DRAFT

for comment

Guidelines for Catchment Management Strategies

Department of Water Affairs and Forestry
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NOTE TO READER:

Please note that this document is for comment purposes ONLY. A final document is in preparation. Issues demanding attention have been highlighted in the text. The authors appreciate any comments and feedback. Please make sure your comments reach Dr Sharon Pollard (Sharon@award.org.za) before 10 December 2006

Still to be finalised are:

- Official document page
- Acknowledgements
- Glossary
- Table of contents

Acronyms

AC	Advisory Committee
BHNR	Basic Human Needs Reserve
CD	Chief Director
CDF	Community Development Forum
CLRA	Communal Land Rights Act
CMA	Catchment Management Agency
CMC	Catchment Management Committee
CMF	Catchment Management Forum
CMS	Catchment Management Strategy
CSC	Catchment Steering Committee
CSO	Civil Society Organisation
DEAT	Department of Environmental Affairs and Tourism
DoA	Department of Agriculture
DPLG	Department of Provincial and Local Government
DWAF	Department of Water Affairs and Forestry.
EIA	Environmental Impact Assessment
ER	Ecological Reserve
FBW	Free Basic Water
GIS	Geographic Information System
D:HS	Directorate: Hydrological Services
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IWRM	Integrated Water Resources Management
WMA	Water Management Areas
MSA	Municipal Systems Act
MTT	Monitoring Task Team
NEMA	National Environmental Management Act
NGO	Non-Governmental Organisation
NWA	National Water Act (Act 36 of 1998)
NWP	New Water Policy
NWRIMS	National Water Resources Information Management Service
NWRS	National Water Resources Strategy
P&R	Branch: Policy and Regulation
PES	Payment for Ecological Services
RDM	Resource Directed Measures
RHP	River Health Programme
RO	Regional Office
RQO	Resource Quality Objectives
SC	Directorate: Strategic Coordination (P&R)
SEA	Strategic Environmental Assessment
SFWS	Strategic Framework for Water Services
VWC	Village Water Committee
WIM	Branch: Water Infrastructure Management
WMA	Water Management Area
WMI	Water Management Institution
WRC	Water Research Commission
WRIM	Chief Directorate: Water Resources Information Management
WRM	Water Resources Management
WRP	Water Resources Protection
WSA	Water Services Act
WSAU	Water Services Authority
WSDP	Water Services Development Plan
WSP	Water Service Providers
WT	Water Tribunals
WUA	Water User Association

Chapter 1
Introduction
&
orientation

Guidelines for the development of Catchment Management Strategies in South Africa

1.1 What this chapter sets out to describe

The chapter provides an orientation to the guideline and a route map for finding a way around the document.

1.2 Why these guidelines?

DWAF has over the past decade developed a suite of guideline documents aimed at facilitating Integrated Water Resources Management (IWRM) in South Africa. These guidelines are part of this process. However, they differ somewhat from many of the existing guides 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 Water Management Area (WMA);
- to provide a framework for developing a CMS;
- to create an understanding of the Catchment Management Strategy (the content and the level of detail);
- to support an understanding of the processes for developing the CMS (sequence, potential timeframes and potential resource requirements); and
- to provide an overview of the approval process (the criteria, process and timeframes).

1.3 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 transformatory 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 in bringing about equity in terms of water allocation, thereby ensuring that the available water is used to reduce the current gap in equity. Potentially, a number of strategic approaches can achieve this without having to resort to compulsory licensing. The authority to do this needs to be given by the strategy (CMS). This discussion illustrates that in practice, strategic approaches are aimed at creating the shifts necessary to bring about the intentions of the NWA. The definition of a strategy, as used in this guideline, is given in Box 1.1.

Box 1.1
What is a strategy?

Strategies are higher 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 ***strategy*** is a means of translating policy into action. The practical application of the concept of strategy for water resources management varies widely. This guide defines a ***water resources management strategy*** as a set of medium- to long-term action programmes to support the achievement of development goals and to implement

water-related policies. This definition of strategy does not necessarily include project identification, ranking or financing; in this sense it is the interface between policies and projects. Although the strategies developed at national (NWRS), regional (CMS) and sectoral (WMP, and WSDP) levels might differ in detail, they should be coherent. There should be common thread from the local level strategy to the national strategy.

1.4 What is a Catchment Management Strategy?

In accordance with Chapter 2, Part 2 of the NWA, the Catchment Management Agencies, or CMAs, are responsible for the protection, conservation, development and management the water resources at the water management area (WMA) level. One of the first delegated functions of water resource management to the CMA will be the development of a **CMS,** described in Box 1.2

Box 1.2
Catchment Management Strategies in the South African context

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

What must the CMA do with respect to the CMS?

- 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.

The CMS must:

- Be in harmony 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 A framework for IWRM in South Africa

Remember that, in accordance with the **NWA (1998) Chapter 2, Part 2 (S9),** a catchment management strategy must achieve certain things (see Box 1.2). In view of these legislative requirements, the overall sequence for the development of a strategy was conceptualised in three parts (Figure 1.1). 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.

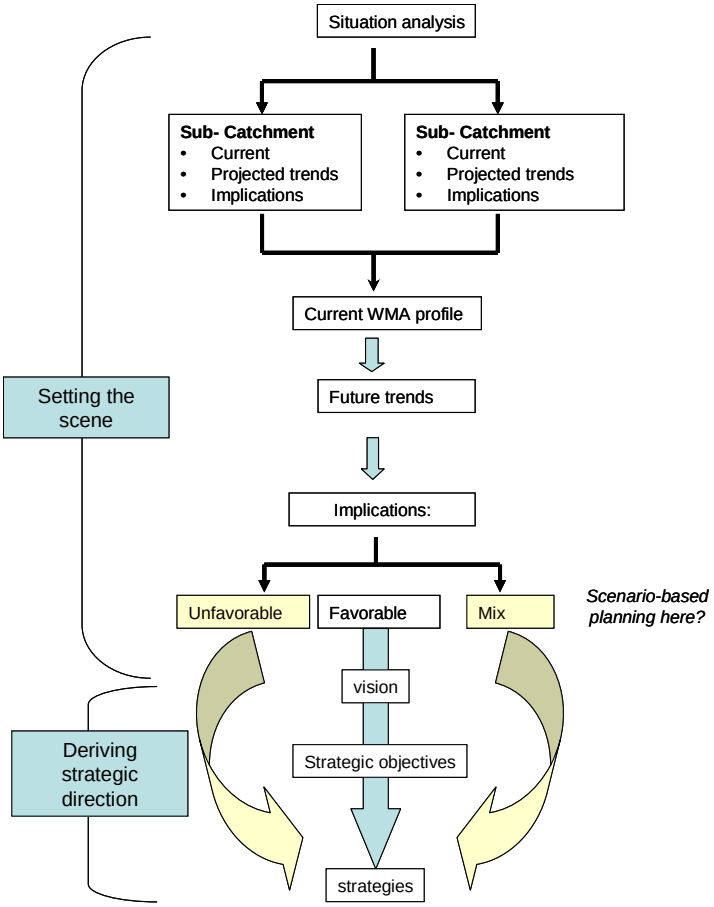


Figure 1.1 An overview of the development of the CMS. In order to develop appropriate context-specific strategies, the wider context in the WMA must be understood and assessed. It is in developing a common understanding of the state of the WMA and where it is going that a future vision can be developed. This vision – effectively a higher order strategic statement – provides the basis for subsequent strategies.

1.6 A roadmap for this guideline

This guideline presents the CMA with background for developing a first generation CMS (Chapter 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. Reference to these documents are made in Chapter 6. An overview of structure for the guideline is presented in figure 1.2

Lastly, this guideline does not pretend to be a complete and comprehensive guide. Its contents will hopefully be informed and refined as CMAs experiment with different options and mechanisms for implementing IWRM.

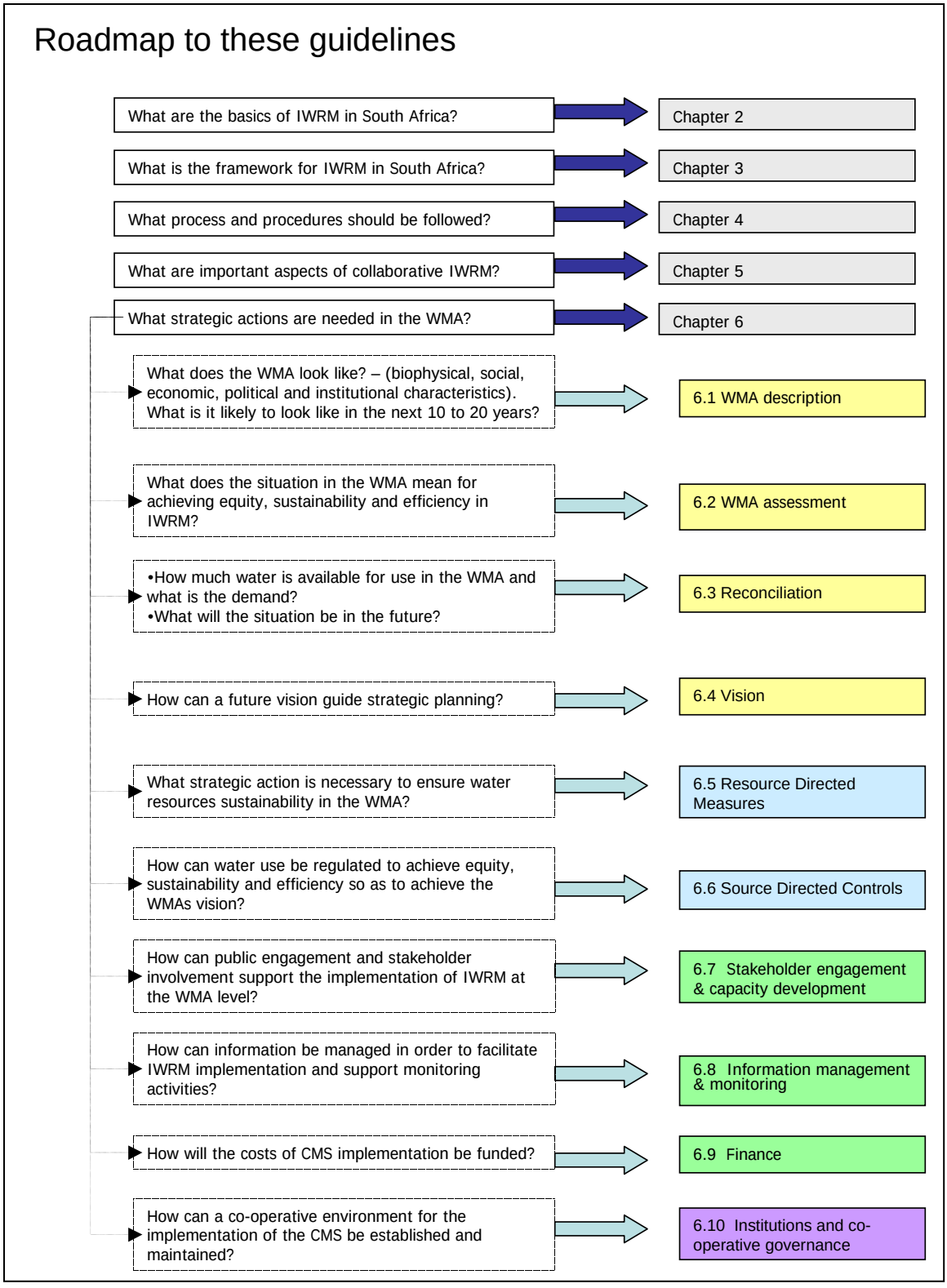


Figure 1.2 Road map to the guideline. The scheme shows how the guideline is structured. Colour-coding is maintained throughout for easy reference.

Chapter 2

Catchment Management Strategies Principles and practice

2.1 What this chapter sets out to describe

This chapter provides an overview of strategic planning for IWRM in South Africa. Essentially, two levels of strategic planning exist: the National Water Resources Strategy (NWRS) and the Catchment Management Strategies.

Part 1 of the National Water Act (No 36 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. 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** and is thus a key consultative document for the Catchment Management Agencies or 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 Perspective**. In anticipation of the delegation of responsibilities to the CMAs, the Department recognised that it was important to capture and synthesise their own strategic direction for each WMA as a basis for planning for the incumbent CMAs. The ISPs thus provide an internal strategic perspective for IWRM for each of the 19 WMA areas. This exercise, undertaken in between 2003-2004, provided an up-to-date account of water resources and related issues from a departmental perspective. The key difference between the ISP and the CMS is that the CMS must be undertaken in consultation with stakeholders.

2.2 Underlying principles of Integrated Water Resources Management in South Africa

Principles and guiding concepts 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”. This summarises the intention of redress underscored by three key principles: equity, sustainability and efficiency. These key principles, and supporting principles, (detailed in Box 2.2 and 2.3), 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).

Box 2.2
Founding principles for the CMS

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 the 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 that share our rivers. Thus 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 not benefited from water resources management, such as women and the poor.

- **Efficiency / optimal beneficial use**: South Africa is a water-scarce country. Our average annual rainfall is a little more than half of the world average, and much of our country is semi-arid, and vulnerable to floods and droughts. Despite this, water use efficiency was given short shrift 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 variety of sectors so that a diverse, robust and stable economy can be supported.

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 some 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".

Box 2.3
Guiding principles for CMS development

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

The CMS is developed at a different scale, and level of detail, to the NWRS developed by DWAF and the sectoral development plans such as the water service development plans (WSDP). As a guiding principle the CMS should seek alignment with the NWRS and seek to achieve coherence between the various local- level sectoral development and management plans that are dependent on the available water resources.

Guiding Principle 2: Collaboration with key institutions

The success of the CMS depends upon collaboration with its stakeholders and beneficiaries. The vision and objectives set for the CMS should be inclusive and reflect the principles of integrated water resource management.

Guiding Principle 3: Stakeholder engagement and capacity building

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

- it ensures that alternatives serving a broad range of interests are considered;
- stakeholders can assist in gathering data and information, and can identify gaps;
- participation provides transparency and accountability regarding both the strategies proposed and the implementation of these action plans;
- participation familiarizes stakeholders with the difficult choices that have to be made and the trade-offs necessary to ensure sustainable water resource management of the WMA;
- participation can improve the implementation of the CMS and achievement of its objectives.

Guiding Principle 4: Integrated Resource Planning

There is increasing recognition for the need to take into account the natural, social, economic and political environments within which water resources management occurs. There are a number of dimensions to this need for integration: (1) water is a complex ecological system of surface water, groundwater, quality and quantity all linked in a continuous cycle. Each component may influence the other and thus a focus on interlinkages is critical. (2) Water systems interact with other systems such as land-based activities and air pollution. By its very nature, water flows in one direction creating upstream-downstream linkages. (3) Water management must be cognisant of its social and economic importance. (4) The international dimensions of shared water resources also provide an imperative for integration.

Guiding Principle 5: **Transparency**:

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

2.3 What must a CMS address?

Chapter 2 (Section 9) of the NWA provides an outline of what the contents of the CMS should contain, as given in Box 2.4.

Box 2.4
Requirements for issues to be addressed as set out by the NWA (1998) Chapter 2, Part 2 (S9).

A catchment management strategy 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 national water resource strategy;
c. set out the strategies, objectives, plans, guidelines and procedures of the catchment management agency for the **protection, use, development, conservation, management and control** of water resources within its water management area;
d. **take into account** the geology, demography, land use, climate, vegetation and waterworks within its water management area;
e. contain **water allocation plans** which are subject to section 23, and which must set out principles for allocating water, taking into account the factors mentioned in section 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.
j. not be in conflict with the national water resource strategy.

2.4 Who is responsible for the IWRM and the CMS?

A key aspect of IWRM transformation in South Africa is the progressive decentralisation of the responsibility and authority for water resources management to Catchment Management Agencies and, at a local level, to Catchment Management Committees and Water User Associations. Also, Catchment Management Forums in support of IWRM at a sub-catchment level.

Overall water use allocation responsibilities

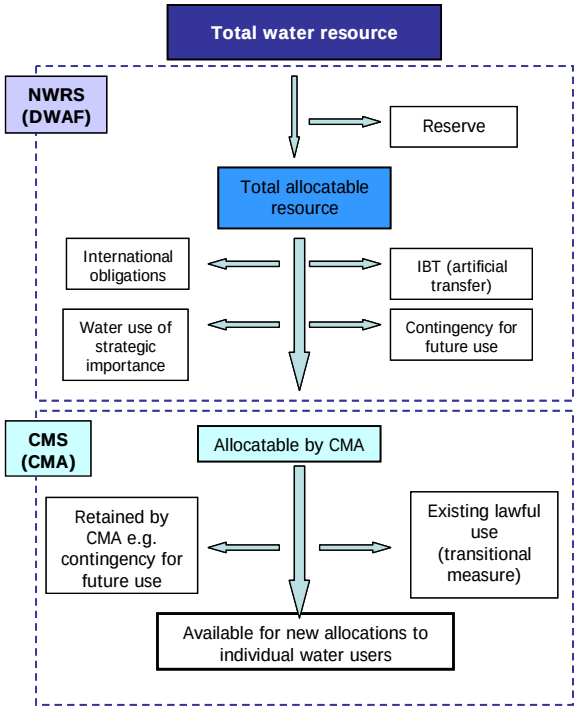


Figure 2.1 Overall water use allocation responsibilities. The figure summarises the strategies from which responsibilities derive and the institution responsible for exercising the responsibility (after DWAF 1999)

The drafting, approval, implementation and monitoring of the CMS is the joint responsibility of the Minister, DWAF national, and the CMA together with the regional office. The Department's role will, however, 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 mainly be 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 and activities in water matters, although some aspects of this may eventually also be handled 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 issues identified in the catchment management strategy, and the responsible authority functions relating 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.

Certain components of the CMS will remain national responsibilities although they will involve liaison with the CMA (see Table 2.1). 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 monitoring and compliance rests with the CMA.

Table 2.1 A summary of IWRM 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 their 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 **CMAs responsibility** to ensure that these determinations and authorisations can be met, are implemented and monitored. Four of the minister's responsibilities may not be delegated (see NWA section 63(2)). 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 stakeholders 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 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 CMAs 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 (section 27).
Clearing of alien vegetation (Section 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. Water use charges – still be checked.
Public consultation and participation (Section 4.3 NWRS)	The CMAs must promote participation by water users and other stakeholders 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 3.6 NWRS)	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 information is available at a national level. 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 3.4.2.3) **Note: The National Pricing Strategy still requires approval from Minister of Finance (Oct 06)**	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 catchment management strategies. • 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 (Section 3.7 NWRS)	The Department, in common with all other organs of State with disaster management responsibilities, will be required to prepare a disaster management plan within the National Disaster Management Framework. The Department will also need to ensure that disaster management planning is included in 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 Water Services Development Plans 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.
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.

2.5 Strategic adaptive management (SAM) and objectives hierarchy

Once managers had realized the implications of managing complex systems, which indeed catchments are, they also realized 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. 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 checking (Figure 2.2) – more formally termed monitoring 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 dividing the vision out into strategic objectives, under which are nested finer and finer details (Figure 2. 3). 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).

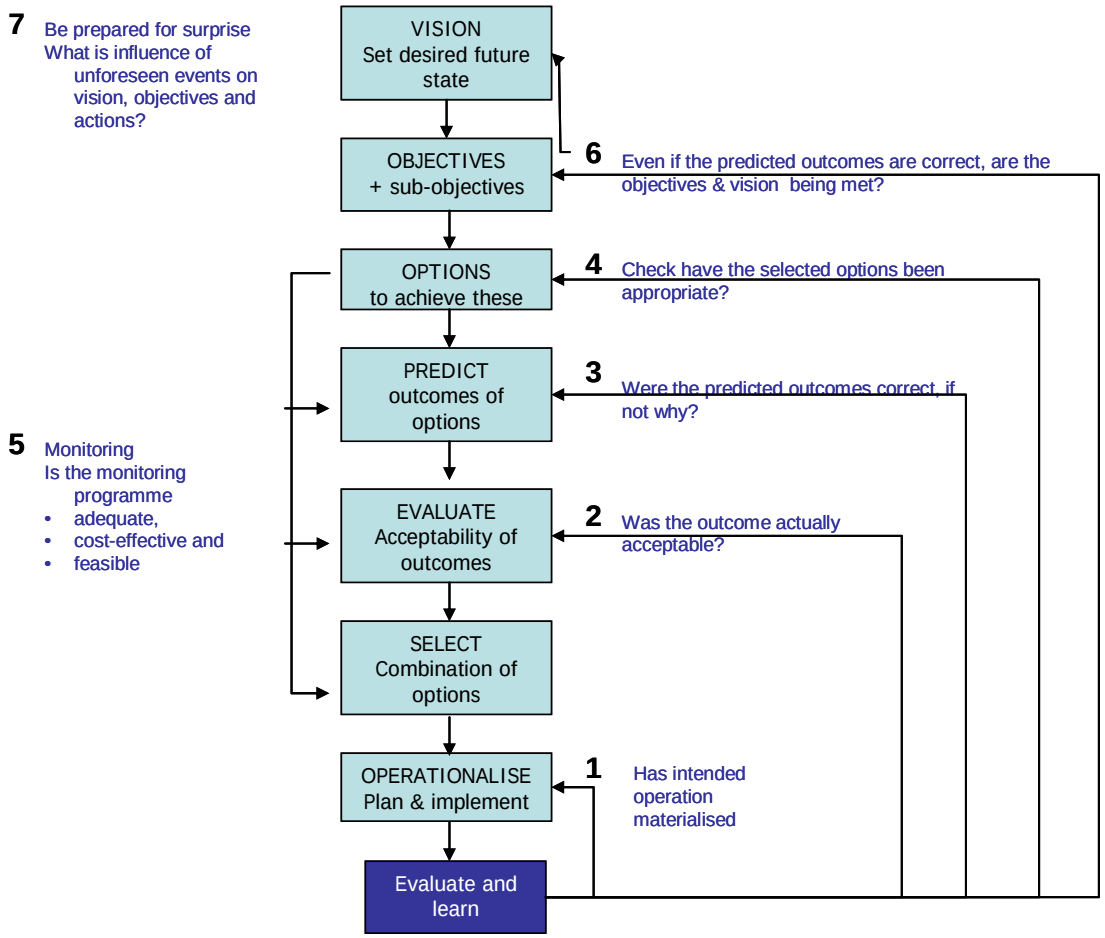


Figure 2.2 Strategic adaptive management relies heavily on checking and cross-checking progress as summarised in this figure (From Pollard & du Toit 2006; Biggs & Rogers, 1999)

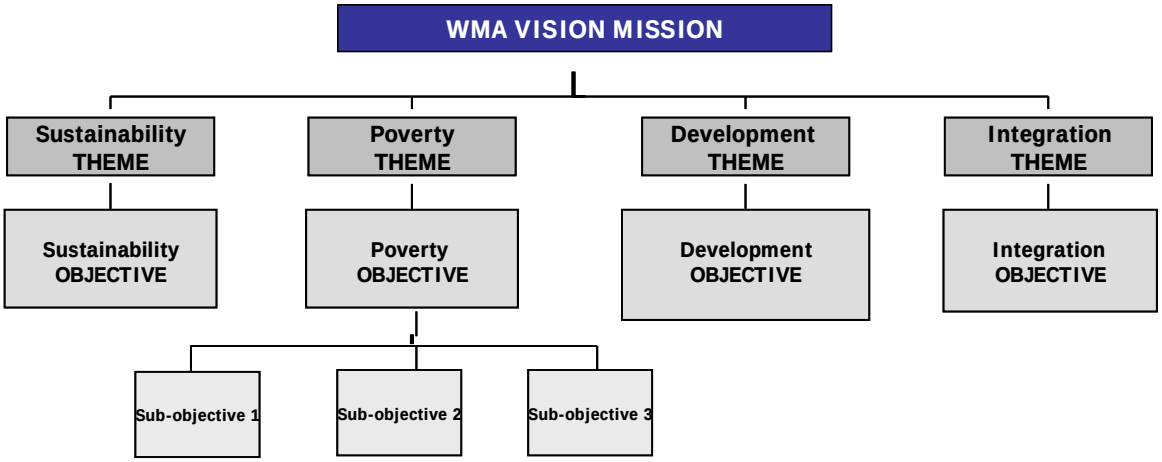


Figure 2.3 An example of an objectives hierarchy

Chapter 3

The overall framework guiding the development of a Catchment Management Strategy

3.1 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 water transfers for meeting the requirements of the Reserve. 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 below) 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 1st generation CMS.
- 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

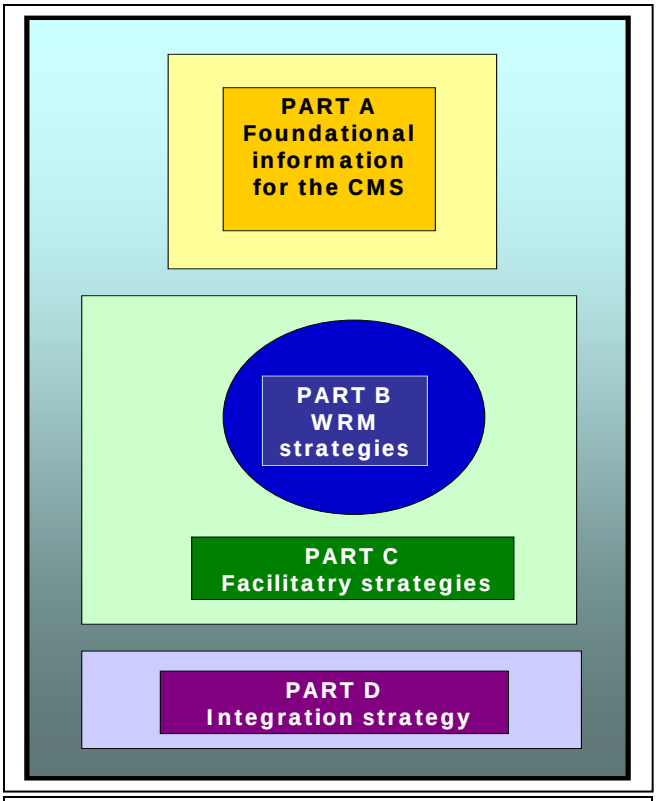


Figure 3.1 Clusters of strategies for the CMS fall into four parts A, B, C & D

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 2.5). In view of these legislative requirements, an overall framework for a CMS is provided in Figure 3.1. & 3.2. Integrated Water Resources Management (IWRM) in South Africa is conceptualised as four clusters, Parts A-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 operating 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**.

Part A: Important foundational information.

Part A does not involve strategy development but 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 NWRS and ISPs.

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 an holistic assessment of the status quo and potential trends against the background of water availability and demand and vision for the WMA. Part A thus provides an (a) overview and (b) assessment of the current and future situation, as well as a (c) vision for the future. This includes a water balance for these scenarios.

(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. This section should also assess a numbers of realistic, potential future scenarios which allow for an analysis of 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"?

(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 scenario and potential future directions (with and without management interventions), a stakeholder **vision** is defined.

(d) **Reconciliation**. As stated above this means looking at water availability and demand under current and anticipated scenarios, as well as for scenario described by the vision.

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 is directed at protecting the water resources base whilst SDC are controls for water use. The SDC cannot be undertaken without RDM and vice versa.

Part C: Facilitatory sub-strategies

The facilitatory strategies are not directly linked to IWRM. Rather they are the "oil" that keeps the engine of IWRM going. In other word 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 various aspects of water-related activities, either directly or indirectly (see Box 2.4; Principle 4). 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 strategy is effectively the "glue" that hold together IWRM.

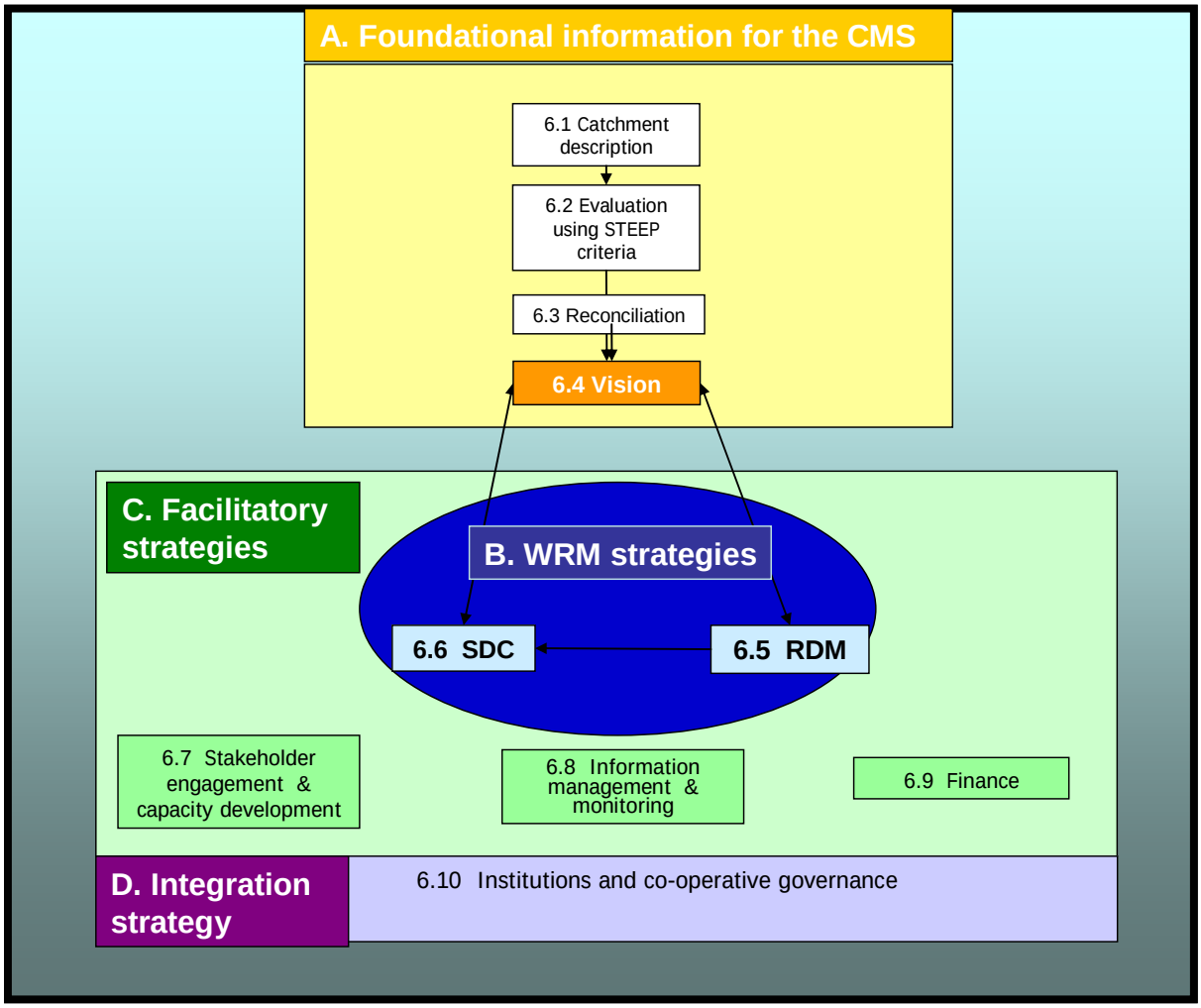


Figure 3.2 The framework for IWRM and hence the CMS in South Africa. This framework comprises clusters of sub-strategies as well as background information for the WMA (A). This framework is adapted from DWAF 1999). It is important to note that this model does not suggest that the steps of IWRM are sequential. Rather much of the process is iterative.

Guidelines for the specific sub-strategies are detailed in Chapter 6. Certain constraints exist with respect to developing complete guidelines including projects that were still underway at the time

of writing. These include the classification system, the water 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. 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 each of the sub-strategies that comprise the CMS

PART A
Objectives of the situation assessment and evaluation, the vision and reconciliation (not strategies but foundation information)

Situation assessment and evaluation

The objective of the situation assessment is to provide a description and evaluation of the key characteristics of the WMA (biophysical, social, economic, political and institutional), as related to water, and the potential future trends, in order to provide a sound basis for the development of appropriate and effective strategic direction. The situation assessment would therefore also identify gaps in knowledge and information.

The intended **outcome** is (a) a synopsis of the best available information regarding the biophysical, social, economic, political and institutional characteristics for the WMA; (b) major anticipated projected trends, and (c) an evaluation of these according to appropriately derived criteria. This information will be used to inform the vision and subsequent strategies.

Visioning

The **objective** of the vision is to present a collective, medium-to-long term vision for the desired future state 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 desired state that provides a medium-to-long direction for the WMA that has been arrived at through stakeholder participation and that is used as a basis for deriving sub-strategies.

Reconciliation

The **objective** of reconciliation is to provide a comprehensive water balance [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 classification. Priority strategic actions must be outlined.

The intended **outcome** is a geographically-based reconciliation of availability versus demand for

current situation and for the state articulated in the vision. It should outline key measures needed to achieve this.

PARTS B, C & D
Objectives of Sub-strategies

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

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

Resource Directed Measures: Water Resources protection strategies

The **objective** of the RDM sub-strategies is to ensure catchment water security and sustainability 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 strategy must give effect to the class, Reserve and Resource Quality Objectives of the water resources.

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

(a) classification,
(b) the Ecological Reserve,
(c) setting RQO for freshwater resources, as well as
(d) establishing strategic partnerships that are intended to protect natural resources (NB note land-water linkages).

Source Directed Controls : Sub-strategy for 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. Based on the principles of equity, sustainability and efficiency, the strategy must address allocation, re-allocation, authorization and licensing, 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, authorization, compliance and enforcement to realize the ideals of equity, sustainability and efficiency

Sub-strategy for public engagement and capacity development
(note collates details from other sub-strategies)

The objective of the strategy for **public** participation and stakeholder engagement is to engage role players and stakeholders in the various aspects of WRM (as addressed in the sub-strategies of the CMS) through co-operation, collaboration and agreement. This must be through ensuring (a) appropriate capacity development, (b) the provision of opportunities for collaborative action, and (c) communication and access to information.

Intended **outcome** is a 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

Sub-strategy for information management and monitoring for adaptive management
(note collates details from other sub-strategies)

The **objective** of the information management and monitoring strategy is to provide a strategic plan that

(i) is consistent with the national information management system,
(ii) guides collecting, accessing, analysing and sharing a wide range of information for the purposes of monitoring and evaluating IWRM and operational management and,
(iii) ensures findings are incorporated into a process of review, learning and design of follow-up activities.

The expected **outcome** is a strategy that provides a comprehensive plan to

(a) manage WRM 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.

Finance sub-strategy
(note collates finances from other sub-strategies)

The **objective** of the financial sub-strategy is to guide the costing of CMA implementation (i.e. undertaking IWRM) and to establish how and where funding to cover these costs will be sourced from.

The intended **outcome** is a strategy that sets out how implementation of the CMS will be funded.

Sub-strategy for institutional arrangements & co-operative governance

The **objective** of the Institutional Arrangements and Co-operative Governance (IACG) sub-strategy is to set out strategic actions for the establishment and maintenance of appropriate cooperative and collaborative relationships for IWRm based on an understanding of the institutional environment.

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

3.4 Adaptive management and the CMA as a 'learning organisation'

The nature of the CMA 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. The CMA members have a short space of time within which to become familiar with the processes of IWRM. Not only will the CMA need to be in touch with the local realities of its WMA, it will also need to ensure that its strategic plans are relevant and responsive to change. Learning is therefore an integral part of overseeing the implementation of the CMS.

These guidelines recommend that the CMA recognise learning as part of the 5-year implementation cycle and build learning opportunities into its practices. Some key sources of learning are:

a) Learning from each other: the aim of this is to see 'other' parties as sources of learning rather than as rivals or competitors. This means that the challenges facing the CMA in implementing the CMS are dealt with as collaborative learning opportunities. Stakeholder platforms are likely to be ideal sources of this learning.

b) Learning by doing: this learning takes place through action, which means that the party who engages in the activity also benefits by learning. The implications of this are that if the CMA outsources the implementation of most of its tasks it also stands to lose the opportunity for learning.

c) Learning by comparing: be comparing different approaches/strategies/ actions/responses the CMA is able to make evaluative judgements and select the best possible option for itself. This means that the CMA of one WMA will need to maintain contact with a variety of other CMAs in order to engage learning opportunities.

d) Learning by reflecting: reflecting is the ability to critically evaluate that which has happened. Reflection is unlikely to happen unless it is specifically planned for and managed. Learning from the reflection process and using it to guide future actions is termed reflexivity. Since the review of the CMS is based on learning from actions, it is suggested that there is a special focus on reflection and reflexivity.

The prospect of getting strategic planning "right" the first time is unlikely. Thus there should be a focus on a process that allows for refining and to 'progressively' develop a strategic planning framework over time. Although legally binding, the CMS should have elements of flexibility built into it so that it can respond to contextual events and change processes.

One of the tools that can assist in refining and improving strategic plans is strategic adaptive management (see Chapter 2).

What is learning?

Learning:

- takes time and is a continuous process;
- is best informed by actual practice;
- is informed by needs. Different interest groups have different needs; preparedness to learn is informed by these needs;
- is framed by the fact the all interest groups have prior knowledge and perceptions that influence learning;
- is more than just about grasping technical information. Skills development and an understanding of social and political processes are integral to meaningful learning;
- is aided by critical reflection that is consciously built into practices

Creating a broader context for learning

One of the assumptions underpinning the public nature of the CMS is that stakeholders will have a general understanding of the need for and processes associated with strategic planning. However one of the realities confronting CMAs is that of low levels of literacy, especially in rural areas. This has implications for the collaborative involvement of these stakeholders in the development and implementation of the CMS. A concerted effort to engage marginalised groups in strategic planning is likely to warrant attention to capacity development and learning programmes that extend beyond the confines of the CMA and its associates (see Chapter 5).

Chapter 4

Sequence and procedure for the drafting of a CMS

4.1 Introduction

The development of the CMS is a process that is initiated by the 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 contexts.

4.2 Adopting a phased approach, sequencing issues and milestones

4.2.1 A phased approach

The temptation 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 absence of particular skills and the availability of 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. This means that by definition the strategies will be 'generational' with the **first** generation 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. It is also at liberty to review and improve upon the CMS through the refinement of business plans associated with each sub-strategy.

4.2.2 Sequence

Sequence refers to the procedure and order in which events follow each other. Some activities require that others have been completed. Thus one of the key issues that a CMA will have to recognise is that 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. The stages described below provide some guidance with respect to sequencing associated with the development of the CMS.

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 how far we have progressed in a certain period. The CMA might want to consider placing certain milestones as a way monitoring how far they have come with a specific process during a 5 year cycle. Figure 4.1 provides a rough-guide in terms of milestones.

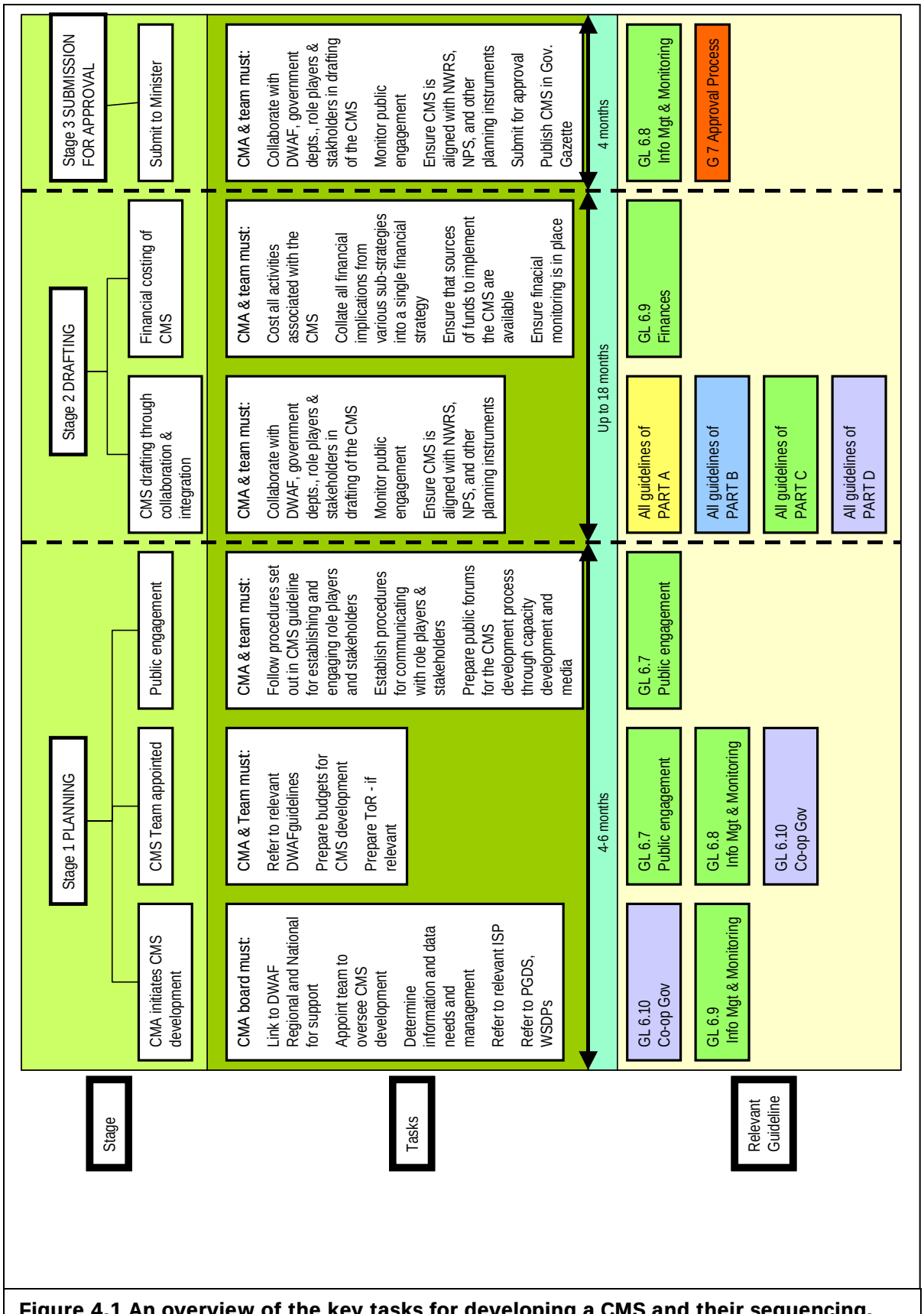


Figure 4.1 An overview of the key tasks for developing a CMS and their sequencing. Not shown in this diagram re the stages of implementation and review, which are beyond the scope of this guideline. They are however briefly outlined in the text.

4.3 The development of a CMS: 5 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 are explained below and summarised in figure 4.1.

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.
3. Stakeholder 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 stakeholder platforms so that collaboration and consultation can take place. One of the key challenges associated with this phase is ensuring that adequate stakeholder platforms exist throughout the WMA (see Chapter 6.4). In some cases, where 'wall-to-wall' WUAs exist, they will provide adequate platforms while in others the CMA will need to first establish platforms. Since proceeding without proper stakeholder engagement can be challenged in terms of the NWA, 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.

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 first generation CMS, aligning and integration of the CMS with other strategic plans.
2. Financial implications and costing of the sub-strategies.

This is the most intensive of the phases and will exact the most attention and input from the CMA and stakeholders. The outcome of this process will be a set of core sub-strategies outlined by 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 must be evident in the first generation CMS submitted to the Minister for approval.

The financial resources required to **draft** the CMS need to be distinguished from those required for its implementation. Whilst the funding for CMS implementation will need to be raised by the CMA (see Guideline 6.9 - Funding IWRM), the drafting costs of the CMS will be supported by DWAF until such time that it can be paid for through cost-recovery.

A challenge associated with drafting stage is to ensure that the issues of integration and co-operative governance are addressed (refer to Chapter 5 and Approval Process, diagram 7.1). There are three main aspects to be considered:

- Firstly, the CMS must be aligned with the NWRS and consequently with the NWA and the Constitution.
- 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.
- Thirdly, some strategies are a collation of parts of other strategies. For example monitoring activities are drawn from various sub-strategies (see Table 3.1). The same applies to the finances and stakeholder engagement strategies. Such strategies cannot 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. In order to ensure that stakeholders have access to the draft CMS, the CMA must ensure its availability in places accessible to the public.

The notice in the Gazette is 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 need to be summarised and presented to DWAF.

A guideline to assist the CMA with gazetting of the CMS and the approval process is provided in Chapter 7.

Legal requirements

Section 8(4) of the NWA requires that the CMS, or any component of 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 –*

(a) *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 completion. After approval is granted the CMA is legally bound (along with the Minister) to implement the strategy. Implementation will exact 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, stakeholder engagement and financial management need to be conducted alongside a number of strategies (see Chapter 3).

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.

Chapter 5

Working together: managing water resources for a WMA

5.1 Introduction

The management of water cannot be done by the CMA alone. It is a complex endeavour that will need to draw on a number of sectors, institutions, organisations and civil society groups in order to fulfil its mandate as manager of water resources of a 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. It is the role of the CMA to facilitate this process so that consensus drives the management process. This is not a simple matter in that each of the roles players might have its own legal and/or institutional mandate as well as vested interests. The CMS is an instrument that provides the CMA with an opportunity to harmonise various roles at the same time minimise conflict and resource overlap.

This chapter will outline the nature and issues associated with working collaboratively towards implementing IWRM as expressed by the CMS framework (see Chapter 3). It will then specifically focus on public participation and stakeholder engagement in the various aspects of the CMS development and implementation.

Role players, stakeholders, public, interested and affected parties

It is worthwhile getting a grip on the different terms that are used to designate different groups that are can be part of IWRM processes:

Role players: those, who by virtue of their identity, **influence** decisions. Role players can include stakeholders, the public and I&APs

Stakeholders: those parties that are interested or are affected by the decisions in that they have an interest in the **outcome** of the decision

Public: the general population of civic society that resides in a particular area

Interested and affected parties (I &APs): a particular group of persons who have an interest in, or are affected by, a particular intervention (similar to stakeholder)

5.2 The nature of working together

5.2.1 The issue of scale

One of the tricky aspects of developing the CMS is related to the fact that the CMS will need to work across a number of scales: national, regional, local. Some of the activities will be guided by national objectives while other activities will be driven by the needs that arise at the local level. Working successfully across these scales is likely to be an iterative process that will need to be sorted out over time. Table 5.1 provides an overview of spheres of government, organs of state, statutory and non-statutory bodies and potential role-players involved in WRM. The CMA is required to work across these scales in a co-ordinated and efficient manner.

Table 5. 1. Overview of role players functioning at different scales

Organisation	Detail
A. National government National government is the highest authority in respect of policy generation, regulation of implementation and co-ordination of activities within the provinces.	Department of Water Affairs and Forestry Department of Minerals and Energy Department of Environmental Affairs Department of Agriculture Department of Housing Department of Provincial and Local Government Department of Public Works Department of Health Department of Education National Treasury
B. Provincial government Policy development and regulatory function	Departments of Agriculture Departments of Local Government Departments of Housing Department of Land Administration Departments of Environmental Affairs Department of Education
C. Local government: Municipalities Municipalities are major role players in that they are generally water services authorities and water services providers.	Metropolitan Councils District Municipalities Local Municipalities
D. Traditional leadership Traditional leadership is operative in land held under communal tenure.	Generally consists of Chiefs and indunas who administer customary laws, supported by a traditional courts of elders.
E. Statutory and non-statutory bodies These bodies, which may be statutory or non-statutory, have an important harmonising function as they are frequently multi sectoral and represent a range of stakeholders and interest groups	• Catchment Management Agencies: management of water resources (an organ of state but NOT a sphere of government) • Catchment Management Committees: provide advisory support to the CMA and act a representative committees for catchments within a WMA • CMF: non-statutory multiple stakeholder forums aimed at representing the views and concerns of catchment inhabitants • Water User Associations: statutory bodies constituted to represent single or multiple use interests in a catchment • IDP forums: Integrated planning for local government • Community Development Forums: facilitate community participation in development • Ward Committees: community participation in local government • Land Administration Committees (LAC): make decisions regarding land administration on communal lands on behalf of communities • Communal Property Associations (CPA): statutory institutions associated with representing communities and their communally held assets on communal land
F. Sectors Commercial and services providing community	• Agriculture • Industry • Mining • Tourism • Recreation • Power generation • Business • Forestry • Water: water boards, private services providers
G. Interested & affected parties	• A broad spectrum of Associations, NGOs, Unions, Investors, Lobby groups, Researchers, CBOs, Conservation Groups

5.2.2. Collaboration, co-operative governance, integration and harmonisation

Collaboration

Collaboration means working together to achieve a commonly held goal or vision. It is more than co-operation as it is an 'active joining together' of resources and effort in order to facilitate movement in a particular direction. This becomes a process where partnerships are formed, and through collective learning, issues are dealt with and problems solved. Collaboration is therefore a social process based on the following aspects:

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

The CMS should be the tool that facilitates collaboration with different stakeholders, spheres of government and interest groups so that an holistic and integrated approach to water resources management can be adopted. By the time that its is approved , role-players should be well versed in its contents and agreement should prevail as regards the actions that it recommends.

Although social processes evident in collaborative action are time consuming and challenging, they cannot be ignored. It is through interaction that conflict and tension are brought to light and it is through collaboration that solutions are found. Effective catchment management is likely to depend on a high level of collaboration.

Co-operative governance

The South African Constitution provides the basis for all spheres of state to work co-operatively with each other and foster good intergovernmental relations in order to fulfill obligations. The principles underpinning co-operation call for effective, transparent, accountable and coherent governance. The notion of collaboration (explained above) applies to a context broader than spheres of governance.

Legislative requirements for co-operative governance

The Constitution

The Constitution obliges all levels of government to work co-operatively with each other (Chapter 3, Section 41)

co-operate with one another in mutual trust and good faith by-

- fostering friendly relations;
- assisting and supporting one another;
- informing one another of, and consulting one another on, matters of common interest;
- co-ordinating their actions and legislation with one another;
- adhering to agreed procedures; and
- avoiding legal proceedings against one another.

An Act of Parliament must establish or provide for structures and institutions to promote and facilitate intergovernmental relations.

Integration and harmonisation

A critical role for the CMA is that of ensuring integration of efforts to achieve IWRM. Indeed, the CMS will drive IWRM actions but it cannot act alone. Integration refers to the *act of combining or adding parts to make a unified whole*. One of the first questions to arise is: why is integration important in the arena of WRM? As we know each WMA is likely to present us with a complex social, political, economic and biophysical environment. Attempts to manage water within such a system require that an integrated approach be adopted. But what does this mean in reality? On the one hand, regular meetings and contact with role players are important. However, a practical approach is to focus

on harmonisation of the various policy and planning instruments of spheres of government and institutions (summarised in Table 5.2).

Table 5.2 Instruments for co-operative governance and integration: plans, strategies frameworks and projects (after Pollard and Du Toit, 2004)

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. One of these explicitly addressed water by setting the goal of reducing by half the proportion of people unable to reach or afford safe drinking water by 2015.
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.
Catchment Management Strategies (CMS)
The CMS must be in line with the NWRS and the Internal Strategic Perspectives (ISP) 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.
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.
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.
Integrated Development Plans (IDP)
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 (WSDP's)
Every district 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.
Spatial Development Frameworks (SDF's)
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, EMP's and WSDP's.
Provincial Environmental Management Plan and/or Environmental Implementation Plans (EIMP's)
The NEMA calls for both National and Provincial Environmental Management Plan – sometimes called Environmental Implementation Plans. These plans provincial activities to be in line with sound environmental planning.
Local Government Environmental Management Plans (EMP)
Local Government need to prepare EMP's as part of the IDP planning process. These plans guide Local Government activities to be in line with sound environmental planning.
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 were water needs to be 'freed up' to support new and emerging farmers (see links to Water Allocation Reform).
Strategic Plan for South African Agriculture (2001) Department of Agriculture
This strategic plan proposes a number of interventions to increase the participation of small-scale, communal and subsistence farmers in the formal agriculture sector and make it more profitable, and to

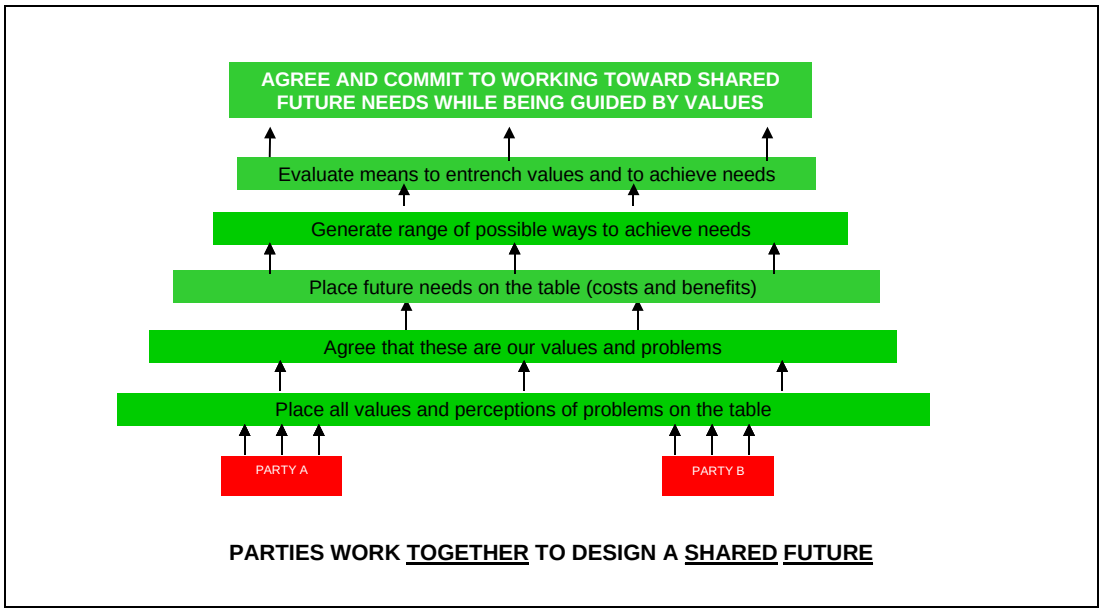
ensure that agricultural developments are not implemented at the cost of degrading natural resources.
Working for Water (WfW)
Working for water is a multi-Departmental programme to clear alien invasive plants. It also aims to create jobs and combat poverty, particularly in rural areas. Since the activities of the WfW project impact on water resources, biological diversity, agricultural production, secondary industry, and employment it is important that it co-ordinate with a wide range of role players.
LandCare
The LandCare Programme (NLP), run by the Department of Agriculture and Land Affairs, provides capacity building and awareness raising aimed at ecosystem rehabilitation and restoration. The vision of the Department's NLP is to have communities and individuals adopt an ecologically sustainable approach to the management of South Africa's environment and natural resources, while improving their quality of life.

5.2.3 Negotiation for consensus and conflict management

We cannot assume that role-players and stakeholders will automatically collaborate with each other. Different role-players have different perceptions and interests. This means that there might be conflict and resistance to change.

Overcoming these relies on developing an atmosphere of trust (Jacoby and Rodgers ,2000?) 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 as a way of integrating different values and meeting diverse needs. People often consider negotiation to be a process that entails compromise. However this leads to short term solutions that do not prevail beyond the negotiation table. To avert such a situation and alternative has been suggested in the form of 'negotiation for consensus' (see Figure 5.1).

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 (Rodgers and Bestbier).



An approach involving 'consensus' encompasses all role-players declaring their values, needs and problems at the outset (see Figure 5.1). This procedure might require a number of iterations, thereafter role players must consider ALL possible options before a foundation for the decision-

making process is established. Each option is evaluated and the merits are discussed in the light of the overarching vision. Finally an agreement is reached and each role-player provides commitment to the implementation of the chosen option. Part of this process involves capacity development (see below).

In the event of consensus not being reached and conflict prevailing, a number of options exist. Conflict resolution, involving and external facilitator or seeking mediation through the Water Tribunal and Courts of Law are some possibilities. Courts are likely to play an important role in interpreting actions in terms of the Constitution and where disputes are serious.

5.3. Capacity development: a plan for sustaining public engagement

Involvement of role-players in drafting and implementation of the CMS is ongoing processes that will need to be sustained requiring that various groups need to receive appropriate and sufficient information to increase their understanding of relevant legislation, IWRM, local water resource issues, and management principles. They also need to know how they will benefit and the consequences of a particular choice. Building capacity for engagement is an investment that the CMA needs to make over time.

In making such an investment special attention needs to be given to effective engagement of previously disadvantaged groups and vulnerable sectors of society. Practical solutions for effective engagement with grassroots communities, women and youth need to be employed. Ways of simplifying concepts and ensuring that poor people can find their way to meetings are crucial for the functioning of IWRM. And finally, there is the need to monitor the public participation process in a meaningful and realistic manner (DWAF is currently developing guidelines in this regard).

5.4 Communication: keeping in touch with stakeholders

It is essential that the CMA keep stakeholders informed of activities, progress and outcomes in an ongoing and consistent manner. The real challenge is to ensure that the diverse and broad spectrum of stakeholders is adequately informed by means of an efficient and well-functioning communication system. The CMA may therefore consider drafting a dedicated sub-strategy that addresses communication with stakeholders. Such a strategy should include details that can be categorised as the *what, who, when, where, how* and *why* of the process summarised in Table 5.3. The method of communication, feedback and evaluation of the effectiveness are all part of this very important aspect of working together.

Table 5.3. The *Why, What, Who, When, Where, How*, and *Why* of a communications framework

Question	***Detail***
Why?	A fundamental question that must be answered for people to know why they are being involved in a particular activity. Answering this question will help focus a participatory process and provide the necessary information required to proceed.
What?	IWRM is not a single step process. It is important that participants understand that each step of the process requires specific, and sometimes different, concepts and therefore different responses
Who?	Each WMA will have a range of stakeholders and institutions depending on the particular WMA. Not everyone can be present at meetings so some form of representation is likely to be necessary. How can the CMA ensure inclusivity in the participation process especially from marginal groups?
When?	It is important that the public are engaged at the appropriate point time so that these inputs are available at the time of making decisions.
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 costs of travel to such points.

How?	This is a question of process – how will it be carried out? Do people just need to be consulted or do they collaborate in some way, for example in developing an allocation plan.Costs, feedback, facilitation, provision of learning support materials, orientation, frameworks, etc. are all part of the how question.

5.5. Platforms for public participation

Establishing and maintaining contact with role-players and stakeholders is essential for sustaining the participatory demands of drafting and implementation the CMS and is an important responsibility of the CMA. The NWA makes a number of options available to the CMA (see Figure 5.2) in the form of management committees (Catchment Management Committees –CMCs), multiple stakeholder platforms (Catchment Management Forums -CMFs) and associations (Water User Associations – WUAs). The challenge for the CMA is to meaningfully engage functioning CMCs, CMFs and WUA in the business of IWRM.

Although the establishment of stakeholder platforms is an initial function of the CMA, much has already been done by DWAF by way of establishing WUAs, and in some WMAs, CMFs are already functioning. The CMA will need to evaluate the status of such forums before proceeding with the CMS drafting procedure.

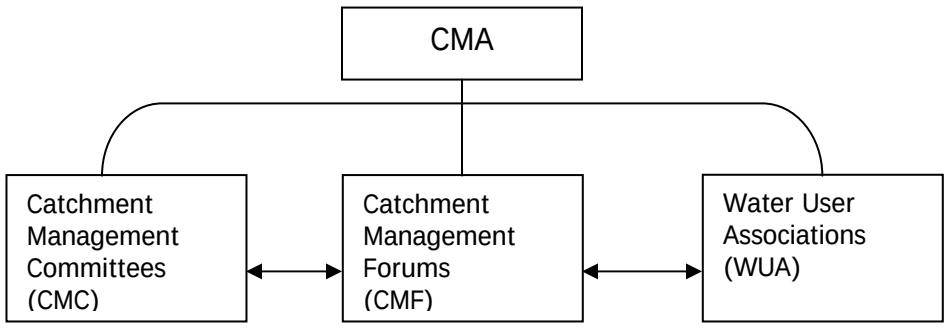


Figure 5.2. The three main platforms available for stakeholder engagement in IWRM. CMCs are statutory (legal) bodies while CMFs are not statutory and can be designed to meet the needs of specific situations. WUAs are established around a single or multiple use of water by licensed users.

5.6 Stakeholder engagement and public participation

IWRM represents a balance of 'top-down' and 'bottom-up' approaches to management. If management decisions are taken solely custodians and regulators ("top-down") there is the potential for role-players to resist the decisions. On the other hand, if decisions are solely taken by role-players ('bottom-up) there is a risk that policies and legislation will not be adhered to, and that spheres of government cannot be held accountable. Additionally, democratic systems require that persons potentially affected by a decision be given the opportunity to be part of the decision making process. However, given the constrains of tome, money and capacity, public participation should not cripple IWRM. 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.

5.6.1 The issue of legitimacy

It is important that the CMA gain and maintain acceptance for the CMS amongst role-players and stakeholders. This should not be to difficult as the CMS is - in effect - a record of management decisions that are arrived at collectively within a WMA. If 'buy –in' occurs early on in the process, there is no reason why stakeholders should contest what is contained in the various sub-strategies. However, there are some points that need to be adhered to for CMS to be regarded as legitimate. Indeed, the CMA will need to ensure that processes to develop the CMS are structured, focused and appropriately facilitated in order to receive meaningful inputs and contributions. To this end, processes of public engagement need to ensure that:

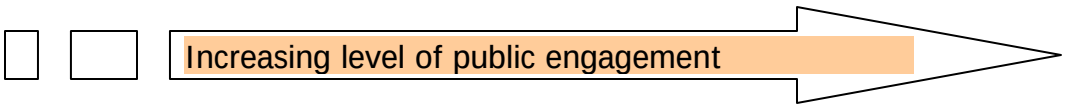
- they are inclusive of all role-player groups,
- the processes are transparent and fair,
- engagement is representative of ALL sub catchments,
- power and capacity gradients are addressed,
- people are timeously informed of meetings,
- allowances are made for language differences,
- HDI groups are given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

5.6.2 The public participation spectrum: establishing the 'right' type of stakeholder participation at the 'right' time

The International Association for Public Participation (IAP^2) has identified different types of public participation (Table 5. 4) which they call a **spectrum**. 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 it is better. The trick is to select the appropriate level of participation at the correct time.

Table 5.4 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 IAP2) **www.IAP2.org**

INFORM	CONSULT	INVOLVE	COLLABORATE
Public participation goal:	**Public participation goal:**	**Public participation goal:**	**Public participation goal:**
To provide the public with balanced information to assist them in understanding the problem, alternatives, opportunities and solutions	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 including the development of alternatives and the identification of preferred solutions
Promise to the public:	Promise to the public:	Promise to the public:	Promise to the public:
We will keep you informed	*We will keep you informed, listen to and acknowledge concerns and aspirations provide feedback 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 recommendations into the decisions to the maximum extent possible*
Example techniques			
• Fact Sheets • Web sites • Open houses	• Public comment • Focus groups • Surveys • Public meetings	• Workshops • Polling	• Citizen advisory committees • Forums • Consensus building • Participatory decision-making



Note: the IAPP lists "Empower" as on option on the Participation Spectrum. However, the opportunity for the public to take autonomous decisions regarding water management decisions does not exist within the South African legal context. The public is provided with the opportunity to participate through various platforms in order to negotiate for consensus in a collaborative manner but never to take autonomous decisions that the CMA must implement.

5.6.3 Public engagement in IWRM tasks

As indicted above, public participation can take a number of forms. It is unrealistic to demand the highest form of engagement (collaboration, in this case) 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 5.5 provides a summary of the key areas of IWRM that will require public engagement and a guide in terms of the public participation process. Table 5.5 should be read in conjunction with Table 5.6.

Table 5.6 List of IWRM tasks requiring 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 guideline and the approach will probably require refinement. Colour codes can be matched with descriptions in Table 5.5

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**
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**
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**
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**
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. Again 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**
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 at this stage high.	**Collaborate**
7. Call for license application	
Current and potential water users will need to **apply** for license to use water for which they will be charged. Stakeholders will need to prepare themselves for submissions to the CMA as each application will be **evaluated** against the goals for WRM (see NWA) and against the allocation plan. Applicants are also required to publish requests for licences in the Government Gazette which can be **questioned**.	**Involve**
8. Issue water use licenses	
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 tribunals will need to prepared.	**Inform**
9. Audit compliance of licence holders	
DWAF is likely to take the major role in this task. Here water inspection officers will check that	**Involve**

license holders are using the correct amount 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 reduce unlawful water use in the WMA.	
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, ecosystem health all form part of this important step. Theoretically, civil society can play a huge role in this task.	**Involve**
11. Review CMS as a whole	
Water managers along with all users, licensed and unlicensed, 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 a five year period has gone. Information gathered at such meetings forms a valuable basis upon which to improve on the future management processes.	**Collaborate**

5.5.4 CMS Development and Implementation: two levels of public engagement (This section of the guidelines should be read in conjunction with Chapter 6.7).

This section presents two levels of participation in the establishing a CMS. The first deals with stakeholder engagement in the DRAFTING of the CMS and the second with stakeholder engagement in the actual IMPLEMENTATION of IWRM as captured in 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, issues of IMPLEMENTATION (level 2) are presented in summary. Both levels are summarised in Table 5.7

Level 1: Drafting of the CMS

Level 1 participation is associated with the development of the contents of the CMS as well as the processes associated with obtaining Ministerial approval for the FIRST generation CMS. This is likely to be a difficult process as it will be the first time that such a collection of strategies will be assembled with public input. However, role-players MUST be engaged as there is a legal obligation, and the exclusion of role-players is likely to have serious implications for the document being accepted as legitimate.

Essentially Chapters 6 & 7 of this guideline provide a framework for the drafting and approval process.

Level 2: Implementation of the CMS

The public will continue to be involved in the ongoing development, implementation and periodic review of the CMS subsequent to the drafting phase (level 1). The CMA will need to establish functional communication channels with stakeholders in order to adequately implement the contents of the CMS. 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 the implementation activities.

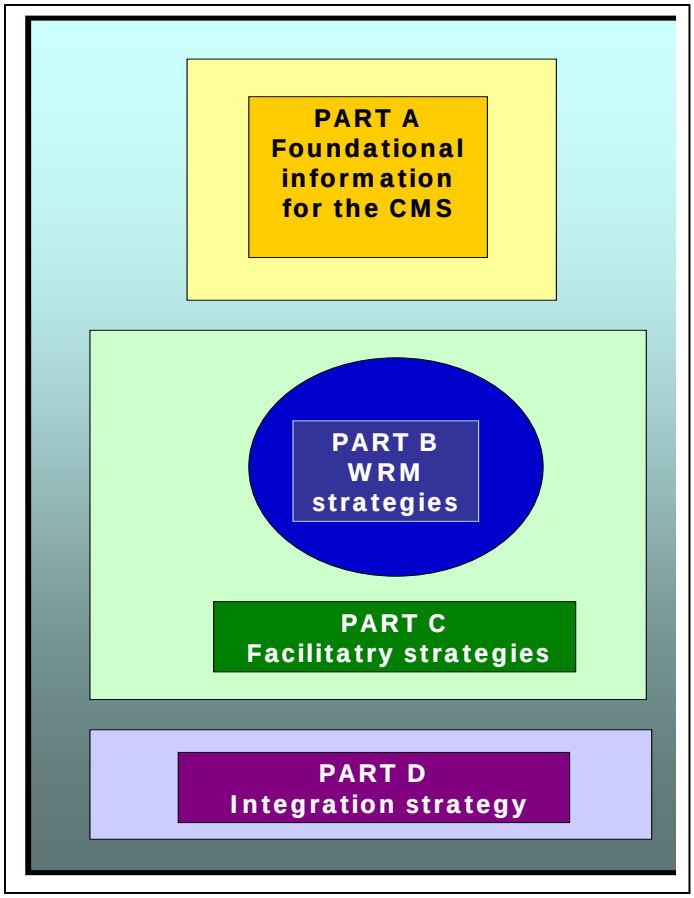
Table 5.7 A summary of two levels of public participation in IWRM: Level 1 refers to the drafting of the CMS and Level 2 deals with the implementation and review of the CMS. The table also provides and indication of the type or nature of the participation as detailed in Table 5.3.

LEVEL	Stage (see Chapter 4)	DETAILS	NATURE OF PUBLIC PARTICIPATION
		CMS Development	
LEVEL 1	1. Planning stage	• 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 meetings dates for the drafting established on basis of sub-catchments	Inform Involve
	2. Drafting stage	• 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 Collaborate
	3. Approval Stage	• Document submitted to the Minister for approval • CMS published in Government Gazette • Public to comment on the CMS as an interested and affected party	Consult
		CMS Implementation	
LEVEL 2	4. Preparation for implementation	• CMA to establish the requirement for 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
	4.Implementation 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. WC/WDM 5. Water quality and pollution management • Continual feedback, communication and updating of stakeholders regarding developments and progress	Consult Collaborate
	5. Review stage	• CMA to establish procedures for the review of the CMS (at least once every 5 years)	Collaborate

CHAPTER 6

Sub-strategies of the CMS

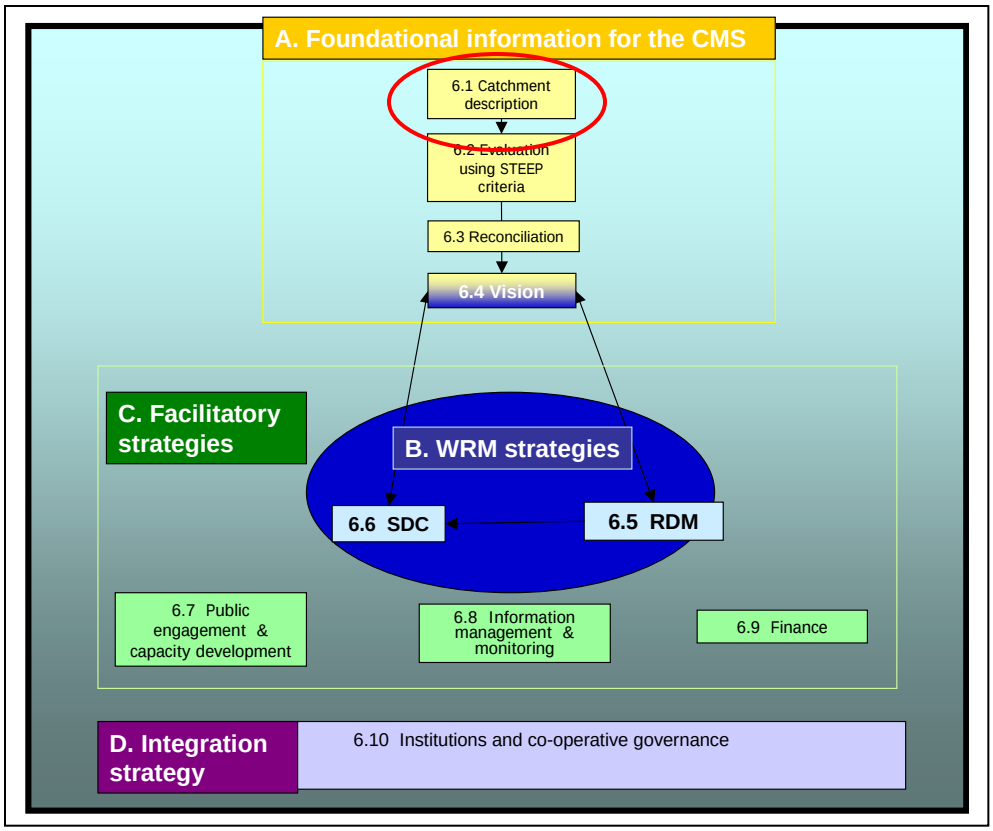
Chapter 6 of the guideline is presented in 4 parts: A, B, C & D. Each of the parts provides a specific group of guidelines for developing the CMS. The parts are colour-coded for easy reference.



PART A

GUIDELINE 6.1

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



6.1.1 Introduction

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 (S9d);
- National and regional plans, including water services development plans (WSDPs) (S9f);
- Needs and expectations of existing and future water users (S9h*).*

The catchment description must describe the present state of the catchment (DWAF 2005). 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.

- Firstly, 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.
- Secondly, because of the nature of water, **upstream** activities impact on the downstream environment. For example, pollution into a river may be felt for a long distance downstream of the input point. Effectively this means that often the consequences of our actions are felt elsewhere.
- Thirdly, it is imperative that the **ecological, social, economic, technological, political** and **institutional** environments are adequately considered when conducting water resources planning and management.

Guiding this is the commitment that South Africa gives to understanding the importance water plays in social and economic development as well as ensuring the sustainability of the resource base itself.

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.

Key questions

In summary, this step provides the preparation for developing a sensible strategy by asking two questions:

- 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 of the Situation Description

The objective of describing the *status quo* is to provide a 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 evaluated, and then used to inform the vision and subsequent strategies.

6. 1. 3. What you need to know to prepare the situation description

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" (see Chapter 4). Moreover, describing the WMA is an important tool for informing and engaging stakeholders.

As stated, in providing a profile of the WMA, two key questions should be addressed:

- What is the current situation in the WMA? [Scenario 0]
- What is it likely to be in 20 years time? [Scenario 1]

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 integrated water resources management, a much wider view of the WMA is required. Moreover, the underlying principles remain to address the cornerstones: 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).

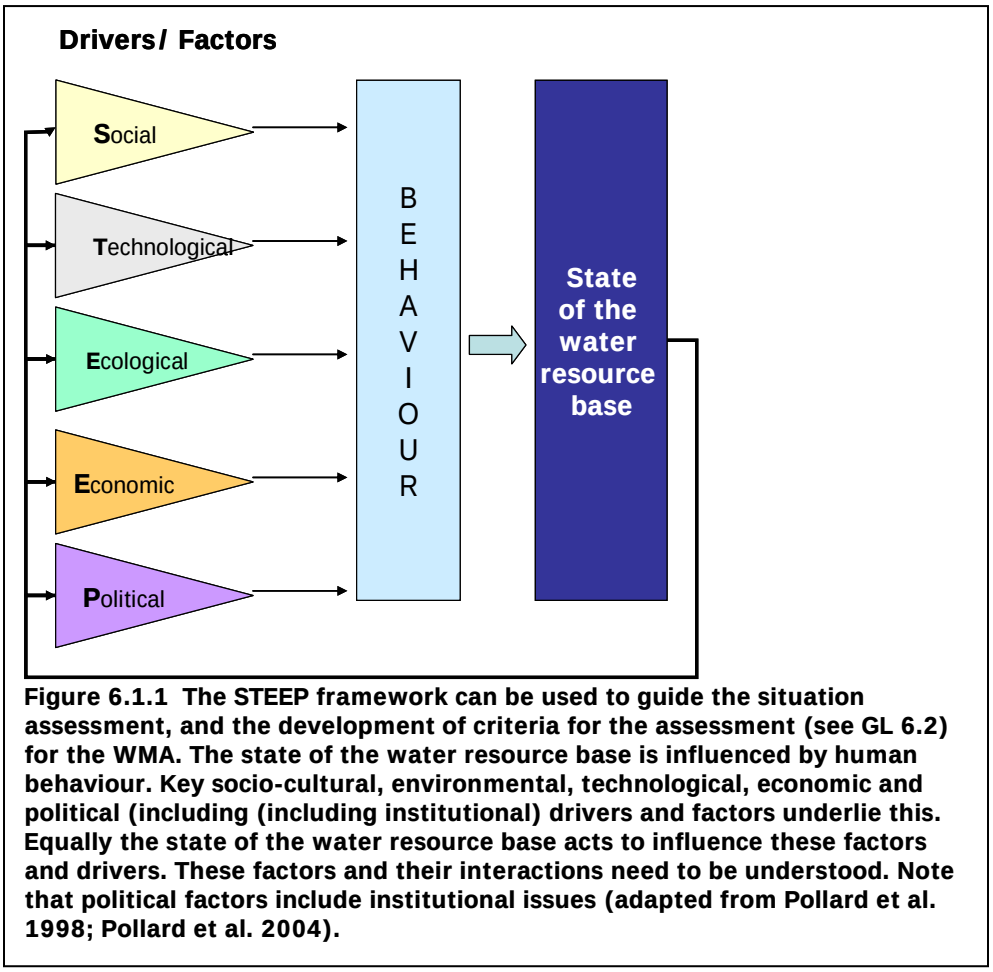


Figure 6.1.1 The STEEP framework can be used to guide the situation assessment, and the development of criteria for the assessment (see GL 6.2) for the WMA. The state of the water resource base is influenced by human behaviour. Key socio-cultural, environmental, technological, economic and political (including (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. 2004).

A description of the current situation in a WMA should **not** require the collection of large amounts 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 a large amount of the information is already available through the DWAF Water Resources Situation Assessment studies (WRSAS), the NWRS, the ISPs and various other documents. A summary of national information that is readily available and that should be consulted in relation to water resources is given in Appendix 6.1.

Developing a situational description offers the opportunity to collectively synthesise this large amount of information into a contextual profile of the WMA that can be evaluated so as to inform

the visioning process and subsequent strategic planning. The first stage is to see what is available and then to build on this. Secondly, one should consult the 'higher tier' requirements as required by the Constitution (S146(2)); norms and standards; frameworks; and national plans such as the NWRS and classification.

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.

6.1.4. Potential contents of a description of the *status quo* and likely future scenarios

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, the likely future scenario(s) based on 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 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 amount 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 situation assessment as the basis for strategic planning within a WMA. Note that this is most effectively prepared for each catchment of the WMA

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 'non-formal', 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).

- Raw Water Resources– Surface water and groundwater (quality and quantity, hydrological patterns)
- Historical attributes and anthropogenic changes
- Aquatic and riparian biota, status, invasive aliens, 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
- Land reform and land claims (if appropriate)
- Projected trends

4. Water demand, water use and supply (Summary, refer to ISP. Note the detailed water balance is dealt with in GL 6.3)

- Current Water Requirements
  - The Reserve (Ecological Reserve and Basic Human Needs Reserve
  - Sectoral water demands
  - Returns to water use (if available)
- Water Treatment Infrastructure
- Water Supply Infrastructure and levels of service
- Institutional Arrangements (system of ownership, O&M)
- Trends

5. Stakeholders and institutional arrangements

- Stakeholder identification and stakeholder platforms
- Co-operative arrangements (e.g. across WMAs, international agreements)

6. Initiatives and planned projects within the WMA, For example

- Status of registration
- Water supply infrastructure
- PGDS, Agricultural developments, SDI
- IDP of Local Government
- Working for Water/ Wetlands
- Integrated Conservation Plans; Environmental Management Plans
- Services (health, sanitation, electrification)
- Industrial developments

7. Key gaps and priorities

6. 1.5. Procedural diagramme

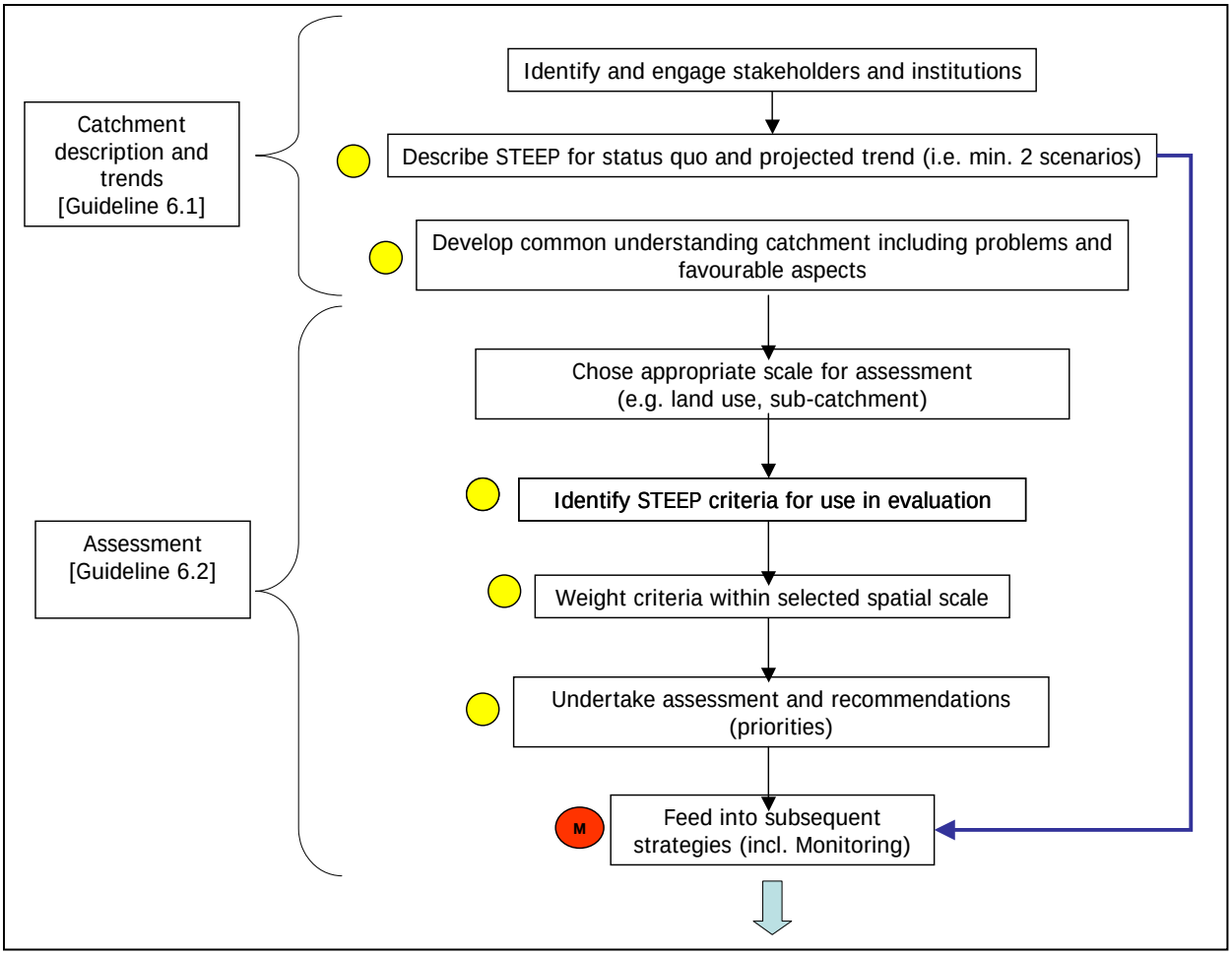


Figure 6.1.2 Schematic representation of steps for the catchment description (adapted from the Catchment Assessment of DWAF 2004). STEEP = **S**ocial, **T**echnical, **E**cological, **E**conomic and **P**olitical characteristics

6.1. 6. Checklist

Does the situation description component of the CMS:
a. identify key strategic areas to be reflected the CMS?
b. identify information needs for the visioning process?
c. address priorities and gaps?
d. identify resource needs?
e. identify skills needed?

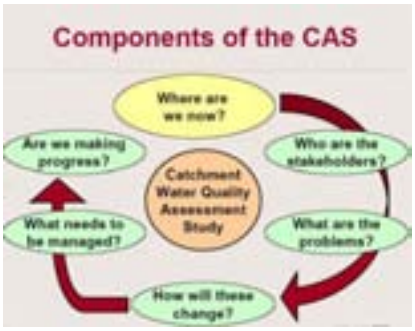
Specific Questions
Essentially, a detailed checklist of contents is given in Table 6.1.2. Additionally, does the situation description:

- Identify which information is of a reasonable quality to provide the basis for a strategic perspective on water resources planning for your WMA?
- Identify key gaps and priorities and have these been adequately captured?
- Provide a reasonable assessment of the trends of the socio-economic, environmental and political characteristics, including the demands of other developmental plans e.g. PGDS?

- Specify the critical issues and if these been taken up in the appropriate sub-strategies of the CMS?

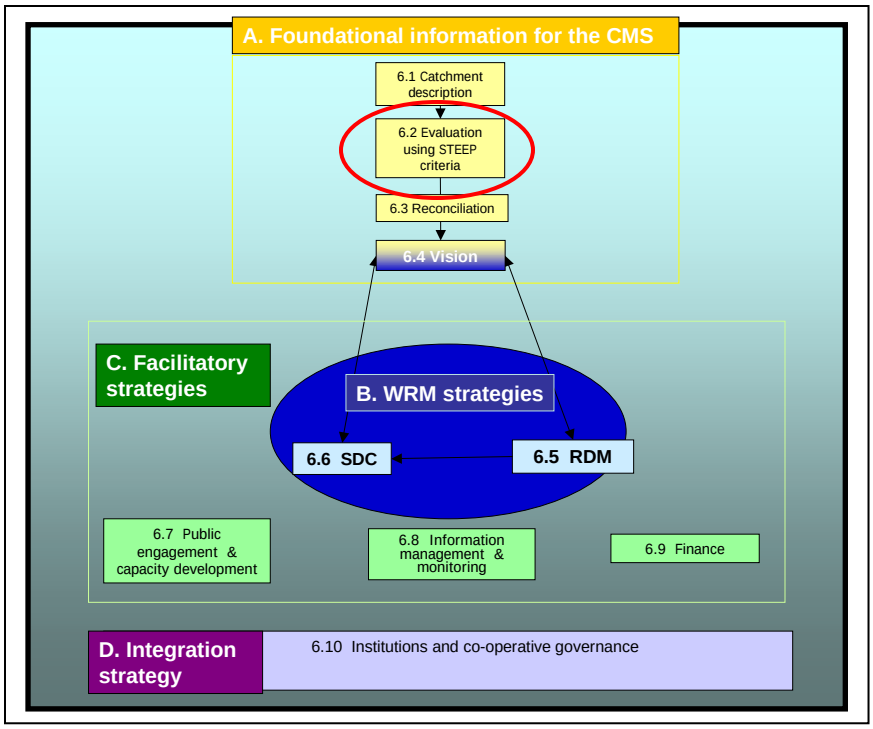
6.1.7. Important references and resources

DWAF has produced a series for Water Quality Management. Although directed towards water quality management, the principles and procedures apply more widely to IWRM. The series includes a guide to undertaking a Catchment Assessment Study. This is also given as an interactive guide on CD. DWAF 2005. Summary policy on the Resource Directed Management of Water Quality. Water resources planning systems series. Sub-series No. WQP 1.5



PART A

Guideline 6.2
Guidelines for undertaking an assessment of the current situation and potential trends within a WMA as a 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, political** and **institutional** environments when conducting water resources planning and management. Once the current situation and likely future scenario in a 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 fail to adequately 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 emphasizes 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 seek 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.

Key question
In summary, this step adds to the description of the WMA by asking the question:

What does the situation in the WMA mean for achieving equity, sustainability and efficiency in WRM?

6.2.2. Objective and intended outcome of the evaluation of the current situation in the WMA

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 strategies.

6.2.3. What you need to know to undertake the situation assessment

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 and thus the situation (and hence assessment) 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 4).

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). Again, it is suggested that the STEEP framework, discussed in Guideline 6.1, is 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 Table 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 headwater or conservation land use 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.

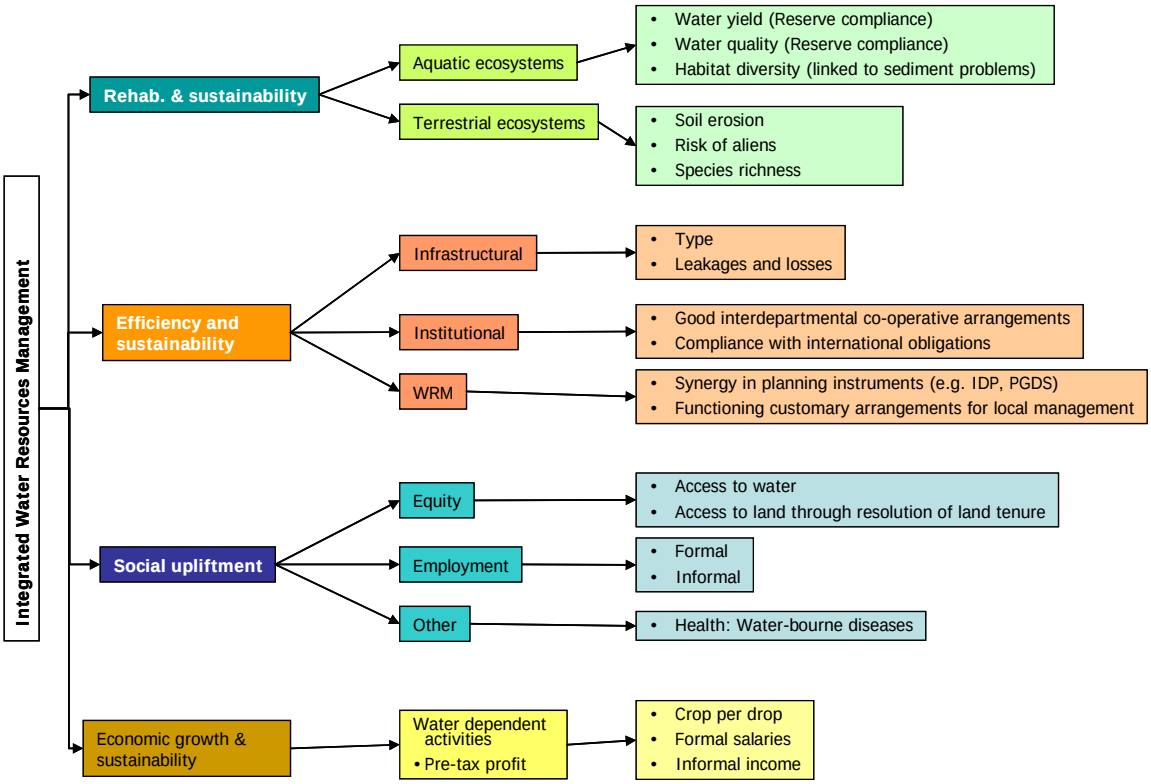


Figure 6.2.1 An example of criteria development used to assess the status quo in the Sand River Catchment (adapted from Pollard et al. 1998). Such criteria should be locally-derived, and should flow from the principles embodied in the NWA of 1998. The STEEP framework may offer a useful approach for criteria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

6.2.4. Potential contents of an evaluation of the status quo

Both the current and projected future scenario 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 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 assessment.
2. The evaluation 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. IDPs, PGDS).
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. Public participation : The assessment must involve stakeholder. 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.

6.2.5. Procedural diagramme

An overview of an approach to the evaluation is given in Figure 6.2.2. This indicates that in order to undertake and evaluation, 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.

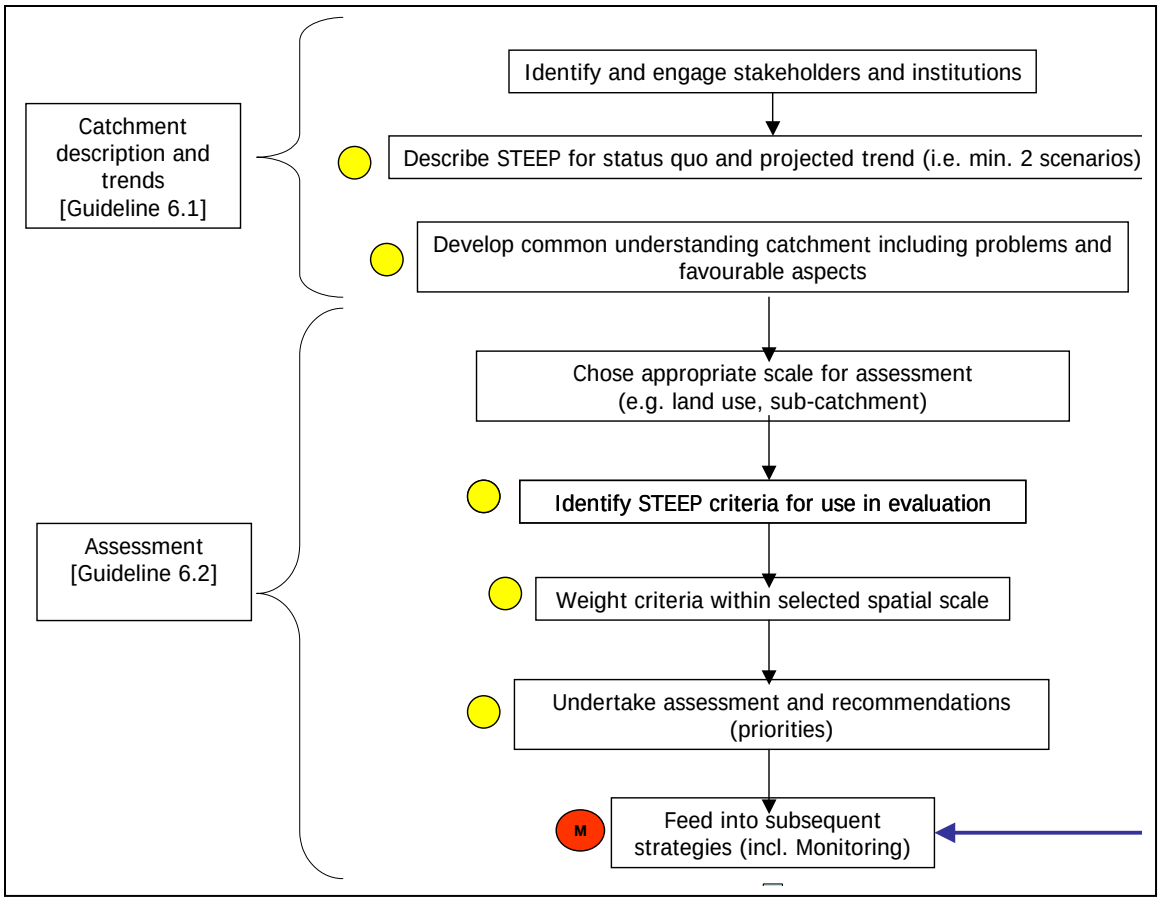


Figure 6.2.2 Schematic representation of steps for the catchment assessment (adapted from the Catchment Assessment of DWAF 2004). STEEP = Social, Technical, Ecological, Economic and Political characteristics Yellow dots= public participation, red dots = monitoring

6.2. 6. Checklist

- Is there a reasonable assessment of the current situation in the WMA?

- Is there a reasonable and holistic assessment of the likely future profile based on and understanding of likely changes in the socio-economic, environmental and political characteristics?
- What are the key gaps and have these been addressed as part of the CMS and associated business plans?
- What are the critical issues and have these been taken up in the appropriate strategic plan in the CMS?

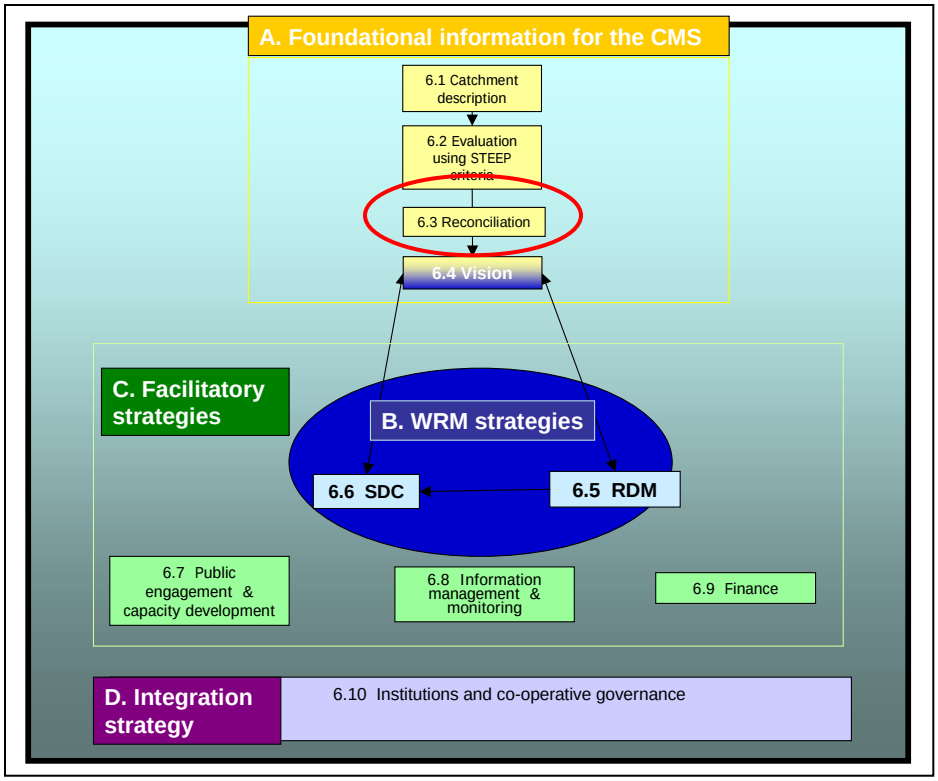
6.2.7. Important references and resources

(DWAF 2004)

Step 6 in DWAF (2004). Water Resource Planning Systems Series, Sub-Series No. WQP 1.4, Resource Directed Water Quality Management Policies: 1st Edition Management Instruments Series. Version 2. Pretoria, Department of Water Affairs & Forestry.

PART A

Guideline 6.3
Guidelines for reconciliation: balancing water availability with water demand



6.3.1. Introduction

"Reconciliation" refers to the process of balancing the available water resources against the water requirements or water demand. In South Africa strong emphasis is placed on **beneficial, effective and efficient water requirements** (see section 3 below).

The water- scarce situation in South African demands that we act strategically to reach the goal of beneficial, effective and efficient water use. Over half (10 of the 19) WMAs in South Africa are in water deficit, or so-called closed catchments (NWRS, Table 2.4; see discussion below). Although the likely scenario for 2025 does not deviate markedly from the 2000 figures, there are large anticipated increases in the main metropolitan centres which require attention. Importantly, 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 CMA is to deal with imbalances and localised areas of water stress through the catchment management strategies (NWRS, Section 2.5).

To meet these challenges, action will have to be taken to manage water use in catchments within sustainable levels; that is, to achieve a sustainable balance. This 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. There are **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 has grown for the value of rainwater collection and desalinisation.

Box 6.3.1
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 availability and requirement are listed below and described in the glossary.

a. water demand management, which in most cases should receive priority;
b. improved resource management and conservation (surface and groundwater);
c. the increased 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.

Key Question
In summary, this step adds to the description of the WMA by asking the question:

- **How much water is available for use (allocation) in the WMA and what is the demand (beneficial, effective and efficient)?**
- **What will the situation be in the future?**

6.3.2 Objectives and outcomes

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 scenario(s) within a WMA, taking into account the water situation assessment, the vision, water required to meet special provisions and classification.

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

6.3.3 What you need to know to undertake a water balance

Principles

Reconciliation presents an opportunity to explicitly address all three principles of the NWA, namely equity, sustainability and efficiency, and these must be clearly reflected throughout. Although these principles have been outlined in Chapter 1 as foundational principles, it is important to stress the issue of poverty eradication in the context of this strategy. This is because the NWA actively seeks to redress the results of past racial and gender discrimination (NWRS 2004).

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

Stressed catchments and water demand

The term "**stressed**" is actually quite polemic 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 demand. Firstly, water deficits will not be experienced 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 linked concept of water demand is also relative and depends upon who is using the water and for what, the levels of assurance required, how it is being used and where. Importantly, demand does not necessarily imply that it is legitimate. In this document "**water demand or 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 groundwater. Not all water within a catchment is available water. Firstly, water availability changes over seasons and throughout the catchment. Secondly, the NWA requires that water is set aside to meet certain obligations. Thus, the determination 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*, all of which are the Minister's responsibility (NWRS 2004; see Table 2.1).

What a review of the ISPs recommended:

In general, the ISPs offer the best information on water availability, use and reconciliation. Nonetheless, DWAF recognised that in many WMAs there is a insufficient knowledge regarding the volumes of water available and how they is 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 / measurement to facilitate allocation and licensing decisions and for use in future policy and strategy development

Due consideration for alternative water augmentation options and their appropriate sequencing

One of the key principles derived from a review of the ISPs (DWAF internal report) is that of developing a reconciliation strategy **that provides explicit and due consideration for alternative options and their appropriate sequencing.** Although South Africa has introduced the possibility of Compulsory Licensing (see glossary) as an essential means to return water back into the system (both for the Reserve and to honour the commitment to *equity*), it is recognised that in many areas, implementing Compulsory Licensing will be challenging. Given this, every possible approach 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 (see WCDM glossary) prior to opting for costly infrastructural solutions, such as dams and inter-basin transfers (see World Commission of Dams). The rationale for this is that the options for further augmentation of water supplies by developing new infrastructure are becoming increasingly limited and expensive

Thus 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). Additionally, water conservation and demand management (WCDM) becomes critical, as well as clearing of invasive alien plants (IAPs), the use of groundwater, water trading, rainwater collection, effluent re-use, desalinisation and Compulsory Licensing. These are elaborated in the glossary.

6.3.4 Potential contents of a water balance for a WMA

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 the 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 water and leakages, as well as the regulation of nightflows in context of urban use.

Estimates of water availability

- These may be based on a variety of sources such as NWRS, ISP, Basin Study reports.
- Groundwater use must take its rightful place as an means to augment future supply.

Water use:

- Water use needs to address the following aspects: Who (which sector), how much (quantity, quality), source, how/ for what purpose, when, where.
- 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. The only way that the requirement can then change is through issuing of a licence(s). Allocations for future irrigation requirements are therefore in the hands of the licensing authority (now DWAF transferring to CMA).
- Comparison or registered irrigation requirements (WARMS) versus actual water requirements
- Unlawful use
- Expected growth: Scenarios: NB to include requirements outlined in IDPs, PGDS etc.

Evaluation of use:

- beneficial, efficient, effective

Strategic actions required in sub-strategies:

- These should identify actions that must be reflected in subsequent sub-strategies. For example, constraints must be fed into the visioning process (GL 6.4), Classification

scenarios need to be balanced (GL 6.5), WCDM needs should be taken up under SDC (GL 6.6) and monitoring may be critical (GL 6.8).

6.3.5. Checklist

Does the water balance assessment component of the CMS:

a. identify key strategic areas to be reflected the CMS?
b. identify information needs for the visioning process?
c. address priorities and gaps?
d. identify resource needs?
e. identify skills needed?

Specific Questions

- Does water balance assessment identify priorities and gaps been identified for an complete water balance?
- Does it address the need for groundwater development and monitoring been developed?. Are measures in place or plans for this addressed in the CMS for groundwater
    - Use?
    - Aquifer status?
    - Groundwater/ surface water interactions?
- All interventions to reconcile are likely to have some impacts. Have these been identified and evaluated together with other relevant factors to enable an informed decision to be reached. This must ensure that benefits exceed costs [NWRS S 2.4].
- Have the continuous improvements of and investments in relevant technology, enabling mechanisms and supporting infrastructure been identified?
- Have the human, financial and infrastructural resources needed for the implementation of this strategy been identified?

6.3.6. Procedural diagramme

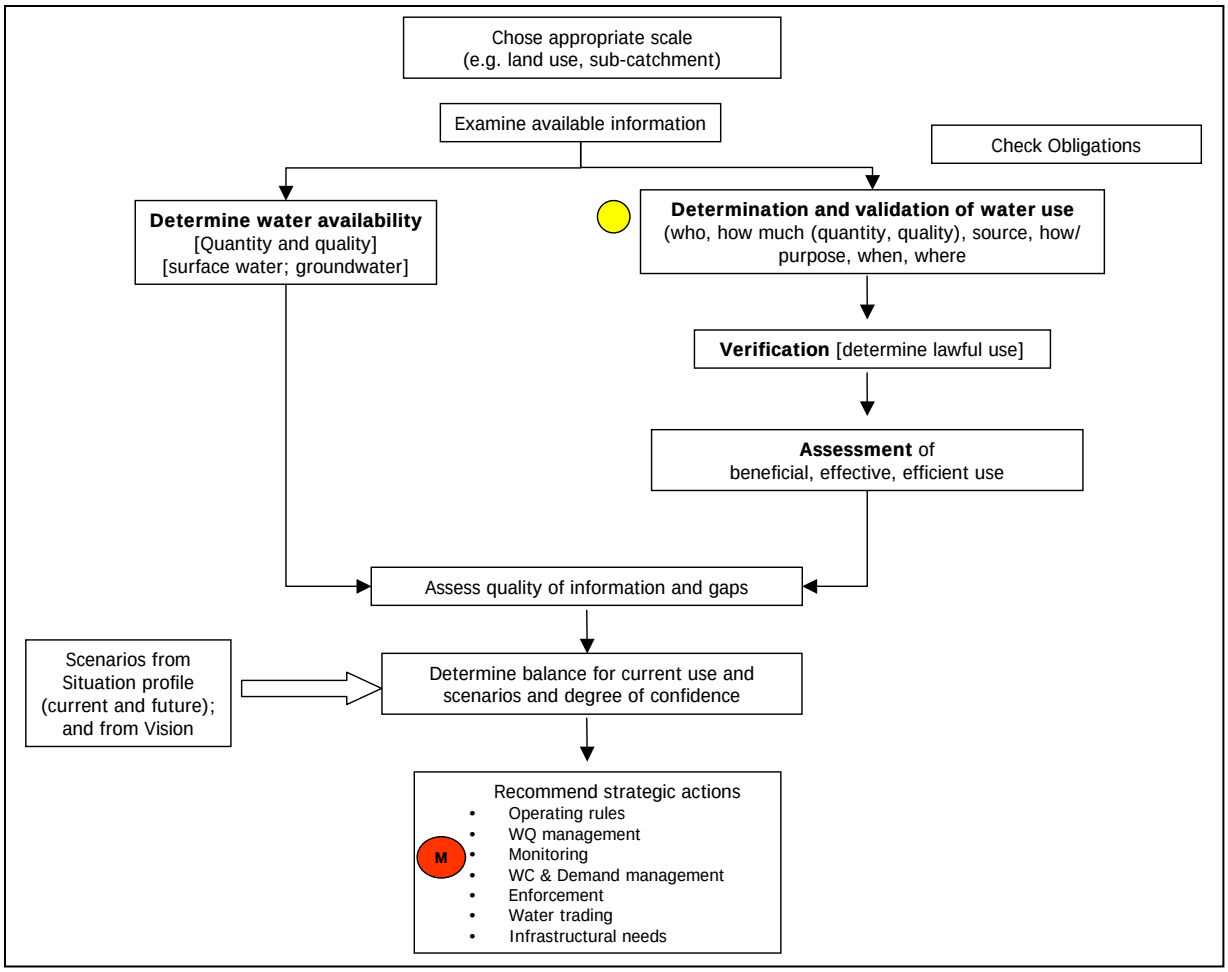


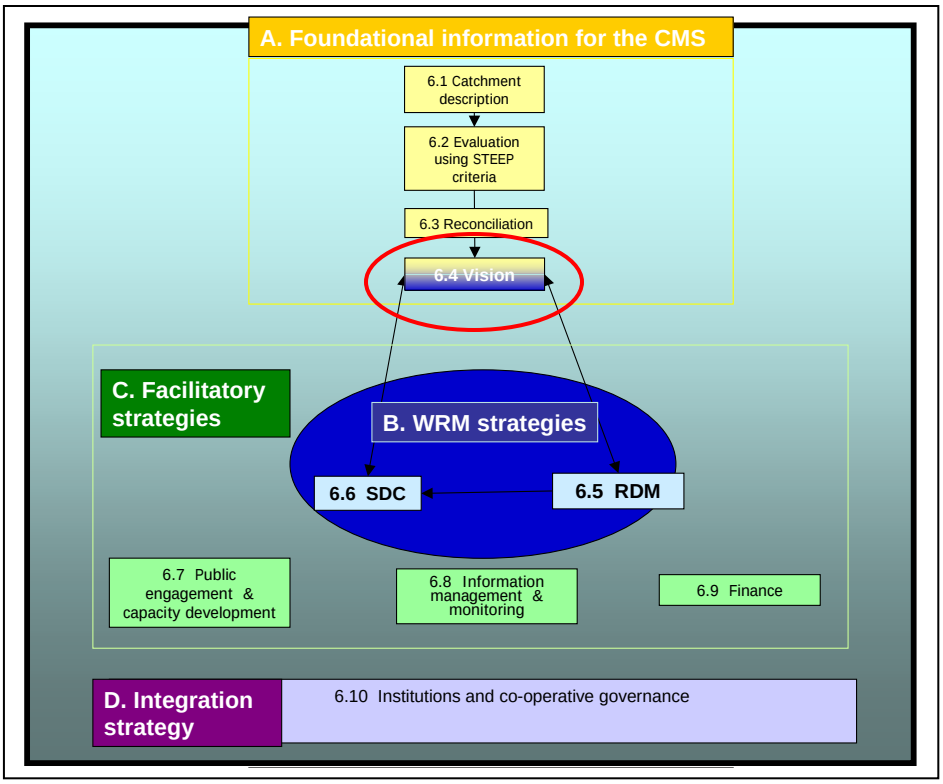
Figure 6.3.1 Schematic representation of steps for reconciliation of water resources. Yellow dots= public participation, red dots = monitoring

6.3.7. Important references

1. DA (2004). Water conservation and water demand management for the agricultural sector. Pretoria, South Africa.
2. DWAF (2001). "Water Conservation and Demand Management National Strategy Framework." Draft.
3. DWAF (2003). Volume 1: Water conservation and water demand management - a planning framework for Catchment Management Agencies. DRAFT. Pretoria, South Africa.
4. DWAF (2003). Volume 2: Guidelines for undertaking a water conservation and water demand management situation assessment and development of a business plan within the water services sector. Pretoria, South Africa.
5. DWAF (2003). Volume 3: Guidelines for implementing water conservation and water demand management within the water services sector. Pretoria, South Africa.
6. World, Commission, et al. (2000). Dams and development: a new framework for decision - making. The report of the world commission on dams an overview.

PART A

Guideline 6.4
Guidelines for developing a vision for a WMA



6.4.1 Introduction

The Constitution 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 decentralisation of water resources management. By collaboratively arriving at a vision, different stakeholders provide their commitment to dealing with the realities of a particular WMA. The process of visioning provides a mechanism for involving multiple stakeholders in the strategic planning process from the very outset. Furthermore, visioning is a valuable tool where there is a poor database, and /or where there is little sharing of knowledge. 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.

The importance of visioning in WRM cannot be overstressed as the vision statement provides a backdrop for the development of the various WRM sub- strategies. Specific reference to setting a vision is made in the White Paper (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 1999; WISA 2000).

One of the most challenging aspects of developing a vision for water resources is likely to relate to its participatory nature. The vision will need to be set with the involvement of various stakeholders and interested parties. 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. The vision will need to be negotiated which implies that consensus and compromise need to be reached. The possibility of divergent visions emerging out of the process might call for conflict mediation.

6.4.2 Objectives and outcomes

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 desired state that provides a medium-to-long direction for the WMA that has been arrived at through stakeholder participation and that is used as a basis for deriving sub-strategies.

Key question

How can a future vision guide strategic planning?

6.4.3 What you need to know to develop a vision for a WMA

The purpose of vision-driven IWRM

Not only is visioning an important source of strategic plans it is also useful in situations of growing water scarcity where there are competing demands. The process of creating a shared vision requires a holistic understanding of the situation in the catchment (GL 6.1 and 6.2) which assists the various parties in working towards a common goal and so reduces the prospects of conflict. Experience shows that a shared vision can be used to illustrate how benefits can be generated from co-operation and so begin to move stakeholders towards focusing on sharing benefits rather than on protecting own interests.

The intent of catchment visioning is to:

- generate a sense of cohesion and common purpose in people with diverse interests in the water resource;
- direct activities related to diverse interests towards that 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 whether the actions contribute to achieving the overall vision;
- provide objectives that allow operational managers to interpret license applications and formulate and recommend license conditions in a strategic manner.

[1] STEEP = Socio-economic, technological, environmental and political for the catchment. See Figure 2.1

It must be noted that while the vision statement should point towards some idealised future state it should not be so unrealistic that it cannot be attained. This means that the visioning process needs to be grounded in a sound understanding of the realties of a particular WMA and its sub-catchments. The visioning step is thus to be conducted after the situation description and assessment have been completed (see sections 6.1 & 6.2).

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 subcatchment 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 n the Figure 6.4. 2. The WMA vision is a higher 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 within specific catchment contexts.

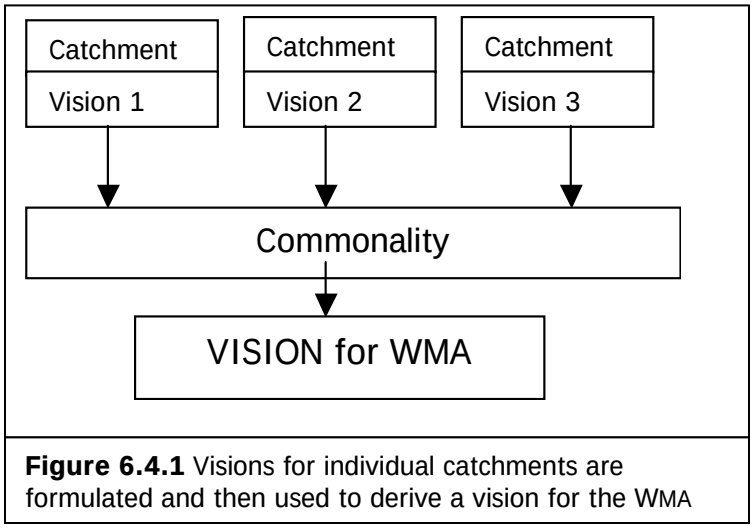


Figure 6.4.1 Visions for individual catchments are formulated and then used to derive a vision for the WMA

The vision as a bridge between assessment of the status quo and management strategies

The vision is the link/bridge between situation assessment of the water resources and the strategies aimed at promoting good management of these resources (RDM and SDC). This is depicted in figure 6.4.1

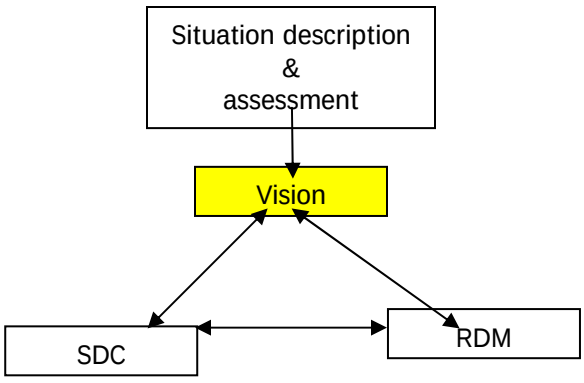


Figure 6.4.2 The vision is the link between the situation assessment and WRM strategy development (Resource Directed Measures: RDM & Source Directed Controls: SDC)

The scope and content of a vision
The vision needs to be expressed as a future state that contains adequate detail yet not too much detail that makes it impossible to achieve. At the minimum, the WMA characteristics need to be recognisable in the vision statement.

The vision statement should not be too lengthy – 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 WMA. It is possible to draw on a 'basket of statements' to guide the actual visioning process.

It is important to remember that the section on visioning is NOT a strategy but rather a process that enables the CMA to proceed with strategy development. This component should explain how the vision process is to be conducted in such a way that IWRM principles are directly addressed.

Visioning: more key issues

i. **A negotiated participatory process**
Visioning is a process that demands a high level of stakeholder 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.

ii. **The basis for forward planning and WRM for a WMA**
A shared vision is the basis from which Resource Directed Measures and Source Directed Controls will the derived. It is therefore important that the vision is accepted as legitimate by stakeholders before proceeding with strategy development for the WMA.

iii. **The basis for establishing long term monitoring and evaluation**
The vision provides an overarching statement of intent against which the CMA and Minister will monitor progress (or retrogress). It therefore forms the basis for the development of indictors for measuring IWRM.

iv. **A way of seeking agreement and reducing conflict**
Since the vision should be reached by consensus is a way of binding stakeholders into an 'agreement' of how water will be management for the benefit of all. This agreement aims to reduce potentially conflictual situations

6.4.5 Checklist

Does this component of the CMS:

a. Identify key strategic areas to be reflected the CMS?

- Procedure and protocols for undertaking the visioning, and the monitoring and review thereof.
- Procedure and protocols for consolidation and reconciliation of sub-catchment visions into a WMA vision.
- Protocol for the communication of this vision to stakeholders.
- Protocol for developing management objectives from the vision
- Protocol for monitoring progress towards achieving the vision

b. identify information needs for the visioning process?

- Situation description (see Section 6.3) and assessment;
- Stakeholder data base, list of existing stakeholder platforms and institutional arrangements;
- knowledge of RDM and SDC processes (see sections 6.5 & 6.6)

c. address priorities and gaps?

- Stakeholder empowerment or support for HDI groups has to be considered (see section 6.7).
- Key gaps that need to be addressed include the absence of public platforms and forums; a lack of experience with the visioning process especially for first generation CMS;
- the lack of facilitator skills and experience with conflict mediation

d. identify resource needs?

- The role of the CMA is to facilitate the development of a collective vision. However, the responsibility for facilitation of the process may be delegated and roles and responsibilities need to be explicitly articulated.
- Public participation is the cornerstone of visioning(see section 6.7). Details of how the public will be involved and issues related to capacity development are essential to consider.

e. identify skills needed?

- Facilitation with knowledge of WRM and WMA; mediation skills.

Specific Questions

- Is the vision presented as an idealized future state for the WMA?
- Does the vision align with national objectives captured in the NWRS?
- Does the vision for the WMA take into account the individual visions for sub catchments?
- Will the vision be reached through consensus?
- Is the vision expressed as a medium to long-term state?
- Is the process of reaching the vision recorded?
- Are there policy implications for the vision? Does the vision have policy implications or commitments?

6.4.5 Procedural diagramme

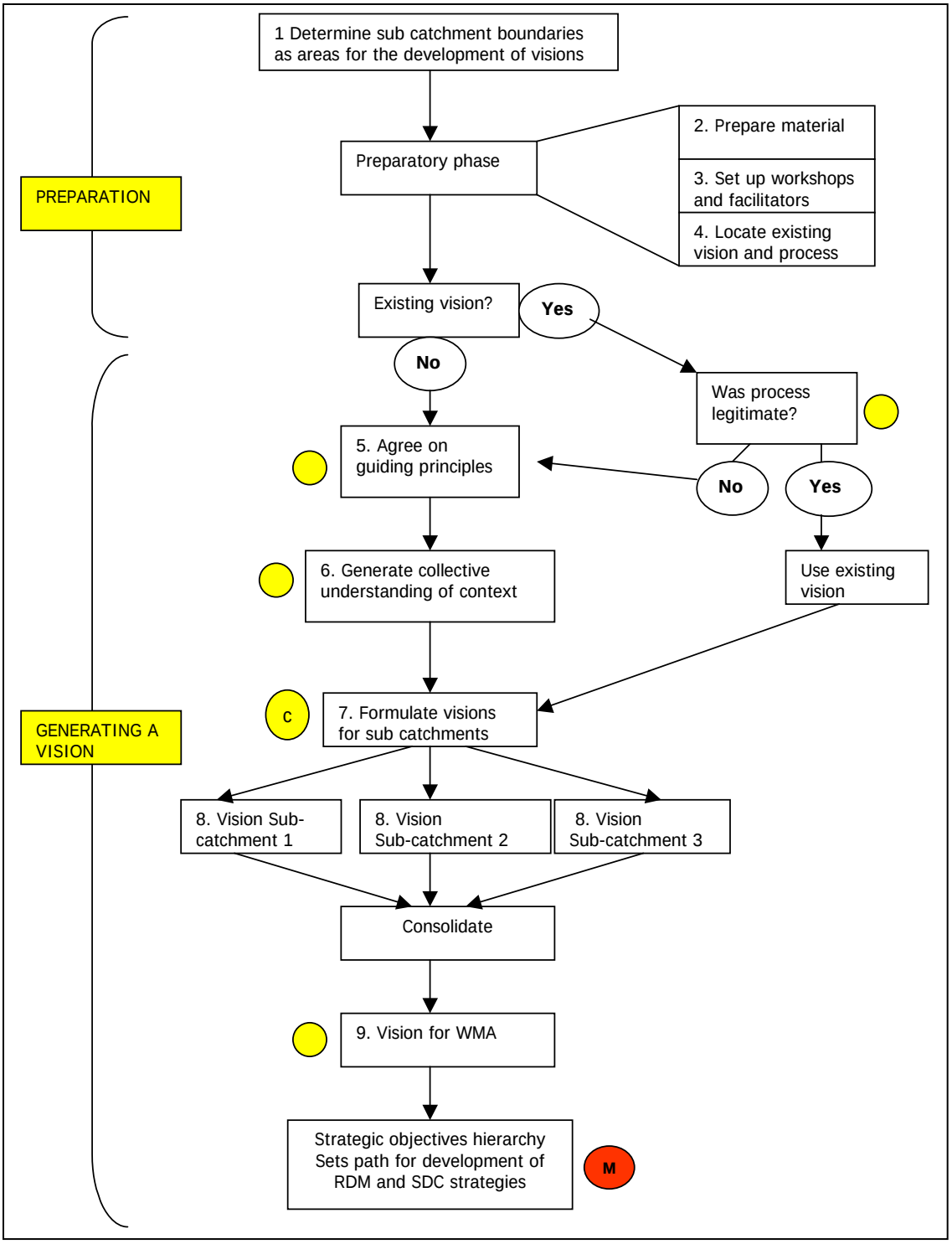


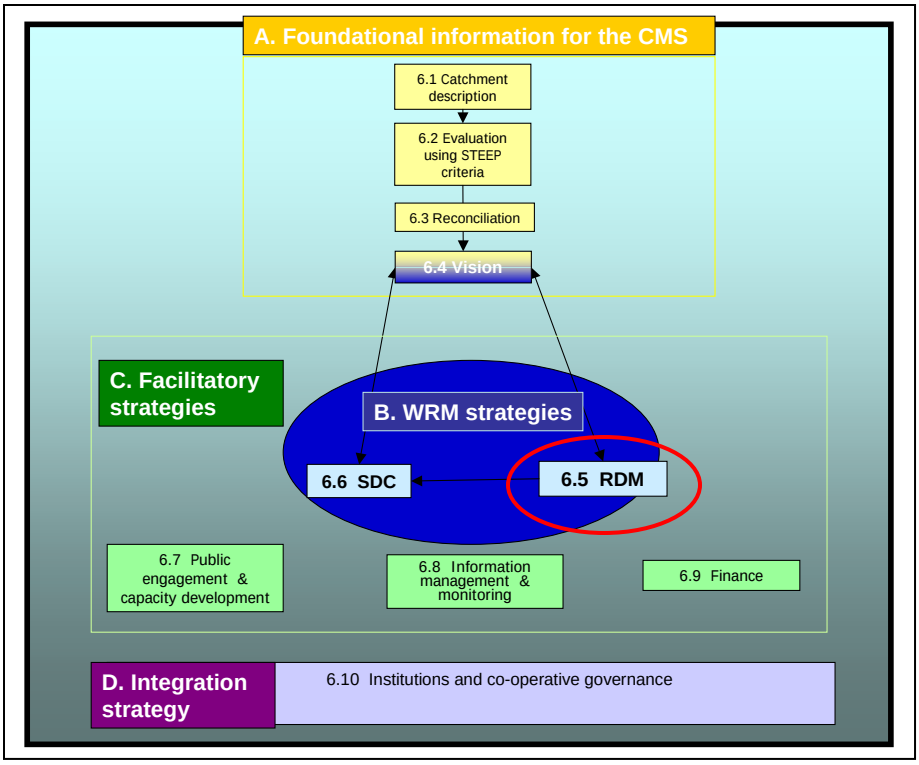
Figure 6.4.1 Schematic representation of steps for visioning. Yellow dots= public participation, red dots = monitoring

6.4.6. Important references

1. DWAF (2001). Guidelines for stakeholder participation in integrated water resources management in water management areas in South Africa. March 2001.
2. DWAF (2001). Generic public participation guidelines, Compiled Romy van Jaarsveld. Pretoria.
3. DWAF. Resource Directed Measures for Protection of Water Resources. Volume 2: Integrated manual, Version 1.0. Pretoria, South Africa.
4. Motteux N. (2001). The development and co-ordination of catchment for a through the empowerment of rural communities. Water Research Commission report no. 1014/1/01
5. Rogers K.H., Roux D. And H. Biggs (2000). Challenges for Catchment Management Agencies. Lessons from bureaucracies, business and resource management. Water SA. Volume 26 (4): 505 – 512.
6. Van Wilgen BW, C.M. Breen, J.J. Jaganyi, K.H. Rogers, D.J. Roux, T. Sherwill, E. van Wyk and F. Venter. (2003) Principles and processes for supporting stakeholder participation in integrated river management - lessons from the Sabie-Sand catchment. WRC report no. 1062/1/03. Pretoria.
7. Integrated Water Resource Planning Systems Series Sub-series No. WQP1.7.1 Guidelines on Catchment Visioning for the Resource Directed Management of Water Quality Version. 7 April 2006

PART B
WRM strategies

Guideline 6.5 Water Resources Protection
Guidelines for developing a sub-strategy for Resource Directed Measures



6.5.1. Introduction

The Water Resources Protection (WRP) sub-strategy (or collection of sub-strategies) addresses the need for the protection of water resources to ensure their continuing sustainability and availability for human use by leaving enough water of appropriate quality in rivers, streams, groundwater and estuaries) to maintain their ecological functioning. Water resources protection (WRP) 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, without compromising those of future generations. To do this, the NWRS stipulates two complementary strategies: **Resource Directed Measures (RDM) and Source Directed Controls (SDC).** Both 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.

The following components contribute to RDM:

- Classification of freshwater bodies.
- Determination of their ecological Reserves.
- Setting resource quality objectives (RQO) for freshwater bodies.

However, **additional measures** to protect water resources also exist. Government has consistently recognised that partnerships need to be developed with other departments and non-governmental bodies in order to meet its objectives, and a range of initiatives must be considered in this regard. These may include initiatives to protect wetlands, riparian zones, groundwater and estuaries and need to be integrated into the overall WRP strategy. This includes agreements ratified through international conventions such as Ramsar.

Box 1
Important potential partners or instruments for water resources protection (see RDM Glossary for details)

River Health Programme, Biomonitoring, Working for Water, Working for Wetlands, National Water Conservation Campaign, strategic environmental assessments, strategic conservation planning, research projects, community-based natural resource initiatives, park management plans, Environmental Management Plans, Spatial Development Initiatives, Common Property Associations (formed under CLARA).

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 and these practices need to be considered. *Note that at the time of writing concepts and policies for this are still in the early stages of development and the CMS must be cognizant of these developments.*

As part of the situation assessment and visioning process, information is required on the Present Ecological State (PES) of the water resource in question as well as the future state of the resource if no management interventions are taken. By association, this also determines the current Management Class of the resource. The vision (i.e. a new future scenario) for a WMA is followed by resource-directed measures to give effect to issues of resource sustainability. As stated, RDMs are then given meaning by setting conditions for water use through the Source Directed Controls.

Key question

What strategic action is necessary to ensure water resources sustainability in the WMA?

6.5.2 Objectives and outcomes

The objective of the RDM sub-strategies is to ensure catchment water security and sustainability 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 strategy must give effect to the class, Reserve and Resource Quality Objectives of the water resources.

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

(a) classification,

(b) the Ecological Reserve,
(c) setting RQO for freshwater resources, as well as
(d) establishing strategic partnerships that are intended to protect natural resources (NB note land-water linkages).

6.5.3 What you need to know to develop an RDM sub-strategy

Legislative framework
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 National Water Resources Classification System (NWRCS);
2. Part 2 deals with using the NWRCS (management classes and objectives); and
3. Part 3 deals with the Reserve.

Additional measures of protection are provided through National Environmental Management Act, the Conservation of Agricultural Resources Act, the Biodiversity Act, the Protected Areas Act, the Ramsar convention, designation as a World Heritage Site and a Biosphere Reserve.

Shared responsibilities
National DWAF has overall responsibility for RDM. The outcome of the classification- a Management Class for a water resource, and Comprehensive Reserve determinations, must be approved by the Minister. However, the CMA must give effect to this at a WMA-level through the RDM/ WRP sub-strategy. Here the obligation is to develop the RDM sub-strategy for the WMA, re-visit and 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 stakeholders, 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.

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 the current state of the water resource in question, setting a desired state, the requirements for the Reserve for that state and the variables that will be monitored to ensure that we are achieving this. More formally the, RDM includes:

- The Reserve,
- Water Resource Classification, and
- Resource Quality Objectives (RQOs).

These protocols for these are in various stages of development and implementation.

Classification system
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 minimum state of health related to an acceptable level of functioning. The Water Resources Classification System (WRCS), which is required by the NWA, is a set of guidelines and procedures for determining the different classes of water resources (Chp. 3, Part 1, Section 2(a)). The WRCS will be used in a collaborative process to classify water resources under present and desired conditions (Classification Process). The NWRCS is still being developed.

The outcome of the Classification Process is that a Management Class (MC) and Resource Quality Objectives (RQOs) will be set by the Minister or her delegated authority for every significant water resource (river, estuary, wetland and aquifer).

Management class
The desired characteristics of a water resource is represented by a Management Class (MC). The MC ranges from Natural to Heavily Used/Impacted (**Table 1**). This essentially describes the desired condition of the resource, and the degree to which it can be utilised. Thus, the MC of a resource sets the boundaries for the volume, distribution and quality of the Reserve and RQOs, and thus the potential allocable portion of a water resource for off-stream use. This has considerable economic, social and ecological implications. Only three MC(I-III) are acceptable.

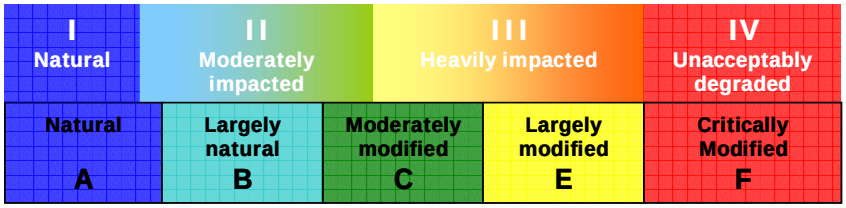


Figure 6.5.1 Figure showing the relationship between Management Classes (I-IV) for a water resource and the corresponding Ecological Category (A-F).

Ecological categories
In order to set a desired MC, the historical and current state of the water resource must be assessed. This current state is represented by the Present Ecological Status, or PES. For rivers, wetlands and estuaries, there are 5 assessment categories, each representing a broad band of "degree of modification" from reference conditions. The categories range from negligible modification, closely approximating natural conditions, to critical modification. Understanding the PES also means one has an idea of the Management Class, as shown in Figure 6.5.1. An ecological category F is not acceptable and RDM sub-strategies have to address improvements to at least a category E.

Resource Quality Objectives refer to numerical or descriptive statements (in terms of water quality and quantity) of conditions (goals) that should be met in the water resource.

The Reserve
A commitment to maintaining a balance between water provision and sustainability is captured by the **NWA** in the concept of the Reserve. The Reserve comprises two components: 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.

Remember: Once a Reserve and Class has been determined for the resource, then the allocation of water cannot impinge on these.

Types and Levels of RDM
It is important to distinguish between types of Reserve determinations and the levels of RDM determinations.
Types of Reserve Determinations refer to the status of Reserve determination. The Act makes a distinction between two Reserve Determinations (as opposed to RDM levels)

1. Reserve determination

This can only be determined once the resource has been classified according to the WRCS

2. Preliminary determination

All Reserve determinations done BEFORE of resource classification are preliminary Reserve determinations

There are four *levels* of RDM determinations ranging from desktop to comprehensive (Table 6.5.2). Determining which one to use depends on a number of factors, which include

- the degree to which the catchment is already utilised;
- the sensitivity and importance of the catchment, and
- the potential impact of the proposed water use.

Table 6.5.2: Levels of RDM determination (DWAF 1999, Integrated manual)

Level	Terminology	Characteristics	Use
1	Desktop estimate	Very low confidence, about 2 hours per water resource	For use in National Water Balance Model only
2	Rapid determination	Low confidence; desktop + quick field assessment of current status, takes about 2 days	Individual licensing for small impacts in unstressed catchments of low importance & sensitivity; compulsory licensing "holding action"
3	Intermediate determination	Medium confidence, specialist field studies, takes about 2 months	Individual licensing in relatively unstressed catchments
4	Comprehensive determination	Relatively high confidence, extensive field data collection by specialists, takes 8-12 months	All compulsory licensing. In individual licensing, for large impacts in any catchments. Small or large impacts in very important and/or sensitive catchments.

Water resources protection priorities would include gathering information on (a) the degree of stress of the catchment in question; (b) the likelihood of compulsory licensing; (c) water use allocation planning and (d) proposed high impact developments.

Note:
No water use licence may be issued without at least a preliminary determination of the Reserve having been undertaken (NWA). Comprehensive Reserve determination is required in the case of (a) compulsory licensing; (b) water use allocation planning; (c) large impacts; (d) sensitive/ stressed catchments (DWAF 2003).

Equally important are the other partners and associated planning instruments mentioned in Box 6.5.1. International conventions, for example, bind the actions of the CMA. In other areas proactive initiatives towards sustainable water resource planning include SEAs and Strategic Conservation Plans (see Glossary).

6.5.4. Potential contents of an RDM sub-strategy

This sub-strategy directly addresses the overarching principle of sustainability and thus has major implications for longterm catchment water-security. In writing the strategy it is also important to note that holistic approaches to water resources protection refers not only to statutory measures like the Reserve, but should reflect additional non-statutory initiatives. Moreover, as signatory to various international conventions, South Africa has a commitment to honour these (e.g. Ramsar, World heritage sites).

The RDM sub-strategy must set out a plan for phased RDM determination, implementation and monitoring for all water resources. This means identifying (a) areas that have already had Reserve determinations or for which the EWRs have been developed, and (b) priorities for Comprehensive Reserve determinations (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 two years. Thus the CMA board needs to plan well in advance. The process of stakeholder engagement is still being tested and the time required should not be underestimated. In the case of transboundary resources, additional commitment to international agreements must be taken into account.

The sub-strategy must identify water quality issues and if necessary, develop a an additional sub-strategy to address this. Areas where a hydrological update and water resources modeling exercise is required (to reconcile the Reserve requirements with the water demand) must be identified. Any infrastructural needs to give effect to RDM should be identified. Most importantly interim approaches for managing the resource must be set out. For example, the current ecological classes may constitute the interim objective to which the sub-strategy must give effect. Where ad-hoc Reserve determinations are required, these will have to be based on best available information, using the rapid or intermediate approach until such time as data has been accumulated to support more comprehensive methods.

Furthermore, the sub-strategy must address partnerships with various organizations and interested parties that will assist in achieving the objective of Water Resources Protection. Included in this is the recognition that in many rural areas in particular, local communities can or are managing natural resources such as wetlands and estuaries.

6.5.5. Checklist

Does this sub-strategy have the following information available or are plans in place to address this?

- Water balance and reconciliation. Have EWR or Reserve determinations been integrated into the water balance?
- Have future projections been determined based on balancing the scenario set by the vision together with potential constraints?
- Are there any international sites ratified by convention (e.g. Ramsar) and what are the agreements of these?
- Spatial distribution, land tenure and governance arrangements for water resources within the WMA (includes inventory of wetlands).
- Status of resources (rivers, groundwater, estuaries, wetlands), i.e.the present class of the resource.
- Other WRP initiatives operative in the sub-catchments.
- Operational plans where appropriate.

Does this sub-strategy reflect the following key strategic areas, and priorities, been reflected in the strategy?

- Strategic actions required to achieve RDMs (Class, Reserve, RQO) for the WMA. This must include protocols for stakeholder participation.
- A clear monitoring and enforcement programme.
- Strategy for establishing and building partnerships to meet the objectives of WRP in the WMA, including international conventions.
- Each strategic action should address time frames, responsibilities, budgets.

Does this sub-strategy take the following skills needs into account?

- Adaptive management; use of objectives hierarchies, knowledge of Reserve determination process; knowledge of strategic conservation planning

Does this sub-strategy consider issues of co-operative governance and institutional arrangements?

The outcomes of the WRP strategy will inform developments identified in a suite of departmental strategies and plans. They need to be informed of this and compliance becomes an important issue.

Does this sub-strategy take into account the following potential partnerships?

- DEAT (Working for Water, Working for Wetlands, the Rivers Health Programme; Conservation agencies); Department of Agriculture; Department of Trade & Industry; Department of Mineral & Energy Affairs: local government; traditional authorities, WUAs, NGOs. Their role needs to be specified in terms of a particular catchment or part of a catchment.

Does this sub-strategy consider the need for any regulatory requirements?

- The WSA and NWA make provision for development of regulations. 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 diagramme

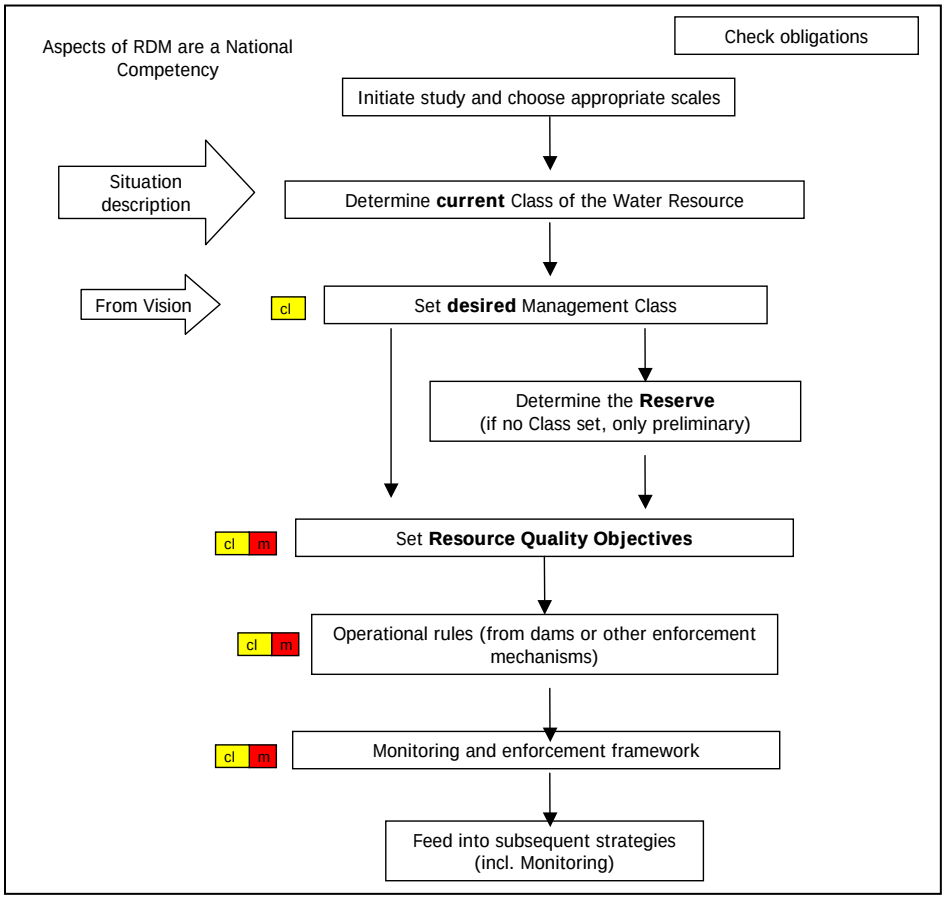


Figure 6.5.1 Schematic representation of steps for RDM. Yellow dots= public participation, red dots = monitoring

6.5.7. Important references

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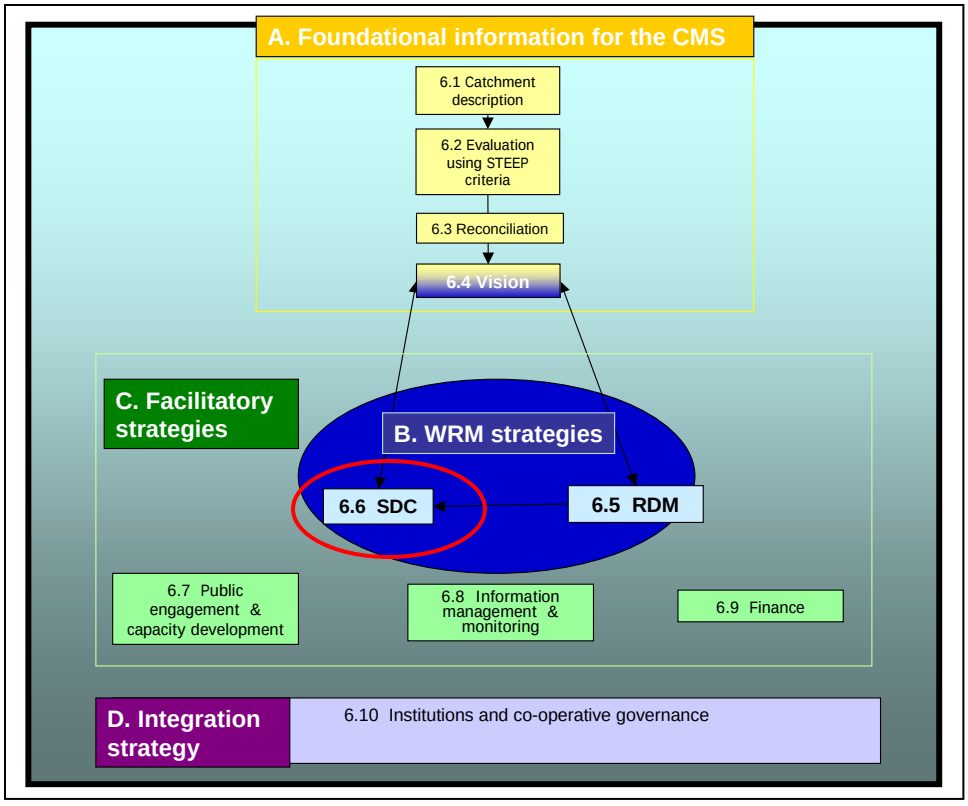
PART B
WRM strategies

Guideline 6.6 Regulating water use
Guidelines for developing a sub-strategy for Source Directed Controls

Authorisation, Allocation Plans, Licensing, Water Conservation Demand Management, Compliance and Enforcement



6.6.1 Introduction

'Source directed controls' (SDC) refers to a set of measures aimed at regulating water use so as to achieve the vision and Resource Directed Measures (RDM). Together with RDM, they are the main mechanisms for achieving the overarching principles of equity, efficiently and sustainability associated with WRM in South Africa. An important component for the early Catchment Management Strategies will be a plan for the reallocation of existing authorisations to address issues of water stress and inequitable water access. The legal grounding for water use is provided for by Chapter 4 of the NWA and the overarching approach is addressed in the NWRS.

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

A. Authorisation of water use
   1. Authorisation and entitlements
   2. Allocation: the process of apportioning water resources to meet various needs
   3. Licensing: the process of issuing an entitlement for use, usually with specific conditions

B. Additional Source Directed Controls
   1. Water quality management and pollution control
   2. Water Conservation and Water Demand Management
   3. Augmentation
   4. Pricing and charges

C. Compliance and enforcement: Ensuring that the conditions for a particular entitlement are being met

Key question:

How can water use be regulated to achieve equity, sustainability and efficiency so as to achieve the WMAs vision?

6.6.2 Objective and expected 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. Based on the principles of equity, sustainability and efficiency, the strategy must address allocation, re-allocation, authorization and licensing, 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, authorization, compliance and enforcement to realize the ideals of equity, sustainability and efficiency.

6.6.3 What you need to know to prepare the SDC strategies

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 and in Appendix 6.6.1. DWAF has also prepared a number of guideline documents that support SDC development and implementation. This guideline should be used in conjunction with these.

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SECTION A: AUTHORISATION OF WATER USE

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

1. Authorisation, entitlements and licences

The NWA only makes provision for one right to water – the Reserve (DWAF 2006). All other uses must be authorised. Entitlements replace the system of 'rights' that were part of the previous legal dispensation. An entitlement is granted for particular water use for a specified time, under specified conditions. Entitlements may or may not require licenses but ALL must be authorised by the appropriate authority (DWAF, CMA or other appointed authority).

The NWA and the NWRS provide a clear guide as to the different types of authorization:

1. Schedule 1
2. General authorizations
3. Existing lawful use (E.L.U.)
4. Licensed use

The NWA recognises 11 water uses (See Chapter 1, Box 1.1). It is important to note that the Act

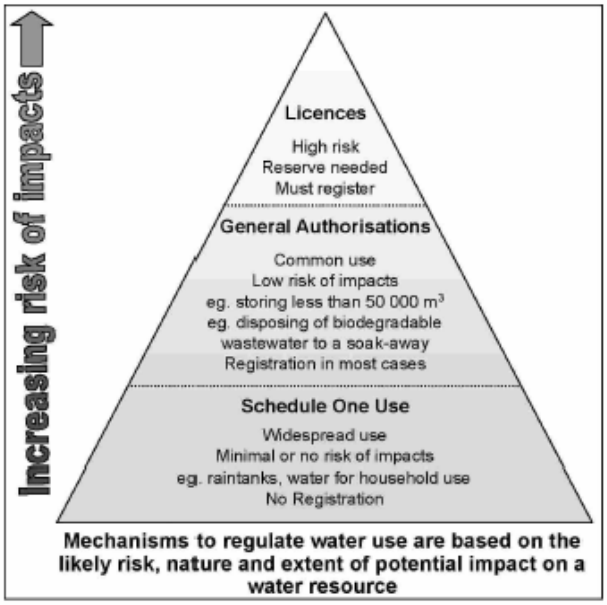


Figure 6.6.2 The NWA sets out rules to use water wisely. These rules say that the bigger the risk of potential negative impact on the water resource, the more stringent the rules will be for using that water. NWRS, 2004

defines water use broadly to include consumptive use and well as non-consumptive use (swimming, fishing, canoeing, afforestation, and forms of waste disposal that might affect the resource). 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 (see Figure 6.6.2).

Direct entitlements

Although those using water under the direct entitlements category do not require a licence for use (as set out in the NWA) they may be required to register the use. E.L.U will eventually be incorporated under licensed authorisation through the process of compulsory licensing.

Licensed authorisation

Licensed use of water is by far the largest category. For this reason it will be closely regulated by a system of licenses that will set out specific conditions that the user must abide by. The CMA is responsible for calling for, evaluating and granting these licenses. 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.

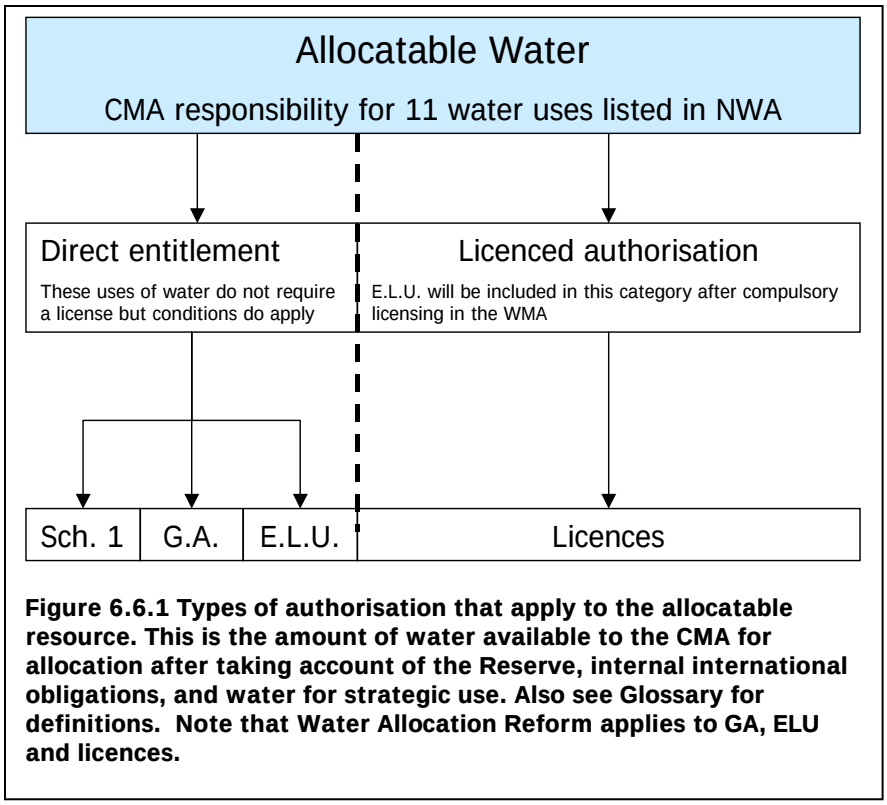


Figure 6.6.1 Types of authorisation that apply to the allocatable resource. This is the amount of water available to the CMA for allocation after taking account of the Reserve, internal international obligations, and water for strategic use. Also see Glossary for definitions. Note that Water Allocation Reform applies to GA, ELU and licences.

Transfer of Water Use Authorisations

Water use authorisations may be transferred through:

1. **A temporary transfer of water:** for irrigation either on the same property for a different use, or to another property for the same or a similar use. 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 allocation 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.

2. Allocation, allocation plans and allocation schedules

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 allocation for the Reserve, international agreements and strategic purposes, allocation for all other uses is the responsibility of the CMA. 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 strategy.

Box 6.6.2
Guiding principles for allocation

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 not benefited from water resources management, 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 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 cooperation between national and regional DWAF offices, government sectors, industry, agriculture and civil society
Transparency: Information and decisions should be open to public scrutiny so as to foster co-operation and support for decisions

Water allocation will be given effect through the drafting of water allocation plans (WAP) (see Box 6.6.3), which must also contain water allocation schedules (WAS).

Box 6.6.3
What is a water allocation plan?

A water allocation plan is a document prepared in terms of section 9 of the National Water Act (Act 36 of 1998) which sets out the amount of water that can be abstracted and used by all users, taking into account both consumptive and non-consumptive uses. WAPs are overarching plans that contain a record of allocation decisions as deliberated and agreed upon by stakeholders and approved by the CMA (using principles Box 6.6.3). A WAP also provides the rules for allocation in terms of section 23 of the Act, the transfer of water within sectors and between sectors, and use of the available water from the Water Management Area.

The WAP will contain Memoranda of Understanding, Agreements, Operating Rules and protocols for transfers of water. Once a WAP is complete a Water Allocation Schedule (WAS), indicating the exact quantity and quality of water apportioned to a particular user, is drafted. The WAS is used as the basis for the issuing of licences. The water uses must be in accordance with the 11 water uses as prescribed in section 21 of the Act.

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 Project (WAR) provides a number of guidelines for the reallocation process, summarised in Box 6.6.5. The key mechanisms for achieving water reform are compulsory licensing (see glossary), water conservation and demand management (WCDM; Appendix 6.6.1) and water trading.

Water allocation reform is integral to the allocation process – not something separate. It is expected that each CMA make a concerted effort to develop a sub-strategy for allocation that incorporates the water allocation reform principles directly into the allocation procedures.

An important aspect of water allocation reform is the decision regarding where this is needed and how and when this will proceed. Although there are currently no protocols for this, the Situation Assessment (GL 6.1 and 6.2) and Reconciliation (GL 6.3) should provide a substantial

contribution. Both the information on water use and users as well as an evaluation of these based on multiple criteria (see Figure 6.2.2) are the basis for taking this forward.

Box 6.6.5 Principles for reallocation and allocation reform (WAR Project, 2005)

1. A primary focus will be to address past imbalances in water allocations to 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 (BBBEE) 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.

3. Licensing

Licensing is dealt with in detail in Chapter 4 of the NWA, and two issues are pertinent. Firstly, all water use that is not authorised as a special provision, Schedule 1, an existing lawful use or a general authorisation requires a license. Secondly, in order to ensure transparency, licenses may only be issued after an allocation schedule has been drafted. Licences provide the appropriate authorities with a mechanism for regulating water use by stipulating conditions for a particular use. Ultimately all uses will have to be licensed through a process of **compulsory licensing** (see glossary). The process of reallocation drives compulsory licensing where entitlements are revoked and reissued to meet the Reserve, to rectify over allocation and redress racial and gender discrimination.

Note: License application usually needs to take into consideration a number of other statutes such as the Water Services Act (1997), Conservation of Agricultural Resources Act (1983), the Municipal Systems Act (2000); relevant planning instruments; land use plans; resource directed measures and source directed controls. For example, a license to dispose of waste water might require the appropriate authorisation from the Minister of Environmental Affairs and Tourism under the Environmental Conservation Act (1989).

SECTION B: ADDITIONAL SOURCE DIRECTED CONTROLS

In addition to the procedures of water use authorisation as a way of setting conditions for use there are a number of additional areas of regulation that have been developed by DWAF and that will ultimately be a responsibility delegated or shared with the CMA. These are:

1. Water Conservation and Water Demand Management (WC/WDM)

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. Given this, 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 WCDM are given in the NWRS (Chapter 3 (3)). Note also the existence of the *National Water Conservation Campaign (NWCC).* 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), and subsidiary strategies for a number of identified water use sectors (see Section 3.3.4, NWRS), namely

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

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 WSA and among water users. At the time of writing, those for the water services and agricultural sectors have been completed (see references). The development and implementation of WC/DM sub-strategies are the responsibilities of the user sectors. However, where capacity is weak the CMA must play a facilitatory role. It is also the task of the CMA to co-ordinate these subsidiary strategies.

The control of invasive alien plants, or IAPs, is an additional issue that needs to be considered, since the IAPs 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.

Note: 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 Year 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, NDA and DWAF.

2. Augmentation

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, for example desalinisation. The SDC sub-strategy should provide a general orientation to the augmentation approaches to be adopted within the WMA (see Appendix 6.6.1).

3. Water quality management and pollution control

Part of the SDC strategy is to outline how water quality will be managed and pollution controlled, through the following areas of activity in the sub-strategy.

- Determining procedures and conditions for wastewater disposal.
- Improving farming and industrial activities so as to reduce sedimentation and water quality degradation.
- 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 aims water quality management are to:

- Promote sustainable development & efficient use of water resources
- Promote internalization of environmental costs by impactors
- Create financial incentives to reduce waste discharge
- Recover costs of mitigating water quality impacts

Water quality management is largely driven by charges that act in an incentive/disincentive through the 'polluter pays principle'. The National Pricing Strategy (NPS) acts as a basis for setting these charges. The two charges are:

a) Waste discharge WRM charge
This is a financial measure aimed at recovering costs of managing water quality in the WMA and it is integrated with abstraction charges.

b) Waste-Discharge Charge-System
The discharging of waste or waste-water into a resource is defined in the S56 (5) of the NWA as a water use against which charges may be levied. DWAF is currently developing a Waste-Discharge Charge-System (WCDS). The charge acts as an incentive for reducing the waste load discharged into the water resource.

4. Incentives and disincentives

The CMS needs to outline an approach for pricing, incentives, disincentives, restrictions, and subsidies. These mechanisms have an important role to play in working towards SDC management goals. They are also important mechanisms for promoting social transformation and equity.

SECTION C: 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.

1. Monitoring

The monitoring aspect of the SDC strategy refers largely to those monitoring activities conducted in relation to the regulation of water use (authorisation, licenses, tariffs, charges etc). This must be linked to the broader context of monitoring of IWRM set out in GL 6.8 on the information management and monitoring strategy.

2. Compliance and enforcement

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

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

The Act is prescriptive and allows for enforcement in cases of non-compliance. Effective enforcement requires co-operation from various institutions. The CMA will however play a dominant role by ensuring that its CMS incorporates mechanisms for enforcement of the law.

6.6.4. Potential contents of the strategy

Key strategic areas to be reflected in the strategy

1. Registration and verification
2. Allocation plans and allocation schedules
3. Licencing procedures
4. Water quality management and pollution control
5. Pricing, tariffs, incentives, disincentives, subsidies
6. Monitoring, compliance and enforcement

The SDC sub-strategy might comprise a number of strategies that cover items 1-6 as integrated or separate strategic plans.

Priorities and gaps

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 should however proceed with interim measures until the required information becomes available and relevant systems are put in place. Two important issues need to be addressed as priorities:

- determining what is lawful and what is unlawful use in the WMA.
- compulsory licensing can only proceed after a comprehensive Reserve determination

Note: informational needs that will be required for the development of the SDC sub-strategies

- Socio-economic profile
- Land tenure reform and associated needs
- Water balance (including groundwater): Availability and demand
- Status of resources (rivers, groundwater, estuaries, wetlands); Management class;
- Other plans that impact on water e.g. WSDPs
- Reserve determination status and/or schedule
- Specials provisions (General authorisations and Schedule 1)
- Database of registrations and verifications (WARMS)
- Status of E.L.U.
- Status of unlawful use

6.6.5. Procedural diagramme

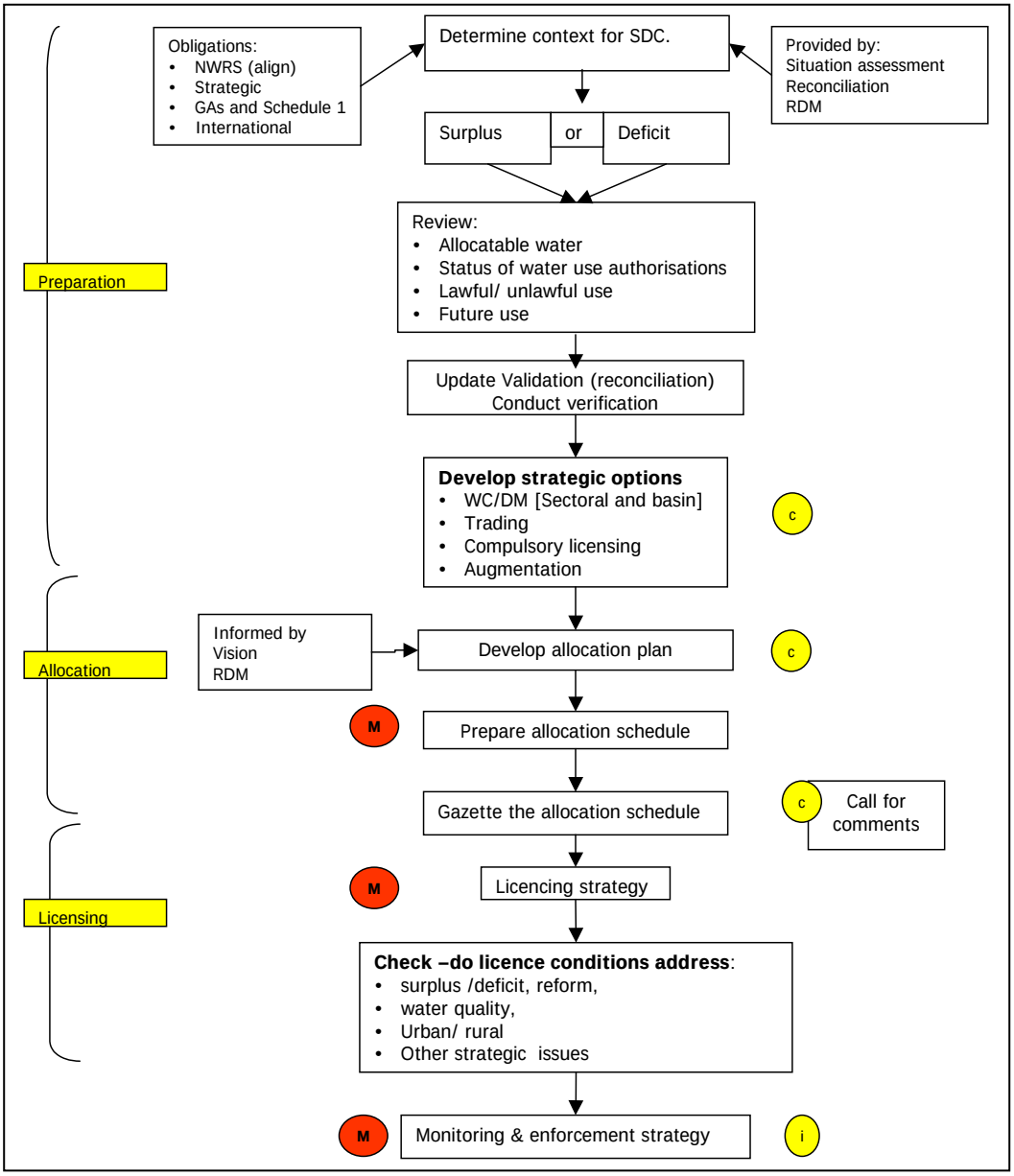


Figure 6.5.1 Schematic representation of steps for SDC. Yellow dots= public participation, red dots = monitoring

6.6.6. Checklist

Does this sub-strategy:

a. identify key strategic areas to be reflected the CMS? (see above).

b. identify information needs, including:

- situation description, assessment, reconciliation and the vision;
- WARMS
- Biophysical data including loss to evaporation from storage?

c. address priorities and gaps such as registration data gaps, or potential water use efficiency options?

d. identify resource needs?

- Capacity
- Enforcement
- 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 shared.

e. identify skills needed?

- Law enforcement
- Licensing

Specific Questions

Does the sub-strategy:

- articulate how it will give effect to the principles of equity, efficiency, sustainability?
- align with the vision for the WMA?
- outline how existing surpluses will these be used to address (a) poverty reduction and equity, and (b) future growth? [S 2.5]

Allocation and licensing

- show how allocation plans are to be drafted with stakeholder involvement?
- set out a plan for compulsory licensing, particularly in stressed catchments?
- allocation plans reflect the intent of water reform? How?
- recognise provision for the Reserve or strategic and international needs ? (a license that compromises the Reserve directly or indirectly cannot be issued)
- set out criteria for evaluation of licences?

Augmentation

- present an integrated WC/WDM strategy after taking into account the sectoral WC/WDM plans?
- give due attention to a comprehensive suite of alternative augmentation options within specific areas of the WMA?
- show that WC/WDM has been adopted prior to using compulsory licensing to address water allocation reforms?

Monitoring

- address the need to develop a compliance management strategy during the first compulsory licensing exercise? (NWRS S 3.2. 3.8)

Synergy

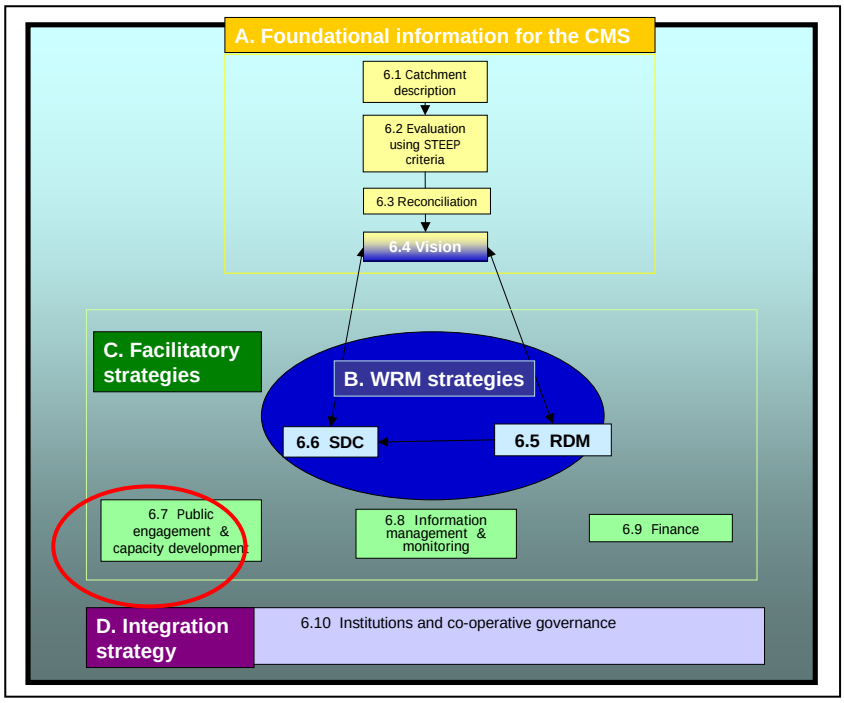
- address the need for synergy between the plans (e.g. WSDPs and the Allocation Plan?
- draw on the National Pricing Strategy where tariff and pricing aspects are required?
- consider water quality in reconciliation especially w.r.t. re-use of water [2.5.1]

6.6.7. Important references

7. DA (2004). Water conservation and water demand management for the agricultural sector. Pretoria, South Africa.
8. DWAF (2001). "Water Conservation and Demand Management National Strategy Framework." Draft.
9. DWAF (2003). Volume 1: Water conservation and water demand management - a planning framework for Catchment Management Agencies. DRAFT. Pretoria, South Africa.
10. DWAF (2003). Volume 2: Guidelines for undertaking a water conservation and water demand management situation assesment and development of a business plan within the water services sector. Pretoria, South Africa.
11. DWAF (2003). Volume 3: Guidelines for implementing water conservation and water demand management within the water services sector. Pretoria, South Africa.
12. NWCC: See also http://web.uct.ac.za/org/rssa/conferen/
13. DWAF (2006) Pricing Strategy for Raw Water Use Charges

PART C
Facilitatory strategies

Guideline 6.7
Guidelines for a strategy for public engagement and capacity development



6. 7. 1. Introduction

According to the NWA each WMA will have a Catchment Management Agency (CMA) that is supposed to act as a co-coordinating body for the collaborative efforts and decisions associated with IWRM. The CMA must, according to the National Water Act, **promote** public participation in the IWRM process. The CMS provides the main location for housing locally derived decisions and strategic plans and is therefore a central mechanism for ensuring public participation and stakeholder engagement.

This section of the guidelines should be read in conjunction with Chapter 4 (Working Together) of the guideline as it is in that chapter that we represent some of the broader discourse of democratic and decentralised natural resource management. Furthermore, this section will present two levels of participatory processes. The first deals with stakeholder engagement in the DRAFTING of the CMS and the second with stakeholder engagement in the actual IMPLEMENTATION of IWRM as captured in the CMS.

While the obligation to involve the public in the development and implementation of a CMS is a statutory one (see Box 6.1) there are some general principles that underpin the need for strategic planning in conjunction with stakeholders. These can be summarised as the need to:

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

- build a broad base of commitment to options by creating an environment that
- recognizes the realistic discussion of benefits, risks, and costs of options and that
- provides a meaningful basis for informed consent to recommendations
- ensure greater sustainability of implementation by involving affected parties in a positive manner.

6.7.2. Objective and outcome

The objective of the strategy for **public** participation and stakeholder engagement is to engage role players and stakeholders in the various aspects of WRM (as addressed in the sub-strategies of the CMS) through co-operation, collaboration and agreement. This must be through ensuring (a) appropriate capacity development, (b) the provision of opportunities for collaborative action, and (c) communication and access to information.

Intended **outcome** is a 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 stakeholder involvement support the implementation of IWRM at the WMA level?

6.7.3. What you need to know to develop this sub-strategy

Legislative framework
The Constitution and the National Water Act provide the main legislative framework for public engagement in the development of the CMS. The instruments are summarized in Box 6.1

Guiding principles
In addition to the legal requirements a number of principles should be evident in the public participation strategy. These are as follows**:**

- **Principle 1- No meaningful participation without capacity development**: stakeholders need to be informed and aware of what the different steps entail in order to be meaningfully involved.
- **Principle 2 - Access**: the public need to be able to access information, documents regarding management decisions and so on in order to be able to participate
- **Principle 3 - Roles and responsibilities clarified**: these must be must be specified so that the process has direction and meaning.
- **Principle 4 - Stakeholders can change their minds**: the process needs to accommodate change and the effect of negotiation on the decision-making processes

Legal basis for public participation in strategic planning

Constitution of the Republic of South Africa (Act no. 108 of 1996)
Section 195 (e) states that: 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 (36 of 1998)

S79- In performing its functions a CMA must- strive towards achieving co-operation and consensus in managing the water resources under its control.

S80- Upon the establishment of a CMA, the initial functions of a CMA are- to promote community participation in the protection, use, development, conservation, management and control of water resources in its WMA.

Ch2 Part2 – 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.

S10- In developing a CMS, CMA must consult with- any person, or their representative organisation- whose activities affect or might affect water resource within its WMA, and who have an interest in the content, effect or implementation of the CMS

- **Principle 5 - Power differences managed**: Issues of power need to be addressed as gradients (differences) in language, knowledge, skills and understanding. These are likely to exist between different role players.
- **Principle 6 – Values declared**: different value systems should be clarified as part of the participatory process. This is linked to interest clarification (see Chapter 5).

6.7.4 Potential contents of the public participation sub strategy

The two levels of public participation
The strategy for public participation should outline how the two levels of public participation - Level 1: drafting of the CMS and Level 2: implementation of the CMS, will be addressed across the WMA (see chapter 5 for more details).

Capacity development
It is the responsibility of the CMA to adequately prepare stakeholders for meaningful engagement. Capacity development is taken to underpin all aspects of Level 1 and Level 2 and should be addressed directly by this strategy. Special attention needs to be given to demographic issues and representativity of stakeholder platforms. Capacity development needs should also be reflected especially were stakeholder groups form part of the Historically Disadvantaged Groups. It is probable that the CMA will need to prepare a sub-strategy for addressing capacity development with special support for HDI groups and the poor.

Communication
Working with a diverse and extensive collection of stakeholders demands an efficient and well functioning communications system. The CMA may consider drafting a specific sub-strategy that addresses communication with role players, stakeholders and the public in general (see Chapter 5).

6.7.5 Procedures diagramme

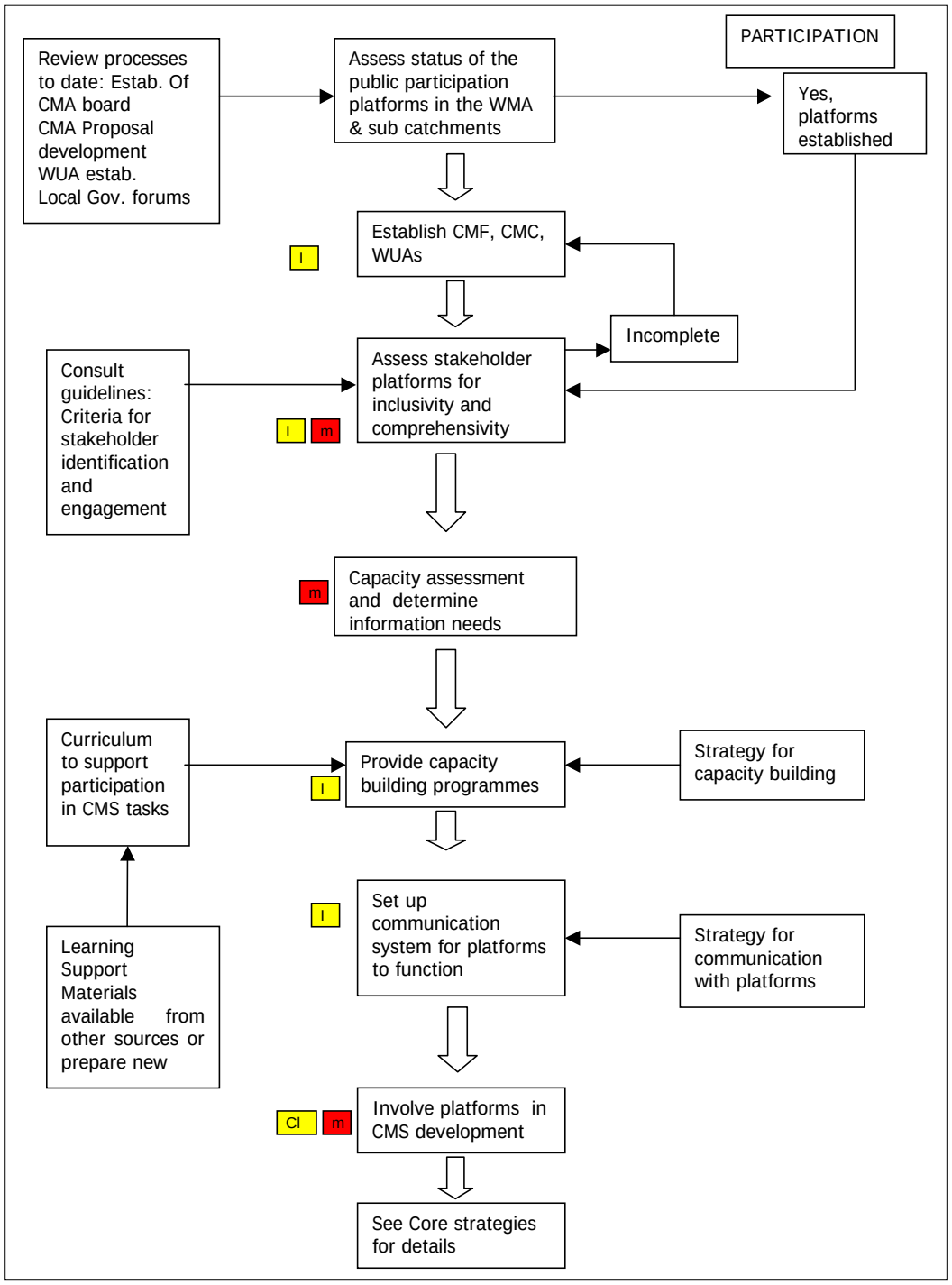


Figure 6.7.1 Schematic representation of steps for RDM. Yellow dots= public participation, red dots = monitoring

6.7.6 Checklist

Does this sub-strategy

a. identify key strategic areas to be reflected the CMS?

- Two levels of participation (drafting and implementation)

- Clarity associated with the stages that are part of Level 1 and 2
- Capacity development
- Communication

b. address information needs?

- Stakeholder data-bases
- Data bases of public forums and stakeholder platforms
- Learning support materials that provide basic concepts and definitions

c. address priorities and gaps?

- **Priorities are likely to be:**
  - Timelines for tasks are developed and communicated to public; thereafter there is a need for the establishment of participatory platforms, together with protocols for involving stakeholder platforms.
  - Support for disadvantaged and marginalised groups,
  - Monitoring and reporting on public participation processes.
- Gaps:
  - The lack of wall-to-wall forums;
  - lack of financial support;
  - lack of indicators for monitoring participation .

d. identify resource needs?

- The facilitation of public platforms and forums are responsibilities that lie with the CMA. The CMA will therefore need to allocate resources for the facilitation and maintenance of such platforms. A fundamental step is the appointment of personnel who have the appropriate skills required for facilitating forum activities.

e. identify skills needed?

- Facilitation,
- Organisation and planning of multiple stakeholder activities
- Communication skills
- Conflict resolution and mediation skills

f. 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).
- The involvement of provincial and local government in developmental planning, sanitation and supply, waster management etc. demand a strategy for co-operative governance (Section 6.10).

Specific Questions

Does this strategy…

- indicate how the CMA will establish, sustain and maintain the appropriate public platforms?
- elaborate on the public engagement regarding tasks within each strategy?
- explain how organised and less organised groups will be engaged?
- define the nature of participation required for each part of the CMS framework?
- present a plan for monitoring stakeholder engagement
- outline the financial implications for stakeholder engagement , with special attention to supporting forums where the HDI is high?

6.7.6 Reference

1. DWAF. Guide 4 in the CMA/ WUA guide series: Public Participation for CMA's and WUA's
2. Evaluation of the involvement of PDI's in the CMA establishment process in the three WMA's of the DWAF/ DANIDA IWRM project.
4. DWAF. Integrated Water Resources Management Communication Strategy, DWAF.
6. DWAF. (2001) Generic Communication Strategy for IWRM, DWAF/DANCED, December 2001.
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8. Capacity Building Overview Assessment Vol.1, Carl Bro a/s, IZNA Consortium, October 2001.
9. Capacity Building Overview Assessment Vol.2, Specific Capacity Building Requirements of Role-Players, Carl Bro a/s, IZNA Consortium, October 2001.
10. Capacity Building Implementation Plan, Carl Bro a/s, IZNA Consortium, April 2002
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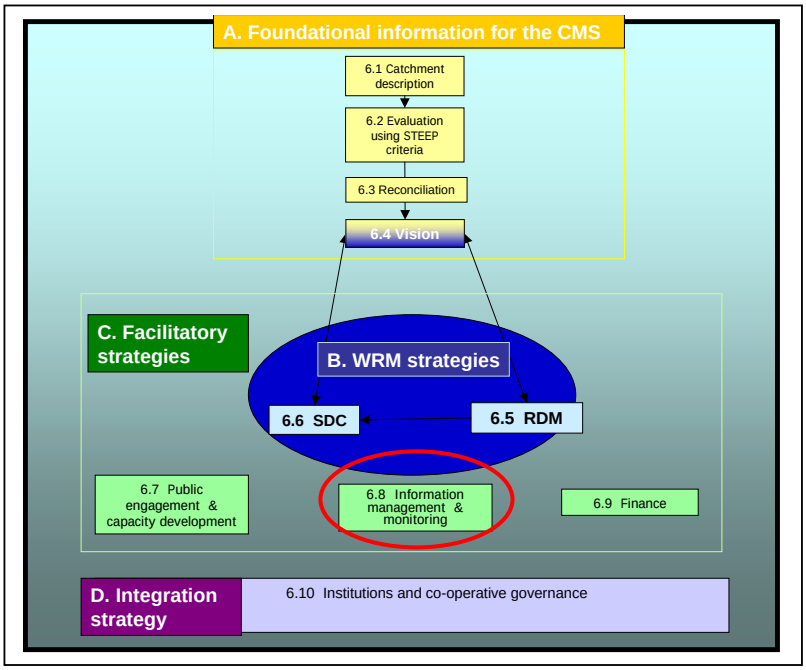
12. DWAF. Guidelines for stakeholder participation in integrated water resources

PART C

Guideline 6.8
Guidelines for developing a sub-strategy for monitoring and information management



6.8.1 Introduction

This chapter of the CMS 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 the National Water Resources Management Service (NWRIMS).

Box 6.8.1 Legal requirements for a national information management system

Chapter 14 of the National Water Act (Act 36 of 1998) describes the establishment of a national monitoring, assessment and information system.

"The objectives of national information systems are -

(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."

The Chief Directorate: Water Resources Information Management is currently preparing a discussion document for the preparation of the NWRIMS (Box 6.8.2) in order to fulfil the legal requirements outlined in Box 6.8.1. The NWRIMS will provide the overarching system into which WMA information and monitoring plans should feed. To this end, CMSs should follow similar procedures methods and

protocols adopted by the NWRIMS in order to ensure alignment. Compliance with national norms and standards will be facilitated by liaison with National Co-ordination Structures such as the National Water Resources Quality Monitoring Committee and the Water Information Advisory Committee to ensure. Regional Information Management Committees will provide a local link between DWAF and the specific CMA.

Box 6.8.2 The National Water Resources Information and Monitoring Service (NWRIMS)

The NWRIMS is proposed to take the form of a service-based model where water resources information will be managed as a national service to all users of water resources data and information. The service will be provided by the present national directorates and regional components currently responsible for water resources monitoring. These units will manage the service as a number of monitoring and information programmes, coordinated at national and regional levels through a hierarchy of committees.

The national service can both provide monitoring support to the CMA for the implementation and monitoring of the CMS.

The NWRIMS currently consists of:

- a number of national programmes (refer to NWRIMS documentation). Examples include: national hydrological and groundwater monitoring programmes, flood and pollution monitoring;
- National GIS related information management programmes e.g cadastral data, remote sensing;
- National Survey Services: dam deflection survey services;
- Supporting information systems and data management services: e.g. HYDSTRA, WMS;

The WRIM is currently planning the following programmes:

- National Sediment Monitoring Programme;
- National Water use programme;
- WARMS will be transferred to the WRIM.

6.8.2 Objectives and outcomes

The **objective** of the information management and monitoring strategy is to provide a strategic plan that

(i) is consistent with the national information management system,
(ii) guides collecting, accessing, analysing and sharing a wide range of information for the purposes of monitoring and evaluating IWRM and operational management and,
(iii) ensures findings are incorporated into a process of review, learning and design of follow-up activities.

The expected **outcome** is a strategy that provides a comprehensive plan to

(a) manage WRM 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.

Key Question:
How can information be managed in order to facilitate IWRM implementation and support monitoring activities?

6.8. 3 What you need to know to prepare this strategy

The decentralisation of IWRM will carry increased demands for water resources data and place additional monitoring responsibilities in the hands of regional offices and CMAs. The nature of responsibilities will need to be clarified on a WMA basis, taking into account capacities and scope of monitoring activities.

Information management and monitoring responsibilities at the WMA level

- The WRIM will prepare a strategy for the development of a single information management and monitoring serve that WMA level information management and monitoring will need to be aligned with. The strategy will cover guidelines for sharing operational costs where monitoring programmes are shared.

- In many cases data from national programmes will also be used for local purposes of planning, compliance monitoring, regulation, guiding operations, disaster management and water-use reporting. The CMA should set up communications structures with WRIM that ensure access to such systems

- Monitoring programmes that are not required to contribute to the national programmes are regarded as local ,monitoring programmes. Responsibility for these will rest with the CMA or regional office for setting up such programmes or plans.

- Local programmes must be registered with the national co-ordination structures and all local data captured by local programmes must be stored on the NWRIMS to ensure availability for national planning and reporting.

- The WRIM can appoint the CMA to operate components of the NWRIMS with remuneration and vice versa.

6.8.4. Potential contents of an information management and monitoring sub-strategy

This sub-strategy must ensure the following:

1. **Co-ordination of information and monitoring needs for the CMS**

   Since the CMS consist of a number of sub- there is likely to be a broad spectrum of information needs and specifically designed monitoring activities. This needs to be co-ordinated by this sub-strategy.

2. **Consistency with the national Water Resources Management Strategy;**

   The overall coordination of national and local water resources monitoring-, GIS, survey and WARMS programmes are coordinated at national level but coordination of specific monitoring and information programmes will be done by the specific directorates responsible for the programmes. There will be a National Integrated Monitoring Committee implementing the national coordination of all local and other sub-committees

3. **Guidance on the availability of information regarding water resources in the WMA;**
   - CMAs to set up their own internal information management structures.
   - identify water resources information needs in addition to those available.
   - identify local monitoring programmes required (for operations, compliance, reporting)
   - establish what national monitoring WRIMS can provide
   - establish what local monitoring the CMA would do themselves
   - establish what the CMA will contribute to the National Monitoring Programmes and what the funding arrangements would be.
4. **Guidance on the collection, access, and sharing of water resources information;**
   - Outline methods, procedures and mechanisms for collecting data that are compliant with national standards
   - Describe roles, responsibilities and contractual agreements associated with data collection, processing and analysis
   - Outline methods and approaches for the processing, sharing and distribution of water resources information (compatibility of IT and networks)

- Description of planning and modelling tools used in strategic planning and decision–making processes. These range from WRYM models to determine the available water and use of the water, to WRP model to determine the timing of future augmentations and the economic models to estimate the economic returns of water use. The model to give effect to the Reserve is being developed as a WRC Research Project.

5. **Required reporting on the state of water resources in the WMA**
   - Establish links with Regional and National Information Management Structures to determine communication channels for reporting on the status of IWRM
   - establish ground-rules for WR auditing
6. **A monitoring plan that addresses:**
   - water use and compliance with conditions for use
   - functioning of networks and data capturing
   - drought, flood and disease management
   - institutional functioning –WUA, water users, Water Boards, Local Authorities and other government agencies to ensure improved water use control, water use efficiency, and general overall performance of WMIs

6.8.5. Checklist

Does this sub-strategy…

a. Identify key strategic areas to be reflected the CMS as listed above?

b. identify information needs?
- preparation and updating of various sub-strategies
- ensuring compliance with the NWRIMS
- monitoring for compliance and enforcement
- communication and reporting

c. address priorities and gaps?
- NWRIMS compliance
- Monitoring for compliance
- Reporting
- Capacity and training
- Information technology

d. identify resource needs?
- Human resources, technological and financial

e. identify skills needed?
- Managing information, data collection, analysis
- Operating IT

Specific questions

Does this strategy…
- align with the NWRIMS?
- collate monitoring and information needs from all other sub-strategies of the CMS?
- state how information will be colleted, analysed, distributed?

6.8.6 Procedural diagramme

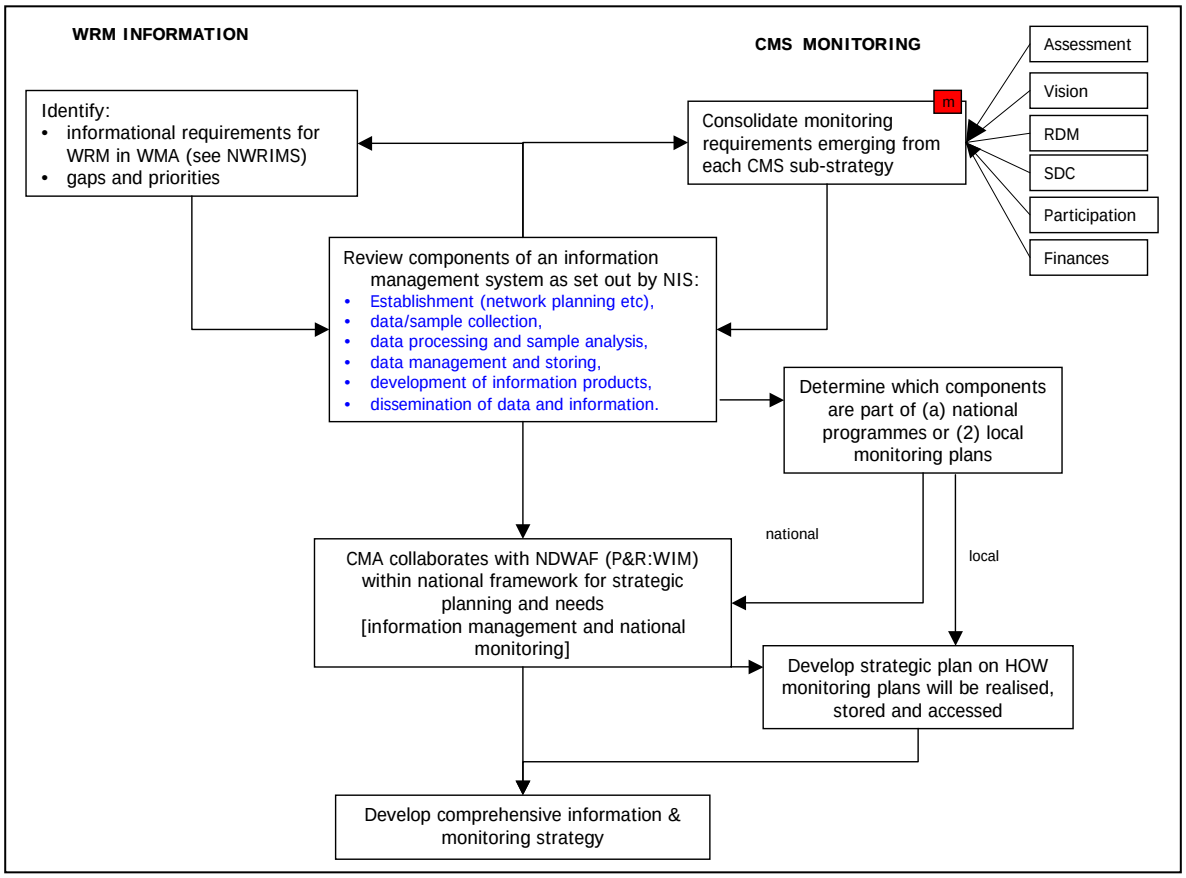


Figure 6.8.1 Schematic representation of steps for information management and monitoring. Red dots = monitoring

6.8.7. Important references

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4. MAIS Phase 3 Results, Final Draft
5. Strategic Framework for National Water Resource Quality Monitoring Programmes
6. DWAF GIS databases – Cadastral Information from Geomatics
7. DWAF Water Quality Programmes-
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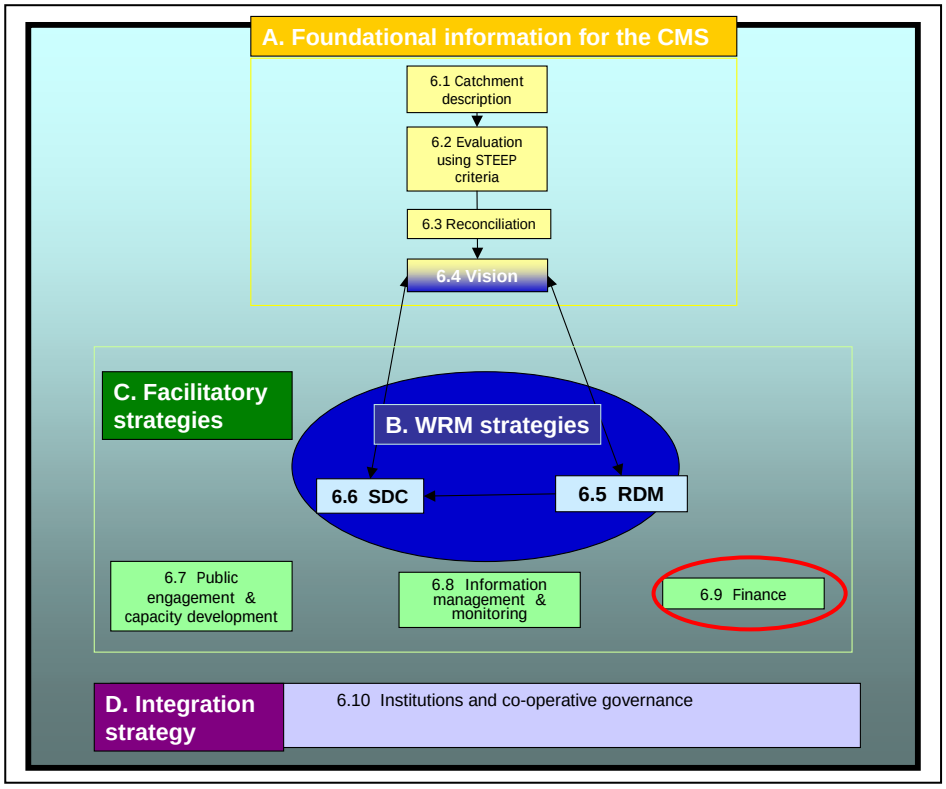
PART C

Guideline 6.9
Guidelines for developing a sub-strategy for funding of IWRM in the WMA



6.9.1. Introduction

The CMS needs to contain a strategic plan to fund expenditures relating to those activities required to collaboratively protect, allocate, conserve, manage and control water resources distributed across the specific WMA. The legislative basis for funding of IWRM and the financial sub-strategy are provided by the NWA(S56 and S84), supported by the First Revision of the National Pricing Strategy for Raw Water Use Charges (the NPS; awaiting approval by the Minister of Finance at the time of writing). The costs are likely to relate to the following IWRM functions to be carried out by the CMA/DWAF:

- Planning, drafting and implementation of the CMS.
- Monitoring and assessing water resource availability and use.
- Water allocations.
- Water quality management, including flood and drought management, water distribution, control over abstraction, storage and stream flow reduction activities.
- Water resources protection, resources quality management and water pollution control.
- Water conservation and demand management.
- Institutional development and enabling the public to participate in water resources management and decision-making.

Box 6.9.1
National Pricing Strategy

The NPS deals with water use and not the pricing of water services, which is dealt with separately under the Water Services Act (1997). The 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 from water boards) and distributed to households (usually via a water services authority or water services provider). The NPS deals with all first tier water as reflected in the use of ground and surface water resources and covers the setting of prices by DWAF as well as the CMA. The CMA will ultimately be responsible for the setting of prices for first-tier water that is in line with the NPS.

The NPS provides a legal framework for:

- Funding water resources management by DWAF and the CMA, through water use charges, Section 56 (2) (a).
- Funding water resource development and use of waterworks by DWAF and CMAs, Section 56 (2) (b).
- Achieving the equitable and efficient allocation of water, through a charge referred to as the 'economic charge', Section 56 (2) (c).
- Providing for a differential rate for waste discharges, referred to as the WDCS, Section 56 (5).

CMAs may raise funds required for purposes of exercising its powers and undertaking its duties in terms of the NWA (S84(1)). In this regard the CMA must be funded by:

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

This sub-strategy should not be seen as a detailed financial plan but it should rather set out the principles along which funding of IWRM, as set out in the previous chapters of the CMS. The detailed financial planning (projected income statements and balance sheets) will be reflected in the CMAs' business plan which should be updated annually.

Key question:

How will the costs of CMS implementation (defined in the sub-strategies) be funded?

6.9.2. Objective of the finances sub-strategy

The **objective** of the financial sub-strategy is to guide the costing of CMS implementation (i.e. undertaking IWRM) and to establish how and where funding to cover these costs will be sourced from.

The intended **outcome** is a strategy that sets out how implementation of the CMS will be funded.

6.9.3. What you need to know to prepare the finances sub-strategy

Two important factors must be considered when developing the finance sub-strategy. Firstly, there must be consistency with the NPS, which is the overarching guide for the CMS financial sub-strategy. Secondly, WRM charges are not a tax but are charges based on services. This implies not only that the service must be efficient but also that sector specific charges must correspond directly to the activities or impacts of that sector.

The following section presents a summary on some of the key issues contained in the NPS. At the time of writing a number of associated documents and systems were in the process of being prepared. These include a computerized billing system, Enhancement of WARMS, the Strategy for Recreational Concessions.

The NPS and sources of revenue

Potential sources of revenue include:

1. Revenue from water use charges
    1. Abstraction related uses
    2. Waste-discharge related uses
    3. Non-consumptive uses

DWAF is currently developing strategies for charges related to all three categories. CMAs will need to apply the contents of these national documents to their particular WMAs in order to develop protocols for collecting revenue.

2. In addition to water use charges and possible financial support from parliamentary appropriation and, a number of other lawful income sources exist:

a) Recreational concessions
b) Licence application fees
c) Donor support and sponsorship
d) Contractual payments
e) In-kind contributions (although not explicitly income they reduce expenditure).

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 contract or delegation. Functions that may be dealt with in this manner include:

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

Water Resource Management Charges

Costs for WRM will be allocated differently to sectors. Costs must be allocated to sectors in proportion to registered volumetric mean annual sector use (which means that assurance is also taken into account). The NPS outlines how sector-based abstraction activities will attract the different costs. The NPS water use charges are differentiated based on:

- Geographic areas [S56 (3) (a) (i)]
- Categories of water use, listed above [S21 of NWA; S56 (3) (a) (ii)]
- Water users [S56 (3) (a) (iii)]. These are:
    - Domestic/industrial (Water Services Authorities, industrial, mining, strategic)
    - Agriculture (irrigation of agricultural crops)
    - Stream-flow reduction (commercial forestry)

In setting charges the assurance of supply must also be considered. The NPS says Water for productive use is available or is abstracted at different assurances and this must be reflected in the annual payment for water resource management services.

Collection of this revenue relies heavily on accurate data bases. Registered water use, general authorizations and confirmations of 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 information and monitoring and the SDC sub-strategies.

WRM charges for waste-discharge water use*

WRM charges for waste-discharge activities will be calculated in a similar way to abstraction-based activities. However a distinction must be made between :

a. point-source discharges directly to surface water resources;
b. discharge to land-based facilities (irrigated effluent, tailings dams, and evaporation ponds); and
c. point-source discharges to the marine environment.

Waste-discharge charges can be levied provided that registration is up to date.

Box 6.9.2 Determination of waste loads per WMA

Waste is defined in terms of Section 1 (1) (xxiii) of the NWA. The calculation of charges will be based on the registered discharge waste load of **salt** and **phosphorus**, as these are the two most widespread water quality problems in South Africa.

Clearing of Invasive Alien Plants (IAPs)

The full cost of control of certain IAPs may be charged to affected water users. The means of clearance, costs and processes must be communicated with stakeholders. IAP clearance should feature in the CMS and should therefore be taken into account in the financial strategy

Natural disasters

Disaster manangement will be dealt with in GL 6.10 but financial implications must be refelected in the fanancial sub-strategy. 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.

Collating and budgeting of activity costs

The strategic actions associated with IWRM are captured as different sub-strategies of the CMS (GL 6.1 – 6.10). Each of these will require a budget and identified sources of revenue. This implies that it is essential that the financial strategy be conducted AFTER the cost implications for all other sub-strategies are clarified.

6.9.4. Potential contents of a finances sub-strategy

Key strategic areas to be reflected in the finances strategy

This sub-strategy must provide a framework, principles and protocols for cost-recovery, as follows:

Costs:

- Estimate the costs for the implementation of each of sub- strategies;
  - Situation Assessment
  - Visioning
  - Reallocation
  - RDM
  - SDC
  - Information Management
  - Stakeholder Participation
  - Establishing institutional and Cooperative Governance structures
- Establish which institutions (i.e CMA, DWAF or other) are responsible for implementation of the respective strategies/functions and the costs associated with the implementation of their functions
- Estimate costs of functions undertaken by other institutions on behalf of the CMA;

* Two further charges i.r.o. waste-discharge will be applicable namely the Incentive Charge and the Mitigation Charge. These two charges will form part of the Waste Discharge Charging System, which description will be appended to the NPS.

- Inter-basin costs;
- Measures for cross-subsidisation.

Funding:

- This component of the strategy must set out who will fund which components of the implementation of the CMS and how the funds will be raised.
- Set out how implementation of IWRM is funded by the institutions and how it will be done so in the future (if there are changes)
- Tariffs and tariff-setting (guided by the national pricing strategy). This includes:
  - WRM charges;
  - Inter-basin transfer (export) income;
  - Waste-discharge charge system;
  - Subsidies/ grant funding.

Where functions undertaken by other institutions are funded through WRM charges, the CMS must indicate how these costs will be apportioned between the institutions.

Priorities and gaps

- Priorities for this strategy include the development of systems for cost recovery and debt-management systems.

6.9.5. Checklist

Does this strategy…

- Cover all costs associated with the implementation of the CMS?
- Address the following costs
  - Situational Assessment
  - Visioning
  - Reallocation
  - RDM
  - SDC
  - Information Management
  - Stakeholder Participation
  - Establishing institutional and Cooperative Governance structures
- Indicate how costs will be apportioned where there is joint responsibility between institutions?
- Indicate how funding will be apportioned between institutions where there is a common source of funding?
- Indicate how it will deal with additional costs as well as the escalation of costs? (note that the public is concerned about what it views as the continued addition of new costs)?
- Specify indicators for monitoring financial management?
- Stipulate how the waste-discharge charge-system will be developed and implemented?
- Outline an approach for dealing with subsidies and specify the source of funding? For example, subsidies to emerging farmers from the Regional Office.
- Make clear the financial arrangements for linkages with Regional Office with respect to WRM functions?

6.9.6. Procedural diagramme

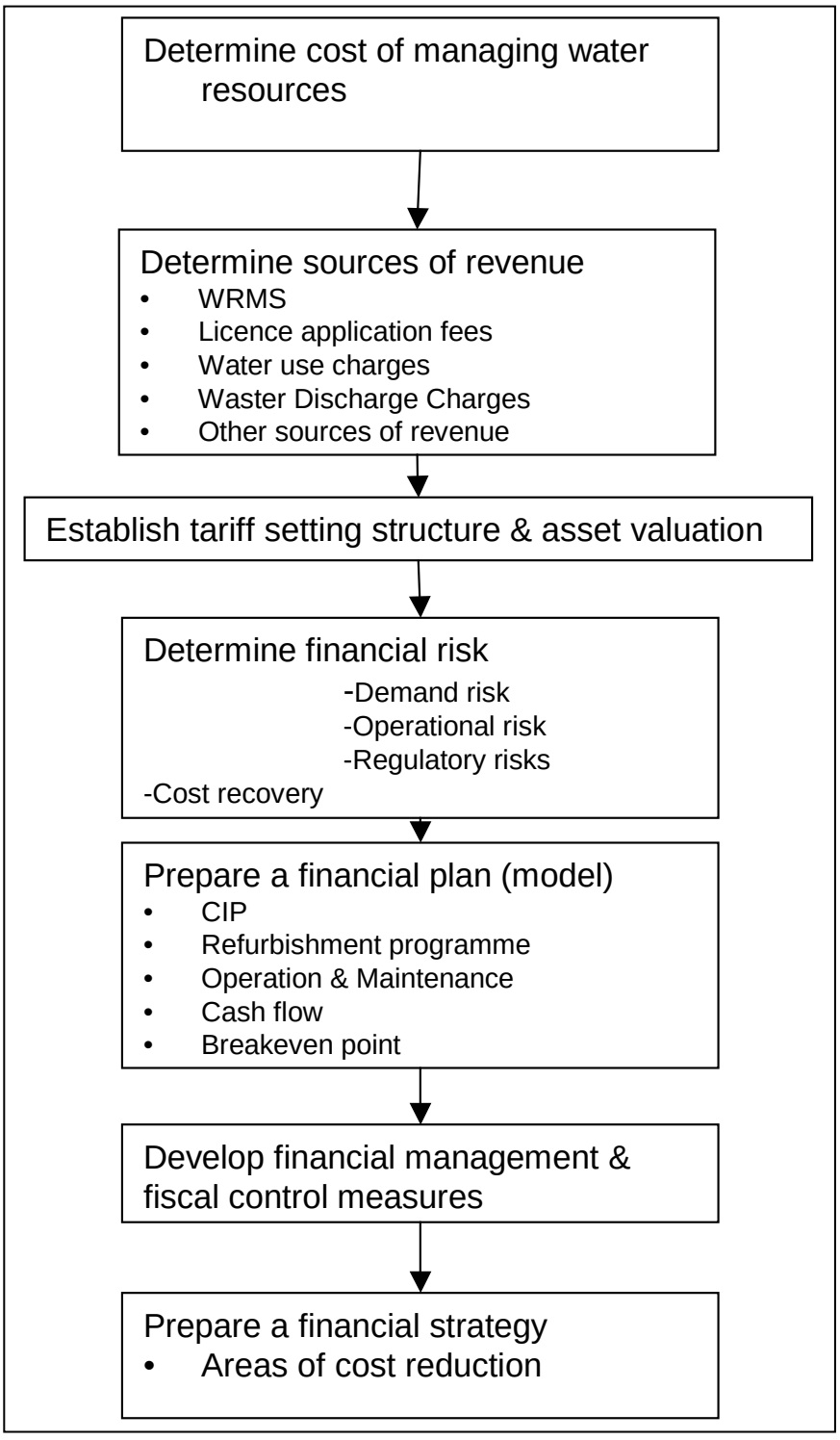


Figure 6.9.1 Schematic representation of steps for funding the CMS.

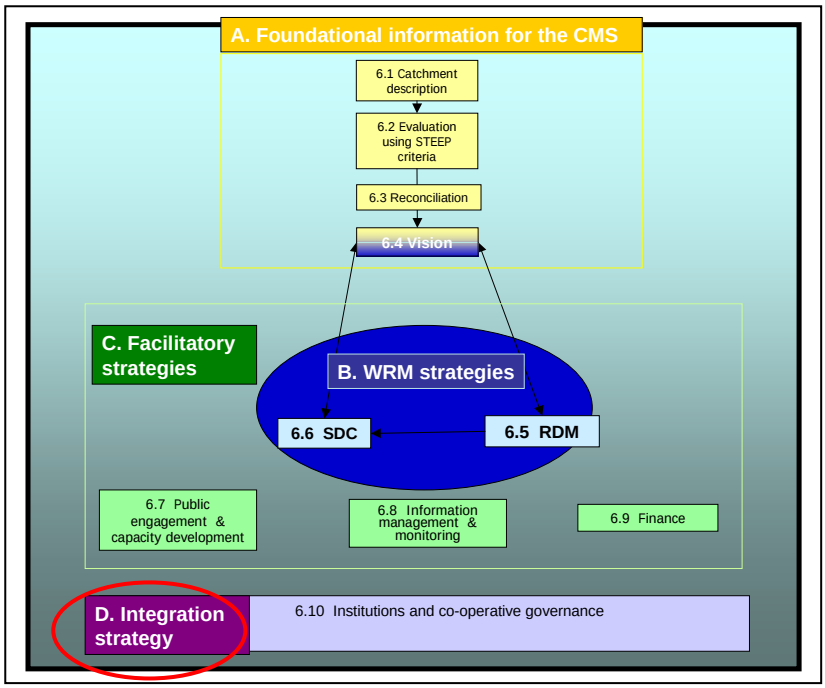
6.9.7. Important references

- DWAF (2005). First Revision of the Pricing Strategy for Water Use Charges
- Public Finance Management Act (Act No 1 of 1999 and as amended by Act No 29 of 1999)
- Treasury Regulations pertaining to Schedule 3A Public Entities (Section 6.1.2 of the Treasury Regulations)

- Governance framework from treasury
- Municipal Finance Management Act (Act No 56 of 2003)
- Promotion of Access to Information Act (Act No 2 of 2000)
- Policy on support to emerging farmers

PART D
The integration strategy

Guideline 6.10
Guidelines for the development of a sub-strategy for establishing institutional arrangements, co-operative governance and partnerships



6.10.1 Introduction

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

The legislative framework for co-operative governance for water resources management is provided by the Constitution of South Africa[2] and is supported by the National Water Act, Water Services Act, National Environmental Management Act and the Intergovernmental Relations Act, Public Administration and Justice Act, and Municipal Systems Act. In this respect the Constitution commits all spheres of government and organs of state to the principles of co-operative governance and requires that public administration be development-oriented, efficient, transparent, accountable, representative, participative and compliant with all basic values and principles governing public administration. In some cases partnerships will be forged with capacitated organisations; in others a focus on institutional development, capacity building and support to will be needed.

[2] Constitution of South Africa, chapters 3,4 and 10

6.10.2 Objectives and outcomes

The **objective** of the Institutional Arrangements and Co-operative Governance (IACG) sub-strategy is to set out strategic actions for the establishment and maintenance of appropriate cooperative and collaborative relationships for IWRm based on an understanding of the institutional environment.

The intended outcome is a sub-strategy that describes how a CMA will establish and maintain a cooperative 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 to develop an IACG sub-strategy

The guiding principle for co-operative governance is that it must comply with the values of public administration in addition to co-operation. This embraces development-orientated and transparent management approaches that are adaptive and reflexive and built on representation, trust and accountability.

The IACG sub-strategy will need to scope out:

a. different types of institutional relationships
b. interfacing institutions involved in each type of relationship
c. 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 Fig 6.10.2.

1. **Statutory accountability**: 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 establishment and delegation of functions to a CMA by DWAF, or the re-delegation of functions. Figure 6.10.1 outlines some of the issues to be dealt with under this type of relationship. The four parties in this regard are:the CMA, DWAf National, National Treasury and DWAF regional.

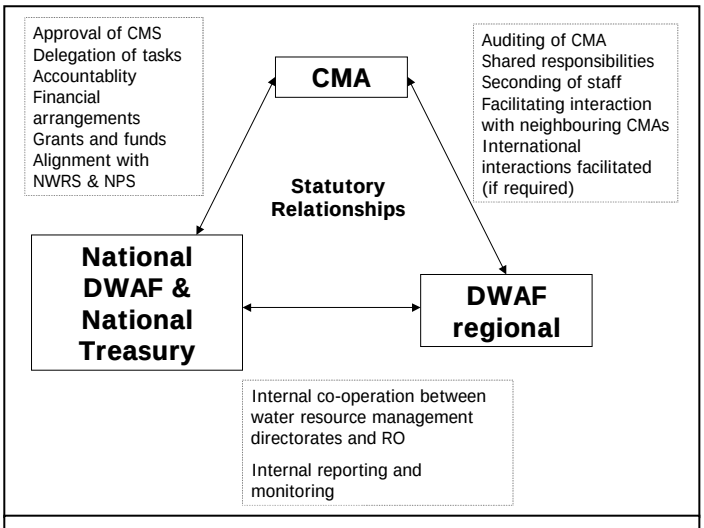
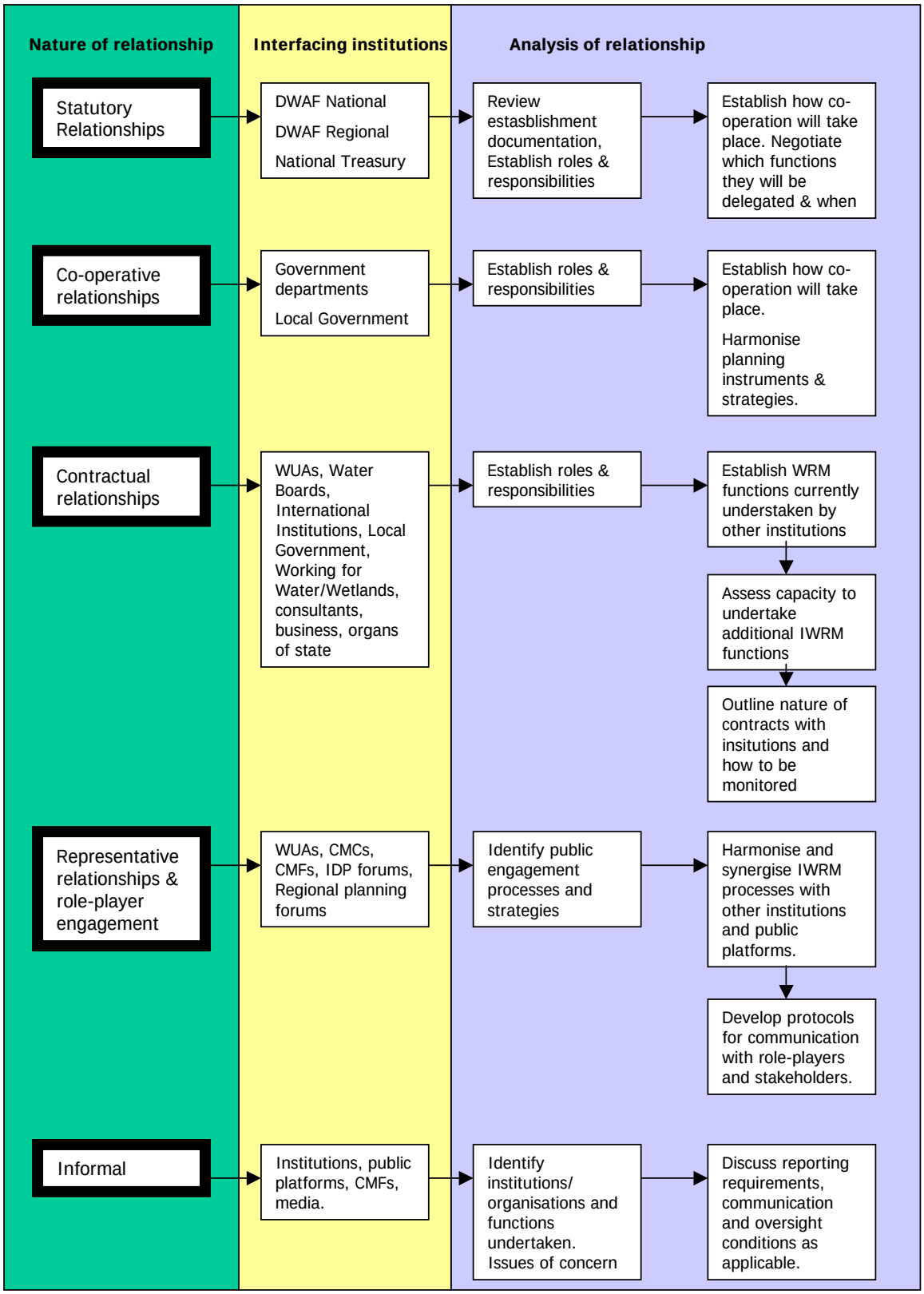


Figure 6.10.1 Statutory accountability. The figure depicts some of the issues that are likely to be covered by these various relationships.

2. **Co-operative governance** 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.
3. **Contractual relationships** are based on legal agreements between parties and usually involve the payment for services. For the CMA this will generally be between the CMA and private sector (consultants), non-statutory bodies (forums), statutory organisations (water boards) and National DWAF. The CMA is also bound by international Conventions to which the South African Government is signatory (e.g. RAMSAR).
4. **Representative relationships** are between a representative body and its stakeholders or members. These relationships provide a mechanism for stakeholder engagement and public participation. Although the members of the CMA Board or CMC may not have a mandate from particular individuals or groups, they should represent their general interests.
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. CMFs and their relationships with CMAs may be based on informal relationships and collaboration on research with research organisations are included here.

Figure 6.10.2. provides an overview of the types of relationships, the interfacing institutions and the analysis of the relationship. 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]



Synergies of planning instruments

There are a range of development plans that must be considered in the development of the CMS (refer to Chapter 5). Examples include Water Services Development Plans and Provincial Growth and Development Strategies. CMAs must consider WSDPs of all municipalities falling within the WMA and where WMAs straddle provincial boundaries, the PGDSs of both provinces must be considered. In at least two provinces, Integrated Conservation and Development Plans have been developed as the preferred instruments for natural resource planning and management.

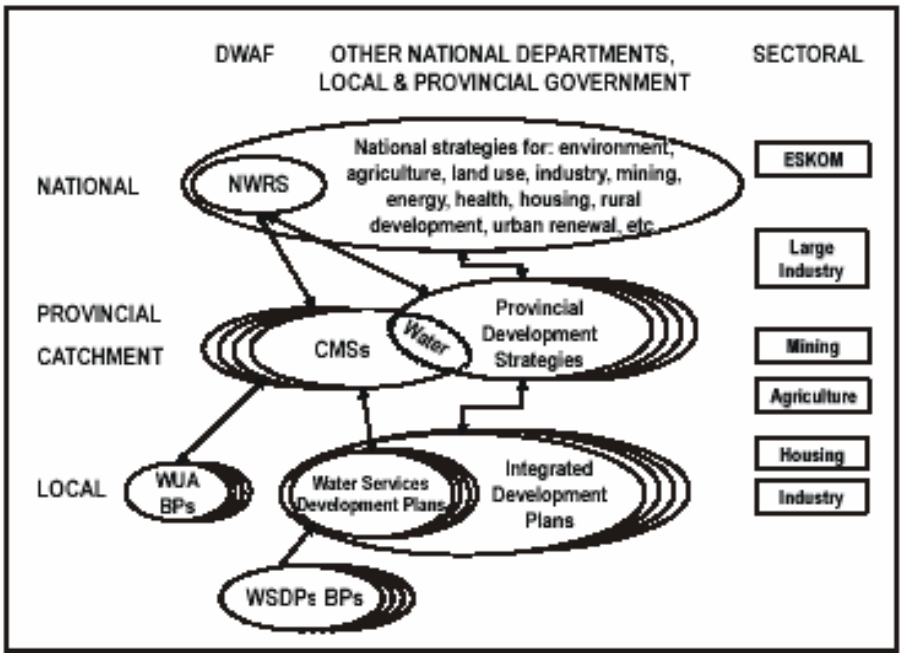


Figure 6.10.3. The various development plans associational with different spheres of government (from NWRS, 2004)

Disaster Management

Disaster management is a joint responsibility of a number of parties but the co-ordination of local a strategies and plans are probably best provided for by Local Government. The CMA has a central role to play in the development of strategies that directly address issues related to:

- droughts
- floods
- water-borne diseases or water-related health matters

Together with the relevant departments and role players, the CMS must outline a 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. restrictions and levies) 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

Other conventions
The CMA must consider and participate in other relevant conventions tha have bearing on water its water management, for example, RAMSAR, marine protected areas, TFCAs, NEPAD, MDGs etc.

6.10. 4. Potential contents of the IACG sub-strategy

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.

- The nature, scope and extent of existing institutions;
- Their role in IWRM in the WMA.
- How related functions can be coordinated and how such coordination can be institutionalised and sustainable. CMAs must also set out how they will consider development plans of other organisations and how cooperation in the development on these plans and 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).

Oversight responsibilities of the CMA at the WMA level
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. 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 the water related activities of these;
- outline how the CMA will undertake this oversight responsibility in relation to the IWRM activities of these institutions, the oversight objectives, and regulatory mechanisms.

BOX 6.10.2
Which institutions will a CMA have oversight responsibility for and how will it exercise this oversight?

The institutions over which the CMA would have oversight are likely to be a range of local institutions. These are:

- Catchment Management Fora;
- Water User Associations;
- Water Boards,
- Water Services Providers in respect of WRM functions contracted to them

These institutions undertake different water-related activities. The oversight mechanisms will need to be institution-specific, and will occur through a number of ways, such as:

1. reporting to the CMA through direct and indirect instruments. An example of a direct instrument would be a Catchment Management Plan, whereas an indirect instrument would be WSDPs and business plans.
2. Contract management where functions are delegated to institutions under contract;
3. On-site inspections;
4. CMA participation during establishment processes of emerging institutions in the WMA;
5. CMA participation in expansion of functions of institutions. These functions are not restricted to water related functions, but include any functions that may negatively or positively affect the carrying out of water related functions by the institution, and/or affect the implementation of the CMS.
6. Provision of support to institutions, for example in the development of sectoral WC/WDM plans, WSDPs etc.

6.10.6 Checklist

Does this sub-strategy…

a. Identify key strategic areas to be reflected the CMS

- Key interfacing institutions. All relevant water resources management and water services institutions? Local government, Water Boards, international water management institutions, neighbouring CMAs? Outside of the WMA?
- Nature and status of relationships for each
- alignment of CMS with that of the neighbouring CMS (if appropriate).

b. identify information needs

- Data bases
- 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 synergy between various planning instruments?

d. identify resource needs

- Personnel and financial
- Budgets for networking and communication

e. identify skills needed

- Facilitation with knowledge of WRM and WMA; mediation skills.

Specific Questions

- How can capacities within different institutions in the WMA can be optimised to achieve the IWRM objectives?
- How can co-operation around the development plans of other institutions can be fostered?
- How can existing institutions can be utilised to facilitate stakeholder engagement?
- Have Informational and monitoring needs be developed?
- Have international agreements been considered?
- Have the CMS specified contributions to the overall Disaster Management Plan (of Local Government)
- Have links been made between this sub-strategy and the others. (especially communications)

6.10.7. Procedural diagramme

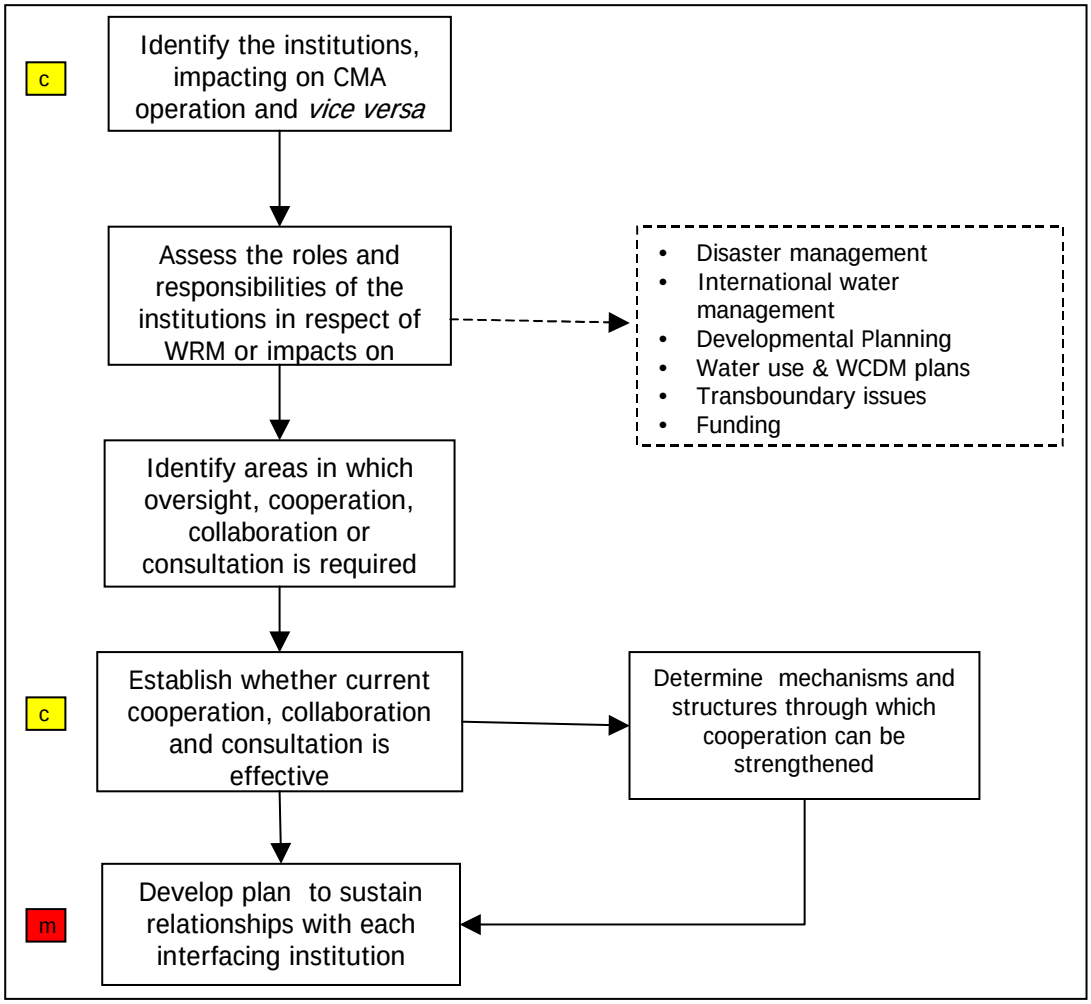


Figure 6.10.4 Schematic representation of steps for institutional arrangement son co-operative governance . Yellow dots= public participation, red dots = monitoring

6.10.8. Important references

1. DWAF, (2001). Guide 1 in the CMA /WUA series: Establishing A CMA
2. DWAF, (2001). Guide 2 in the CMA/WUA series: The CMA as an organisation
3. DWAF (2002). Roles and functions of institutions involved in WRM
4. DWAF, (2002). Protocol on transfer of DWAF personnel to CMA
5. DWAF, (2002). Interrelationships between WMIs
6. MOU to formalize co-operation between CMAs and Local Government

Chapter 7

Approval process

7.1 Introduction

This section of the guideline provides the procedure that the CMA would need to follow:

a) to ensure the approval of the CMS by the DWAF in order for it to be legislated in the government gazette in the shortest possible time.
b) to ensure implementation of the strategies before review and update within five (5) years.

The primary objective of the consultation and approval of the catchment management strategy (CMS) prepared by the CMA is to provide a process for addressing any policy and institutional implications to the development of the CMS that may be binding on DWAF and other organs. This process is envisaged to minimise risk and the repercussions that may negatively impact on water resource management, policy implementation and to fully achieve the policy objective of integrated water resource management (IWRM).

The purpose of this document is to provide detailed description of the framework including the flow chart for the approval of the CMS document. This document also sets out the steps necessary to ensure a written consent is provided by the Minister of the catchment management strategy (CMS) prepared by the CMA before publishing a notice in the gazette of the strategy.

7.2 Background

The Act provides for the catchment management agency (CMA), established in terms of Chapter 7 of the Act to "establish a catchment management strategy for the protection, use, development, conservation, management and control of water resources within its water management area."
One of the initial functions of the CMA, once it has been established in terms of chapter 7 of the Act, is the establishment of a catchment management strategy as stipulated in section 8.

The CMS must be aligned to and not be in conflict with the National Water Resources Strategy (NWRS), while at the same time taking into account the relevant national and regional development planning initiatives.

In the establishment of the CMS, section 10 of the Act provides guidelines and consultation on catchment management strategies and section 10(2) specifically requires that, in order to ensure sustainable water resource management, it is envisaged that the CMA "*must consult with*

(a) the Minister;
(b) other organs of state which has interest in the content, effect or implementation of the catchment management strategy
(c) any persons or……."

Furthermore the 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 catchment management strategy is based on integrated water resource management (IWRM) principles, it is highly likely that the CMS will encompass integrating of sectoral strategies; this invariably means that most if not all CMS documents will impact on the activities of other organs of state. The consultation process prior to the approval of the CMS is very important in reducing the turnaround time for the approval of the CMS.

The CMS established by the CMA can only become a legal document through notice in the government gazette, after which it is binding to the Minister and the CMA to give effect to the strategy. Section 8(4) requires that the CMS or any component of that strategy may be established only "*with the written consent of the Minister.*"

Therefore there is a need to develop the guidelines for the CMA that will allow it first to approach the Minister for her/his consideration and determination regarding matters of policy or co-operative governance aspects before the CMA publishes a notice in the Government Gazette. Secondly guidelines processes are required to ensure the CMA gets the written consent with the gazetting of the CMS, as it is binding to the Minister (see section 11 of the Act).
Two guideline processes have been developed. The first one is for the consultation process with DWAF on matters of policy implications and co-operative governance in developing and implementing

the CMS. The second is a guideline of the approval of the draft CMS for final gazetting. The steps in each of the two processes are described in the following sections.

7.3 Consultation process for the development of a catchment management strategy

7.3.1 Overview

The guidelines for the development of the catchment management strategy are being developed to address how DWAF and other organs of state will work together in the establishment of a CMS. Once the draft CMS has been developed the CMA is required by the Act to publish a notice in the gazette inviting written comments on the draft CMS.

However before the CMA can publish a notice in the gazette, it is required to refer to the Minister those components of the draft CMS that raise material question of policy, or may affect other organs of state or DWAF (e.g. National Water Resource Infrastructure Agency) in achieving the objectives of the draft CMS. **Figure 7.1** below presents the process flow chart for referring these issues to the Minister.

7.3.2. Step 1: CMS refers matters of policy and governance issues of the draft CMS

It is envisaged that one the CMA has identified those matters that raise material questions of policy, that it should notify the Minister through the Policy and Regulatory Branch. The CMA should submit to DWAF a report on these issues and issues of alignment with the National Water Resource Strategy (NWRS).

As a matter of protocol, the CMA must make its submission to the Minister through the relevant DWAF Regional Office. The timing of the submission on the issues should be done immediately it is envisaged that it will affect policy and the strategy will impact on the work of other institutions particularly during the implementation of the component of the catchment management strategy.

7.3.3. STEP 2: DWAF review of policy issues

Since there has been no delegation of the consideration and determination on policy issues emanating from the development of the CMS, the department will review the submission by the CMA on behalf of the Minister.

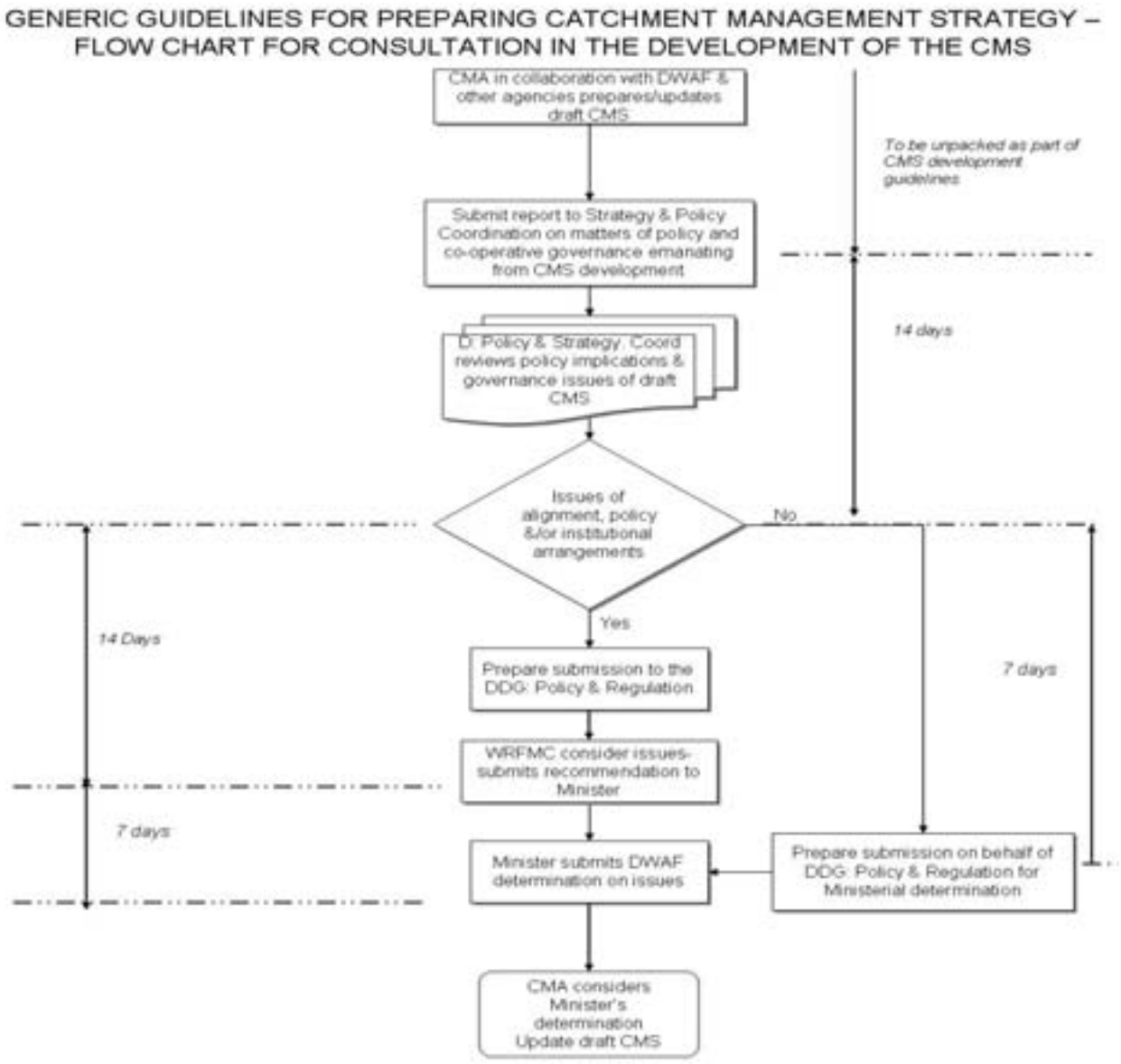


Figure 7.1: Flow chart for dealing with policy, alignment and institutional process

Criteria for evaluation
The evaluation of the policy implications of the draft CMS will be done within each of the three water institution components namely, (i) legal, (ii) policy, and (iii) administrative aspects of the CMS:

Directorates relevant for the policy review of the CMS
Depending on the issues submitted by the CMA for the Minister's consideration, it may be necessary for the Directorate: Policy and Strategy Coordination to establish an evaluation committee comprising of the relevant directorates.
The evaluation panel would consist of representatives of the key directorates required to review the policy and institutional aspects, namely:

- Dir: Policy and Strategy Coordination who will be responsible for convening the evaluation meetings of the advisory committee.
- CD: Institutional Oversight, involving
  - Dir: Water Management Institutions Governance in terms of the linkage to the business plan and institutional development part of the CMS
  - Dir: Stakeholder Empowerment in terms of the stakeholder participation, social justice and consultation process for the CMS
- Dir: Resource Directed Measures, in terms of adherence with the classification of the water resource and its implications to socio-economic development and Reserve for catchments within the WMA
- CD: Integrated WR Planning, involving
  - Dir: National WR Planning, in terms of consistency with the NWRS allocatable water and reconciliation
- Water Use
  - Dir: Allocation Planning 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
- Information Management
  - Dir: Information Programmes in terms of consistency with the National Information and Monitoring System
- Water Services
  - Dir: Planning and Information in terms of alignment with WSDP
- Legal Services
  - This to ensure all legal processes have been followed

It should be noted that not all Directorates will be involved but only those directorates whose oversight role and regulatory function may be affected by the component of the draft CMS.
The evaluation committee should convene within 30 days from the date that DWAF RO informs Policy and Strategy Coordination of its intent to submit the draft CMS.

7.3.4 . Step 3: recommendation by evaluation committee
The consideration and determination of the draft CMS is not delegated. Where the CMS has policy and/or institutional implications to water resource management, the evaluation committee will submit their findings to the DDG: Policy and Regulation for submission to the WRFMC for their consideration.

Where the draft CMS does not contain issues material to policy and alignment, the DDG: Policy and Regulation will 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 WRFMC.
7.3.5. Step 4: Minister submits determination to CMA
Where DWAF has made determination with regards to policy issues, the Minister will inform the CMA of its position and whether the CMS should be updated. DWAF must ensure that the time allowed for updating of the CMS is reasonable given the issues to be addressed.

The CMA can then proceed with the development of the CMS taking into account the Minister's consideration and determination on matters of policy and institutional aspects of the CMS development and implementation. This will be the last step in consultation process on policy and institutional aspects of the CMS before the draft CMS is finalised.

7.4 Approval process

7.4.1.General

The approval is envisaged to be as short a process as possible to enable the CMA to publish the final CMS and begin implementation of the strategies and plans. This process in illustrated in the flow chart in **Figure 7.2**. The process has been structured to ensure that it is as simple as possible for the written to be given by the Minister. The steps in the flow chart and the expected timeframe are described below. The first two steps are a link between the consultation process and this proposed approval process.

7.4.2. Step 1: Gazetting of the of the draft CMS by the CMS

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 –*

(a) publish a notice in the Gazette –

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

The CMA will prepare the notice as required and inform the public where to access the CMS. In order to ensure that stakeholders have access to the catchment management strategy, the CMA must ensure that the CMS document is distributed in all the places accessible to the public.

There will the follow 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. This will indicate the final step in the consultation process with DWAF.

7.4.3. Step 2: Review and consider public comments

After the 90 day period for receiving written comments on the draft CMS, the CMA will document all the comments received and determine how to consider the comments and communicate these with the public. Any comments received during this period must be formally considered by the CMA, with the relevant amendments being made.

It is envisaged that the review and consideration of the comments will take a maximum of 30 days to the date of submission of the update draft CMS to DWAF.

7.4.4. Step 3: Prepare summary of comments and submit update CMS

Once the CMA has considered all comments, it will prepare a summary of the comments received, a report documenting how the comments were dealt with and submit an update of the draft CMS to DWAF.

The timeframe for this step is included in the review and consideration of public comments.

7.4.5. Step 4: DWAF consider how public comments have been considered

The revised CMS and comments register would be reviewed by Dir: Policy and Strategy Coordination to ensure that all issues raised by the public have been well considered and how they have been considered. Where necessary the updated CMS should be submitted to the evaluation committee for further review if the comments received warrant this.

If accepted by the DDG: P & R, a recommendation would be submitted to the Ministry for approval and gazetting. Any queries or comments would be returned to the CMA to be addressed.

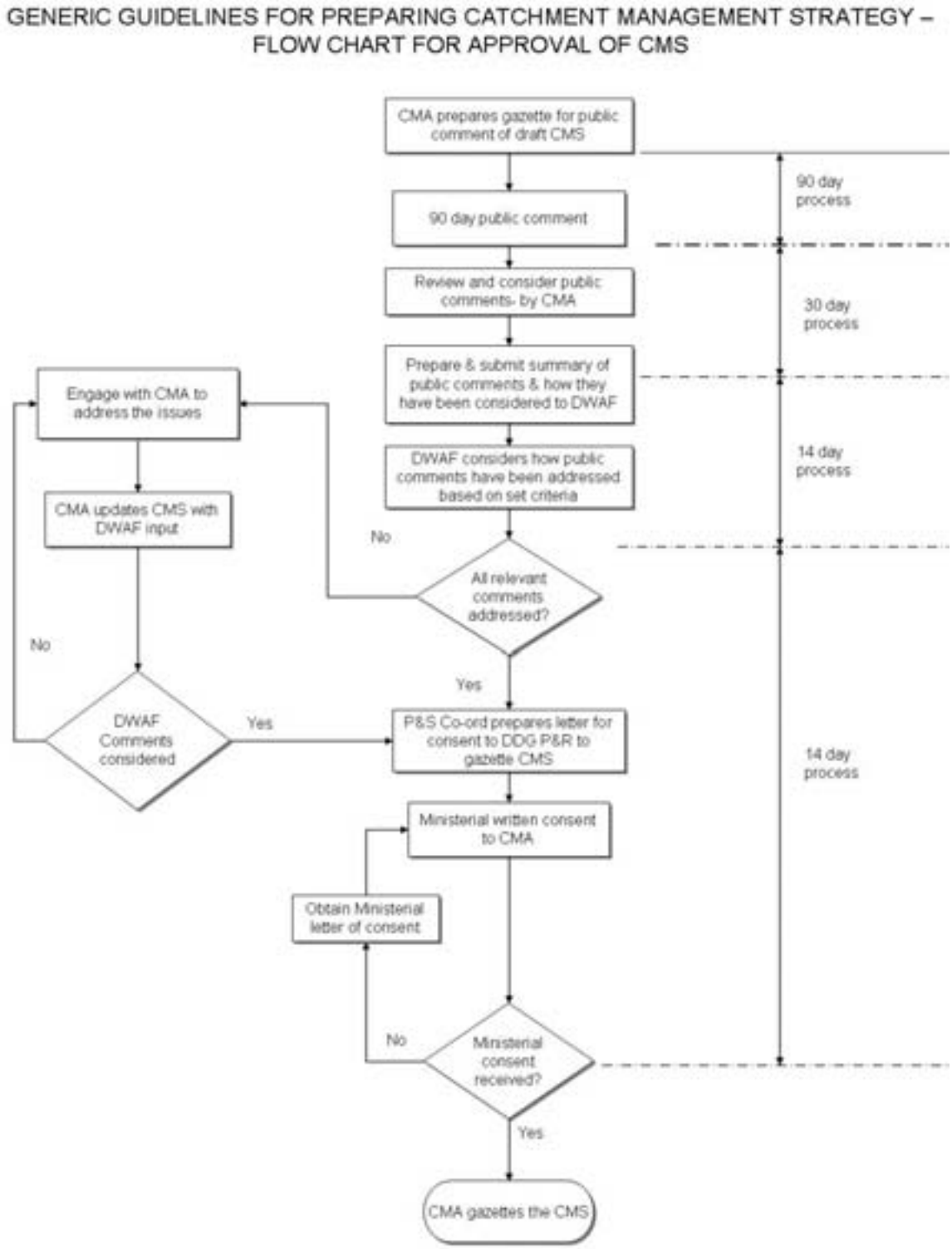


Figure 7.2: Flow chart for approval of the CMS

7.4.6 Step 5: prepare submission for approval of cms

Once the Directorate: Policy & Strategy Coordination is satisfied that all the public comments have been substantially considered, a ministerial will then be prepared for the Minister to provide the written consent as required by section 8 (4) of the Act.

The ministerial determination should highlight all the content of the CMS and the process followed in ensuring that every opportunity was provided to the public for them to comment. The submission should describe how these comments were considered in the final CMS.

7.4.7. Step 6: 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 stakeholder, will then provide a written consent to the CMA.

7.4.8. Gazetting of the final CMS

With the written consent, the CMA will prepare a notice in the gazette informing of the establishment of a catchment management strategy for the protection, use, development, conservation, management and control of water resources within its water management area.

Expanded glossary

Allocable water: This refers to that water that can still be allocated to new licences or General Authorisations after meeting the requirements of the Reserve, and International Obligations.

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 also determine the total available resource and allocate water for the Reserve, international agreements, strategic needs (electricity generation), interbasin transfers, and water for future use. The allocation of the remainder of the resource will be negotiated by stakeholders where inhabitants of a WMA decide on the best possible allocation of available resources (captured in an Allocation Plan). This process is directed by principles and is legislated for by the NWA (S 9 e, h and S 23, 27, 28)

Clarification of interests: stakeholders should be driven to not only declare their positions (*what they want from the process*) in relation to WRM but also explicitly state their interests (*why they want it*)

Compulsory licensing [NWA, Sections 43-48] is a mechanism to reconsider all the water use authorisations in an area, 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) to facilitate efficient management of the water resource; or
(4) to protect water resource quality.

It will be undertaken progressively throughout all WMA, for an estimated 100 catchment or groundwater aquifers.

Compulsory licensing, supported by water demand management and the trading of water use authorizations, is the main enabling mechanism for achieving **re-allocation** (NWRS).

The general, compulsory licensing of existing and potential new water users will be undertaken in accordance with the requirements of Chapter 4, Part 8 of the Act. Section 43(1) sets out criteria for assessing the necessity for compulsory licensing[8] and provides for such exercises to be carried out progressively over time, in different parts of the country and according to the circumstances prevailing in particular areas or water resources. It is desirable to consider calling for licence applications for all water uses in each identified area at one time. Compulsory licensing will be carried out in areas defined by catchment or groundwater aquifer boundaries. Approximately 100 surface and groundwater areas have been identified across the country as a whole and a multi-year programme based on the water-related needs of each area indicates the likely order in which the Department intends to proceed with compulsory licensing (see Part 8 of this chapter).

As soon as reasonably practicable after the final allocation schedule has been published the responsible authority must issue licences to water users in accordance with its provisions.

Consensus-building: consensus building a process grounded in dialogue the starts with defining the problem rather than proposing solutions

Demand management (NWRS)

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. For example, as is evident from Table 2.4, of the 10 water management areas currently in deficit, 4 would change to a surplus situation if a 10 per cent saving in user requirements could be achieved. Compared with supply-side management, the management of demand in South Africa is relatively under-developed, although there are world-class examples of water use efficiency in some areas of industry and agriculture that will help to set benchmarks. Some quantitative data is available on water savings resulting from demand management programmes, notably in some of the metropolitan areas and the larger municipalities, but in general insufficient information exists to make reliable estimates of the potential savings in each water management area.

More information will become available as the effects of the Department's water demand management programme

become evident (see Part 3 of Chapter 3), and these will be accounted for in the water availability and requirements data in future editions of the NWRS.

Direct entitlements

- Schedule 1 use: relatively small quantities mainly for domestic, non-commercial, emergency and some recreational. 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

Ecological sustainability: This concept captures the view that there is a need to treat ecological protection and continuing economic growth as mutually compatible rather than as necessarily conflicting objectives.

EMPRs

Environmental Management Programme Reports for prospecting and mining. This is a process developed specifically for the mining industry - to provide guidelines for the development, management, and ultimate closure of mining operations. the primary objective lies in impact mitigation. EMPRs were developed by the Department of Mineral and Energy Affairs.

Entitlements to use water

- Schedule 1 use - small volumes of water for household use with little potential for negative impacts on the water resource, for which no application for authorisation needs to be made.
- General Authorisations - larger volumes of water with some potential for negative impacts on the water resource which may be generally authorised in any catchment, or for a specific type of water use or category of water user anywhere in the country.
- Existing Lawful Use - which is a water use that lawfully took place in the period two years before the commencement of the National Water Act, and
- 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.

Environmental Impact Assessment (EIA)

EIA 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 project including all forms of land transformation, such as conversion of natural veld to agriculture or forestry. A good EIA will also give consideration to alternative ways in which the land or resource could be used. The Department of Environment Affairs has the statutory authority to apply EIA to all development, through the National Environmental Management Act (NEMA).

Environmental Management Frameworks (EMFs)

The EMF is a spatial inventory, essentially a filing system of information, with a strong focus on biophysical parameters. Specific environmental management parameters are connected to this information. The national Department of Environment Affairs and Tourism (DEA&T) is in the process of establishing Environmental Management Frameworks for each province. These EMFs are environmental databases providing the information for use in the formulation of management plans. SEAs form a most valuable component at this part of the loop. The EMFs provide a useful gathering of data, which can then readily be made available to provincial planners. Such data will include physical and environmental coverages (such as topography and land cover). Social and economic data available through sources such as the national census would also be included. As with SEAs the EMFs aim to pro-actively identify areas of potential 'conflict' in land use, with the emphasis on environmental opportunity. The EMFs are databases of concrete information and do not offer tools, weights, or pictures of visions or understanding.

Existing lawful use (from NWRS) The Act's provisions in respect of Schedule 1 use and use under general authorisations are primarily intended to reduce the administrative effort of authorising every use in the country

individually. However, any water use that exceeds a Schedule 1 use, or that exceeds the limits imposed under general authorisations, must be authorised by a licence. As a transitional measure the Act permits water use that was lawfully exercised under any law

preceding the introduction of the Act, termed *existing lawful water use*, to continue under existing conditions until such time as it is formally licensed.

Integrated Environmental Management (IEM)

IEM has become the umbrella term, or toolbox, within which all environmental assessment processes, and environmental management practices, reside. IEM has become a guiding philosophy - the interface for the various environmental management processes. IEM is the umbrella covering EIA, SEA and EMPs (Environmental Management Planning).

Iterative and adaptive: the process of visioning should be conducted in such a way so as to allow for the progressive development and refining of the vision statement

Management class: An essential component of Resource Directed Measures, is setting the **management class** of the water resources in a catchment. Formally, the NWA facilitates this through the **National Water Resources Classification System**, or NWRCS which gives meaning to achieving a balance between protection and sustainable. Establishing a classification system and applying it to significant resources is a **legal** requirement. Significant resources include rivers, wetlands, estuaries and groundwater. Once the class of the water resource is set, together with the Reserve, the Resource Quality Objectives can be set.

Market clearance: A condition that is attained when the price of the good traded adjusts so that the quantity buyers wish to buy is equal to the quantity which sellers wish to supply.

Mediation: is the process of facilitating the visioning and negotiation process where a third party might be brought in to reduce conflict situations for arising

Monitoring programme 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 (from NIMS)

Multiple stakeholder platforms: these are opportunities for diverse interests groups to engage in dialogue and consensus reaching

Negotiation: this is a process where stakeholders are given the opportunity, through dialogue, to reach consensus in the management and planning process.

Opportunity costs: The costs of alternatives forgone by using scarce resources in a particular manner.

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*.*

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 might want from a negotiation process, an interest is **why** the stakeholder might want it

Public awareness & civic education: for 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 civil society 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 2006). The (gradual) re-allocation of water is preferred 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 Ch. 2 (2.5.4)).

Registration of use (see NWRS Chp 2, Part 3, 3.2.3.10)

Authorisation of all water uses throughout the country that require licences will take some time to complete (see Part 8 of this chapter). As an essential preliminary step towards licensing, and to enable water pricing to be

implemented[9], 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.

The registration data is currently being captured on the Water Authorisation and Registration Management System (WARMS - see Part 6 of this chapter) 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.

Resource Poor Farmers/Forest growers: Entry-level water users who are citizens of South Africa and who are members of the historically disadvantaged population groups.

Resource poor farmers: entry-level water users who are citizens of South Africa and who are members of the historically disadvantaged groups

SAPWAT: a software programme providing a crop water requirement model for South Africa

Resource-Directed Measures: These measures focus on the overall health or condition – or quality - of the water resource itself (ecological status). The **Resource quality** includes:

- water quantity,
- water quality,
- character and condition of in-stream and riparian habitats,
- characteristics, condition and distribution of the aquatic biota.

To describe the desired state of the resource, **Resource Quality Objectives** will be defined for each significant resource to describe its quality at the desired level of protection.

SAPWAT: A software program providing a crop water requirement model for South Africa.

Scarcity: The situation which arises when demand for any given good outstrips the supply of that good.

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: 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 control 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 are 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 will 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 SOE reports are currently being undertaken at national and at city level.

Strategic Conservation Planning. This is a tool for prioritising 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) SEA is a far-reaching and proactive process, differing fundamentally from EIA in a number of ways. DEA&T does not have a mandate to implement or apply SEA. Indeed 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, ie what fits with what the environment has to offer, and can be practised in a sustainable way. SEA looks not only at the physical environment, but also at the social and economic context. An 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 an 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, prosects 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. A table listing the differences between EIA and SEA is attached - but in reading the comparison it should be remembered that both tools have their place and offer complementary services in environmental management.

Indeed a good SEA should provide answers to many of the questions facing an EIA, where these may apply to a region or catchment, and it is the intention of the SEA process to simplify any required EIA by being pro-actively ready with knowledge and data

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 offered at the scale of the province. SEMPs provide the framework for more site specific studies. SEMPs tend to be broad and may lack, as in Mpumalanga, much of the conflict and visions data which the SEA for SFRAs is providing. There is a good deal of synergy between these processes.

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 setting up. Typically a SEMP was proposed for the Coega Industrial Zone (Eastern Cape), and a similar framework was prepared for the Capricorn Industrial Park (Western Cape).

Stream Flow Reduction Activity An SFRA is any dryland land use practice, which reduces the yield of water (with reference to yield from natural veld in undisturbed conditions) from that land to downstream users. Such activities may be declared as SFRAs if found to be significant.

The Reserve (NWA (Chapter 3, Part 3))

The Reserve, consists of two parts - the basic human needs reserve and the ecological reserve. The basic human needs reserve 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 ecological reserve 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. 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.

WARMS information programme consists of coordinating the registration of water use, capturing, storing and disseminating water use registration information.

Water for productive livelihoods

The objectives of the Act are, among other things, to meet the basic human needs of present and future generations, to promote equitable access to water, and to redress the results of past racial and gender discrimination. The Department is committed to achieving these objectives, and particularly to ensuring that water management strategies contribute to the eradication of poverty.

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 litres per household day.

Although Schedule 1 provides for the use of small quantities of water without the need for further administrative authorisation it is restricted to domestic uses such as food gardens and domestic stock watering. As the Act currently stands water use under Schedule 1 supports subsistence activities but does not allow water to be used for commercial purposes

The requirements for water for small-scale uses in rural areas will be quantified during compulsory licensing (see below), and the Department will investigate ways of making secure and cost effective supplies of water available without placing unnecessary administrative burdens on the users.

Water stressed: This refers to areas where the existing water use and additional demands for water exceeds the water available.

WC/DM and the control of alien invasive vegetation

Recent estimates indicate that about 10 million 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 biodiversity,

ecological functioning and the productive use of land. There is evidence that they use more water than the natural vegetation they replace. The effect on runoff is similar to the deliberate planting of trees for commercial use, which is a declared stream flow reduction activity. Preliminary estimates are that water use by alien plants is greater than that used by natural vegetation, and can result in significant reductions in runoff in some of the catchments where they occur. Clearing infestations, especially from the riparian zone, can increase stream flow (NWRS 2004).

Appendix 6.1

Table 6.1.1
A summary of the range of 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	
NWRS	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 than that contained in the NWRS. These are also known as the "WMA Reports".
Water Resource Situation Assessment Reports	Relevant characteristics of all quaternary catchments, totally 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 DWAFs 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) system 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 LANDSAT TM satellite imagery. Data collected over 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 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 together 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 6.6.1
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 SDC strategy should provide a general orientation to the augmentation approaches to be adopted within the WMA. The reconciliation section of the CMS might allude to ways of reconciling supply with demand. Addition ways of regulating water use so that demand is brought in line with supply should be part of the SDC strategy. Some guidelines are provided below:

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, these 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 authorizations (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.[3] Possible resource developments are listed in the NWRS[4] (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.

[3] 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".

[4] 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