of water resources in their care to the Minister of DWAF;
b) is consistent with the national standards and requirements as per the NWA (Chp. 14);
c) guides collecting, accessing, analysing and sharing a wide range of information for the purposes of monitoring and evaluating IWRM and operational management and,
d) ensures findings are incorporated into a process of review, learning and design of follow-up activities.

The intended **outcome** is a sub-strategy that provides a comprehensive plan to:

a) manage water resources monitoring and the information in collaboration with DWAF;
b) monitor, analyze and evaluate IWRM intentions and actions through nationally approved methods, procedures and techniques and,
c) incorporate findings into an adaptive management process.

6.9 Finance (note: collates finances from other sub-strategies)

The **objective** of the finance sub-strategy is to set out financial arrangements for IWRM for the WMA. Reference must be made to the costs associated with the functioning of the CMA.

The intended **outcome** is a sub-strategy that sets out how the implementation of the CMS and functions of the CMA will be funded.

6.10 Institutional arrangements & co-operative governance

The **objective** of the institutional arrangements and co-operative governance sub-strategy is to set out strategic actions for the establishment and maintenance of appropriate co-operative and collaborative relationships for IWRM based on the institutional environment.

The intended **outcome** is a sub-strategy that describes how a CMA will establish and maintain a co-operative and collaborative institutional environment by employing the available capacities in institutions to ensure that IWRM objectives are achieved.

3.4 Using Strategic Adaptive Management and an objectives hierarchy to achieve IWRM goals

It may well. be that objectives are set for a WMA, but a frequently asked question is how these statements-of-intent, or goals, can be translated into something meaningful and practical that can be implemented and monitored. One approach that may be useful is the development of an objectives hierarchy (see below).

However, a critical component of using the objectives hierarchy is an approach to management that is adaptive- in other words one adapts as one learns. This is known as strategic adaptive management and is briefly described below. Once managers had realised the implications of managing complex systems, which indeed catchments are, they also realised that setting a single, rigid solution – so characteristic of conventional management approaches - was unlikely to succeed. External and multiple influences, changing values, unpredictability and the fact that management action brings change all mean that one is essentially managing a moving target. Instead, an adaptive management process that encourages learning-by-doing, based on best available information, is gaining acceptance as a more appropriate approach. A good example of this is documented by Biggs & Rogers (2003) for the Kruger National Park, where rigid management targets have been replaced by a management system where feedback, iterative planning and evaluation are essential for successful implementation (Pollard & du Toit, 2006).

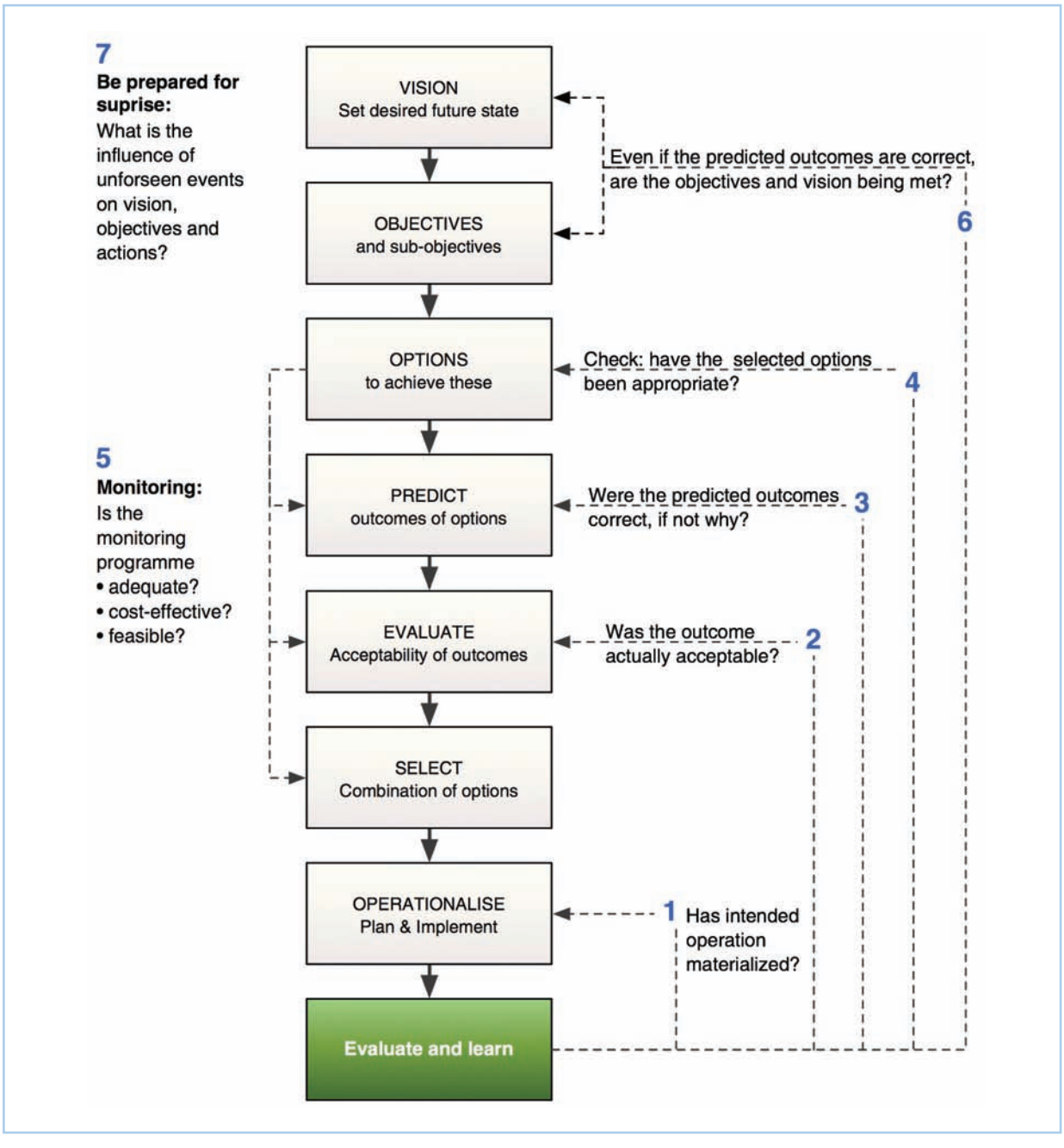


Figure 3.2
Strategic adaptive management relies heavily on checking and cross-checking progress as summarised in this figure (From Pollard & du Toit, 2006; adapted from Rogers & Biggs, 1999).

This requires an attitudinal shift in accepting that one doesn't have all the answers. It also means making the learning process an explicit one. Central to this is building in a process of cross-checking (Figure 3.2) – by asking the questions: Have we achieved what we wanted to achieve? And, more importantly is this helping us achieve our vision? The process of setting a vision is central to the adaptive management process, but translating this into practice can be challenging. A good model for this is translating the vision down into strategic objectives, under which are nested-hierarchies of objectives in finer and finer detail (Figure 3. 3). These may, for example, focus specifically on sustainability, equity and efficiency objectives that have been set for catchments within the WMA. Finally one reaches points that can be monitored and traced back up to the vision (see Rogers and Biggs, 1999, for a good local example of this). Guidelines for such an approach in freshwater systems are currently being developed.

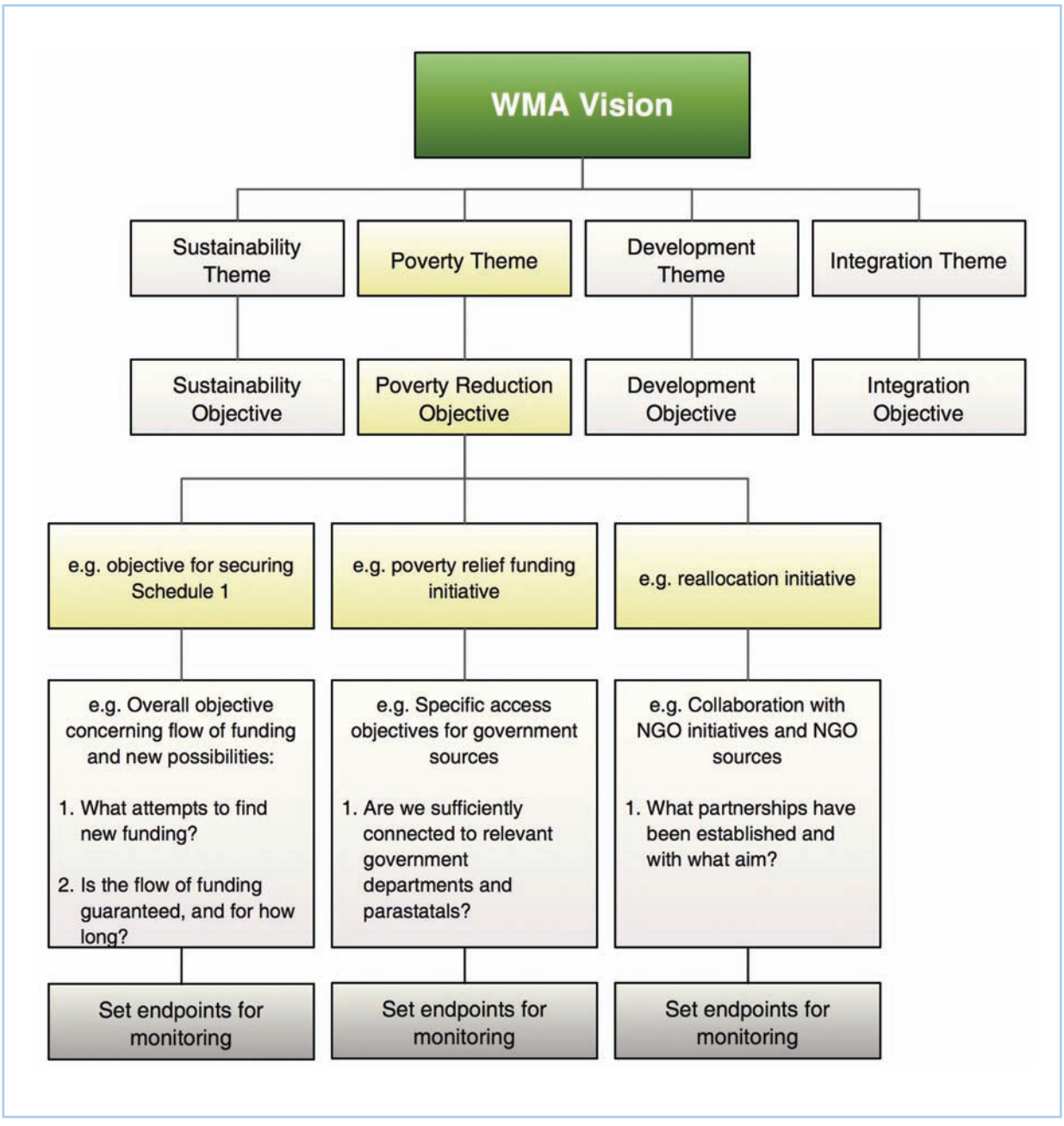
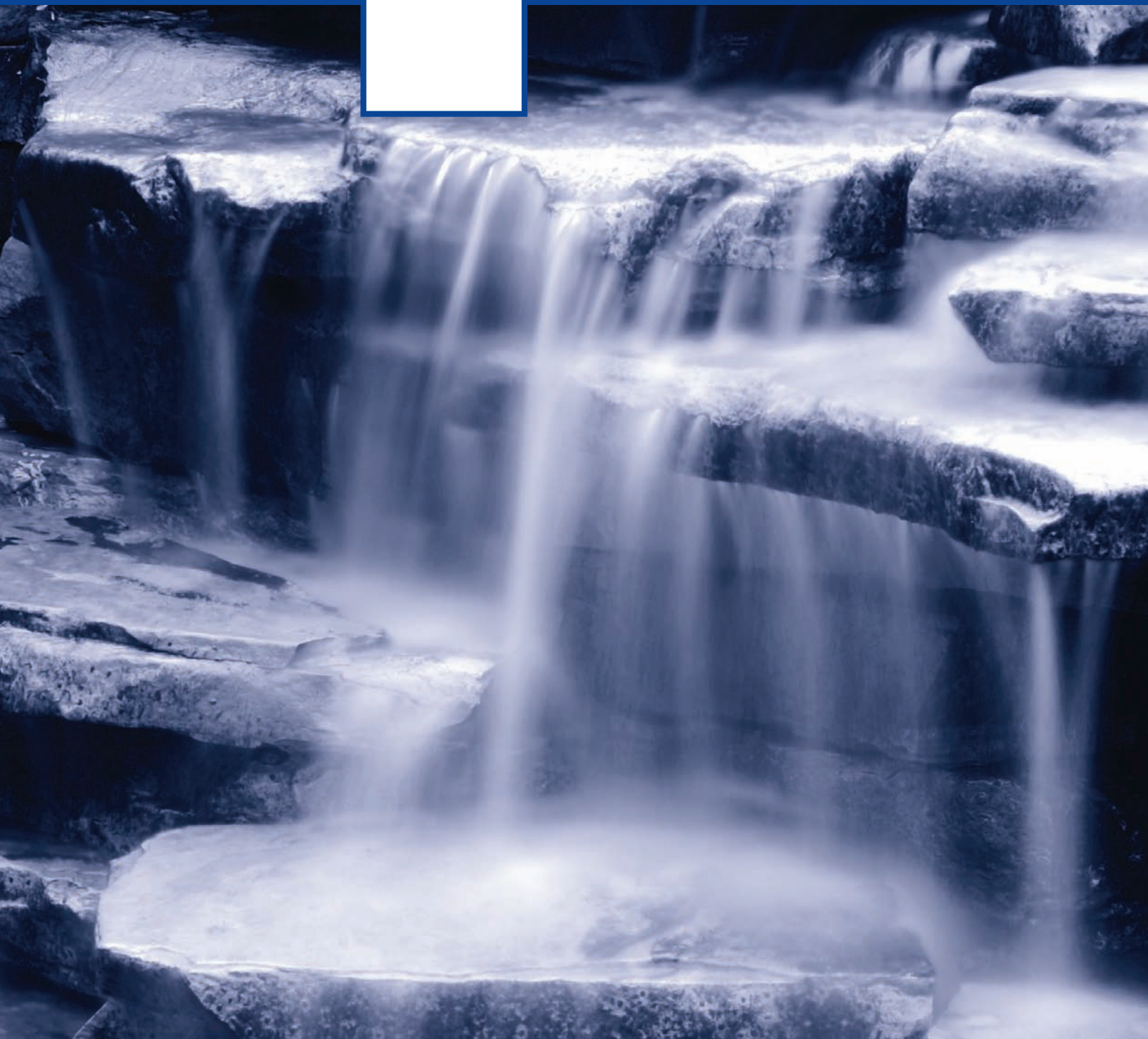


Figure 3.3
An example of an objectives hierarchy. This shows how a vision is translated, or linked to endpoints that can be used for monitoring through the development of a nested hierarchy of objectives.

4

Sequence and procedure for the drafting of a CMS



4.1 Introduction: What this chapter sets out to do

The development of the Catchment Management Strategy (CMS) is a process that is initiated by the Catchment Management Agency, or CMA and culminates in the strategy being approved by the Minister. This chapter outlines the process of initiating the development of the CMS to the point where it is approved (see Figure 4.1). The processes associated with the implementation and review are not the focus of this guideline but the overall procedure must be kept in mind when developing the strategy.

Special attention is given to the sequencing of activities but this should not be taken to be a 'blueprint' as variations might be necessary to match with specific needs in particular contexts.

4.2 Adopting a phased approach, sequencing issues and milestones

4.2.1 A phased approach

The desire to develop a perfect CMS the first time around is likely to be strong. However, the complexity of the task, the lack of certain types of information, the changing roles and responsibilities (particularly between DWAF and the CMA), the constraints of particular skills and funds might hamper such an ambition. Importantly, the process of developing a CMS is iterative, with knowledge and skills being built as part of an adaptive management approach (see Section 3.4). This means that by definition the strategies will be 'generational' with the first CMS not being 'perfect'. As long as the CMS meets with the criteria set out in the approval process, the CMA can move ahead with implementation. However, even a **first** generation CMS must contain all sub-strategies that are listed in Chapter 6 (the CMA is also at liberty to review and improve upon the CMS through the refinement of business plans associated with each sub-strategy). Bear in mind that not all functions will be delegated from the start and the sub-strategies will therefore **be developed together with the support of the regional office and national DWAF.**

4.2.2 Sequence

Sequence refers to the procedure and order in which things need to occur. In the development of a CMS, some steps depend on the completion of others, whilst other steps can be conducted simultaneously. This requires that a CMA plan for the issue of sequence. For example, the visioning process needs to be completed before the desired Management Class can be set for a resource; the conditions for licences can only be developed after a water balance has been determined and existing licences might have their conditions changed during the licence review period following the determination of the water balance. The stages described below provide some guidance with respect to sequencing associated with the development of the CMS. The CMS review process is likely to be similar but note that the implementation will probably be quite different (see Chapter 5, Table 5.3).

4.2.3 Milestones

Milestones are useful tools for the monitoring of progress. They do not reveal much about the quality and depth of what is happening but they can show progress over a certain period. The CMA might want to consider placing certain milestones as a way of monitoring how far they have come with a specific process during a five-year cycle. Figure 4.1 provides a rough guide in terms of achievable Stages or milestones for: a) planning (4-6 months), b) drafting (up to 18 months) and c) approval (approximately 6 months) of the CMS.

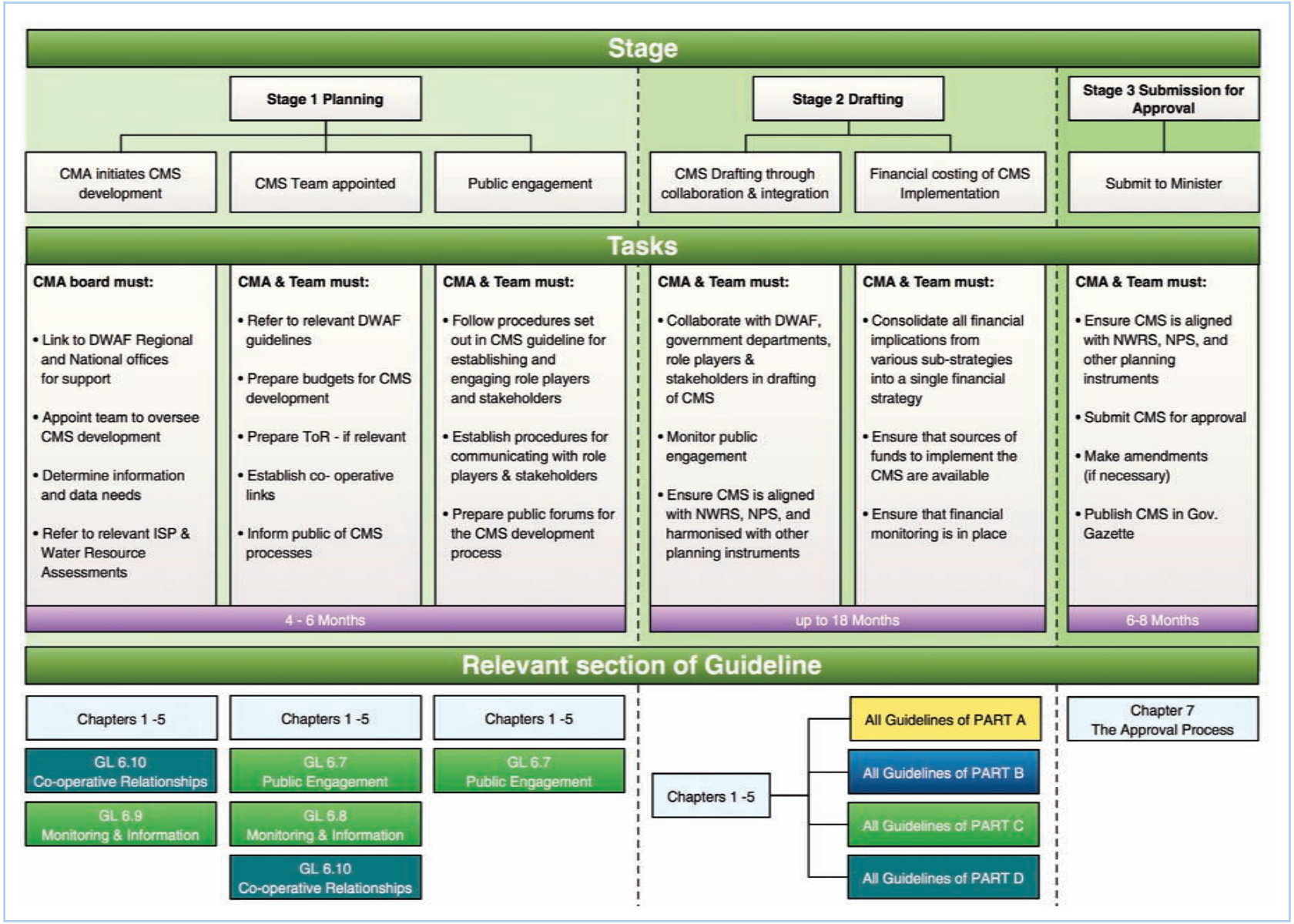


Figure 4.1
An overview of the key tasks for developing a CMS and their sequencing. Not shown in this diagram are the stages of implementation and review, which are beyond the scope of this guideline. They are however briefly outlined in the text [PGDS = Provincial Growth & Development Strategy; WSDP= Water Services Development Plan; NWRS= National Water Resources Strategy; NPS= Revised National Pricing Strategy; GL = Guideline; Co-op Gov = Co-operative governance; Info Mgt = Information Management].

4.3 The development of a CMS: Five stages

The preparation and implementation of a CMS can be divided into a number of broad stages that need to be conducted in sequence. These - comprising planning, drafting and submission, implementation and review - are explained below and summarised in Figure 4.1. This guideline however only addresses the first three in detail.

4.3.1 Stage 1: Planning

There are three areas of activity associated with the planning stage:

1) the CMA initiates CMS development;
2) the CMS team is appointed; and
3) stake holder platforms are engaged.

The planning phase is essentially a preparation phase that allows the CMA to officially launch the drafting of the CMS with the appropriate team in place, adequate funding and with access to stake holder platforms so that collaboration and consultation can take place. One of the key challenges associated with this phase is ensuring that adequate stake holder platforms exist throughout the Water Management Area (WMA) (see GL 6.7). In some cases, adequate platforms may already be present in the form of water users associations or catchment forums, whilst in others the CMA will need to first establish such platforms. Since proceeding without proper stake holder engagement can be challenged in terms of the National Water Act (NWA 1998), this aspect becomes one of the first tasks for CMS development. A situation assessment to establish the status of such platforms will be a useful step in this regard. A number of guidelines supporting public participation are available through DWAF (see Appendix 2).

4.3.2 Stage 2: Drafting of the CMS

The two areas of activity associated with the drafting of the CMS are:

1) collaborative drafting of the CMS, as well as ensuring alignment and harmonisation with other strategic plans; and
2) costing of the sub-strategies.

This is the most intensive of the phases and will require the most attention and input from DWAF, the CMA and stakeholders. The outcome of this process will be a set of core sub-strategies outlined in the CMS framework (Chapter 3). Chapter 6 of this guideline provides further detail and can be used to assist in the drafting of the various core strategies. Additional strategies may be added with time as is deemed necessary. However, the core strategies (as reflected in Chapter 6 of this guideline) must be evident in the first CMS submitted to the Minister for approval.

The financial resources required for drafting the CMS need to be distinguished from those required for its implementation. Drafting costs will be covered by seed-funding provided for by DWAF while the funding for CMS implementation will need to be raised by the CMA (see GL 6.9). A challenge associated with the drafting stage is to ensure that the issues of integration and co-operation are addressed (refer to Chapters 5, GL 6.10 and Chapter 7).

There are three main aspects in this regard:

1) Firstly, the CMS must be aligned with the National Water Resource Strategy (NWRS) and consequently with the NWA and the Constitution of South Africa (NWRS, 2004)

2) Secondly, the CMS must be reflected in, and must reflect other strategic and developmental plans. This process of harmonisation and integration requires a strong focus on co-operative governance (SeeConstitution, Chpt 3 S 41).
3) Thirdly, some strategies draw on parts of other strategies. This is true for public engagement, information management, monitoring and finances (see Figures 6.7.1; 6.8.1 and 6.9.1 respectively). Such strategies can therefore not be developed in isolation.

4.3.3 Stage 3: Submission for approval

Once the CMS has been drafted it needs to be submitted to the Minister for approval. Only after publication in the Government Gazette does it become legally binding on the Minister and CMA to implement it. The CMA needs to prepare a notice as required by law and to inform the public where to access the final draft of the CMS. Availability in places accessible to the public is therefore key for succesful public engagement.

The notice in the Gazette and local media (recommended) is followed by a 90-day period during which comments are received, documented and considered. This will be done by the CMA and all the issues and comments need to be summarised and presented to DWAF. A guideline to assist the CMA with gazetting of the CMS is provided in Chapter 7.

Legislation

Section 8(4) *of the NWA requires that the CMS, or any component of the strategy, be established only "with the written consent of the Minister."*

Section 8 (5) *of the Act requires that before the CMA establishes " a catchment management strategy or any component of that strategy in terms of subsection (1), a catchment management agency must – publish a notice in the Gazette – inviting written comments to be submitted on the proposed strategy or the component in question…"*

4.3.4 Stage 4: Implementation

Whilst implementation and review of the CMS is beyond the scope of these guidelines, mention is made of them for the sake of completeness. After approval is granted the CMA must give effect to the strategy. Implementation will require a high level of co-operation and collaboration from various sectors, stakeholders and government departments.

Also worth noting is that implementation is not a linear process where one task must be completed before the CMA can move to the next – some overlap is bound to occur. This means that the different core sub-strategies need to be implemented as a set of harmonised plans, complementing and supporting each other. For example, monitoring activities, public engagement and financial management need to be conducted alongside a number of sub-strategies (see Figure 3.1).

4.3.5 Stage 5: Review, refine and redraft

In terms of the NWA the CMA is obliged to review and refine the CMS at least once every 5 years. The process of review and refining should be planned for and facilitated, as it will draw on a broad spectrum of service providers, stakeholders and role-players. In fact, stakeholder groups are likely to be an important source of critical feedback necessary for improving subsequent versions of the CMS.

5

Working together

Collectively managing the water resources of a Water Management Area

5.1 Introduction: What this chapter sets out to do

The management of water resources cannot be done by the Catchment Management Agency (CMA) alone. It is a complex endeavour that will need to draw on a number of sectors, government departments, institutions, organisations and civil society groups to fulfil its mandate as manager of the water resources of a Water Management Area (WMA). Although each of these is a role-player in the process they do not necessarily have the same interest in the resource. However they will need to work collaboratively to ensure that water is managed in the interests of all and as a 'public good'. The question is not *whether* they will work together but *how* they will work together. The National Water Act (1998; S 80 (e)) requires the CMA, as an initial function, to *promote community participation* in water resource management. It is the role of the CMA to facilitate the participatory process so that understanding and consensus, and not conflict, drives management. The CMS is an instrument that provides the CMA with an opportunity to harmonise various roles and at the same time to minimise conflict and overlap.

The key focus of this chapter is to provide **guidance on the appropriate levels of participation** in the tasks of Integrated Water Resources Management (IWRM). The chapter outlines some issues associated with working collaboratively, and touches on platforms for participation as well as capacity development - both of stake holders and within the CMA. The chapter closes with a brief look at participation in drafting and implementing the CMS.

Role players, stake holders, affected parties — Box 5.1

It is worthwhile getting a grip on the different terms that are used to designate different groups for participation. It is possible that these distinctions will have important legal implications. Currently, this guideline uses the terms somewhat interchangeably.

Role-players: Those, who by virtue of their identity, **influence** decisions. Democracy requires that role-players be part of decision-making. Role-players are a broad group and include stakeholders, the public and interested & affected parties.

Stakeholders: Those parties that are directly **affected** by decisions and **outcomes** of a decision. For example, waste-discharge charges directly affect licenced users (stakeholders). There is a legal obligation for involving affected stakeholders in the process of setting such charges.

Interested and affected parties (I&APs): A particular group of persons who have an interest in, or are affected by, a particular intervention. Generally used in Environmental Impact Assessments.

5.2 Key issues in working together

A number of aspects of working together are discussed below. These include the issues of scale and legitimacy, co-operation and collaboration, integration and negotiation for consensus.

Firstly, dealing with different **scales** is one of the challenging aspects of developing the CMS. National, regional and local scales all influence the CMS and in this regard some of the activities will be guided by national objectives while others will be driven by needs that arise at the local level. Another issue for the CMA is that of **legitimacy** since it is crucial that the CMA gain and maintain acceptance for the CMS amongst role-players and stake holders. If 'buy–in' occurs early on in the process, there is no reason why stake holders should contest what is contained in the various sub-strategies. By the time that it is approved, role-players should be familiar with its contents and agreement should prevail as regards the actions that it recommends.

The process of public engagement needs to ensure that (DWAF, 2001 a. b):

- it is inclusive of all role-player groups;
- the processes are transparent and fair;
- engagement is representative of ALL sub-catchments;
- power and capacity differences are addressed;
- people are timeously informed of meetings;
- allowances are made for language differences; and
- historically disadvantaged groups are given special consideration in the CMS development process.

Various guidelines are available for designing and implementing a public participation process.

(see Appendix 2).

As mentioned earlier, **co-operation and collaboration** in drafting the CMS are essential, and the CMS should be the tool that facilitates these. The South African Constitution (1996, Chapter 3, S 41), together with the Inter-governmental Relations Framework Act (Act 13 of 2005) and National Water Act (NWA 1998) sets out protocols for spheres of government to work co-operatively and calls for effective, transparent, accountable and coherent government structures and processes. This includes co-operation with international neighbours and neighbouring CMAs, especially where infrastructure is shared, water transfers occur or where one WMA lies upstream of another e.g. upper, middle and lower Vaal. Interestingly, **collaboration** is more than co-operation as it is an 'active joining together' of resources and effort towards a particular goal. Collaboration is thus a social process based on:

- participation and dialogue;
- formation of partnerships;
- investment in ideas and processes of learning;
- consensus and negotiation between various role-players;
- emphasis on management strategies (financial, social, resources and others); and
- learning based on the understanding and recognition of similarities and differences between various role-player groups.

Attempts to manage water within complex systems such as WMAs, require that an **integrated approach** be adopted. But what does this mean in reality? On the one hand, regular contact with role-players is important. However, a practical approach is to focus on **harmonisation of the various policy and planning** instruments of spheres of government and institutions (Pollard & du Toit 2005). Efforts to harmonise should consider two aspects, namely (a) the alignment of the **content** of these planning instruments (Appendix 3), and (b) harmonisation of the **review and approval** process so that the National Water Resources Strategy (NWRS), the CMS and licensing processes are synchronized. A final issue relates to **negotiation for achieving consensus**. Despite there being a legal imperative to seek consensus in the WRM processes (NWA S 79 4(b)), we cannot assume that stake holders will automatically collaborate with each other. Overcoming the realities of different interests and perceptions relies on developing an atmosphere of trust (Rogers, 2005). The best way of achieving this is to focus on future needs rather than on present and past problems. A **structured negotiation approach** is recommended that utilizes the 'negotiation for consensus' framework (see Figure 5.1). In the event of consensus not being reached, conflict resolution (involving an external facilitator), or mediation through the Water Tribunal and Courts of Law are options to address this. Courts are likely to play an important role where disputes are serious.

Legislation

Legal requirements for harmonisation

The Act requires the Minister to ensure that all aspects of water resource management that will affect other organs of State, water users and the public in general are brought to their attention.

The NWRS states that " when preparing its water services development plan, a water services authority must refer to the relevant CMS for information about the availability of water to support proposed water services targets, the source of the water, and the requirements for the quality of waste water that is to be returned to the water resource after use."

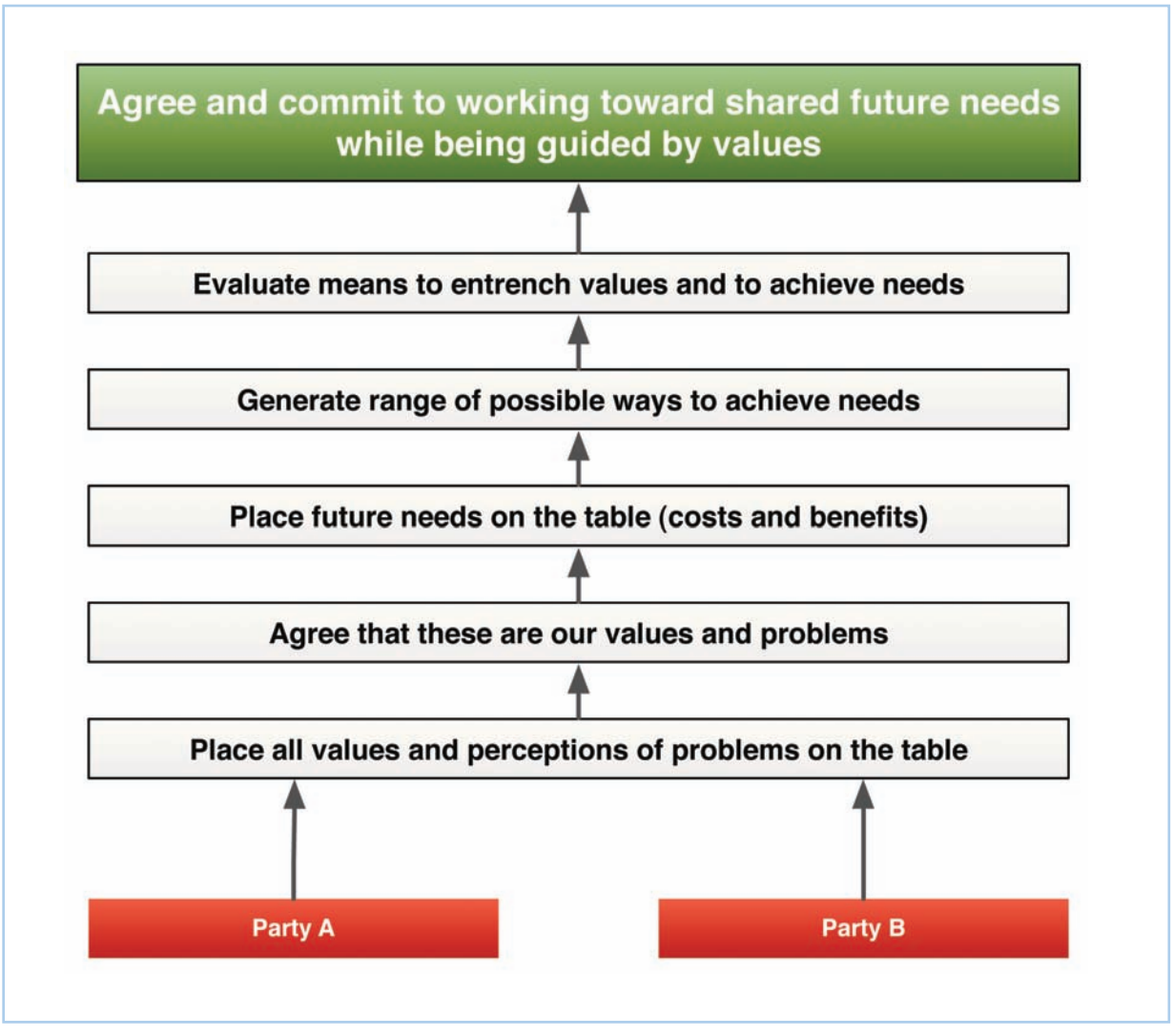


Figure 5.1
Negotiation for consensus. The process of 'negotiation for consensus' is different to 'negotiation for compromise' since the focus is on a 'common future' rather than on defending current interests (Rogers, 2005). Consensus building requires that all role-players declare their values, needs and problems at the outset. All options should be considered and evaluated. Part of this process involves capacity development (see GL 6.7).

5.3 Platforms for participation and collaborative management

An important responsibility of the CMA is that of establishing and maintaining contact with role-players and stakeholders so as to draft and implement the CMS. The NWA (Chapters 8, 9, 10) makes a number of options available in the form of statutory and non-statutory bodies (see Figure 5.2).

Although the establishment and maintenance of stakeholder platforms is the responsibility of the CMA, much has already been done by DWAF in establishing these. The CMA should **evaluate the status of such forums**. Where such platforms do not exist, the CMA must address this gap **before** proceeding with the CMS development. The resource requirements for their establishment should not be underestimated.

A number of guidelines supporting the establishment of Water User Associations and Catchment Management Forums are available from DWAF

(Appendix 2)

Although other forums could be engaged, such as ward committees and community development forums, it should be noted that they deal with water services and sanitation and not water resources management, leading to possible confusion. Furthermore, the mismatch between municipal and WMA boundaries (see Pollard & Du Toit, 2005) means that co-ordinating public participation is likely to be complex.

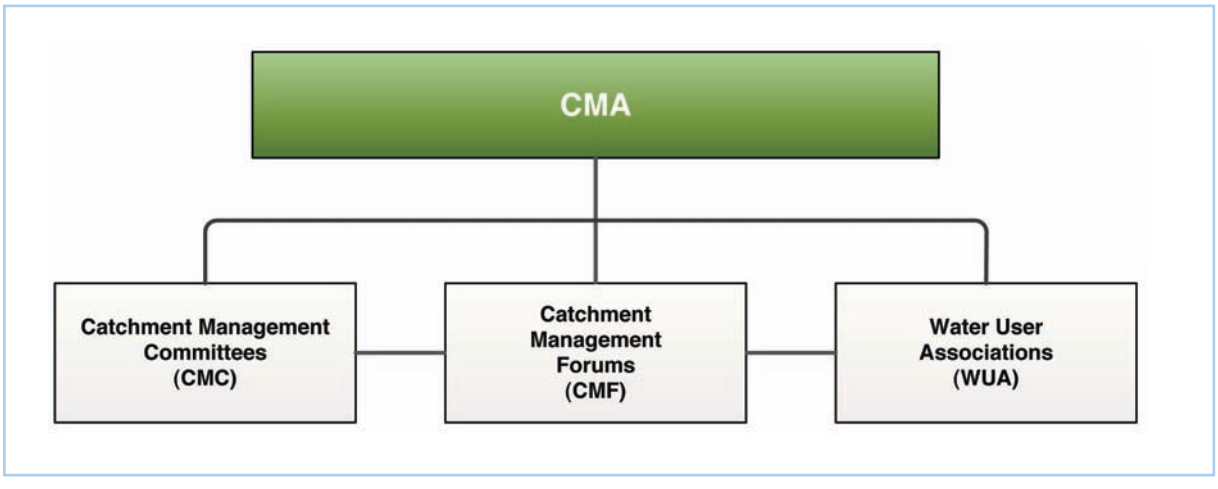


Figure 5.2
The three main platforms available for stakeholder engagement in Integrated Water Resources Management. The Catchment Management Committees are statutory (legal) bodies, whilst Catchment Management Forums are not and can be designed to meet the needs of specific situations. Water User Associations are generally established around a single or multiple-use of water by licensed users.

5.4 Capacity and competence building

There cannot be any meaningful engagement of the public if the basic principles and content of IWRM are not understood, and the CMA should not underestimate this need. Guideline 6.7 outlines the essential components for the drafting of a sub-strategy for public engagement and capacity development. Special attention to capacity building programmes for disadvantaged and vulnerable groups is crucial in this regard.

A further issue relates to that of internal capacity building and the CMA as a 'learning organisation'. The nature of the CMA board as a public body (with a diversity of members), established for a limited period of 5 years, means that there is a need for intensive and rapid internal capacity development and learning. Learning is therefore an integral part of overseeing the implementation of the CMS.

How the CMA goes about building the capacity and competence to develop, implement, oversee and review the CMS will depend on context but must be planned for.

Key sources of learning include a) Learning from each other; b) Learning by doing; c) Learning by comparing: and d) Learning by reflecting (see Chapter 3, Section 3.4 which addresses adaptive management and reflexive learning).

Appointment of a competent and representative CMA Board
The NWA – S 81 (10) (f) makes provision for the appointment of competent and representative boards. The Act clearly indicates the intention, among other things, to have a board equipped with all the necessary competences.

S 81 (10): After appointing members to the board the Minister may appoint additional members selected by the Minister in order to: (f) obtain the expertise necessary for the efficient exercise of the board's, powers and performance of its duties.

5.5 The public participation spectrum:
The 'right' type of public participation at the 'right' time

Democratic systems require that persons potentially affected by a decision be given the opportunity to be part of the decision-making process. This places a huge challenge on the CMA to design a process that facilitates appropriate engagement, at the appropriate times. This section aims to guide such a process.

The International Association for Public Participation (IAP[2]) has identified different types of public participation (Table 5. 1) which they call a **spectrum**[1] . We see that the level of involvement increases towards the right of the table and there is a general trend from provision of information to collaborative decision-making. This does not imply that one is better than the other. The trick is to select the appropriate level of participation for a particular task.

Since **public participation can take a number of forms,** it is unrealistic to demand the highest form of engagement in every IWRM task as some tasks are performed largely by the custodians and regulators whilst only some need to draw on public input. Table 5.2 provides a summary of the key areas of IWRM that will require public engagement and a guide in terms of the public participation process. Importantly, all participatory processes need to be transparent and feedback to stakeholders is essential (as per the Promotion of Administrative Justice Act (PAJA, No 3 of 2000)).

Table 5.1
The Public Participation Spectrum

Understanding the table contents helps with developing the plans for participatory practice and provides the basis for the 'how' and 'why' of public engagement (adapted from the International Association for Public Participation IAP. http://www.iap2.org/spectrum.html; *(All rights reserved).*

Increasing level of public engagement

INFORM **In**	CONSULT **Cn**	INVOLVE **Iv**	COLLABORATE **CL**
Public participation goal:			
To provide the public with balanced information to assist them in understanding the problem, opportunities, solutions and alternatives	To obtain public feedback on analysis, alternatives and decisions	To work directly with the public throughout the process to ensure that public concerns are consistently understood and considered	To partner with the public in each aspect of the decision-making process including the development of alternatives and the identification of preferred solutions
Promise to the public:			
We will keep you informed	We will keep you informed, listen to and acknowledge concerns and aspirations, provide feed back on how public input influenced the decision	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how the public input influenced the decisions.	We will look to you for direct advice and innovation in formulating solutions and incorporate your advice and recomendations into the decisions to the maximum extent possible
Example of techniques:			
• Fact Sheets • Web sites	• Public comment • Focus groups • Surveys • Public meetings	• Workshops • Polling	• Citizen advisory committees • Forums • Consensus building • Participatory decision-making

1The IAP[2] lists "Empower" as an autonomous decision making process as part of the Participation Spectrum. However, this option does not exist within the South African legal context. The public is provided with the opportunity to participate in a collaborative manner but not to take autonomous decisions that the CMA must implement. The 'empower' column has been omitted.

Table 5.2
IWRM tasks and public participation

This table provides an overview of the task, the details of the task and the method for incorporating contributions from role-players. This is merely a rough-guide, the approach will require refinement.
Colour-codes can be matched with descriptions in Table 5.1

IWRM Task	Nature of participation
1. A vision for the resource	
This task relates to creating a vision for the water resources for the WMA. Water managers, along with the public, need to **develop** a common vision, which includes medium to long-term aims and objectives, of how they want their water to be managed.	COLLABORATE CL
2. Set a class for the resource	
Stakeholders **negotiate** and **decide** on the desired future state - or Class - that they wish their water resources to be in (quantity and quality of water resources). The class will determine the activities and management actions for the CMA and associated institutions. This is based on an understanding of the current state and what actions need to be taken to achieve the desired state. Public participation is essential for the success of this step.	COLLABORATE CL
3. Set the Reserve	
Water managers will **determine** how much water will be allocated to meet the Basic Human Needs Reserve and Ecological Reserve associated with the Class. This is an activity that has limited public participation as it is a task completed by specialist teams. The public will however need to **understand** the implications for this in the remaining steps of the cycle (e.g. allocation).	INFORM In
4. Set Resource Quality Objectives (RQOs)	
In order to track goals for the WMA, smaller objectives are set. Specialist teams, with limited input from the public will set these objectives against the class of resource that has been chosen. RQOs are set for the resource in its entirety not just for the Ecological Reserve. The participation here is more likely to be of a **consultative** nature.	CONSULT Cn
5. Determine the allocatable resources	
After the Reserve has been set, water managers and specialist teams will determine how much water is available for the catchment in question. This stage requires a scientific investigation with technical input and again public participation in this stage is limited. The stakeholders will need to know how much is available for other users so that they can make realistic requests for water allocation to a particular sector.	INFORM In
6. Draw up an allocation plan	
The next step is to draw up an allocation plan that all water users within a WMA understand. This plan must reflect the consensus reached by the inhabitants of a WMA and must work towards equitable access and the greatest possible benefit for catchment residents and the ecological health of the WMA. Public participation and negotiation are high at this stage.	COLLABORATE CL
7. Call for licence application	
Current and potential water users will need to apply for licences to use water for which they will be charged. Stakeholders will need to prepare submissions to the CMA as each application will be evaluated against the goals of IWRM (see NWA) and against the allocation plan. Applicants are also required to publish requests for licences in the Government Gazette which can then be challenged.	INVOLVE Iv

8. Issue water use licences	
Successful applicants will receive licences from the CMA at this stage. Limited public participation is required. However, users might want to challenge licensing if they feel that it is inequitable or unfair. Submissions to the water tribunal will need to be prepared.	INFORM **In**
9. Audit compliance of licence holders	
DWAF is likely to take the major role in this task. Water inspection officers will check that licence holders are using the correct quantity of water for the correct purposes in agreed to ways. Public participation will take the form of stakeholders monitoring and informing DWAF of irregular or illegal uses that come to their attention. In this way the public will play an important role in assisting DWAF to reduce unlawful water use in the WMA.	INVOLVE **Iv**
10. Monitor resource status	
This step refers to the actions aimed at monitoring the condition (quality and quality) of the water resources in the WMA. The public has an important role to play in this step as the health of the resources will affect all users in a WMA. Monitoring of river flow, quality of water, rainfall data collection, and ecosystem health all form part of this important step. Theoretically, civil society can play a huge role in this task.	INVOLVE **Iv**
11. Review CMS as a whole	
Water managers along with all users, licenced and unlicenced, will be given an opportunity to review their CMS (at least once every 5 years). Public participation is likely to be crucial since it is at this stage that the different users and stakeholders will get an opportunity to evaluate the process of WRM over the five year period. Information gathered at such meetings forms a valuable basis upon which to improve on the future management processes.	COLLABORATE **CL**

5.6 CMS development and implementation: Two levels of public engagement

This section presents two levels of participation associated with a CMS and should be read in conjunction with Guideline 6.7. The first level deals with stakeholder engagement in the **drafting** of the CMS, and the second with stakeholder engagement in the actual **implementation** of IWRM as captured by the CMS. It is important that these two processes are regarded separately as they entail somewhat different approaches.

These guidelines are largely concerned with supporting the drafting of a CMS (level 1) but for purposes of clarity, both levels are summarised in Table 5.3. It is important to note that the phases of level 2 are not as distinct or sequential as level 1, and that the nature of participation tends towards 'collaboration' with implementation activities.

Table 5.3
A summary of public participation in IWRM

Level 1 refers to the drafting of the CMS and Level 2 deals with the implementation and review of the CMS. The table also provides an indication of the type or nature of participation as detailed in Table 5.1.

Level	Stage (see Chapter 4)	Details	Nature of participation
CMS Development			
LEVEL 1	**1. Planning**	• CMA to support and, if necessary, establish suitable stakeholder platforms • Protocol for communication with stakeholder platforms established • Data bases set up • Information sharing and awareness raising regarding the CMS and drafting of the CMS • Procedures and meeting dates for the drafting established on basis of sub-catchments	INFORM **In** INVOLVE **Iv**
	2. Drafting	• Stakeholder platforms engaged in different tasks associated with drafting Parts A,B,C & D of the CMS • Special attention to: 1. Situation description & assessment 2. Visioning 3. Choosing a Management Class for the resource 4. Determination of Resource Quality Objectives (RQOs) 5. Drafting of the allocation plan 6. Disaster management plan • Drafting and finalisation of first generation CMS	CONSULT **Cn**
	3. Approval	• Document submitted to the Minister for approval • CMS published in Government Gazette • Public to comment on the CMS as an interested and affected party	COLLABORATE **CL** CONSULT **Cn**
CMS Implementation			
LEVEL 2	**4a. Preparation for implementation**	• CMA to establish the extent of stakeholder engagement in each of the parts of the CMS (See flow diagrams in chapter 6) • Implementation plan drafted • Stakeholder platforms are informed of the implementation plan and tasks at hand • Facilitators and venues prepared • Capacity requirements are addressed	INFORM **In**
	4b. Implementanion stage	• Stakeholder platforms engaged in different tasks associated with Parts A,B,C & D of the CMS • Special attention to: 1. Monitoring of Resource Directed Measures 2. Licensing procedures 3. Monitoring, compliance and enforcement 4. Water Conservation/ Water Demand Management 5. Water quality and pollution management • Continual feedback, communication and updating of stake holders regarding developments and progress	CONSULT **Cn** COLLABORATE **CL**
	5. Review	• CMA to establish procedures for the review of the CMS (at least once every 5 years)	COLLABORATE **CL**

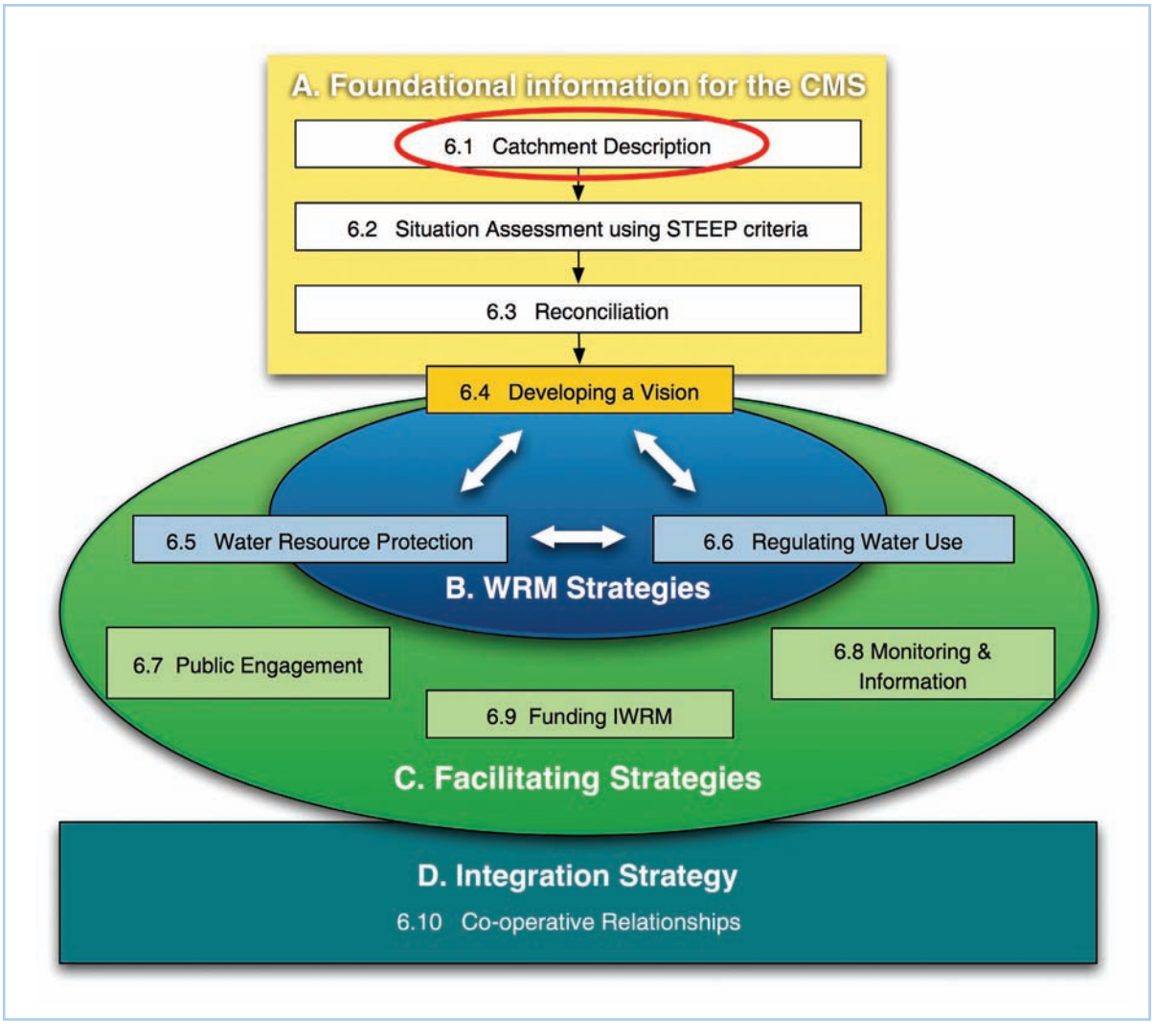
6

Sub-strategies of the CMS

Chapter 6 is presented in 4 parts: A, B, C & D. Each consists of a group of guidelines

6.1 Catchment Description

Guidelines for undertaking a description of the WMA: *Status quo* and potential future profile



6.1.1 Introduction

Section 9 of the National Water Act (1998; NWA) specifies the need for a Catchment Management Strategy (CMS) to contain a contextual profile. This catchment description must describe the present state of the catchment (DWAF 2004 c). However, the management of water cannot be divorced from the broader context. This requires the recognition of linkages, which is more formally given the name of Integrated Water Resource Management (IWRM). This approach, adopted by DWAF, implies a number of things; discussed below.

- Firstly, a holistic approach is required. Guiding this is the commitment that South Africa gives to understanding the important role water plays in social and economic development, as well as ensuring the sustainability of the resource base itself. Thus it is imperative that the ecological, social, economic, technological, political and institutional environments are adequately considered when conducting water resources planning and management.
- Secondly, the quantity and quality of water is influenced by both water based and land based activities. For example, not only does abstraction for a particular sector like agriculture or industry influence the

flow regime but the activities on land - such as the generation of effluent or the loss of topsoil - will also be reflected in the water quality and/ or quantity.
- Thirdly, because of the nature of water, upstream activities impact on the down-stream environment. For example, pollution into a river may be felt for a long distance down stream of the input point. Effectively this means that often the consequences of our actions are felt elsewhere.

This guideline seeks to provide a generic framework in support of achieving a balanced description and assessment (GL 6.2) of the Water Management Area (WMA). This is supported by a more detailed set of specialist guidelines that have been developed by DWAF, such as those for water quality planning (See Appendix 2).

Section 9 of the NWA specifies the need for developing a contextual profile.
It requires that the CMS reflects an understanding of catchment characteristics, trends and national directives, by stating that the CMS must consider the:

- *Natural and anthropogenic character, i.e. geology, land use, etc (S9 (d));*
- *National and regional plans, including water services development plans (WSDP) (S 9(f));*
- *Needs and expectations of existing and future water users (S 9(h)).*

Legislation

Key question

What does the WMA look like? (Biophysical, social, economic, political and institutional characteristics).

What is it likely to look like in the next 10 to 20 years?

6.1.2 Objective and outcome

The **objective** of describing the *status quo* is to provide a holistic contextual profile of the key characteristics of the WMA (biophysical, social, technical, economic, political and institutional), as related to water, and the likely future profile, in order to provide a sound basis for the development of appropriate and effective strategic direction.

The intended **outcome** is a synopsis of (a) the best available information regarding the biophysical, social, economic, political and institutional characteristics for the WMA and, (b) the likely future scenario(s). This contextual profile for a WMA will be assessed, and then used to inform the vision and subsequent strategies.

6.1.3 What you need to know

The development of a situational profile is **not a once-off exercise**. As management actions change, so will the situation in the WMA and *vice versa*. In order to inform strategic actions, the *status quo* will have to be revisited in a process of 'reflection-and-action". Moreover, describing the WMA is an important tool for informing and engaging stakeholders.

A key orientation of the work, guided by the NWA, is one of an integrated and holistic assessment of the current situation. Thus although the core business of the CMA is that of IWRM, a much wider view of the WMA is required to give effect to sustainability, equity and efficiency. A useful framework for this is to develop a "*STEEP*" profile of the WMA: that is one that includes and integrates **S**ocial, **T**echnical, **E**cological, **E**conomic and **P**olitical characteristics (Figure 6.1.1).

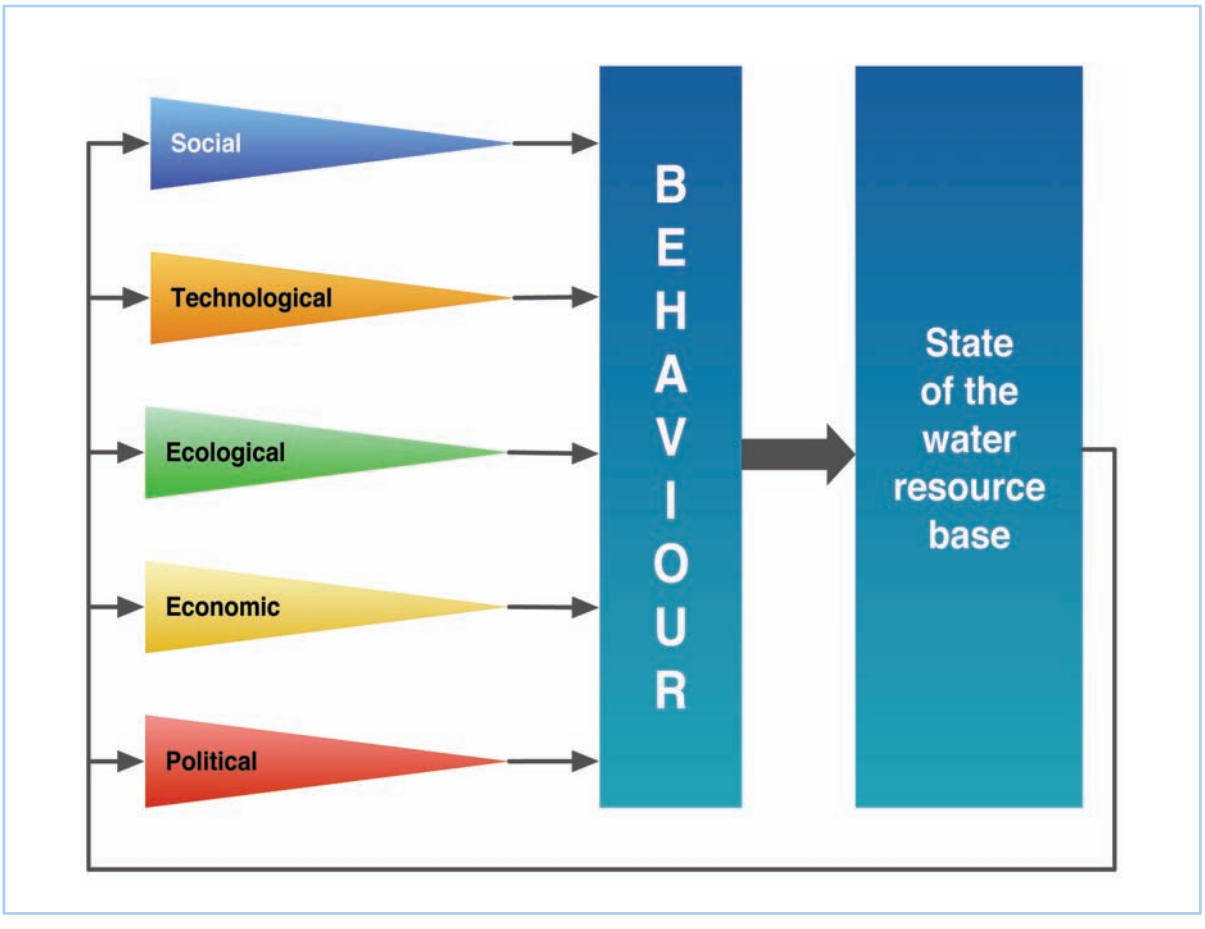


Figure 6.1.1
The STEEP framework can be used to guide the situation description, and the development of criteria for the assessment (see Guideline 6.2) for the WMA. The state of the water resource base is influenced by human behaviour. Key socio-cultural, environmental, technological, economic and political (including institutional) drivers and factors underlie this. Equally the state of the water resource base acts to influence these factors and drivers. These factors and their interactions need to be understood. Note that political factors include institutional issues (adapted from Pollard *et al.* 1998; Pollard *et al.* 2003).

A description of the current situation in a WMA should **not** require the collection of large quantities of information or data. The intention is not to re-invent the wheel but rather to collate and synthesise what is available in such a way as to provide the basis for strategic direction for the WMA.

Indeed, the principle should be to work with what is available and to use the exercise to identify gaps and priorities. This is because large quantities of information are already available through the DWAF Water Resources Situation Assessment Studies, the National Water Resources Strategy (2004), the Internal Strategic Perspectives (ISPs), the Water Services Development Plans (WSDP) and various other documents within provincial and local government. A summary of some of the information that is readily available and that should be consulted in relation to water resources is given in Appendix 4. The first stage is to see what is available and then to build on this. Secondly, one should consult the 'higher tier' requirements as outlined by the Constitution (S 146(2)); norms and standards; frameworks; and national plans such as the NWRS and classification system.

Understanding the **potential future catchment profile** within a WMA is also an important component of the description. This asks the question: *Given the current situation and where things are going, what will the situation be in 20 years?* This is essentially 'planning' and various specialist tools that focus on water quality or the ecological status exist for national water resources planning within DWAF.

Developing a situational description offers the opportunity to **collectively** synthesise this large amount of information into a contextual profile of the WMA. It provides an ideal starting point from which to engage stakeholders, thereby facilitating the assessment (GL 6.2) and visioning steps (GL 6.4).

6.1.4 Potential contents

The potential contents for describing the catchment context are summarised in Table 6.1.1. Attention should be paid to noting the status and quality of the available information. Equally, this document should be concluded by identifying gaps in information and priorities for future work.

Importantly, a description of the likely future scenario(s) integrating each of the characteristics must be undertaken. This is based on the best available information. Again, the development of a sound understanding of the catchment characteristics is iterative, with information being integrated as new research is undertaken. Thus for example, the economic assessment of returns to water use may not be immediately available but may be essential for the water allocation plan. Likewise, in some WMAs hydrological or demographic information is weak, and this should be reflected when identifying gaps and/or priorities. Thus an **objective** for such a situational description may be to improve the situation analysis for certain key areas. Certain **principles**, such as the urgent need to address poverty and equity, or sustainability may be important to re-iterate here. The public can provide an enormous quantity of information and should be involved. In some WMAs the approach of **public consultation** has already been used with great effect and contributed to a sense of identity and ownership. Equally, other research bodies and other organizations can be invaluable **partners** in building a better understanding of the situation in the WMA and should be actively nurtured. Much of the information sharing will rely on co-operative relations with other departments and institutions.

Table 6.1.1
Essential contents of a situational profile which provides the basis for strategic planning within a WMA

Note that this is most effectively prepared for each catchment of the WMA (ISP = Internal Strategic Perspective (see Chapter 1))

1. History, socio-economics and politics

- Macro-historical trends
- Demographic attributes (population, density, distribution, urban/rural, household size, structure)
- Socio-economic profile (employment- formal and informal, income, education, gender issues, other vulnerable groups (refugees))
- Economic development
- Stakeholders (government, NGO, civil society)
- Trends

2. Biophysical

- Climate (rainfall, temperature, evaporation)
- Geology and soils (geology, soils, erosion potential)
- Flora and fauna (description and status, invasive aliens, evidence of change)

Water resources overview: rivers, wetlands, groundwater, estuaries (refer to ISP, classification and reserve determination)

- Raw water resources – surface water and groundwater (quality and quantity, hydrological patterns). Reserve + Class if available
- Historical attributes and anthropogenic changes
- Aquatic and riparian biota, status, invasive alien plants, evidence of change, trends

3. Land use, land administration, tenure and land reform

- Historical land cover and changes
- Current land use (include irrigated versus non-irrigated)
- Potential changes
- Land tenure arrangements, municipal boundaries including wards
- Traditional community/ traditional council boundaries
- Land redistribution, land restitution, and communal tenure reform (if applicable)
- Land reform and land claims (if applicable)
- Trends

4. Water requirements, water use and supply (summary, refer to ISP).

Note: The water balance, which is an important part describing the current and future scenarios is dealt with in GL 6.3.

- Water balance (see GL 6.3)
- Water treatment infrastructure
- Water supply infrastructure and levels of service (capacity and skills of operators)
- Institutional arrangements (system of ownership, operations and maintenance)
- Trends

5. Role-players, stakeholders and institutional arrangements

- Role-player/ stakeholder identification and stakeholder platforms/ forums
- Co-operative arrangements (e.g. across WMAs, international agreements)

6. Initiatives and planned projects within the WMA.

- Status of registration/ water use licences
- Water supply infrastructure
- Provincial Growth & Development Strategies, Agricultural developments, Spatial Development Initiatives
- Integrated Development Plans, and Water Services Development Plans of Local Government
- Working for Water/ Wetlands
- Integrated Conservation Plans; Environmental Management Plans
- Services (health, sanitation, electrification)
- Industrial developments
- Mining

7. Key gaps and priorities

Checklist 6.1.5

Essentially, a detailed checklist of contents is given in Table 6.1.1. In addition, the following questions can be asked.

Does the situation description:

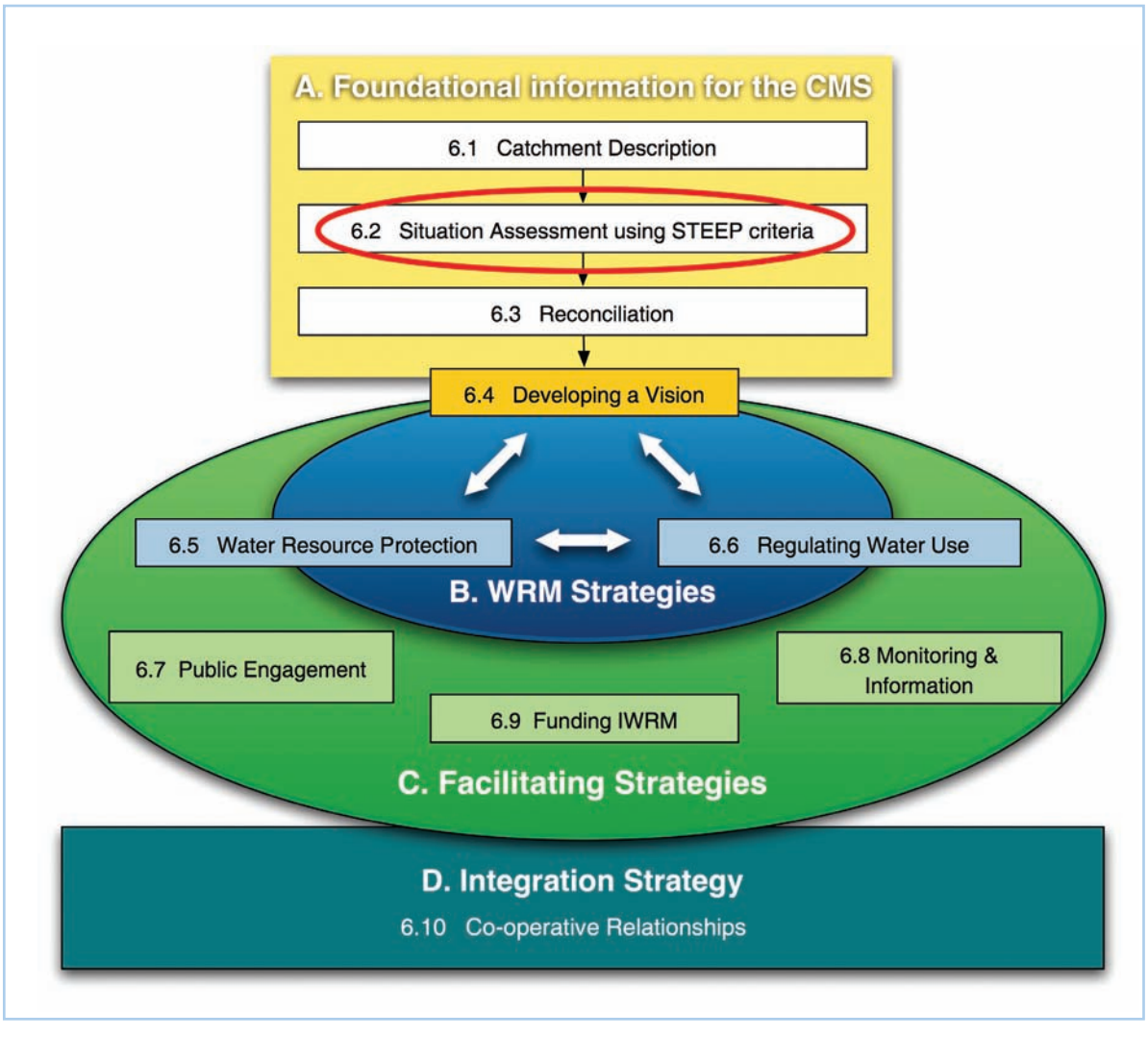
a) identify which information is of a reasonable quality to provide the basis for a strategic perspective on water resources planning for your WMA?
b) identify key gaps and priorities and have these been adequately captured?
c) provide a reasonable assessment of the trends of the socio-economic, environmental and political characteristics, including the demands of other developmental plans, e.g. Provincial Growth and Development Strategy (PGDS)?
d) specify the critical issues and have these been taken up in the appropriate sub-strategies of the CMS?

6.1.6 Procedural diagram

An overview of an approach to the catchment description, together with the assessment is given in Figure 6.2.2.

6.2 Situation Assessment

Guidelines for undertaking an assessment of the current situation and potential future scenario within a WMA as the basis for strategic planning



6.2.1 Introduction

The preceding guideline pointed to the integrated nature of water and highlighted the importance of considering the ecological, social, economic, technological, and political environments when conducting water resources planning and management. Once the current situation and likely future scenario in a Water Management Area (WMA) are described, they must be assessed from a range of perspectives. This is because we must honour our commitment to collectively achieving equity, sustainability and efficiency. Consider for example, a certain water use that is regarded as highly profitable. When viewed from other perspectives however, it may be shown to carry high environmental costs, or to inadequately address the issue of equity. Is this wise use of water according to South Africa's principles? The answer is probably 'no' and the example emphasises the importance of striking a balance.

This means that multiple criteria must be used to assess both the current and future scenarios in the WMA. But how does one develop these criteria and make sure that they are appropriate for the

sub-catchment in question? Importantly, how does one use these criteria in a way that is meaningful? For instance, poverty reduction may be a key issue in one area of the WMA whilst river degradation is a dominant issue in another area. The following guideline seeks to provide a generic framework in support of achieving a balanced assessment of the WMA. This is supported by a more detailed set of specialist guidelines that have been developed by DWAF, such as those for water quality planning (see DWAF 2003 b, d; 2004 c, 2005 a, and Appendix 2).

Key question

What does the situation in the WMA mean for achieving equity, sustainability and efficiency in Water Resources Management?

6.2.2 Objective and outcome

The objective is to provide a holistic assessment of the current situation and likely future profile within the WMA (biophysical, social, economic, political and institutional), as related to water, in order to provide a sound basis for the development of appropriate and effective strategic direction.

The intended **outcome** is an assessment of the current situation and the likely future profile according to appropriately derived criteria. This information will be used to inform the vision and subsequent catchment management strategy (CMS).

6.2.3 What you need to know

The situation assessment is not a once-off exercise. In a process of adaptive management, strong links exist between the assessment, management actions and monitoring. Since management results in change, the situation – and hence the assessment thereof - will change. In order to inform strategic actions, the *status quo* will have to be revisited in a process of 'reflection-and-action" (see Chapter 3).

As stated above, the key principle here is one of adopting an integrated and holistic assessment of the current situation (Scenario 0) and the likely future situation(s) (Scenario 1, etc.). Again, it is suggested that the STEEP framework, discussed in Guideline 6.1, could be a useful approach for developing locally-appropriate and meaningful criteria.

The assessment must provide a clearly defined process and methodology for using and evaluating the information from the situation description against agreed criteria (see for example Figure 6.2.1). Importantly, not all criteria are equal in all situations; thus some criteria will be more important in one area than others. For example, criteria that flow from the ecological sustainability principle are likely to be more important in headwaters or in areas under conservation, whilst social-upliftment criteria will dominate densely-populated poor areas.

This process is called weighting of criteria. A range of tools are available for assisting in conducting such an exercise. Multi-Criteria Decision Analysis, or MCDA has been used in a number of cases for example.

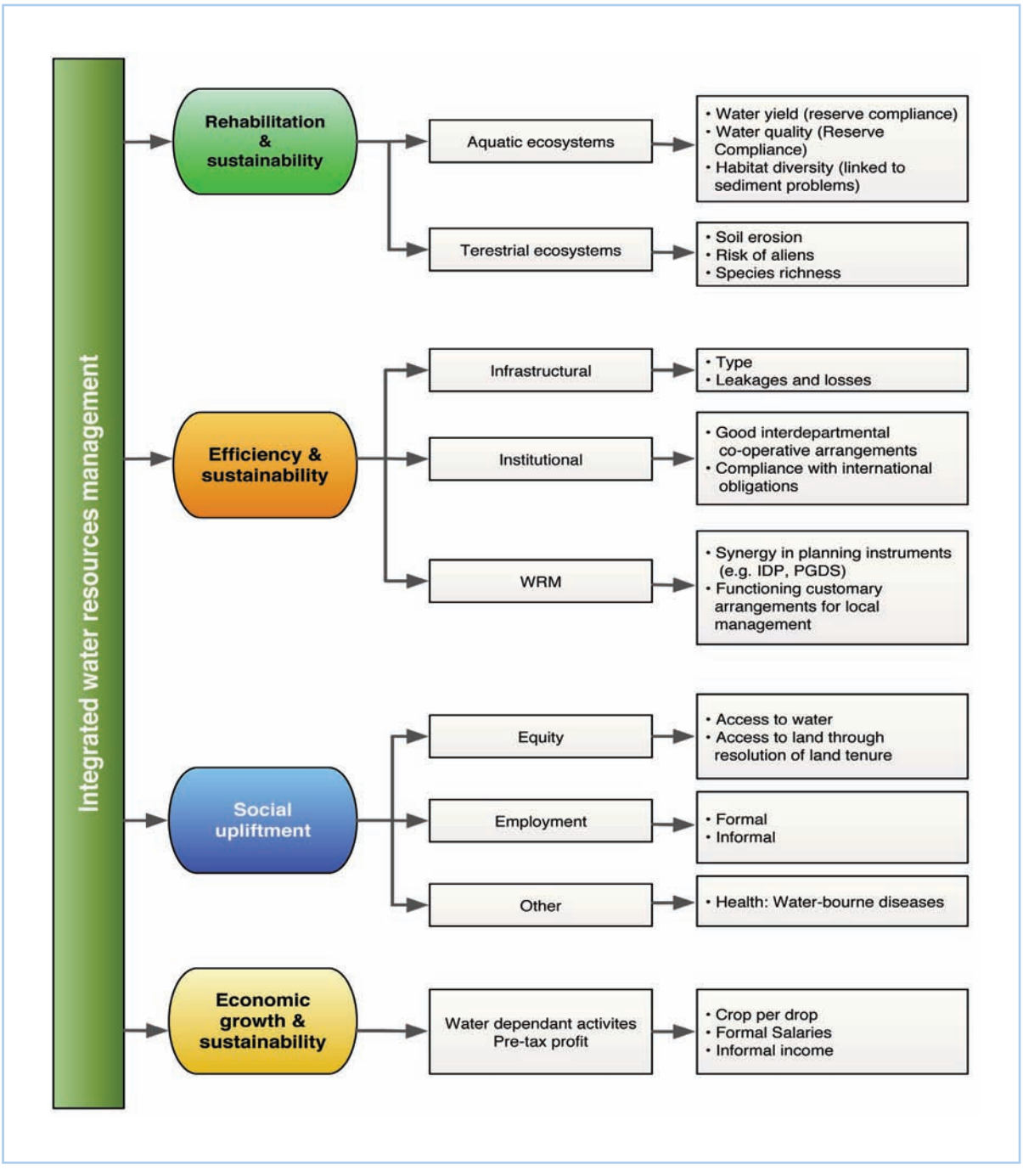


Figure 6.2.1
An example of criteria development used to assess the *status quo* in the Sand River Catchment (adapted from Pollard *et al.* 1998). Such criteria should be locally-derived, and should flow from the principles embodied in the NWA of 1998 (see Box 2.1). The STEEP framework may offer a useful approach for criteria development. This is not a once-off process and will need to be revisited as part of adaptive management.

6.2.4 Potential contents

Both the current and projected future scenario(s) must be assessed. Like the description of the catchment, the assessment will be iterative, with information being integrated as new work is undertaken. Thus for example, the economic assessment of returns from irrigation to water use may not be immediately available but may be essential for the water allocation strategy. This should be reflected here when identifying gaps and/or priorities.

Certain aspects of the assessment are critical and are listed below.

1) The assessment must provide a clearly defined process and methodology for using and evaluating the information from the situation description.
2) The assessment must be holistic in that it addresses the biophysical and socio-economic situation from a wide range of perspectives (also biophysical, technical and socio-economic). Thought should be given to the implications of various other strategies and plans (e.g. Integrated Development Plans, Provincial Growth & Development Strategies).
3) The scale that will be used for the assessment must be clearly stated and motivated for.
4) The criteria used for the assessment, why these were selected and their importance (weighting) must be clear. For example, the urgent need to address poverty or sustainability will guide the weighting of criteria in different parts of the WMA.
5) Priorities and gaps together with key strategic actions needed must be considered.
6) The assessment must involve stake holders. Equally, other research bodies and other organizations can be invaluable partners in building a better understanding of the situation in the WMA and should be actively nurtured. Much of the information sharing will rely on co-operative relations with other departments and institutions. Moreover, the early involvement of stake holders will facilitate the visioning process (See GL 6.4) as people will participate from an informed position.

Checklist 6.2.5

Does the situation assessment:

a) provide a reasonable, holistic assessment of the current situation in the WMA?
b) provide a reasonable and holistic assessment of the likely future profile based on an understanding of likely changes in the socio-economic, environmental and political characteristics?
c) identify the key gaps, and have these been addressed as part of the CMS?
d) specify the critical issues, and have these been taken up in the appropriate strategic area of the CMS?

6.2.6 Procedural diagram

An overview of an approach to the assessment is given in Figure 6.2.2. This indicates that in order to undertake an assessment, the scale and appropriate criteria must be determined. In many cases in the ISPs, the scale was defined by the land-use or at a sub-catchment scale. So for example, one may consider agricultural land separately from that of residential land use.

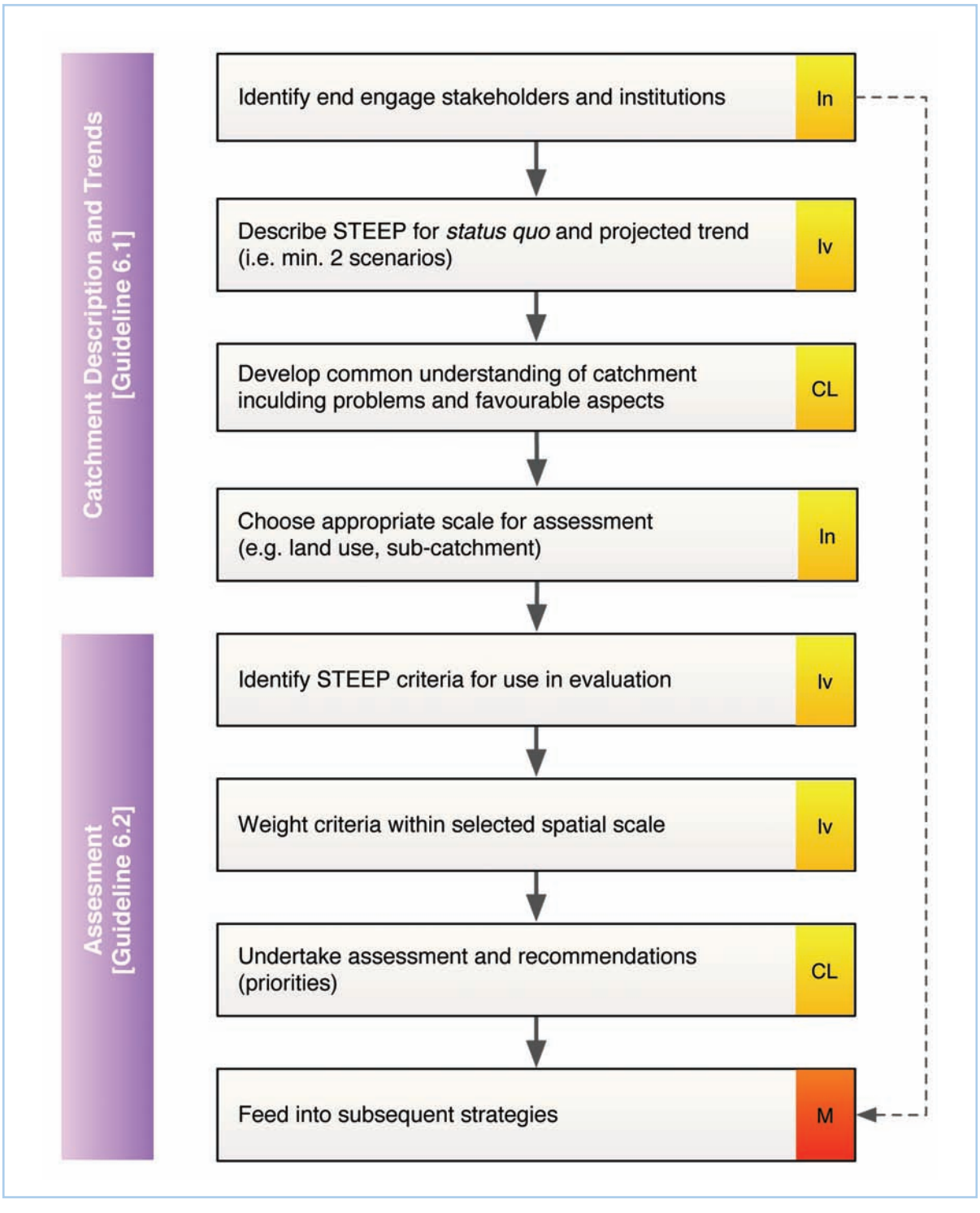
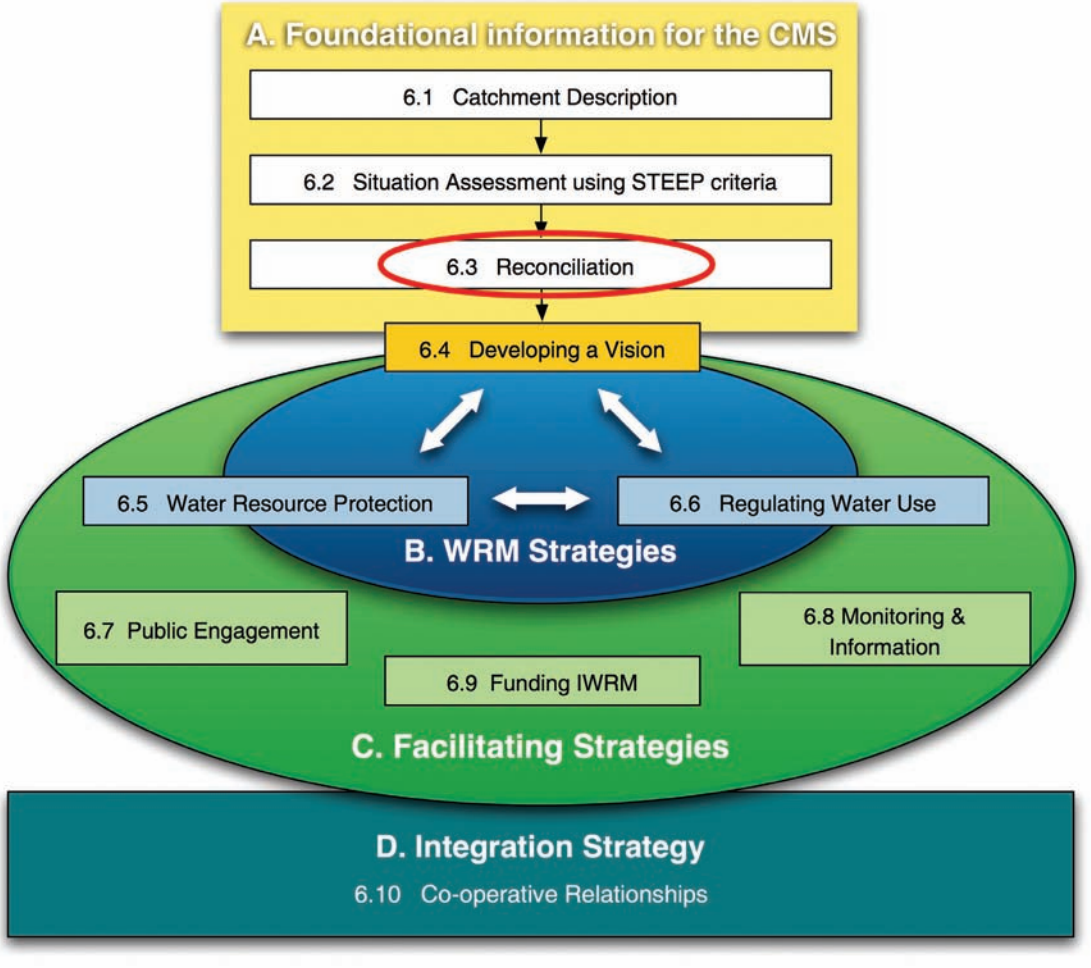


Figure 6.2.2
Schematic representation of steps for the catchment description and assessment (see also DWAF 2004). STEEP = Social, Technical, Ecological, Economic and Political characteristics. Requirements for public participation yellow) and monitoring (red) are indicated. See Table 5.1 for a full description of types of participation. [In= Inform, Cn=Consult, Iv= Involve, CL=Collaborate].

6.3 Reconciliation

Guidelines for reconciliation: balancing water availability with water requirements



6.3.1 Introduction

Water Balance details for each of the WMAs are given in the NWRS (2004) in Chapter 2, S 2.5.

The water-scarce situation in South African demands that we act strategically to achieve equity, sustainability and efficiency in water resources management. Over half (10 of the 19) of the Water Management Areas (WMA) in South Africa are in water deficit, or are so-called 'closed catchments' (National Water Resource Strategy (NWRS), 2004: Table 2.4). Although the likely scenario for 2025 does not deviate markedly from the 2000 figures, there are large anticipated increases in water requirements for the main metropolitan centres which require attention. Importantly however, such generalizations often mask **local realities**, and a surplus or a deficit shown in a particular WMA is unlikely to be representative of the area as a whole. A key responsibility of the Catchment Management Agency (CMA) is to deal with imbalances and localised areas of water stress through the catchment management strategies (CMS) (NWRS, 2004: S 2.5). An important step in this regard is that of **reconciliation**.

Water Requirements (water demand) In South Africa, refer to beneficial, effective and efficient water requirements (see NWA, S 2 (d).

Reconciliation refers to the technical process of undertaking a water balance – that is, weighing up the available water resources against the water requirements, or so-called 'water demand'. This can be predicted – or modeled – for a range of scenarios including the current and likely future situations. This technical process must be distinguished from the **strategic intent to achieve reconciliation** or, in other words, the intent to achieve a water balance that is equitable, sustainable and efficient. Such a commitment places an imperative on the CMA to outline strategies for achieving this balance, including proactive strategic plans to reduce the likelihood of such deficits occurring. In South Africa, two complementary strategies have been designed to achieve this - Resources Directed Measures and Source Directed Controls. These components are dealt with in GL 6.5 and GL 6.6.

This guideline provides an overview of reconciliation and more importantly for the CMS development, when it is required. As such it forms part of the situation description and assessment discussed in the previous guidelines. However, undertaking a reconciliation exercise is also required during visioning, RDM and SDC. This indicates that reconciliation is not a **once-off, nor a stand-alone process**, but is an integral part of many of the steps that make up Integrated Water Resources Management (IWRM) (see Figure 6.3.1).

Key questions

How much water is available for use (allocation) in the WMA and what is the requirement (beneficial, effective and efficient)?

What will the situation be under different scenarios?

6.3.2 Objective and outcome

The **objective** of reconciliation is to provide a comprehensive water balance of beneficial, effective and efficient water requirements with water availability (quality and quantity) for the current situation and for potential future scenarios within a WMA, taking into account the water situation assessment, the vision, water required to meet special provisions and the implications of resource classification.

The intended **outcome** is a geographically-based reconciliation of availability versus requirement for the current situation and for the state articulated in the vision and management class. Priority strategic actions must be outlined to ensure the beneficial, effective and efficient use of water.

6.3.3 What you need to know

6.3.3.1 Integrating reconciliation into IWRM: When should reconciliation be undertaken?

As stated earlier, the technical exercise of reconciliation is not a once-off process, but must be seen as an integral part of many of the steps that make up IWRM as shown in Figure 6.3.1.

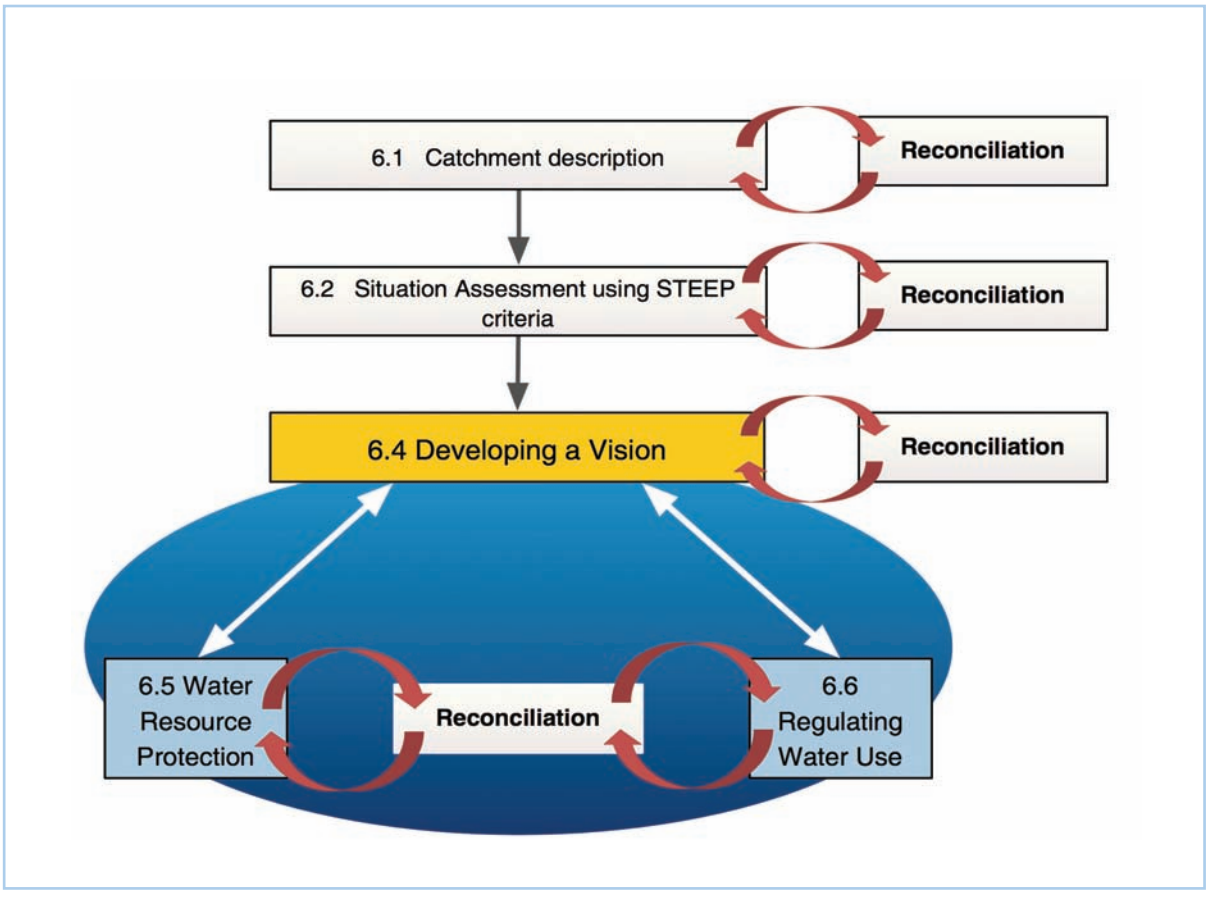


Figure 6.3.1
Reconciliation – or balancing water availability versus requirements – occurs not as a stand-alone process but, as shown in the diagram, as an integral part of various components of the CMS.

It might not be possible to complete the reconciliation for the scenarios associated with the vision and classification before the WRM strategies (under Part B) have been finalised. A first order reconciliation for the WMA must be done, and the vision based on this (see GL 6.4 – Vision). The reconciliation process will then continue as part of the RDM (GL 6.5) and SDC (GL 6.6) sub-strategies. Reconciliation will form an essential component of the classification process (see GL 6.5) because as Management Classes are chosen, these will need to be checked for viability (see DWAF 2006 b).

Through the public participation processes, the balance between water requirements and water availability can be further refined and fed back to reconciliation (6.3). It is not expected that the vision will have to be amended as a result of the adjusted reconciliation figures. However, should substantial change result, the vision might also need revision. Adjustments will also take place as the situation description is improved and/or reviewed. In the end the water requirements and water availability on which the RDM and SDC sub-strategies are based must tally with the quantities set out in the situation description.

6.3.3.2 What does a water balance consist of?

As stated, a water balance involves modelling water availability versus water requirements under different scenarios. Importantly, in South Africa water availability is constrained by certain requirements as outlined in Box 6.3.1.

Summary of components that contribute to a water balance **Box 6.3.1**

Water availability

Estimates of water availability must take account of the requirements of:

- Resource Quality Objectives and the Reserve,
- water to meet international rights and obligations,
- a "contingency" to meet projected future water requirements including possible transfers of water to another water management area; and
- water use of strategic importance.

Water use

Accounted for consumption:

- metered consumption
- unmetered consumption

Unaccounted for water (Losses):

- unauthorised consumption (illegal connections),
- meter inaccuracies,
- leakage on transmission and distribution mains,
- leakage and overflow at storage tanks,
- leakage on service connections up to point of customer meter.

6.3.3.3 Protocol for undertaking reconciliation

There is currently no protocol for reconciliation nor is there a prescribed approach to determining yield. However the **water resources yield model** is the model most commonly used by the Department. Currently DWAF is developing guidelines for reconciling water use with efficient use, but a number of elements of good practice are generally accepted. These might include addressing unaccounted for water and leakages, as well as the regulation of nightflows in the context of urban use.

6.3.3.4 Key concepts

A number of important terms and concepts, described below, must be understood in terms of reconciliation.

Stressed catchments and water requirements

The term "stressed" can be quite misleading because it is a relative term. However it is equally recognised that it is a useful concept, especially for the public, as it quickly draws attention to issues of water shortages and wise use. Water stress depends on a range of factors and is not simply a shortfall in water availability versus requirement. Firstly, water deficits will not be experienced equally over the entire WMA, nor at all times. Thus 'stress' can change in space and time. Secondly, in some cases the deficits do not imply that consumptive use exceeds the available water, but that the allowances made for the implementation of the ecological component of the Reserve cannot be met fully at present levels of use. Thirdly, the term 'water demand/ requirement' is also a relative one since it depends upon who is using the water, for what, the levels of assurance required, how it is being used and where. Importantly, a water requirement does not necessarily imply that it is legitimate. In this document "water requirements" refer specifically to the beneficial, effective and efficient use of water. These are important distinctions because currently some so-called water requirements can be improved through, for example, a reduction in water losses.

Water availability

Availability refers to the **quantity and quality** of surface water and ground water. Not all water within a catchment is available water. Firstly, this is because water availability changes over seasons and throughout the catchment. Secondly, the NWA (1998) requires that water is set aside to meet certain obligations (see Box 6.3.1 and Figure 2.1). Thus, the determination of **water availability** must take account of a number of requirements all of which are the Minister's responsibility (NWRS 2004; see Table 2.1).

Estimates of water availability must take account of the requirements of:

1) *Resource Quality Objectives and the Reserve (see GL 6.5),*
2) *water to meet international rights and obligations,*
3) *a "contingency" to meet projected future water requirements including possible transfers of water to another water management area, and*
4) *water-use of strategic importance.*

6.3.3.5 Quality of available information

A review of the ISPs in 2005 recognised that in general, they currently offer the best information on water availability, use and reconciliation. Nonetheless, some improvements have been made in some areas. It was also noted that in many WMAs there is insufficient knowledge regarding the volumes of water available and how they are used. Importantly, the network coverage is regarded as inadequate to meet the management challenges. It was recommended that the CMA, together with DWAF, must allocate adequate resources to monitoring so as to facilitate allocation and licensing decisions and for use in future policy and strategy development.

6.3.3.6 Links to Resource Directed Measures and Source Directed Controls

It was pointed out earlier that RDM and SDC together comprise the strategic intent of the Department to achieve a balance between water availability and use. Thus these collectively represent our strategy to balance water use against availability.

6.3.4 Potential contents

Clearly, the water balance sets out water availability versus use. A clear description must be given of the scenarios for which the water balance is being made (e.g. current, under likely projections, the vision, classification scenarios, and so on).

Estimates of water availability

These estimates may be based on a variety of sources such as the NWRS, ISPs and Basin Study reports. Note that the sustainable use of groundwater must take its rightful place as a means to augment future supply.

Estimates of water use

Water use needs to address the following aspects: who (which sector), how much (quantity, quality), source, how/ for what purpose, when, where. The registration of water use has been captured on DWAF's Water Authorisation and Registration Management System (WARMS) and the sources identified from which these requirements must be supplied. Has water use been validated and is this lawful (see GL 6.6)?

A number of scenarios need to be considered, but as stated, the reconciliation exercise will not be undertaken as a once-off or stand alone exercise. The general areas for which reconciliation will be required are as follows.

- Expected growth and other potential future scenarios should be considered. These trajectories will be available from the situation description.
- The vision. Visions will be derived for each sub-catchment (where appropriate, see GL 6.4) and these will need to be checked for feasibility via reconciliation. Various iterations are likely as aspects of the vision are cross-checked.
- Likewise a similar, but more detailed process will be needed for classification (see GL 6.5).
- Reconciliation also forms part of the cross-checking processes within RDM and SDC as a whole.

Finally, the various reconciliation exercises should be assessed. Importantly the quality of information needs to be spelt out. Comments on strategic actions required in sub-strategies are also useful. For example, this means that constraints must be fed into the visioning process (GL 6.4), classification scenarios need to be balanced (GL 6.5), measures to balance deficits need to be taken up under SDC (GL 6.6) and monitoring may be critical (GL 6.8). This also implies that information needs to be presented in a form that can be understood by stake holders.

Checklist 6.3.5

Does the water-balance assessment:

a) describe the quality of information and confidence of results?
b) clearly outline scenarios for which it was conducted?
c) clarify that it was based on the use registered in WARMS? Has this been validated and verified?
d) take into account the quality and quantity of use under Schedule 1 and general authorisations in order to assess their relative importance?
e) take into account obligations (the Reserve, international and strategic needs) before any other needs?
f) take into account water for needs committed under certain agreements (e.g. Ramsar)?
g) identify priorities and gaps?
h) include an assessment of groundwater? (use; aquifer status; groundwater/ surface water interactions)
i) have the results been presented in such a way that they can be used in discussions with stakeholders?

6.3.6 Procedural diagram

An overview of an approach to reconciliation is given in Figure 6.3.2.

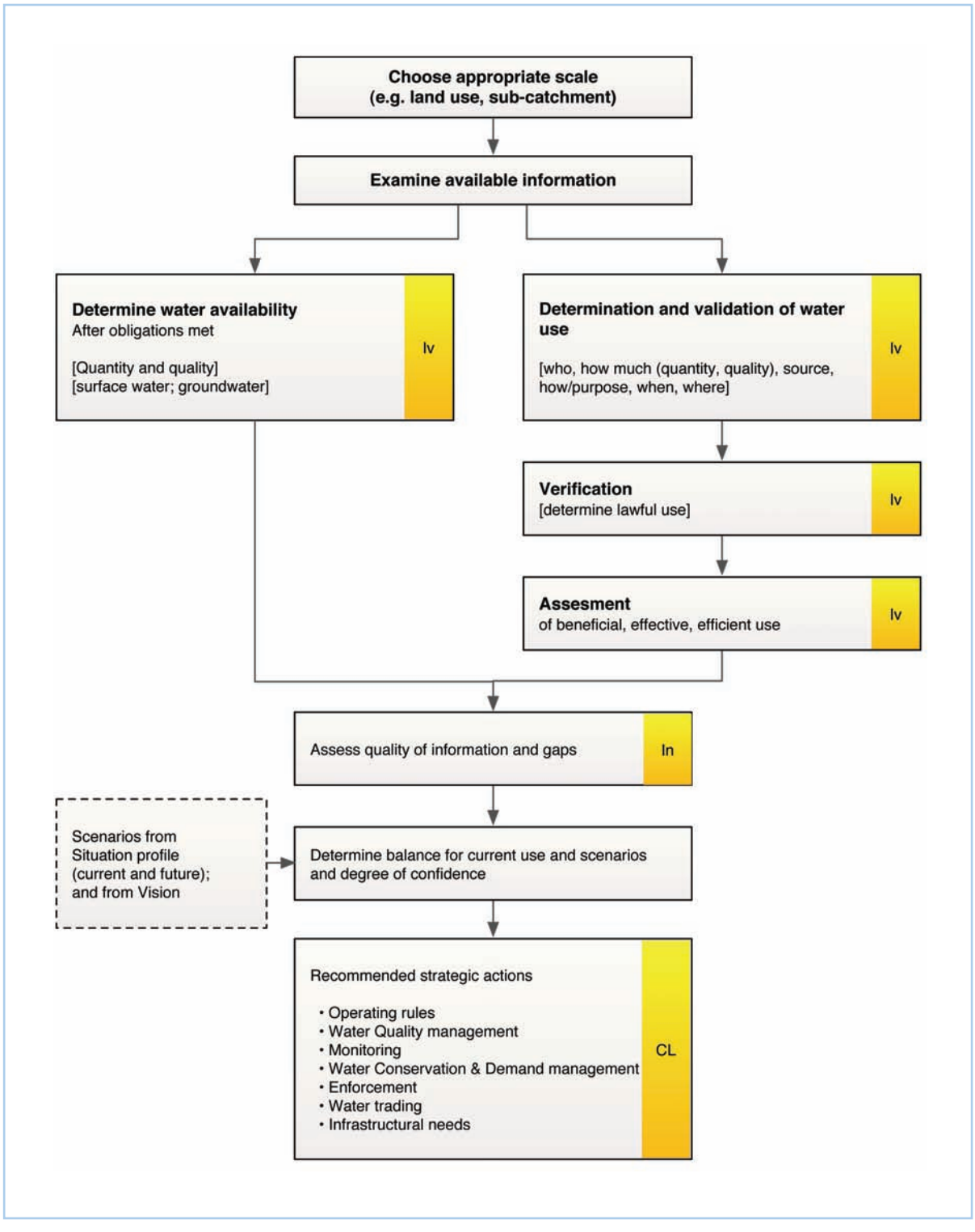
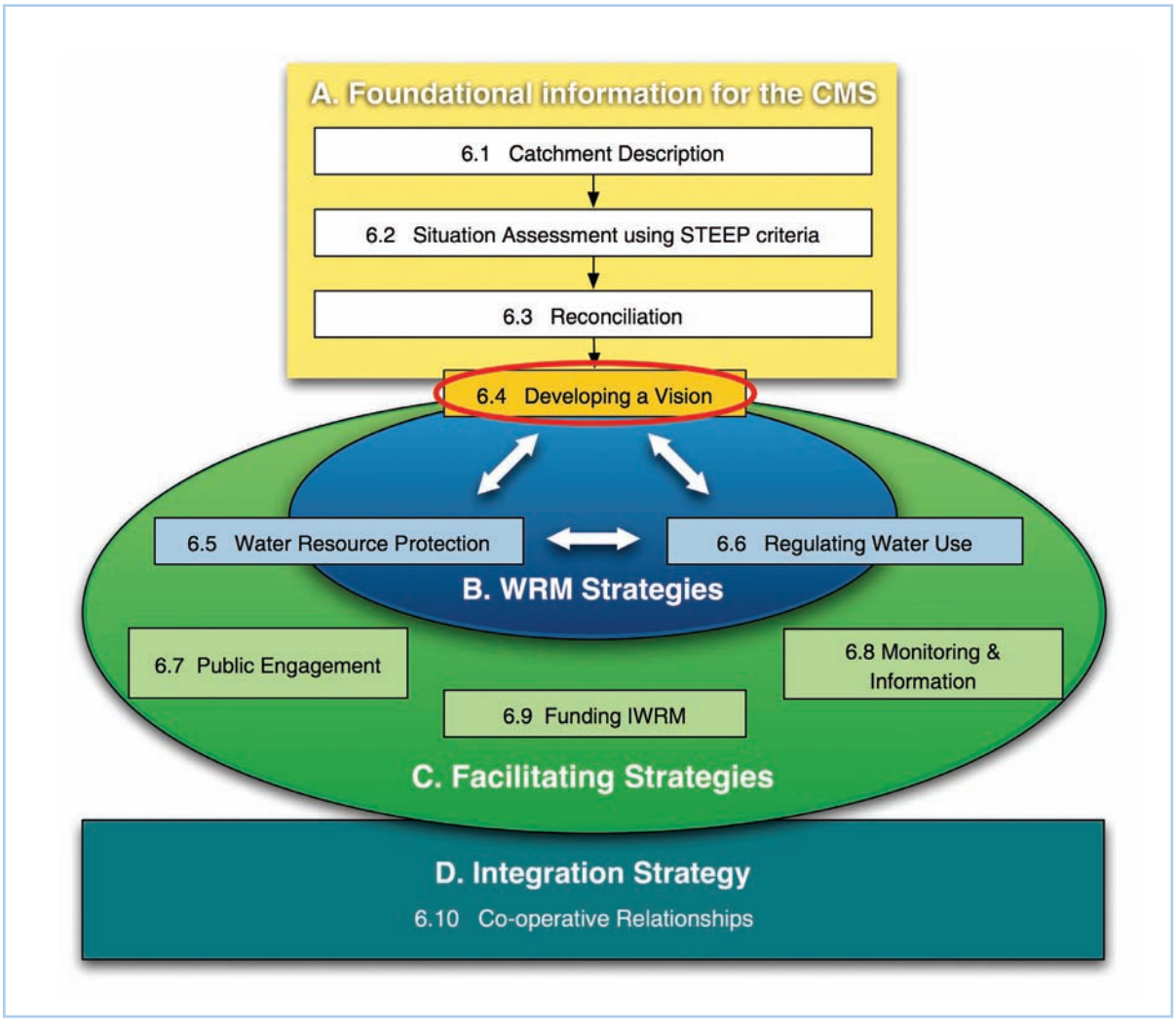


Figure 6.3.2
Schematic representation of steps for reconciliation of water resources. Requirements for public participation (yellow) and monitoring (red) are indicated (see Table 5.1).
[In= Inform, Cn=Consult, Iv= Involve, CL=Collaborate].

6.4 Developing a Vision

Guidelines for developing a vision for WMA



6.4.1 Introduction

The Constitution (1996) holds that South Africans have the right to be involved in issues that affect them. Visioning can be seen as one of the fundamental steps towards democratising and decentralising water resources management. By collaboratively arriving at a vision, different stake holders commit to dealing with the realities of a particular Water Management Area (WMA). The process of visioning provides a mechanism for involving multiple stake holders in the strategic planning process from the very outset. The ideal situation is to have as much information available as possible before the visioning process is initiated. However, since the visioning process is iterative, a vision can be refined over time as and when information is made available. In any event, a vision will be revisited as part of the review process once every five years. The importance of visioning in Integrated Water Resource Management (IWRM) cannot be over stressed as the vision statement provides the basis for developing a series of overarching goals in relation to the principles of **equity, efficiency and sustainability** (see for example Figure 3.3). The goals then direct the development of the various IWRM sub-strategies. While the vision is a general statement of a desired future state, the goals are more specific and can be ranked or priortised in order to achieve the vision effectively. The vision must provide the basis for **transformation** of water resources management, to achieve social justice and sustainability.

This section of the guideline sets out some of the underlying concepts of visioning and pays particular attention to the scope and content of a vision. Additional information is also provided on the participatory nature of deriving a vision. Which is one of the most challenging aspects of developing a vision.

Reference to visioning

Specific reference to setting a vision is made in the White Paper on Water Policy (1997; S 6.3.3) that states: "Through a process of consensus seeking the level of protection of a resource will be decided by setting objectives". Furthermore, visioning is also identified as the first step in IWRM in South Africa (DWAF, 2005 b)

Key question

What is the vision of role-players and stakeholders of a WMA for achieving equity, sustainability and efficiency in IWRM?

6.4.2 Objective and outcome

The **objective** of the vision is to present a collective, medium-to-long term vision for the desired future state (STEEP[1]) of the WMA and its sub-catchments that can be used to derive strategies that are realistic and locally attainable.

The intended **outcome** is a statement of the desired state for the WMA that has been arrived at through public participation, which provides a medium-to-long-term direction that can be used as a basis for deriving sub-strategies.

6.4.3 What you need to know

Visioning is a process that demands a high level of stake holder input. Since different parties are likely to have divergent visions with varying implications for the water resources base it is important that negotiation of a **common** vision is central to the process. This means that arriving at a vision is a collaborative effort – it is not the vision of DWAF, the CMA board or a single interest group.

6.4.3.1 Stake holder development and participation in deriving a vision

The vision will need to be negotiated which implies that a solid, common understanding of the WMA (from GL 6.1 – 6.3) amongst stake holders is required in order to reach consensus on a desired future state. This implies that visioning is not a once-off exercise – but rather a **process** during which people need to **be adequately prepared** for visioning. People need to have, and understand information from the **situation assessment and reconciliation**. Indeed, presenting stake holders with an adequate reflection of water availability versus the need for water (called a water balance- see GL 6.3) is an extremely important and powerful instrument for shaping the WMA vision.

Within this process, issues of concern need to be raised and compromise on certain demands is likely. The possibility of divergent visions emerging out of the process might call for conflict mediation. However, if the vision is built up collectively from a

Since the vision should be reached by consensus, it is a way of binding stakeholders into an 'agreement' of how water will be managed for the benefit of all. This agreement aims to reduce potentially conflicting situations.

1 STEEP = Socio-economic, technological, environmental and political for the catchment. See Figure 6.1.1

basis of understanding with role-players, this is far less likely. Experience shows that a shared vision can be used to illustrate how benefits can be generated from co-operation and so begin to move stake holders towards focusing on sharing benefits rather than on protecting their own interests. Finally, it also implies that appropriate platforms for participation have been established (see GL 6.7).

6.4.3.2 The purpose of vision-driven integrated water resources management

The intent of catchment visioning is to (DWAF, 2006 a):

- generate a sense of cohesion and common purpose in people with diverse interests in the water resource;
- direct activities related to diverse interests towards a common purpose;
- continuously improve water resource management practices and the state of the resource;
- promote a culture of co-operation and consensus-building;
- provide a chain of accountability that links the vision to management objectives and management actions, so that it is possible to track if and how actions contributed to achieving the overall vision (see Figure 3.3);
- provide the framework (together with other information) that allows managers to assess licence applications and to formulate and recommend appropriate licence conditions in a strategic manner.

6.4.3.3 The appropriate scale for setting a vision

Given that a vision is based on an understanding of the present status and outlook for the catchment, visions should be developed at a sub-catchment scale. The CMA needs to develop a protocol for using the individual sub-catchment visions in the formulation of a WMA vision. This process is depicted in Figure 6.4.1. The WMA vision is a high-order statement against which the CMA will monitor WRM progress while the sub-catchment visions provide additional detail that can guide RDM and SDC measures appropriate to specific catchment contexts.

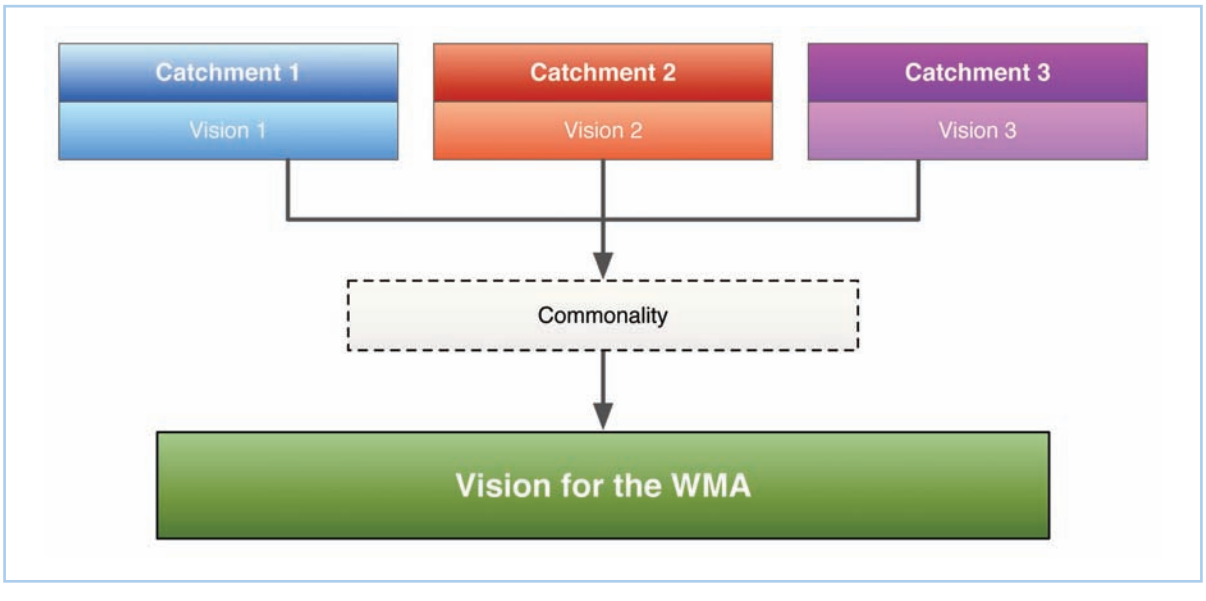


Figure 6.4.1
Visions for individual catchments are formulated and then used to derive a vision for the WMA.

6.4.3.4 The scope and content of a vision

The vision needs to be expressed as a future state that contains adequate detail so that it is recognisable for (a) its geographic area and, (b) the intentions for addressing equity, sustainability and efficiency. This means that a vague reference to reducing inequities is not acceptable. The vision must make it clear where inequities are being experienced and then provide the strategic intent to address them.

Also, the vision statement should strive to balance the level of detail – not too little to be meaningless and not so detailed that it infringes on more detailed objectives. A statement that is in the order of one page appears to be agreeable. The CMA may want to specify areas that need to be covered in the vision statement so that it is possible to integrate sub-catchment visions into a vision for the entire WMA.

6.4.3.5 The vision as a link between the assessment of the status quo and the ensuing sub-strategies

The vision is the link between the situation assessment and the strategies aimed at promoting good management of water resources (Resource Directed Measures and Source Directed Controls). This is depicted in Figure 6.4.2. It is therefore important that the vision is accepted as legitimate by stakeholders before proceeding with strategy development for the WMA (part of this process would involve balancing water availability versus water demand). Furthermore, it also means that aspects of water resources management (e.g. Resource Quality Objectives, or licence conditions) can be cross-checked against the vision. This vision provides the basis for **establishing long-term monitoring and evaluation.** It should be noted that the processes of setting a vision and a desired Management Class are iterative, with the latter being a more detailed version of the former (see GL 6.5).

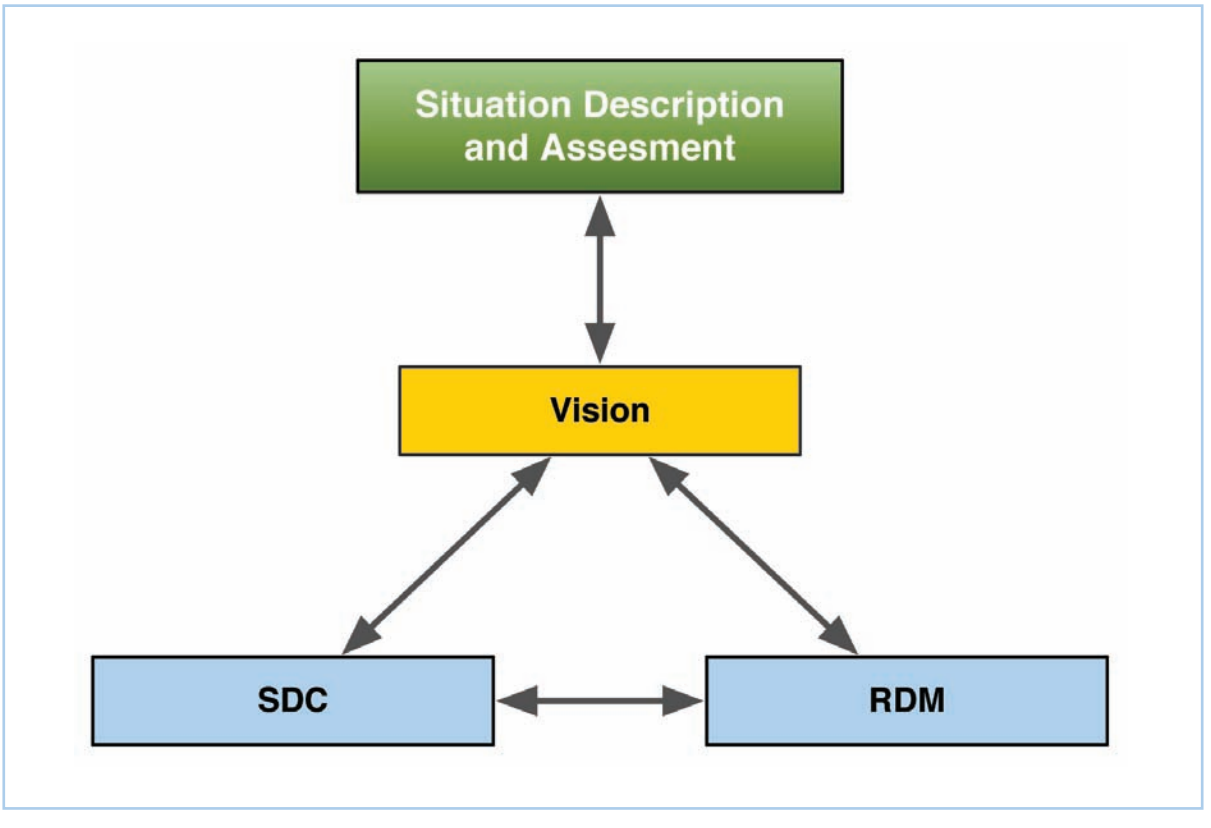


Figure 6.4.2
The vision is the link between the situation assessment and WRM strategy development (RDM: Resource Directed Measures; SDC: Source Directed Controls; WRM: Water Resource Management.)

6.4.4 Potential contents

It is important to remember that the section on visioning is NOT a strategy *per sé,* but rather a process that enables the CMA to proceed with strategy development. As mentioned above, the vision must be expressed as a future state that explicitly addresses **sustainability, equity** and **efficiency.** These issues must be geographically located so that any resident or interested person may, upon reading the vision, understand the particular issues and hence vision for each sub-catchment. The process of integrating this into an appropriate overall vision must also be clear.

Aside from containing the vision per sub-catchment and the derived, overall vision, this component should also detail a number of additional elements. First, it must explain **how** the visioning process was conducted in such a way that IWRM principles are directly addressed (see Chapter 2). This would include a summary of who was involved (in terms of representation), how stake holders were prepared and how the vision was arrived at. Issues of agreement, conflict or compromise must be noted. Second, it should provide **direction** for the ensuing strategic areas of the CMS. One way to do this may be via derived goals that flow from the vision (see, for example, the objectives hierarchy shown in Figure 3.3). Third, **key constraints** and gaps to the process should be noted. This may include difficulties in ensuring participation, inadequate information, areas in which concepts were difficult or contested and so on. Again, it is worth pointing out that the **reconciliation** of water availability versus need is critical background information for the visioning process and confidence in the data must be made explicit. This is because not only must the vision be informed by the water balance, but deriving a vision needs to be "moderated" by the reality of reconciling the use against the availability.

Checklist 6.4.5

a) Is the vision presented as a desired future state for the WMA?
b) Does the vision align with national objectives captured in the NWRS?
c) Does the vision for the WMA take into account the individual visions for sub-catchments?
d) Do these visions and the overall WMA vision provide strategic direction in terms of equity, sustainability and efficiency?
e) Was the vision reached through consensus?
f) Was the vision based on an understanding of the situation assessment and reconciliation results?
g) Is the vision expressed as a medium to long-term state?
h) Is the process of reaching the vision recorded? Since public participation is the cornerstone of visioning, did the process address stakeholder preparation and participation adequately and appropriately?
i) Is the vision clear about specific commitments?
j) Does it include plans for monitoring progress towards achieving the vision, and to review it?
k) Does it include a plan for communication of this vision to stakeholders?

6.4.6 Procedural diagram

An overview of an approach to developing a vision for the WMA is shown in Figure 6.4.3.

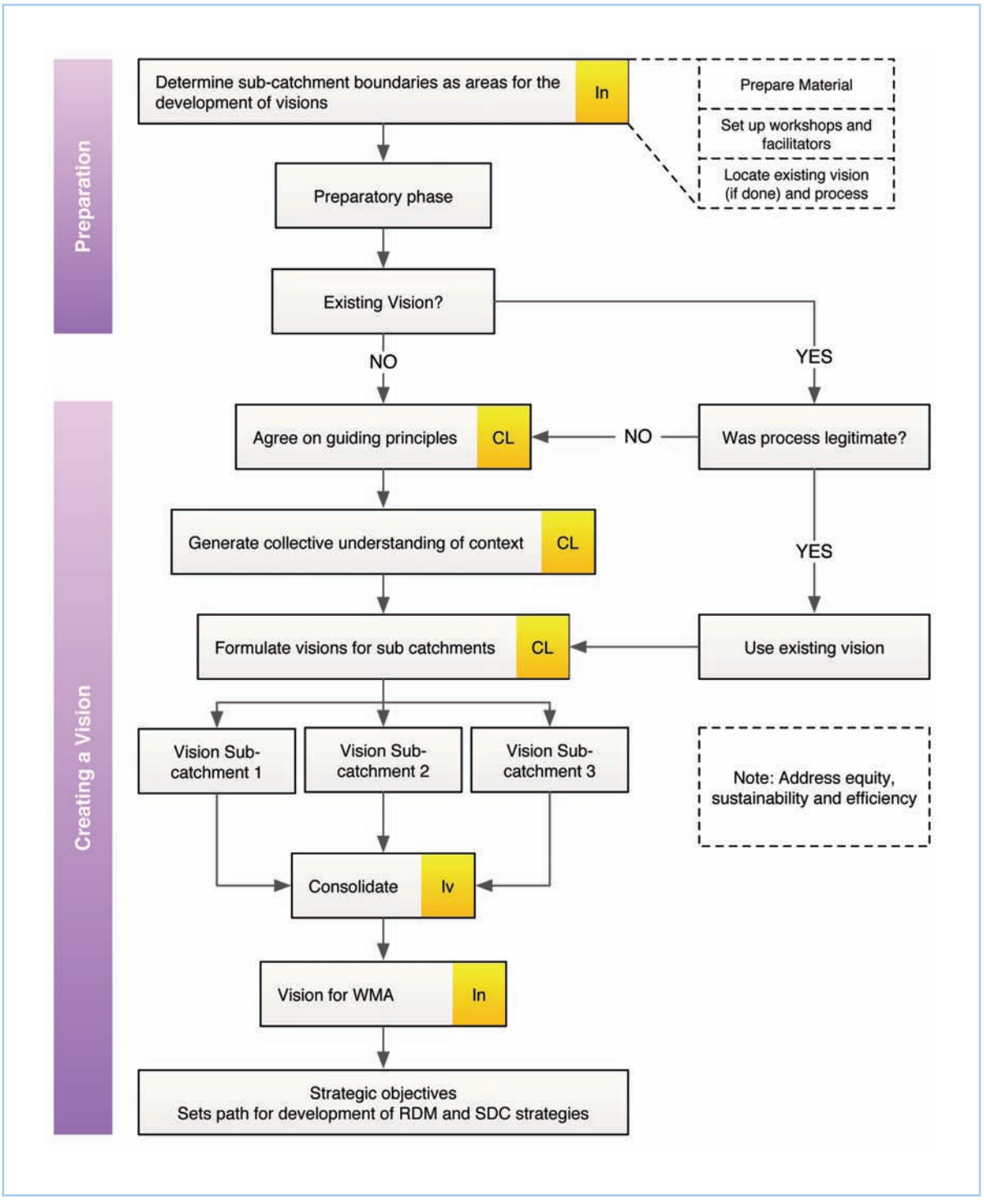
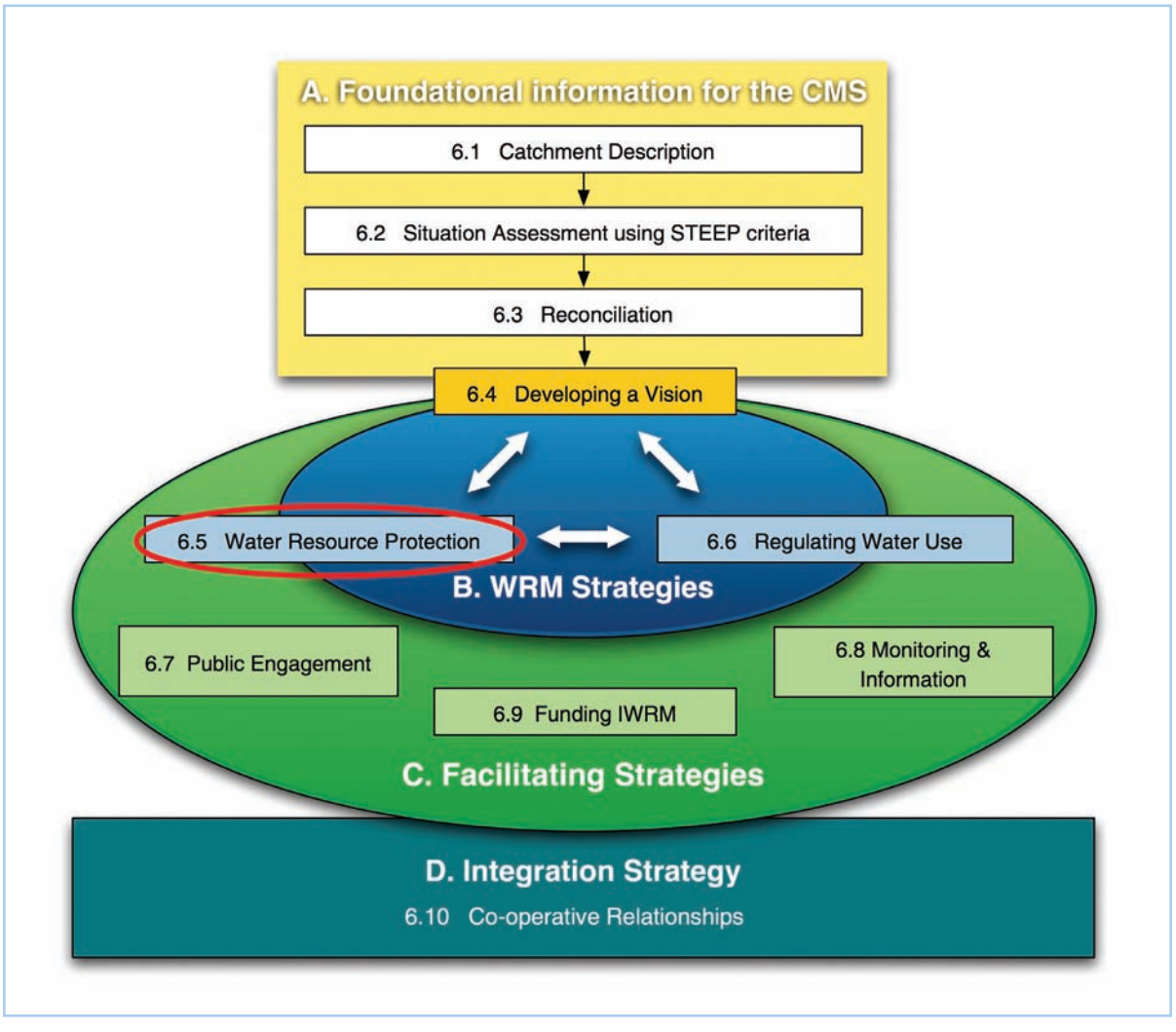


Figure 6.4.3
Schematic representation of steps for visioning (adapted from DWAF, 2006 a). Requirements for public participation (yellow) and monitoring (red) are indicated (see Table 5.1).
[In= Inform, Cn=Consult, Iv= Involve, CL=Collaborate].

6.5 Water Resource Protection

Guidelines for developing a sub-strategy for Water Resource Protection and Resource Directed Measures



6.5.1 Introduction

The water resources protection sub-strategy (or collection of sub-strategies) addresses the need to protect water resources to ensure their continuing sustainability, and availability for all life. Importantly, water resources protection is about achieving a balance that honours the commitment to "**some, for all, forever**". The interrelated objectives of sustainability and equity seek to promote the use of resources in a way that meets the needs of the current generations, fairly and sustainably, without compromising those of future generations. To do this, the National Water Resource Strategy (2004; NWrS) stipulates two complementary strategies: Resource Directed Measures (RDM) and Source Directed Controls (SDC; see GL 6.6). Both of these strategies contain measures to ensure the protection of the water resources by setting objectives for the desired condition of resources, as well as putting measures in place to control water use to limit impacts to acceptable levels. More specifically, RDM is a mechanism developed by the Department to give effect to Chapter 3 of the National Water Act (1998; NWA) which focuses on water resources protection. These measures, which include classification of water resources, determination of the Reserve and Resource Quality Objectives, are explained below. However, additional measures to protect water resources - be they government or civil society initiatives - must also be taken into account in this sub-strategy.

This chapter provides an overview of the strategic intent by the Catchment Management Agency (CMA) to ensure water resources protection and sustainability. The issues of collaborative responsibilities are discussed. In terms of Resource Directed Measures, a broad overview is provided as background although readers are referred to additional documentation for detail. Mention is also made of the potential partners that need to be considered in order to fulfil the commitments to resource protection measures.

Legislation

Legal requirements for the protection of water resources

The protection of water resources is governed by Chapter 3 of the NWA, and Chapter 3, Part 1 of the NWRS (2004).

Chapter 3 of the NWA has three parts:

1) *Part 1 deals with measures of protection and the Water Resources Classification System (WRCS), see DWAF 2006 a);*
2) *Part 2 deals with using the WRCS (management classes) and resource Quality Objectives; and*
3) *Part 3 deals with the Reserve.*

Additional measures of protection are provided through the National Environmental Management Act (Act No. 10, 2004), NEMA: Biodiversity Act (Act No. 10, 2004); NEMA: Protected Areas Act (2003); National Forests Act (Act No. 84 of 1998); the Conservation of Agricultural Resources Act No. 43 of 1983); Mountain Catchment Areas Act (Act No. 63 of 1970). The Ramsar convention, designation as a World Heritage Site and a Biosphere Reserve.

Key question

What strategic actions are necessary to ensure water resources sustainability in the WMA?

6.5.2 Objective and outcome

The **objective** of the water resources protection sub-strategy is to ensure water resource sustainability of the WMA through protection of the water resources using a suite of statutory and non-statutory tools. Based on the principles of sustainability, equity and efficiency, the sub-strategy must give effect to the Class, Reserve and Resource Quality Objectives (RQO) of the water resources and associated protection measures.

The intended **outcome** is a sub-strategy that addresses the holistic, incremental protection (including rehabilitation) of the water resources of the WMA through:

a) water resource classification;
b) determination and implementation of the Reserve;
c) determination and implementation of the RQOs for water resources; as well as
d) associated protection measures (either governmental or civil society).

6.5.3 What you need to know

Some important concepts and initiatives underpin the water resources protection sub-strategy including where roles and responsibilities lie, the concepts associated with RDM, and the role of non-statutory measures. These are discussed below.

6.5.3.1 Shared responsibilities in achieving sustainability

Water resources protection can only be achieved through collaboration. This requires understanding the nature of shared responsibilities as well as the fact that water resources protection is not about "protecting a few animals in the river" but rather addresses directly, the issue of sustainability. This means making sure that there is **sufficient water of an assured quality to meet the needs not only of this generation but also of future generations.**

Misconceptions about water resources protection

A frequent misconception is that water resources protection is about "protecting animals in the river"- but water resources protection is really about making sure that our "water balance" is in credit so that it can sustain use now and in the future

Another **misconception is that because Reserve** Determinations and Classification are national competencies, the CMA and stake holders have no role. This is not the case. In reality, whilst national DWAF holds the overall responsibility for both of these, the role of the CMA together with stake holders is critical, as follows. The outcome of the classification process - a recommended Management Class for a water resource, and the associated Reserve - must be approved by the Minister. However, the CMA must give effect to this at a WMA-level through the water resources protection sub-strategy. Here the obligation is to:

- develop the RDM sub-strategy for the WMA;
- assess the priorities for Reserve determinations set out in the NWRS;
- motivate for and collaborate with national DWAF for additional determinations according to priorities (if necessary);
- engage stake holders;
- develop, implement and monitor the Resource Directed Measures (via RQOs); and
- identify and collaborate with other organizations and interested parties partaking in water resource protection measures.

More formally stated, the CMA as a water management institution is directed by the Act to "give effect to the Reserve" (NWA, Part 3, S 18). Such a list indicates that the roles and responsibilities of the CMA are indeed extensive with respect to water resources protection.

An important responsibility for the CMA - and one that cannot be underestimated – is to address the need for strategic direction if the components of RDM have not been determined or have only been partially determined. Although the determination of the Class, Reserve and RQOs is not the responsibility of the CMA *per se* it is important that the Catchment Management Strategy (CMS) includes priorities for these and that it generates the required information to ensure improved long term planning for use of the resource. The CMA will need to communicate the need for RDM determinations and the priorities to regional and national DWAF.

6.5.3.2 What are Resource Directed Measures?

As outlined, a number of **statutory** measures for the protection of water resources, known as Resource Directed Measures (RDM) have been developed. Essentially these involve understanding four key concepts, also elaborated in Table 6.5.1.

1) The **present state** of the water resource in question. This is represented by the **Present Ecological State (PES) comprising Categories A - F.**
2) Determining a **desired state** for the water resource. Formally this is referred to as the **Management Class (MC)**

3) The amount and quality of water needed to achieve that MC and water for basic human needs, collectively known as the **Reserve**.
4) The variables that will be monitored to ensure that the above are achieved. These are formally called **Resource Quality Objectives or RQOs**. The protocol for these are in various stages of development and implementation.

The above concepts flow rationally from one to the other as follows. As part of the situation assessment and visioning process (see GL 6.1- 6.4), information is required on the present ecological state of the water resource in question, as well as its potential future state. Through an understanding of this, and guided by the vision, a recommended Management Class for the resource is arrived at collaboratively.

The Reserve specifies the amount of, and quality of water needed to achieve this Class. Lastly, one needs to determine and monitor certain variables - the RQOs - to track progress in achieving the MC. Practically, giving effect to RDMs means regulating water use through Source Directed Controls, which are addressed in GL 6.6.

6.5.3.3 What are the implications of the requirements of the Reserve and Classification?

In terms of RDM, a number of rules govern water-use authorisation. These provide important linkages to SDC, as well as guidance for the prioritisation of strategic actions to be reflected in the water resources protection sub-strategy. These are as follows.

1) The Reserve has priority over all water uses and the requirements of the Reserve must be allowed for before any use is licensed (NWRS, S 3.2.3.3).

2) No Reserve determinations are required for Schedule 1 use, but the requirements of the Reserve are taken into account in determining the limitations on and conditions for use under general authorisations.

3) No water-use licence may be issued without at least a preliminary determination[1] of the Reserve having been undertaken (NWA). This includes the consideration of a permanent transfer of water use authorisations (NWRS, S 3.2.12)

4) A comprehensive Reserve determination (see Table 6.5.1) is required in the case of:
    a) compulsory licensing;
    b) water-use allocation planning;
    c) large impacts; and
    d) sensitive/ stressed catchments (DWAF, 2003 a).

5) If non-compliance with the Reserve requirements is the result of historical over-allocation and resource use, then a plan must be compiled to achieve compliance over a given period of time. This plan must be incorporated into the CMS.

Equally important are the water resources protection agreements such as those mentioned in Box 6.5.1. International conventions, for example, bind the actions of the CMA.

1 Preliminary determinations are a transitional measure that makes it possible to license water use while the classification system is being developed and established. It does not require public consultation (NWRS 2004).

Table 6.5.1
A Summary of Resource Directed Measures

see also DWAF 2003 a, b, c; 2004 a, c

The Present State and Ecological Categories	In order to set a desired Management Class for a water resource, the historical and current state of the water resource must be assessed. The assessment which represents a "degree of modification" from reference conditions- ranges from negligible to critical. An **ecological category E and F** is not acceptable and RDM sub-strategies have to address improvements to at least a category D.
Classification of significant water resources (river, estuary, wetland and aquifer), and determining a desired Management Class	The NWA requires that all significant water resources in South Africa be classified to determine the quantity and quality of water necessary for ecosystem functioning, and to ensure that they are maintained in a healthy state. The Water Resources Classification System (WRCS) is a set of guidelines and procedures for determining the different classes of water resources (Chp. 3, Part 1, S 2(a)). The outcome of the Classification Process is that a Management Class (MC; described in Appendix 5) and Resource Quality Objectives (RQOs) will be set by the Minister or her delegated authority for every significant water resource. Importantly for the CMA: 1) setting a desired MC is a collaborative process, 2) a MC has considerable economic, social and ecological implications and these need to be understood by stakeholders (see DWAF 2006 b). 3) only **three classes** (I-III) are acceptable.
The Reserve	**Remember: Once a Reserve and Class have been determined for the resource, then the allocation of water cannot impinge on these.** The NWA gives highest priority to water for the Reserve, which includes water for basic human needs and to protect aquatic ecosystems. These two components are referred to as the **Basic Human Needs Reserve (BHNR) and the Ecological Reserve (ER).** The BHNR provides for the essential needs of individuals served by the water resource in question and includes water for drinking, for food preparation and for personal hygiene. The ER relates to the water required to protect the aquatic ecosystems of the water resource. The Reserve refers to both the quantity and quality of the water in the resource, and will vary depending on the class of the resource. The Minister is required to determine the Reserve for all or part of any significant water resource. Note that the ecological component of the Reserve is not included as a use since it is allowed for as a part of the resource that may not be abstracted.
Resource Quality Objectives	**Remember: Resource quality does not mean water quality alone. It refers to all aspects of the water resource including quantity, quality, habitat and biota** This is a numerical or descriptive statement (in terms of water quality and quantity, habitat and biota) of conditions (goals) that should be met in the water resource.
Types of Reserve Determinations	It is important to distinguish between types of Reserve determinations (see below). The Act makes a distinction between two Reserve Determinations (as opposed to RDM levels) • **1. Class, Reserve and RQO determinations:** This can only be determined once the resource has been classified according to the WRCS. • **2. Preliminary determinations.** All determinations done BEFORE the water resource classification system are preliminary Class, Reserve and Resource Quality • Objective determinations. Water-use authorization can take place using preliminary RDM determinations.

6.5.3.4 Additional measures for water resources protection

Government has consistently recognised that partnerships need to be developed with other departments, non-governmental bodies and civil society in order to meet its objectives. With respect to water resources protection, it has already been pointed out that a number of important measures exist in addition to those covered by RDM. These - which may include government and/or civil society initiatives to protect wetlands, riparian zones, groundwater and estuaries - need to be integrated into the overall water resources protection sub-strategy.

Inter-departmental plans also need to be integrated. For example, a joint policy between DWAF and DEAT is being developed to ensure that a representative set of ecosystems are protected. A component of this addresses freshwater systems (Freshwater Biodiversity Conservation see www.waternet.co.za/rivercons/), and this has been piloted in three WMAs (Olifants-Doorn, Fish to Tsitsikamma, and the Crocodile-Marico). Conservation planning, which includes a freshwater component, has also been developed for two provinces at the time of writing: Mpumalanga and KZN. These plans represent is a crucial resource for water resources protection and must be integrated into the water resources protection sub-strategy, as must agreements ratified through international conventions such as Ramsar. The strategic plans of Working for Water, Working for Wetlands, SANParks, provincial parks, and other conservation plans[2] all contribute to the goals of water resources protection. The integration of wetland protection into a CMS has been examined in a Water Research Commission report (Dickens *et al*. 2003).

Additionally, recent attention has turned to the management – or governance - of natural resources at a **local level**. This is particularly pertinent in the context of natural resources that fall under **common-property regimes**. In these systems, local people have practiced local-level management of a variety of resources. These governance regimes are to be more formally registered according to the Communal Land Rights Act (Act No. 11, 2004) and the associated Traditional Leaders Governance Framework Act (Act No. 41, 2003). The potential of these systems to meaningfully afford protection to both the user and the resources is the subject of an ongoing research project. Other local-level initiatives that must be considered include civil society actions such as conservancies.

Important potential partners for Water Resource Protection — Box 6.5.1

Various programmes such as:

- Conservation plans (national and provincial, as well as those to address sensitive fresh water systems – see above) such as the River Health Programme (see RHP 2001) and the State of the Environment Reports (www.csir.co.za/rhp/state_of_rivers/),
- Working for Water (www.dwaf.gov.za/wfw/)
- Working for Wetlands (www.sanbi.org/research/wetlandprog.htm)
- National Water Conservation Campaign
- Strategic Environmental Assessments undertaken mainly in KZN
- Biosphere Reserves; Heritage sites; Ramsar sites

Various planning tools such as:

- National and Provincial conservation plans;
- Environmental Management Plans;
- Spatial development plans of Local Government;
- Strategic plans of protected areas; and
- Local level conservancy plans.

In communal areas, Common Property Associations will set up a communal general plan which will have a bearing on natural resources.

6.5.4 Potential contents

The water resources protection sub-strategy must be guided by a number of important requirements. Foremost it is important to note that the legislative requirements to address sustainability are relatively new and as such this sub-strategy must both rectify problems of the past and proactively avoid any future occurrences. This element of **redress** must be captured in the water resources protection sub-strategy. Secondly, and as a corollary to this, the statutes are in various stages of a phased implementation process and the challenge for this sub-strategy is to reflect this **dynamic picture** as well as to put plans in place for water resources protection until statutory requirements for RDM have been implemented. Much of this

2 CAPE, Cape Action Plan for the Environment (CAPE), Succulent Karoo Ecosystem Plan (SKEP); Subtropical Thicket Ecosystem Plan (STEP)

requires understanding the status of RDM measures which also has bearing on the third point, which is that this sub-strategy must set out plans for the progressive **realization of RDM measures**. Fourthly, sufficient mention has been made of the importance of **holistic approaches** to water resources protection that include both statutory and non-statutory measures. Fifthly, the **integration** of various planning instruments that have a bearing on water resources protection must be addressed in this sub-strategy. Finally, **raising awareness** for effective stake holder participation and support (shown in Figure 6.5.1 and discussed in Chapters 5 and GL 6.7) is an essential component of this sub-strategy. A number of these points are elaborated below.

The development of a water resources protection sub-strategy requires understanding the status of water resources in the WMA. Much of this will be available from the situation description and assessment, and reconciliation (see GL 6.1 – 6.3). Specifically, the following must be described:

- Status of classification, Reserve and RQOs determinations in WMA. This includes checking the status of compliance with Reserve and strategic implications (consult
- with the NWRS, ISPs, and RDM Directorate)
- Additional information pertaining to the state of the water resources, to be gleaned from supporting documentation/ tools (Environmental Management Plans and Reports, State of the Environment reports from the River Health Programme, etc.)

Importantly, **interim strategic measures** must be set out for managing the resource if only some or no RDM measures have been determined. Consideration should be given to the following in this regard.

- **Priorities** must be set and strategic direction given.
- Interim measures must be considered including the use of preliminary measures. For example, the existing preliminary class, Reserve and RQOs may constitute the interim measures to which the sub-strategy must give effect.
- Is there a biodiversity plan in place? What should be done in the interim? The CMA should strategise together with DEAT.
- What strategic actions will be taken in the cases of **non-compliance**?
- What operational plans exist and what will be done in the interim?

This sub-strategy must set out a **phased plan** for RDM determination, implementation, monitoring and **enforcement**. This means identifying (a) areas for which Reserve determinations have been done, and (b) priorities for comprehensive Reserve determinations- (i.e. compulsory licensing; water use allocation planning; large impacts; sensitive/ stressed catchments). These circumstances require a **comprehensive Reserve determination** which can take anywhere between one and three years and must be planned for well in advance. The process of **stake holder engagement** is still being tested and the time required should not be underestimated.

A key issue for regulation is that of **water quality**, and water quality issues must be outlined, prioritised and mitigatory measures planned for (see GL 6.6, and DWAF 2003 c, 2004 d). If necessary, an additional sub-strategy may be required to address this. Any infrastructural needs to give effect to RDM should be identified. This sub-strategy must elaborate processes for the **integration** of various initiatives and plans (see also Roux *et al*. 2006). For example, the Water Services Development Plan of the relevant local authority must be checked to ensure harmonisation so that the Reserve or Class is not infringed upon. An important component of this is the linkages with SDC to ensure that RDM are reflected in licence conditions. This sub-strategy can include the setting of limitations for the use of riparian zones to ensure the achievement of specific protection and biodiversity targets. Finally, the resources needed must be detailed, and the links made with other components (such as finances, public participation and capacity development, monitoring and information management and issues of co-operation) of the CMS.

Checklist 6.5.5

Does the RDM sub-strategy:

a) identify key strategic areas to be reflected in the CMS?

- Strategic actions required to achieve RDM (Class, Reserve, and RQO) for the WMA. This must include protocols for stakeholder participation.
- Strategic actions in cases where there are no RDM or they are incomplete.
- A clear water resources monitoring and enforcement programme.
- A strategy for establishing and building partnerships to meet the objectives of water resources protection in the WMA, including international conventions.
- Each strategic action should address time frames, responsibilities, budgets.
- Linkages between various planning instruments.
- Education and awareness initiatives.

b) identify information needs?

- Status of the water resources (rivers, groundwater, estuaries, wetlands) i.e. the present state
- Status of RDM in the WMA including status of compliance.
- International sites ratified by convention (e.g. Ramsar) and what are the agreements of these? Is the water resource located in a place that affords it protection such as conservancies or protected areas?
- Other water resources protection initiatives operative in the WMA, including other conservation/ environmental plans.
- Spatial distribution, land tenure and governance arrangements for water resources within the WMA (includes inventory of wetlands and estuaries).

c) address priorities and gaps?

- Operational plans (where appropriate e.g. operating rules for dams to give effect to Reserve and other protection requirements).

d) identify resource needs?

- Capacity building.
- Human resources. The responsibilities for the implementation of the RDM sub-strategy are likely to demand considerable human resources. Since the majority of these functions are conducted by the DWAF regional office the CMA will need to determine how human resources will be accessed and shared.

e) identify skills needed?

- Adaptive management; use of objectives hierarchies (see Chapter 3, Fig.3.3), knowledge of Reserve determination process; knowledge of freshwater biodiversity conservation planning.
- Dam operators to give effect to Reserve; calculation of water balances; auditing e.g. of mines.

Specifically…

a) Does the sub-strategy consider issues of co-operative governance and institutional arrangements? The outcomes of the water resources protection strategy will inform developments identified in a suite of departmental strategies and plans. They need to be formed of this and compliance becomes an important issue.

Checklist 6.5.5 cont.

b) Are the following potential partnerships considered? DEAT ,Working for Water, Working for Wetlands, the Rivers Health Programme Conservation agencies; Department of Agriculture; Department of Trade & Industry; Department of Minerals & Energy; Department of Provincial & Local Government, Land Affairs, local government; traditional authorities, Water User Associations, NGOs. Their role needs to be specified in terms of a particular catchment or part of a catchment.

c) Are regulatory requirements considered? In the development of this strategy, the CMA needs to consider implications for regulation development. The need for regulations is highly likely in this strategy, e.g. operating rules.

6.5.6 Procedural diagram

An overview of an approach to developing a water resources protection sub-strategy for the WMA is shown in Figure 6.5.1.

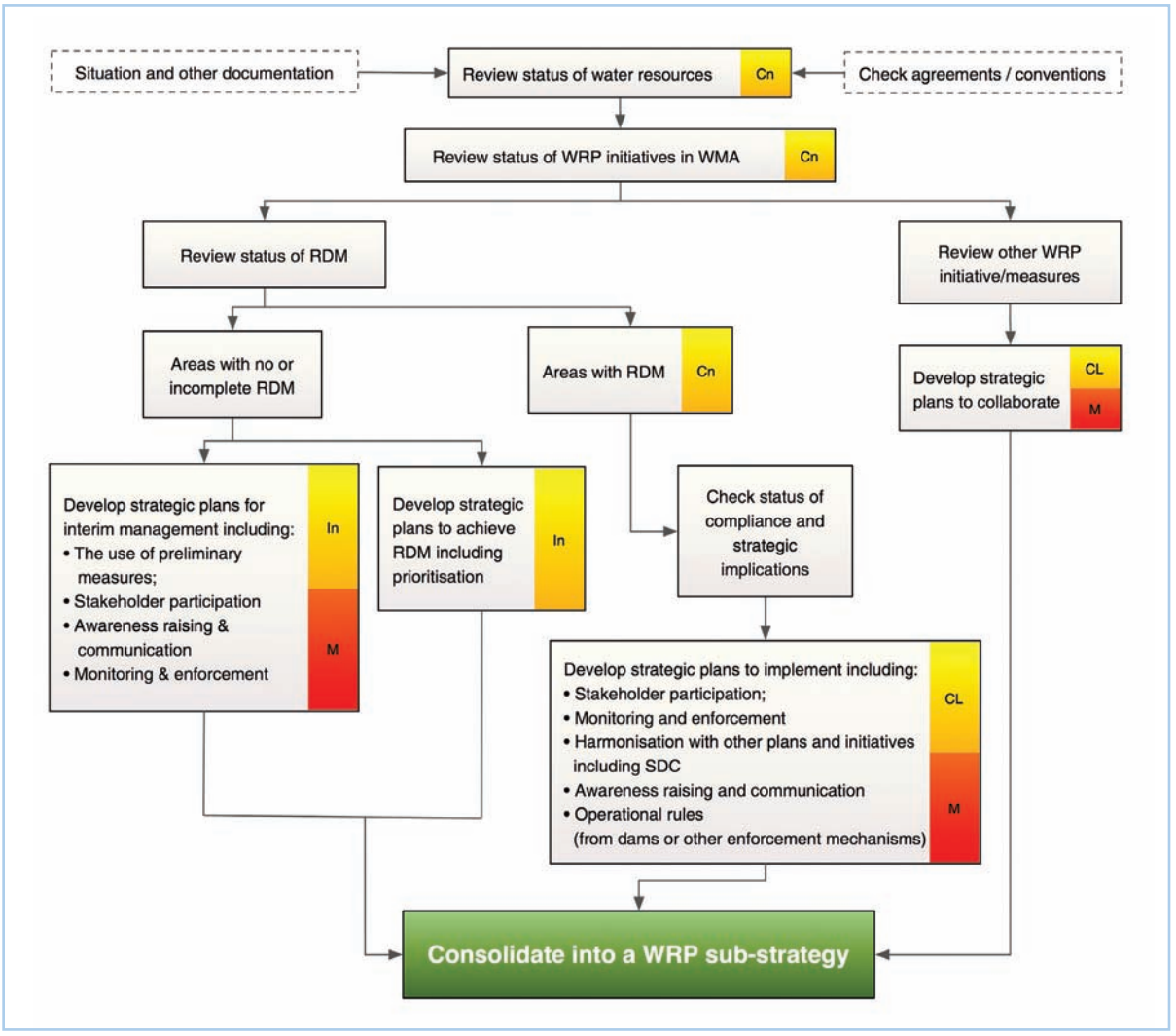
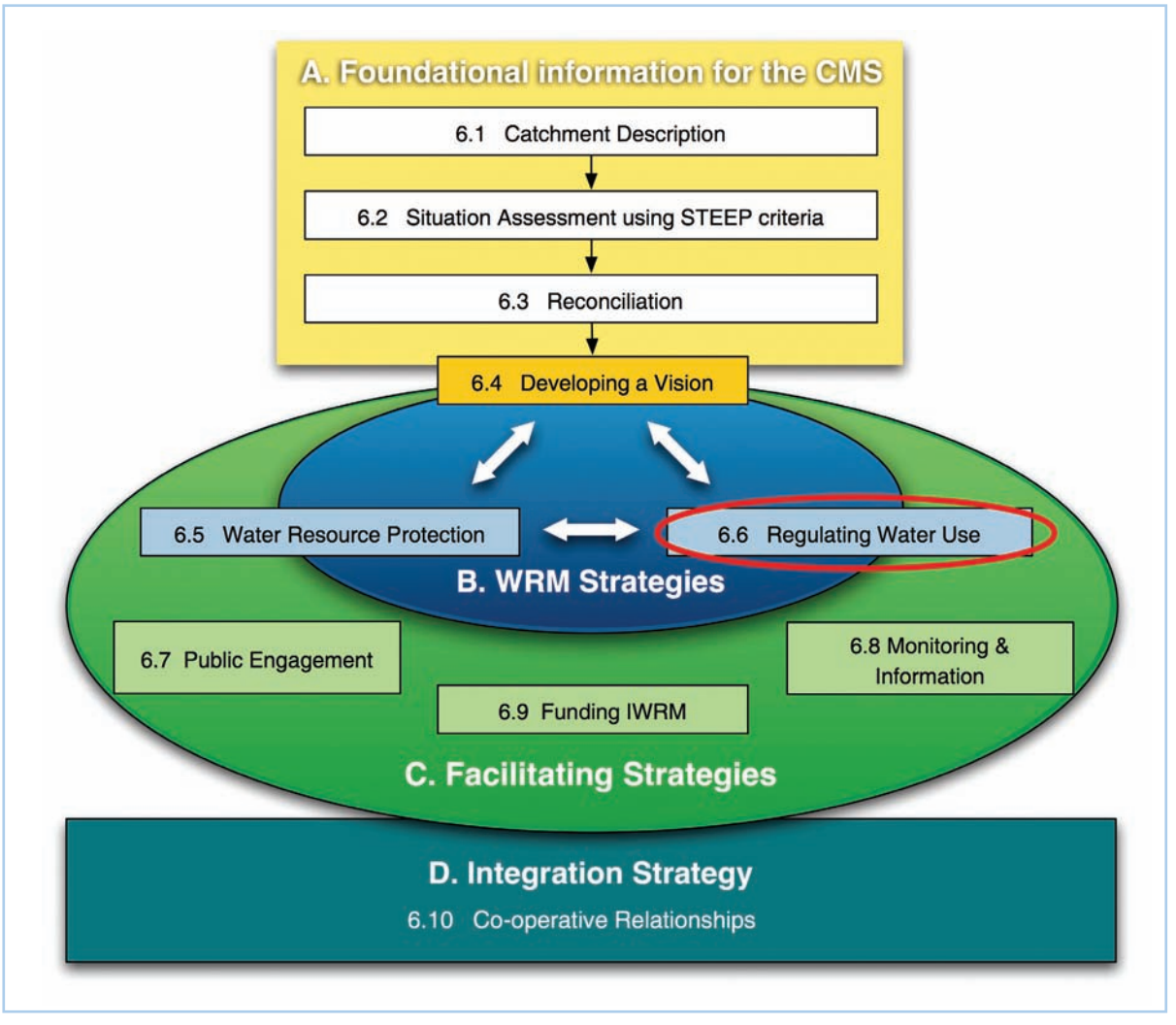


Figure 6.5.1
Schematic representation of steps for developing a sub-strategy for water resources protection. Requirements for public participation (yellow) and monitoring (red) are indicated (see Table 5.1). [In = Inform, Cn=Consult, Iv= Involve, CL=Collaborate].

6.6 Regulating water use

Guidelines for developing a sub-strategy for Source Directed Controls



6.6.1 Introduction

Source Directed Controls (SDC) refer to a set of measures aimed at regulating water use, impact prevention and minimisation so as to achieve the desired future state described in the vision and appropriate levels of protection of the resource set out in Resource Directed Measures (RDM). Together with RDM, SDC are the main mechanisms for achieving the overarching principles of **equity, efficiency and sustainability** associated with South Africa's approach to water resource management (WRM). An important component for the first Catchment Management Strategies (CMS) will be to plan for the re-allocation of existing entitlements to address issues of **water stress and inequitable water access**.

This guideline will give a general orientation to the key components of SDC and provide a framework for developing a SDC sub-strategy. Given the wide array of concepts and strategic actions associated with SDC, this guide is structured into four parts as set out below. The CMA may choose to follow this framework in the development of the CMS.

Legal requirements for Source Directed Controls

Chapter 4 of the National Water Act (1998; NWA) and Chapter 3 of the National Water Resources Strategy (2004; NWRS) provide the legal grounding for water use. Where necessary, specific references to statutes are made in the text.

Legislation

A. Authorisation of water use

- Authorisations and entitlements – including transfers of water-use entitlements.
- Allocation, water allocation plans and schedules – including water allocation reform.
- Licensing and compulsory licensing.

B. Additional Source Directed Controls

- Water Conservation and Water Demand Management (WC/WDM).
- Augmentation options- other than WC/WDM.
- Water quality management and pollution control.

C. Pricing, charges, incentives and disincentives

- including Waste-Discharge Charge-System (WDCS).

D. Monitoring, compliance and enforcement

- Ensuring that the conditions for a particular entitlement are being met.

Key question

How can water use be regulated to achieve the vision and water resources protection measures of the WMA and, more explicitly, to achieve equity, sustainability and efficiency?

6.6.2 Objective and outcome

The **objective** of the sub-strategy for water-use regulation is to define the limits and constraints, incentives and disincentives that must be imposed on the use of water resources to achieve the desired vision and water resources protection for the WMA. Based on the principles of equity, sustainability and efficiency, the strategy must address verification, allocation, re-allocation, authorisation and licensing, water management and pollution control, augmentation measures, and compliance and enforcement.

The expected **outcome** is a comprehensive sub-strategy for water use regulation for a WMA that will draw on incentives and disincentives, verification, allocation planning, re-allocation, authorisation and licensing, water management and pollution control, augmentation measures, and compliance and enforcement to realise the ideals of equity, sustainability and efficiency.

6.6.3 What you need to know

As stated, a wide range of actions comprise SDC. This means understanding the concepts, definitions and associated principles for each. These are summarised below and elaborated in the glossary.

DWAF has also prepared a number of guideline documents that support SDC development and implementation, which can be used to complement this guideline (see Appendix 2)

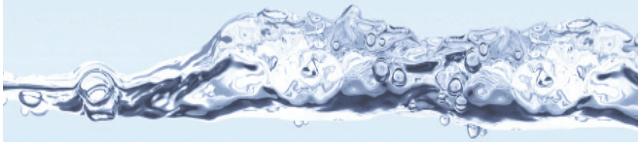
SECTION A: Authorisation of water use

This section presents some of the issues related to obtaining permission to use water

6.6.3.1 Authorisation and entitlement

Authorisation is a generic term that refers to the process of granting permission to use water and an entitlement is the outcome of being granted permission (see S 22, NWA for permissible use). As stated, the NWA only makes provision for one right to water – the Reserve. All other uses must be authorised. Entitlements replace the system of 'rights' that were part of the previous legal dispensation where ownership of land conferred the 'right' to the water.

*The NWA defines **water use** broadly to include both consumptive use and well as non-consumptive use (swimming, fishing, canoeing and forms of waste disposal that might affect the resource). Formally, 11 water uses are recognised (NWA S21 (a-k); see Chapter 2, Box 2.3 of this guideline).*



It is important to note that authorisation refers to more than licensing the abstraction of water from a resource - all uses listed in Section 21 of the NWA require authorisation. In cases where water uses have a high risk of impact on the resource, a licence is required. Under the NWA an entitlement is granted for a particular water-use for a specified time, with attached conditions. Entitlements may or may not require licences but all must be authorised by the appropriate authority (DWAF, CMA or another appointed authority). Any water use that is not deemed lawful must be 'recovered' and returned to the system. The process of verification implemented under Section 35 of the NWA is used to determine the extent of existing lawful use in a manner that is fair and justifiable.

The authorisation of use is conducted according to 'risk of impact' – the higher the risk of impact on the resource the more strict the conditions are for use (Figure 6.6.1). Both the NWA and the NWRS provide a clear guide as to the different types of authorisation. The authorisation categories are those listed in Box 6.6.1: Schedule 1, General Authorizations, licensed use and Existing Lawful Use (ELU). The last category, ELU, is a transitional measure that will eventually become part of the licensed water-use category through the process of compulsory licensing (see later).

***Validation and verification of water use** (see Glossary)*

A number of steps for checking water use exist. First, validation entails checking what water use has been registered (on WARMS). Thereafter, verification of this involves ascertaining whether or not this is lawful.

According to the NWA, a responsible authority may, in order to verify the lawfulness or extent of an existing water use, by written notice, require any person claiming an entitlement to that water to apply for verification of that use (NWA S 35). Databases of registration (WARMS) provide a basis for this process. Verification requires water users to apply to the responsible authority for any water use not contemplated in S 32 1 (b) to be declared as an existing lawful use.

Verification is essential for the process of compulsory licensing.

A fundamental concept for understanding SDC is that of entitlements, which in effect replaces the concept of 'water rights'.

Currently there is only one right to water, that of the Reserve. All other uses are granted permission as entitlements, listed in Box 6.6.1.

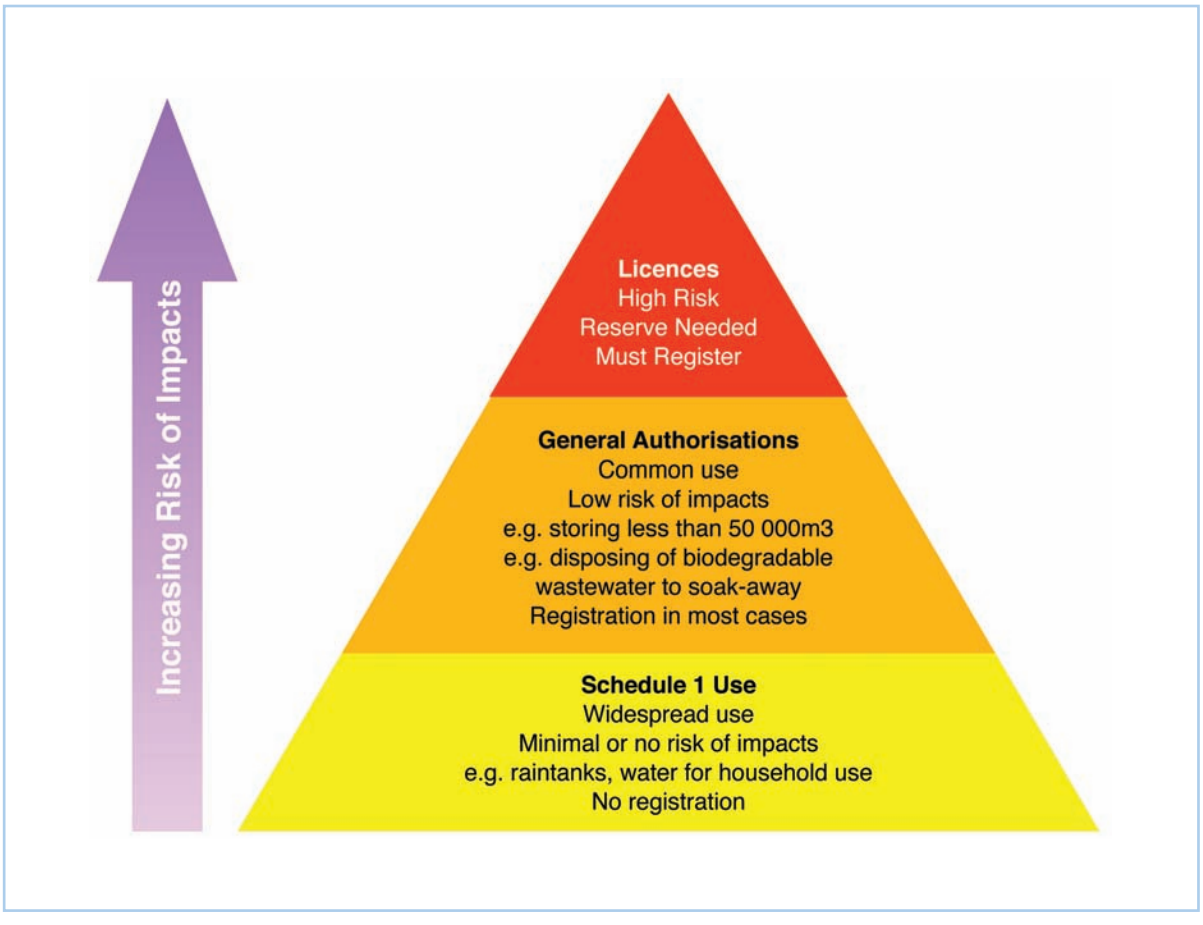


Figure 6.6.1
The NWA sets out rules to use water wisely. These rules say that the bigger the risk of potential negative impact on the water resource, the more stringent the rules will be for using that water (NWRS, 2004).

Entitlements to use water — Box 6.6.1

- **Schedule 1 use**
  This refers to small volumes of water for household use with little potential for negative impacts on the water resource, and for which no application for authorisation needs to be made.

- **General Authorisations (GA)**
  Larger volumes of water with some potential for negative impacts on the water resource which may be authorised in any catchment. A GA may be granted for any type of water use or category of water user anywhere in the country.

- **Existing Lawful Use (ELU)**
  This is a water use that lawfully took place in the period two years before the commencement of the NWA (1998). It is a transitional arrangement.

- **Licensed Water Use**
  This is water use authorised in terms of a licence issued under the NWA, and upon approval of an application by a responsible authority.

Entitlements for use can be divided into two parts:

a) Direct entitlements

These uses do not require a licence as they are regarded as low-impact. The user may however be required to register the use with a designated authority (this is especially relevant to use under a General Authorisation).

b) Licensed/indirect entitlements

Licensed use is generally the largest use. For this reason it will be closely regulated by a system of licences that will set out specific conditions that the user must abide by. The CMA is responsible for calling for, evaluating and granting these licences. Note that the registration of a use does not automatically mean that a licence will be granted. Once a CMA is satisfied that all criteria are met, a licence may be issued for up to a 40-year period, with a review period at least every 5 years.

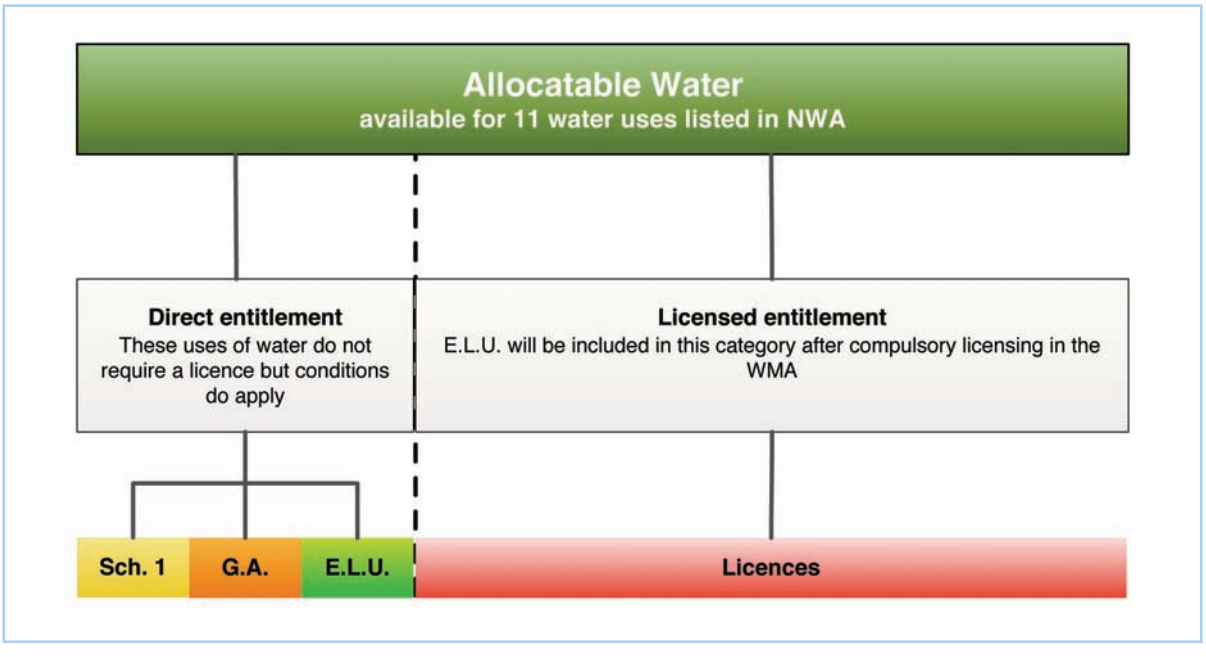


Figure 6.6.2
Types of authorisation that apply to the allocatable resource (see Figure 2.1). This is the amount of water available to the CMA for allocation after taking account of the Reserve, international obligations, and water for strategic use. [Sch1 = schedule 1, G.A. = General Authorisation, E.L.U = Existing Lawful Use.] See the glossary for definitions. Note that Water Allocation Reform applies to GA, ELU and licences.

Although the overall responsibilities for the use, development, conservation, management and control of water resources are vested with the Minister, the CMA may be delegated or assigned various functions in this regard (NWA S72, S73, Schedule 3). In general, direct entitlements are the domain of the Minister whilst licensed entitlements will be the domain of the CMA. The Minister may delegate responsibilities for direct entitlements to the CMA, e.g. establishment and implementation of Schedule 1 water-use and General Authorisations. Note that Schedule 1 use can be limited by the CMA in terms of the NWA (Schedule 3.2 (e)).

Transfer of Water-use entitlements

Water-use entitlements may be transferred (NWA, S 25) as follows:

1) A temporary transfer of water

This applies only to transfer of an entitlement for irrigation purposes, either on the same property or to another property. In general, temporary transfers will be for one year only, with the option of applying for an extension of a further year.

2) Permanent transfers

A user may surrender all or part of an entitlement to facilitate a licence application by another user. The new licence application will be subject to all the relevant requirements of the Act regarding applications for licences.

6.6.3.2 Allocation, allocation plans and allocation schedules

Allocation refers to the apportionment of water. The responsibility for allocation of the total available resource within a WMA is shared between the Minister and the CMA of a particular WMA (see Figures 2.1 and 6.6.2). First, the Minister will determine the allocation for the Reserve, international agreements, strategic purposes and water for future needs. Thereafter, the allocation for other uses is the responsibility of the CMA. Generally then, allocation of available water by the CMA is sector-based. A number of key principles, given in Box 6.6.2. apply directly to the process of allocation and should therefore be reflected in the SDC sub-strategy.

The CMA may only allocate water after a number of commitments have been met. This means understanding how much water is available to allocate after the requirements of the Reserve, international agreements, strategic and future needs have been met.

Water allocation will be given effect through the drafting of water allocation plans (WAP; see Box 6.6.3), which in turn will lead to the compilation of water allocation schedules. The CMS will contain a WAP (in terms of NWA S 9) but not a water allocation schedule.

Guiding principles for allocation — Box 6.6.2

Equity:
Allocation of water should address the issue of fair access to water resources, benefits and services directly. A special focus should be on those who have historically had poor or no access to water resources, such as women and the poor.

Efficiency/ optimal beneficial use:
The aim of this principle is to allocate water to a broad range of uses in a variety of sectors so that a diverse, robust and stable economy can be supported.

Sustainability:
Since ecological and socio-economic sustainability depend on water resources, this should be a guiding principle evident in all allocation decisions.

Local participation:
Stakeholders have the right to be involved in the decisions that are taken when water resources are allocated to a particular use.

Representivity and inclusivity:
Allocation plans need to reflect consideration for all stakeholders' interests, needs and values.

Integration:
Water allocation processes should be a function of co-operation between national and regional DWAF offices, government sectors, industry, agriculture and civil society. Important to consider here is the harmonisation of various planning instruments (see Appendix 3).

Transparency:
Information and decisions should be open to public scrutiny so as to foster co-operation and support for decisions.

What are allocation plans and schedules? Box 6.6.3

- A water allocation plan (WAP) is a document prepared in terms of Section 9 of the NWA (1998). It sets out the amounts and conditions for use within a WMA, taking into account both consumptive and non-consumptive uses.
- The WAPs are overarching plans that are in effect a record of allocation decisions as deliberated and agreed upon by role-players and stake holders of a WMA, and approved by the CMA (using the principles given in Boxes 6.6.2 and 6.6.4). A WAP should contain information relating to: a) the quantity of water available for allocation (S 23, NWA), b) the transfer of water authorisations within sectors and between sectors (S 25), and, c) regulations for use (S 26) of the available water from the WMA. The WAP might also contain memoranda of understanding, agreements, operating rules and protocols for managing water.
- Once a WAP is complete, a water allocation schedule, indicating the exact quantity and quality of water apportioned to a particular user, is drafted. The water allocation schedule must also indicate assurance of supply. The process of drafting allocation schedules is provided for in the NWA S 45, 46, & 47. Attention is drawn to the requirements for **proposed, preliminary and final allocation schedules**. The CMA, once assigned the responsibility, will use the final schedule as the basis for the licensing process.

Water allocation reform and reallocation

This aspect of water allocation is about redress. The aim is to adjust skewed allocations that emerged during the apartheid era. The Water Allocation Reform Programme (DWAF, 2005 b) provides a number of guidelines for the reallocation process, summarised in Box 6.6.4. The key mechanisms for achieving water reform are compulsory licensing (see glossary), water conservation and demand management (WC/ WDM; Appendix 6) and water trading. Note that at the time of writing, policy regarding the trading of entitlements where a land claim is involved, was being developed. More than likely, the land claimant will not lose any entitlement to water that might exist.

Water allocation reform is integral to the allocation process – not something separate. Each CMA **must address water allocation reform** (NWA, S 45 9 (c); DWAF, 2005 b). An important aspect for this sub-strategy is to determine when and where reform and reallocation are needed and how this will proceed. Although there are currently no protocols for this, the Situation Assessment (GL 6.1 and 6.2), Reconciliation (GL 6.3) and Vision (GL 6.4) should provide substantive indications. Both the information on water use and users, as well as an evaluation of these, based on multiple criteria (see Figure 6.2.1) are the basis for taking this forward.

Guiding principles for reallocation and allocation reform (WAR Programme, 2005) Box 6.6.4

1) A primary focus will be to address past imbalances in water allocations to Historically Disadvantaged Individuals (HDIs).
2) It must be supported by capacity development programmes that support the use of water to improve livelihoods and to support the productive and responsible use of water by all users, also aimed at HDI participation.
3) It will contribute to Broad-Based Black Empowerment and Equity and gender equity by facilitating access by black- and women- owned enterprises to water.
4) It will respond to local, provincial and national planning initiatives as well as South Africa's international obligations and regional (SADC) initiatives.
5) It will be undertaken in a fair, reasonable and consistent manner and existing lawful uses will not be arbitrarily curtailed.
6) It will give effect to the protection of the water resources as outlined in the NWA by promoting the phased attainment of both developmental and environmental objectives.
7) Innovative mechanisms that reduce the administrative burden of authorising water use while still supporting its productive use, as well as the effective management and protection of water resources will be developed.

6.6.3.3 Licensing

Licensing refers specifically to the act of granting permission to use water and is dealt with in Chapter 4 of the NWA. Sections 27, 28 and 29 of the NWA describe the considerations necessary and conditions for issuing of a licence as well as the essential information that must be included in a licence. Box 6.6.5. provides a summary of conditions related to licences (see also DWAF 2004 c). Since licensing is likely to be complex and controversial, it is essential that the CMA proceed with due consideration for all the conditions listed in the NWA. Note that the Act makes clear the need to address equity (S 27b), sustainability (S 27 (g), (j)) and efficiency (S27(c)).

In order to better manage the process of authorisation the NWA (S43-48) provides for a process of compulsory licensing (see Glossary). The principles of allocation reform (Box 6.6.4) underpin the process of **compulsory licensing** where entitlements are reviewed and amended to:

1) achieve fair allocation of water from a resource that is under stress or to achieve equity in allocations;
2) promote beneficial use of water in the public interest;
3) facilitate efficient management of the water resource; or
4) protect the water resource quality.

The Water Allocation Reform Project (DWAF, 2005 b) outlines the process of allocation reform and their guidelines, discussion documents and notes should be thoroughly consulted prior to the compulsory licensing process. A schedule for compulsory licensing has been developed and is provided in Appendix 7. Further details on compulsory licensing are provided in DWAF (2005 b).

A licence to use water... ***(NWRS 2004)*** **Box 6.6.5**

- may only be issued by a responsible authority, to which a prospective user must apply;
- replaces all previous entitlements, if any, to use water for the purpose specified in the licence;
- is specific to the user to whom it is issued and to a particular property or area;
- is specific to the use or uses for which it is issued;
- is valid for a specified time period, which may not exceed 40 years;
- may have a range of conditions attached to it; and
- must be reviewed by the responsible authority at least every five years.

SECTION B: Additional Source Directed Controls

One of the key lessons derived from a review of the ISPs (DWAF, internal reports) is that strategies to balance water availability with use must **provide explicit and due consideration for alternative options and their appropriate sequencing.** Although South Africa has introduced the possibility of compulsory licensing as an essential means to return water back to the system (both for the Reserve and to honour the commitment to equity), it is recognised that in many areas, this will be challenging. Given this, every possible means must be taken to create supplementary water in the system before taking water away from licensed users (DWAF 2005, internal report). Moreover, DWAF subscribes to the principle that all efforts should be made to ensure the efficient and wise use of water within a catchment prior to opting for costly infrastructural solutions, such as dams and inter-basin transfers (see World Commission on Dams, 2000). The rationale for this is that the options

Sequencing

Prior to compulsory licensing, the recommended sequencing is first to return unlawfully used water to the system through tighter management and control, using verification and validation of existing lawful use (ELU). At the same time, additional measures for augmenting water supply must be considered.

for further augmentation of water supplies by developing new infrastructure are becoming increasingly limited and expensive. Thus in addition to authorising water use, there are a number of additional areas of regulation that have been developed by DWAF. These will ultimately be a responsibility delegated to, or shared with the CMA. A number of these are elaborated below (see also Appendix 6).

6.6.3.4 Water Conservation and Water Demand Management (WC/WDM)

Given the issues discussed above, attention has turned to managing the demand for water, encouraging its efficient and effective use, and reducing losses in water systems – an approach known as **water conservation and demand management (WC/ WDM)**. The approach, focused on achieving a sustainable long-term balance between water availability and water requirements, signifies an important re-orientation to water resources management.

The major policy imperatives for WC/ WDM are given in the NWRS (Chapter 3 (3)). A number of strategies have been or are being developed in this regard: the National Water Conservation and Water Demand Management (WC/WDM) Strategy (2001 c), and subsidiary strategies for a number of identified water use sectors (see Section 3.3.4, NWRS), namely:

- water services,
- agriculture,
- industry, mining and power generation, and
- forestry.

Alien Invasive Plant Management

Strategies have shifted towards "containment" of the problem, and to moving responsibility out of the hands of the State and into those of private landholders (DWAF internal report). Since invasive vegetation affects not only runoff, but also the productive use of land and biodiversity, its management must be approached in a co-ordinated multi-sectoral way (NWRS 2004). The approach to be used will be determined jointly by the DEAT, DoA and DWAF.

The core objective of the strategies is to create a WC/ WDM culture within all the water management and water services institutions defined in the NWA and the Water Services Act (WSA) and among water users. At the time of writing, those for the water services and agricultural sectors have been completed. The development and implementation of WC/WDM sub-strategies are the responsibilities of the user sectors. However, where capacity is weak the CMA must play a facilitating role. It is also the task of the CMA to co-ordinate these subsidiary strategies. The control of invasive alien plants is an additional issue that needs to be considered, since the invasive plants threaten water resources of a number of WMAs. Through government's inter-departmental Working for Water Programme, large areas are being cleared of alien vegetation. The removal and containment of such vegetation should, where applicable, form part of a CMS.

6.6.3.5 Additional augmentation options

Augmentation refers to a collection of strategic plans that aim to enhance the availability of resources through means that do not place the resource under further stress. The aforementioned WC/ WDM is essentially an augmentation measure. The SDC sub-strategy should provide a general orientation to the augmentation approaches to be adopted within the WMA (see Appendix 6).

6.6.3.6 Water quality management and pollution control

Part of the SDC sub-strategy must outline how water quality will be managed and pollution controlled, through the following areas of activity:

- determining procedures and conditions for wastewater disposal.
- improving farming and industrial activities so as to reduce sedimentation and water quality degradation.
- establishing mechanisms for ensuring compliance with wastewater standards.

- monitoring of the use of harmful, hazardous and high-risk chemicals (including fertilizers, pesticides and herbicides) in the WMA.

The following points provide a framework for water quality management (NWRS, 2004):

- preference for the **prevention of pollution** of water resources or if unavoidable, the minimization of pollution and its effects;
- the authorisation of polluting discharges should be based on consideration of their **social, economic and ecological impacts**;
- the re-mediation of water resources where pollution has caused degradation;
- **assessment of probable impacts** on water resources and water uses prior to issuing authorisations that entail polluting effects;
- **prevention, or minimization** of hazardous waste discharges into water resources;
- for non-hazardous wastes – the use of the risk-based Resource Quality Objectives (RQO) approach to be used.

The aims of water quality management are to:

- *promote sustainable development and efficient use of water resources;*
- *promote internalisation of environmental costs by impactors;*
- *create financial incentives to reduce waste discharge;*
- *recover costs of mitigating water quality impacts.*

The management of water quality and pollution is often likely to be an integrated function, carried out in conjunction with the Department of Environment and Tourism (DEAT). For example, where waste is disposed of on land or discharged into a water resource, DEAT needs to be involved. The issuing of **co-operative authorisations** is aimed to facilitate such authorisation applications.

Co-operative authorisation

The process of authorising water use and, specifically, licence applications need to take into consideration a number of other statutes and regulatory instruments such as the Water Services Act (1997), Conservation of Agricultural Resources Act (1983), Municipal Systems Act (2000); NEMA (1998); relevant planning instruments; land use plans; RDM and other SDC. For example, a licence to dispose of waste-water might require the appropriate authorisation from the Minister of Environmental Affairs and Tourism under the Environmental Conservation Act (1989).

Additional SDC that need to be considered as part of the sub-strategy that can be used to prevent or minimize pollution include recycling, reuse, water recovery, detoxification, neutralisation, treatment and cleaner technologies.

SECTION C: Pricing, charges, tariffs and incentives

Financial mechanisms for regulating water use relate to water pricing, charges and tariffs. By setting appropriate, fair and reasonable tariffs, charges and incentives, the CMA is able to regulate water-use (including waste-water management) for purposes of sustainability, equity and efficiency. They are also important mechanisms for protecting the environment and promoting social transformation and equity. While the revised National Pricing Strategy (NPS, in prep.) provides an overarching framework for tariff setting, the physical and demographic characteristics as well as the socio-economic circumstances of a particular WMA will determine the specifics of water pricing. The CMA will progressively be empowered to set these charges and collect the associated revenue.

Provisions relating to water pricing are to be found in Chapter 5 of the NWA, Part 4 of the NWRS and the revised NPS. While GL 6.9 of this document provides a framework for the development of a financial strategy for the CMS, the sub-strategy for SDC needs to indicate how the CMA aims to use financial measures to regulate water use.

Important pointers in this regard include:

- alignment with the revised National Pricing Strategy (DWAF, in prep.) in setting tariffs and charges for the 11 water uses (Box 2.3);
- economic incentives to encourage more efficient use of water, water conservation and a shift from lower to higher value uses (NWRS, 2004);
- a range of subsidies for water users from historically disadvantaged groups to promote equitable access.

Note that the water pricing arrangements set out in the CMS do not deal with treated water supplied in bulk (for example by water boards) and distributed to households via water services authorities and water services providers as set out in the Water Services Act (1997).

Water quality management is largely driven by charges that act as **incentives or disincentives**. The NWA (Part 1, Chpt. 5) states: "*water use charges … may be used … to ensure compliance with prescribed standards and water management practices according to the polluter pays principle*". The revised NPS (in prep) acts as a basis for setting these charges.

The two systems of charges are:

a) Waste-discharge charges for WRM
The WRM charge is an integrated charge set to recover the cost of water resources management activities relating to both abstraction and waste discharge. Where waste is discharged into the resource or where waste enters the resource through diffuse pathways (non-point sources) a charge is applied. The charge applies to registered dischargers only, including those discharging waste from non-point sources.

The calculation of charges are based on registered waste loads of the following:

a) salinity: electrical conductivity, chloride, sodium, sulphate
b) nutrients: soluble phosphorus, nitrate, ammonium
c) acidity/ alkalinity (pH)
d) heavy metals: arsenic, cadmium, chromium, copper, mercury, lead, nickel, zinc
e) organic: oxygen demand

b) The Waste-Discharge Charge-System (WDCS)
DWAF has developed a Waste-Discharge Charge-System (WDCS Implementation Strategy, DWAF 2006 c) that is part of the revised National Pricing Strategy. The charge system acts as an incentive for reducing the waste load discharged into a water resource. The system is only applied when a RQO is exceeded within the WMA. The revenue collected from the discharging parties is either in the form of an environmental tax (incentive charge) or used to put mitigatory measures in place (mitigation charge) (Appendix 8; and see DWAF, 2006 c):

1) **The incentive charge:** This aims to provide an incentive to reduce waste load where it is produced (at the source).
2) **The mitigation charge:** This is intended to cover the costs of putting in place mitigatory measures in the WMA.

In the case of RQOs being exceeded the CMA will need to decide whether to apply incentive or mitigation charges, or a combination of both. Since the CMA is likely to administer the WDCS, it needs to be reflected in the CMS. Whilst the CMA administers the WDCS it is NOT a form of revenue contributing to CMA viability.

Monitoring

This CMS guideline deals with two distinct aspects of monitoring:

a) the general monitoring of the status of IWRM in the WMA and the progress made in implementing the CMS, and
b) monitoring of authorizations and compliance in terms of conditions for use in the WMA.

The former is dealt with in GL 6. 8 of this guideline while the latter is covered by this section (Section 6.6).

SECTION D: Monitoring, Compliance and Enforcement

The CMA is expected to provide a strategic plan for monitoring and enforcing the conditions set out by the authorisation process. It is noted that the initial responsibilities are likely to be carried by the DWAF regional offices with the CMA taking these functions over when they develop the capacity to do so.

Water-use regulation is incomplete without systems for compliance monitoring and enforcement of the conditions set out in licences. Responsible authorities require a reliable system that enables them to monitor these conditions. The monitoring aspect of the SDC sub-strategy refers largely to those **monitoring activities conducted in relation to the regulation of water use** (authorisation, licences, tariffs, charges, etc). Ensuring that functional monitoring and enforcement systems are in place so that revenue can be collected, is one of the key reasons that this must be done expediently. Monitoring and enforcement are thus essential components of the CMS.

The compliance and enforcement aspects, as reflected in the NWA, relate to:

- lawful water use (S 21);
- existing lawful water uses (S 32-36);
- protection of the water resources (Chapter 3)
- declaration of stream flow reduction activities (S 39);
- use of water under general authorisations (S 39);
- rectification of contraventions (S 53);
- offences and remedies (Chapter 16).

The CMA has an obligation to show that conditions laid down by water-use authorisation are adhered to. The Act (Chapter 16) makes provision for responsible authorities to enforce compliance (also summarised in the NWRS S 3.2.3.8). In fact, the issuing of licences without a functioning enforcement system is meaningless.

6.6.4 Potential contents

The SDC sub-strategy must be guided by a number of important requirements, which have been elaborated above. In summary the **key strategic areas to be reflected in the sub-strategy** include:

1) registration and verification;
2) allocation plans;
3) licensing, including water allocation reform and compulsory licensing;
4) water quality management and pollution control (see DWAF 2003 b, 2004 b, c);
5) augmentation options;
6) pricing, tariffs, incentives, disincentives, subsidies; and
7) monitoring, compliance and enforcement.

The SDC sub-strategy might comprise a number of sub-strategies that cover items 1- 7 as integrated or separate strategic plans.

A number of important issues have a bearing on SDC. The starting point will be to establish the **requirements** set out by RDM and other obligations (strategic, special provisions, international arrangements), as well as the **status of registration and compliance** (GL 6.3). A central theme here is also the need to address **equity,** requiring an adequate understanding of the socio-economic profile of the area and priorities for **redress.** As with RDM, the implementation of SDC will need to be undertaken in

a **phased manner** and this must be set out in the sub-strategy, through a process of **prioritisation**. The **harmonisation** between the CMS and various planning instruments that have bearing on water resources has been frequently raised, and there is a strong imperative for this to be taken up in this sub-strategy (the WSDPs and WC/WDM plans of various sectors are cases in point). This calls on the need for co-operative relationships that must be set out in the appropriate sub-strategy (see GL 6.10). Equally, issues of **non-compliance and enforcement** have to be addressed as a matter of urgency if the SDC are to function effectively. Finally, **raising awareness** for effective stakeholder participation and support (shown in Figure 6.6.3 and discussed in Chapters 5 and G.L 6.7) is an essential component of this sub-strategy.

One of the challenges for the CMA is to develop a sub-strategy for the regulation of water use in the absence of all the required information. The CMA, through the CMS, should therefore proceed with **interim measures** until the required information becomes available and relevant systems are put in place. A number of important issues need to be addressed as priorities:

- determining lawful and unlawful use in the WMA;
- status of RDM since compulsory licensing can only proceed after a comprehensive Reserve determination;
- water allocation reform;
- measures to address non-compliance.

Finally, the **resources needed** must be detailed, and the **links** made with other components (such as finances, public participation and capacity development, monitoring and information management and issues of co-operation) of the CMS.

Checklist 6.6.5

Does SDC sub-strategy:

a) identify key strategic areas to be reflected in the CMS?

Allocation and licensing

- Allocation plans are to be drafted with stakeholder involvement. In particular, discussion
- regarding the collaboration with all sectors and the harmonisation of various planning instruments (see Appendix 3), such as the WSDP of Local Government.
- Implications for water balance (reconciliation) in the WMA.
- A plan for compulsory licensing, particularly in stressed catchments.
- Allocation plans to reflect the intent of water reform, and provide direction on where and when this is needed and how this will be addressed.
- Provision for the Reserve, strategic and international needs. A licence that compromises the Reserve directly or indirectly cannot be issued.
- Criteria for evaluation of licences.

Augmentation

- Integrated WC/ WDM strategy after taking into account the sectoral WC/ WDM plans.
- Attention to a comprehensive suite of alternative augmentation options within specific areas of the WMA.
- Plans for augmentation developed prior to using compulsory licensing to address water allocation reforms.

Water quality management and pollution control

- A plan for managing water quality including pollution control mechanisms.
- Financial mechanisms (charges and incentives) will be used to achieve SDCs and specifically RQOs.

Checklist 6.6.5 cont.

- WDCS for the WMA and its sub-catchments to manage water quality.

Financial arrangements and charges: incentives and disincentives

- A system of charges and how they will play a role in the regulation of water use.
- A framework for incentives and disincentives aimed at supporting sustainability, equity and efficiency.

Monitoring, enforcement and compliance

- A compliance management strategy must be developed during the first compulsory licensing exercised (NWRS S 3.2.3.8).

b) identify information needs?

- Situation description, assessment, reconciliation and the vision.
- WARMS for registered use.
- Biophysical data.

c) address priorities and gaps?

- Potential water-use efficiency options.
- Registration data gaps.

d) identify resource needs?

- Capacity building.
- Enforcement of authorisation.
- Human resources. The responsibilities for the implementation of the SDC sub-strategy are likely to demand considerable human resources. Since the majority of these functions are conducted by the DWAF regional office the CMA will need to determine how human resources will be accessed and shared.

e) identify skills needed?

- Law enforcement: procedures for prosecution and penalties.
- Licensing procedures and administration.
- Monitoring for validation.

Specifically…

a) Does the sub-strategy articulate how it will give effect to the principles of equity, efficiency, sustainability?
b) Is it aligned with the vision for the WMA?
c) Does it outline how existing water surpluses could be used to address (a) poverty reduction and equity, and (b) future growth [S 2.5], or if there are no surpluses, how these issues will be addressed?
d) Does it address the need for harmony between various plans (e.g. WSDPs and the Allocation Plan?

6.6.6 Procedural diagram

An overview of an approach to developing a SDC sub-strategy for the WMA is shown in Figure 6.6.3. This indicates that SDC contain five key strategic areas for consideration. Note that the water allocation plan precedes licensing.

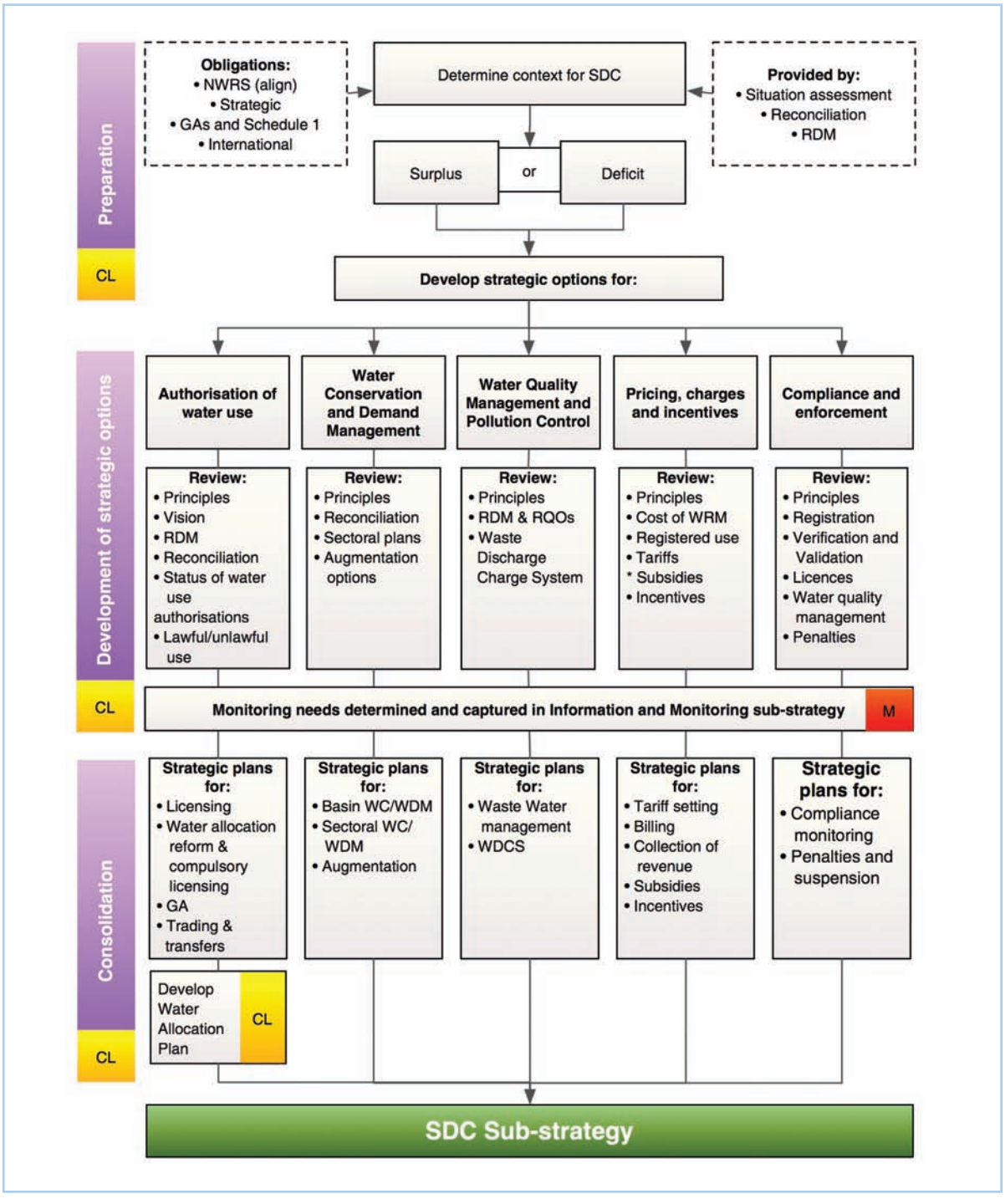
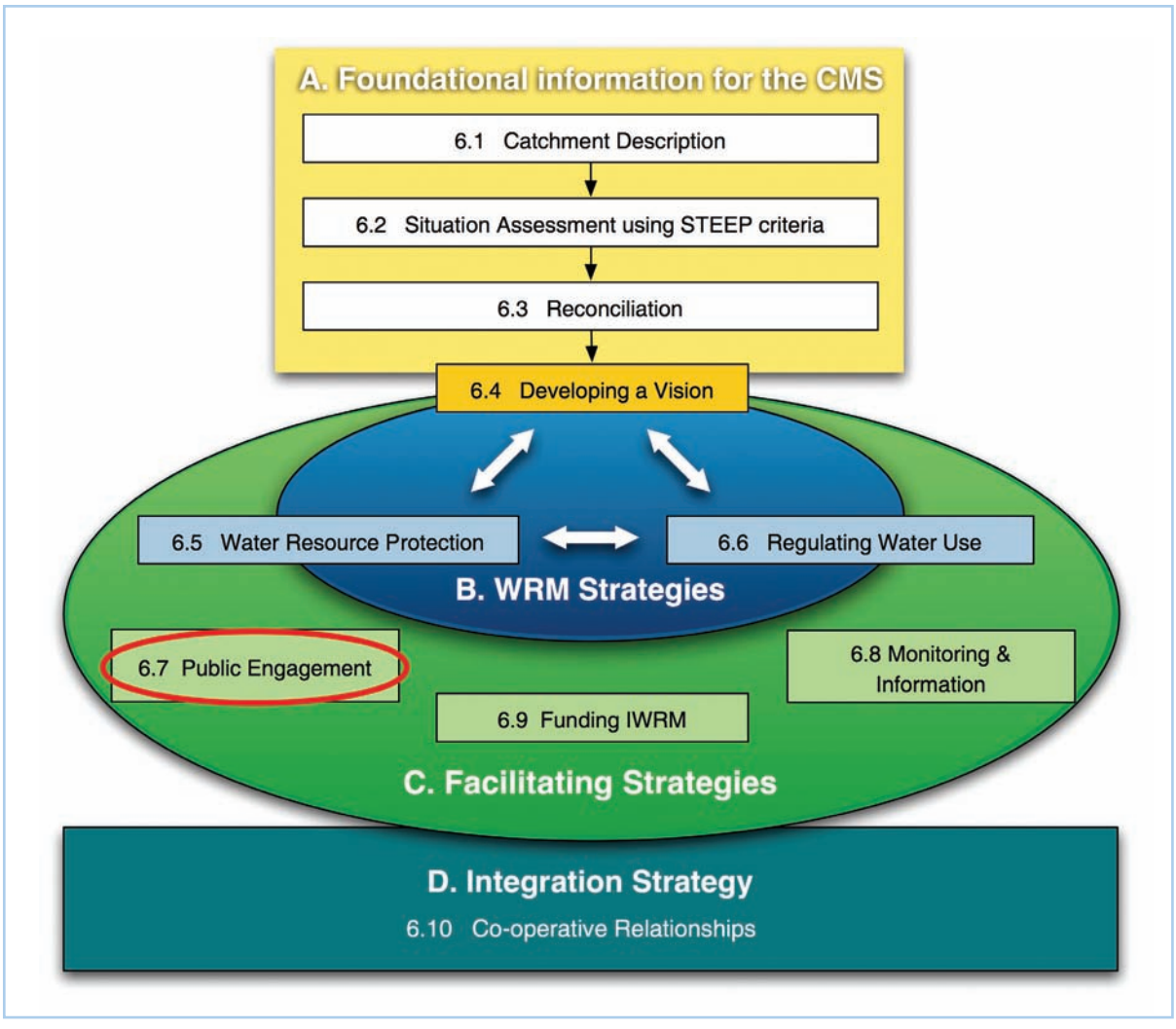


Figure 6.6.3
Schematic representation of steps for developing a SDC sub-strategy. Given the scope of SDC, this will most likely be addressed through a number of sub-strategies as shown above. Requirements for public participation (yellow) and monitoring (red) are indicated (see Table 5.1). [In= Inform, Cn=Consult, Iv= Involve, CL=Collaborate; GA = general authorisation; RDM = Resource Directed Measures; RQO = Resource Quality Objectives; SDC= Source Directed Controls; WC/WDM = Water Conservation and Water Demand management; WDCS = Waste-Discharge Charge System].

6.7 Public Engagement

Guidelines for a sub-strategy for public engagement and capacity development



6.7.1 Introduction

Participation is the cornerstone of Integrated Water Resources Management (IWRM) in South Africa. Indeed, the National Water Act (1998; S 80) states that the Catchment Management Agency (CMA) will **promote** public participation, and furthermore will do so as its initial function.

To do this, the CMA needs (a) **platforms** through which it can engage representatives of *stakeholders*, as well as (b) a sub-strategy for participation, which must be contained in the catchment management strategy (CMS). Participation means **informed participation,** and this places an added responsibility on the CMA for (c) **capacity development.** Additionally, the CMA will need to (d) **communicate** with stakeholders and others in a structured and meaningful way. This guideline addresses these issues. It should be read in conjunction with Chapter 5 (Working Together) which discusses appropriate types of participation associated with different tasks of IWRM. Figure 4.1 also indicates when this component needs to be initiated.

As pointed out in Chapter 5, two levels of participatory processes exist: public participation in the **drafting** of the CMS, and public participation in its **implementation**. The focus of this sub-strategy is on the latter although the principles apply to both steps. This will be addressed again below (Section 6.7.3.3). Note that the term stakeholders is used throughout the text for ease although it can be distinguished from terms "*role-players and Interested & affected parties*" (see Box 5.1).

Legislation

Constitution of the Republic of South Africa (Act no. 108 of 1996)
Section 195 (e) People's needs must be responded to, and the public must be encouraged to participate in policy-making.
Section 195 (g) Transparency must be fostered by providing the public with timely, accessible and accurate information.

National Water Act, NWA (No. 36 of 1998)
S 79- In performing its functions a CMA must strive towards achieving co-operation and consensus in managing the water resources under its control.
S 80- Upon the establishment of a CMA, the initial functions of a CMA is to promote community participation in the protection, use, development, conservation, management and control of water resources in its WMA.
Ch2 Part 2 – In the process of developing the CMS, a CMA must seek co-operation and agreement on water-related matters from the various stakeholders and interested parties.
S 10- In developing a CMS, the CMA must consult with any person, or their representative organisation whose activities affect or might affect water resources within its WMA, and who have an interest in the content, effect or implementation of the CMS.

Promotion of Administrative Justice Act (No.3 of 2000)
S 4 – Where administrative actions affect the rights of the public an administrator must follow correct and fair administrative procedure.
S5 – A person whose rights have been affected by a decision is entitled to request reasons for that decision.

Promotion of Access to Information Act (No 2 of 2000)
The Act promotes public engagement in scrutinising and participating in decisions made by public bodies, especially when decisions affect their rights. The purpose of the Act is to foster a culture of transparency and accountability in public and private bodies.

6.7.2 Objective and outcome

The **objective** of the sub-strategy is to provide the basis for public engagement in the various aspects of IWRM (as addressed in the sub-strategies of the CMS) through co-operation, collaboration and agreement. It must address (a) appropriate capacity building, (b) the provision of opportunities for collaborative action, and (c) communication and access to information.

The **intended outcome** is a sub-strategy that ensures that all role-players in a WMA are adequately represented and that they participate in the formulation, implementation and review of the CMS (and its sub-strategies) on a sustained basis.

Key question

How can public engagement and capacity development best support the implementation of IWRM at the WMA level?

6.7.3 What you need to know

6.7.3.1 Collating other sub-strategies

This sub-strategy belongs to Part C of the CMS, which are Facilitating Strategies. Public engagement is an integral part of all components of the CMS, and this sub-strategy must draw on and collate participation in various aspects of implementation of the CMS. This important integrative function is depicted in Figure 6.7.1. The nature of the engagement in each of the steps is explained in more detail in Table 5.2 (Chapter 5).

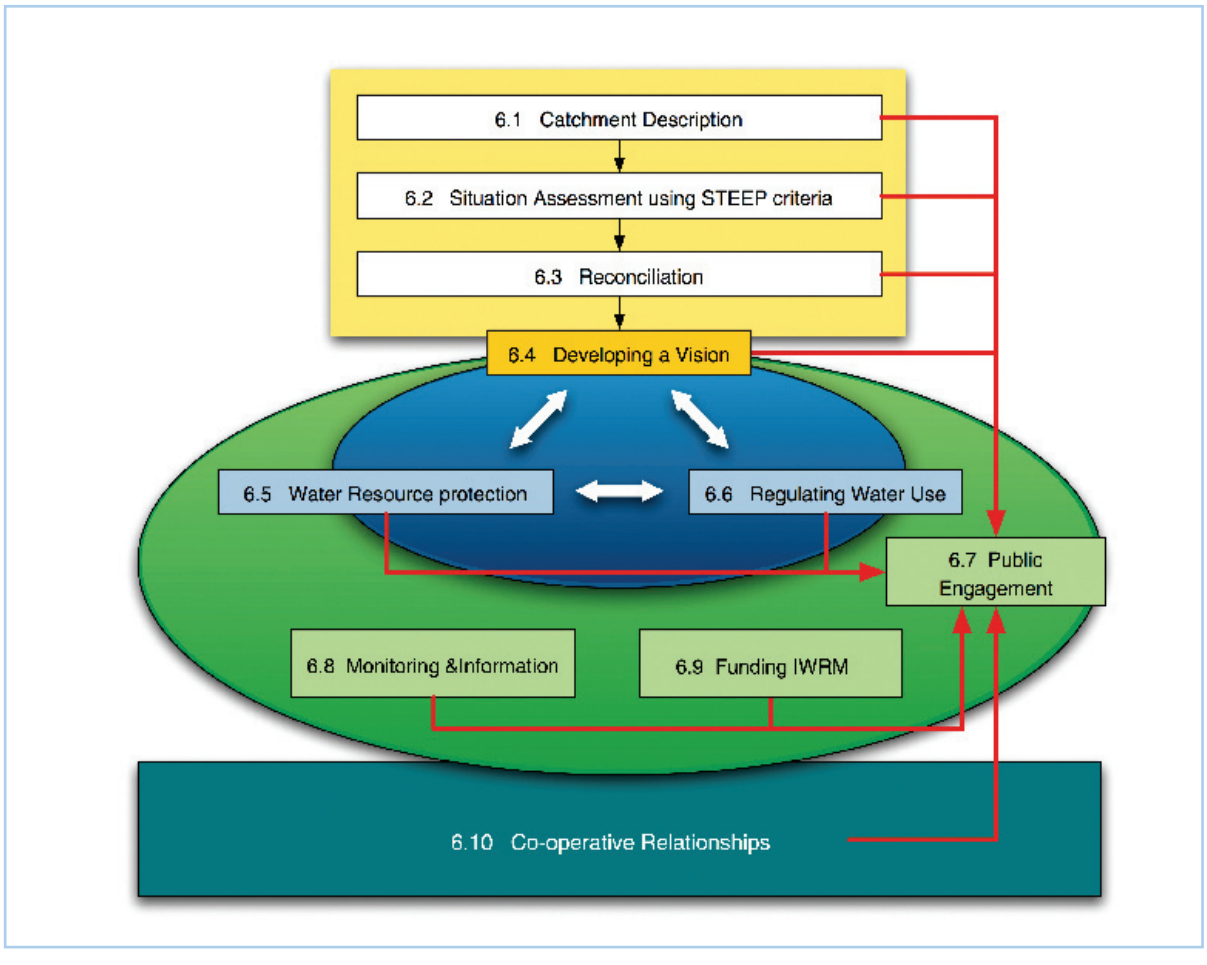


Figure 6.7.1
The sub-strategy for public engagement and capacity development must draw on and collate the need for informed participation in each of the components of the CMS. This figure highlights which components of the CMS will contribute to this sub-strategy.

6.7.3.2 Reasons and guiding principles for participation

Clear reasons underlie the need to involve the public in the development and implementation of a CMS. In summary these include the need to:

- serve as broad a range of interests as possible;
- improve data or information gathering and identify gaps;
- provide transparency and accountability regarding both decisions taken and the process by which decisions were taken in developing the CMS;

- build a broad-based commitment of options by creating an environment in which there is meaningful discussion of costs, benefits and options;
- ensure greater sustainability of implementation by involving stakeholders in a positive manner.

In addition to the legal requirements a number of principles should be evident in the public engagement strategy (see DWAF Generic Guidelines, 2001 b, 2002 b). These are summarized for the CMS development in Box 6.7.1.

Principles for the public engagement sub-strategy — Box 6.7.1

- **Inclusive involvement** of the public, role-players and stakeholders;
- **Awareness creation:** Stakeholders aware of catchment realities and of issues affecting them;
- **Capacity building and empowerment:** Stakeholders to be supported to participate meaningfully in strategic planning;
- **Integration of public issues** and technical assessments in strategic planning;
- **Mutual respect between role-players:** Stakeholders acknowledge and respect each other's knowledge, background and contributions;
- **Continuity in participation:** Stakeholders engaged throughout the CMS drafting and implementation;
- **Strategic plans** based on consideration of multiple options;
- **Flexibility:** Public participation process to adapt to contextual realities of each WMA;
- **Transparency:** Honest, open and equitable;
- **Accountability and commitment:** Stakeholders to take responsibility for engaging in the CMS drafting and implementation;
- **Rights and roles:** Stakeholders to clarify rights and roles in the CMS process;
- **Accessibility of information** so that stakeholders can be engaged in CMS processes from a knowledgeable and informed position;
- **Efficiency:** Refers to a clear and defined plan for the public participation process;
- **Suitability of scale of involvement:** the nature of participation (see Tables 5.1 and 5.2) must match a particular CMS task;
-
- **Feedback to and from role-players:** In addition to the legal obligation for transparency, feedback and communication establish trust and accountability in the CMS processes.
- **Monitoring and evaluation** aid the implementation and refinement of strategic plans by providing the opportunity to learn from experience.

6.7.3.3 When is the right time to start public engagement and how?

An issue that has led to some confusion is whether or not this sub-strategy deals with engagement in the drafting or implementation of the CMS (see Chapter 5). Examine the steps shown in Figure 4.1 to assist in this discussion.

Functioning stakeholder platforms are crucial for both the **drafting** and **implementation** of the CMS. Thus, one

*The NWA makes provision for **stakeholder platforms** in the form of Catchment Management Committees (CMCs) - S82 (5) and Water User Associations (WUAs) - Chapter 8. In some cases CMCs, WUAs and, non-statutory platforms called Catchment Management Forums (CMFs), will have already been established by DWAF. Additional platforms in the form of Local Government Forums (IDP forums, Water Committees) can be engaged. Special attention should always be given to demographic issues and representivity, regardless of the stakeholder platform.*

of the first tasks of the CMA is to ensure that such platforms are in place prior to the actual drafting (see Chapter 5). Remember this also means addressing capacity development so that there is informed and meaningful participation (capacity will also be built over time). Thus from the outset, the CMA needs to plan how this will be done. For the first CMS, the **CMA may wish to develop a separate strategy** (not part of the CMS) that deals with these initial processes of platform establishment and capacity development (Figure 6.7.2). These platforms can be used in both the drafting and implementation processes. To assist the CMA in doing this initial task, the procedures diagrams at the **end of each guideline** indicate where, and what type of participation is needed in drafting of the CMS.

Once the CMS is drafted, it must be implemented. How stakeholders will be involved in this phase (see Level 2 participation in Table 5.3) is the focus of the public engagement sub-strategy. This sub-strategy will need to draw on other sub-strategies as they are being drafted (See Figure 6.7.1). Nonetheless, addressing the broad issue of public engagement probably requires a number of supporting strategies.

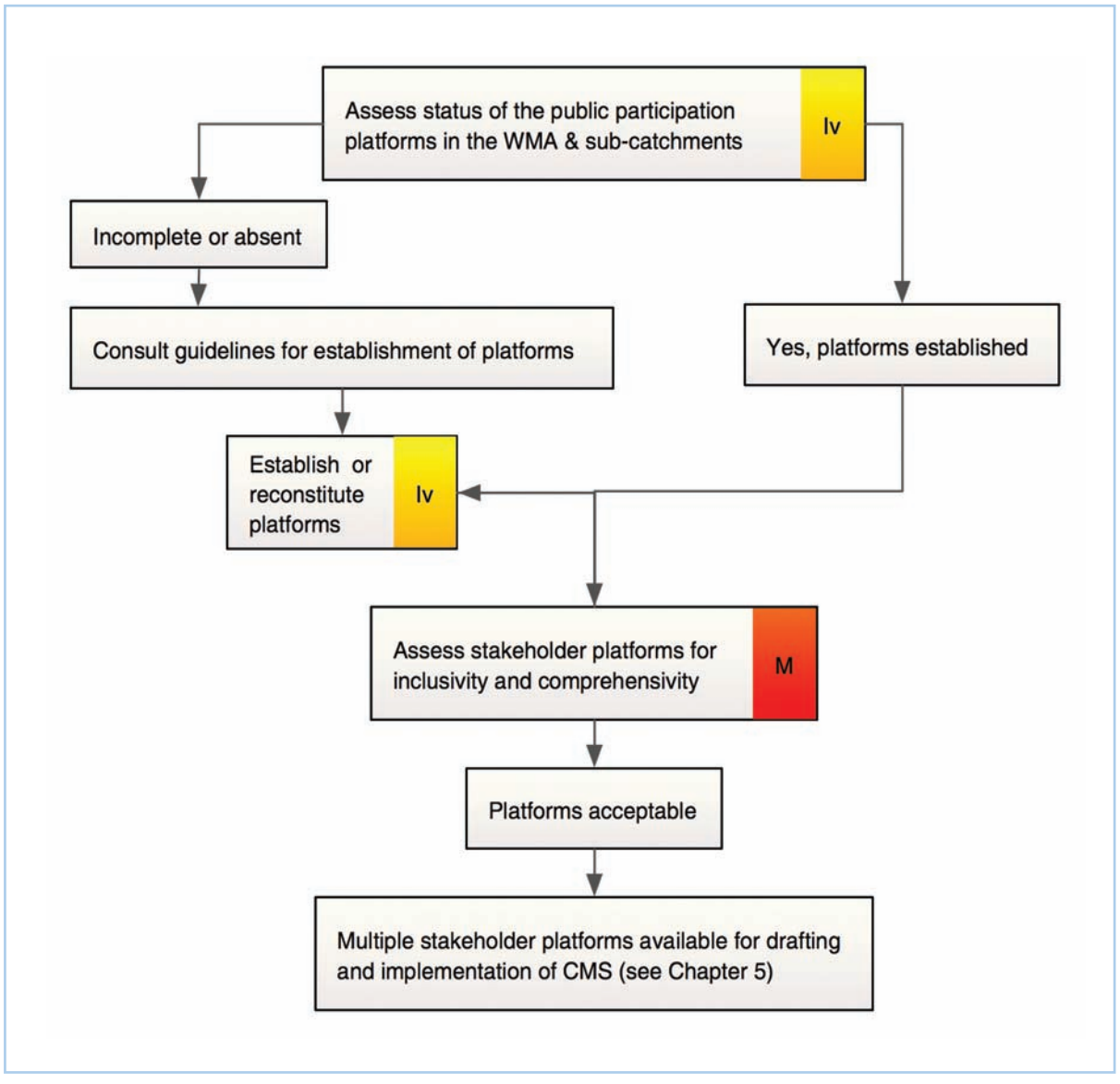


Figure 6.7.2
Summary of the process required for the establishment of stakeholder platforms. This is one of the initial functions of a CMA (NWA, S 80) and is required for the drafting and implementation of the CMS (refer also to Figure 4.1 for sequence). Requirements for public participation (yellow) and monitoring (red) are indicated (see Table 5.1). [In= Inform, Cn=Consult, Iv= Involve, CL=Collaborate].

6.7.3.4 Sustaining public engagement through capacity development

As mentioned in Chapters 5 there are likely to be massive demands for awareness raising and capacity building, both internally (within the CMA) and amongst the stakeholders of a WMA (see DWAF, 2002 d). This sub-strategy will need to address these issues directly as IWRM can only be realised if there is adequate understanding, skills and competence amongst the CMA and public alike. Building capacity for continued engagement in drafting, implementation and review is an investment that the CMA needs to take seriously.

Special attention needs to be given to effective engagement of previously disadvantaged groups and vulnerable sectors of society. Ways of simplifying concepts and ensuring that poor people can find their way to meetings are crucial for the functioning of IWRM. Finally, there is a need to monitor the public participation process in a meaningful and realistic manner (DWAF is currently developing guidelines in this regard).

6.7.3.5 Communication: keeping in touch with the public

Working with a diverse and extensive collection of stakeholders demands an efficient and well-functioning communications system. As stated, the CMA may consider drafting a specific sub-strategy that addresses communication with stakeholders within and beyond the WMA (see DWAF, 2001, c, d, and e). The methods of communication, feedback and evaluation of the effectiveness of the communication are all part of this important aspect of working together.

The CMA must also ensure that it follows all legal procedures that may apply to administrative actions carried out in the course of its duties. The requirements for publishing notices, receiving inputs, responding to comments and submissions are all part of administrative actions. The Promotion of Administrative Justice Act (2000) and the Promotion of Access to Information Act (2000) are relevant legislation in this regard.

6.7.4 Potential contents

As mentioned above, a number of supporting strategies are probably required for:

- the establishment and maintenance of stakeholder platforms;
- capacity development (stakeholders and CMA);
- the implementation and review of the CMS; and
- communication with stakeholders.

The first two issues need to be taken up immediately by the CMA (see Figure 4.1), and will probably be best addressed through a distinct sub-strategy.

A sub-strategy that deals with the last two issues has an important integrative function, drawing on and collating the need for public engagement and capacity development of the other components of the CMS (see Figure 6.7.1). This integrative aspect must be explicitly addressed.

Certain considerations must guide the public engagement sub-strategies. Foremost is the need to include people in a way that has not been done before. The need for redress also means capacitating people for meaningful engagement. Additionally, the CMA needs to ensure that the correct instruments are in place for effective public participation, including both appropriate platforms as well as communication mechanisms. Such high demands on the CMA must be given strategic direction through this sub-strategy.

Participation needs to be well co-ordinated, and this sub-strategy is the foundation for successful engagement of the public. Facilitation is critical and the *why, what, who, when, where and how,* for each of Parts A, B, C and D of the CMS should be outlined. Table 6.7.1 provides a basic framework for this.

Table 6.7.1
Participatory processes

The *why, what, who, when, where, and how,* of a participatory process. This table, together with Tables 5.1 and 5.2 will support the preparation of each sub-strategy of the CMS

Why?	People to know why they are being involved in a particular activity. Answering this will help focus a participatory process and provide the necessary information required to proceed.
What?	Integrated Water Resources Management is not a single step process – meaning the public will be engaged in a number of steps. It is important that participants understand what these are since each step of the process requires specific, and sometimes different concepts.
Who?	Each WMA will have a range of stakeholders and institutions. Not everyone can be present at meetings so some form of representation is necessary. Moreover, not all groups need to be present for every decision or step, and this must be made clear.
When?	It is important that the public is engaged at the appropriate point in time. The issue of sequence is important for the process to run smoothly and for the correct information to be available timeously.
Where?	This refers to the physical location of where the meetings will take place. It is important to choose a location that is accessible to all stakeholders. Marginalised groups often have to travel the furthest to venues and so carry the highest costs of travel to such points.
How?	This is a question of process – how will it be carried out? Understanding the type of participation needed will assist in this regard (see Table 5.2). Costs, feedback, facilitation, provision of learning support materials, orientation, frameworks, etc. are also all part of the "how" question.

The CMS needs to contain interim measures in the event of there being a lack of, or inadequate access to stakeholder platforms.

Finally, the resources needed must be detailed, and the links made with other components (such as the situation assessment, visioning, RDM, SDC, finances, monitoring and information management and issues of co-operation) of the CMS.

Checklist 6.7.5

Does the public engagement and capacity building sub-strategy:

a) identify key strategic areas?

- Collate public participation associated with other sub-strategies.
- Address how the public will be involved in implementation.
- Present a profile of the status and functioning of stakeholder platforms.
- The need for capacity development of public platforms.
- Outline a plan for communication between the CMA and stakeholders.
- Time lines for tasks are developed and communicated to public.
- Include a plan for supporting disadvantaged and marginalised groups.
- Plan for monitoring and reporting on public participation processes.

f) address information needs?

- Stakeholder data-bases.
- Learning support materials that provide basic concepts and definitions.

c) address gaps?

- Lack of 'wall-to-wall' forums.
- Lack of financial support.
- Lack of indicators for monitoring participation.

d) identify resource needs?

- Human resources: facilitators.
- Finances.
- Venues and catering.

e) identify skills needed?

- Facilitators with conflict resolution and mediation skills.
- Organisation and planning of multiple stakeholder activities.
- Communication skills.

f) identify co-operative and collaborative issues?

- Collaboration of various role-players and stakeholders within a WMA is essential. In some cases role-players may be located outside of the WMA (e.g. in WMA with international boundaries).

Specifically…

a) Does this sub-strategy indicate how the CMA will establish, sustain and maintain the appropriate public platforms?

b) Does this sub-strategy define the nature of participation required for each task within the various sub-strategies?

c) Does this sub-strategy explain how organised and less organised groups will be engaged?

6.7.6 Procedural diagram

An overview of an approach to developing a public participation sub-strategy for the WMA is shown in Figure 6.7.3.

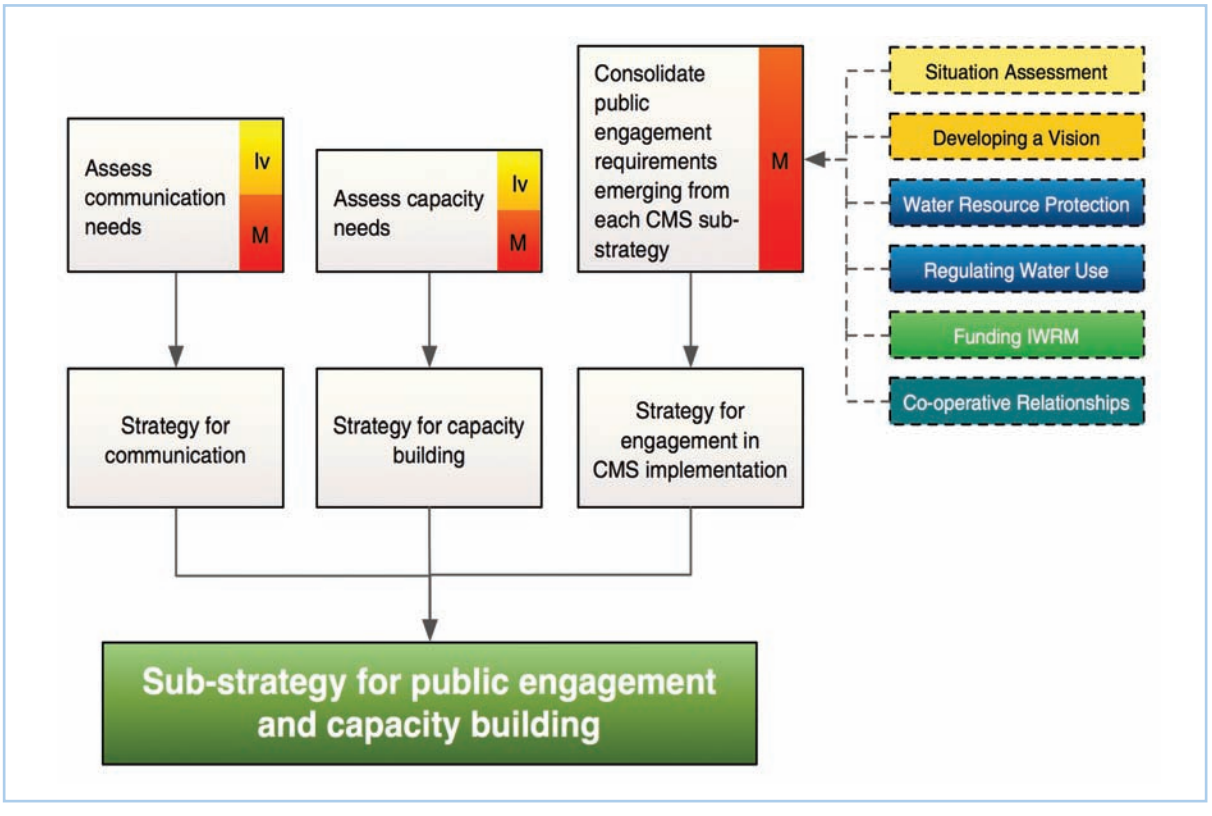
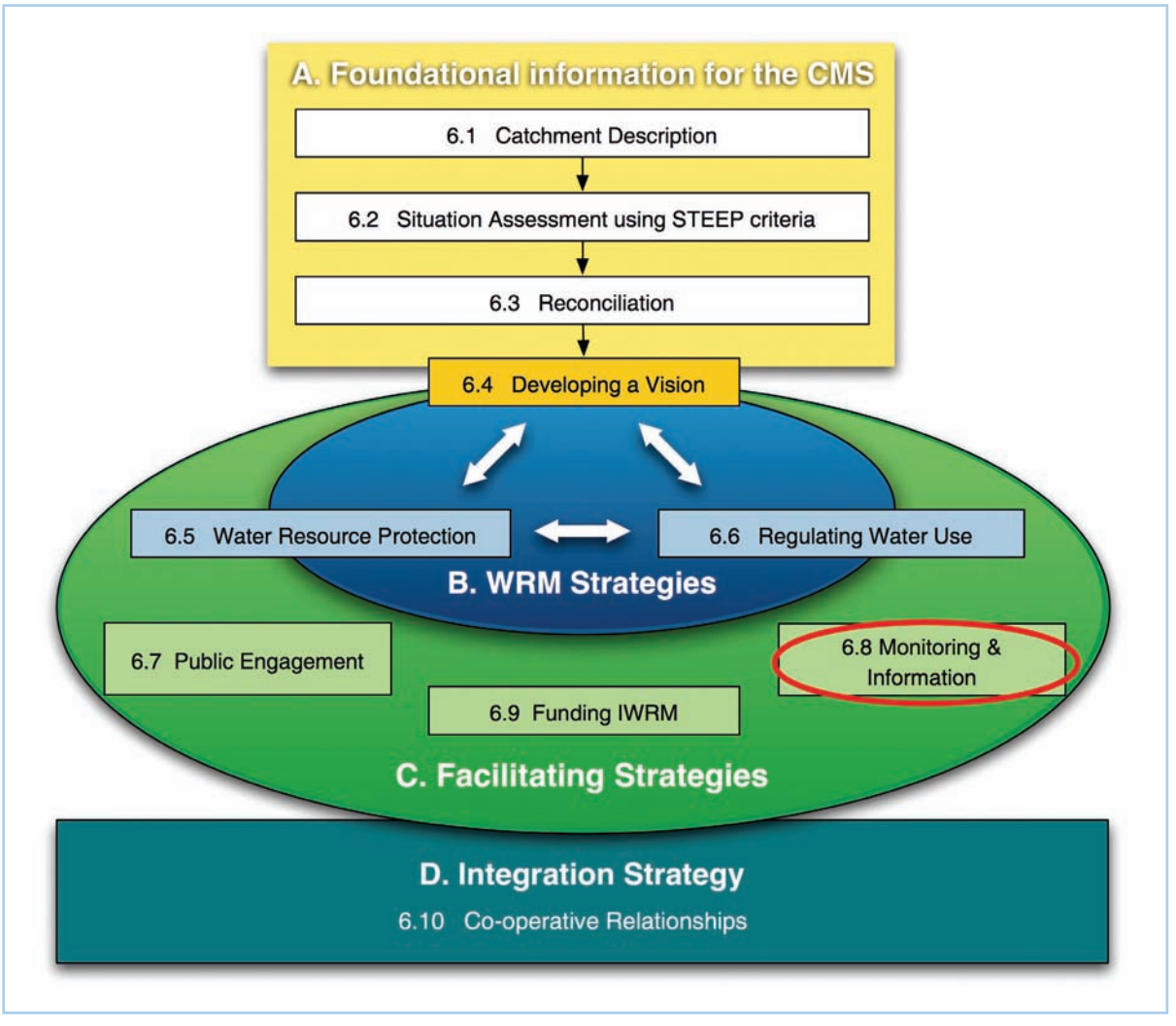


Figure 6.7.3
Schematic representation of steps for developing a public engagement and capacity development sub-strategy. Note that this assumes that stakeholder platforms are in place (see Figure 6.7.2). Requirements for public participation (yellow) and monitoring (red) are indicated (see Table 5.1). [In= Inform, Cn=Consult, Iv= Involve, CL=Collaborate: RDM = Resource Directed measures: SDC = Source Directed Controls].

6.8 Monitoring & Information

Guidelines for developing a sub-strategy for monitoring and information management



6.8.1 Introduction

In recognition of the importance of an integrated and consistent system of monitoring and information management, the National Water Act (1998; NWA) requires the establishment of a national monitoring system (Part 1), and an information system (Part 2) by the Minister. The Act states that "*The purpose of the systems will be to facilitate the continued and co-ordinated monitoring of various aspects of water resources by collecting relevant information and data, through established procedures and mechanisms, from a variety of sources including organs of state, water management institutions and water users*". This makes it clear that DWAF seeks to co-ordinate and harmonise systems of monitoring and information management of all Water Management Areas (WMA) to ensure such consistency. Moreover, it also shows that monitoring cannot be de-coupled from the information management system into which it feeds.

The Department already has a number of monitoring and information systems, but since they were largely operated as separate units, they are currently being integrated into a coherent, structured system. The Chief Directorate: Water Resources Information Management (WRIM) in DWAF has a primary responsibility for the monitoring and management of such information. As pointed out in Table 2.1, the Catchment Management

Agency (CMA) will play a critical role in managing WMA-information but will also be responsible for ensuring the flow of information between the WMA and the national systems.

This guideline provides an overview of the strategic intent by the CMA to develop and/or update WMA specific information management and monitoring plans that are compatible with both the National Water Resources Strategy (NWRS) and the national systems. It should be noted however, that these systems are in various stages of development.

Legislation

Legal requirements for a national monitoring and information management system

Chapter 14 of the NWA describes the establishment of a number of national systems pertaining to monitoring, assessment and information management. Chapter 3, Part 6 of the NWRS (2004) details monitoring systems (S 3.6.2) and information systems (S 3.6.3).

The monitoring systems must provide for the collection of appropriate data and information necessary to assess, among other matters (NWA S 137(2)):

a) the quantity of water in the various water resources;
b) the quality of water resources;
c) the use of water resources;
d) the rehabilitation of water resources;
e) compliance with resource quality objectives;
f) the health of aquatic ecosystems; and
g) atmospheric conditions which may influence water resources.

The objectives of national information systems are (NWA S 140):

a) to store and provide data and information for the protection, sustainable use and management of water resources;
b) to provide information for the development and implementation of the national water resource strategy; and
c) to provide information to water management institutions, water users and the public:
i) for research and development;
ii) for planning and environment impact assessments;
iii) for public safety and disaster management; and
iv) on the status of water resources.

Key questions

What are the information and monitoring needs of the WMA?

How can their associated activities be managed, co-ordinated and consolidated in order to facilitate IWRM implementation and to ensure compliance with national norms and standards?

6.8.2 Objective and outcome

The **objective** of the information management and monitoring sub-strategy for a CMA is to provide a strategic plan that:

a) will provide a CMA with the water resources information and related information required to meet their responsibility towards effective water resources management as well as their reporting requirements regarding the health of water resources in their care to the Minister of DWAF;
b) is consistent with the national standards and requirements as per the NWA (Chpt. 14);
c) guides collecting, accessing, analysing and sharing a wide range of information for the purposes of monitoring and evaluating Integrated Water Resources Management (IWRM) and operational management and,
d) ensures findings are incorporated into a process of review, learning and design of follow-up activities.

The **expected outcome** is a sub-strategy that provides a strategic plan to:

a) manage water resources monitoring and information in collaboration with DWAF;
b) monitor, analyse and evaluate IWRM intentions and actions through nationally approved methods, procedures and techniques and,
c) incorporate findings into an adaptive management process.

6.8.3 What you need to know

6.8.3.1 Collating other sub-strategies

Not only must this sub-strategy be consistent with national standards, but it must also collate the information and monitoring plans developed in the other sub-strategies of the Catchment Management Strategy (CMS). This important integrative function is shown in Figure 6.8.1.

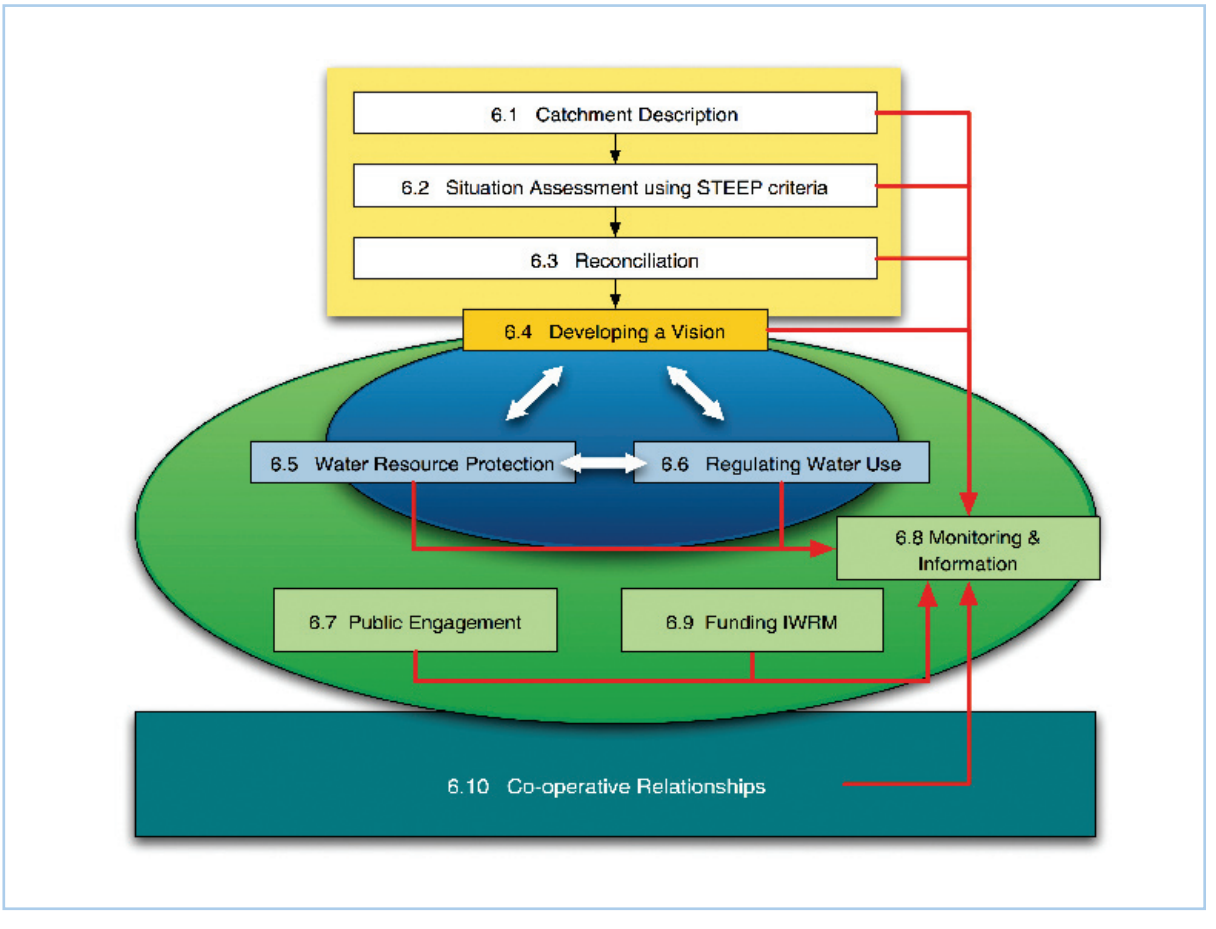


Figure 6.8.1
The sub-strategy for information management and monitoring must draw on and collate the need for information and monitoring each of the components of the CMS as shown above. [RDM = Resource Directed Measures: SDC = Source Directed Controls].

6.8.3.2 Consistency with the national norms and standards

This sub-strategy must ensure consistency with both the National Water Resources Strategy (NWRS) and the national systems which provide norms and standards. As mentioned, these are in various stages of development.

6.8.3.3 Monitoring and information management responsibilities

As stated, the responsibility for ensuring coherency and integration across monitoring and information systems lies with national DWAF. The Chief Directorate: WRIM is currently preparing for the implementation of the proposed National Water Resources Monitoring Committee (NWRMC; Box 6.8.1.). This committee will coordinate water-related information and monitoring plans including those for WMAs. To this end, a CMS should be formulated in a consultative process with the proposed structure to ensure alignment with national norms, standards, procedures, methods and protocols adopted by the NWRMC. Regional Information Management Committees will provide a local link between DWAF and each CMA.

National Water Resource Monitoring Committee **Box 6.8.1**

Monitoring is defined as 'the establishment of a monitoring network, data acquisition, data management and storage, development of information products and the dissemination of data and information.'

The NWRMC will:

- consist of **national monitoring programme managers**, national cross-cutting programme managers (information systems, quality assurance, assessment, data management etc.) and **regional integrated monitoring managers who will represent their respective CMAs,** if not already represented;
- consist of technical sub-committees as required;
- establish a **National Water Resources Monitoring Framework** of standards, guidelines and methodologies;
- support effective and coordinated governance of water resources monitoring;
- coordinate the relevant activities of stakeholders;
- link the monitoring task to support research and technology;
- co-ordinate the development and roll out of national monitoring programmes;
- guide and support the development and implementation of regional, provincial and local monitoring programmes;

The NWRMC will interface with the proposed National Advisory Committee for Water Monitoring which, in turn, will link to the Minister's National Water Advisory Committee.

The implementation of the NWRMC is planned over the period January to June 2007.
Note: Until the NWRMC and the National Framework for Water Resources Monitoring are operational, the CD: WRIM and its respective directorates will fulfill the roles of the proposed entities.

The Chief Directorate: WRIM services currently consists of:

- a number of national programmes: national surface water, groundwater and water quality monitoring programmes;
- national GIS-related information management programmes e.g. cadastral data, remote sensing;
- National Survey Services: dam survey services; and
- supporting information systems and data management services for various data bases (e.g. HYDSTRA, WMS; NGIS; WARMS see DWAF 2004 a, b).

The WRIM is currently planning the following monitoring programmes:

- National Sediment Monitoring Programme; and
- National Water Use programme;

Although compliance with national standards is a statutory requirement, the responsibilities are likely to be shared. The details of this will be meaningfully negotiated by each WMA. In this regard the following points need to be borne in mind.

- The overall co-ordination of national and local water resources monitoring, GIS, survey and WARMS programmes is done at **national level**, co-ordination of specific monitoring and information programmes will be done by the specific directorates responsible for the programmes. A national committee will co-ordinate all local and other sub-committees.

- The CD: WRIM is preparing a **framework** of procedures and standards for information management and monitoring with which local- or CMA- level information management and monitoring will need to be aligned. The framework will also cover guidelines for sharing both capital and operational costs where monitoring programmes are shared.

- Several years ago DWAF initiated the development of a strategy for Monitoring and Assessment Information Systems to support Water Resources Management (MAIS; DWAF, 2000). Emanating from this was the strategic Framework for National Water Resource Quality Monitoring Programmes (DWAF 2004 c) which offers guidance for resource quality monitoring (see glossary for definition).

Some likely responsibilities

According to DWAF (2004 a), decentralization of IWRM means that CMAs (or DWAF as their substitutes) and other local management institutions are likely to assume primary responsibility for the following types of monitoring programmes

- *Status and trend monitoring of local catchments to evaluate the achievement of Reserve and Resource Quality Objectives at the catchment scale.*
- *Programmes to assess compliance of water users to water licence conditions or general authorisations.*
- *Programmes assessing the impacts of proposed water uses for the purpose of issuing licences or designing other water management interventions. Process control monitoring, e.g. for water releases from a reservoir.*

- Data from national programmes will be used for local purposes of planning, compliance monitoring, regulation, guiding operations, disaster management, water-use reporting and reporting on the status and health of water resources. The CMA should set up **communication** channel with CD: WRIM that ensure access to such systems.

- Responsibility for **local monitoring programmes** will rest with the CMA or regional office. Such programmes must be registered with the national co-ordinating structures, and all local data must be stored on the respective national information systems (as per NWA) to ensure their availability for national planning and reporting.

- National, regional, CMA and local-monitoring managers must **co-operate** to ensure the optimal utilisation and sharing of scarce skilled human and operational resources so as to avoid duplication and waste.

- The CD: WRIM can **appoint the CMA** to operate components of the national programmes with appropriate financial arrangements.

- Some of the national monitoring programmes, especially water quality, rely heavily on **partnerships** with, and support of local stakeholders. This co-operation, especially with national monitoring programme managers, must be planned for.

- The NWA makes it clear that subject to any limitations imposed by law, information in the national systems should be **generally accessible for use by water users** and the general public. This principle will also apply to information held by the CMA.

6.8.4 Potential contents

This sub-strategy has an important integrative function – drawing together and collating the monitoring and information management needs of the other components of the CMS (see Figure 6.8.1). This integrative aspect must be explicitly addressed. Additionally as per the NWA, it must set out how compliance with national norms and standards will be ensured.

Furthermore, this sub-strategy must ensure that the following issues are taken into account. The starting point will be to establish the **needs** of the CMA, and to consider the **status** of information and monitoring applicable to the WMA both regionally and nationally. This will highlight both **priorities and gaps**, thereby also indicating the requirements for local monitoring programmes. Establishing how this will be done (internally or through partnerships with other initiatives) must therefore be addressed.

Flowing from this, the sub-strategy must set out the (a) **internal arrangements** for monitoring and information management, and (b) the **collaborative and co-operative arrangements** with partners and the Regional and National Information Management Structures, both for co-ordinating monitoring activities and for reporting on the status of IWRM. Important partners to consider here include Local Authorities, Water Boards, WUA, Catchment Committees and Forums, and neigbouring WMAs.

Issues that must be covered include setting out the roles, responsibilities and contractual agreements for the **collection, access, and sharing of water resources information**, per monitoring programme. An aspect of this collaborative arrangement must be to address the **financial arrangements** between national and regional DWAF, the CMA and its partners (see Section 6.8.3.3).

This sub-strategy must include a **strategic monitoring plan that addresses**:

- quantity and quality of water resources;
- water use and compliance with conditions for use;
- functioning of networks and data capturing;
- rehabilitation of water resources;
- drought, flood and disease management; and
- institutional responsibilities and performance in terms of monitoring water resources protection, water use control, water use efficiency and so on (CMA, Water User Associations, water users, Water Boards, Local Authorities and other government agencies).

Finally, the resources needed must be detailed and the links made with other components (such as a situation assessment, visioning, RDM, SDC, finances, public participation and capacity development, and issues of co-operation) of the CMS.

Checklist 6.8.5

Does the sub-strategy for information management and monitoring:

a) identify key strategic areas?

- Information availability (national to local) and monitoring needs.
- The management of data and information.
- Collaborative and co-operative arrangements.
- Compliance with national norms and standards.
- Capacity and training needs.
- Financial arrangements.

b) identify information needs?

- National systems and frameworks.
- Existing information and monitoring systems.
- Communication and reporting.

c) address priorities and gaps?

- Incomplete information or monitoring data.
- Absence of national systems.
- Weak communication.
- Poor access.
- Information technology.

d) identify resource needs?

- Human, technological and financial resources.

e) identify skills needed?

- Managing information, data collection and analysis.
- Operating information management technologies.

Specifically…

a) Does the sub-strategy align with the NWRS and National Water Resource Monitoring Framework?
b) Does it collate monitoring and information needs from all other sub-strategies of the CMS?
c) Does it organize these into priorities and address gaps?
d) Does it set out how information will be collected, accessed, analysed and distributed?
e) Does it set out co-operative and collaborative arrangements for information management and monitoring?
f) Does it highlight constraints and suggest strategic direction to address these?

6.8.6 Procedural diagram

An overview of an approach to developing a monitoring and information management sub-strategy for the WMA is shown in Figure 6.8.2.

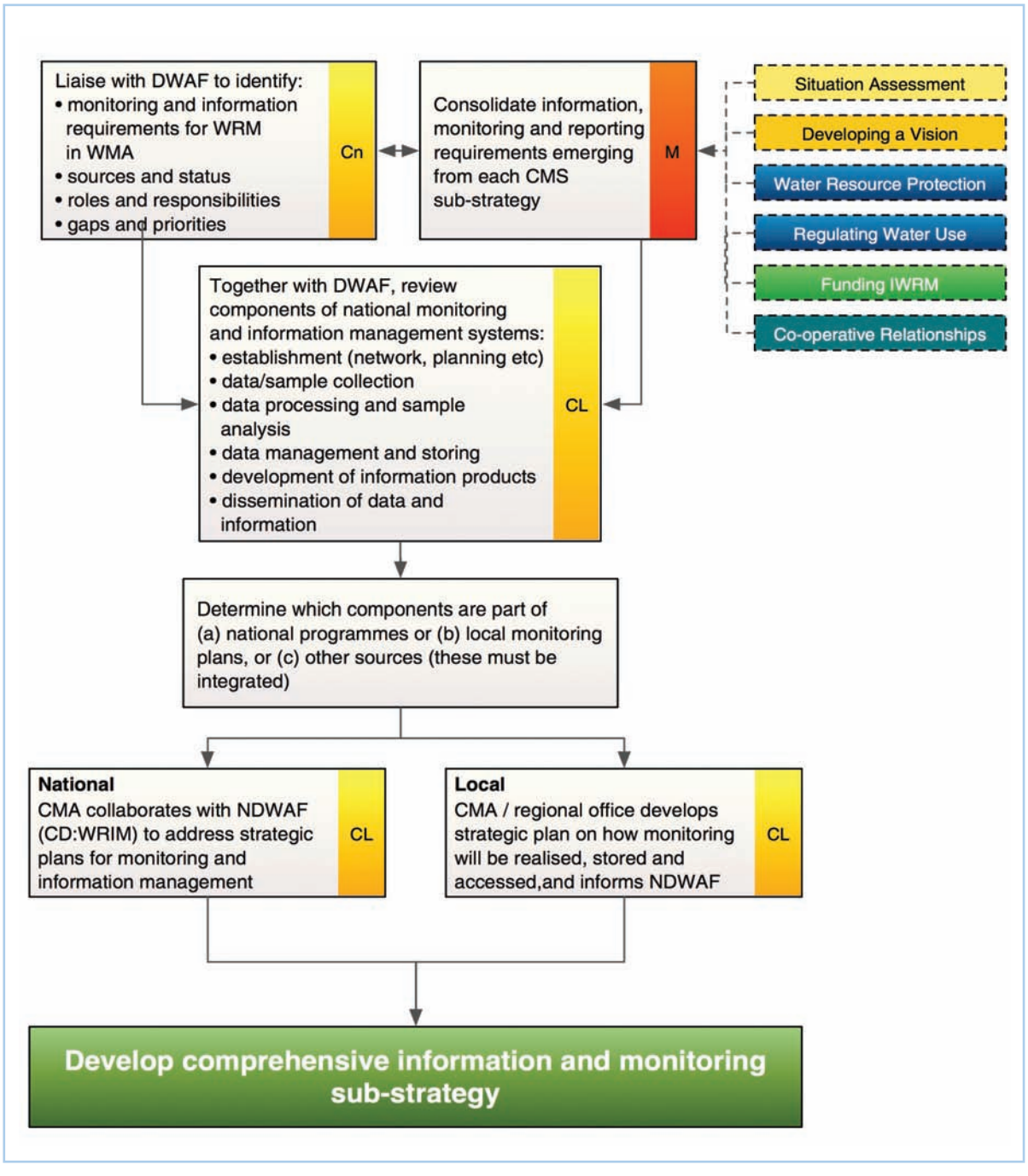
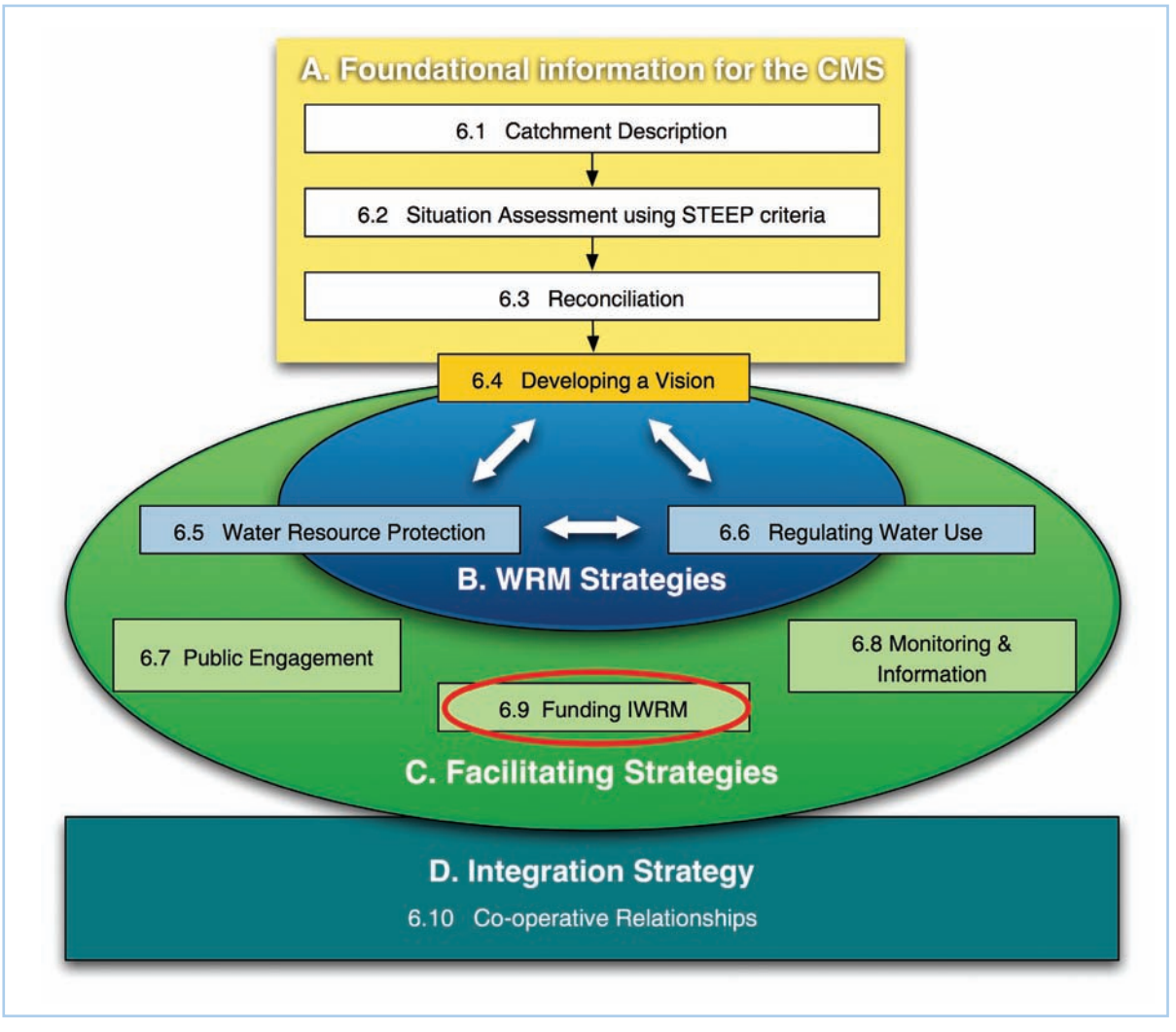


Figure 6.8.2
Schematic representation of steps for the development of the information management and monitoring sub-strategy. Requirements for public participation (yellow) and monitoring (red) are indicated (see Table 5.1). [In= Inform, Cn=Consult, Iv= Involve, CL=Collaborate; CD: WRIM = Chief Directorate: Water Resources Information Management; NDWAF = National DWAF; WRM = Water Resources Management; RDM= Resource Directed Measures; SDC= Source Directed Controls].

6.9 Funding IWRM

Guidelines for a sub-strategy for the funding of Integrated Water Resource Management in a WMA



6.9.1 Introduction

The Catchment Management Agency (CMA) is directed, through the National Water Act (1998; NWA), to collaboratively protect, allocate, conserve, manage and control water resources distributed across the specific Water Management Area (WMA). In order to finance these activities, the CMA needs a strategy for generating revenue. This is largely through cost recovery from water users but can also be from parliament or other sources (see below). Revenue raised by the CMA will be used to cover various costs including the functioning of the CMA, Integrated Water Resources Management (IWRM), the development and operation of waterworks, and costs to achieve equity (NWA, S 56 (1)). The Catchment Management Strategy (CMS) must therefore contain a financial sub-strategy which addresses the costs incurred for the above. However, this sub-strategy will focus on the cost recovery associated with the **implementation** of IWRM. In this respect, although costs associated with the corporate functions of the CMA must be recognised (for the calculation of charges), these will be detailed elsewhere. This section of the guideline sets out key issues to be considered when developing a finances sub-strategy. Importantly, this sub-strategy should not be seen as a detailed financial plan. It should however, at the minimum, set out the principles and procedures along which funding of IWRM will be achieved. The challenge for the CMA is to balance five-year strategic

planning captured by the CMS with annual business plans. Whilst the CMA business plans and budget are conducted annually, many IWRM activities stretch over a few years requiring that this sub-strategy contain first order (rough) estimates of such longer-term costs. The annual budgets will then be informed by this longer-term forecast.

Legislation

Legal requirements

The legislative basis for funding of IWRM and the financial sub-strategy are provided by the NWA (Chapter 5, S 56 and S 84), supported by:

- *Chapter 3, Part 4 of the NWRS (2004)*
- *the Revised National Pricing Strategy for Raw Water Use Charges (the NPS, in prep.)*

Key questions

How will IWRM, as captured in the CMS (and detailed in the sub-strategies) be funded?

How will the costs of corporate functions of the CMA be funded?

6.9.2 Objective and outcome

The **objective** of the finance sub-strategy is to set out financial arrangements for IWRM (including waterworks and equity) for the WMA. Reference must be made to the costs associated with the functioning of the CMA.

The **intended outcome** is a sub-strategy that sets out how implementation of the CMS and functions of the CMA will be funded.

6.9.3 What you need to know

6.9.3.1 Collating and budgeting of activity costs

The financial arrangements can be categorized as: a) CMA functioning and, b) strategic actions captured as different sub-strategies of the CMS (GL 6.1 – 6.10). Each will require a budget and identified sources of revenue. This implies that the finance sub-strategy will draw on and collate these financial aspects, and be developed **after** estimates for (a) the running costs of the CMA and, (b) the cost implications for other sub-strategies, are available. This important integrative function is shown in Figure 6.9.1.

6.9.3.2 Consistency with the revised National Pricing Strategy

Two important factors must be considered when developing the finance sub-strategy. Firstly, there must be consistency with the revised National Pricing Strategy (NPS), which is the overarching guide for the CMS financial sub-strategy (Box 6.9.1). Secondly, charges are not a tax, unless explicitly defined as such (e.g. environmental taxes, see incentives charges in revised NPS S 6.3.3.6), but are charges based on services.

The overarching guide for the CMS financial sub-strategy is the revised National Pricing Strategy for Raw Water Charges (DWAF, in prep.), or NPS (summarised in Box 6.9.1). The CMA will set tariffs which must be in line with the NPS, and that are subject to ministerial approval. At the time of writing a number of associated documents and systems were in the process of being prepared. These include a computerised billing system, Enhancement of WARMS, and the Strategy for Recreational Concessions.

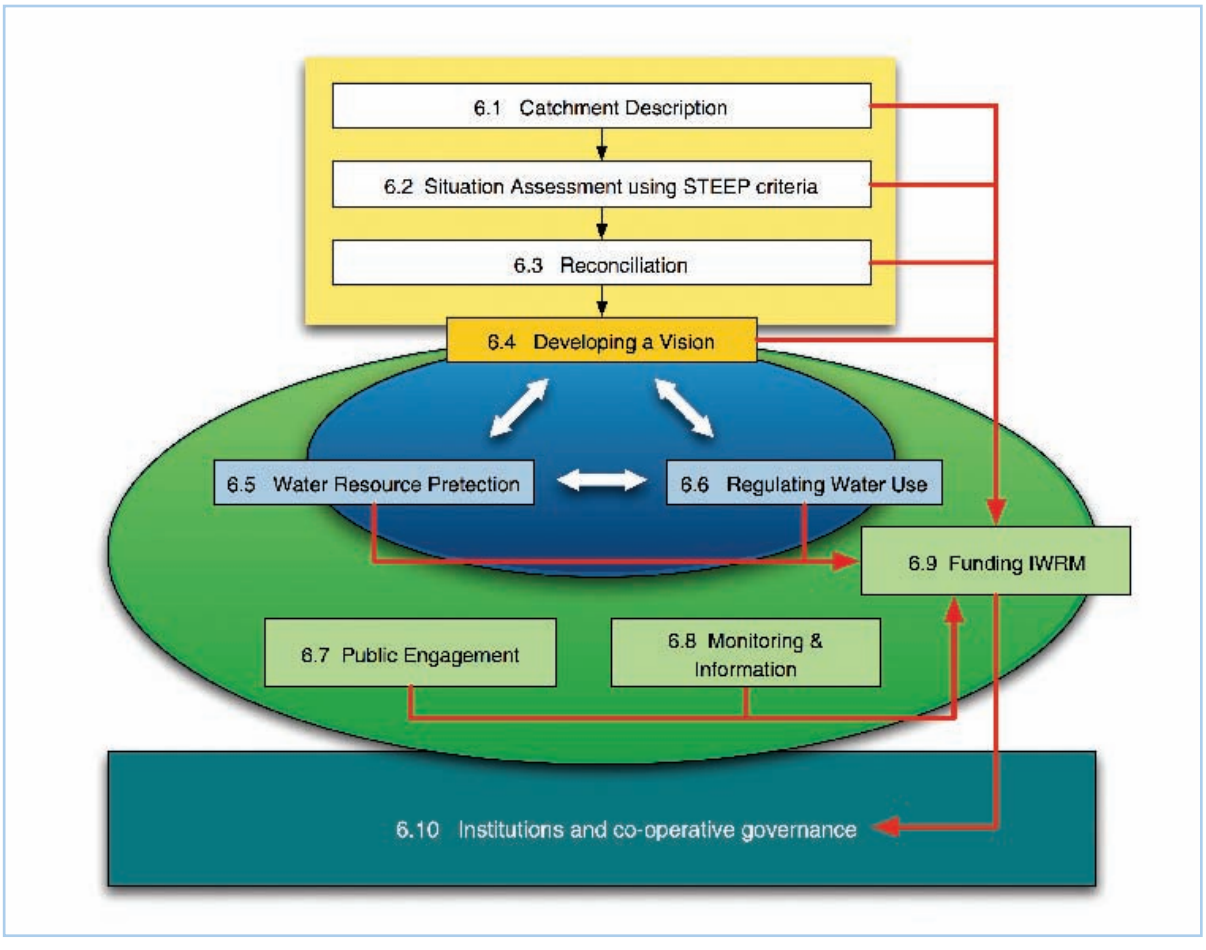


Figure 6.9.1
In addition to estimates for the CMA running costs, this sub-strategy must draw on and collate the financial resources needed for the implementation of each of the components of the CMS. This figure highlights which components of the CMS will contribute to this sub-strategy.
[RDM = Resource Directed Measures: SDC = Source Directed Controls].

6.9.3.3 What is the CMA charging for?

The CMA must budget annually for the estimated costs of activities that it will oversee or perform. In order to cover these costs the CMA is, according to law, entitled to set charges. The three areas of activities that will be covered by water-use charges are elaborated in Figure 6.9.2.

These include:

1) funding water resource management;
2) funding water resource development and use of waterworks;
3) achieving the equitable and efficient allocation of water.

The **water resource management activities** are by far the largest category of activities that the CMA will need to budget for. The revised NPS recognises 11 Integrated Water Resources Management functions (Table 6.9.1). According to the NPS, each function may be divided into abstraction and waste-discharge activities, for which charges can be set.

Revised National Pricing Strategy (NPS) Box 6.9.1

The NWA (S 56 1) provides a legal framework for the development of the NPS in respect of:

- Funding water resources management by DWAF and the CMA, through water-use charges (S 56(2)(a)).
- Funding water resource development and use of waterworks by DWAF and CMAs, (S 56(2)(b)).
- Achieving the equitable and efficient allocation of water (S 56(2)(c)).
- Providing for a differential rate for waste discharges, referred to as the Waste Discharge Charge System (S56 (5)) (see GL 6.6 and Appendix 8 for further details)

The first edition of the NPS (1999) has become outdated and DWAF has published a revised NPS for public comment in the Government Gazette on 1 July 2005. At the time of writing the CMS Guideline, the final revised NPS has not as yet been published, but the Minister of Finance has already endorsed the strategy. It is therefore expected that the principles in the revised NPS will stand and that these should form the basis of the Financial sub-strategy of the CMS.

The revised NPS provides a framework for water pricing to be implemented by DWAF as well as the CMA. Note that it deals with **water use** and not the pricing of **water services**, which is dealt with separately under the Water Services Act (1997). The revised NPS deals with what is called **'first-tier' water**, i.e. the use of raw (untreated) water from the water resource and /or supplied from a government works. **'Second-tier' water** refers to water supplied in bulk (often by water boards) and distributed to households (usually via a water services authority or water services provider).

Table 6.9.1
The 11 Water Resource Management functions

The 11 Water Resource Management functions and how they can be covered by charges set for either abstraction and/or waste discharge-related activities (see revised NPS, in prep.)

No.	Function/Activity	Abstraction activities	Waste discharge activities
1	Catchment Management Strategies	Resource studies, investigations and sub-strategy development	
		Allocation plans	Water quality management plans
2	Resource Directed Measures	Reserve determinations, classification and RQOs	
3	Water use authorisation	Registration and verification of water use	
		Licensing of abstraction and stream flow reduction activities, dam safety regulations implementation	Licensing of waste discharge into a water resource
4	Control and enforcement of water use	Control and monitoring of abstraction and stream flow reduction activities Control and monitoring of dam safety (private dams)	Control and compliance monitoring of waste discharge into water resources
5	Disaster management	flood and drought management	Pollution incident planning and response management
6	Water resources management programmes	Integrated programmes	
		Abstraction programmes, water conservation and demand management	Waste discharge programmes
7	Water related institutional development	Stakeholder participation, empowerment, institutional development and co-ordination activities	
8	Water weed control	Control of plants such as water hyacinth	
9	Terrestrial Invasive Alien Plant Control	Control of invasive alien plants with negative impacts on water resources	
10	Geohydrology and hydrology	Monitoring groundwater yields and compiling maps and yield information Extending and maintaining the hydrological database and compiling information	
11	Administration and overheads	Administrative costs and overheads for regional office or CMA	

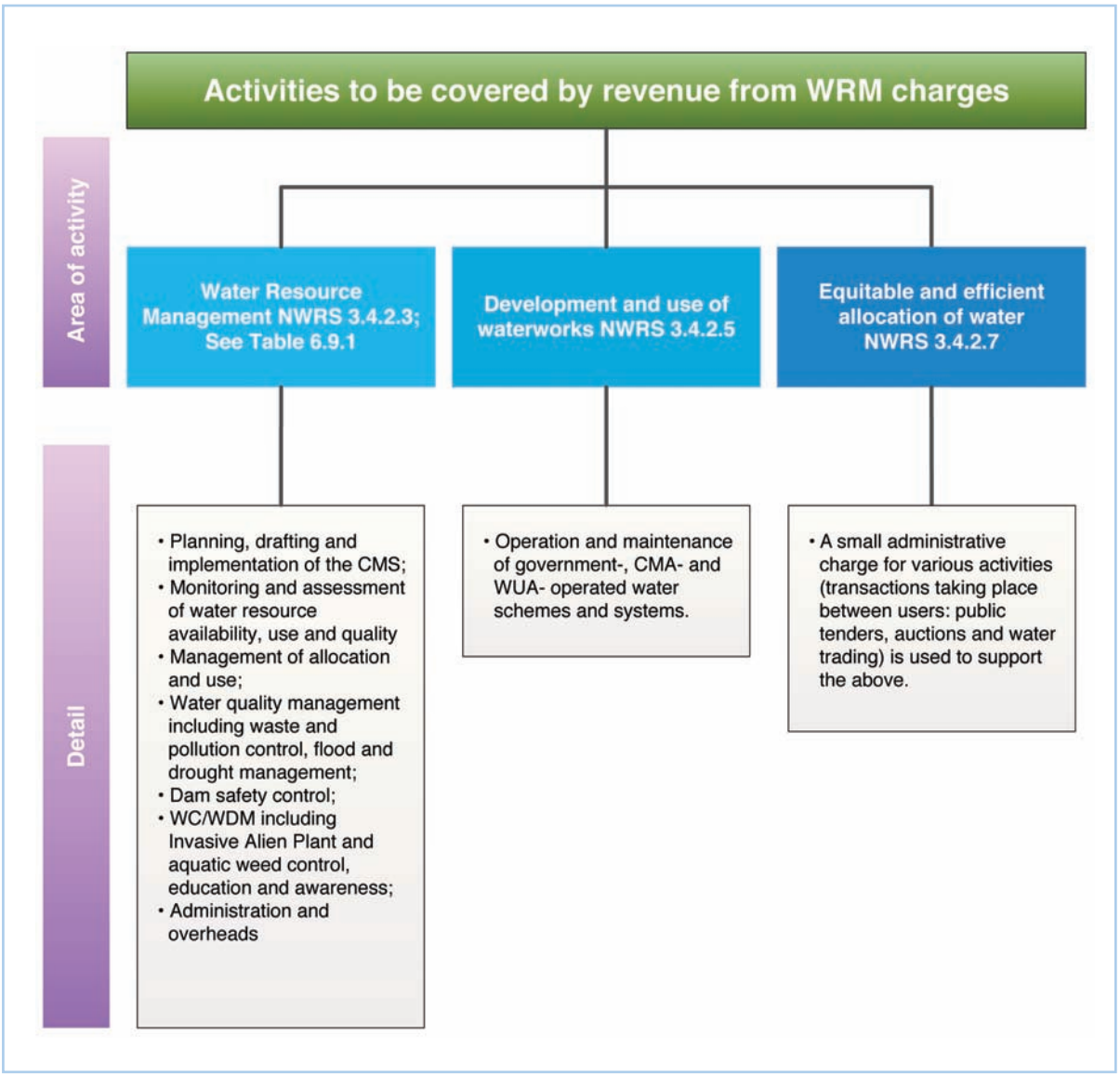


Figure 6.9.2
WRM charges are used to cover three areas of activity [WC/WDM = Water Conservation & Water Demand Management (see GL 6.6); WUA = Water User Associations].

6.9.3.4 Potential sources of revenue

The NWA authorises a CMA to raise funds required for the purposes of exercising its powers and undertaking its duties in terms of S 84 (1). Sources of funding include (Figure 6.9.3):

1) water-use charges;
2) money appropriated by Parliament;
3) any other lawful sources for the purpose of exercising its powers and carrying out its duties.

Revenue from water-use charges includes:

a) abstraction-related uses determined per sector and for specified assurance levels;
b) waste-discharge related uses, charged as those set as a flat rate for WRM discharge-charges (Box 6.9.2; Table 6.9.1) across the WMA and non-consumptive uses.

DWAF is currently developing strategies for charges related to the various categories which will guide the CMAs in developing protocols for collecting revenue.

Revenue from Parliament

Parliament may apportion money for water resources management for a particular WMA. The conditions for this money being made available will be determined on a *pro rata* basis

Additional sources of revenue

In addition to water-use charges and possible financial support from parliamentary appropriation, a number of other lawful income sources exist (see Figure 6.9.3), including (a) recreational concessions; (b) licence application fees; (c) donor support and sponsorship; (d) contractual payments; and (e) in-kind contributions (although not explicitly income, they reduce expenditure).

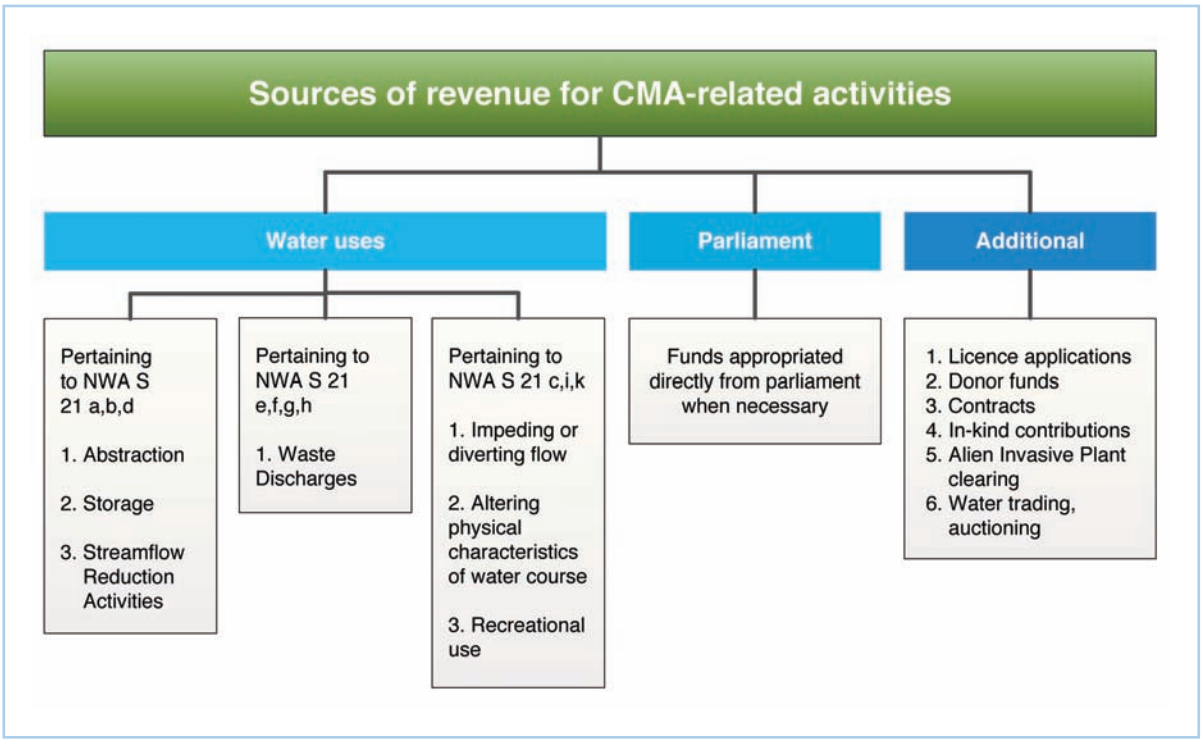


Figure 6.9.3
The three main sources of revenue for CMA-related activities.

With respect to contractual payments (d), a CMA may be contracted or delegated by DWAF to perform certain national functions. A service or management fee will be payable by DWAF to the CMA as a condition of this assignment or delegation. Functions that may be dealt with in this manner include:

a) national water resources monitoring;
b) DWAF water-resources management programmes where the CMA acts as an implementing agent on behalf of DWAF, possibly including compulsory licensing and classification; and
c) national developmental and/or empowerment programmes.

The full cost of the control of certain **invasive alien plants** may be charged to affected water users. The means of clearance, costs and processes must be negotiated and communicated with stakeholders. Finally, it is important to note that the NWA also deals with the issue of non-payment (Chpt. 5. Part 1 and in Chpt. 11, S 59). It states that failure to pay water use charges will attract penalties, including the possible restriction or suspension of water supply from a waterwork or of an authorisation to use water.

WRM Waste Discharge Charges and System — Box 6.9.2

Waste-discharge is regarded as a water use (NWA S 21) and CMA is entitled to set a charge for it. WRM charges for waste-discharge activities will be calculated in a similar way to abstraction-based activities. However a distinction must be made between the following when setting the charge:

a) point-source discharges directly to surface water resources, and;
b) discharge to land-based facilities (irrigated effluent, tailings dams, and evaporation ponds) and non-point sources of pollution.

The WRM waste-charges will be integrated with the abstraction charges to give a water-use charge that will be reflected in an invoice (bill). An integrated invoice will specify 3 items: a WRM charge, incentives charge and mitigation charge. The waste variables and associated charges per waste load will also be indicated.

The Waste Discharge Charge System (WDCS) (DWAF, 2006 c) consists of two charges: a **mitigation** charge and an **incentive** charge that may be applied to waste discharge-related water uses in a particular WMA. The CMA can decide which charge to apply (or, if necessary, a mixture of both) in order to control, reduce and remedy water-polluting activities in the WMA.

6.9.3.5 How are charges determined?

Guidance for tariff setting is provided by the NWA (S 56–60) and the revised NPS. Two main charges must be considered:

- Abstraction-related charges are determined **volumetrically** and according to **assurance** of supply;
- Waste-discharge charges are determined according to load of waste discharged into the resource.

The revised NPS outlines how sector-based abstraction activities will attract the different costs. Since water-use charges are determined on the basis of categories of water users, the CMA must be clear on the categories to be used. The NWRS recognises a number of users, but sometimes these are grouped into different categories in different documents, as shown in Table 6.9.2.

In setting charges the **assurance of supply** must also be considered. The revised NPS states that water for productive use is available or is abstracted at different assurances and this must be taken into account in setting the relevant charges.

Revenue can be collected only from **registered users** which means that information on registered and licensed water use, general authorisations and existing lawful use are therefore crucial for collection of charges for both abstraction-based activities and waste discharges. This sub-strategy must therefore link to the Source Directed Controls and Information and Monitoring sub-strategies (GL 6.6 and 6.8 respectively). Note however that a number of discharges do not currently require registration and therefore cannot be charged under the WDCS (e.g. urban stormflow, overloaded or failing sewage systems, irrigation return-flow).

Legislation

Abstraction-related charges

The NWA (S56 3(a)) states that the pricing strategy may differentiate on an equitable basis between.

a) different types of geographic areas;
b) different categories of water use; and
c) different water users.

Waste Discharge Charges (S 56 (5)]

a) characteristics of waste;
b) amount and quality of waste discharges;
c) nature and extent of impact on water resource;
d) deviation from prescribed standards;
e) requirements for monitoring

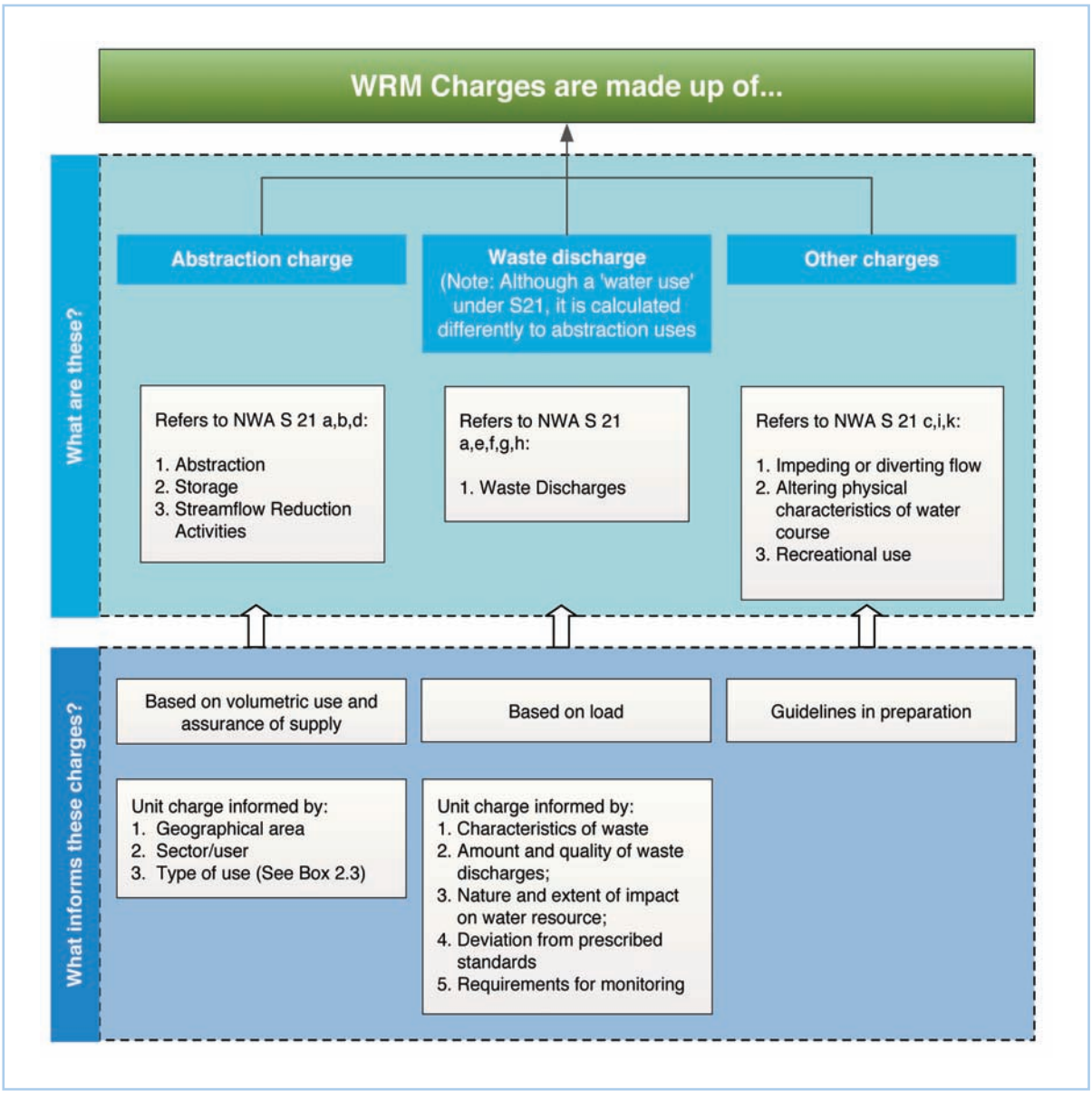


Figure 6.9.4

Water Resource Management charges will be made up of a number of components and are summarised in this figure.

6.9.3.6 Financial assistance and subsidies

Financial assistance is dealt with in Chapter 5, Part 2 (NWA). The NWRS also identifies subsidies for water users from historically disadvantaged groups to promote equitable access to the use of water resources. This would include for example, subsidies to emerging farmers. Special provisions for assistance to emerging farmers using water from government schemes can be made (NWRS; S 3.4.3). Section 61 of the NWA also makes provision for financial assistance to any person for purposes of the act in the form of grants, loans or subsidies. Issues to be taken into consideration before providing financial support are given in the NWA S61 (3) (a – f). Operational subsidies are also available for WUAs that take over operation and maintenance of government water schemes.

WRM charges for resource-poor farmers and resource poor forest growers will be phased in over five years through fiscal subsidy of amounts not to be recovered from the beneficiaries.

A differentiated subsidy policy will be applied to determine annual costs to be recovered from resource-poor farmers and forest growers. A table providing details of the subsidy is provided in S 10.1 of the revised NPS. The subsidy comes into effect on the date of registration of water-use by individual resource-poor farmers or resource-poor forest growers.

Table 6.9.2
Categories of water users

Water users and categories of water users. This should be read in conjunction with Box 2.3 which shows water uses.

Water users recognised in the NWRS (2004; S 2.4)

For the purposes of the NWRS, information and statistics are provided for the main user sectors, which are:

- **Rural requirements**, which mainly represent domestic use and stock watering requirements in rural areas.
- **Urban requirements**, which include all water used in urban areas for domestic, industrial, commercial, parks and other communal purposes.
- **Mining and bulk users,** representing large mining and industrial users abstracting directly from the resource or bulk supply systems, not from municipal systems.
- **Power generation** (also refer to water use of strategic importance under Section 2.7.3).
- **Irrigation** for agricultural production.
- **Afforestation,** as a formally declared stream flow reduction activity (see Part 2 of Chapter 3).
- **Transfers of water out of a particular area,** which constitutes a requirement for water from that area.

Note:

- The ecological component of the **Reserve** is not included as a use since it is allowed for as a part of the resource that may not be abstracted (S2.3).
- The provision of water for **basic human needs** (the Reserve) is included under rural and urban requirements and is currently taken as the first 25 litres/person/day of these requirements.
- Water to meet international obligations is not included as a user sector as it does not constitute an internal use of water in South Africa (S 2.7.2), but is accounted for in reconciliation.

Categories of water users

In the case of **water-use charges,** the following categories are used (NWRS S 3.4.2.1):

All charges will be specific to each of four end-user sectors, namely -

- Municipal (water services authorities).
- Industry, mining and energy.
- Agriculture.
- Stream-flow reduction activities.

It should be noted also that the NWA (S 56(3)(e)) provides for some elements of charges to be waived in respect of specific users for a specified period of time relative to a) forest fires and floods, and b) droughts. Disaster management will be dealt with in GL 6.10 but the financial implications must be reflected in the finance sub-strategy.

6.9.4 Potential contents

As stated above, this sub-strategy must draw on the financial implications developed as part of all the other sub-strategies of the CMS (see also Figure 6.9.1). Thus it has an important integrative function.

The key strategic areas to be reflected in the finances strategy are outlined below. The financial sub-strategy must complement the revised NPS in its contribution to achieving **equity and sustainability** in water matters by promoting **financial sustainability and economic efficiency** in water use. A key objective is to ensure that the real financial costs of managing water resources and supplying water, including the

cost of capital infrastructure, are recovered from users (NWRS, 2004). Thus, this sub-strategy must provide a framework, principles and protocols for financial arrangements to be carried out by the CMA, including subsidisation initiatives. Clearly, a key aspect is to assess the status of registration (since this is the basis for revenue collection) and to address, as a matter of priority, how this will be finalised.

The most important areas to be covered in this sub-strategy relate to **costs** incurred during the implementation of the CMS and the collection of **revenue** in order to cover these costs. The costs associated with the corporate and administrative functions of the CMA must be recognised but not necessarily detailed in this sub-strategy.

The finances sub-strategy should outline all **costs** associated with the implementation of the various parts of the CMS (given by Guidelines 6.1 – 6.10) and summarised in Figure 6.9.1.

Additionally the sub-strategy will need to:

- establish which institutions (i.e. CMA, DWAF or other) are responsible for implementation
- of the respective sub-strategies and the **costs** associated with the implementation of their respective functions;
- estimate costs of functions undertaken by other institutions on behalf of the CMA;
- detail inter-basin water transfer costs (if applicable).

The sub-strategy must indicate how the **revenue** for the costs listed above will be sourced. Figure 6.9.3 provides an overview of the various potential sources of revenue. Where functions undertaken by other institutions are funded through WRM charges, the CMS must indicate how these funds will be apportioned between the institutions. As mentioned earlier a large portion of the revenue generated within a WMA will come from water-use charges. This sub-strategy, guided by the revised NPS, must set out a **system of charges** that will allow the CMA to collect revenue from the various categories of users. The charges should be reflected as:

- abstraction-related charges;
- waste Discharge Charges: including mitigation and incentives charges (although **not** revenue for the CMA);
- non-consumptive uses;
- inter-basin transfers (export) – if applicable.

A system for providing **financial assistance and subsidies** will need to be included as part of this sub-strategy.

Finally, a critical issue will be to provide protocols for the recovery of water-use charges, and in the case of non-payment for use a system of penalties needs to be provided (NWA, S 59 (3)).

Checklist 6.9.5

Does the finances sub-strategy:

a) identify key strategic areas?

- Costs associated with the implementation of the CMS.
- Apportionment of costs where there is:
  - » joint responsibility between institutions,
  - » a common source of funding,
  - » protocols for non-payment,
  - » subsidisation policy.
- Sources of revenue.
- Tariff structures.
- Subsidies, loans grants.

b) identify information needs?

- Registration and status of payment.
- Subsidisation where appropriate.
- Communication and reporting.

c) address priorities and gaps?

- Priorities for this sub-strategy include the development of systems for cost recovery.
- Debt-management systems.

d) identify resource needs?

- Human, technological and financial resources.

e) identify skills needed?

- Financial management.
- Accounting and financial monitoring.

Specifically…

a) Does the sub-strategy align with the revised National Pricing Strategy?
b) Does it collate needs from all other sub-strategies of the CMS?
c) How does it deal with additional costs as well as the escalation of costs?
d) Are indicators for monitoring financial management provided?
e) Does it stipulate how the waste discharge charge system will be developed and implemented (link to GL 6.6 SDC)?
f) Does it outline an approach for dealing with subsidies and specify the source of funding? For example, subsidies to emerging farmers from the DWAF Regional Office.
g) What are the financial arrangements for linkages between the CMA and the DWAF Regional Office with respect to WRM functions?

6.9.6 Procedural diagram

An overview of an approach to developing a monitoring and information management sub-strategy for the WMA is shown in Figure 6.8.2.

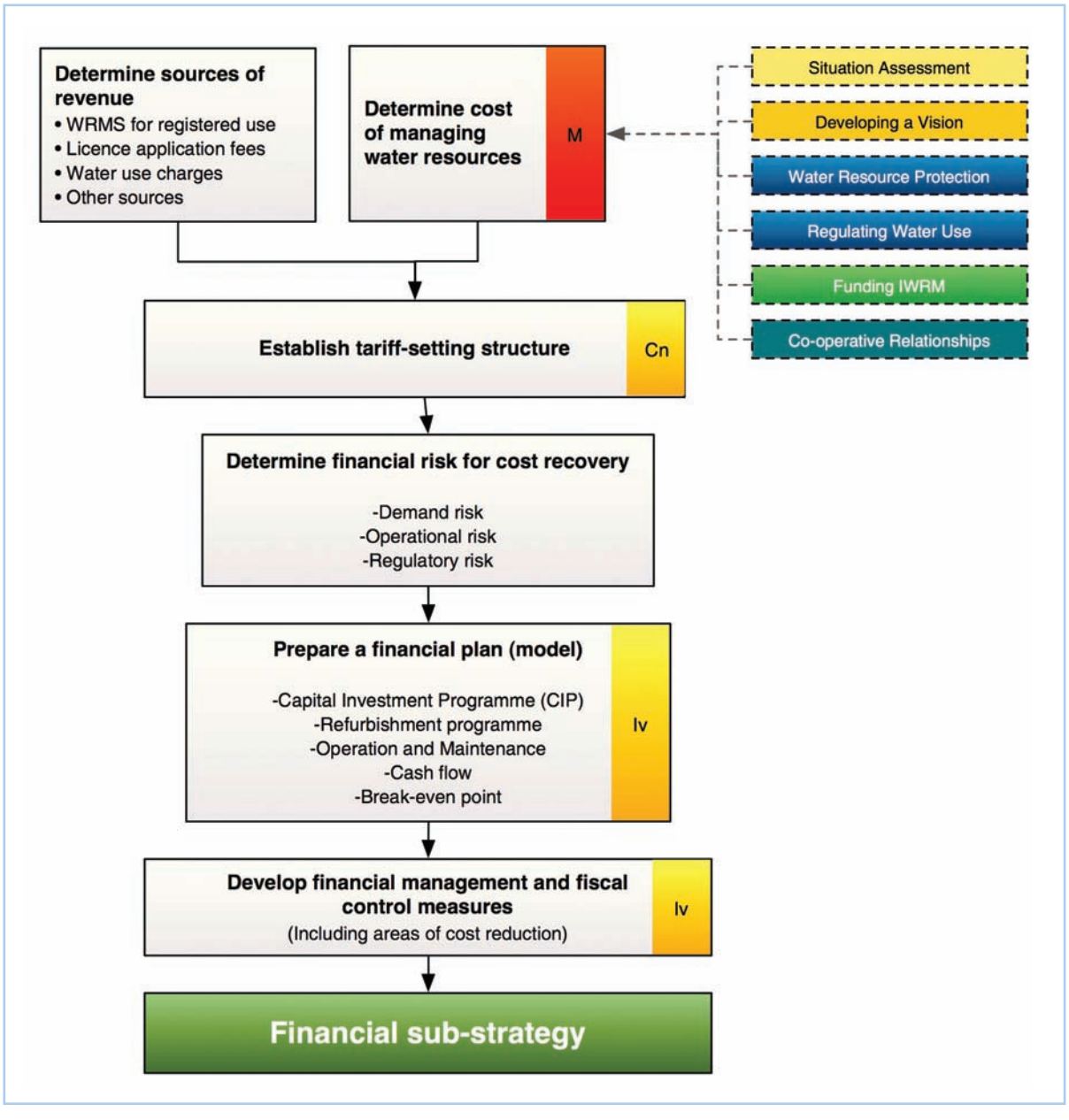
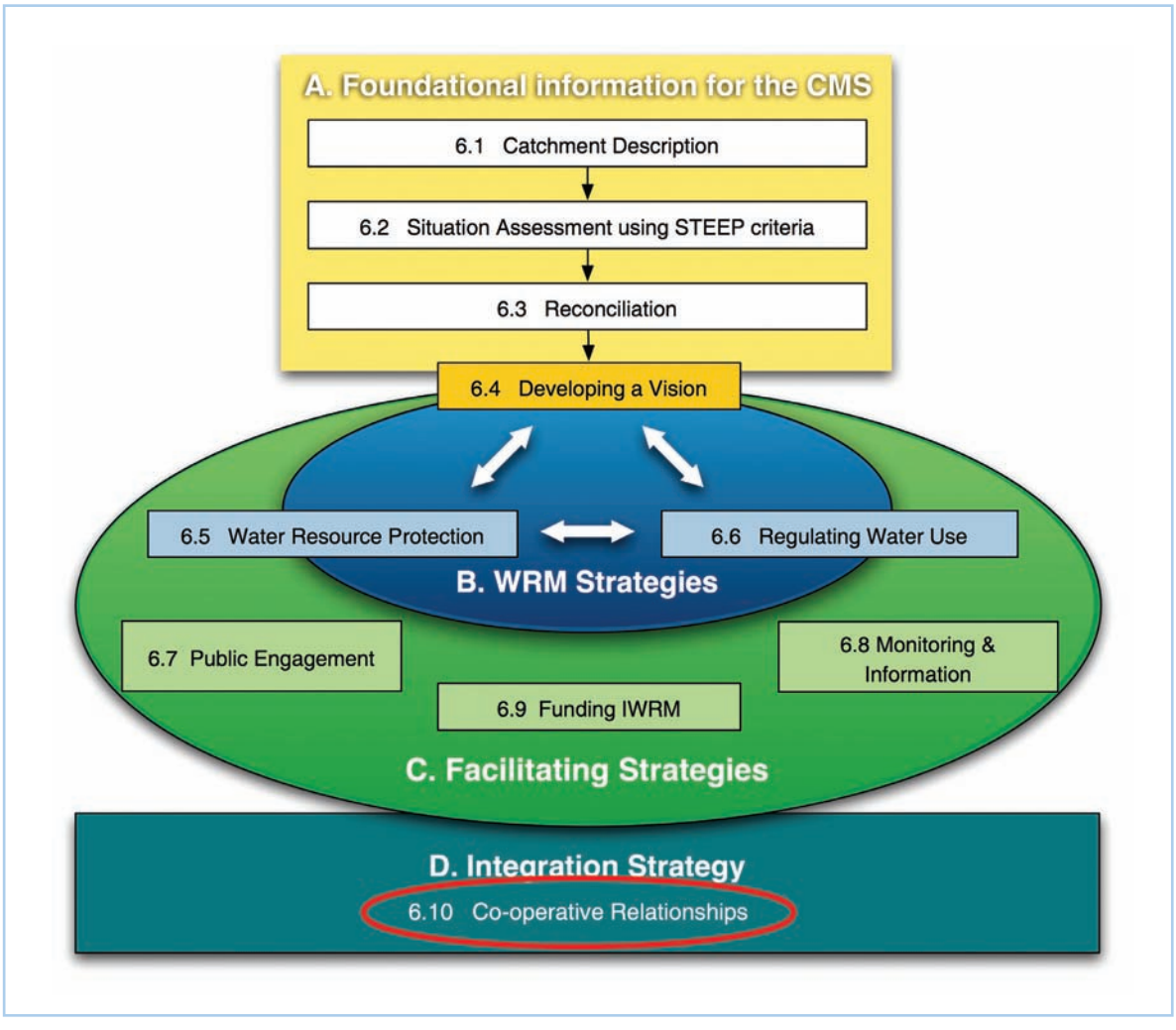


Figure 6.9.5
Schematic representation of steps for developing a sub-strategy for funding the CMS. Requirements for public participation (yellow) and monitoring (red) are indicated (see Table 5.1).
[In= Inform, Cn=Consult, Iv= Involve, CL=Collaborate].

6.10 Co-operative relationships

Guidelines for the development of a sub-strategy for establishing institutional arrangements, co-operative governance and partnerships



6.10.1 Introduction

Catchment Management Agencies (CMA) embody the principle of decentralised management and co-operative governance. They will operate in an existing institutional environment and it is critical that they establish appropriate relationships with other institutions to ensure effective implementation of Integrated Water Resources Management (IWRM). Successful functioning of CMAs is dependent on their ability to forge co-operative relationships, particularly around water resources management, environmental management, spatial (land-use) planning and management, infrastructure development and service provision.

Co-operative government - a concept that applies to all spheres of government - requires that public administration be development-oriented, efficient, transparent, accountable, representative, participative and compliant with all basic values and principles governing public administration. Although the CMA is not a sphere of government it is an institution that falls under the jurisdiction of the Minister. Principles governing public administration therefore apply to the CMA.

The development of this sub-strategy requires understanding types of relationships, as well as tools for collaboration and co-operation. To this end, this guideline provides an overview of the types of collaborative and co-operative relationships. It focuses on institutional relationships and in this respect is differentiated from, although linked to, the types of participation, discussed in Chapter 5. It also provides background on the oversight functions of the CMA, and potential institutional arrangements to be considered (see DWAF, 2002 a, c). Note that both disaster management and international agreements are included here as they are key examples of the need for co-operative arrangements. A CMA may wish however to develop a specific sub-strategy dealing with each of these issues.

Legislation

Legal requirements for co-operative governance

The legislative framework for co-operative governance for water resources management is supported by numerous statutes. Foremost is the Constitution of South Africa (Chpts. 3,4,10), supported by the National Water Act (1998), Water Services Act (1997), National Environmental Management Act (1998), Intergovernmental Relations Act (2005), Municipal Systems Act (2000), and the Traditional Governance Leadership Framework Act (2006).

The Promotion of Administrative Justice Act - PAJA (Act No 3 of 2000) and Promotion of Access to Information Act - PAIA (Act No 2 of 2000) provide a framework for public administrative action for the CMA.

6.10.2 Objective and outcome

The **objective** of the institutional arrangements and co-operative governance sub-strategy is to set out strategic actions for the establishment and maintenance of appropriate co-operative and collaborative relationships for IWRM based on the institutional environment.

The **intended outcome** is a sub-strategy that describes how a CMA will establish and maintain a co-operative and collaborative institutional environment by employing the available capacities in institutions to ensure that IWRM objectives are achieved efficiently and cost effectively.

Key question

How can a co-operative environment for the implementation of the CMS be established and maintained?

6.10.3 What you need to know

6.10.3.1 Consistency with national policy

The guiding principle for co-operative governance is that it must comply with the values of public administration. This embraces development-orientated and transparent management approaches that are adaptive, and built on representation, trust and accountability (see PAJA, 2000).

6.10.3.2 Types of institutional relationships

This sub-strategy will need to scope out:

a) different types of institutional relationships;
b) interfacing institutions involved in each type of relationship; and
c) the exact nature of the relationship.

Five different types of institutional relationships have been identified for IWRM although these are not mutually exclusive. These are described below and summarised in Figure 6.10.1.

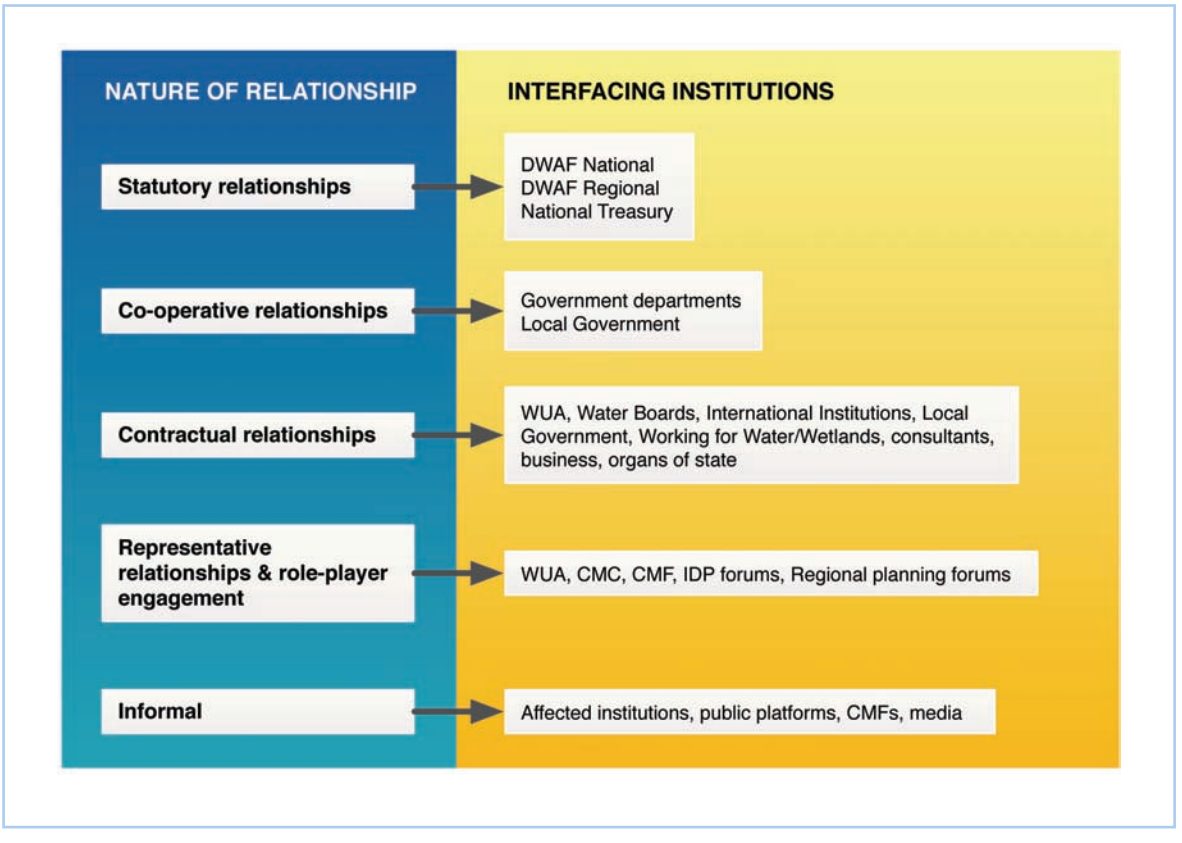


Figure 6.10.1
A summary of the types of relationships that CMAs will be involved in and the interfacing institutions. The CMA will need to provide the details associated with each interaction in this strategy.
[WUA = Water User Association, CMC = Catchment Management Committee, CMF = Catchment Management Forum, IDP = Integrated Development Plan]

1) **Statutory relationships.** This is a legally-binding relationship based on the establishment of a statutory body by another statutory body and/ or the assignment or delegation of powers, duties and functions between statutory bodies. Examples of such relationships would be the assignment or delegation of functions to a CMA by DWAF. Figure 6.10.2 outlines some of the issues to be dealt with under statutory relationships. The parties in this regard are: the CMA, DWAF National, National Treasury and DWAF regional.

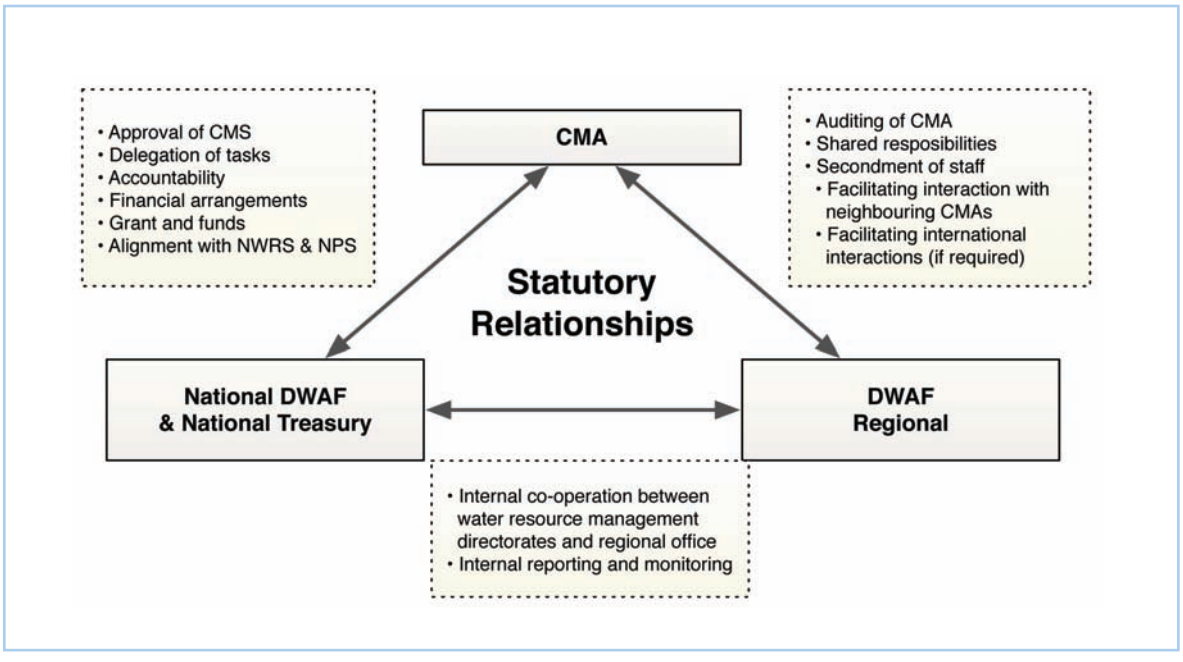


Figure 6.10.2
Statutory relationships. The figure depicts some of the issues that are likely to be covered by such relationships. [NPS = revised National Pricing Strategy]

2) **Co-operative government** is a statutory obligation in terms of the Constitution. It contributes to the clarification, alignment or efficiency in performing functions by two or more organs of state. The co-ordination of planning functions between the CMA and other governmental departments represents co-operative governance in support of co-operative government.

3) **Contractual relationships** are based on legal agreements between parties and usually involve the payment for services.

4) **Representative relationships** are between a representative body and its stakeholders or members. These relationships provide a mechanism for stakeholder engagement and public participation. Importantly for the CMA, inputs from representative bodies do not dictate the actions of the CMA but must be taken into account.

5) **Informal relationships** are voluntary associations based on common interests and provide for information sharing and consultation. This does not mean that they are less meaningful or important.

6.10.3.3 Oversight responsibilities of the CMA

Since the CMA is the institution mandated to manage water resources it is likely to have a number of specific responsibilities related to overseeing the functions of other associated local organisations and institutions (Box 6.10.1). The nature of the relationship can vary as explained above from contractual to informal. Where CMAs have oversight responsibilities over other institutions, they should:

- identify these institutions and include a brief analysis on their water-related activities; and
- outline how the CMA will undertake this oversight responsibility (see Box 6.10.1).

Oversight responsibility Box 6.10.1

The institutions that the CMA is likely to oversee:

- Catchment Management Committees and Forums;
- Water User Associations;
- Water Boards in respect of WRM functions contracted to them;
- Water Services Authorities and Providers in respect of WRM functions contracted to them.

The oversight mechanisms will need to be institution-specific, and will occur through a number of ways, such as:

1) agreed-upon reporting means;
2) contractual conditions;
3) on-site inspections;
4) CMA participation in the establishment of institutions in the WMA;
5) CMA participation in expansion of functions of institutions.
6) provision of support to institutions, for example in the development of sectoral Water Conservation and Water Demand Management Plans, Integrated Development Plans, Water Services Development Plans etc.

6.10.3.4 A basis for co-operation: Harmonisation of planning instruments

A key aspect of cementing institutional relationships so that they are functional and practical is to ensure that harmony is reflected in the planning instruments of the relevant departments and initiatives. There is a range of development plans that must be considered in the development of the CMS (Figure 6.10.3; and see Appendix 3). Examples include Water Services Development Plans (WSDP) and Provincial Growth and Development Strategies (PGDS). A CMA must consider WSDPs of all municipalities falling within the WMA and where WMAs straddle provincial boundaries, the planning instruments of both provinces must be considered.

6.10.3.5 Some key collaborative issues

Disaster Management

Disaster management is dealt with in Part 7, Chapter 3 of the NWRS. This stresses that water-related disasters must be managed within the broad framework of national disaster management policy and legislation. The National Disaster Management Act (No. 57 of 2002) established the National Disaster Management Centre (NDMC) as the national focal point for all disaster management activities. Provincial and local Disaster Management Centers provide further co-ordination points.

The NWRS also stresses that disaster management is a joint responsibility of a number of parties but the co-ordination of local strategies and plans are probably best provided for by Local Government in view of the fact that the NDMC is situated in the Department of Provincial & Local Government (DPLG). The CMA has a central role to play in the development of strategies that directly address issues related to:

- droughts;
- floods;
- pollution, including hazardous waste and water-borne diseases/ water-related health matters;
- serious degradation of water resources; and
- dam safety.

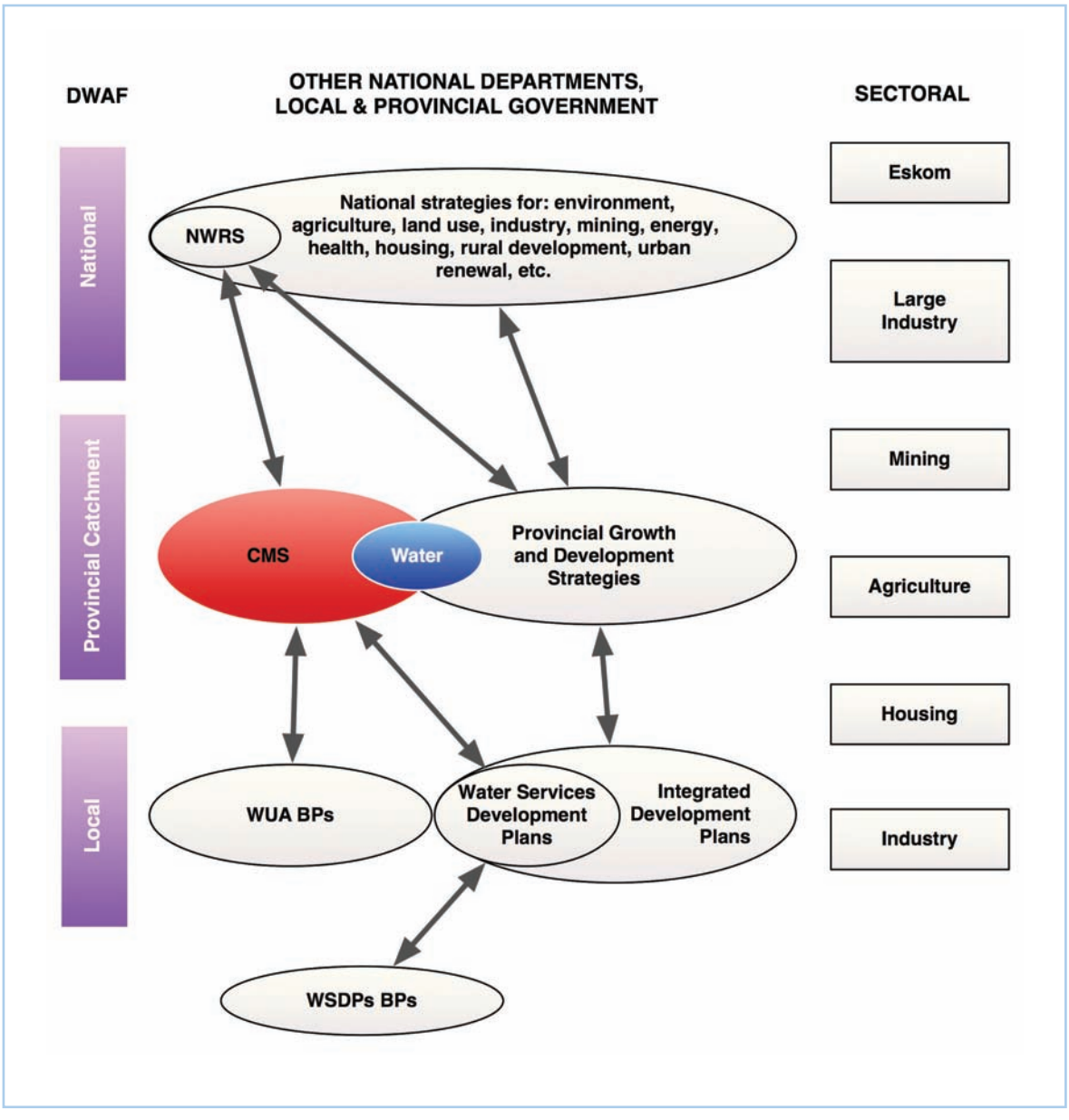


Figure 6.10.3.
The various development plans associated with different spheres of government (from NWRS, 2004) [BPs = Business Plans] See Appendix 3.

Together with the relevant departments and role players, the CMS must outline an integrated plan for dealing with each of the above and be clear as regards financial aspects associated with waiving or applying conditions for water use (e.g. tariffs and restrictions) under disaster conditions.

Joint use of water by neighbouring states

South Africa shares common water resources with six neighbouring countries (Botswana, Lesotho, Mozambique, Namibia, Swaziland and Zimbabwe), all of which are water-scarce with the exception of Lesotho. The CMS is legally-bound to demonstrate commitment to the various international agreements that are binding on signatory countries.

A number of bilateral and multi-lateral commissions and committees have been established between South Africa and its neighbours. Although the bodies have a range of purposes (see NWRS, Part 5 of

Chapter 3) they also act as forums where co-operative arrangements for the utilisation and development of shared water resources can be discussed.

Conventions

South Africa is party to a number of international conventions that relate to water, such as The United Nations Conventions on Biological Diversity and Combating Desertification, the United Nations Framework Convention on Climate Change, and the Ramsar Convention on Wetlands, Trans-frontier Conservation Areas, NEPAD, Millennium Development Goals, and conventions related to coastal protection.

Bilateral and multi-lateral commissions and committees

- *Botswana/ RSA Joint Permanent Technical Water Committee*
- *Lesotho Highlands Water Commission (LHWC) (Lesotho, RSA)*
- *Limpopo Basin Permanent Technical Committee (LBPTC) (Botswana, Mozambique, RSA, Zimbabwe)*
- *Mozambique/RSA Joint Water Commission*
- *Orange/ Senqu River Basin Commission (Botswana, Lesotho, Namibia, RSA)*
- *Permanent Water Commission (PWC) (Namibia, RSA)*
- *Swaziland/ RSA Joint Water Commission*
- *Swaziland/ Mozambique/ RSA Tripartite Permanent Technical Committee (TPTC)*

6.10.4 Potential contents

This sub-strategy has an important integrative function – drawing together and collating the need for co-operative arrangements of the other components of the CMS. This integrative aspect must be explicitly addressed.

In order to develop this sub-strategy, an **institutional analysis** of the WMA needs to be undertaken, together with an analysis of the IWRM functions needed within the WMA. Following from this would be an analysis of current functions, which institutions are undertaking these and flowing from this, the identification of gaps and priorities.

Determining the nature and extent of the relationships between CMAs and other institutions will generally depend on the functional interfaces, dependencies and overlaps. In discussing the arrangements with each institution, the CMA must consider the following:

- How related functions can be co-ordinated and how such co-ordination can be institutionalised, and can be sustained. CMAs must also set out how they will consider development plans of other organisations and how strategic co-operation in the development of these plans and the CMS can be entrenched.
- The institutional and technical capacity to undertake WRM functions. Where the CMA intends to contract other institutions to undertake WRM functions, it must outline the nature of the contract, and how it will monitor performance.
- How the CMA can support or assist in building capacity within the various institutions (where appropriate).
- Protocols, procedures and means of communication for sustaining the relationship must be established.
- Accountability: an assessment of the roles and functions must be planned for.

Finally, the **resources** needed must be detailed and the links made with other components (such as the situation assessment, visioning, RDM, SDC, finances and monitoring and information management) of the CMS.

Checklist 6.10.5

Does the integration and co-operative governance sub-strategy:

a) identify key strategic areas?

- An analysis of key interfacing institutions and their responsibilities with respect to WRM. This should include alignment of planning instruments.
- Collaborative arrangements outside of the WMA.
- Nature and status of relationships for each.
- Alignment of CMS with that of the neighbouring CMS (if appropriate).
- Disaster Management.

b) identify information needs?

- Databases.
- Planning instruments and strategies of all interfacing institutions.

c) address priorities and gaps?

- Communication protocols.
- Formalisation of relationships (e.g. contracts).
- Inadequate institutional capacities to undertake co-operative functions.
- The absence of platforms for the co-ordination of institutions.
- Lack of points of harmony between various planning instruments.

d) identify resource needs?

- Personnel.
- Budgets for networking and communication.

e) identify skills needed?

- Facilitators with knowledge of WRM and the WMA.
- Mediation skills.
-

Specifically…

a) How can capacities within different institutions in the WMA be optimised to achieve the IWRM objectives?
b) How can co-operation around the development plans of other institutions be fostered?
c) How can existing institutions be used to facilitate stakeholder engagement?
d) Have information and monitoring needs been developed?
e) Have international agreements been considered?
f) Has the CMS specified contributions to the overall Integrated Disaster Management Plan (of Local Government), and specifically addressed risk-reduction strategies?
g) Have links been made between this sub-strategy and the others?

6.10.6 Procedural diagram

An overview of an approach to developing a sub-strategy for institutional arrangements and co-operative governance for the WMA is shown in Figure 6.10.4.

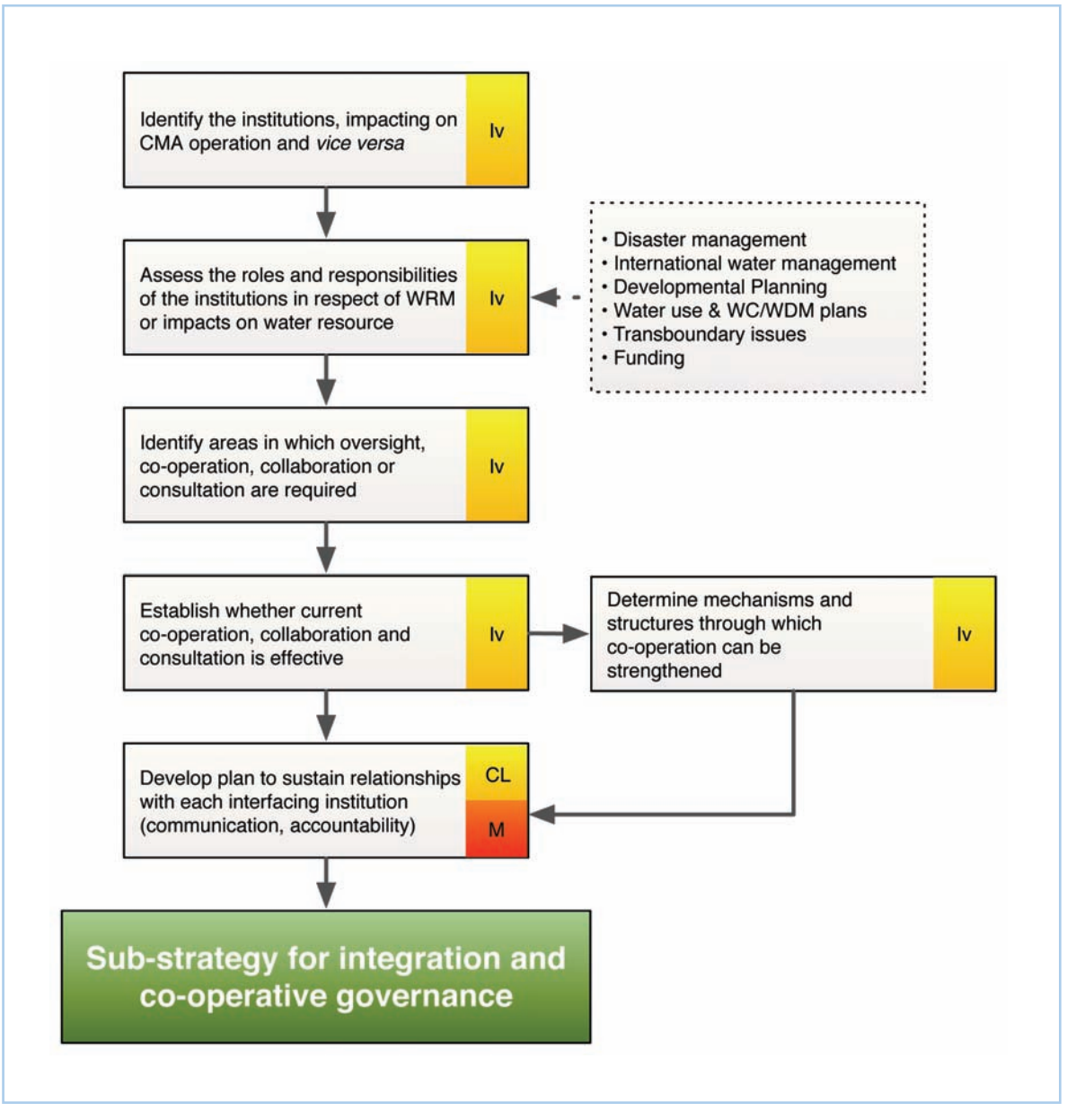


Figure 6.10.4
Schematic representation of steps for developing a sub-strategy for institutional arrangements and co-operative governance. Requirements for public participation (yellow) and monitoring (red) are indicated (see Table 5.1). [In= Inform, Cn=Consult, Iv= Involve, CL=Collaborate; WC/WDM = Water Conservation & Water Demand Management].

7

The Approval Process

Consultation with the Minister and the approval process

7.1 Introduction

The Catchment Management Strategy (CMS) is established through a Government Notice, after which it is binding to the Minister and the Catchment Management Agency (CMA) to give effect to the strategy. In order to get to this stage, the CMA must first go through a process of consultation with the Minister and DWAF regarding the implications that the CMS may have for policy and institutional arrangements, both for DWAF and for other institutions. Undertaking this process before final gazetting is designed to reduce risk and conflict. Thereafter the CMS is submitted for approval by the Minister.

The purpose of this section of the guideline is to provide the procedures that the CMA must follow to:

a) ensure the approval of the CMS by the DWAF so that it may be legislated in the Government Gazette as expediently as possible;
b) ensure implementation of the strategies before review and update within five years.

To this end, the guideline provides a detailed description of both of the aforementioned steps: consultation with the Minister and DWAF, and the steps necessary to ensure that written consent is provided by the Minister before publication of the strategy in the Gazette. Estimated time frames are given for guidance.

7.2 Legislative requirements

In addition to the legislative requirements for the CMS set out in Chapters 1 and 2, Section 8(4) of the National Water Act (1998; NWA) requires that the CMS or any component of that strategy may be established only "with the written consent of the Minister." Only then is it binding on the Minister and the CMA to give effect to the strategy.

Furthermore, section 10(3) of the Act requires that the CMA refer to the Minister "any component of the strategy which raises issues of policy or issues concerning the relationship between the CMA and other organs of state or DWAF". Given the fact that the CMS seeks to achieve integrated water resource management, it is highly likely that the CMS will require a reorientation towards water resources by different sectors and institutions. This invariably means that the CMS will impact on the activities of other organs of state. Thus the consultation process prior to the approval of the CMS is very important in ensuring integration through meaningful and appropriate co-operative arrangements.

Given these legislative requirements, guidance is needed for the CMA on the process for approaching the Minister for her/his consideration and determination regarding matters of policy or co-operative governance. Secondly, guidelines are required in support of securing written consent from the Minister so as to gazette the CMS (see S 11 of NWA). In this regard, two stages are presented below. The first – called Stage 1- deals with the consultation process with DWAF on matters of policy implications and co-operative governance in developing and implementing the CMS. The second – called Stage 2- is a guideline for the approval of the draft CMS for final gazetting.

7.3 Stage 1: Consultation process with the Minister and DWAF on implications for policy and co-operative governance

As mentioned above, before the CMA can publish a notice in the Gazette, it must refer those components of the draft CMS that raise material questions of policy, or may affect other organs of state or DWAF to the Minister. For example, the National Water Resource Infrastructure Agency needs to be cognisant of infrastructural needs and implications. This process is shown in Figure 7.1 and elaborated below. Box 7.1 indicates which directorates may be involved in this stage.

Directorates that may be involved in the policy and co-operative governance review of the CMS — Box 7.1

Depending on the issues submitted by the CMA for the Minister's consideration, it may be necessary for the Directorate: Policy and Strategy Co-ordination to establish an evaluation committee comprising the relevant directorates, namely:

CD: Strategic Co-ordination, involving:
- Dir: Policy & Strategy Co-ordination who will be responsible for convening the evaluation meetings of the advisory committee.
- Dir: International Development Co-operation, for support with any international issues.

CD: Institutional Oversight, involving:
- Dir: Water Management Institutions Governance in terms of the linkage to the business plan and institutional development aspects of the CMS;
- Dir: Stakeholder Empowerment regarding stakeholder participation, social justice and the consultation process for the CMS.
- Dir: Water Resource Finance & Pricing, in terms of adherence to the National Pricing Strategy

CD: Resource Directed Measures:
- in terms of adherence with the classification of the water resource and its implications to socio-economic development and the Reserve.

CD: Integrated Water Resources Planning, involving:
- Dir: National Water Resources Planning, in terms of consistency with the NWRS on allocatable water and reconciliation.
- Dir: Water Resources Planning Services, in terms of adherence to groundwater guidelines, and operational guidelines for systems and dams.
- Option Analysis for consideration of possible new water resource infrastructure.

Water Use
- Dir: Water Allocation in terms of consistency with the water allocation reform process and government's policy objective for redress.
- Dir: Water Use Efficiency in terms of water conservation and demand management strategy.
- Dir: Water Abstraction and Instream Use in terms of consistency with the issuing of licences.

Information Management
- Dir: Information Programmes in terms of consistency with the existing monitoring and information systems
- Hydrological Services, for maintenance and expansion of the national monitoring network
- Resource Quality Services, in terms of linking into existing water resource quality monitoring programmes
- Spatial & Land Information Management, in terms of cadastral data, surveys, etc.

Water Services
- Dir: Planning & Information in terms of alignment with Water Services Development Plans

Legal Services
- This to ensure all legal processes have been followed

Step 1: CMA prepares report on matters of policy and governance emanating from draft

The CMA identifies policy and governance issues that emanate from the draft CMS. It should notify the Minister through the National DWAF: Policy and Regulatory Branch. As a matter of protocol, the CMA must make its submission to the Minister through the relevant DWAF Regional Office.

Step 2: DWAF undertakes review

The Department will review the submission by the CMA, through an evaluation committee on behalf of the Minister. The three criteria used for this evaluation will deal with the (i) legal, (ii) policy, and (iii) administrative aspects of the CMS. It should be noted that not all Directorates will be involved but only those whose oversight role and regulatory function may be affected by the component of the draft CMS. The evaluation committee should convene and respond within 20 days from the date of submission.

Step 3: Recommendation by evaluation committee

If the CMS draft does not have implications for policy alignment and co-operative governance, then the DDG: Policy & Regulation would recommend to the Minister to give the CMA the go-ahead to publish a notice in the Gazette in terms of Section 8(5). This will not require the consideration by the Water Resource Functional Management Committee.

However, where implications are identified, the evaluation committee will submit their findings to the DDG: Policy & Regulation for submission to the Water Resource Functional Management Committee for their consideration.

Step 4: Consideration of the evaluation by the Water Resource Functional Management Committee (in the event of amendments)

The Water Resource Functional Management Committee prepares a report for the Minister regarding the implications above within 20 days.

Step 5: Minister reviews findings and drafts determination to CMA

Within 20 to 30 days, the Minister will inform the CMA of DWAF's position, and whether or not amendments to the draft CMS are required. The Department must ensure that sufficient time is allowed for revision of the CMS. The CMA can then proceed with Stage 2.

7.4 Stage 2: The approval process

The approval process, although fairly stringent in terms of time, is designed to facilitate an efficient process that enables the CMA to begin implementation of the CMS without undue delays (see also comments in Section 8 below). The process, structured to ensure that it is as simple as possible, is illustrated (together with suggested time frames) in the flow chart in Figure 7.2.

Section 8 (5) of the NWA requires that before the CMA establishes "a catchment management strategy or any component of that strategy in terms of subsection (1), a catchment management agency must:

a) publish a notice in the Gazette –

iii) invite written comments to be submitted on the proposed strategy or the component in question"

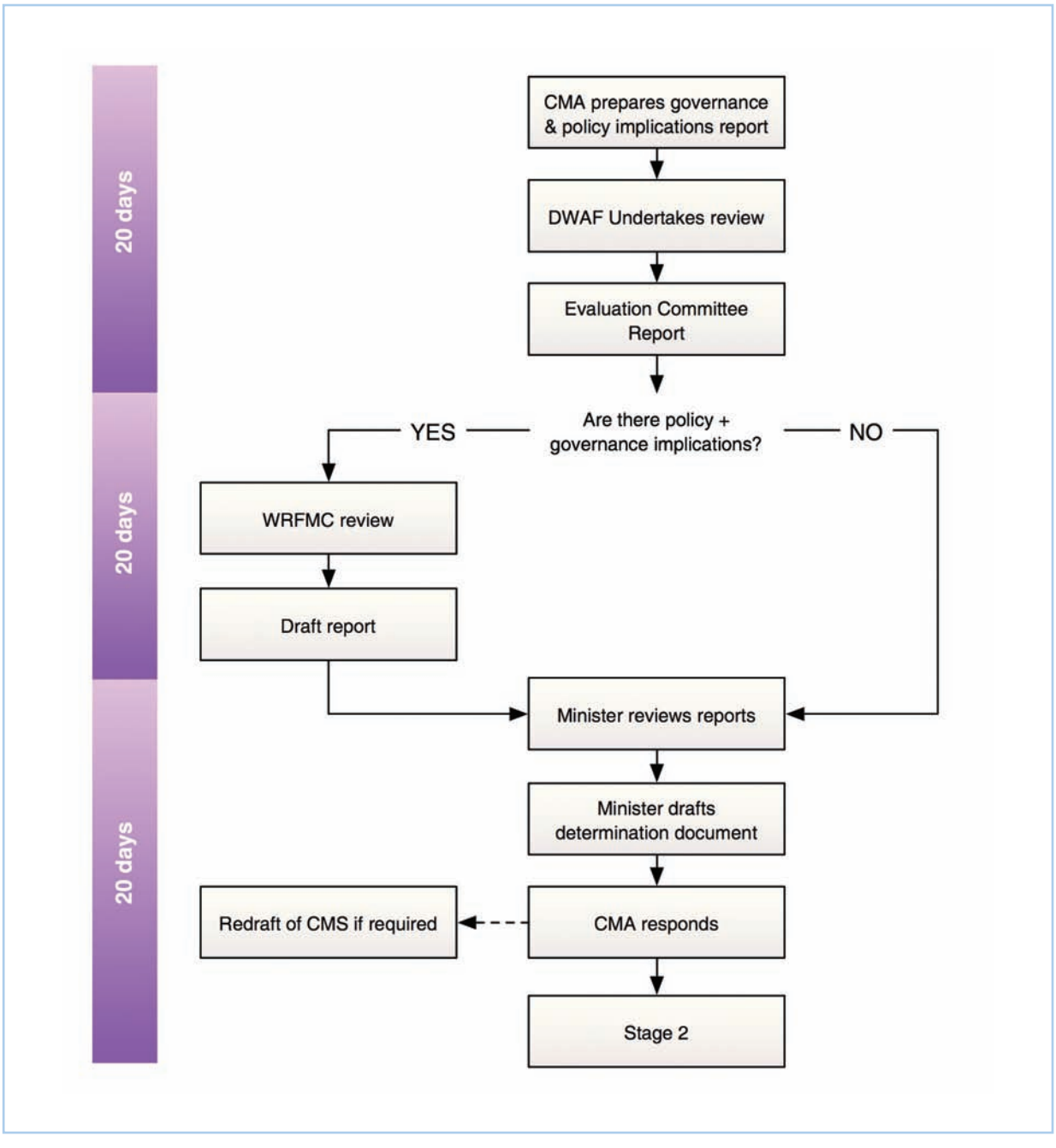


Figure 7.1
Flow chart for Stage 1 of the approval process which deals with policy alignment and institutional implications [WRFMC = Water Resource Functional Management Committee.]

Step 1: Preparation of the Gazette notice calling for public comment

The CMA will prepare the notice as required and inform the public where the CMS may be accessed. In this regard, the CMA must ensure that the CMS document is distributed in places accessible to the public. This will be followed by a 90 - day period during which the comments are received and documented. This will be done by the CMA and all the issues and comments will be summarised and presented to DWAF.

Step 2: Review and consider public comments and amend CMS

Any comments received during 90-day period must be formally considered by the CMA, and the relevant amendments must be made. Once the CMA has considered all comments, it will prepare a report that summarises the comments received and how these were dealt with. It will also submit an update of the draft CMS to DWAF.
This step should take a maximum of 30 days.

Step 3: DWAF reviews how public comments have been considered and the CMS revised

The revised CMS and comments register will be reviewed by the Directorate: Policy & Strategy Co-ordination to ensure that all issues raised by the public have been well considered and how they have been dealt with.

Where necessary the updated CMS should be submitted to the evaluation committee for further review if the comments received warrant this. If accepted, a recommendation would be submitted to the Minister for approval and gazetting. Any queries or comments would be returned to the CMA to be addressed.
This step should take a maximum of 30 days.

Step 4: DWAF prepares submission for approval of CMS

Once the Directorate: Policy & Strategy Co-ordination is satisfied that all the public comments have been substantially considered, a submission will then be prepared for the Minister to provide the written consent as required by S8 (4) of the Act.
The ministerial determination should highlight the content of the CMS and the process followed in ensuring that every opportunity was provided to the public for their comment. The submission should describe how these comments were considered in the final CMS.

Step 5: Written consent by the Minister

The Minister, once satisfied that all administrative procedures have been followed and the content of the CMS has the general support of relevant stakeholders, will then provide a written consent to the CMA.

Step 6: Gazetting of the final CMS

With the written consent, the CMA will prepare a notice in the Gazette informing of the establishment of a CMS for the protection, use, development, conservation, management and control of water resources within its water management area.
Steps 4, 5 and 6 should take 30 days.

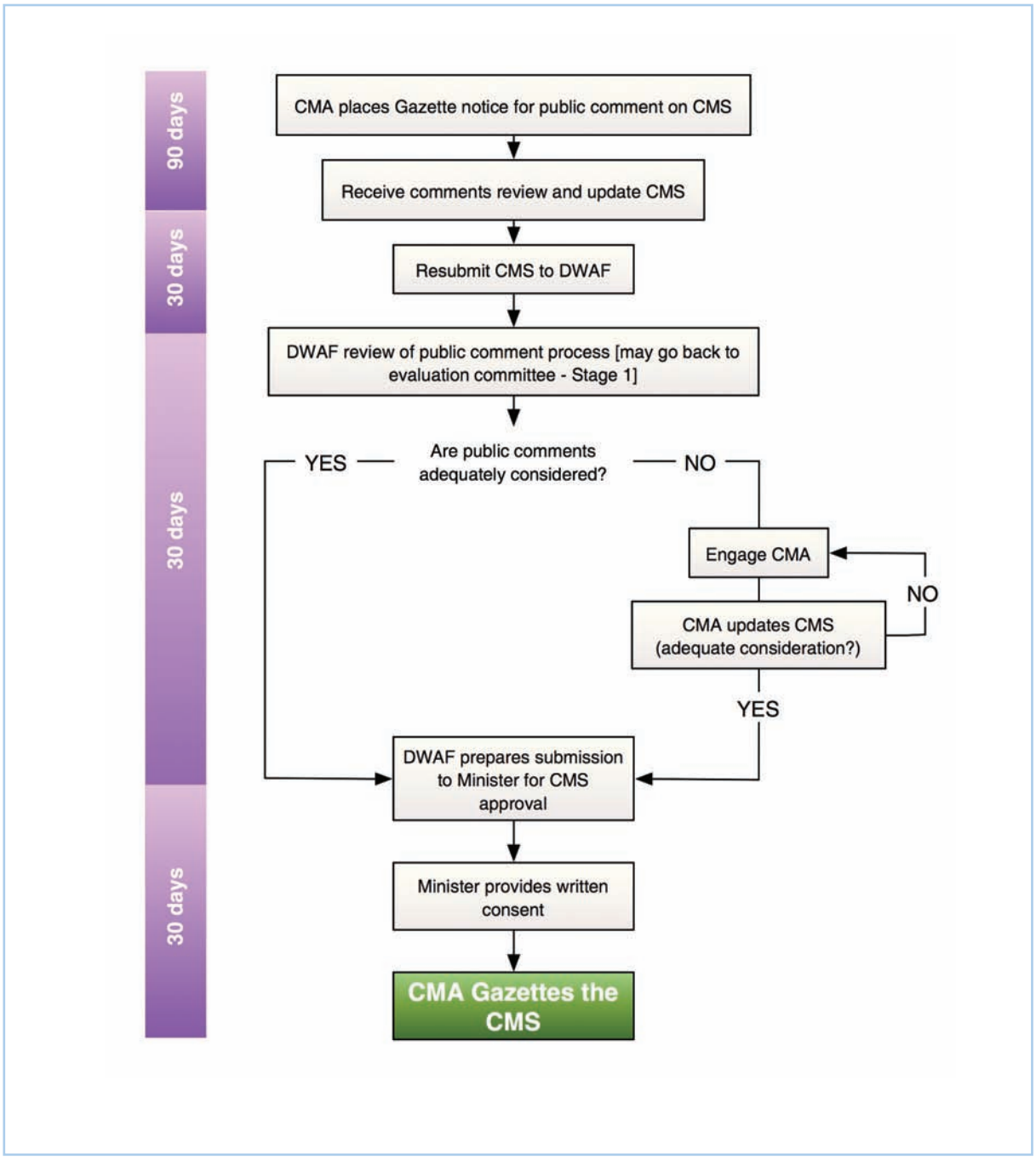


Figure 7.2
Flow chart for Stage 2 showing the approval process.

7.5 Concluding remarks

The time frame provided in this chapter which amounts to some 6 to 8 months in total, is based on the assumption that the CMA and the DWAF will collaborate closely right from the beginning of the CMS preparation process (see Figure 4.1). By working together, the DWAF officials will be acquainted with all issues that will impact on policy and co-operative government from the start so that issues can be dealt with as they arise. If the CMA does not involve DWAF at an early stage, the process will take longer than indicated in the flow diagrams and the CMA will run the risk of having to redo work that is not in line with current policies and the NWRS.

Furthermore, it must be kept in mind that the first CMS will have to describe a transitional situation where certain activities will still be performed by DWAF where these activities have not yet been delegated or assigned to the CMA. This also emphasizes the requirement that DWAF and CMA have to work together closely.

Expanded glossary

Allocatable water
Not all water is available for use. Allocatable water refers to that water that can be allocated after special provisions have been met (the Reserve, international obligations, inter-basin transfers, future contingency and water use of strategic importance (see Figure 2.1)).

Allocation
Allocation is the apportionment of the total available resource within a WMA. The responsibility for allocation is shared between the Minister and the CMA of a particular WMA (see Figure 2.1). The Minister will determine the total available resource and allocate water for the Reserve, international agreements, strategic needs, inter-basin transfers, and water for future use. The allocation of the remainder of the resource will be negotiated by stakeholders (captured in a Water Allocation Plan; see GL 6.6). The Water Allocation Plan is part of the CMS and will be used to draft a Water Allocation Schedule.

Authorisation
This is the process of granting permission to use water for the one or more of the purposes set out in S21 (NWA see Box 2.3). The authorisation process will grant or decline permission to use water according to conditions set out in S22 of the NWA. An entitlement is the outcome of being granted such permission (see S22, NWA for permissible use). Entitlements may require licences but this is not the case with direct entitlements (see below).

Beneficial use of water in the public interest
Water allocation must promote the beneficial use of water in the public interest. This includes a commitment to the fair and equitable allocation of water to all South Africans, which promotes social stability and investor confidence. However, while supporting the provision of water for uplifting the poor, the process should not fall into a "poverty trap" of only providing water to sustain basic livelihoods. The water allocation process should therefore also support and facilitate Broad-based Black Economic Empowerment by promoting larger-scale productive commercial uses of water. This does not mean that the water allocation process will focus solely on issues of equity. While addressing issues of equity, it will also support water uses that generate employment and growth. Similarly, where water must be re-allocated between users, the impacts of curtailing existing beneficial uses of water will be carefully considered and, where appropriate, re-allocations could follow a phased approach. Beneficial use also means promoting a broad range of uses of water across variety of sectors to support a diverse, robust and stable economy (WAR, 2005)

Catchment Management Agency (CMA)
A CMA is a Water Management Institution. It is a statutory body governed by a board representing the interests of users, local and provincial government and environmental interest groups. It manages all water resources within a defined Water Management Area.

Classification of water resources and the National Water Resources Classification System (NWRCS).
Classification is the first stage in water resources protection. Establishing a classification system and applying it to significant resources is a legal requirement. The Act requires that all significant resources (rivers, wetlands, estuaries and groundwater) must be classified and a desired Management Class must be set with stakeholders (see also GL 6.5). The classification System considers not only sustainability but also social and economic attributes of different Management Classes.

Compulsory licensing
A process of compulsory licensing will take place for all existing and potential water users. Chapter 4, Part 8 of the NWA establishes a procedure for a responsible authority to undertake compulsory licensing of any aspect of water use in respect of one or more water resources within a specific geographic area. The procedure is intended to be used to:

1) achieve a fair allocation of water from a resource that is under stress or to achieve equity in allocations;
2) promote beneficial use of water in the public interest;
3) facilitate efficient management of the water resource; or
4) protect water resource quality.

Section 43 (1) sets out criteria for assessing the necessity for compulsory licensing and provides for such exercises to be carried out progressively (see also re-allocation). Appendix 7 indicates the likely order in which the Department intends to proceed with compulsory licensing.

Consensus-building
This process is grounded in dialogue that starts with defining the problem. The aim is for all role-players to eventually negotiate a solution that serves to benefit the majority of the negotiating parties whilst ensuring attention to environmental concerns and those with a weak voice.

Demand management (NWRS, 2004)
For many years the tendency has been to resort to constructing additional infrastructure where the demand for water has exceeded the supply. As water use approaches its full potential however, the cost of resource development increases and the environmental impacts become more pronounced. Management of the demand for water is an obvious option for reconciling imbalances between requirements and availability, and has been applied with great success by some users. Compared with supply-side management, the management of demand in South Africa is relatively under-developed. More information will become available as the effects of the Department's water demand management programme become evident.

Direct entitlements
These are water uses that do NOT require a licence (see Figure 6.6.2). However direct entitlements might need to be registered with the applicable authority (especially in the case of General Authorisations). Direct entitlements include:

- Schedule 1 use: relatively small quantities mainly for domestic, non-commercial, emergency and some recreational use. Use is not registered;
- General authorisation: limited/ conditional unlicensed use of water decided upon for a particular region. Use is registered
- Existing lawful use (ELU): transitional provision for lawfully recognised use under old water law. Compulsory licensing will eventually require all ELU to be licensed
- Special provisions: according to the NWA a special provision that does not require a license may be declared by the Minister

Environmental sustainability
Environmental sustainability has been defined as meeting the needs of the present without compromising the ability of future generations to meet their needs.

Environmental Impact Assessment (EIA)
This is a project-specific process which looks at how a proposed development might impact on the environment, and at how those impacts might be mitigated. The EIA is an extremely important and useful tool in South Africa - and the primary legislative check on most forms of development - a check which also allows for the shaping of the development to be more environmentally acceptable. The completion of an EIA is a legal requirement for many types of development projects including all forms of land transformation, such as conversion of natural veld to agriculture or forestry. The Department of Environment Affairs has the statutory authority to apply EIA to all development, through the National Environmental Management Act (NEMA).

Existing Lawful Use
As a transitional measure, the Act permits water use that was lawfully exercised under any law two years preceding the introduction of the National Water Act (1998). This, termed existing lawful water use, can continue under existing conditions until such time as it is formally licensed.

General Authorisations
Various forms of water use may be 'generally authorised' for particular areas or catchments, and under specified conditions, by means of a general notice in the Gazette. These are larger volumes of water than those of Schedule 1, with some potential for negative impacts on the water resource. This exempts such users from having to apply for a licence for that use, but they are required to register the use, and pay for that registration.

Indirect entitlements
Indirect entitlements to use water refer to those uses listed under S21 of the NWA that require a licence to be issued by a responsible authority (see Figure 6.6.2). Any water use that exceeds a Schedule 1 use, or that exceeds the limits imposed under general authorisations must be authorised by a licence. Indirect entitlements apply to abstraction-related activities, waste discharges and non-consumptive uses.

Integrated Water Resources Management
Integrated Water Resources Management (IWRM) is a strategic approach adopted to managing our water resources. The National Water Act (1998) directs the National Water Resources Strategy to promote the management of catchments within a water management area in a holistic and integrated manner. This means recognizing linkages - between water and land, between upstream and downstream areas of a catchment, and between socio-economic, political and environmental factors. As stated in the National Water Resources Strategy (2004), IWRM will 'make it possible for us to use our precious water to assist in addressing the overwhelming need to eradicate poverty and remove inequity in South Africa'. The National Water Resource Strategy sets out the ways in which we aim to achieve integrated water resources management in South Africa. It describes the policies, strategies, plans and procedures by which this will be done.

Integrated Water Resources Management Plan (IWRMP)
This is a proposed plan for Local Government aimed at dealing with the socio-economic, technical, financial, institutional, political and environmental issues as they pertain to management of the water resource. The plan also serves as a framework to ensure efficient, appropriate, affordable, economical and sustainable use and development of water resources and includes the management of wastes that have the potential to impact on the water resource (Draft report WRC, K8/116).

Invasive Alien Plants
Recent estimates indicate that about 10 M hectares of land in South Africa are infested with invasive alien plants that out-compete and replace the natural vegetation. They are undesirable because they impact on water resources, biodiversity, ecological functioning and the productive use of land. Clearing infestations, especially from the riparian zone, can increase stream flow (NWRS 2004).

Licensed Water Use
Water use authorised in terms of a licence issued under the National Water Act, and upon approval of an application by a responsible authority.

Livelihoods use of water
This term includes the small-scale use of water for basic human needs, as well as for household food security. Further, it includes water used by farmers to grow crops which may be sold or traded for other commodities (WAR, 2005). Although significant progress has been made in addressing the backlogs in water services, the provision of water to meet basic human needs does not make allowance for water for income-generating activities. Similarly, whilst prioritising allocations of water for emerging farmers and small grower forestry schemes, and revitalising defunct irrigation schemes has the potential to provide livelihoods for many people in rural areas, these do not address the needs of the large numbers of people who require water for small-scale activities such as, for instance, brick making, rearing poultry and growing produce for

local sale. The quantities of water required are relatively small - research in small villages indicates that livelihoods can be significantly enhanced by the availability of 50 to 100 l per household per day.

Management Class (see also Classification)
An essential component of Resource Directed Measures is understanding the current state – or Class – of a water resource and, together with stakeholders, setting a desired Management Class of the water resources in a catchment. The NWA facilitates this through the National Water Resource Classification System or NWRCS.

Mediation
This is the process of facilitating negotiation and consensus-seeking. For example, the visioning process might require mediation where a third party is brought in to reduce conflict situations from arising.

Monitoring programme
According to the national norms and standards, this consists of the following elements: establishment (network planning etc), data/sample collection, data processing and sample analysis, data management and storing, the development of information products, dissemination of data and information.

Multiple stakeholder platforms
These platforms provide opportunities for diverse role-player and interest groups to engage in dialogue and consensus reaching. An example of a multiple stakeholder platform is a Catchment Management Forum (CMF).

Negotiation
This is a process where stakeholders are given the opportunity, through dialogue, to reach consensus in the management and planning process. The negotiation process should always be framed by the principles of sustainability, equity and efficiency.

Polluter-pays principle
A principle that ensures that a charge per unit of pollution emitted into the ecosystem is charged to those responsible for such pollution in order to internalise the cost thereof.

Positions and interests
A position is what a stakeholder wants from a negotiation process, an interest is why the stakeholder wants it.

Public awareness and capacity building
In order for the public to engage appropriately with the IWRM processes and tasks there is a need for awareness and understanding. For example, for a catchment vision to be meaningful and based on real-life situations it needs to be informed by understanding and knowledge of the catchment for which the vision is being created. Programmes should therefore support the public and stakeholder groups with the development of this capacity.

Re-allocation
This refers to the re-allocation of water between users via compulsory licensing or when licences are reviewed (DWAF 2005 b). The (gradual) re-allocation of water is preferred to harsh immediate measures, responding as the need arises in different parts of the country. The main enabling mechanisms are compulsory licensing, supported by water demand management and the trading of water use authorisations (NWRS S 2.5.4).

Reconciliation
Reconciliation refers to the technical process of undertaking a water balance – that is, weighing up the available water resources against the water requirements, or so-called 'water demand'. This can be predicted – or modeled – for a range of scenarios including the current and likely future situations. The CMS seeks to achieve a balance between the available water and the water demand (see below).

Registration of use
As an essential preliminary step towards licensing, and to enable water pricing to be implemented, a countrywide process has been undertaken to register existing water uses. The registration process will ultimately capture information about the location and extent of all Section 21 uses (NWA). The registration data is currently being captured on the Water Authorisation and Registration Management System (WARMS) and registration certificates are being issued. A registration certificate is not, however, a licence to use water, and does not confer legitimacy on an unlawful water use (see NWRS Chp 2, Part 3, 3.2.3.10).

Reserve (NWA (Chapter 3, Part 3))
The Reserve refers to water quality and quantity for two components:

- water for basic human needs, known as the Basic Human Needs Reserve (BHNR), and
- water to maintain aquatic ecosystems, known as the Ecological Reserve (ER).

The BHNR provides for the essential needs of individuals served by the water resource in question and includes water for drinking, for food preparation and for personal hygiene. The ER is captured through Reserve determinations The Reserve refers to both the quantity and quality of the water in the resource, and will vary depending on the class of the resource. The Minister is required to determine the Reserve for all or part of any significant water resource. If a resource has not yet been classified, a preliminary determination of the Reserve may be made and later superseded by a new one. Once the Reserve is determined for a water resource it is binding in the same way as the Class and the Resource Quality Objectives. The Reserve is the only right to water use in the National Water Act, and water must be assigned to meet the requirements of the Reserve before water can be allocated to other uses. As such, a Reserve must be determined before any water use can be authorised. (WAR, 2005). A Preliminary Reserve can be determined before a comprehensive Reserve determination.

Resource Directed Measures (RDM)
Resource Directed Measures, together with Source Directed Controls are the key strategic approaches designed under the NWA (1998) to achieve equity, sustainability and efficiency is Integrated water Resources Management in South Africa. These measures comprise classification system, the Reserve and Resource Quality Objectives. They are described in Chapter 3 of the NWA (36:1998), and together are intended to ensure comprehensive protection of all water resources.

Resource-poor farmers
Usually small-scale users with little access to financial capital and capital equipment. They are a broad category of vulnerable farmers who are usually members of the historically disadvantaged groups

Resource quality
Resource quality does not mean water quality alone. It refers to all aspects of the water resource including:

- water quantity,
- water quality,
- character and condition of in-stream and riparian habitats,
- characteristics, condition and distribution of the aquatic biota.

Resource Quality Objectives (RQOs)
A numerical or descriptive statement of the conditions which should be met in the receiving water resource, in order to ensure that the water resource is protected.

Right to water
The National Water Act only makes provision for **one** right to water, the Reserve.

Scarcity
Scarcity of water resources arises when demand or requirements outstrips the supply or availability (but see water stress).

Schedule 1
This refers to small volumes of water for household use with little potential for negative impacts on the water resource, and for which no application for authorisation needs to be made. Water may not be used for commercial purposes.

Social equity
In the context of water resources, social equity implies that all user groups have fair and reasonable access to the nation's scarce water resources, and that the allocation of water resources facilitates universal and affordable access to a basic water supply.

Source Directed Controls (SDC)
This is part of two complementary strategies to achieve equity, sustainability and efficiency in Integ rated water Resources Management in South Africa. Together with RDM (see above), these measures contribute to defining the limits on the use of water resources to achieve the desired level of protection. They are primarily designed to regulate water-use activities at the source of impact (using tools such as standards and the situation-specific conditions that are included in water-use authorisations). Source-directed controls are the essential link between the protection of water resources and the regulation of their use.

Stakeholders
The individuals, groups, or institutions that have an interest, or 'stake', in the outcome of the project, mainly because they will be affected by or can have an influence on the project/ activity.

State of the Environment (SoE)
This is an information gathering and reporting procedure providing a report on the current state of the environment. An SoE report sets a baseline but aims also to explain causes (past and present) and effects (present and future). It serves as a useful decision-making and management aid. In South Africa, the SoE reports are currently being developed.

Strategic Conservation Planning
Part of this planning tool deals with the prioritisation of freshwater resources, their status and threats. It is already being used by various provinces on a sub-catchment basis (5000 ha or less).

Strategic Environmental Assessment (SEA)
This is a far-reaching and proactive process, differing fundamentally from EIA in a number of ways. There is no legal requirement for SEA but SEAs are more and more frequently being undertaken voluntarily by Provinces and by Government as a process toward sound land-use planning and management. SEA looks at the whole environment and reviews how that environment can support development. SEA looks not only at the physical environment, but also at the social and economic context. A SEA will gather information, seek to describe opportunities and constraints, deal with issues and work with stakeholders at all levels. Much of the information which a SEA seeks to gather is unique to the process - for example the demands, needs and visions of stakeholders, an understanding of true social and economic dynamics, prospects for alternatives, and the way in which this information is brought into debate and ultimately made available to both developers and decision-makers, so that choices can be made and decisions understood. The Department of Water Affairs and Forestry has embraced the concept of SEA as a tool for use in catchment planning and management, and as a support to the National Water Act.

Strategic Environmental Management Planning (SEMP)
The SEMP is a strategic plan, generally undertaken at the scale of the province. SEMPs are also an important tool in providing the over-arching environmental management system for development clusters or nodes. For example, a SEMP would provide the environmental limits and guidelines for the establishment of an industrial park in which various different companies may be involved.

Stream Flow Reduction Activity
A SFRA is any dryland land-use practice which reduces the yield of water from that land to downstream users (with reference to yield from natural veld in undisturbed conditions). Such activities may be declared as SFRAs if found to be significant.

Validation
Validation of water use is done by comparing the registered water use with the water use that actually took place when the NWA [Act 36 of 1998] came into operation. Three scenarios are possible:

- a water use greater that the use that actually took place could be registered, which is a possible over registration;
- a water use less than the use that actually took place could be registered, which is a possible under registration; and
- a water use equal to the use that actually took place could be registered, which is a possible correct registration.

Verification
Verification is the process of determining the lawfulness of the water use and is done by comparing the water use that actually took place when the NWA come into operation with the extent of the right that was authorised or allowed by the laws repealed by the NWA.

Visioning
Visioning (see GL 6.4) is a process of articulating society's aspirations for the future – in this case of the 'basket' of benefits to be derived from aquatic ecosystem services and the costs associated with their use. The visioning process begins with the generation of a vision statement that addresses our commitment to achieving equity, sustainability and efficiency in Integrated Water Resources Management. Balancing costs and benefits of resource use must include both water resource quality and quantity components, thus both are incorporated into the formulation of a statement of the desired future conditions of resource use and protection.

A vision statement must be converted into, and explicitly linked with, objectives that are useful at the operational level (see Figure 3.3). Unless a vision is linked to practical end-points, or explicit objectives for management, it will not be supported by those involved in the water allocation and licensing process. (DWAF, 2006 a).

Waste Discharge Charge System (WDCS)
A financial mechanism that acts as an incentive for reducing the waste load discharged into a water resource. The system is only applied when an RQO is exceeded within the WMA. The revenue collected from the discharging parties is either in the form of an environmental tax (incentive charge) or used to put mitigatory measures in place (mitigation charge). See Appendix 8 for explanation.

Waste
This includes any material that is dissolved, suspended or transported in water and which is deposited on land or into a water resource in such volume, composition or manner as to cause, or to be reasonably likely to cause, the water resource to be polluted. Wastewater is water containing waste, or water that has been in contact with waste material.

Water Authorisation and Registration Management System (WARMS):
WARMS is an information programme to co-ordinate the registration of water use. It is used for capturing, storing and disseminating water-use registration information.

Water availability
In South Africa, estimates of water availability must take account of the requirements of:

- Resource Quality Objectives and the Reserve (see GL 6.5),
- water to meet international rights and obligations,
- a contingency to meet projected future water requirements including possible transfers of water to another water management area, and
- water use of strategic importance.

Water Conservation and Water Demand Management (WC/ WDM)
This is an approach in water resources management that seeks to improve water use efficiency through using available water more wisely and through seeking appropriate and cost-effective technologies that reduce wasteful use. Water demand management encourages efficient and effective use by encouraging users to reduce their demands on the resource.

Water demand
This technical term refers to water requirements by a user (see GL 6.3). Importantly, a water requirement does not necessarily imply that it is legitimate. In South Africa, water requirements refer to beneficial, effective and efficient water requirements (see NWA, S 2 (d).

Water quality
The physical, chemical, toxicological, biological (including microbiological) and aesthetic properties of water that determine sustained (1) healthy functioning of aquatic ecosystems and (2) fitness for use (e.g. domestic, recreational, agricultural and industrial). Water quality is therefore reflected in (a) concentrations or loads of substances (either dissolved or suspended), or micro-organisms, (b) physico-chemical attributes (e.g. temperature) and (c) certain biological responses to those concentrations, loads or physico-chemical attributes.

Water resource

A water resource is:

- a river or a spring;
- a natural channel in which water flows regularly or intermittently;
- a wetland, lake or dam into which, or from which, water flows;
- any collection of water which the Minister may declare to be a watercourse; and
- surface water, estuaries and aquifers (underground water).

All water bodies in the hydrological cycle, including underground water, are regarded as water resources. Each of these falls within the jurisdiction of DWAF.

Water Services Authority

Any municipality (district or local) that has authority to provide water services within its area of jurisdiction in terms of the Municipal Structures Act of 1998 (National Water Services Bill, 2005).

Water Services Institution

This includes a water services authority. a water services provider, a water board and a water committee (WSA 1997).

Water Services Provider

Can refer to a local or regional Water Services Provider. Any 'person' who provides water services and/or accepts waste water for purposes of treatment to consumers or to another water services institution but does not include a water services intermediary (WSA 1997; National Water Services Bill, 2005)

Water stress

Although useful, as explained in GL 6.3, the term "stressed" can be misleading because it is a relative one. Water stress depends on a range of factors and is not simply a shortfall in water availability versus requirement. Firstly, water deficits will not be experienced equally over the entire WMA, nor at all times. Thus 'stress' can change in space and time. Secondly, in some cases the deficits do not imply that consumptive use exceeds the available water, but that the allowances made for the implementation of the ecological component of the Reserve cannot be met fully at present levels of use. Thirdly, the term 'water demand/ requirement' is also a relative one since it depends upon who is using the water, for what, the levels of assurance required, how it is being used and where. Importantly, a water requirement does not necessarily imply that it is legitimate.

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2. Working for Water (www.dwaf.gov.za/wfw/)
3. Working for Wetlands (www.sanbi.org/research/wetlandprog.htm)
4. Freshwater conservation planning: see /www.waternet.co.za/rivercons/
5. International Association for Public Participation IAP2. http://www.iap2.org/spectrum.html
6. National Water Conservation Campaign: See also http://web.uct.ac.za/org/rssa/conferen/
7. NePAD. 2001. The New Partnership for Africa's Development (NePAD). Document of Accord drawn up on July 2001. Available online at http://www.nepad.org
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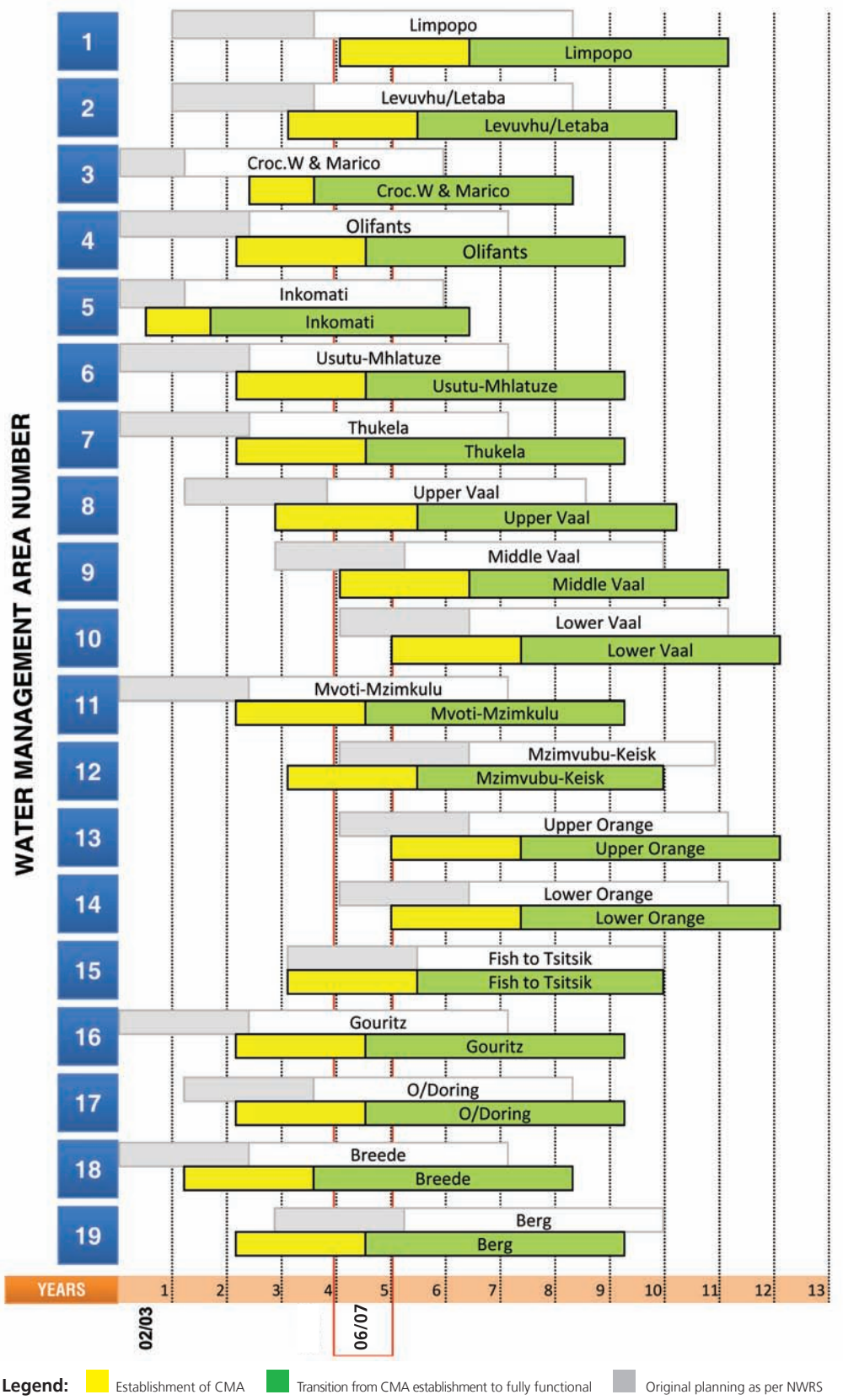
Appendix 1

Revised Programme for CMA establishment

This programme has been amended from that presented in the NWRS (2004)

PROGRAMME FOR CMA ESTABLISHMENT (NOV 06)



Appendix 2

Legislation, policy, guidelines and useful documents relevant to Integrated Water Resource Management

A. Legislation

Water-related Legislation

Department of Water Affairs and Forestry
National Water Act [No. 36 of 1998]
Water Services Act [No. 108 of 1997]

Constitution-related Legislation

Intergovernmental Relations Framework Act [No. 13 of 2005]
Promotion of Administrative Justice Act [No 3 of 2000]
Promotion of Access to Information Act [No. 2 of 2000]
Constitution of the Republic of South Africa [No. 108 of 1996]
Promotion of National Unity and Reconciliation Act [No. 34 of 1995]

Environment-related Legislation

Department Environment and Tourism

National Environment Management: Air Quality Act [No. 39 of 2004]
National Environmental Management: Protected Areas Amendment Act [No. 31 of 2004]
National Environmental Management: Biodiversity Act [No. 10 of 2004]
National Environmental Management: Protected Areas Act [No. 57 of 2003]
Environment Conservation Amendment Act [No 50 of 2003]
National Parks Amendment Act [No. 54 of 2001]
South African Weather Service Act [No. 8 of 2001]
National Environmental Management Act [No 107 of 1998]
Environment Conservation Act Extension Act [No. 100 of 1996]
Environment Conservation Act [No. 73 of 1989]

Department of Water Affairs and Forestry

National Forest and Fire Laws Amendment Act [No. 12 of 2001]
National Veld and Forest Act [No. 101 of 1998]
National Forests Act [No. 84 of 1998]

Land-related Legislation

Department of Land Affairs

Communal Land Rights Act [No. 11 of 2004]
Transformation of Certain Rural Areas Act [No. 94 of 1998]
Extension of Security of Tenure Act [No. 62 of 1997]
Land Survey Act [No. 8 of 1997]
Interim Protection of Informal Land Rights Act [No. 31 of 1996]
Communal Property Associations Act [No. 28 of 1996]
Land Reform (Labour Tenants) Act [No. 3 of 1996]
Development Facilitation Act [No. 67 of 1995]
Land Administration Act [No. 2 of 1995]
Restitution of Land Rights Act [No. 22 of 1994]

Public administration-related legislation

Department of Finance

Finance Act [No. 26 of 2004]
Public Audit Act [No. 25 of 2004]
Public Finance Management Act [No 1 of 1999]

Department of Provincial and Local Government
Disaster Management Act [No. 57 of 2002]

Department of Trade and Industry
Broad-Based Black Economic Empowerment Act [No. 53 of 2003]

Governance-related Legislation

Department of Provincial and Local Government
Re-determination of the Boundaries of Cross-boundary Municipalities Act [No. 6 of 2005]
Traditional Leadership and Governance Framework Act [No. 41 of 2003]
Local Government: Municipal Systems Act [No. 32 of 2000]
Local Government: Cross-boundary Municipalities Act [No. 29 of 2000]
Local Government: Municipal Structures Act [No 117 of 1998]
Local Government: Municipal Demarcation Act [No. 27 of 1998]
National Council of Provinces Act [No. 17 of 1997]
Council of Traditional Leaders Act [No. 31 of 1994]

Sector-specific Legislation

Department of Agriculture
Agricultural Laws Rationalisation Act [No. 72 of 1998]
Subdivision of Agricultural Land Act Repeal Act [No. 64 of 1998]
Conservation of Agricultural Resources Act [No. 43 of 1983]

Department of Minerals and Energy
Mineral and Petroleum Resources Development Act [No. 28 of 2002]

B. Policy

White Papers

Department of Agriculture - Agriculture White Paper, 1995
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Department of Environmental Affairs and Tourism -Environmental Management Policy White Paper, 15 May 1998
Department of Environmental Affairs and Tourism - Environmental Management Policy White Paper, 28 July 1997
Department of Environmental Affairs and Tourism - Conservation and sustainable use of South Africa's biological diversity White Paper, May 1997
Department of Land Affairs - South African Land Policy White Paper, June 1997
Department of Minerals and Energy - Promotion of Renewable Energy and Clean Energy Development White Paper: Part One: Promotion of Renewable Energy, 23 August 2002
Department of Minerals and Energy - Energy Policy White Paper, December 1998
Department of Minerals and Energy - Minerals and Mining Policy White Paper, October 1998
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Department of Provincial and Local Government - Spatial Planning and Land Use Management White Paper, July 2001
Department of Provincial and Local Government - Disaster Management White Paper, 15 January 1999
Department of Provincial and Local Government - Local Government White Paper, 9 March 1998
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Department of Water Affairs and Forestry - National Water Policy White Paper, April 1997
Department of Water Affairs and Forestry - National Sanitation Policy White Paper, October 1996
Department of Water Affairs and Forestry - Sustainable Forest Development in South Africa White Paper, March 1996
Department of Water Affairs and Forestry - Water Supply and Sanitation White Paper, November 1994

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Department of Agriculture - Land redistribution for agricultural development, June 2001
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Department of Water Affairs and Forestry - Using water for recreational purposes policy, March 2002
Department of Water Affairs and Forestry - Water conservation and demand management national strategic framework: Draft, May 1999
Department of Water Affairs and Forestry - Managing the water quality effects of settlements: The national strategy, April 1999
Government of South Africa - The New Partnership for Africa's Development (NEPAD), October 2001 - Department of Foreign Affairs
Government of South Africa - Women's Empowerment and Gender Equality: South Africa's National Policy Framework, December 2000
Government of South Africa - Integrated Sustainable Rural Poverty and Inequality in South Africa: Final Report, 13 May 1998
Government of South Africa - Growth, Employment and Redistribution: A Macroeconomic Strategy for South Africa (GEAR), 1996 Development Strategy, 17 November 2000

C. Guidelines and useful documents

Department of Water Affairs & Forestry

Guidelines and documents published by DWAF are listed according to topic. Additional guidelines and documents published by other departments and organisations are listed at the end.

Catchment Management Agencies

- 2001. Implementation of Catchment Management in South Africa. The National Policy. August 2001.
- 2001. The CMA/WUA series. Guide 1: Establishing a Catchment Management Agency (CMA) August 2001.
- 2001. The CMA/WUA series. Guide 2: The Catchment Management Agency as an organisation. August 2001.
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- 2002. Guideline on the Viability Study for the Establishment of a Catchment Management Agency, Carl Bro a/s, Pegasus Strategic Management, Feb. 2002.
- 2002. Guidelines on the organisational structure of Catchment Management Agencies. August 2002.
- 2002. Guidelines on the Transfer of Personnel from DWAF to other Institutions /Organisations. September 2002.
- An Overview of Water Management Institutions (undated).

Integrated Water Resource Planning - National Documents

- 1999. Resource Directed Measures for Protection of Water Resources, Vol. 2: Integrated manual.Vol. 3: River Ecosystems; Vol. 4: Wetland Ecosystems; Vol. 5: Estuarine Ecosystems; Vol. 6. Groundwater component. Pretoria, South Africa.
- 2000. Authorisation Process for Individual Applications for Water Use Licences, Revision 3, December 2000 .
- 2002. National Guidelines for Integrated Agriculture Water Use. July 2002.
- 2003. A Guide to Conduct Water Quality Catchment Assessment Studies: in support of the Water Quality Management Component of a Catchment Management Strategy. Sub-Series no. MS 8.3. Edition 1. March 2003.
- 2003. A Practical Field Procedure for Identification and Delineation of Wetlands and Riparian Areas Version: Final draft, February 2003.
- 2004. Financial Assistance to Resource Poor Irrigation Farmers, 29 September 2004.
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- 2006. Draft Guidelines on Catchment Visioning for the Resource Directed Management of Water.
- Quality Water Resource Planning Systems Series, Sub-Series No. WQP 1.7.1, Resource Directed
- Management of Water Quality: 2nd Edition Management Instruments Series. 2006.
- 2006. Using Water for Recreational Purposes. Recreational Water Use Manual, November 2006 (first release).
- A Guide to the National Water Act (No. 36 of 1998) (undated).

- Water use licensing (Draft): The Policy and Procedure for Licensing Stream Flow Reduction Activities (undated).
- Sanitation Services: A Water Services Act Interpretative Guide. A guide to the Water Services Act (Act No. 108 of 1997) from a sanitation services perspective (undated).

Public participation, capacity building and communication

- 2000. Public Participation for Catchment Management Agencies and Water User Associations: Guide 4 in the CMA/WUA guide series. 2000.
- 2001. Generic Public Participation Guidelines, September 2001. Compiled by R. van Jaarsveld.
- 2001. Generic Communication Strategy for IWRM, DWAF/DANCED, December 2001.
- 2001. Capacity Building Overview Assessment Vol.1, Carl Bro a/s, IZNA Consortium, October 2001.
- 2001. Capacity Building Overview Assessment Vol.2, Specific Capacity Building Requirements of Role-Players, Carl Bro a/s, IZNA Consortium, October 2001.
- 2004. Guidelines for Stakeholder Participation in Integrated Water Resources Management in Water Management Areas In South Africa. March 2004.
- 2004. Managing Public Participation: A Toolkit for Planning, Designing, Implementing, Monitoring and Evaluating Public Participation Processes Related to the Implementation of Integrated Water Resources Management with Particular Emphasis Upon the Inclusion of Marginalized Groups. October 2004.

Water Use & Conservation

- 2000. Draft Water Conservation / Demand Management Strategy for the South African Forestry Sector. May 2000.
- 2000. Implementation Guidelines for Water Conservation and Water Demand Management for the Agriculture sector regarding the Development of Irrigation Water Development plans for the Agriculture Sector of South Africa, July 2000.
- 2001. Water Conservation and Demand Management National Strategy Framework. 2001.
- 2003. Volume 1: Water Conservation and Water Demand Management - a planning framework for Catchment Management Agencies. DRAFT, 2003.
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- 2003. Volume 3: Guidelines for implementing Water Conservation and Water Demand Management within the water services sector. 2003.
- 2004. Clarification of the Department of Water Affairs and Forestry's Requirements for Regulating the Utilisation of Water for Aquaculture Purposes and Development of Relevant Protocol, June 2004 (Project number: 2003-325).
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- 1996. South African Water Quality Guidelines, Second Edition, 1996 .
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- 1998. Waste Management Series: Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, Second Edition, 1998.
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- 2000. Policy and Strategy for Groundwater Quality Management in South Africa, 1st Edition, 2000.
- 2000. Guideline Document for the implementation of Regulations on use of water for Mining and related activities aimed at the protection of Water Resources, 2nd, May 2000.
- 2001. Guidelines for Catchment Management to Achieve Integrated Water Resource Management in South Africa : Part 1,2,3, 2001.
- 2004. Operational Policy for the disposal of land-derived water containing waste to the marine environment of South Africa (MS 13.2, 13.3, 13.4), Edition 1, 2004.
- 2005. Minimum Requirements for Hazardous Waste. Draft September 2005.
- 2005. Minimum Requirements for Waste Disposal by Landfill. Draft September 2005.
- 2005. Minimum Requirements for Water Monitoring at Waste Management Facilities. Draft September 2005.
- 2006. Waste Discharge Charge System: Implementation Strategy 2006.

Proposals for the establishment of the Catchment Management Agencies

- Proposals for the establishment of a Catchment Management Agency for each of the WMAs are available on the DWAF website: *www.dwaf.gov.za.*

Water Resources Situation Assessment reports

- Water Resources Situation Assessment reports are available for each of the WMAs on the DWAF website: *www.dwaf.gov.za.*

Internal Strategic Perspectives

- 2004. Internal Strategic Perspective. Berg River WMA.
- 2004. Internal Strategic Perspective. Breede WMA.
- 2004. Internal Strategic Perspective. Crocodile West Marico WMA.
- 2004. Internal Strategic Perspective. Fish to Tsitsikamma WMA Tsitsikamma to Coega.
- 2004. Internal Strategic Perspective. Gouritz WMA.
- 2004. Internal Strategic Perspective. Inkomati WMA.
- 2004. Internal strategic perspective. Limpopo River WMA. Pretoria.
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- 2004. Internal Strategic Perspective. Lower Vaal WMA.
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- 2004. Internal Strategic Perspective. Middle Vaal WMA.
- 2004. Internal Strategic Perspective. Mvoti to Mzimkulu WMA.
- 2004. Internal Strategic Perspective. Mzimvubu to Keiskamma WMA Amatole to Kei.
- 2004. Internal Strategic Perspective. Olifants River WMA.
- 2004. Internal Strategic Perspective. Thukela WMA.
- 2004. Internal Strategic Perspective. Upper Orange WMA.
- 2004. Internal Strategic Perspective. Upper Vaal WMA.
- 2004. Internal Strategic Perspective. Vaal River System: Overarching.
- 2004. Internal Strategic Perspective. Orange River System: Overarching.

ISP reports are available for each of the WMAs on the DWAF website: www.dwaf.gov.za.

Water Research Commission (WRC)

A list of WRC guidelines and publications follows below. Documents can be obtained directly from (012) 330 0340 or via the website: http://www.wrc.org.za.

Catchment Management

- 2001. Development of a blueprint for urban catchment management in South Africa. WRC 2001/2 Reference No 864
- 2002. Protocols and models for ICM case studies. WRC 2001/2 Reference No. 1062
- 2003. Protocols and models for ICM case studies. WRC 2003/4 Reference Nos. 749 and 1212
- 2002. The management of water resources by the emerging catchment management agencies WRC, 2001/2, Reference No. 906
- 2004. Development of a Hydrological Decision Support Framework (HDSF) to support CMAs in the assessment of water resources and the allocation of water use licences
- WRC 2003/4 Reference No.1490 D20
- 2004. WRM functions delegation to WUA and CMAs (WRC 2003/4 Reference No 1140
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Governance

- 2004. Appropriate approaches and mechanisms to foster co-operative governance between WUAs, CMAs and local government. WRC 2003/4 Reference Nos.1140 and 1433
- 2004. Review and evaluation of all relevant governance elements (principles, policy, legislation, regulation and practice) in terms of the hydrological cycle. WRC 2003/4 Reference No. 1514

Groundwater

- 2004. Groundwater supply in Local Authorities. WRC 2003/4 Reference No. 1254
- Groundwater–surface water interactions. WRC 2002/3 Reference No.1327 (in progress: 2004-2008)
- 2004. Groundwater–surface water interactions. WRC 2003/4 Reference Nos. 1093, 1117, 1168, 1234, 1488 (in progress: 2004-2008)
- In Prep. A multidisciplinary research project to promote co-operative governance and develop the industry standard for exploring, development and usage of groundwater supplies. WRC 2003/4 Reference No. 1510 (in progress: 2004-2006)

Monitoring

- 2002. Development of a GIS-based modelling system (ACRU). WRC 2001/2 Reference No. 1155
- 2002. Development of a water information management database system aimed at linking MuniBase to the National Information System of DWAF. WRC 2001/2 Reference No 642

- 2004. Development of an interactive surface water quality information and evaluation system for South Africa (WQ 2000). WRC 2003/4 Reference No 950
- 2004. Development of an integrated information system specifically for water quality (WQIS) WRC 2003/4 Reference No 951
- 2004. DWAF's national water quality and microbial monitoring programs. WRC 2003/4 Reference No 1118
- 2004. Development and evaluation of the Guide to Non-Point Source Assessment. WRC 2003/4 Reference No 1279

Participation

- 2001. The Development And Co-Ordination of Catchment Forums Through the Empowerment of Rural Communities. WRC report no. 1014/1/01
- 2002. Group decision-support methods. WRC 2001/2, Reference No. 863
- Participatory WRM guidelines. WRC 2001/2, Reference No. 863, WRC Reference No. 1233
- 2003. Development of protocols for improving catchment management through enhanced stakeholder participation. WRC no. 1062/1/03
- 2003. Principles and Processes for Supporting Stakeholder Integrated River Management - Lessons from the Sabie-Sand Catchment. WRC report no. 1062/1/03. Pretoria.
- 2004. Identification of the critical steps in establishing and ensuring the sustainability and transferability of community participation in ICM. WRC 2001/2 Reference No 866; WRC 2003/4 Reference No 1157
- 2004. Establishment of a WUA in the Kat River valley, Eastern Cape WRC 2003/4 No 1233 WRC 2003/4 No 1233
- 2004. Development of appropriate tools to support meaningful participation of the public at different levels of decision-making. WRC 2003/4 Reference No 1434

Quality and quantity

- 2002. Development of models to integrate water quality and quantity. WRC 2001/2, Reference No 1043

Water Conservation and Water Demand Management

- 2002. Water demand forecasting. WRC 2001/2 Reference No. 905
- 2004. Water conservation and water demand management measures. WRC 2003/4 Reference No. 1273
- 2002. Trade-off between various water uses and associated socio-economic issues in allocation of a limited water resource and optimisation of land use. WRC 2001/2 Reference No. 749
- 2002. Models to optimise urban water consumption. WRC 2001/2, Reference No. 997; WRC Reference No 1205
- 2002. Physical interventions and education programs to improve conservation and promote payment for services. WRC 2001/2 Reference No 1143

Guidelines and Documents from other Departments

- Department of Environmental Affairs & Tourism. 1992. Integrated Environmental Management Guideline Series. Pretoria
- Department of Environmental Affairs & Tourism. 2000. Strategic Environmental Assessment in South Africa. Guideline document. Pretoria, South Africa
- Department of Agriculture. 2004. Water Conservation and Water Demand Management for the Agricultural Sector. Pretoria, South Africa.
- Manual in terms of Section 14 of the Promotion of Access to Information Act (Act 2 of 2000) (available on the Department of Public Services and Administration website: www.DPSA.gov.za)

Appendix 3

Instruments for integration and co-operation

The table below contains a list of strategies, plans, frameworks and projects that have relevance to IWRM. The list cannot be considered comprehensive, especially with regard to international frameworks. However, these instruments provide the focus for co-operation and integration. Note that the instruments operate at different levels: national, provincial and local (after Pollard and Du Toit, 2004).

International

Millennium Development Goals (MDGs)

In the year 2000, the United Nations and the international water community announced the Millennium Development Goals (MDGs) for human development over the next several decades. Two of these explicitly address water by (a) setting the goal of reducing by half the proportion of people unable to reach or afford safe drinking water by 2015, and (b) setting out needs for environmental sustainability.

National

The National Water Resource Strategy (NWRS)

The NWRS, called for in the NWA, guides institutions in the implementation of the National Water Policy. In terms of co-operative functions, the NWRS sets out interrelationships between institutions involved in water resources management and other water-related activities.

The Integrated Rural Development Strategy (IRDS)

The ISRDS is a national plan of government to implement development plans that are integrated and sustainable for rural areas. The aim of the IRDS is to work cooperatively with all sectors to provide services and support development of rural areas by providing services and supporting economic growth. The Integrated Rural Development Strategy, whilst not dealing with water per se, talks to issues of sustainable rural livelihoods.

Redistribution for Agricultural Development policy (LRAD)

LRAD policy is designed to provide a framework for grants to previously disadvantaged South Africans to access land specifically for agricultural purposes or to improve current land uses. Links between spatial planning and resource allocation are critical especially where water needs to be 'freed up' to support new and emerging farmers (see links to Water Allocation Reform).

Esturine Management Plan

Under the NEMA: Integrated Coastal Management Bill, the esturine management plans will be developed. Alignment must be sought.

Regional/Provincial

Catchment Management Strategies (CMS)

The CMS must be in line with the NWRS of the DWAF. The CMS is based on participatory and integrated processes that should reflect the plans and visions of water users located in a particular WMA.

Provincial Growth and Development Strategies (PGDS)

PGDS are aimed at guiding provincial growth and development. These plans are important in that they place significant demands on water resources and will therefore need to be aligned with the CMS and take into account the processes of IWRM.

Provincial Environmental Management Plan (EMP) and/or Environmental Implementation Plans (EIMPs)

The NEMA calls for both National and Provincial Environmental Management Plans – sometimes called Environmental Implementation Plans. These plans ensure provincial activities are in line with sound environmental planning (see also SEMP in the glossary)

Local

Local government

Integrated Development Plans (IDPs)

An IDP is the main 'strategic planning' tool for planning and development within a municipality. It must link, integrate and co-ordinate plans and be compatible with national and provincial development plans.

Water Services Development Plans (WSDPs)

Every Water Services Authority (usually a district municipality but sometimes a metropolitan or local municipality) is required by the Water Services Act to develop a Water Services Development Plan as part of the IDP. The WSDP must be consistent with the broader goals of IWRM and be informed by the CMS. The plan must also reflect an implementation programme for a five-year period.

Integrated Water Resource Managemetn Plan (IWRMP)

the Constitution and national environmental and local government legislation lays the foundation for Local Authorities to consider IWRM although there is not yet any specific legal requirement for the preparation of an IWRMP.

Integrated Waste Management Plans

To integrate, improve and optimise waste management in order to maximise efficiency by providing an adequate service to residents and businesses and to minimise the associated environmental impacts and financial costs.

Spatial Development Frameworks (SDFs)

The Municipal Systems Act calls for spatial development frameworks to be part of municipalities' IDP's. The SDF must associate development priorities with different geographic areas of the municipality. The SDF, CMS and WSDP need to be harmonised in terms of water allocation and provision.

Land Use Management Systems (LUMS)

In terms of the Municipal Systems Act (2000) and the Local Government Municipal Demarcation Act (1998), land under Traditional Leadership has been incorporated into municipal boundaries. The MSA and the Land Use Management Bill requires that a single Land Use Management System (LUMS) be developed for the entire area. Land use management is closely interlinked with resource management and harmonization is needed between relevant resource management strategies/plans such as the CMS, EMPs and WSDPs.

Local Government Environmental Management Plans (EMP)

Local Government need to prepare EMPs as part of the IDP planning process. These plans guide Local Government activities to be in line with sound environmental planning.

Appendix 4

Information and data for Situational Profiles

A summary of some of the sources of information and data available for technical, biophysical and socio-economic characteristics that can be drawn on to develop a situational profile of the WMA

Data source/ Issue	Detail
Biophysical	
National Water Resources Strategy (2004)	The information in the NWRS is a concise view of the best information and knowledge available at the time – that is until February 2003 (see Chapter 1)
Overview of Water Resources Availability & Utilisation	A set of 19 reports – one for each WMA – that provide the detailed information that is contained in the NWRS. These are also known as the "WMA Reports".
Water Resource Situation Assessment Reports	Relevant characteristics of all quaternary catchments, totalling 1946, in South Africa. Resolution and detail is good. These reports – also one per WMA - contain a wealth of information on each WMA, but the figures on requirements, availability and reconciliation have been largely superseded by the WMA report and the NWRS.
Internal Strategic Perspectives	The ISPs for all WMAs used the information contained in the NWRS and the above WMA reports as the point of departure. However, an inevitable result of the ISP process has been that better information has emerged in some cases.
Water quality	The "Water Quality on Disc" package, developed by the CSIR (Environmentek), enables users to access the DWAF's macro-chemical database directly on their PCs. This database, containing data dating back, in some cases, to the early 1970s, forms part of the Department's National Water Quality Monitoring Network, maintained by the Directorate: Hydrology. http://dbn.csir.co.za/water/
Data on registered water use	Each Regional Office has access to the Water Authorisation and Registration Management System (WARMS) where data on registered water use and users are kept. The WARMS will be extended to the offices of each CMA.
Water charges	Information on current water charges can be downloaded from DWAF's website at http://www.dwaf.gov.za/Projects/WARMS/
Flow data	Flow data can be downloaded from http://www.dwaf.gov.za/iwqs/report.htm#Aquatic Resource Data
State of the environment reports	The SOE report (1999) was the first comprehensive national state of the environment report. A 2005 report is now available. The report deals with biological resources, physical resources, and chemical processes. Some regional reports are available. The freshwater SOE reports are of particular pertinence.
Ecoregions	This first level delineation of ecoregions for South Africa was derived from terrain and vegetation, with some consideration of altitude, rainfall, runoff variability, air temperature, geology and soil. Note that this version has 12 new regions. The metadata and documentation are not yet ready for release. Please contact IWQS if you have specific questions. http://www.dwaf.gov.za/iwqs/gis_data/ecoregions

Historical climate data	Historical climate data is any data that has passed first level quality control checks and which is stored on the central database at the South African Weather Service. http://www.weathersa.co.za/Climate/
Land-Cover	1. The National Land-Cover Database Project (CSIR/ ARC/ SANDF, DWAF, DEAT, DA) has produced land-cover data for all of South Africa, Swaziland and Lesotho derived from 1:250 000 LAN DSAT TM satellite imagery. Data collected over the period 1994-1996. 2. Secondary drainage region land cover. PDF files of South African landcover from the CSIR ARC national 1:250 000 land cover data set segmented by secondary drainage region. Resource Quality Services 3. National land cover grid with roads (NLC_grid) from South African National Biodiversity Institute. Created for the National Biodiversity Assessment (part of the National Biodiversity Strategy and Action Plan) to identify transformed areas for terrestrial biodiversity in South Africa. http://www.sanbi.org 4. South African Estuaries: Catchment land cover http://www.environment.gov.za/soer/estuary/approach.html
Soils and land type data	1. Soil data for South Africa from the WR90 project http://www.dwaf.gov.za/bi/ 2. Soil and land type data for South Africa. http://www.agis.agric.za/agisweb/agis.html
Vegetation	Various sources: maps, Landsat images, and Acocks Veld Types (1975) (1:250 000 - 1:1000 000) compiled by SANBI. Low and Rebello (1996) Vegetation of South Africa, Lesotho and Swaziland (DEAT).
River health	Geomorphology, river signatures; http://www.deat.gov.za/
Groundwater	The National Groundwater Database (NGDB) presently populated with in excess of 225 000 borehole records across the country. The spatial distribution of borehole records and some metadata on this database are also available. Basic data from Eastern Cape is available for download. A map has been prepared from borehole records, the bulk of which were obtained from State drilled boreholes. The map does not depict all existing boreholes nor does it reflect the groundwater potential of any area. http://www.dwaf.gov.za/
Prime agricultural land	Percentage of prime agricultural land other than irrigated per magisterial district. (1: 250 000). Based on land type map. Institute of Soil Climate and water
Socio-economic	
Municipal demographic and services data	SA Explorer: easy-to-use tool that brings municipal, demographic and services data together as spatial overlays. Contains information on wards, municipalities, demographics, employment, income, water sources, services (water and sanitation, electricity). www.demarcation.org.za
Demographics, socio-economic data	Central Statistical Services
Demographics, socio-economic and health	See SA Health Systems Trust http://www.hst.org.za/sahr
Land tenure	Latest title deed information (list of title deeds) can be obtained from either the Deeds Office or DWAF's Directorate of Spatial and Land Information Management.

Appendix 5

Proposed water resources Management Classes

(NWRS 2004; DWAF (in prep))

Class I Natural

- Human activity has caused no or minimal changes to the historical natural structure and functioning of biological communities (animals and plants), hydrological characteristics or the bed, banks and channel of the resource (ecological category A);
- chemical concentrations are not significantly different from background concentration levels or ranges for naturally occurring substances;
- safe for contact recreation and most water uses, including sensitive uses;
- can be used for basic human needs with minimum treatment; and
- the resource should be:
  - » situated in a national or international heritage site or wilderness area;
  - » of compelling biodiversity importance;
  - » a protected site under the Ramsar Wetlands Convention;
  - » situated in an area that has economic importance for tourism or the harvesting of medicinal plants;
  - » have social and/or cultural significance; and
  - » an area designated as Natural under other legislation.
- Other classes will be defined in terms of the degree of deviation from the Natural Class.

Class II Moderately used/impacted

- Resources that are slightly to moderately altered from their natural condition due to the impacts of human activity and water use;
- retain a high degree of ecological function and integrity (ecological category B to high C);
- safe for some recreation and non-sensitive water uses; and
- can be used for basic human needs with conventional treatment.

Class III Heavily used/impacted

- Resources that are significantly changed from the Natural class reference conditions due to the impacts of human activity and water use but are nevertheless ecologically sustainable;
- where there are pressing social and economic reasons to permit uses that will cause limited, short-term and reversible degradation of the resource, cases will be considered on their merits within the framework of long-term sustainability;
- retain at least some ecological function, but probably highly modified from Natural (ecological category D);
- safe for some non-contact recreation and some non-sensitive water uses; and
- may require advanced treatment to meet basic human needs requirements.

Class IV Unacceptably degraded resources

- Unacceptably degraded resources as a result of over-exploitation; and
- MC set at one class up with the aim to rehabilitate this resource to at least one higher class.

Appendix 6

Water resources augmentation options

The approach to meeting increasing water demands by only considering the development of new infrastructure such as dams, has come under severe criticism, particularly given the associated environmental, social and economic costs (see World Commission on Dams 2001). This reflects the realization that (a) current water use can be improved through using the water we have more wisely and efficiently and, (b) a suite of alternative options for augmenting water availability exist and need to be considered. There are a number of possible solutions to balance or reconcile water requirements with water availability in each surface and groundwater area. The main tools for doing so are outlined in Box 1 (see also GL 6.5 and 6.6). An analysis of the ISPs has placed particular emphasis on the development and management of groundwater resources, and recognition of the value of rainwater collection and desalinisation has grown.

Augmentation refers to a collection of strategic plans that aim to enhance the availability of resources through means that do not place the resource under further stress. The SDC strategy should provide a general orientation to the augmentation approaches to be adopted within the WMA.

Identified Options — Box 1

Options identified by the NWRS and ISP review to achieve a balance between water availability and demand

The main options that are available to achieve a balance between the water available and requirements are listed below (see also Appendix 7).

a) water demand management, which in most cases should receive priority;
b) improved resource management and conservation (surface and groundwater);
c) the considered use of groundwater;
d) the re-use of water;
e) the management of invasive alien vegetation;
f) the re-allocation of water (through compulsory licensing and water trading);
g) rainwater collection;
h) the development of surface water resources and the inter-catchment transfer of water; and
i) desalinisation.

a. Development, management and wise use of groundwater

Until recently, South Africa's focus for meeting water demand was almost exclusively on surface water. However, in many areas surface water availability and sustainability is severely stressed and it is now recognised that the role of groundwater must be considered. In many areas groundwater is one of the only realistic and significant sources of additional water which can ameliorate stress on existing resources. The lack of attention to groundwater has also resulted in its mismanagement and abuse, primarily because neither use nor the state of the aquifer are rarely, if ever, monitored (see DWAF, internal report).

The strategic importance of groundwater places an imperative on the CMA to outline measures for groundwater development as a realistic source of supply within a WMA. However, this requires that particular attention must be given to outlining protocols for its management, use and monitoring. A common strategic approach towards the utilisation of groundwater is now being developed by the Department. In the absence of a national framework, this should be developed at the scale of the WMA and revised once the national framework is available.

b. Re-use of water

A clear strategy for re-use of water is promoted in stressed catchments. The CMA may wish to outline processes and procedures for the use of waste water and grey water as well as a plan to purify and re-use water.

c. Re-allocation of water between sectors

The re-allocation of water between user sectors is an obvious and powerful option for realising the greatest overall benefit for the country from a social, economic and environmental perspective. However, to avoid unnecessary disruption, the NWA provides for the gradual re-allocation of water as the need arises. The main enabling mechanisms are compulsory licensing, supported by water demand management and the trading of water use authorisations (see glossary).

d. Rainwater collection

The requirements for water need not necessarily be met via piped supplies or using water abstracted from rivers. Rainwater harvesting from roofs or other hardened surfaces, using tanks, small check dams or catchpits can supplement more conventional sources of supply (NWRS 2004). Although this did not receive significant attention during the development of the NWRS, an increased interest and commitment to this as a strategy to secure supplementary water supply is witnessed through several ongoing research and pilot projects. Moreover the Department of Agriculture is considering a subsidy to assist the indigent in the construction of rainwater harvesting structures. Again, the issue of inter-departmental co-operation, and co-operation with other institutions and structures becomes important here.

Soil moisture can be retained on cultivated land and infiltration can be increased by contouring or constructing other micro water retaining structures, which have limited effects on water resources or downstream users.

e. Development of surface water resources and the inter-catchment transfers

Potential for further development of surface water resources still exists in some parts of the country. Possible resource developments are listed in the NWRS[1] (Chp. 3, Part 8), and are further elaborated in the ISPs.

The departmental perspective is that due to the spatial imbalances in the availability of and requirements for water in the country, inter-catchment transfer of water is a necessary reality in South Africa.

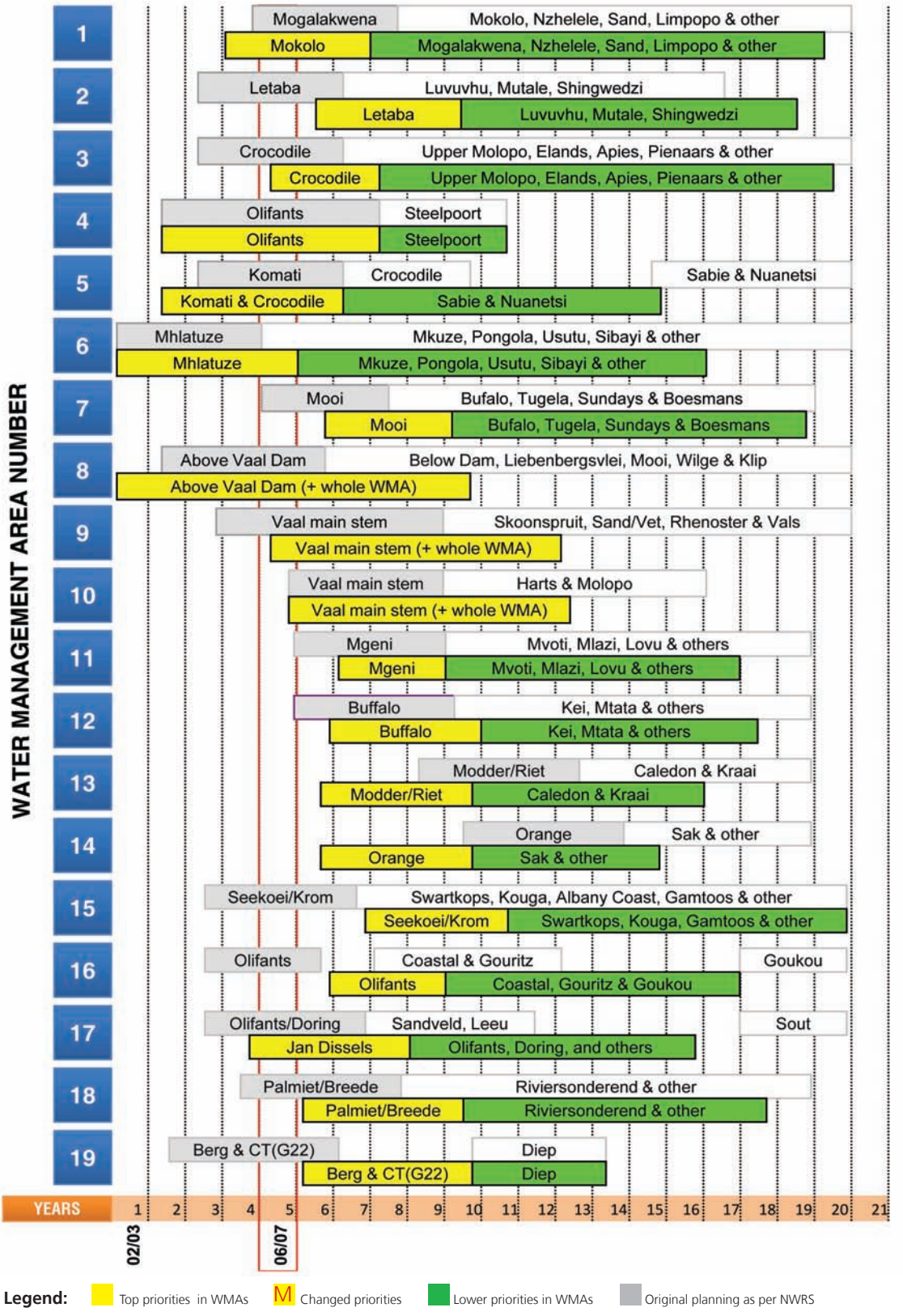
1 As noted in the NWRS (p. 45): "A factor that reduces the feasibility of new capital-intensive water resource infrastructure developments is the current projection of smaller growth rates than previously used in water requirements in many parts of the country. This would result in longer pay-back periods for the redemption of capital and lead to a reduction in the economic viability of investments. It may reduce the options for new resource development in favour of inducing changes in water use patterns and re-allocation among users". Note that the information given in the NWRS is intended to identify areas where there are imbalances in availability and requirements, and to serve as background for the formulation of more detailed, nationally-consistent strategies to reconcile the two in each WMA. The data is not sufficiently accurate to consider the water balance in smaller geographic areas.

Appendix 7

Revised Programme for Compulsory Licencing

This programme has been amended from that presented in the NWRS (2004)

PROGRAMME FOR COMPULSORY LICENSING (NOV 06)



Appendix 8

Waste Discharge Charge System (WDCS)

An extract from the WDCS implementation strategy (DWAF 2006 c)

The WDCS provides an economic instrument to support the management of water quality, where problems have been identified through the processes of classifying the water resource (the Classification process) and developing a Catchment Management Strategy (CMS). The WDCS represents an economically efficient tool for waste minimisation and water conservation: the benefits of the WDCS to society-at-large must exceed the total costs, incorporating the sum of costs to individual dischargers and to society.

The WDCS is premised on resource quality objectives (RQOs) as the measure of acceptable risk, and seeks to achieve RQOs at lowest total cost to the catchment. Where RQOs are exceeded or are threatened, impact on the resource is unacceptable and the WDCS may be deployed to achieve RQOs. Where RQOs are achieved, the level of impact experienced by society is assumed to be acceptable and the WDCS is not implemented. Accordingly, the class and the RQOs should be set at optimal levels, to balance the need to protect and sustain water resources with the need to develop and use them. Resource Quality Objectives (RQOs) are established in terms of Section 13 of the NWA to achieve the specified class of water resource. In the absence of a classification system, a preliminary class or RQO may be determined in terms of Section 14 of the NWA.

The WDCS will be applied at a catchment scale. The catchment area will be defined as those areas that have a significant impact on water quality, or are impacted by the specific water quality problem. This may, therefore, be an entire catchment in which a widespread water quality problem exists or may be a sub-catchment within a larger basin, which is bounded by large reservoirs and/or reaches in which RQO are being met.

The following variables, representing the dominant water quality problems in South Africa, are included in the current version of the WDCS: nutrients[1] , salinity[2] , pH, heavy metals[3] and organic material[4] . Further variables may be added, where this is found to be necessary. Selection of a particular indicator variable will consider the type of waste discharge sources in the catchment, the nature of the waste typically discharged, the variable/s responsible for the dominant impacts, and the cost-effectiveness of monitoring different variables.

The following considerations apply to implementation of the WDCS.

- The WDCS applies to registered water use only, as defined in Section 21 of the National Water Act (NWA).
- The WDCS is applied to both surface water and groundwater resources, where RQOs have been defined for the receiving resource.
- The charge rate will not vary against concentration. The charge to a waste discharger will be based on a linear relationship against load, using a constant charge rate for a specific variable.
- The load or concentration associated with the intake of water supplied to the discharger may be subtracted from the load liable for a discharge charge, differentiating between processes that concentrate or dilute effluent.
- Minimum load thresholds for charging may be identified on the basis of cost considerations.
- Where downstream RQOs are more stringent than upstream RQOs and downstream RQOs are exceeded or threatened, the WDCS may be applied in the upstream catchment even if the upstream RQOs are met.

Non point sources (NPS) that are registered under Section 21 of the NWA are also included in the WDCS. The approach to estimating load is based on management practices and systems. For each sector and source type, three levels of management practice may be identified, namely those that do not comply with minimum standards, those that achieve minimum standards and those that can demonstrate that they have zero impact and should therefore pay no charge. In determining the load contribution to the resource from NPS, poor practice is deemed to contribute the highest proportional load to the resource. Load contribution to the resource is calculated as a defined proportion of waste load applied to the land or facilities generating the NPS, with the proportion depending on the management practice category.

The WDCS consists of two distinct water use charges, either or both of which may be applied in a specific catchment:

1. Charges that provide a disincentive or deterrent to the discharge of waste, based on the use of the resource as a means of disposing waste (Incentive Charge)
2. Charges to cover the quantifiable costs of administratively implemented measures for the mitigation of waste discharge related impacts (Mitigation Charge).

1 phosphate, nitrate and ammonium.
2 total dissolved solids, electrical conductivity, chloride, sodium and sulphate.
3 arsenic, cadmium, chromium, copper, mercury, lead, nickel and zinc.
4 COD.

The Incentive Charge and Mitigation Charge are used in an integrated fashion - the Incentive Charge is applied in every catchment where the WDCS is implemented, while the Mitigation Charge is only deployed where a mitigation measure in the resource offers an economically efficient measure to reducing the pollution load within the resource. In some circumstances, the Mitigation Charge alone is sufficient to achieve the RQOs. Under these circumstances, the Incentive Charge will necessarily be set at zero.

Incentive Charge

The incentive charge is the basis of the WDCS and is applied to influence those dischargers that can reduce their load most cost effectively, thereby improving water quality towards achieving the RQOs. It is not based on the recovery of costs, but rather represents an economic charge to promote the reduction of waste discharge in order to meet specified RQOs. The Incentive Charge, therefore, seeks to change discharge behaviour.

Mitigation Charge

The mitigation charge is a user charge established in terms of the pricing strategy to recover the costs of mitigating the impacts of waste discharge on the resources. It is intended for application where a mitigation measure provides an economically efficient option to support the achievement of RQO in a catchment, in comparison to the costs of waste discharge reduction at source. As such it provides an administrative mechanism for collaboration between dischargers and therefore may have significant institutional requirements. It must be planned, developed and implemented in terms of the catchment management strategy, and the specific water quality management plan developed to address a water quality problem in a catchment.

Four categories of the mitigation charge can be identified:

1. *Mitigation through removal of load from the resource*
   This category includes regional mitigation scheme or infrastructure developed to remove load from the resource or mitigate the impact on the resource, as well as regional mitigation projects which also remove load / mitigate impact but without the development of significant infrastructure (i.e. limited capital costs).

2. *Water resource system operation for water quality management*
   This approach enables the recovery of costs associated with the management of river-reservoir systems designed to reduce the impact of water quality problems. This may include dilution, blending or purging of poor quality water to achieve specific targets / objectives, which may result in a reduction of the yield of the system or use of a more expensive source for consumptive use.

3. *Mitigation to downstream users through downstream treatment costs*
   This approach allows for the recovery of costs incurred in developing and operating additional treatment requirements for downstream users (for water quality that does not meet specified resource quality objectives), such as processes required for the treatment of water abstracted from a eutrophic water resource.

4. *Treatment at source*
   This last approach enables collective treatment of a single source, or a limited number of sources. Instead of requiring all dischargers to further reduce their discharge, this approach would propose the most cost-effective treatment options on a limited number of dischargers to meet the objectives. The cost for these options would be borne by all dischargers, as they would all be benefiting. This option is analogous to an administrative waste load trading approach.