# Public participation in the drafting of CATCHMENT MANAGEMENT STRATEGIES MADE SIMPLE!

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WATER RESEARCH COMMISSION

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# Public Participation in the Drafting of Catchment Management Strategies made Simple!

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**Water Research Commission**

by

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## *Background to this resource*

Despite the strong emphasis on public participation in the National Water Act (NWA), South Africa has yet to implement a comprehensive and functional approach to public engagement at the level of Water Management Areas. Part of the problem is that actual requirements are not explicitly articulated anywhere. This has led to the situation where public participatory processes are poorly conceptualised, misdirected and often perceived as confusing by stakeholders. 'Participation fatigue' is the consequence of this, accompanied by a growing frustration with the implementation of the content of the Act (du Toit and Pollard, 2008). The intention for decentralised democratic water resources management is consequently seriously jeopardized if the public participation processes are not clearly presented in the public domain.

The aim of this document is to draw together the work on IWRM that has a focus on participatory practices in South Africa, specifically The Save the Sand Project (Pollard et al , 1998; Pollard & Du Toit, 2004; Du Toit, 2005), a Water Research Commission project on public participation (Lotz-Sisitka & Burt, 2005, Du Toit et al, 2005), Catchment Management Strategy Guidelines (DWAF, 2007), and a DWAF project that funded the exploration of public participation in the Sand River Catchment. The latter (2005-2007) supported a better understand public participation processes and dynamics in a high-density rural catchment. The work is further referenced against a collection of related documentation, guidelines and research literature (DWAF, 2000, 2001a –d, 2004a, b; WRC, 2003, 2004a-c) aimed at elucidating public participation in Integrated Water Resources Management (IWRM) in South Africa.

The focus of the work is specifically on the development and implementation of Catchment Management Strategies as the locus of decentralized, democratized, participatory water resources management. The outcome of the work is a proposed framework for focusing public engagement on specific IWRM tasks. The framework outlines tasks where multi-stakeholder platforms collaboratively design strategic water management actions that are assembled as the Catchment Management Strategy (CMS), a statutory obligation for CMAs.

**This document 'manual' can be used by Catchment Management Agencies** to co-ordinate and orientate the public in drafting Catchment Management Strategies. It possesses considerable detail regarding the various steps required in putting a CMS together and therefore requires mediation and explanation. The authors encourage the extraction of useful bits and or the simplification for practical reasons. It is also important that this framework be read in conjunction with the official Guidelines for Catchment Management Strategies.

## IWRM – the joint responsibility of stakeholders

Integrated Water Resources Management (IWRM) with its proposed institutional arrangements as set out in the National Water Act (NWA, 1998) provides the broad context for the engagement of the general public in water resources management. Once CMAs are established they are expected to manage water in collaboration with local stakeholders. The NWA makes provision for a number of stakeholder platforms (Catchment Management Forums – CMFs and Catchment management Committees – CMCs) where IWRM can be negotiated at the level of a Water Management Area. The platforms are intended to be more than places where stakeholders defend vested interests in water resources. They are platforms where decisions are taken and collaborative actions are designed in order to strategically manage water resources for and by the inhabitants of a WMA.

South Africa has yet to implement a comprehensive and functional approach to stakeholder engagement at the level of Water Management Areas. One of the most important challenges relates to focusing the interactions on specific IWRM tasks (Du Toit et al, 2005). As multiple stakeholder environments are potentially conflictual it is essential that tasks are clearly articulated and well presented at such forums in order to appropriately direct interactions.

## An enabling policy environment is not enough

Whilst we recognize the importance of an enabling legislative and policy environment, we maintain that these are not sufficient to support the development of meaningful public participation in IWRM. The National Water Policy (1997), NWA (1998), NWRS (2001), and the Guidelines for CMS (2007) explicitly outline the need for public engagement in IWRM, In a WRC report (Du Toit et al, 2005) the authors outlined a proposal for task-oriented public participation in IWRM. However it is only with the development of the CMS guidelines (DWAF, 2007) that a clear and practical guide to how the public can be engaged in the various tasks associated with IWRM is presented.

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

The CMA is faced with the huge challenge of having to design a process that facilitates appropriate engagement in IWRM, at the appropriate times. In this section we provide a framework that could assist CMAs in this regard.

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

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

than the other. The challenge is to select the appropriate level of participation for a particular task. In this section we will identify the tasks and provide a framework for the 'right' type of participation to be supported by drawing on the public participation spectrum developed by the IAP2. Table 4 provides details of the IAP2 spectrum.

**Table 1. The Public Participation Spectrum. Understanding the table contents helps with developing the plans for participatory practice and provides the basis for the 'how' and 'why' of public engagement (adapted from the International Association for Public Participation IAP2. http://www.iap2.org/spectrum.html; All rights reserved).**

| 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, opportunities, solutions and alternatives | To obtain public feedback on analysis, alternatives and decisions | To work directly with the public throughout the process to ensure that public concerns are consistently understood and considered | To partner with the public in each aspect of the decision-making process including the development of alternatives and the identification of preferred solutions |
| Promise to the public: | 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* |
| Suggested techniques | | | |
| • Fact Sheets<br>• Web sites<br>• Open-forums<br>• Press releases<br>• Advertisements<br>• Media | • Public comment<br>• Focus groups<br>• Surveys<br>• Circulars<br>• E-mails | • Workshops<br>• Face-to-face meetings<br>• Discussion groups<br>• Sector meetings<br>• | • Forums<br>• Multiple stakeholder meetings<br>• Consensus building meetings<br>• Participatory decision-making |
|  | | | |

## *The CMS – the basis for structuring public engagement*

The democratization and decentralization of water resources management to more regional and localized levels of water management areas places a responsibility on localized water management institutions such as the CMA. The challenge for the CMA is to engage stakeholders in strategic planning that recognises the need to plan for water security through the development of Catchment Management Strategies. The CMS guidelines (DWAF, 2007) provide clear reasons for involving the public in the development and implementation of a CMS. In summary these include the need to:

- serve as broad a range of interests as possible;
- improve data or information gathering, 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 in which there is meaningful discussion of benefits, risks, and costs of options, and that consequently provides a basis for informed consent to recommendations;
- ensure greater sustainability of implementation by involving affected parties in a positive manner.

In order to address these aims a framework for the development of a CMS is provided in Figure 1 from the Guidelines for Catchment Management Strategies (DWAF, 2007) and should be read in conjunction with this contribution. For purposes of efficiency only aspects of the framework pertinent to the discussion of public participation will be described in this section.

The framework is conceptualised as four clusters of strategic plans, Parts A-D, which collectively comprise the CMS. A number of these deal specifically with the 'business' of IWRM whilst others facilitate the operating of the CMA, roll-out and operation of the strategies. The parts of the CMS are described below.

**Part A: Important foundational information**

Part A does not involve strategy development *per se* but provides the foundation for strategic action. It is important that the public has an important understanding of the contextual issues before engaging in strategic planning.

**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 constitute regulations for water use.

**Part C: Facilitating sub-strategies**

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

**Part D: Integration strategy**

As is well recognised, IWRM requires collaboration. This is because many institutions are involved with various aspects of water-related activities, either directly or indirectly. Moreover, given our international agreements, the imperative for collaboration extends beyond our national borders.

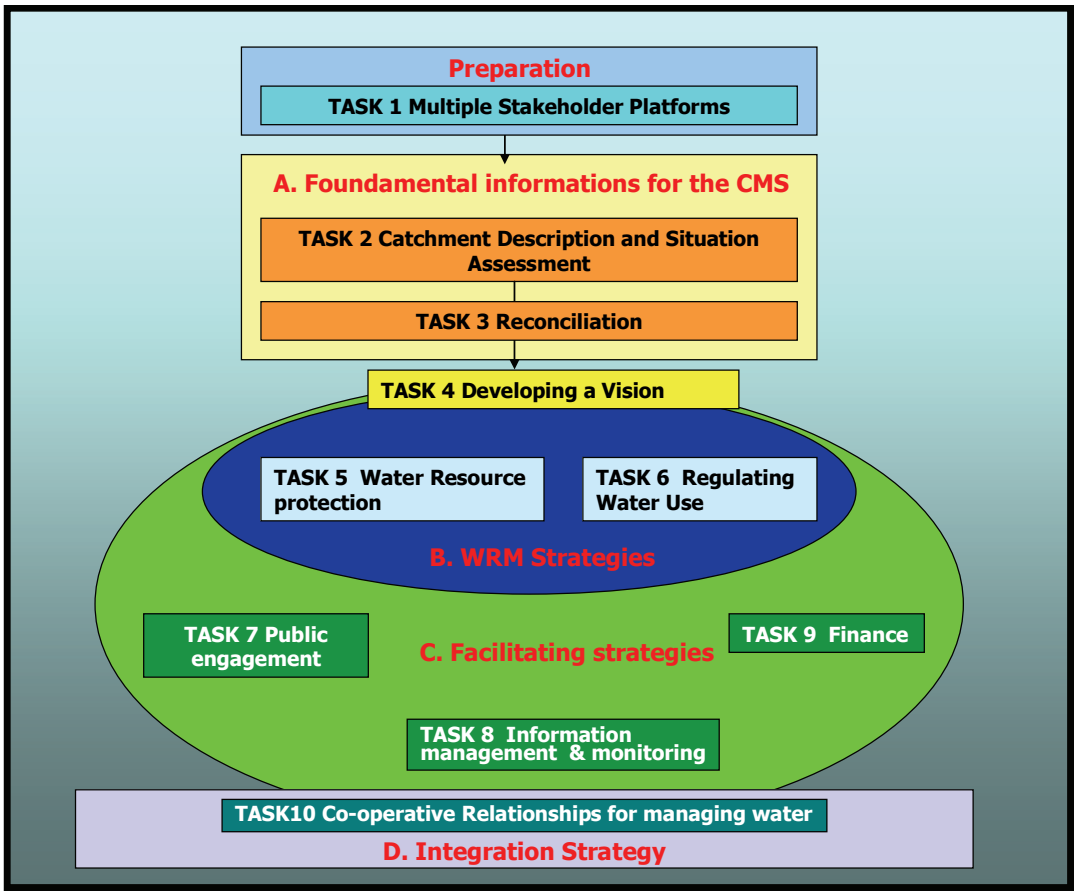


**Figure 1. The framework for IWRM and hence the CMS in South Africa (adapted from DWAF 2007). Clusters of contextual information and sub-strategies for the CMS fall into four parts: A, B, C & D.**

## *Requirements for the CMS*

**NWA (1998) Chapter 2, Part 2 (S 9).**

**A CMS must:**

a. take into account the **class of water resources and resource quality objectives** contemplated in Chapter 3, the requirements of the **Reserve** and, where applicable, **international obligations**;
b. not be in conflict with the NWRS;
c. set out the strategies, objectives, plans, guidelines and procedures of the CMA for the **protection, use, development, conservation, management and control** of water resources within its WMA;
d. **take into account** the geology, demography, land use, climate, vegetation and waterworks within its WMA;
e. contain **water allocation plans** which are subject to S 23, and which must set out principles for allocating water, taking into account the factors mentioned in S 27(1);
f. take account of any **relevant national or regional plans** prepared in terms of any other law, including any development plan adopted in terms of the Water Services Act, 1997 (Act No. 108 of 1997);
g. enable the **public to participate** in managing the water resources within its water management area;
h. take into account the **needs and expectations** of existing and potential water users; and
i. set out the **institutions** to be established.

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

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

## *The process of DRAFTING the CMS*

The preparation and implementation of a CMS can be divided into a number of broad stages that need to be conducted in sequence. The process of drafting the CMS can be divided into 3 stages:

1. Planning and preparation
2. Drafting stage
3. Submission for approval and public comment

The implementation of the CMS is part of another process and will not be dealt with in this document.

**Table 2. Summary of the three phases leading to the submission for approval by the Minister**

| Stage | DETAILS |
|---|---|
| **1. Planning and preparation stage** | • CMA to support and, if necessary, establish suitable stakeholder platforms for CMS<br>• Procedures and meetings dates for the drafting established on basis of sub-catchments<br>• Protocol for communication with stakeholder platforms established<br>• Data bases set up<br>• Information sharing and awareness raising regarding the CMS and drafting of the sub-strategies |
| **2. Drafting stage** | • Stakeholder platforms engaged in different tasks associated with drafting Parts A,B,C & D of the CMS (see framework below)<br>• 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<br>• Drafting and finalisation of FIRST GENERATION CMS |
| **3. Approval Stage** | • Approval<br>• CMS published in Government Gazette<br>• Public to comment on the CMS as an interested and affected party Document submitted to the Minister for signing off |

**A phased approach**

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

**Sequence**

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

## *A series of Tasks for public engagement in the drafting process*

In this section we will demonstrate how each part of the CMS, and hence IWRM in South Africa, can be broken down into tasks with which the public can engage. Each task is divided into a number of steps (taken from the procedures diagrams in the CMS guideline, DWAF, 2007). Table 2 summarizes the tasks associated with each part and indicates the types of participation most appropriate for each.

**TABLE 3. Breakdown of the parts of the CMS with its associated tasks and appropriate levels of public participation**

| Part of the CMS | Task area | Rationale | Types of participation |
|---|---|---|---|
| Preparation | Multiple stakeholder platforms | Preparation required in order to engage stakeholders in the development of the CMS | Inform<br>Consult<br>Involve |
| Part A: Background information and situation assessment | Situation description and assessment | Collective description of context and issues with collective assessment of the status of the resource prior to setting a vision. | Inform<br>**Collaborate** |
| | Reconciliation | Assessing the balance between availability and requirements | Inform<br>Consult<br>Involve |
| | Visioning | The collaborative vision for managing the resource is set at this stage | Inform<br>**Collaborate** |
| Part B: WRM strategies | Resources protection strategies | Public involvement in the classification of the resource, and negotiation of resource quality objectives | Inform<br>Consult<br>**Collaborate** |
| | Water use regulation strategies | Public involved in drafting of water allocation plan, licence applications and compliance with water use conditions | Inform<br>Consult<br>Involve<br>**Collaborate** |
| Part C: Facilitating strategies | Public participation, communication and capacity building processes established | A strategy for establishing and maintaining functioning platforms negotiated. Communication and capacity building processes established. | Inform<br>Consult<br>Involve |
| | Information management and monitoring | Protocols for monitoring and information management established with the assistance and input from stakeholders | Inform<br>Involve |
| | Financial arrangements | Financial arrangement, especially water resource management charges established with public involvement and captured in the CMS | Consult<br>Involve |
| Part D: Co-operative governance and institutional relationships | Institutional relationships established and defined | Relationships for water resources management formalized and captured in the CMS | Consult<br>Involve<br>**Collaborate** |

In the example of the framework (next section) we demonstrate how each task is further broken down into a series of steps that follow in a specific sequence. For example the situation description and assessment (Part A) is broken down into eight steps each with a clearly specified purpose, level of public participation and an expected outcome. In this way practitioners responsible for facilitating public participation are able to guide the process and the public is provided with a clear plan of procedure and outcomes.

## Table 4. Details of the IAP2 framework for participation ©IAP2

**(adapted from the International Association for Public Participation IAP2. http://www.iap2.org/spectrum.html; All rights reserved).**

| | Inform | Consult | Involve | Collaborate |
|---|---|---|---|---|
| Estimated time and workload | One-Way Communication: No direct feedback. | Question-Answer Communication: Public feedback and re-feedback (refer to the influence of public feedback on decision) **Verbs: review, liaise, *establish*** | Direct work with the public during the process and make sure, that public concerns and aspirations are taken into account. **Verbs: describe, identify, weigh, determine, verify, assess, consolidate, *establish*, prepare, *develop*** | Partner with the public to for developing alternatives and solutions. Use direct public advices. Recommend advices and build agreement (max possible). Collaboration should end with a result. **Verbs: develop, undertake, recommend, agree, generate, formulate, *review*, consolidate, establish** |
| Low level | An information centre without a CMA member or spokesperson and with worse prepared material would be a low information level. A website would be – especially for this project – low level information, too. | Computer based Polling, Deliberative Polling, Telephone Surveys/Poll or Internet Surveys/Poll are not the best way to consult the public, because internet is not common and you cannot be sure to reach many people. | | |
| Middle level | Press advertisements or newspaper reports and articles (they are not read by everyone), Information Hotlines/Central information Contact (you only talk to one person), Community fairs (they are not visited by many people). | A more personal way to consult people/institutes is by mail. The probability to get feedback is higher. | Polling and Response sheets: the degree of involvement | |
| High level | A collection of Newspaper articles, radio reports, mail distribution and maybe a short report on television. Information dissemination and assimilation should be contemporary. E.G you can expel to a newspaper article in the radio report (to look up). | Consult institutions/experts/ government, or public society in personal or small group meetings to get a deep insight of an issue. Caution: if you consult in a 'one person interview', you will not get a representative opinion. | When you use the techniques of "consult – very high level" in connection with smaller discussions between stakeholders you would be able to give a feedback on their aspirations and concerns. | |
| Very high level | With "very high level" is not meant, that you reach more people, but the quantity of information should be a lot higher. You can reach "very high level" by connecting the techniques of "high level" to inform them about an upcoming meeting. In this meeting you could use interviews, public hearings or expert-panels. Or the information refers to an established field office or dates for open houses (Field offices should have defined opening hours and a stand-by member to answer arising questions). | When you connect the techniques of "inform-very high level" with the permission to ask questions (e.g. direct communication between expert and public) and voting's or elections you may get a more representative feedback (public comment). Interviews (in a meeting) with arbitrary selected persons may be helpful, too. | To reach a very high level of public involvement use techniques of information to unite many people in workshops, open-space technology or future search conference. The result of these techniques must not be a complete perfect consensus or opinion. Before you carry out a workshop (or similar) you need to prepare information and material and you need a well defined organisation and time-table to reach all goals you lined up. | The highest level of public participation is a collaboration process. Collaboration needs always time for organisation, information and implementation. In a collaboration process stakeholders of all sectors should be involved and the result should be consensus and an agreement of all parties. Techniques to do so are: Forums, consensus building techniques, decision making and citizen advisory committees. |

**Increasing level of participation**

# A Generic framework for Participation in CMS development

## *The framework*

- In this section we present the proposed framework for supporting the involvement of the public in the development of the CMS
- There will be 10 sections corresponding to the 10 sub-strategies that are outlined in the CMS guideline
- Each section will cover the detail of What, Why, How, When, Where & Who for that particular task
- The aim is not to provide a complicated or overelaborate framework but rather to seek a plan that will help CMAs develop the details themselves and as they see fit. The principle is Keep It Simple

### The framework: some key points

The need to deepen the discourse on public participation in IWRM is critical for the development of an appropriate, practicable and functional approach. And while we recognize that this paper cannot present such an approach in its entirety we believe that the contents provide a step forward in the direction of developing the practices of participatory IWRM. We close with a number of points for discussion.

1. The framework presented here aims to provide practitioners with a concrete expression of IWRM through identifying specific tasks and distinguishing specific steps with designated outcomes. The aim is not to be over-formulaic but to provide some norms and standards with which multi-stakeholder groups can engage.
2. The framework is taken to be flexible with the intention that it can be adapted to specific contexts and the highly diverse Water Management Areas of South Africa
3. Public participation in IWRM is not a single step process. This framework calls for the disaggregation of public participation into various types of participation using the IAP2 Spectrum. The levels of participation vary according to the specific stages of a water management task. The public is not expected to be participant in every step of the process. For example, the setting of the Reserve is a technical process that does not require public engagement. However the public needs to be informed when a reserve has been set so that an appropriate management class can be deliberated on. This demonstrates the integratedness of all the IWRM tasks – the framework makes this explicit.
4. Adopting a task and outcome specific approach to IWRM provides an opportunity to better facilitate and manage the process. Using the framework for the development of the CMS means that the issues of sequence and procedure are clarified and that the public is in a better position to participate meaningfully.
5. It is important to note that collaborative engagement is not expected in every instance and that it is reserved for specific steps in particular tasks. Collaborate engagement is costly and resource intensive and not necessary for most steps in the CMS processes. It is important that stakeholders are aware of this so that the process can be focused and efficiently executed.
6. **IMPORTANT NOTE: there are 5 instances of Collaborate in the framework which are tasks that should ideally be completed in a multi-stakeholder environment (where collaborative planning can take place).**

## *A key to the framework*

The focus of the document is to guide CMA personnel in the structuring of public engagement in the drafting and implementation of the CMS. Each section is taken directly from the CMS guideline and each task is developed in terms of steps. The requisite level of public engagement is suggested on the left and the 'how' for each task is presented. There are 10 TASKS, each with step-by-step tables like the one presented below.

### Table 5. Key to the framework

| *Steps of the process. Taken from the CMS Guideline* | *The recommended level of participation for this step of the process* | | | | | *Details of each step* | *Reference to relevant part of the guideline or other reference* | *The expected outcome for this step of the process* |
|---|---|---|---|---|---|---|---|---|
| **STEP** | **No.** | **Level of participation** | | | | **How?** | **Useful reference** | **Outcome** |
| Step 1 | 1 | Inform | | | | | | |
| Step 2 | 2 | | consult | | | | | |
| Step 3 | 3 | | | Involve | | | | |
| Step 4 | 4 | | | | Collaborate | | | |

# The framework

## 10 TASKS for public engagement in the development of a CMS

Important note: The tasks listed in this framework have been developed from the Guidelines for the development of CMSs published by DWAF. Each task has an extraction of the important actions that need to be taken in order to develop the main strategic areas that need to be evident in the CMS in order for it to be approved by the Minister.

Please note that the steps depicted in the framework may be slightly modified (usually in terms of the levels of participation required for each step) in order to streamline and sharpen the process. These changes have been made after consultation with key practitioners in the field. Also note that these are recommended processes of participation for the development of the CMS. Individual services providers and CMAs may choose to do things differently. We present this framework in the interests of improving participatory IWRM practice in South Africa.

We have marked COLLABORATE in blue as it is the highest form of participation expected for the development of the CMS. It is also recommended that this step be conducted in a multiple stakeholder environment (such as a forum).

| TASK 1 | **Multiple stakeholder platforms**<br>**Establishment of participatory platforms** | **Preparation** |
|---|---|---|

## What?

The NWA sets out how civil society could participate in developing a CMS in each catchment. Functioning stakeholder platforms are crucial for both the drafting and implementation of the CMS. Thus, one of the first tasks of the CMA is to ensure that such platforms are in place prior to the actual drafting (see Chapter 5 of the CMS Guideline). Remember this also means addressing capacity development so that there is informed and meaningful participation (capacity will also be built over time). Thus from the outset, the CMA needs to plan how this will be done. For the first CMS, the **CMA may wish to develop a separate strategy** (not part of the CMS) that deals with these initial processes of platform establishment and capacity development. These platforms can be used in both the drafting and implementation processes.

## Why?

The National Water Act (1998; S 80) states that the Catchment Management Agency (CMA) will **promote** public participation, and furthermore will do so as its first function. Clear reasons underlie the need to involve the public in the development and implementation of a CMS. In summary these include the need to:

- serve as broad a range of interests as possible;
- improve data or information gathering and identify gaps;
- provide transparency and accountability regarding both decisions taken and the process by which decisions were taken in developing the CMS;
- build a broad base of commitment to options by creating an environment in which there is meaningful discussion of costs, benefits and options,;
- ensure greater sustainability of implementation by involving stakeholders in a positive manner.

## Expected outcome for the task

For each sub-catchment of the WMA one participation platform should be established. These platforms should prepare to draft and implement the CMS

## Table 6. Public participation: setting up stakeholder platforms

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| Assess status of the public participation platforms in the WMA and sub-catchments | 1 | Consult | As part of assessing the status of multiple stakeholder platforms (MSP), consult various chairpersons and convenors as to the status and nature of the platform. If MSPs established move to Step 3. | | Assessed status and record of platforms |
| Multiple stakeholder platforms: Incomplete or absent? | 2 | Involve | If MSPs are incomplete or absent then consult DWA guidelines for establishment of platforms. Establish or reconstitute existing platforms with stakeholder involvement | See DWA Guidelines for the establishment of stakeholder platforms | MSPs established |
| Assess stakeholder platforms for inclusivity and comprehensivity | 3 | | Monitor the platform: Are the established platforms inclusive and comprehensive. Was the participation process correct and were the principles applied? Refer to Monitoring sub-strategy which is part of Task 8 **There is no need for public engagement in this step** | Chapter 6.8 of CMS-GL | |
| Platforms acceptable? | 4 | | Approve the MSP or plans to be more inclusive (so that there is broad representation of all major water use categories on the platform) **There is no need for public engagement in this step** | | |
| Multiple stakeholder platforms available for drafting and implementation of CMS | 5 | Inform | Inform stakeholders of the appropriate platforms for their involvement. Include contact information, chairpersons etc. Inform MSPs of the CMS draft process, plans and 10 tasks. | | Participation platforms established and aware of their role in the development of the CMS |

| When | Where | Who |
|---|---|---|
| Must be completed BEFORE the 9 remaining CMS tasks are initiated. | Should be inclusive of all stakeholder groups. Meetings should be planned on a catchment basis | All key stakeholder groups and I&APs with a special emphasis on up/downstream representation of users |

## Additional Useful-reference

See Chapter 5 of the CMS-GL and Chapter 6.8 of CMS-GL
A Guide to the National Water Act (No. 36 of 1998) (undated)
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WRC. Participatory WRM guidelines. WRC 2001/2, Reference No. 863, WRC Reference No. 1233
WRC. 2002. The management of water resources by the emerging catchment management agencies WRC, 2001/2, Reference No. 906
WRC. 2003. Development of protocols for improving catchment management through enhanced stakeholder participation. WRC no. 1062/1/03
WRC. 2003. Principles and Processes for Supporting Stakeholder Integrated River Management – Lessons from the Sabie-Sand Catchment. WRC report no. 1062/1/03. Pretoria.
WRC. 2004. Identification of the critical steps in establishing and ensuring the sustainability and transferability of community participation in ICM. WRC 2001/2 Reference No 866; WRC 2003/4 Reference No 1157
WRC. 2004. Establishment of a WUA in the Kat River valley, Eastern Cape WRC 2003/4 No 1233
WRC. WRC 2003/4 No 1233
2004. Development of appropriate tools to support meaningful participation of the public at different levels of decision-making. WRC 2003/4 Reference No 1434
WRC. 2004. WRM functions delegation to WUA and CMAs (WRC 2003/4 Reference No 1140

| TASK 2 | Catchment Description and Situation Assessment | Part A |
|---|---|---|

## What?

The objective of describing the *status quo* is to provide a holistic contextual profile of the key characteristics of the WMA (biophysical, social, technical, economic, political and institutional), as related to water, and the likely future profile, in order to provide a sound basis for the development of appropriate and effective strategic direction. Stakeholders need to have a shared concept of what it is they will be collaboratively managing for current and future generations. This starts with a collective description of the present state of the water management area and its sub-catchments. After describing the current status projected trends should show how the catchment could/should look in the future (10 or 20 years).

## Why?

Section 9 of the National Water Act (1998; NWA) specifies the need for a Catchment Management Strategy to contain a contextual profile. This catchment description must describe **the present state of the catchment** (DWAF 2004 c). However, the management of water cannot be divorced from the broader context.

- Guiding this is the commitment that South Africa gives to understanding the important role water plays in social and economic development, as well as ensuring the sustainability of the resource base itself. Thus it is imperative that the **ecological, social, economic, technological, political** and **institutional** environments are adequately considered when conducting water resources planning and management.
- Secondly, the quantity and quality of water is influenced by **both** water-based and land-based activities. For example, not only does abstraction for a particular sector like agriculture or industry influence the flow regime but the activities on land – such as the generation of effluent or the loss of topsoil – will also be reflected in the water quality and/or quantity.
- Thirdly, because of the nature of water, **upstream** activities impact on the 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.

## Expected Outcome for the task

A holistic assessment of the current situation in the WMA and two likely scenarios that include the socio-economic, environmental and political characteristics. The catchment description and the situation assessment are the basis for all subsequent strategies.

## Table 7. Steps for Catchment Description and Situation Assessment

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| Identify and notify stakeholders and institutions. Choose appropriate scale for assessment (e.g. land use, zones, sub-catchment) | 1 | Inform | Communicate through media, letters, e-mails. Make use of established CMC, and CMF to communicate that they will describe and assess the status of the catchment in a holistic way. Inform stakeholders of the scale that has been selected for the assessment process. The CMA sets the scale for the assessment but it can take inputs form stakeholders. | Saving the Sands Series; Unit 8, Relevant ISP | Informed stakeholders about their planned engagement in describing their catchments and assessing the status |
| Describe STEEP factors (see glossary) for status quo and projected trends (i.e. minimum of. 2 scenarios) | 2 | Collaborate | Collaborate through multi-stakeholder meetings to identify and prioritise the key problems and favourable aspects of the catchment (*What is problematic, what favourable in the catchment?).* Involve the public, institutions, and/or CMF to describe the catchment in a holistic way, using the best available information for each criterion of STEEP. During the collaboration each stakeholder should get an insight into the perspectives of the other stakeholders. This step is important as it will have influence over the strategies developed in tasks4, 5 and 6. Use STEEP criteria (Social, Technological, Economic, Ecological and Political) to develop a minimum of **2** possible trends. This step can be conducted along with Step 3 if desired. | Figure 6.1.1 and 6.2.1<br>Table 6.1.1 of CMS-GL | Described status quo for the criteria: social, technical, ecological, economic and political in the catchment. Minimum two projected trends for the catchment. |
| Identify STEEP **criteria** for use in assessment of the situation.<br>Weight criteria within selected spatial scale in terms of importance | 3 | Collaborate | Review step 2 and involve the stakeholder platforms to determine the criteria for the evaluation. Weight criteria within selected spatial scale. Undertake assessment and collaborate with the stakeholders in making recommendations | NOTE: this process has been modified from the lengthier process detailed in the guideline | Status of catchment assessed according to the STEEP criteria |

| When | Where | Who |
|---|---|---|
| This task needs to be done at the beginning of the CMS development process as it is the basis for the water resources strategic planning | Should be done at a place in the relevant catchment where all stakeholder groups can attend. Activities should be conducted on a catchment basis | All key stakeholder groups and I&APs with a special emphasis on up/downstream representation of users |

## Capacity-Development-Needs

It is possible that stakeholders will need some background to the NWA and have a concept of what a catchment is. A basic glossary of terms is valuable.

## Useful references


DWAF 2004c, NWA section 9, Table 6.1.1 of the CMS-GL, Checklist 6.2.5, DWAF 2005. Summary policy on the Resource Directed Management of Water Quality. Water resource planning systems series. Sub-series No. WQP 1.5
Water Resources Situation Assessment reports are available for each of the WMAs on the DWAF website: *www.dwaf.gov.za*
DWAF 2004. Internal Strategic Perspective. Berg River WMA.
DWAF 2004. Internal Strategic Perspective. Breede WMA.
DWAF 2004. Internal Strategic Perspective. Crocodile West Marico WMA.
DWAF 2004. Internal Strategic Perspective. Fish to Tsitsikamma WMA Tsitsikamma to Coega.
DWAF 2004. Internal Strategic Perspective. Gouritz WMA.
DWAF 2004. Internal Strategic Perspective. Inkomati WMA.
DWAF 2004. Internal strategic perspective. Limpopo River WMA. Pretoria.
DWAF 2004. Internal Strategic Perspective. Lower Orange WMA.
DWAF 2004. Internal Strategic Perspective. Lower Vaal WMA.
DWAF 2004. Internal strategic perspective. Luvuvhu / Letaba WMA.
DWAF 2004. Internal Strategic Perspective. Middle Vaal WMA.
DWAF 2004. Internal Strategic Perspective. Mvoti to Mzimkulu WMA.
DWAF 2004. Internal Strategic Perspective. Mzimvubu to Keiskamma WMA Amatole to Kei.
DWAF 2004. Internal Strategic Perspective. Olifants River WMA.
DWAF 2004. Internal Strategic Perspective. Upper Orange WMA.
DWAF 2004. Internal Strategic Perspective. Upper Vaal WMA.
DWAF 2004. Internal Strategic Perspective. Vaal River System: Overarching.
DWAF 2004. Internal Strategic Perspective. Orange River System: Overarching.
ISP reports are available for each of the WMAs on the DWAF website: *www.dwaf.gov.za*
WRC. 2004. Development of a Hydrological Decision Support Framework (HDSF) to support CMAs in the assessment of water resources and the allocation of water use licences
WRC. 2003. Groundwater–surface water interactions. WRC 2002/3 Reference No.1327 (in progress: 2004-2008)
WRC. 2004. Groundwater–surface water interactions. WRC 2003/4 Reference Nos. 1093, 1117, 1168, 1234, 1488 (in progress: 2004-2008)

| TASK 3 | **Reconciliation**<br>Water balance | **Part A** |
|---|---|---|

## What?

*Reconciliation* refers to the technical process of undertaking a water balance – that is, weighing up the available water resources against the water requirements, or so-called 'water demand'. This can be predicted – or modelled – for a range of scenarios including the current and likely future situations. The reconciliation process is critical for the steps that follow as it means that the strategies will need to address a water surplus or deficit by developing appropriate Resource Directed Measures (RDM) and Source Directed Controls (SDC). The reconciliation should also point out if the required water is used in a beneficial, effective and efficient way. Reconciliation is an iterative step that is done to check the consequences of particular management choices of the CMS. Reconciliation is not a once-off, nor a standalone process, but is an integral part of many of the steps that make up Integrated Water Resources Management (IWRM)

The technical process of doing a water balance must be distinguished from the ***strategic intent to achieve reconciliation*** – or, in other words, the intent to achieve a water balance that is equitable, sustainable and efficient.

## Why?

The water-scarce situation in South African demands that we act strategically to achieve equity, sustainability and efficiency in water resources management. Over half (10 of the 19) of the Water Management Areas (WMA) in South Africa are in water deficit, or are so-called 'closed catchments' (NWRS, 2004: Table 2.4). A key responsibility of the Catchment Management Agency (CMA) is to deal with imbalances and localised areas of water stress through the catchment management strategies. The reconciliation is essential for making decisions associated with granting new licences and reviewing reapplications.

## Expected outcome for the task

The **intended outcome** is a geographically-based reconciliation of availability versus requirement 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.

## Table 8. Steps for conducting the Reconciliation

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| Review the scale selected in Task 1 and examine information from the assessment | 1 | | Review scales from step 4 of Task 1. Examine information of Task 1<br><br>There is no need for public engagement in this step | ISP, Basin studies, NWRS | |
| Determine water availability<br><br>*Examine quantity and quality of surface or groundwater* | 2 | Consult | Consult people from DWA, CMA, WUAs and CMFs to determine water availability for the particular catchment (refer to choice of scale). Refer to hydrological studies and DWA databases. Assess quality of information and gaps | NWRS, ISP, basin studies<br>6.3.4 of CMS-GL | Status of available water documented |
| Validation and verification of water use | 3 | Consult | This process is conducted by DWA in most cases. It might be necessary to consult with various users if the validation process has not been completed in a particular catchment. Validation is the checking what water use is registered as a valid use under the NWA. Verification is determining whether such a use is lawful. | Box 6.3.1 of CMS-GL<br>Figure 6.6.1 of CMS-GL | WARMS register will contain this information<br>Verified Water use of lawful and unlawful use. |
| Assessment of beneficial, effective and efficient use | 4 | Involve | This step is usually conducted as part of the validation and verification process. It might not be necessary to involve stakeholders – it is optional. It is important to inform stakeholders of the outcome however. Assess quality of information and gaps | | Is the use in the appropriate scale beneficial, efficient and effective? |
| Determine the water balance for current use and for future scenarios from Task 2 | 5 | Inform | This is usually done by specialists. Stakeholders should be informed of the outcome as the water balance is the basis for deriving strategic plans in Tasks 5 and 6 | Fig 6.3.1 | Water balance per catchment |

| When | Where | Who |
|---|---|---|
| A basic reconciliation is fundamental to the development of the CMS as it is the basis for the water resources strategic planning. However reconciliations need to be done at a number of stages in order to check the implications of various strategic plans. For example water allocation plans will have impacts on the water balance. See Fig 6.3.1 in the guideline for an explanation of this. | Should be done at a place in the relevant catchment where are stakeholder groups can attend. Meeting s should be held on the catchment basis | All key stakeholder groups and I&APs with a special emphasis on up/downstream representation of users |

## Useful references


Figure 6.3.1 and Box 6.3.1 of CMS-GL
There is unfortunately no guideline for reconciliation by DWAF.
DWAF 2004. Internal Strategic Perspective. Berg River WMA.
DWAF 2004. Internal Strategic Perspective. Breede WMA.
DWAF 2004. Internal Strategic Perspective. Crocodile West Marico WMA.
DWAF 2004. Internal Strategic Perspective. Fish to Tsitsikamma WMA Tsitsikamma to Coega.
DWAF 2004. Internal Strategic Perspective. Gouritz WMA.
DWAF 2004. Internal Strategic Perspective. Inkomati WMA.
DWAF 2004. Internal strategic perspective. Limpopo River WMA. Pretoria.
DWAF 2004. Internal Strategic Perspective. Lower Orange WMA.
DWAF 2004. Internal Strategic Perspective. Lower Vaal WMA.
DWAF 2004. Internal strategic perspective. Luvuvhu / Letaba WMA.
DWAF 2004. Internal Strategic Perspective. Middle Vaal WMA.
DWAF 2004. Internal Strategic Perspective. Mvoti to Mzimkulu WMA.
DWAF 2004. Internal Strategic Perspective. Mzimvubu to Keiskamma WMA Amatole to Kei.
DWAF 2004. Internal Strategic Perspective. Olifants River WMA.
DWAF 2004. Internal Strategic Perspective. Thukela WMA.
DWAF 2004. Internal Strategic Perspective. Upper Orange WMA.
DWAF 2004. Internal Strategic Perspective. Upper Vaal WMA.
DWAF 2004. Internal Strategic Perspective. Vaal River System: Overarching.
DWAF 2004. Internal Strategic Perspective. Orange River System: Overarching.
ISP reports are available for each of the WMAs on the DWAF website: *www.dwaf.gov.za*
WRC. 2002. Water demand forecasting. WRC 2001/2 Reference No. 905

| TASK 4 | Developing a Vision | Part A |
|---|---|---|

## What?

It is important to develop a vision for each sub-catchment. The Vision should "draw a picture" of the future state of the Water Management Area in relation to water resources. The main goal of a vision is to create a desired future state that will guide us to achieve sustainability, efficiency and equity (unsustainability, inefficiency and inequity are not be accepted in terms of the Constitution and/or law). There are important stepping stones for arriving at a vision: firstly all affected stakeholder will need to be familiar with the catchment and an assessment of its resources (especially water) [See Catchment Description and Situation Assessment], secondly, the level of engagement around the vision setting is high [collaboration] as it is against the vision that the conditions and principles for water management will be set and that users will ultimately be held accountable.

This is not likely to be a simple process as a diversity of stakeholders will want to influence the vision development process. This means that consensus will need to be reached in arriving at the vision.

The vision is a text, 'picture' or statement that addresses one geographical area specifically and which cannot be copied to another area. The text should also be realistic. Resource Directed Measures and Source Directed Controls need a vision as basis for the development of an allocation plan. Thus the vision is a link between the Situation Assessment and RDM or SDC.

## Why?

The Constitution (1996) holds that South Africans have the right to be involved in issues that affect them. Visioning can be seen as one of the fundamental steps towards democratizing and decentralizing water resources management. By collaboratively arriving at a vision, different stakeholders commit to dealing with the realities of a particular Water Management Area (WMA). The process of visioning provides a mechanism for involving multiple stakeholders in the strategic planning process from the very outset. The ideal situation is to have as much information available as possible **before** the visioning process is initiated. However, since the visioning process is iterative, a vision can be refined over time, as and when information is made available. In any event, a vision will be revisited as part of the review process once every five years.

## Expected outcome of the task

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

## Table 9. Steps for Visioning

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| Preparation for visioning process | 1 | Inform | Determine sub-catchment boundaries as areas for the development of visions<br>Prepare information about the sub-catchment boundaries (determined in the catchment description or reconciliation process). Maps are a useful tool for communicating boundaries in MSP settings. Prepare maps for the visioning process.<br>Organise workshops and facilitators | Maps from ISPs and DWA website | Materials and handouts to support visioning process.<br>Visioning workshop planned |
| Is there an existing Vision? (of any kind) | 2 | | IS there an existing Vision? NO-> Step 4 or YES-> Step 5<br>If yes: was process of creating it legitimate? (broad representation). If yes proceed to Step 6.If no proceed to 4.<br><br>**There is no need for public engagement in this step** | | Status of vision determined |
| Initiate collaborative visioning process | 3 | Collaborate | In a multiple stakeholder meeting conduct the following preparatory activities:<br>– verify that a **common understanding** of each catchment and its issues exists. If necessary, revisit the situation description from Task 2. Do not proceed unless a common understanding exists.<br>– Agree on **guiding principles**. Agree to those principles that should guide the visioning through a consensus reaching process. Remember to include the national principles of equity, sustainability and efficiency as overarching principles.<br><br>NOTE: The level of engagement is high and the process must be carefully facilitated<br>- | DWAF 2005b | Collective understanding of context for visioning and people agree to guiding principles |
| Formulate vision statements for sub catchments | 4 | Collaborate | With the guiding principles as a starting point discuss and decide on the scope and content of issues that will form the basis of the vision statement. The vision statement must contain enough detail so that it can be recognisable for a particular geographic area and must express intentions for addressing equity, sustainability and efficiency. Remember that the scale for the vision statement is the sub-catchment NOT the WMA.<br><br>NOTE: The level of engagement is high and the process must be carefully facilitated | Fig 3.3 p 28 GL | One vision statement (roughly 1 page) expressed as a desired future state per catchment |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Develop a vision statement for WMA by consolidating sub catchment visions | 5 | Inform | | | | By seeking common themes from the sub-catchment visions extract common issues and derive a vision for the WMA. Inform the public through the media about the sub-catchment visions AND the WMA vision. | People are informed about the vision and their expected future statement for the catchments. |

| When | Where | Who |
|---|---|---|
| Visioning should only be conducted after the situation description and assessment have been completed. Also a reconciliation of the water availability and requirements is the basis for deliberation of a shared vision. | Visions should be done on a catchment basis. It is not legitimate to involve stakeholders in visioning statements for catchments that they have no stake in. | Visions should be done with a spectrum of stakeholders representing as many groups as possible and most importantly, that there is up/downstream representation in the process. |

## Useful references


DWAF (2001). Guidelines for stakeholder participation in integrated water resources management in water management areas in South Africa. March 2001.
DWAF (2001). Generic public participation guidelines, Compiled Romy van Jaarsveld.
Figure 6.4.2 of CMS-GL
DWAF 2006. Draft Guidelines on Catchment Visioning for the Resource Directed Management of Water
DWAF 2006 Quality Water Resource Planning Systems Series, Sub-Series No. WQP 1.7.1, Resource Directed Management of Water Quality: 2nd Edition Management Instruments Series. 2006.
2006. Draft Guidelines on Catchment Visioning for the Resource Directed Management of Water Quality. Water Resource Planning Systems Series, Sub-Series No. WQP 1.7.1, Resource Directed Management of Water Quality: 2nd Edition Management Instruments Series. 2006.

| TASK 5 | Water Resource Protection | Part B |
|---|---|---|

## What?

After the catchment description and situation assessment with the following process of visioning comes the strategic part for water resource protection and sustainable and equity allocation of water. Within the National Water Resource Strategy there are, as mentioned before, two strategies: The Resource Directed Measures and Source Directed Control.

This task deals with Water Resource Protection and how people could be involved in this process. One goal of the RDM sub-strategy is to achieve sustainability and equity for the present state and the future status as well. Water should not only be available, it is important that one can use water in the future, too. Therefore water protection is not only protection of life in the water, rather it is protecting water for the aquatic ecosystem and for ensuring water availability for basic human needs, current users, future users and the system in general.

There are five steps which describe RDM. The first step is a description of the present state of the water resource. It's called Present Ecological State or short PES. PES could be divided in 5 Categories, from A to F. A PES of category E or F is not allowed and category D should be achieved. Once the present ecological state is determined the desired state should be formulated. It's also called the Management Class MC, which means a "going to" status. The MC will be made in collaboration with the public and different experts with reference to the vision.

The next step is belongs to the reserve. It has priority over all and includes the Basic Human Needs Reserve and the Ecological Reserve. Last one of the first four steps is the definition of control mechanism or Resource Quality Objectives. The plus is the determination of reserve types: first the Class, Reserve and RQO determination or second the Preliminary determination.

## Why?

The Water Resources Protection sub-strategy (or collection of sub-strategies) addresses the need to protect water resources to ensure their continuing sustainability, and availability for human use. Importantly, water resources protection is about achieving a balance that honours the commitment to "***some, for all, forever***". The interrelated objectives of sustainability and equity seek to promote the use of resources in a way that meets the needs of the current generations, fairly and sustainably, without compromising those of future generations. To do this, the NWRS (2004) stipulates two complementary strategies: **Resource Directed Measures (RDM) and Source Directed Controls (SDC**

## Expected outcome for the task

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

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

### Table 10. Steps for developing a sub-strategy for water resources protection

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| Review status of water resources and status of WRP initiatives in WMA | 1 | Consult | Approach DWAF and organisations and institutions from Checklist 6.5.5 of CMS-GL.<br>Note: There are various programs like Working for Water; National Water Conservation Campaign etc. | ISP and other documents which describe the water resource. | Reviewed status of water resource. |
| Determine whether any of the RDM measures have been initiated | 2 | | Consult Table 6.5.1 in the GL (and Appendix 4 of this document). and determine the status of RDM measures implemented in the WMA (i.e. PES categorisation, Classification of resource, Reserve determination and the development of RQOs)<br>Do this for each sub-catchment –<br>Is it absent or incomplete? – > go to Step 5 and proceed with interim RDM measures (i.e. if no classification is done or if there is a preliminary Reserve)<br>Is it complete? – > go to Step 6 and proceed with the development of all RDM measures (Table 6.5.1. Appendix 4 of this document)<br>**There is no need for public engagement in this step** | Box 6.5.1. of CMS-GL | Reviewed status of the RDM measures for each catchment of the WMA. |
| | 3 | Inform | Prepare a summary table as in Appendix XXX that reflects the status RDM for each catchment.<br>Inform stakeholder platforms of this status | | Table summary of RDM for the WMA |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| If the RDM measures for any of the catchments is incomplete proceed with step 4 | | | | | | | | |
| Develop strategic plans for interim management | 4 | | Consult | | | RDM is absent or incomplete: In the interim period strategies for achieving the PRELIMINARY RESERVE should be developed. Inform the public about the need of preliminary measures and that no NEW licences should be issued.<br>Consult stakeholder groups regarding proposed interim strategies | | Interim management plan and informed people. |
| Check status of compliance and strategic implications with interim measures | 5 | | | | | Now check compliance with interim measures and strategic implications<br><br>**There is no need for public engagement in this step** | | Record of compliance with interim RDM exists |
| If the RDM measures for all or some of the catchments are complete, proceed with step 6 | | | | | | | | |
| Develop strategic plans to implement RDM | 6 | | | | Collaborate | Using the Table of RDM s (see Table 6.5.1 and Appendix 4 of this document) develop strategies for developing and implementing RDMs (i.e. classification, Reserve determination and implementation, and setting of RQOs)<br>Work with stakeholders, WUA, DWAF to develop strategic plans for **operating rules** etc | | Strategies for RDM including Operating Rules etc |
| Consolidate resource protection strategies | 7 | | | | | **Collate all RDM efforts into a comprehensive water resources protection sub-strategy**<br><br>**There is no need for public engagement in this step** | | Substrategy for RDM |
| Check status of compliance and strategic implications with interim measures | 8 | | Consult | | | Now check compliance with RDM and strategic implications<br><br>**There is no need for public engagement in this step** | | Record of compliance with interim RDM exists |
| Inform stakeholders of the RDM strategies | 9 | Inform | | | | Inform stakeholders | | Informed stakeholders of the implications of RDM |

| When | Where | Who |
|---|---|---|
| After the visioning process. It is essential to have the RDM strategies in place before engaging with the SDC strategies | Should be done at a place in the relevant catchment where are stakeholder groups can attend. Meeting s should be held on the catchment basis | All key stakeholder groups and I&APs with a special emphasis on up/downstream representation of users |

## Useful references

Figure 6.5.1 of CMS-GL and Table 6.5.1,
NWA Chapter 3
DWAF 1999. Resource Directed Measures for Protection of Water Resources, Vol. 2: Integrated manual. Vol. 3: River Ecosystems; Vol. 4: Wetland Ecosystems; Vol. 5: Estuarine Ecosystems; Vol. 6. Groundwater component. Pretoria, South Africa

| TASK 6 | Regulating Water Use | Part B |
|---|---|---|

## What?

*Source Directed Controls* (SDC) refer to a set of measures aimed at regulating water use, impact prevention and impact minimisation so as to achieve the desired future state described in the vision and appropriate levels of protection of the resource set out in Resource Directed Measures (RDM). Together with RDM, SDC are the main mechanisms for achieving the overarching principles of **equity, efficiency and sustainability**

The purpose of water-use regulation is to define the limits and constraints, incentives and disincentives that must be imposed on the use of water resources to achieve the desired vision and water resources protection for the WMA. Given the wide array of strategic actions associated with SDC, stakeholders are likely to be involved in **four** different aspects of regulation. Some of their involvement will be through procedures required of users (i.e. registration and applications for licences) whilst other engagements will be conducted in multiple stakeholder environments where they will negotiate allocations and strategic plans based on the vision. The parts of the SDC are summarised as:

**a. Authorisation of water use – permission to use water**

1. Registrations and applications for entitlements – including transfers of water-use entitlements.
2. Water allocation planning, actual plans and schedules – including a plan for water allocation reform.
3. Licensing and compulsory licensing.

**b. Creating conditions for 'wise use' of water – efficiency of use**

1. Water Conservation and Water Demand Management (WC/WDM).
2. Water quality management and pollution control.
3. Augmentation options – other than WC/WDM – rainwater harvesting, desalination etc.

**c. Pricing, charges, incentives and disincentives – using financial mechanisms to regulate**

– Including Waste-Discharge Charge-System (WDCS).

**d. Monitoring, compliance and enforcement – checking on the users**

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

## Why?

Water is a scare and precious commodity. We therefore need to make sure that there are mechanisms that enable us to regulate its use. We are committed to regulating according to the three overarching principles of **equity, efficiency and sustainability.** An important component for the first Catchment Management Strategies (CMS) in stressed catchments will be to plan for the reallocation of existing entitlements to address issues of **water stress and inequitable water access**.

## Expected outcome for the task

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

## Table 11. Steps for developing a sub strategy for water use regulation

### Preparation for the different components of SDC strategy development (parts a, b, c & d)

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| Determine the context for regulation of water use | 1 | | Consider obligations: national, strategic, special use (schedule 1 and GA) and international agreements<br>Review situation assessment, reconciliation and vision tasks | | Reviewed contextual profile for the WMA |
| Is there a deficit or surplus? | 2 | | From the reconciliation study, establish if there is a surplus or deficit on the basis of catchments | | |
| Prepare to develop strategic options for 4 components of SDC | 3 | | Consider the 4 main areas for regulation as the basis for strategic planning (see pasts a – d below)<br>Steps 1 – 3 provide a context within which the regulatory strategic options will be developed. All stakeholders need to be familiar with this context BEFORE moving forward<br>**There is no need for public engagement in steps 1,2&3** | Figure 6.6.3 GL | |

## Part a. Authorisation of water use and entitlements ('permission to use water')

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| **Review:**<br>– Principles for a authorisation<br>– Vision<br>– RDM<br>– Reconciliation<br>– Status of water use authorisations (verification)<br>– Lawful/unlawful use | 4 | Consult | – Review the principles of the authorisation of water use (S 22 NWA); communicate with the users. Highlight legislative reforms that affect authorisation e.g. entitlements replace the system of 'water rights'.<br>– Review the vision statement (and situation descriptions, assessments and reconciliations).<br>– Review information from RDM (the Reserve, class etc). Licensing must take these issues into consideration<br>– Align with NWRS, ISPs and various basin studies.<br>– Determine status of lawful or unlawful use in the catchment (see validation and verification study) | Figure 6.6.1 and 6.6.2 and Box 6.6.1 of the CMS-GL | A comprehensive review of all aspects affecting the authorisation. |
| Develop Water Allocation Plan | 5 | Collaborate | Developing an allocation plan is a **legal obligation and stakeholders must collaborate** it its development. This is likely to be a contested process and clear guidelines with good facilitation skills are required. Use the vision, RDM plans and information from step 4 to develop the WAP. It might be necessary to have a number of meetings to get final consensus.<br>The WAP will form the basis for the Water Allocation Schedule | Box 6.6.3 of the CMS-GL | A water allocation plan. |
| Develop Strategic plans for:<br>– Schedule 1 use and general authorisations<br>– Licensing<br>– Compulsory licensing and water allocation reform<br>– Trading and transfer | 6 | Involve | This step entails strategies for the granting permission to use water for low, medium and high risk use (see Figure 6.6.1 and Appendix4 of this document).<br>Consult water allocation reform project.<br>Here the different sectors can be involved in supporting the process of drafting and reviewing these strategies.<br>It is important to get involvement and consensus at this point as disputes are likely to arise if there is not adequate stakeholder buy-in | Box 6.6.2 and Box 6.6.4 of the CMS-GL | Strategic plans for the different aspects of water use authorisation |

## Part b. Water Conservation and Demand Management, Water Quality Management and Pollution Control

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| **i. Water Conservation and Demand Management** | | | | | |
| **Review existing:**<br>– Principles for WCDM<br>– Reconciliation<br>– Sectoral plans<br>– Augmentation options | 7 | Consult | – review the principles of Water conservation. Consult sectors, companies and research based organizations for options and possibilities<br>– Review the available and demanded water by using the reconciliation study.<br>– Explore opportunities to augment the water conservation. | | A comprehensive review of all water conservation and demand management efforts in the catchment |
| **Develop Strategic plans for:**<br>– Basin WCDM<br>– Sectoral WCDM<br>– Augmentation options | 8 | Involve | Involve DWAF and stakeholders to make specific plans for WC/WDM for each catchment.<br>Sectors to develop own WCDM plans<br>Include augmentation options | (see Appendix 6 GL pg156). | Strategic plans for important aspects of WCDM |
| **ii. Water Conservation and Demand Management** | | | | | |
| **Review existing:**<br>– Principles for WQM<br>– RDM and RQOs<br>– Waste Mgt System | 9 | Consult | – review the principles of water quality management and pollution control. Consult sectors, companies and research based organizations for options and possibilities<br>– Review current efforts, standards, practices and possibilities for WQM<br>– Technical aspects: Are there any opportunities that have not been explored? | | A comprehensive review of all water WQM and pollution control efforts in the catchment |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Develop strategic plans for:**<br>– Water Quality Management<br>– implementing the Waste Discharge Charge System (WDCS) | 10 | | | Involve | | Involve DWAF and stakeholders to make strategic plans for WQM and pollution control for each catchment. | (see Appendix 8 GL p159) | Strategic plans for important aspects of WQM and pollution control |

## Part c. Pricing, charges, tariffs and incentives

| Step | Number | Level of participation | | | | How? | Useful reference | Outcome |
|---|---|---|---|---|---|---|---|---|
| **Review existing:**<br>– Principles for regulating through pricing<br>– Registered use<br>– Charges & Tariffs<br>– Subsidies<br>– Incentives | 11 | | Consult | | | Review the principles for regulating through financial mechanisms. Consult sectors, companies and research based organizations for suggestions and inputs<br>– Review current efforts, standards, practices and possibilities for regulating use through financial means<br>– Are there any opportunities that have not been explored? | GL 6.9 p 106<br>See also National Pricing Strategy | A comprehensive review of all water pricing, charges and incentive setting applicable to the catchment |
| **Develop strategic plan for:**<br>– Tariff and charge setting<br>– Subsidies<br>– Incentives & disincentives | 12 | | | Involve | | Involve DWAF and stakeholders to make strategic plans for regulating water use through financial mechanisms. Remember to refer to Strategies for funding IWRM that will be developed as part of Task 9. | | Strategic plans financial mechanisms for regulating use |

## Part d. Compliance monitoring and enforcement

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| **Review existing:**<br>– Principles for enforcement and compliance<br>– Registration, verification and validation<br>– Monitoring of compliance with licences<br>– Water quality management and records<br>– Violations and Penalties | 13 | Consult | Review the principles of compliance and enforcement.<br>Consult WUAs and other water management institutions for details and approaches that have been employed (e.g. bailiffs)<br>– Review current efforts, standards, practices and possibilities for enforcement from other WMAs or countries<br>– Are there any opportunities that have not been explored?<br>NOTE: monitoring under this task is taken to mean the monitoring of compliance with licence and regulation conditions. The broader monitoring associated with data collection regarding the resource and its mgt will be dealt with under Task 8 | GL 6.6 p85 | A comprehensive review of all water compliance monitoring and enforcement efforts in the catchment |
| **Develop strategic plan for:**<br>– Compliance monitoring<br>– Record keeping and evidence<br>– Penalties and suspensions | 14 | Involve | Involve DWAF and stakeholders to make strategic plans for compliance monitoring and enforcement<br>Incorporate various sector efforts (WUA monitoring and enforcements, use of bailiffs), consider options such as the use of Landsat images, records of transgressions and evidence gathering procedures.<br>Remember to link these strategies with the Monitoring Sub-strategy developed under Task 8 | GL 6.6 p85 | Strategic plans for aspects of compliance and enforcement |

NOTE: Work with the "information and monitoring sub-strategy" to create a strategy for monitoring of parts a-d

| When | Where | Who |
|---|---|---|
| Only once a vision is agreed upon and after strategies for resources protection are in place | Should be done at a place in the relevant catchment where are stakeholder groups can | All key stakeholder groups and I&APs with a special emphasis on up/downstream |

| | | |
|---|---|---|
| | attend. Meeting s should be held on the catchment basis | representation of users |

## Useful references


Figure 6.5.1 of CMS-GL and Table 6.5.1, Legislation in NWA Chapter 3
Water use licensing (Draft): The Policy and Procedure for Licensing Stream Flow Reduction Activities (undated)
DWAF 2000. Draft Water Conservation / Demand Management Strategy for the South African Forestry Sector. May 2000.
DWAF 2001. Water Conservation and Demand Management National Strategy Framework. 2001.
DWAF 2003. Volume 1: Water Conservation and Water Demand Management – a planning framework for Catchment Management Agencies. 2003.
DWAF 2003. Volume 3: Guidelines for implementing Water Conservation and Water Demand Management within the water services sector. 2003.
DWAF 2004. National Water Conservation and Water Demand Management Strategy, August 2004
DWAF 1998. Waste Management Series: Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, Second Edition, 1998
WRC. 2002. Water demand forecasting. WRC 2001/2 Reference No. 905
WRC. 2004. Water conservation and water demand management measures. WRC 2003/4 Reference No. 1273
WRC. 2002. Trade-off between various water uses and associated socio-economic issues in allocation of a limited water resource and optimisation of land use. WRC 2001/2 Reference No. 749
WRC. 2002. Models to optimise urban water consumption. WRC 2001/2, Reference No. 997; WRC Reference No 1205
WRC. 2002. Physical interventions and education programs to improve conservation and promote payment for services. WRC 2001/2 Reference No 1143

| TASK 7 | **Public Engagement**<br>**Sub-strategy for communication, capacity development and participation in CMS implementation,** | **Part C** |
|---|---|---|

## What?

Task 6 was about the establishment and constitution of participation platforms. After the platforms are established the public will be engaged in various IWRM activities. However, IWRM is not a single step process – meaning the public will be engaged in a number of steps. It is important that participants understand what these are since each step of the process requires specific, and sometimes different levels of engagement.

As stated in the CMS guidelines four things are important for engaging the public in the implementation of the CMS: platform establishment, a sub-strategy for sustained participation, capacity development and communication. Task 7 is about assessing these various aspects and collation into a sub-strategy in the CMS.

## Why?

The objective of the sub-strategy is to provide the basis for public engagement in the various aspects of IWRM (as addressed in the sub-strategies of the CMS) through co-operation, collaboration and agreement. It is important that the public is fully aware of its commitments and obligations to be part of the drafting and implementation of the CMS. Clearly the task is to avoid confusion, false expectations and engage informed, knowledgeable and enthusiastic parties in the CMS processes. **The key words are preparation, preparation and preparation!**

## Expected outcome for the task

The intended **outcome** is a sub-strategy that ensures that all stakeholders and 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. The sub-strategy should contain strategic options for: communication with the public, for capacity building and engagement and implementation of other CMS sub-strategies.

## Table 12. Public engagement: strategies for communication, capacity building and plans for stakeholder engagement in the implementation of the CMS

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| **A sub-strategy for communication** | | | | | |
| Assess communication needs | 1 | Consult | Consult the stakeholders to assess the needs and methods of communication between the CMA and the stakeholders (e.g. e-mail, fax, visits, post, etc). | 6.7.3.5 of the CMS-GL | Assessed status of communication needs. |
| Sub-strategy for communication | 2 | Involve | In step 1 you assessed the status of the communication needs between the CMA and the public. Now develop a strategy for communication with stakeholders. A data base should be developed and preferred/appropriate means of communication must be noted | | Communication strategy and database of methods for each stakeholder |
| **A sub-strategy for capacity building** | | | | | |
| Assess information and capacity building needs | 3 | Consult | Consult the stakeholders to assess capacity building needs for participation in the drafting and implementation of the CMS. It might be helpful to do this in meetings with people representing sectors or telephonically. Do not underestimate this importance of this step, capacity and understanding are fundamental to the development of the CMS but do remember that capacity will be developed as they go through the process of developing the CMS. | 6.7.3.4 of the CMS-GL | Assessed capacity needs |
| Strategy for capacity building | 4 | Involve | From 3 develop a strategy for capacity building needs (Maybe: in learning modules). A database with capacity and information needs is useful in structuring the strategy. | | A strategy for capacity building |

| Consolidation of opportunities for engaging stakeholders in the implementation of the CMS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Consolidate public engagement requirements emerging from each CMS sub-strategy | 5 | | | | | This is an **extremely** important step in the CMS development process as it specifies how, when and who will be involved in the implementation of the various aspects of the CMS. This requires the identification and clarification of all possible opportunities for stakeholder engagement in the **IMPLEMENTATION** of the CMS. For example it could specify a particular stakeholder's responsibility for monitoring water quality of a particular river or, say, local governments' efforts to improve water use efficiency by installing low pressure systems. These are then collated into a sub strategy. See Fig 6.7.1 for a depiction of this process<br>There is no need for public engagement in this step as the process will have been completed for each of the Sub-strategies. | Fig 6.7.1.<br>6.7.6 of the CMS-GL | Consolidated public engagement opportunities and requirements from each sub-strategy |
| Strategy for engagement in CMS implementation | 6 | Inform | | | | Inform stakeholders of the plan to engage them in achieving the strategic plans of the CMS. Inform them as to the implications it has for their time and resources. This is critical step for the achievement of the strategic plans | | Stakeholders informed of the expectations for implementing the CMS |

| When | Where | Who |
|---|---|---|
| The consolidation process can only be done on completion of ALL other sub-strategies. Capacity and communication strategies can be completed earlier. | N/A | All key stakeholder groups and I&APs with a special emphasis on up/downstream representation of users |

## Useful reference

6.7.3.4 and 6.7.3.5 of the CMS-GL 6.7.1 of the CMS-GL
DWAF. 2000. Public Participation for Catchment Management Agencies and Water User Associations: Guide 4 in the CMA/WUA guide series. 2000
DWAF. 2001. The CMA/WUA series. Guide 4: Public participation for Catchment Management Agencies and Water User Associations. August 2001
DWAF. 2001. Generic public participation guidelines, September 2001. Compiled by R. van Jaarsveld.
DWAF. 2001. Generic Communication Strategy for IWRM, DWAF/DANCED, December 2001.
DWAF. 2001. Capacity Building Overview Assessment Vol.1, Carl Bro a/s, IZNA Consortium, October 2001.
DWAF. 2001. Capacity Building Overview Assessment Vol.2, Specific Capacity Building Requirements of Role-Players, Carl Bro a/s, IZNA Consortium, October 2001.
DWAF. 2004. Guidelines for Stakeholder Participation in Integrated Water Resources Management in Water Management Areas in South Africa. March 2004
DWAF. 2004. Managing Public Participation: A Toolkit for Planning, Designing, Implementing, Monitoring and Evaluating Public Participation Processes Related to the Implementation of Integrated Water Resources Management with Particular Emphasis Upon the Inclusion of Marginalized Groups. October 2004
WRC. 2002. Group decision-support methods. WRC 2001/2, Reference No. 863
WRC Participatory WRM guidelines. WRC 2001/2, Reference No. 863, WRC Reference No. 1233
WRC 2003. Development of protocols for improving catchment management through enhanced stakeholder participation. WRC no. 1062/1/03
WRC 2004. Identification of the critical steps in establishing and ensuring the sustainability and transferability of community participation in ICM. WRC 2001/2 Reference No 866; WRC 2003/4 Reference No 1157
WRC 2004. Development of appropriate tools to support meaningful participation of the public at different levels of decision-making. WRC 2003/4 Reference No 1434

| TASK 8 | **Monitoring and Information management** | **Part C** |
|---|---|---|

## What?

In recognition of the importance of an integrated and consistent system of monitoring and information management, the National Water Act (1998; NWA) requires the establishment of a national monitoring system, and an information system by the Minister. The Act states that "*The purpose of the systems will be to facilitate the continued and co-ordinated monitoring of various aspects of water resources by collecting relevant information and data, through established procedures and mechanisms, from a variety of sources including organs of state, water management institutions and water users".*

The goal is for stakeholders to contribute to and agree upon a strategic plan that:

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

## Why?

The NWA makes it clear that subject to any limitations imposed by law, information in the national systems should be **generally accessible for use by water users and the general public.** This principle will also apply to information held by the CMA. Some of the national monitoring programmes, especially water quality, rely heavily on **partnerships** with, and support of local stakeholders. This co-operation, especially with national monitoring programme managers, must be planned for.

## Expected outcome for the task

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

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

## Table 13. Steps for developing a sub-strategy for monitoring and information management

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| Liaise with DWAF to identify key area for monitoring and data gathering | 1 | | Liaise with DWA to identify key areas for:<br>Monitoring and information<br>Sources of data and status<br>Roles and responsibilities for monitoring<br>Gaps and priorities<br><br>**There is no need for public engagement in this step** | Chapter 14 of the NWA<br>NWRIP documents<br>Information services at DWA<br>ISPs | Overview about all monitoring and information requirements, sources and roles. |
| Consolidate information, monitoring and reporting requirements emerging from each CMS sub-catchment | 2 | | Just as in Task 7, the requirements for monitoring emerging from each sub-strategy of the CMS are collated into this comprehensive collection of strategies for monitoring. So, for example the monitoring requirement from RDM (Task 5) and those from SDC (Task 6), and all the other sub strategies are collected up and collated into this sub-strategy.<br><br>**There is no need for public engagement in this step** | | Sub-strategy containing all the monitoring requirements for all component s of the CMS |
| Together with DWAFs, review components of national and local monitoring and information management systems. | 3 | Involve | Determine which components are part of national or local programmes<br><br>Communicate with DWAF for review and supporting material, databases and other information management systems. Involve stakeholders such as WUA in the review process<br>– Establish an information network (internet) and a planning network.<br>– Determine how data should be collected and available for everybody (learning from each other).<br>– Design storage and management.<br>– Presented and disseminated? | NWRIP | Complete review of the information and monitoring structure with key priority area |
| National/ regional | 4 | Inform | Inform stakeholders of the national and regional monitoring programs | NWRIP | A strategic plan for local and national monitoring and information management. |
| Local | 5 | Involve | Involve stakeholders in the drafting of a strategy for monitoring and information (data) gathering at a local (catchment) level | | A strategic plan how to monitor and gather data on local level |

| When | Where | Who |
|---|---|---|
| Can be done during the development of WRM strategies | Should be done at a place in the relevant catchment where all stakeholder groups can attend. Meetings should be held on the catchment basis | All key stakeholder groups and I&APs with a special emphasis on up/downstream representation of users |

## Useful reference


Box 6.8.1 of the CMS-GL
NWA chapter 14 DWAF.
DWAF GIS databases.
Refer to the National Water Resources Monitoring Committee, National Survey Services
Various data bases at DWA (Hydstra, WMS, WARMS)
DWAF 2005. Minimum Requirements for Water Monitoring at Waste Management Facilities. Draft September 2005
WRC. 2002. Development of a GIS-based modelling system (ACRU). WRC 2001/2 Reference No. 1155
WRC. 2002. Development of a water information management database system aimed at linking MuniBase to the National Information System of DWAF. WRC 2001/2 Reference No 642
WRC. 2004. Development of an interactive surface water quality information and evaluation system for South Africa (WQ 2000). WRC 2003/4 Reference No 950
WRC. 2004. Development of an integrated information system specifically for water quality (WQIS) WRC 2003/4 Reference No 951
WRC. 2004. DWAF's national water quality and microbial monitoring programs. WRC 2003/4 Reference No 1118
WRC. 2004. Development and evaluation of the Guide to Non-Point Source Assessment. WRC 2003/4 Reference No 1279

| TASK 9 | **Funding Integrated Water Resources Management** | **Part C** |
|---|---|---|

## What?

In order to fund the activities associated with collaboratively protecting, allocating, conserving, managing and controlling water resources across a specific Water Management Area, the CMA needs a strategy for generating revenue. The Catchment Management Strategy (CMS) must therefore contain a financial sub-strategy which addresses the costs incurred for the above. Importantly, this sub-strategy should not be seen as a detailed financial plan. It should however, at the minimum, set out the principles and procedures along which funding of IWRM will be achieved. The financial implications of this strategy need to be discussed with stakeholders and users need to agree to the principles for setting charges.

## Why?

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

- funding water resource management;
- funding water resource development and use of waterworks;
- achieving the equitable and efficient allocation of water.

## Expected outcome for the task

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

## Table 14. Steps in the drafting of a financial strategy

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| Determine all potential sources of revenue | 1 | | Revenue determination<br>– *Where does the money come from (registration, licence application fees, water use charges, other)*<br>**There is no need for public engagement in this step** | Figure 6.9.3 and 6.9.3.4 of CMS-GL | Balance sheet |
| Determine cost of managing water resources | 2 | Consult | Determine cost implications for all the different aspects of water resources management (see Table 6.9.1) including the development and implementation of the CMS (Situation assessment, developing a vision, water resource protection, regulating water use, co-operative relationships)<br><br>Consultation with WUAs might be necessary where they perform some of these functions | Table 6.9.1, Fig 6.9.2 | Schedule of costs for each set of strategic plans. (not detailed) |
| Establish tariff-setting structure | 3 | Consult | Set out tariffs which are in line with National Pricing Strategy (NPS)<br>Consult stakeholders with regard to pricing structures for abstraction, storage, stream flow reduction, waste discharge, recreation, etc. Note that stakeholders must be consulted when there are cost implications for water use | NPS | Pricing structure |
| Determine financial risk for cost recovery | 4 | | This includes demand, operation and regulation activities<br>**There is no need for public engagement in this step** | | Cost recovery plans |
| Prepare a financial plan (model) | 5 | | This includes Capital Investment Programmes, refurbishment, operation and maintenance, cash flows and break-even point<br>**There is no need for public engagement in this step** | | Capital Investment Programmes, refurbishment, operation and maintenance, cash flows and break-even point |
| Develop financial management and fiscal control measures | 6 | Involve | Involve institutions and key stakeholders in this if they play a management function. | | Sub strategy for funding IWRM in the WMA |

| When | Where | Who |
|---|---|---|
| Will need to be done after WRM strategies (Tasks 5,6) are developed as these have cost implications | Should be done at a place in the relevant catchment where all stakeholder groups can attend. Meetings should be held on the catchment basis | All key stakeholder groups and I&APs with a special emphasis on up/downstream representation of users |

## Additional Useful-reference

Chapter 5 of the NWA.
National Pricing Strategy Government gazette 1 July 2005.
The 11 Water resource Management functions table 6.9.1
Financial assistance and subsidies – > Chapter 5, Part 2 of NWA

| TASK 10 | Co-operative Relationships for managing water | Part D |
|---|---|---|

## What?

Successful management of water is dependent on the ability of stakeholders to forge co-operative relationships, particularly around water management practices, environmental management, spatial (land-use) planning and management, infrastructure development and service provision. Stakeholders will be engaged in the formalization of various kinds of relationships that are the basis for IWRM. This sub-strategy will need to scope out:

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

Five different types of institutional relationships have been identified for IWRM although these are not mutually exclusive. They are listed in the guideline in Fig 6.10.1

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

## Why?

The legislative framework for co-operative governance for water resources management is supported by numerous statutes. Foremost is the Constitution of South Africa (Ch. 3,4,10), supported by the National Water Act (1998), Water Services Act (1997), National Environmental Management Act (1998), Intergovernmental Relations Act (2005), Municipal Systems Act (2000), and the Traditional Governance Leadership Framework Act (2006). The Promotion of Administrative Justice Act – PAJA (Act No 3 of 2000) and Promotion of Access to Information Act – PAIA (Act No 2 of 2000) provide a framework for public administrative action for the CMA. Although the CMA is not a sphere of government it is an institution that falls under the jurisdiction of the Minister. Principles governing public administration therefore apply to the CMA.

Catchment Management Agencies (CMA) embody the principle of decentralised management and co-operative governance. They will operate in an existing institutional environment and it is critical that they establish appropriate relationships with other institutions to ensure effective implementation of Integrated Water Resources Management (IWRM).

## Expected outcome for the task

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

## Table 15. Steps for the development of a co-operative relationships sub-strategy

| Step | Number | Level of participation | How? | Useful reference | Outcome |
|---|---|---|---|---|---|
| Identify the institutions, impacting on CMA operation and vice versa | 1 | | Identify institutions through National DWAF, regional DWAF. Figure 6.10.1 of CMS-GL.<br><br>*– Which institutions are impacting on the CMA operations?*<br>**There is no need for public engagement in this step** | Figures 6.10.1 , 6.10.2, 6.10.3 of CMS-GL. | A schedule of all relationships between institutions. |
| Assess the roles and responsibilities of the institutions | 2 | Involve | Assess the roles and responsibilities of institutions involved in IWRM.<br>*– Who is responsible for: disaster management, for international water management, developmental planning, water use and WC/WDM, transboundary issues, funding?*<br>Note: Some relationships are more important than others | | The roles and responsibilities of each institute are determined. Every institute knows what they have to do and what the others are doing. |
| Identify areas in which oversight, co-operation, consultation and collaboration are required | 3 | Involve | CMA should facilitate the various kinds of relationships: co-operation, collaboration or consultation | Fig 6.10.1 | Inventory of different co-operative relationships. |
| Establish whether current co-operation, collaboration is functioning. | 4 | Consult | Review and assess how stakeholders feel about the co-operation. Determine mechanisms and structures through which co-operation can be strengthened | | Report |
| Develop plan to sustain relationships with each interfacing institutions | 5 | Collaborate | Stakeholders need to consolidate the nature of the relationships. For example they may be of a statutory nature, contractual, co-operative, representative or informal.<br><br>Communication networks must be established and the accountability must be clearly defined | | A sub-strategy for sustaining co-operative relations for IWRM |

| When | Where | Who |
|---|---|---|
| Should be done towards the end of the CMS development process | Should be done at a place in the relevant catchment where all stakeholder groups can attend. Meetings should be held on the catchment basis | All key stakeholder groups and I&APs with a special emphasis on up/downstream representation of users |

## Useful reference


DWAF. NWRS. Disaster Management: Chapter 3, Part 7 of National Water Resource Strategy
Conventions
International agreements
Existing contracts and MoUs
DWAF 2000. Waste Discharge Charge System Framework Document, second Edition, May 2000
DWAF 2006. Waste Discharge Charge System: Implementation Strategy 2006
WRC. 2004. Appropriate approaches and mechanisms to foster co-operative governance between WUAs, CMAs and local government. WRC 2003/4 Reference Nos.1140 and 1433
WRC. 2004. Review and evaluation of all relevant governance elements (principles, policy, legislation, regulation and practice) in terms of the hydrological cycle. WRC 2003/4 Reference No. 1514

# APPENDIX 1

# Glossary of terms

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

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

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

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

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

**Compulsory licensing**
A process of compulsory licensing will take place for all existing and potential water users. Chapter 4, Part 8 of the NWA establishes a procedure for a responsible authority to undertake compulsory licensing of any aspect of water use in respect of one or more water resources within a specific geographic area. The procedure is intended to be used to:
1) achieve a fair allocation of water from a resource that is under stress or to achieve equity in allocations;
2) promote beneficial use of water in the public interest;
3) facilitate efficient management of the water resource; or
4) protect water resource quality.
Section 43 (1) sets out criteria for assessing the necessity for compulsory licensing and provides for such exercises to be carried out progressively (see also re-allocation). Appendix 7 indicates the likely order in which the Department intends to proceed with compulsory licensing.

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

**Demand management (NWRS, 2004)**

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

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

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

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

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

**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.

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

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

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

**Negotiation**
This is a process where stakeholders are given the opportunity, through dialogue, to reach consensus in the management and planning process. The negotiation process should always be framed by the principles of sustainability, equity and efficiency.

**Positions and interests**
A position is what a stakeholder wants from a negotiation process, an interest is why the stakeholder wants it.

**Public awareness and capacity building**
In order for the public to engage appropriately with the IWRM processes and tasks there is a need for awareness and understanding. For example, for a catchment vision to be meaningful and based on real-life situations it needs to be informed by understanding and knowledge of the catchment for which the vision is being created. Programmes should therefore support the public and stakeholder groups with the development of this capacity.

**Re-allocation**
This refers to the re-allocation of water between users via compulsory licensing or when licences are reviewed (DWAF 2005 b). The (gradual) re-allocation of water is preferred to harsh immediate measures, responding as the need arises in different parts of the country. The main enabling mechanisms are compulsory licensing, supported by water demand management and the trading of water use authorisations (NWRS S 2.5.4).

**Reconciliation**
Reconciliation refers to the technical process of undertaking a water balance – that is, weighing up the available water resources against the water requirements, or so-called 'water demand'. This can be predicted – or modeled – for a range of scenarios including the current and likely future situations. The CMS seeks to achieve a balance between the available water and the water demand (see below).

**Registration of use**
As an essential preliminary step towards licensing, and to enable water pricing to be implemented, a countrywide process has been undertaken to register existing water uses. The registration process will ultimately capture information about the location and extent of all Section 21 uses (NWA). The registration data is currently being captured on the Water Authorisation and Registration Management System (WARMS) and registration certificates are being issued. A registration certificate is not, however, a licence to use water, and does not confer legitimacy on an unlawful water use (see NWRS Ch 2, Part 3, 3.2.3.10).

**Reserve (NWA (Chapter 3, Part 3))**
The Reserve refers to water quality and quantity for two components:
• water for basic human needs, known as the Basic Human Needs Reserve (BHNR), and
• water to maintain aquatic ecosystems, known as the Ecological Reserve (ER).
The BHNR provides for the essential needs of individuals served by the water resource in question and includes water for drinking, for food preparation and for personal hygiene. The ER is captured through Reserve determinations The Reserve refers to both the quantity and quality of the water in the resource, and will vary depending on the class of the resource. The Minister is required to determine the Reserve for all or part of any significant water resource. If a resource has not yet been classified, a preliminary determination of the Reserve may be made and later superseded by a new one. Once the Reserve is determined for a water resource it is binding in the same way as the Class and the Resource Quality Objectives. The Reserve is the only right to water use in the National Water Act, and water must be assigned to meet the requirements of the Reserve before water can be allocated to other uses. As such, a Reserve must be determined before any water use can be authorised. (WAR, 2005). A Preliminary Reserve can be determined before a comprehensive Reserve determination.

**Resource Directed Measures (RDM)**
Resource Directed Measures, together with Source Directed Controls are the key strategic approaches designed under the NWA (1998) to achieve equity, sustainability and efficiency is Integrated water Resources Management in South Africa. These measures comprise classification system, the Reserve and Resource Quality Objectives. They are described in Chapter 3 of the NWA (36:1998), and together are intended to ensure comprehensive protection of all water resources.

**Resource quality**
Resource quality does not mean water quality alone. It refers to all aspects of the water resource including:
• water quantity,
• water quality,
• character and condition of in-stream and riparian habitats,
• characteristics, condition and distribution of the aquatic biota.

**Resource Quality Objectives (RQOs)**
A numerical or descriptive statement of the conditions which should be met in the receiving water resource, in order to ensure that the water resource is protected.

**Social equity**
In the context of water resources, social equity implies that all user groups have fair and reasonable access to the nation's scarce water resources, and that the allocation of water resources facilitates universal and affordable access to a basic water supply.

**Source Directed Controls (SDC)**
This is part of two complementary strategies to achieve equity, sustainability and efficiency in Integrated water Resources Management in South Africa. Together with RDM (see above), these measures contribute to defining the limits on the use of water resources to achieve the desired level of protection. They are primarily designed to regulate water-use activities at the source of impact (using tools such as standards and the situation-specific conditions that are included in water-use authorisations). Source-directed controls are the essential link between the protection of water resources and the regulation of their use.

**Stakeholders**
The individuals, groups, or institutions that have an interest, or 'stake', in the outcome of the project, mainly because they will be affected by or can have an influence on the project/ activity.

**STEEP**
This stands for Social, Technical, Ecological, Economic and Political characteristics. The Steep framework can be used to guide the situation description, and the development of criteria for the assessment for the WMA.

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

**Validation**
Validation of water use is done by comparing the registered water use with the water use that actually took place when the NWA [Act 36 of 1998] came into operation. Three scenarios are possible:
• a water use greater that the use that actually took place could be registered, which is a possible over registration;
• a water use less than the use that actually took place could be registered, which is a possible under registration; and
• a water use equal to the use that actually took place could be registered, which is a possible correct registration.

**Verification**
Verification is the process of determining the lawfulness of the water use and is done by comparing the water use that actually took place when the NWA come into operation with the extent of the right that was authorised or allowed by the laws repealed by the NWA.

**Visioning**
Visioning (see GL 6.4) is a process of articulating society's aspirations for the future – in this case of the 'basket' of benefits to be derived from aquatic ecosystem services and the costs associated with their use. The visioning process begins with the generation of a vision statement that addresses our commitment to achieving equity, sustainability and efficiency in Integrated Water Resources Management.

Balancing costs and benefits of resource use must include both water resource quality and quantity components, thus both are incorporated into the formulation of a statement of the desired future conditions of resource use and protection.
A vision statement must be converted into, and explicitly linked with, objectives that are useful at the operational level (see Figure 3.3).
Unless a vision is linked to practical end-points, or explicit objectives for management, it will not be supported by those involved in the water allocation and licensing process. (DWAF, 2006 a).

**Waste Discharge Charge System (WDCS)**
A financial mechanism that acts as an incentive for reducing the waste load discharged into a water resource. The system is only applied when an RQO is exceeded within the WMA. The revenue collected from the discharging parties is either in the form of an environmental tax (incentive charge) or used to put mitigatory measures in place (mitigation charge). See Appendix 3 for explanation.

**Water Authorisation and Registration Management System (WARMS):**
WARMS is an information programme to co-ordinate the registration of water use. It is used for capturing, storing and disseminating water-use registration information.

**Water Conservation and Water Demand Management (WC/ WDM)**
This is an approach in water resources management that seeks to improve water use efficiency through using available water more wisely and through seeking appropriate and cost-effective technologies that reduce wasteful use. Water demand management encourages efficient and effective use by encouraging users to reduce their demands on the resource.

**Water demand**
This technical term refers to water requirements by a user (see GL 6.3). Importantly, a water requirement does not necessarily imply that it is legitimate. In South Africa, water requirements refer to beneficial, effective and efficient water requirements (see NWA, S 2 (d).

**Water quality**
The physical, chemical, toxicological, biological (including microbiological) and aesthetic properties of water that determine sustained (1) healthy functioning of aquatic ecosystems and (2) fitness for use (e.g. domestic, recreational, agricultural and industrial). Water quality is therefore reflected in (a) concentrations or loads of substances (either dissolved or suspended), or micro-organisms, (b) physico-chemical attributes (e.g. temperature) and (c) certain biological responses to those concentrations, loads or physico-chemical attributes.

**Water resource**
A water resource is:
- a river or a spring;
- a natural channel in which water flows regularly or intermittently;
- a wetland, lake or dam into which, or from which, water flows;
- any collection of water which the Minister may declare to be a watercourse; and
- surface water, estuaries and aquifers (underground water).

All water bodies in the hydrological cycle, including underground water, are regarded as water resources. Each of these falls within the jurisdiction of DWAF.

**Water stress**
Although useful, as explained in GL 6.3, the term “stressed” can be misleading because it is a relative one. Water stress depends on a range of factors and is not simply a shortfall in water availability versus requirement. Firstly, water deficits will not be experienced equally over the entire WMA, nor at all times. Thus ‘stress’ can change in space and time. Secondly, in some cases the deficits do not imply that consumptive use exceeds the available water, but that the allowances made for the implementation of the ecological component of the Reserve cannot be met fully at present levels of use. Thirdly, the term ‘water demand/ requirement’ is also a relative one since it depends upon who is using the water, for what, the levels of assurance required, how it is being used and where. Importantly, a water requirement does not necessarily imply that it is legitimate.

# APPENDIX 2

## Proposed water resource Management Classes
### (NWRS 2004; DWAF (in prep))

**Class I Natural**

- Human activity has caused no or minimal changes to the historical natural structure and functioning of biological communities (animals and plants), hydrological characteristics or the bed, banks and channel of the resource (ecological category A);
- chemical concentrations are not significantly different from background concentration levels or ranges for naturally occurring substances;
- safe for contact recreation and most water uses, including sensitive uses;
- can be used for basic human needs with minimum treatment; and
- the resource should be:
  - » situated in a national or international heritage site or wilderness area;
  - » of compelling biodiversity importance;
  - » a protected site under the Ramsar Wetlands Convention;
  - » situated in an area that has economic importance for tourism or the harvesting of medicinal plants;
  - » have social and/or cultural significance; and
  - » an area designated as Natural under other legislation.
- Other classes will be defined in terms of the degree of deviation from the Natural Class.

**Class II Moderately used/impacted**

- Resources that are slightly to moderately altered from their natural condition due to the impacts of human activity and water use;
- retain a high degree of ecological function and integrity (ecological category B to high C);
- safe for some recreation and non-sensitive water uses; and
- can be used for basic human needs with conventional treatment.

**Class III Heavily used/impacted**

- Resources that are significantly changed from the Natural class reference conditions due to the impacts of human activity and water use but are nevertheless ecologically sustainable;
- where there are pressing social and economic reasons to permit uses that will cause limited, short-term and reversible degradation of the resource, cases will be considered on their merits within the framework of long-term sustainability;
- retain at least some ecological function, but probably highly modified from Natural (ecological category D);
- safe for some non-contact recreation and some non-sensitive water uses; and
- may require advanced treatment to meet basic human needs requirements.

**Class IV Unacceptably degraded resources**

- Unacceptably degraded resources as a result of over-exploitation; and
- MC set at one class up with the aim to rehabilitate this resource to at least one higher class.

# APPENDIX 3

## *Water resources augmentation options*

The approach to meeting increasing water demands by only considering the development of new infrastructure such as dams, has come under severe criticism, particularly given the associated environmental, social and economic costs (see World Commission on Dams, 2000). This reflects the realization that (a) current water use can be improved through using the water we have more wisely and efficiently and, (b) a suite of alternative options for augmenting water availability exist and need to be considered.

There are a **number of possible solutions to balance** or reconcile water requirements with water availability in each surface and groundwater area. The main tools for doing so are outlined in Box 1 (see also GL 6.5 and 6.6). An analysis of the ISPs has placed particular emphasis on the development and management of groundwater resources, and recognition of the value of rainwater collection and desalinization has grown.

**Box 1**
**Options identified by the NWRS and ISP review to achieve a balance between water availability and demand**

The main options that are available to achieve a balance between the water available and requirements are listed below (see also Appendix 7).

a. water demand management, which in most cases should receive priority;
b. improved resource management and conservation (surface and groundwater);
c. the considered use of groundwater;
d. the re-use of water;
e. the management of invasive alien vegetation;
f. the re-allocation of water (through compulsory licensing and water trading);
g. rainwater collection;
h. the development of surface water resources and the inter-catchment transfer of water; and
i. desalinisation.

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.

### 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 is 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. Possible resource developments are listed in the NWRS (Ch. 3, Part 8), and are further elaborated in the ISPs.

# APPENDIX 4

## *Waste Discharge Charge Systems*

### Introduction

The Department of Water Affairs and Forestry (DWAF) is developing a Waste Discharge Charge System (WDCS) to promote waste reduction and water conservation. It forms part of the Pricing Strategy and is being established under the National Water Act (Act 36 of 1998).

The WDCS is based on the polluter-pays principle and aims to:

- Promote the sustainable development and efficient use of water resources
- Promote the internalisation of environmental costs by impactors
- Create financial incentives for dischargers to reduce waste and use water resources in a more optimal way
- Recover the costs of mitigating the impacts of waste discharge on water quality.

### Philosophy of the WDCS

The basis of the polluter pays principle is that the costs of environmental impact should be borne by those responsible for the impact. The National Water Act specifically refers to the polluter pays principle as an economic mechanism for achieving effective and efficient water use. The introduction to Part 1 of Chapter 5 of the National Water Act states:

> *"Water use charges ... may be used ... to ensure compliance with prescribed standards and water management practices according to the user pays and polluter pays principles."*

Water resource management in South Africa links the acceptable level of impact to the concept of resource quality objectives (RQOs), which balance the need to protect water resources with the need to develop and use them. The setting of RQOs is catchment specific, based on the social, economic and political drivers for development and utilisation of a specific water resource.

RQOs are to be set as part of the classification system for water resources, through a process of consensus seeking among water users and other stakeholders, in which the government is responsible for ensuring that environmental interests are represented.

### Principles of the WDCS

1. Resource quality objectives are the basis for the WDCS

   The WDCS is focused on reducing discharge load in order to achieve or maintain RQOs in a catchment.

   Accordingly, where RQOs are being met, the WDCS is not applied. However, where RQOs are exceeded or in threat of being exceeded, the WDCS may be applied as part of water quality management plan aimed at achieve water quality objectives.

2. The WDCS applies to surface water and groundwater resources

   The WDCS is applied to both surface water and groundwater resources, where RQOs have been defined and an adequate understanding of the resource supports the implementation of the system.

3. Catchment scale

   The WDCS will be applied to a particular catchment area in which a water quality problem exists. This could be a whole catchment in which a widespread water quality problem occurs or a sub-catchment within a larger water basin.

4. Downstream/upstream catchments

Where downstream RQOs are more stringent than upstream RQOs, and downstream RQOs are exceeded or threatened, the WDCS may be applied in the upstream catchment even if the upstream RQOs are achieved.

5. Charge based on load

   The WDCS will be based on load discharged. While the WDCS does not charge for concentration, discharge standards still apply. Accordingly, high concentration effluent is managed through other mechanisms, chiefly regulations.

6. Constant charge rate

   The WDCS is based on a linear relationship between load and charge (i.e. a flat charge rate is applied). In other words, the charge increases by constant increments with an increase in discharge load.

7. Subtraction of intake

   Waste dischargers are liable only for their contribution to the water quality problem.

8. Minimum load thresholds

   Based on an assessment in any given catchment, a minimum discharge load may be identified, below which the charge is waived.

## Users

The current version off the WDCS will apply to the following registered water uses in terms of Section 21 of the National Water Act:

- Section 21(e): engaging in a controlled activity
- Section 21(f): discharging waste or water containing waste into a water resource
- Section 21(g): disposing of waste in a manner which may detrimentally impact on a water resource
- Section 21(h): disposing of water which contains waste from, or which has been heated in, any industrial or power generation process

These water uses includes a number of non-point sources (NPS), where the charge will be based on an estimation of the load entering the water resource through the various diffuse pathways:

- Disposal of effluent to land or to a facility (e.g. tailings dams, irrigated effluent, evaporation ponds, treatment wetlands)
- Disposal of waste to land or to a facility (e.g. landfill, waste-rock dumps, fly ash disposal, solid waste disposal)
- Controlled land-use activities (e.g. confined animal facilities, dirty water systems).

Section 21(j) – removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people –requires another water use registration to discharge or dispose of the water (e.g. 21(f) where the water is discharged into the resource or 21(g) where the water is discharged into a waste management facility).

A number of important dischargers do not currently require registration and therefore cannot be charged under the WDCS. Included in this grouping are urban stormflow, overloaded or failing sewerage systems, peri-urban and rural settlements and developments, irrigation return-flow, dry-land agriculture and extensive animal husbandry.

## Charges

The WDCS is composed of two charges: (1) Incentive Charge and (2) Mitigation Charge.

*Incentive charge*

The Incentive Charge seeks to change discharge behaviour by providing an incentive to reduce waste load at source. The charge rate is set at a level where sufficient dischargers are incentivised to reduce waste load at source, such that the cumulative waste load reduction within the resource (catchment) achieves the resource quality objectives. The Incentive Charge is an unrequited payment in that it does not recover any direct costs nor is it related to a particular service received. The Incentive Charge is thus considered an environmental tax, which requires the promulgation of a Money Bill in terms of National Treasury's environmental tax policy.

Owing to its tax nature, the Incentive Charge generates surplus revenue. Surplus revenue could be used for a number of uses, through a process of implicit earmarking and budgetary allocation. Examples of such disbursement include investment in public goods to counter impacts experienced, seed funding to users to enable them to undertake capital expenditure for load reduction, initiatives to address NPS pollution and national funds to counter pollution accident events (accident fund) and/or enforce standards (litigation fund).

The Incentive Charge is based on monitored discharge load, given that the charge seeks to change actual discharge load. This also means that where dischargers are reducing waste load at source, that reduction is reflected in a reduced charge.

*Mitigation Charge*

The Mitigation Charge is intended to cover the costs of mitigation measures undertaken in the water resource and will be applied in cases where it is more economically efficient to reduce load within the resource than reducing discharge load at source. As such, the Mitigation Charge is a user charge to recover the costs of mitigation measures deployed in the resource.

There are four categories of Mitigation Charge:

- Mitigation through removal of load from the resource, including a regional mitigation scheme or infrastructure or a regional mitigation project
- Water resource system operation for the dilution, blending or purging of poor quality water
- Mitigation for treatment costs downstream
- Treatment at source, in order to apply the most cost-effective treatment options to a limited number of dischargers in a catchment

# APPENDIX 5

## National Water Resources Information Programs and Information Services operated by DWAF

| | Name | Short | Purpose | Data and Information | Database | Custodian |
|---|---|---|---|---|---|---|
| 1 | National Microbial | NMMP | Status & trend | Microbes (E-Coli etc) | WMS | RQS |
| 2 | River Health | RHP | Status & trend | Biological indicator | WMS (Rivers) | RQS |
| 3 | National Chemical | NCMP | Status & trend | Water Quality Samples | WMS | RQS |
| 4 | National Eutrophication | NEMP | Status & trend | Phosphates<br>Nitrogenous'<br>Chlorophyll<br>Algae<br>Cyanobacteria | WMS | RQS |
| 5 | National Radioactivity | NRMP | Status & trends | Concentration of radionuclides | WMS | RQS |
| 6 | National Toxicity | NTMP | Status & trends | Toxicants, Toxicity | WMS | RQS |
| 7 | Ecological Reserve Determination & monitoring | | Compliance & conformance, status & trends | Biological & ecological indexes, status, predictions | WMS | RQS |
| 8 | Hydrographic Surveys for Sedimentation | | Sedimentation | Surveys | Several | S&LIM |
| 9 | Dam Walls for Dam Safety | Defor-mation | Dam Safety | Surveys | | S&LIM |
| 10 | Hydrological | HMP | Status & trends | River & dam water-levels & flows, rainfall & evaporation | HYDSTRA | HS |
| 11 | Geo-hydrological Monitoring | GMP | Status & trends | Groundwater level, tracer elements, chemical character | NGIS | HS |
| 12 | Water Use Authorisation Registration Management System | WARMS | National Register of Water Use | Water use, water user, properties and billing information | WARMS | S&LIM |
| 13 | Geographical Information | GIS | Geographic characteristics | GIS coverages<br>Meta data<br>Map | DWAF Corporate Spatial Database | S&LIM |
| 14 | Remote Sensing | | Engineering Surveying Support | Satellite images, aerial photos | Several | S&LIM |
| 15 | Topographic Surveys | | Engineering Survey Info | Maps, drawings, profiles & cross sections | Several | S&LIM |
| 16 | Land Information | | Spatial data interpretation | Cadastral property data<br>Dam boundaries | Property | S&LIM |
| 17 | Monitoring Framework | | Guidance on monitoring | Structured approach to monitoring | NWRMC | WRIP |

# APPENDIX 6

## Useful tables and figures from the Guidelines

**In this section you will find important figures and tables and boxes that will help you in completing the tasks that are part of this framework. You will find all the relevant figures in the guideline**

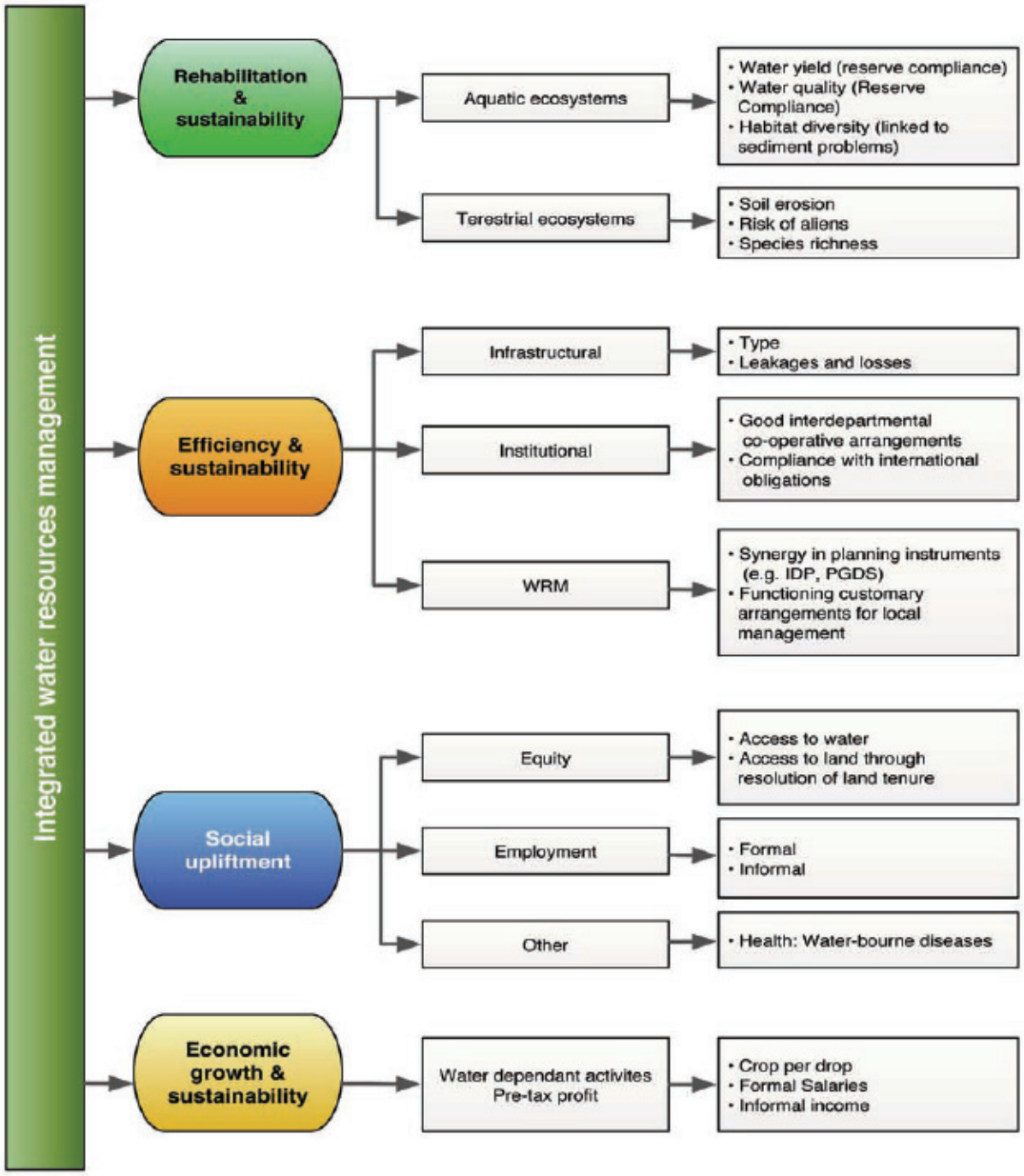


**Figure 6.2.1 from the GL. An example of criteria development used to assess the status quo in the Sand River Catchment (adapted from Pollard et al. 1998). Such criteria should be locally-derived, and should flow from the principles embodied in the NWA of 1998. The STEEP framework may offer a useful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

# Table 6.5.1
## A Summary of Resource Directed Measures

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

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

**Table 6.5.1. from the GL.**

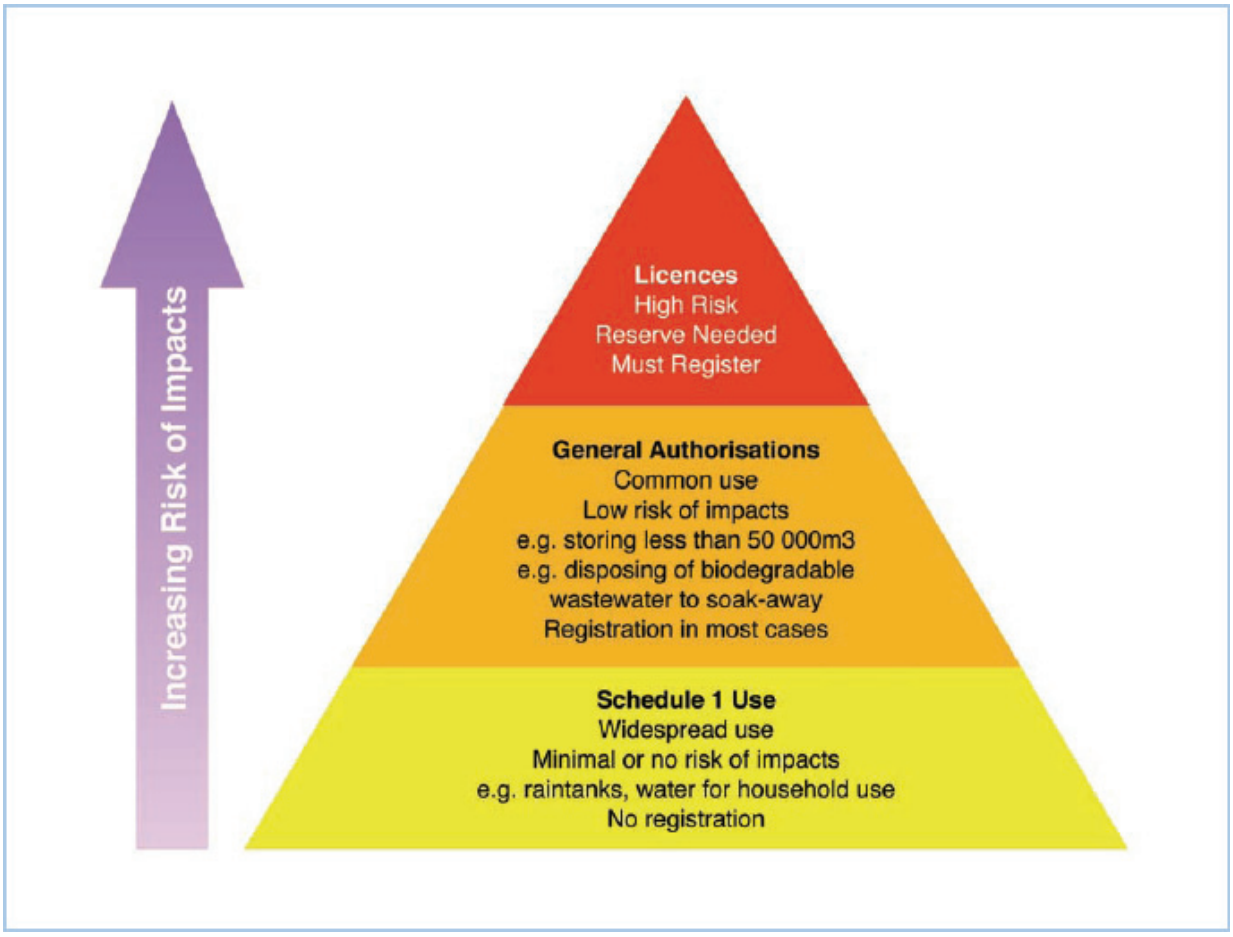


**Figure 6.6.1. from the GL. The NWA sets out rules to use water wisely. These rules say that the bigger the risk of potential negative impact on the water resource, the more stringent the rules will be for using that water (NWRS, 2004).**

## Table 6.9.1
## The 11 Water Resource Management functions

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

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

**Table 6.9.1. from the GL.**

# APPENDIX 7

## Legislation, policy, guidelines and useful documents relevant to CMS drafting

# A. Legislation

### Water-related Legislation

***Department of Water Affairs and Forestry***

National Water Act [No. 36 of 1998]

Water Services Act [No. 108 of 1997]

### Constitution-related Legislation

Intergovernmental Relations Framework Act [No. 13 of 2005]

Promotion of Administrative Justice Act [No 3 of 2000]

Promotion of Access to Information Act [No. 2 of 2000]

Constitution of the Republic of South Africa [No. 108 of 1996]

Promotion of National Unity and Reconciliation Act [No. 34 of 1995]

### Environment-related Legislation

***Department Environment and Tourism***

National Environment Management: Air Quality Act [No. 39 of 2004]

National Environmental Management: Protected Areas Amendment Act [No. 31 of 2004]

National Environmental Management: Biodiversity Act [No. 10 of 2004]

National Environmental Management: Protected Areas Act [No. 57 of 2003]

Environment Conservation Amendment Act [No 50 of 2003]

National Parks Amendment Act [No. 54 of 2001]

South African Weather Service Act [No. 8 of 2001]

National Environmental Management Act [No 107 of 1998]

Environment Conservation Act Extension Act [No. 100 of 1996]

Environment Conservation Act [No. 73 of 1989]

***Department of Water Affairs and Forestry***

National Forest and Fire Laws Amendment Act [No. 12 of 2001]

National Veld and Forest Act [No. 101 of 1998]

National Forests Act [No. 84 of 1998]

### Land-related Legislation

***Department of Land Affairs***

Communal Land Rights Act [No. 11 of 2004]

Transformation of Certain Rural Areas Act [No. 94 of 1998]

Extension of Security of Tenure Act [No. 62 of 1997]

Land Survey Act [No. 8 of 1997]

Interim Protection of Informal Land Rights Act [No. 31 of 1996]

Communal Property Associations Act [No. 28 of 1996]

Land Reform (Labour Tenants) Act [No. 3 of 1996]

Development Facilitation Act [No. 67 of 1995]

Land Administration Act [No. 2 of 1995]

Restitution of Land Rights Act [No. 22 of 1994]

## Public administration-related legislation

***Department of Finance***

Finance Act [No. 26 of 2004]

Public Audit Act [No. 25 of 2004]

Public Finance Management Act [No 1 of 1999]

***Department of Provincial and Local Government***

Disaster Management Act [No. 57 of 2002]

***Department of Trade and Industry***

Broad-Based Black Economic Empowerment Act [No. 53 of 2003]

## *Governance-related Legislation*

***Department of Provincial and Local Government***

Re-determination of the Boundaries of Cross-boundary Municipalities Act [No. 6 of 2005]

Traditional Leadership and Governance Framework Act [No. 41 of 2003]

Local Government: Municipal Systems Act [No. 32 of 2000]

Local Government: Cross-boundary Municipalities Act [No. 29 of 2000]

Local Government: Municipal Structures Act [No 117 of 1998]

Local Government: Municipal Demarcation Act [No. 27 of 1998]

National Council of Provinces Act [No. 17 of 1997]

Council of Traditional Leaders Act [No. 31 of 1994]

## *Sector-specific Legislation*

Department of Agriculture

Agricultural Laws Rationalisation Act [No. 72 of 1998]

Subdivision of Agricultural Land Act Repeal Act [No. 64 of 1998]

Conservation of Agricultural Resources Act [No. 43 of 1983]

***Department of Minerals and Energy***

Mineral and Petroleum Resources Development Act [No. 28 of 2002]

# *B. Policy*

***White Papers***

- Department of Agriculture – Agriculture White Paper, 1995
- Department of Environmental Affairs and Tourism — Integrated Pollution and Waste Management White Paper, March 2000
- Department of Environmental Affairs and Tourism – Environmental Management Policy White Paper, 15 May 1998
- Department of Environmental Affairs and Tourism – Environmental Management Policy White Paper, 28 July 1997
- Department of Environmental Affairs and Tourism – Conservation and sustainable use of South Africa's biological diversity White Paper, May 1997
- Department of Land Affairs — South African Land Policy White Paper, June 1997 — Department of Land Affairs
- Department of Minerals and Energy — Promotion of Renewable Energy and Clean Energy Development White Paper: Part One: Promotion of Renewable Energy, 23 August 2002
- Department of Minerals and Energy — Energy Policy White Paper, December 1998
- Department of Minerals and Energy — Minerals and Mining Policy White Paper, October 1998
- Department of Provincial and Local Government — Traditional Leadership and Governance Draft White Paper — 29 October 2002
- Department of Provincial and Local Government — Spatial Planning and Land Use Management White Paper, July 2001
- Department of Provincial and Local Government — Disaster Management White Paper, 15 January 1999
- Department of Provincial and Local Government — Local Government White Paper, 9 March 1998 — Department of Provincial and Local Government
- Department of Water Affairs and Forestry — Water Services Draft White Paper, October 2002
- Department of Water Affairs and Forestry — National Water Policy White Paper, April 1997 — Department of Water Affairs and Forestry
- Department of Water Affairs and Forestry — National Sanitation Policy White Paper, October 1996 — Department of Water Affairs and Forestry
- Department of Water Affairs and Forestry — Sustainable Forest Development in South Africa White Paper, March 1996-
- Department of Water Affairs and Forestry — Water Supply and Sanitation White Paper, November 1994

***Other Documents***

- Department of Agriculture Strategic Plan 2003-2006, March 2003
- Department of Agriculture — Land redistribution for agricultural development, June 2001
- Department of Agriculture — Formulation of the Regulations on the Combating of Declared Weeds Invader Plants, November 1999
- Department of Agriculture — LandCare programme implementation framework: Discussion document, February 1999
- Department of Environmental Affairs and Tourism — Consolidated Environmental Implementation and Management Plan 2000, June 2000
- Department of Environmental Affairs and Tourism — Water Conservation and Demand Management Strategy for the Forest Sector: Draft, May 2000
- Department of Environmental Affairs and Tourism — Water Conservation and Water Demand Management Strategy for the Water Services Sector: Draft, 15 March 2000
- Department of Environmental Affairs and Tourism — Water Conservation Strategy for the Industry, Mining and Power Generation User Sector: Draft, 11 February 2000
- Department of Environmental Affairs and Tourism — Groundwater quality management in South Africa policy and strategy, 2000
- Department of Land Affairs — Opportunities and obstacles to women's land access in South Africa (Land reform gender policy framework), February 2002
- Department of Water Affairs and Forestry Strategic plan 2003/4-2005/6, 25 March 2003
- Department of Water Affairs and Forestry — Using water for recreational purposes policy, March 2002

- Department of Water Affairs and Forestry – Water conservation and demand management national strategic framework: Draft, May 1999
- Department of Water Affairs and Forestry – Managing the water quality effects of settlements: The national strategy, April 1999
- Government of South Africa – The New Partnership for Africa's Development (NEPAD), October 2001 – Department of Foreign Affairs
- Government of South Africa – Women's Empowerment and Gender Equality: South Africa's National Policy Framework, December 2000
- Government of South Africa – Integrated Sustainable Rural Poverty and Inequality in South Africa: Final Report, 13 May 1998
- Government of South Africa – Growth, Employment and Redistribution: A Macroeconomic Strategy for South Africa (GEAR), 1996 Development Strategy, 17 November 2000

# C. Guidelines and useful documents

## Department of Water Affairs & Forestry

Guidelines and documents published by DWAF are listed according to topic. Additional guidelines and documents published by other departments and organisations are listed at the end.

**Catchment Management Agencies**

- 2001. Implementation of Catchment Management in South Africa. The National Policy. August 2001
- 2001. The CMA/WUA series. Guide 1: Establishing a Catchment Management Agency (CMA) August 2001
- 2001. The CMA/WUA series. Guide 2: The Catchment Management Agency as an organisation. August 2001
- 2001. The CMA/WUA series. Guide 4: Public participation for Catchment Management Agencies and Water User Associations. August 2001
- 2002. Guideline on the Viability Study for the Establishment of a Catchment Management Agency, Carl Bro a/s, Pegasus Strategic Management, Feb. 2002.
- 2002. Guidelines on the organisational structure of Catchment Management Agencies. August 2002
- 2002. Guidelines on the Transfer of Personnel from DWAF to other Institutions /Organisations. September 2002.
- An Overview of Water Management Institutions (undated)

**Integrated Water Resource Planning National Documents**

- 1999. Resource Directed Measures for Protection of Water Resources, Vol. 2: Integrated manual. Vol. 3: River Ecosystems; Vol. 4: Wetland Ecosystems; Vol. 5: Estuarine Ecosystems; Vol. 6. Groundwater component. Pretoria, South Africa
- 2000. Authorisation Process for Individual Applications for Water Use Licences, Revision 3, December 2000
- 2002. National Guidelines for Integrated Agriculture Water Use. July 2002
- 2003. A Guide to Conduct Water Quality Catchment Assessment Studies: in support of the Water Quality Management Component of a Catchment Management Strategy. Sub-Series no. MS 8.3. Edition 1. March 2003.
- 2003. A Practical Field Procedure for Identification and Delineation of Wetlands and Riparian Areas Version: Final draft, February 2003
- 2004. Financial Assistance to Resource Poor Irrigation Farmers, 29 September 2004
- 2005. Wetland and Riparian Zone Delineation Guideline Document. Edition 1. September 2005
- 2006. Draft Guidelines on Catchment Visioning for the Resource Directed Management of Water Quality. Water Resource Planning Systems Series, Sub-Series No. WQP 1.7.1, Resource Directed Management of Water Quality: 2nd Edition Management Instruments Series. 2006.
- 2006. Using Water for Recreational Purposes. Recreational Water Use Manual, November 2006 (first release)
- A Guide to the National Water Act (No. 36 of 1998) (undated)
- Water use licensing (Draft): The Policy and Procedure for Licensing Stream Flow Reduction Activities (undated)
- Sanitation Services: A Water Services Act Interpretative Guide. A guide to the Water Services Act (Act No. 108 of 1997) from a sanitation services perspective (undated)

**Public participation, capacity building and communication**

- 2000. Public Participation for Catchment Management Agencies and Water User Associations: Guide 4 in the CMA/WUA guide series. 2000
- 2001. Generic public participation guidelines, September 2001. Compiled by R. van Jaarsveld.

- 2001. Generic Communication Strategy for IWRM, DWAF/DANCED, December 2001.
- 2001. Capacity Building Overview Assessment Vol.1, Carl Bro a/s, IZNA Consortium, October 2001.
- 2001. Capacity Building Overview Assessment Vol.2, Specific Capacity Building Requirements of Role-Players, Carl Bro a/s, IZNA Consortium, October 2001.
- 2004. Guidelines for Stakeholder Participation in Integrated Water Resources Management in Water Management Areas in South Africa. March 2004
- 2004. Managing Public Participation: A Toolkit for Planning, Designing, Implementing, Monitoring and Evaluating Public Participation Processes Related to the Implementation of Integrated Water Resources Management with Particular Emphasis Upon the Inclusion of Marginalized Groups. October 2004

**Water Use & Conservation**

- 2000. Draft Water Conservation / Demand Management Strategy for the South African Forestry Sector. May 2000.
- 2000. Implementation Guidelines for Water Conservation and Water Demand Management for the Agriculture sector regarding the Development of Irrigation Water Development plans for the Agriculture Sector of South Africa, July 2000.
- 2001. Water Conservation and Demand Management National Strategy Framework. 2001.
- 2003. Volume 1: Water Conservation and Water Demand Management – a planning framework for Catchment Management Agencies. DRAFT, 2003.
- 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. 2003.
- 2003. Volume 3: Guidelines for implementing Water Conservation and Water Demand Management within the water services sector. 2003.
- 2004. Clarification of the Department of Water Affairs and Forestry's Requirements for Regulating the Utilisation of Water for Aquaculture Purposes and Development of Relevant Protocol, June 2004 (Project number: 2003-325)
- 2004. National Water Conservation and Water Demand Management Strategy, August 2004
- 2007. Artificial Recharge Strategy. Version 1.2. April 2007.

**Water Quality Management**

- 1996. South African Water Quality Guidelines, Second Edition, 1996
- 1998. Waste Management and the Minimum Requirements, Edition 1: Information Booklet, 1998
- 1998. Waste Management Series: Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, Second Edition, 1998
- 2000. Waste Discharge Charge System Framework Document, second Edition, May 2000
- 2000. Policy and Strategy for Groundwater Quality Management in South Africa, 1st Edition, 2000
- 2000. Guideline Document for the implementation of Regulations on use of water for Mining and related activities aimed at the protection of Water Resources, 2nd, May 2000
- 2001. Guidelines for Catchment Management to Achieve Integrated Water Resource Management in South Africa : Part 1,2,3, 2001
- 2004. Operational Policy for the disposal of land-derived water containing waste to the marine environment of South Africa (MS 13.2, 13.3, 13.4), Edition 1, 2004
- 2005. Minimum Requirements for Hazardous Waste. Draft September 2005
- 2005. Minimum Requirements for Waste Disposal by Landfill. Draft September 2005
- 2005. Minimum Requirements for Water Monitoring at Waste Management Facilities. Draft September 2005
- 2006. Waste Discharge Charge System: Implementation Strategy 2006

**Proposals for the establishment of the Catchment Management Agencies**

- Proposals for the establishment of a Catchment Management Agency for each of the WMAs are available on the DWAF website: *www.dwaf.gov.za*

**Water Resources Situation Assessment reports**

- Water Resources Situation Assessment reports are available for each of the WMAs on the DWAF website: *www.dwaf.gov.za*

**Internal Strategic Perspectives**

- 2004. Internal Strategic Perspective. Berg River WMA.
- 2004. Internal Strategic Perspective. Breede WMA.
- 2004. Internal Strategic Perspective. Crocodile West Marico WMA.
- 2004. Internal Strategic Perspective. Fish to Tsitsikamma WMA Tsitsikamma to Coega.
- 2004. Internal Strategic Perspective. Gouritz WMA.
- 2004. Internal Strategic Perspective. Inkomati WMA.

- 2004. Internal strategic perspective. Limpopo River WMA. Pretoria.
- 2004. Internal Strategic Perspective. Lower Orange WMA.
- 2004. Internal Strategic Perspective. Lower Vaal WMA.
- 2004. Internal strategic perspective. Luvuvhu / Letaba WMA.
- 2004. Internal Strategic Perspective. Middle Vaal WMA.
- 2004. Internal Strategic Perspective. Mvoti to Mzimkulu WMA.
- 2004. Internal Strategic Perspective. Mzimvubu to Keiskamma WMA Amatole to Kei.
- 2004. Internal Strategic Perspective. Olifants River WMA.
- 2004. Internal Strategic Perspective. Thukela WMA.
- 2004. Internal Strategic Perspective. Upper Orange WMA.
- 2004. Internal Strategic Perspective. Upper Vaal WMA.
- 2004. Internal Strategic Perspective. Vaal River System: Overarching.
- 2004. Internal Strategic Perspective. Orange River System: Overarching.

ISP reports are available for each of the WMAs on the DWAF website: *www.dwaf.gov.za*

# Water Research Commission (WRC) documents and guidelines

A list of WRC guidelines and publications follows below. Documents can be obtained directly from (012) 330 0340 or via the website: http://www.wrc.org.za.

**Catchment Management**

- 2001. Development of a blueprint for urban catchment management in South Africa. WRC 2001/2 Reference No 864
- 2002. Protocols and models for ICM case studies. WRC 2001/2 Reference No. 1062
- 2003. Protocols and models for ICM case studies. WRC 2003/4 Reference Nos. 749 and 1212
- 2002. The management of water resources by the emerging catchment management agencies WRC, 2001/2, Reference No. 906
- 2004. Development of a Hydrological Decision Support Framework (HDSF) to support CMAs in the assessment of water resources and the allocation of water use licences
- WRC 2003/4 Reference No.1490 D20
- 2004. WRM functions delegation to WUA and CMAs (WRC 2003/4 Reference No 1140
- WRC 2003/4 Reference No 1140

**Governance**

- 2004. Appropriate approaches and mechanisms to foster co-operative governance between WUAs, CMAs and local government. WRC 2003/4 Reference Nos.1140 and 1433
- 2004. Review and evaluation of all relevant governance elements (principles, policy, legislation, regulation and practice) in terms of the hydrological cycle. WRC 2003/4 Reference No. 1514

**Groundwater**

- 2004. Groundwater supply in Local Authorities. WRC 2003/4 Reference No. 1254
- Groundwater–surface water interactions. WRC 2002/3 Reference No.1327 (in progress: 2004-2008)
- 2004. Groundwater–surface water interactions. WRC 2003/4 Reference Nos. 1093, 1117, 1168, 1234, 1488 (in progress: 2004-2008)
- In Prep. A multidisciplinary research project to promote co-operative governance and develop the industry standard for exploring, development and usage of groundwater supplies. WRC 2003/4 Reference No. 1510 (in progress: 2004-2006)

**Monitoring**

- 2002. Development of a GIS-based modelling system (ACRU). WRC 2001/2 Reference No. 1155
- 2002. Development of a water information management database system aimed at linking MuniBase to the National Information System of DWAF. WRC 2001/2 Reference No 642
- 2004. Development of an interactive surface water quality information and evaluation system for South Africa (WQ 2000). WRC 2003/4 Reference No 950
- 2004. Development of an integrated information system specifically for water quality (WQIS)
- WRC 2003/4 Reference No 951
- 2004. DWAF's national water quality and microbial monitoring programs. WRC 2003/4 Reference No 1118

- 2004. Development and evaluation of the Guide to Non-Point Source Assessment. WRC 2003/4 Reference No 1279

**Participation**

- 2001. The Development and Co-Ordination of Catchment Forums through the Empowerment of Rural Communities. WRC report no. 1014/1/01
- 2002. Group decision-support methods. WRC 2001/2, Reference No. 863
- Participatory WRM guidelines. WRC 2001/2, Reference No. 863, WRC Reference No. 1233
- 2003. Development of protocols for improving catchment management through enhanced stakeholder participation. WRC no. 1062/1/03
- 2003. Principles and Processes for Supporting Stakeholder Integrated River Management – Lessons from the Sabie-Sand Catchment. WRC report no. 1062/1/03. Pretoria.
- 2004. Identification of the critical steps in establishing and ensuring the sustainability and transferability of community participation in ICM. WRC 2001/2 Reference No 866; WRC 2003/4 Reference No 1157
- 2004. Establishment of a WUA in the Kat River valley, Eastern Cape WRC 2003/4 No 1233
- WRC 2003/4 No 1233
- 2004. Development of appropriate tools to support meaningful participation of the public at different levels of decision-making. WRC 2003/4 Reference No 1434

**Quality and quantity**

- 2002. Development of models to integrate water quality and quantity. WRC 2001/2, Reference No 1043

**Water Conservation and Water Demand Management**

- 2002. Water demand forecasting. WRC 2001/2 Reference No. 905
- 2004. Water conservation and water demand management measures. WRC 2003/4 Reference No. 1273
- 2002. Trade-off between various water uses and associated socio-economic issues in allocation of a limited water resource and optimisation of land use. WRC 2001/2 Reference No. 749
- 2002. Models to optimise urban water consumption. WRC 2001/2, Reference No. 997; WRC Reference No 1205
- 2002. Physical interventions and education programs to improve conservation and promote payment for services. WRC 2001/2 Reference No 1143

# Guidelines and Documents from other Departments

- Department of Environmental Affairs & Tourism. 1992. Integrated Environmental Management Guideline Series. Pretoria
- Department of Environmental Affairs & Tourism. 2000. Strategic Environmental Assessment in South Africa. Guideline document. Pretoria, South Africa
- Department of Agriculture. 2004. Water Conservation and Water Demand Management for the Agricultural Sector. Pretoria, South Africa.
- Manual in terms of Section 14 of the Promotion of Access to Information Act (Act 2 of 2000) (available on the Department of Public Services and Administration website: *www.DPSA.gov.za*)