



Department : Water Affairs  
and Forestry

# Integrated Water Resources Management



Guideline on Capacity Building  
Summary



**DEPARTMENT OF WATER AFFAIRS AND FORESTRY**

**INTEGRATED WATER RESOURCES MANAGEMENT**

**GUIDELINE FOR CAPACITY BUILDING  
OVERVIEW ASSESSMENT**

**SUMMARY**

INTEGRATED WATER RESOURCE MANAGEMENT  
STRATEGIES, GUIDELINES AND PILOT IMPLEMENTATION  
IN THREE WATER MANAGEMENT AREAS, SOUTH AFRICA

**DANIDA**  
FUNDING AGENCY

**Edition 1**

**March 2004**

**TITLE:** GUIDELINE FOR CAPACITY BUILDING:  
OVERVIEW ASSESSMENT: SUMMARY

**FUNDING AGENCY:** DANIDA

**CATEGORY:** Guideline

**PURPOSE:** Identify the capacity building requirements of role-players within the context of IWRM and to identify a few general guiding principles to which capacity-building programmes should adhere. To propose a framework for Capacity Building with IWRM, formulate a procedure to give effect to this at water management area level and identify the awareness and training material needs with respect to this procedure.

**TARGET GROUP:** DWAF, IWRM Project Consultants and Implementers in three Water Management Areas.

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## SUMMARY

### 1 INTRODUCTION

Integrated Water Resources Management (IWRM) is simultaneously a philosophy, a process and an implementation strategy to achieve equitable access to, and sustainable use of, water resources by all stakeholders. The project Integrated Water Resources Management: Strategies, Guidelines and Pilot Implementation in Three Water Management Areas, South Africa is a collaboration between the South African Department of Water Affairs and Forestry (DWAF) and the Danish Co-operation for Environment and Development (DANCED). The aim of this project is to support DWAF in the establishment of IWRM in three of South Africa's 19 Water Management Areas (WMAs).

The elements of the DWAF/DANCED project can be divided into three categories:

1. The development of IWRM *strategies*;
2. The establishment of appropriate *institutions* to implement those strategies in the three designated Water Management Areas; and
3. The cultivation of human *competencies*, both inside as well as outside organisational boundaries, to turn strategies into reality.

This report, being specifically concerned with the third item in the foregoing list, addresses the following questions:

- How does IWRM contrast with previous approaches to water resources management?
- Who are the role-players to be involved in IWRM, and how do the roles they played during the old dispensation (if any) compare with those they are expected to play in the new?
- What is meant by the term "capacity building"?
- What kinds of capacity should be cultivated in the various role-players to ensure their ability to fulfil their assigned functions?
- How should capacity-building programmes be designed and delivered?

### 2 THE WATER RESOURCES MANAGEMENT CONTEXT

A turning point in the development of a new approach to water resources management in South Africa was the passing of the National Water Act (NWA) (Act 36 of 1998). This Act ensures that the country's water resources are protected, used, developed and managed in an integrated, sustainable, equitable and efficient manner. It foresees the implementation of IWRM in all 19 of South Africa's Water Management Areas – not just in the three pilot areas targeted by the DWAF/DANCED project.

In the South African context, the challenges posed by the adoption of IWRM are amplified by the fact that it coincides with a period of major socio-political change.

Apartheid legislation both enforced and ratified a number of discriminatory practices – among them, inequality in access to water resources. Now, even as the IWRM agenda strives to bring about a fair distribution of water-related benefits, efforts are underway in various other spheres of social and economic life to do away with the legacy of apartheid. In the table below, the characteristics of the approach to water resources management are sketched against the backdrop of these broader changes.

**TABLE 1: CHARACTERISTICS OF THE APPROACH TO WATER RESOURCES MANAGEMENT**

Focus Area	Characteristics
<b>Development and conservation</b>	<p>Integrated Water Resources Management concerns itself with both the provision of water and sanitation services, and with the management of water resources in an <i>integrated</i> and <i>sustainable</i> manner.</p> <p>It recognises the <i>interdependence</i> of development and conservation, and the fact that IWRM cannot be accomplished in isolation: its success depends on the concurrent development of <i>other economic sectors</i> (such as tourism).</p>
<b>Distribution of benefits</b>	<p>A developmental or <i>poverty eradication approach</i> is adopted. This implies, among other things, increasing the proportion of resources allocated to small-scale users.</p> <p>In order to <i>defuse conflicts</i> that might arise over the redistribution of resources, mechanisms (such as forums) are created in which all stakeholders can participate in consensus-based decision-making.</p>
<b>Decision-making structures</b>	<p>A participatory approach is adopted, and WRM functions are delegated to the lowest appropriate level – in some cases, that of local communities. Increasing the involvement of stakeholders enhances their <i>support of WRM projects</i>.</p> <p>However, community members' willingness to become actively involved depends on whether project goals are viewed as <i>important</i> (e.g. whether they alleviate poverty).</p>
<b>The role of women</b>	<p>Female members of local communities are included in WRM.</p> <p>Obstacles in the way of women's involvement are removed by bolstering their <i>skills and self-confidence</i>; by addressing <i>sexist stereotypes</i>; and by <i>mainstreaming a gender perspective</i> (i.e. assessing every planned action in terms of its differential implications for women and men).</p>

### 3 ROLES AND ROLE-PLAYERS

The implementation of IWRM will involve the establishment of several new agencies or organisations, as well as the extensive restructuring of some existing ones. This transformation will be achieved in a stepwise manner, with a number of initial changes being effected so as to set the stage for further developments.

### 3.1 The Role-players

The institutions that will be responsible for implementing IWRM in a Water Management Area include:

- A *Catchment Management Agency* (CMA) – a statutory body that will be responsible for developing and giving effect to the Catchment Management Strategy (which stipulates how the WMA’s water resources should be utilised, conserved and controlled); for coordinating the activities of water users and Water Management Institutions; and for promoting stakeholder participation and buy-in through consultation and information dissemination.
- A *CMA Governing Board* – a statutory body whose members may be elected or nominated by the various water user groups for appointment by the Minister. Chief considerations in decisions regarding the composition of the Board will be whether it fairly represents the interests of the various stakeholders, and whether it has the necessary expertise to function effectively. The Board will be responsible for operating the CMA on a daily basis.
- A *Catchment Management Forum* (CMF) – a voluntary and non-statutory participatory organisation. Its establishment precedes that of the CMA and the intention is that the organisation will offer representation to comprehensive groups of stakeholders and serve as a platform for participation in the systematic process of establishing and implementing the CMA. The CMF will serve as a “link” between the CMA, on the one hand, and local communities, civil society bodies and other stakeholders with an interest in WRM, on the other. It will enable their active participation in IWRM at a local level, and thereby ensure representation of multiple (multi-lateral) viewpoints regarding WRM-related issues. It will, as well, play an important role in the development of institutional capacity, mainly prior to CMA establishment and during the consolidation period.
- The *Department of Water Affairs and Forestry* (DWAF) – the public trustee of the nation’s water resources, is expected to fulfil the functions of a CMA until the latter has been established. It is also required to take on the role of initiator and facilitator in the establishment of the CMA. Once the CMA is fully operational, many of DWAF’s former catchment-level functions will be delegated to it, depending on capacity. Functions to be retained by DWAF will include those whose spatial scale or capacity requirements extend beyond the boundaries of any single WMA, as well as those with high potential impact in terms of severity (e.g. toxicity) or their downstream effects on other WMAs.
- *Catchment Management Committees* (CMCs) – statutory bodies that may be formed by the CMA to broaden its technical management capacity and/or stakeholder presentation, and to perform delegated functions within specific areas of the WMA. Typically, a CMC may be required to focus on a specified WRM problem in a sub-catchment area.
- *Water User Associations* (WUAs) – statutory cooperative associations of water users established by the Minister and acting on behalf of their members. A WUA can represent similar users (recreational use or agriculture) or be multi-sectoral. Its functions include undertaking water-related activities on a local scale so as to ensure mutual benefit. In the new dispensation, the membership criteria of WUAs will be broadened so as to include previously disadvantaged individuals and communities.
- *Civil Society Bodies* (CSBs) – stakeholder organisations such as NGOs, CBOs, the Mining Sector, etc., that have an interest in WRM. CSBs will represent community interests and priorities, disseminate information to key stakeholders, and provide valuable information regarding local conditions.

- An *Advisory Committee* (AC), which may be established by the Minister, to provide advice or perform designated functions in a specified area. An important aspect of an AC's functions may be to guide, monitor and oversee the consultation process in which various stakeholders provide inputs towards the establishment of a CMA. It may also be required to guide, monitor and oversee capacity building. The Committee will be disestablished at the end of the transitional period.
- *Reference Groups* (RGs), which are optional and non-statutory bodies specifically established to guide and oversee processes related to WRM and/or CMA establishment and/or functioning. Their functions will overlap with those of the Advisory Committee in that they will guide, oversee and evaluate the consultation process and other activities as and when relevant to ensure that it is fair, transparent and legitimate. Reference groups will be dissolved at the end of the transitional period.
- A *Catchment Management Steering Committee* (CMSC), which is a non-statutory interim representative stakeholder body that may evolve from a CMF prior to the establishment of a CMA. Its functions will include investigating and developing, with DWAF's assistance, the proposal for establishing a CMA.

#### 4 DEFINITION OF CAPACITY BUILDING

The term "capacity building" is often used synonymously with "training." In this report, however, it is assumed that the two activities are distinct, although there are important similarities between them. They are alike in that both involve the cultivation of *competencies* required to accomplish certain tasks. As a first step towards drawing the distinction between capacity building and training, the nature of human competency will therefore be examined below.

Competency is frequently described as comprising three dimensions: *values/attitudes*, *knowledge* and *skills*. Each of these three dimensions encompasses a spectrum ranging from the *universal* to the *particular*. There are general skills and specific skills, just as there is general knowledge and specific knowledge. In the case of values and attitudes, these two terms already contain an implicit distinction in terms of specificity: "values" may be defined as general, overarching, all-embracing attitudes.

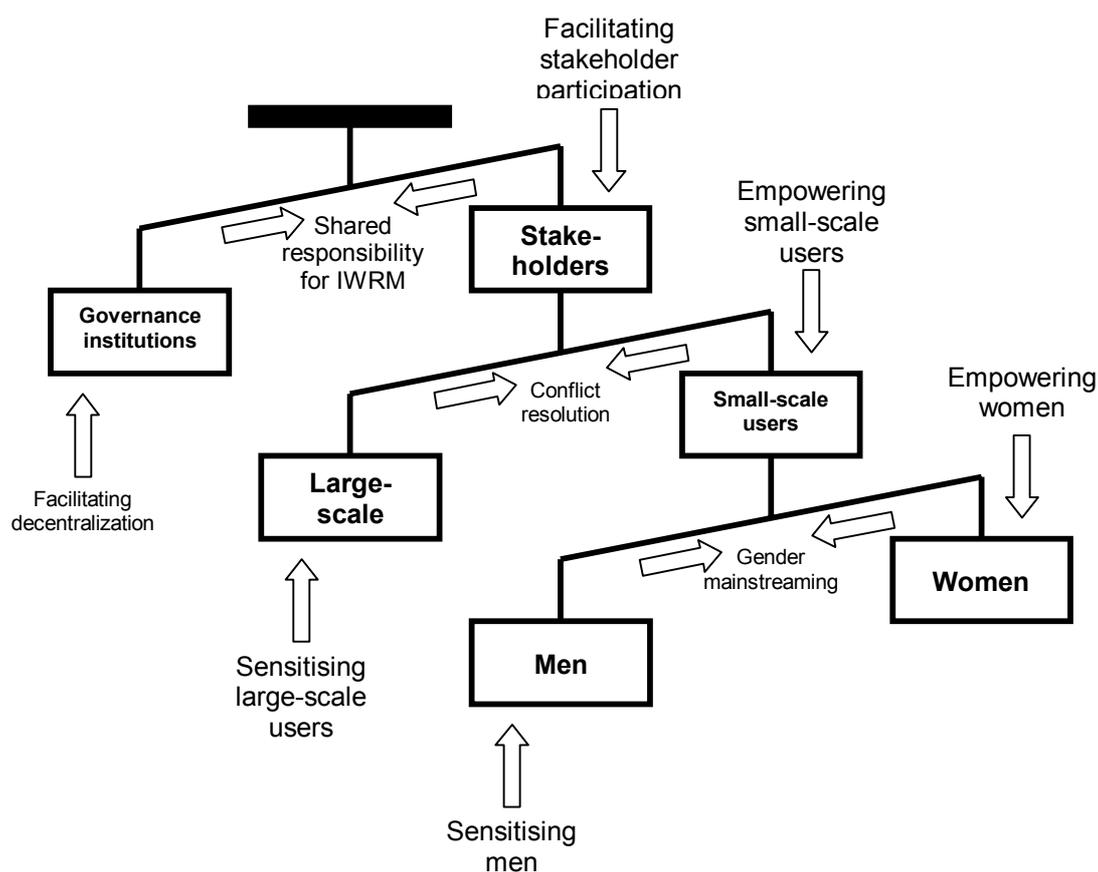
General competencies are frequently a prerequisite for the acquisition of specific, task-related competencies. For instance, one first has to know how to write (a general skill) before one can learn how to write a technical report (a specific skill). *Training*, then, may be defined as the development of those attitudes, knowledge and skills required to perform a particular set of tasks. *Capacity building*, by contrast, is the cultivation of the more general values, attitudes, knowledge and skills that a person needs to be able to benefit from training. Capacity building, as it were, prepares the soil in which the seeds sown by training may flourish.

#### 5 CAPACITY BUILDING REQUIREMENTS

The effectiveness of IWRM in South Africa is currently hampered by three nested imbalances. First, the distribution of decision-making authority is biased in favour of centralised governance institutions at the expense of stakeholders. Second, where stakeholders are able to participate in decision-making, the arena is dominated by large-scale users to the exclusion of small-scale users.

Third, in cases where small-scale users are allowed to offer their inputs, this task tends to be assumed by men rather than women. Figure 1 depicts the relationships among the three imbalances, as well as the capacity building initiatives that are required to correct them.

**FIGURE 1: IMBALANCES TO BE ADDRESSED THROUGH IWRM-RELATED CAPACITY BUILDING**



The nine areas of required capacity building depicted in Figure 1 are described in greater detail in the tables below. The distinction between values/attitudes, knowledge and skills is retained throughout.

## 5.1 Addressing the imbalance between men and women

ATTITUDES/VALUES	KNOWLEDGE	SKILLS
<b>Empowering women</b> <i>Target groups: Women in traditional African communities</i>		
Self-confidence Faith in their own ability to make valid contributions to community decisions	Knowledge of basic environmental and economic principles, hygiene and sanitation practices	Decision-making, problem-solving, communication and planning  Literacy and numeracy
<b>Sensitising men</b> <i>Target groups: Men in traditional communities</i>		
Willingness to question gender stereotypes Respect for the equal dignity of men and women	Recognition of the fact that gender roles are social constructs, not immutable givens	
<b>Gender mainstreaming</b> <i>Target groups: All role-players at organisational level</i>		
	Understanding of the gender implications of WRM at every phase of a project cycle	Ability to ensure equity and increased involvement of women in WRM processes

## 5.2 Addressing the imbalance between large-scale and small-scale users

ATTITUDES/VALUES	KNOWLEDGE	SKILLS
<b>Empowering small-scale users</b> <i>Target groups: Local community members</i>		
A culture of participation and responsibility for cooperative decision-making Willingness to shoulder responsibility for water services as paying customers	Knowledge of basic WRM principles, such as the link between water supply and demand issues, and the fact that water services are subject to the dual constraints of resource availability and financial viability  Awareness of the new, inclusive membership criteria for Water User Associations	Planning, funding, implementing, monitoring and evaluating programmes; leadership; joint decision making; managing finances.  <i>For individuals representing community interests in Catchment Management Forums:</i>  Administrative skills (chairing meetings, taking minutes, etc.); interpersonal relations; accurate, effective reporting
<b>Sensitising large-scale users</b> <i>Target groups: Large-scale water users</i>		
Willingness to revise racial stereotypes	Awareness of the need to incorporate local priorities, indigenous knowledge systems and traditional management practices into WRM processes	Cross-cultural communication

ATTITUDES/VALUES	KNOWLEDGE	SKILLS
<b>Conflict resolution</b> <i>Target groups: All role-players</i>		
	<p>Conflict management strategies (force, withdrawal, accommodation, compromise, consensus)</p> <p><i>For dedicated conflict management personnel in DWAF or CMA:</i></p> <p>Knowledge of office-based and participatory conflict analysis techniques</p>	<p>The ability to combine and apply conflict management strategies in a context-appropriate manner</p> <p>Communication, negotiation, mediation and facilitation skills</p>

### 5.3 Addressing the imbalance between governance institutions and stakeholders

ATTITUDES/VALUES	KNOWLEDGE	SKILLS
<b>Facilitating stakeholder participation</b> <i>Target groups: All stakeholders</i>		
	<p>Awareness of local institutional arrangements (who the stakeholders in the local WMA are, what the linkages are among them, and what their respective roles entail)</p> <p>Knowledge of local geography</p>	<p>Representation</p> <p>Monitoring (e.g. of catchments and water supplies)</p> <p>Data management</p>
<b>Facilitating decentralisation</b> <i>Target groups: Governance institutions</i>		
<p>Appreciation of the fact that IWRM relies on the cooperation of all concerned parties</p> <p>Willingness to share and delegate authority</p>	<p>Awareness of local technologies and traditional management practices</p> <p>Knowledge of the Water Management Areas and Water Management Institutions that sort under their jurisdiction</p> <p>When, and how much, support should be rendered to catchment-level IWRM processes and institutions</p>	<p>Ability to interact with and foster the continuing participation of stakeholders</p> <p>Ability to render appropriate support (especially to previously disadvantaged individuals and communities)</p> <p>Skill at managing sub-contracting and outsourcing of WRM functions</p> <p>Ability to create an enabling regulatory context; enforce enabling legislation; ensure effective, co-operative governance; prevent unnecessary duplication of functions</p>

ATTITUDES/VALUES	KNOWLEDGE	SKILLS
<b>Shared responsibility for IWRM</b> <i>Target groups: All role-players</i>		
<p>Giving high priority to the satisfaction of all citizens' basic human needs</p> <p>Valuing the preservation of the natural environment and the promotion of human well-being, each as a worthy end in itself.</p>	<p>The general institutional arrangements underpinning IWRM</p> <p>The ecological and socio-economic principles that underlie IWRM</p> <p>The diverse needs and expectations of various role-players</p> <p><i>For those involved in technical aspects of IWRM:</i></p> <p>Supporting methodologies (e.g. water conservation and demand management systems; the conjunctive use of ground and surface water resources; water quality and quantity modelling tools)</p>	<p>The ability to ensure that key sustainability outcomes are met</p> <p>The ability to integrate development initiatives within IWRM with those of other sectors</p> <p>The ability to draw on local wisdom and adapt WRM solutions to local contexts</p>

## 6 GUIDING PRINCIPLES FOR CAPACITY BUILDING INITIATIVES

The previous section was concerned with the question of *what* capacity building programmes should aim to achieve. The present section addresses the question of *how* such programmes should be designed and conducted. The following general guiding principles have been identified:

- Capacity building initiatives should *promote equity and redress* regarding the exclusionary systems that have curtailed access to education and training of black South Africans. Increasing the skills base and the simultaneous redress of the historic exclusion of black people from the structured learning context and the commensurate formal learning progression process should address the current skills shortage, lack of theoretical knowledge and absence of recognition for skills that have been acquired informally in the Water Sector in South Africa.
- Initiatives should *promote* the aims and objectives of the national, sectoral as well as DWAF *Skills Strategies and Plans*. This is believed essential in order to allow skills accreditation and develop opportunities for certificated training courses that will promote **career options and opportunities**. Such integration would also serve to provide opportunities for retraining and re-deploying DWAF staff in line with the Department's changing regulatory and support functions and skills development commitments
- In order to avoid the unnecessary duplication of efforts, programmes should build on *existing materials and experience* wherever possible. Curricula and methodologies may be adapted from capacity building programmes that have been conducted internationally, nationally and within DWAF over the last few years.

- Programmes should be *outcomes-based*. The practice of Outcomes-Based Education is predicated on the assumption that people learn best when they are actively involved in the learning process. Such involvement may be promoted through a wide range of activities such as group work, problem solving, the discussion of novel insights, and the honing newly acquired skills. Outcomes-based assessment is centred on demonstrable competencies that are measured against agreed criteria.
- They should be *contextually grounded*, focusing on the specific needs of the various WMAs while recognising and accommodating the educational, economic and cultural diversity found in South African society. Given the wide contextual diversity of stakeholders, the level, focus and even the approach towards capacity building must be structured accordingly.
- They should be articulated within the *National Qualifications Framework*, which is a set of educational standards, linked to a system of accreditation, that is designed to bridge the gap between the currently isolated sectors of formal (or theoretical) and non-formal vocational (or applied) learning. Wherever possible, capacity-building initiatives forming part of this project should be designed in such a way as to allow for official recognition within the NQF.

## 7 THE WAY FORWARD

In this report, the role-players to be involved in IWRM were identified, as were the general competencies that they would require in order to fulfil their designated roles. A few guiding principles were also laid down for the design of programmes to equip them with these competencies. The way ahead, leading towards the practical implementation of such programmes, is marked by the following signposts:

- *The identification of task-specific training needs*. It was argued above that capacity building often paves the way for training, and that the latter generally differs from the former in being more focused and task-specific. The development of a detailed *training plan* therefore presents itself as a logical sequel to the generic capacity building plan set out in this report. Such a training plan would require a breakdown of the various *tasks* for which learners have to be equipped, along with a list of the specific *competencies* that these tasks entail.
- The development of a *detailed plan for the delivery of capacity building and training*. Such a plan would specify curricula, personnel requirements, target groups, entry-level requirements for each module, as well as the venues, schedules and projected costs of delivery.
- Putting mechanisms in place for *assessing the effectiveness of capacity building and training programmes*. Such mechanisms are essential for determining whether or not such programmes are meeting their objectives. Assessment will need to be formulated around two aspects: *monitoring* (which is concerned with tracking the progress being made in a programme) and *evaluation* (which entails measuring its consequences).
- The design of *feedback mechanisms*. The purpose of assessment is to provide capacity building and training providers with information that will enable them to learn from their mistakes, and to learn from the successes and failures of others. In order for feedback mechanisms to be effective, information gleaned from the assessment of a capacity building or training project should be gathered as *close to the project* as possible, so that it can be fed back to key stakeholders in a timely manner. Assessment results should also be fed into *higher levels* of the organisational hierarchy so that national trends can be identified and a model of “best practice” assembled.

## VOLUME TWO: TASK-SPECIFIC COMPETENCY REQUIREMENTS OF DWAF AND CMAS

The following inventory of tasks and associated competencies is based on an analysis of the regulatory, policy and guideline requirements for institutional functioning.

PRIMARY TASKS	CAPACITY / COMPETENCE
<b>Functional Area 1: Policy And Strategy Development</b>	
<b>1.1 Develop legislation, internal policy &amp; policy about international water resources obligations</b>	
Create & maintain internal strategic planning trust Derive principles & strategic objectives Advocate principles Support legal drafting team Support Portfolio Committee Plan implementation	Legal Technical WRM Communications
Derive legal objectives Derive technical "tools" Support legal drafting team Support Portfolio Committee Plan implementation	Legal Technical WRM Communications
Create & maintain internal strategic planning trust Refine strategic objectives Derive pragmatic targets Advocate policies	Technical WRM Financial Communications
Derive principles & strategic objectives Support legal drafting team Support Portfolio Committee Plan treaty implementation	International Law Technical WRM Financial
<b>1.2 Develop the national water resources strategy (NWRS)</b>	
Classify water resources [s13] Specify RQOs [s13] Determine the Reserves [s16]	Scientific (ecological & hydrological) Social Economic
Reconcile water resource availability & demand in & between WMAs (national assessment) Establish principles and strategy for water conservation & demand management Develop national quality/ instream management strategy Formulate infrastructure development strategy, incl. inter-catchment transfers Develop strategy to meet international obligations	Technical WRM Economic International Law Communications
Develop a strategy to establish CMAs and WUAs in all WMAs Set out the functional domains of DWAF vis a vis CMAs, WUAs & Forums Derive a cooperative governance strategy for WMLs	Institutional development Communications Financial

<b>PRIMARY TASKS</b>	<b>CAPACITY / COMPETENCE</b>
Establish/ maintain a national WRM database at suitable scale Establish/ maintain suitable DSS tools and procedures Initiate data updates Perform foregoing tasks under this Function (1.2) Formulate (updated) NWRSs	Information technology Technical WRM Communications Legal
Mobilise and maintain a re-structuring task team Derive strategic objectives for re-structuring Develop organisational change model & programme Implement programme	Institutional development Technical WRM Financial Organisational design Communications
<b>1.3 Develop catchment management strategies (CMSs)</b>	
Description: natural attributes; anthropogenic impacts; RDM; economic profile; monitoring Reconciliation of water demand and availability Configure DSS tools	Technical WRM Social Economic Communication
Refine RQOs Derive water use allocation principles & plans Develop regulatory plans Plan demand management Physical development plans Water quality/ instream plans	Technical WRM Social Economic Communications Institutional development
Establish/ maintain a WMA database at suitable scale Establish/ maintain suitable DSS tools and procedures Initiate data updates Perform foregoing tasks under this Function (1.3) Formulate (updated) CMSs	Technical WRM Social Economic Communications Institutional development
<b>1.4 Develop and maintain guidelines, methodologies and procedures for strategic functions</b>	
Derive objectives of procedural or guiding document Assemble technical and experience-based knowledge on subject Workshop the organisation and prioritisation of this knowledge Assemble supporting technical and administrative information Prepare document and conduct review process Distribute documents Update documents	Technical WRM Communications Social Institutional development Financial Legal
<b>1.5 Develop and maintain a Pricing Strategy [s56; 57]</b>	
Derive/ refine objectives of pricing strategy Assemble/ update catchment water use data base Assemble technical and experience-based knowledge on subject Formulate/ refine components of pricing strategy Financial modelling with proposed charges Finalise/ update strategy	Financial Economic
<b>1.6 Formulate the water resource components of the Medium-Term Expenditure Framework (MTEF) on the basis of DWAF's Strategic Business Plans</b>	
Translate the National Water Policy, as well as the NWRS, into strategic planning objectives for each Functional Area Using the above planning objectives, draw up a Strategic Business Plan for each Business Planning Unit in the Water Resources Component of DWAF Plan the rolling-out of right-sizing measures in response to the Business Plans and derive personnel budgets	Technical WRM Business management Financial Human resource management

PRIMARY TASKS	CAPACITY / COMPETENCE
<b>1.7 Plan for DWAF's and other WMLs' public safety responsibilities in terms of water resources</b>	
Develop and maintain a national dam safety policy Review/ refine dam safety regulations & procedures [s123] Maintain/ develop Register of Dams & "Approved Professionals" Review/ refine dambreak warning & evacuation procedures	Technical WRM Legal Regulatory administrative
Develop and maintain a national flood management and protection policy and strategy Review/refine relevant regulations Support Portfolio Committee Review/ refine flood warning & evacuation procedures Develop dam operating procedures for flood attenuation Set up joint procedures with other relevant National and Provincial Government Departments and the National Disaster Management Centre	Technical WRM Scientific Legal Economic Social Communications
Review/ refine zoning and requirements of physical barriers Review/ refine water craft regulation policies and practices Set up joint procedure with the Department of Police Services Develop/maintain data base of safety zonings	Technical WRM Social Communications Information technology
Develop and maintain national policy jointly with National Department of Health Set up joint procedures with the Provincial Departments of Health and Environmental Affairs and the National Disaster Management Centre. Develop step-wise in-house response procedures Acquire and resource water tankers and mobile pump/pipe systems Mobilise water tankers, stand-by pumps and mobile pipe systems	Technical water services & WRM Medical/Health Social Communications
Develop and maintain national policy jointly with Department of Environmental Affairs and Tourism Set up joint procedures with Provincial Departments of Environmental Affairs and Health and the National Disaster Management Centre. Develop step-wise in-house response procedures Develop and maintain national data base of pollution clean-up contractors	Scientific Technical WRM Medical/Health Administrative Communications
<b>1.8 Develop or support other statutes, strategies, plans and WRM-related bodies</b>	
Develop EIP for DWAF according to the requirements of Section 13 of NEMA Develop EMP for DWAF according to the requirements of Section 14 of NEMA Submit EIP & EMP to CEC and update periodically	Strategic visioning Scientific (Environmental management) Technical WRM
Mobilise suitable line function staff to fulfill all prescribed statutory or other appropriate duties relevant to ex officio membership of WRC, CEC, JTPCs, NDMC and SANCOLD Mobilise suitable line function staff to provide both formal and informal support to SANCIAHS and WISA Utilise any and all the above institutions to support implementation of the NWA. Derive suitable protocols for the DWAF inputs to each of these bodies to ensure their adequate functioning	Technical WRM Scientific (Environmental management) International law Advocacy Communications

PRIMARY TASKS	CAPACITY / COMPETENCE
Mobilise appropriate line function staff to provide these inputs Reconcile these inputs with requirements for implementation of the NWA. Derive suitable protocols for the DWAF inputs to each of these processes to ensure their adequate functioning	Technical WRM Scientific (water quality) Communications
<b>Functional Area 2: Water Use Regulation</b>	
<b>2.1 Registration of water users</b>	
Develop and refine Registration procedures Develop Register and supporting meta-database	Administration Technical WRM
Develop and refine Registration procedures Administer Registration process Develop and maintain Register and supporting meta-database	Information technology Database administration Stakeholder consultation Correspondence administration
<b>2.2 Authorise water use</b>	
Develop and execute licence application and administration procedures for all types of licences Develop and execute consultation and negotiation procedures Issue individual licences	Regulatory administrative Legal Information technology Technical WRM
Prepare and publish notices to this effect Support Portfolio Committee Plan implementation Prepare an allocation schedule [s45-s47] Issue compulsory licences	Technical WRM Regulatory administrative Communications Consultative Legal Economic Information technology
Perform technical/ scientific assessments to delimit the nature of any particular regulation Perform extensive stakeholder consultations and negotiations & advocate principles Support legal drafting team Support Portfolio Committee Plan implementation	Technical WRM Legal Regulatory administrative Communications Consultative Cooperative governance
Perform scientific & economic assessments of candidate SFR or controlled activities Develop & advocate guidelines for quantifying such activity impacts Perform extensive stakeholder consultations and negotiations & advocate principles Support legal drafting team Support Portfolio Committee Plan implementation	Technical WRM Legal Economic Regulatory administrative Communications Consultative Cooperative governance
Develop and advocate guidelines for Schedule 1 uses Record enquiries and responses in Register	Technical WRM Regulatory administrative Communications
<b>2.3 Collect water use charges</b>	
Develop and execute procedures to: Record monitored water use Invoice water use Collect invoiced amounts Administer revenue Prosecute to force payment or redress	Regulatory administrative Financial Business management Legal Information technology

PRIMARY TASKS	CAPACITY / COMPETENCE
<b>2.4 Enforce compliance with water use authorisation conditions</b>	
Develop and execute water use monitoring and recording procedures	Technical WRM Information technology Regulatory administrative
The following actions may be taken: Directive to prevent and/or remedy effects of pollution [s19] Notice to rectify contravention of water use provisions [s53] Withdrawal of water use entitlements [s54] Prosecute to force compliance or redress	Technical WRM Scientific Regulatory administrative Legal Information technology
<b>2.5 Regulate dam safety</b>	
Maintain Register of Dams and of “Approved Professional Persons” (APPs) (for dam safety-related work) Maintain cycle of five-yearly dam safety investigations Ensure dam safety-related work is done by APPs Make/refine Regulations regarding dam safety [s123] Advocate dambreak warning & evacuation procedures Safety zoning of dams	Technical Engineering Regulatory administrative Legal Consultative
<b>Functional Area 3: Physical Implementation / Make Water Available</b>	
<b>3.1 Water resource infrastructure development</b>	
Supervise final scheme evaluations & designs (incl. groundwater) Develop IEM Plans for schemes Supervise construction  Raise capital Manage finance flows	Technical WRM Financial Contract Admin. International Law Consultative
<b>3.2 Water resource system operation and maintenance</b>	
Develop operating rules (quantity, quality & ecological requirements) Monitoring-led operational responses	Technical-scientific WRM Consultative Contract Admin.
Develop and execute inspection procedures Attain budget allocations for maintenance Manage preventative maintenance contracts	Technical Engineering Contract Administration
<b>3.3 Water conservation (WC) and demand management (DM)</b>	
Develop and execute WC procedures Advocate and publicise WC Manage contracts for invasive alien plant clearing	Technical - WRM & Water Services Consultative Advocacy Social Legal Contract administration
Develop and execute DM procedures Detect and eliminate losses in bulk infrastructure Make Regulations to support DM Build in-house capacity for DM implementation Support Water Services Providers regarding loss control and DM Monitor demand patterns and responses to measures Promote research on technological innovations	

PRIMARY TASKS	CAPACITY / COMPETENCE
<b>3.4 Flood and drought management activities</b>	
Support National Disaster Management Centre Develop and execute flood management procedures on large river systems Monitoring via telemetry Operate large dams for floods Publicise flood warning procedures Execute early warning procedures Engage relevant other state organs Engage downstream countries	Technical-scientific WRM Information technology Consultative Social Communications International law
Support National Disaster Management Centre Monitoring of trends in availability Monitoring of trends in water use Publicise trends Intensify WC & DM, including making Regulations Publicise WC & DM Determine and implement required restrictions of supply to safeguard high priority demands Engage relevant other state organs Engage downstream countries	Technical-scientific WRM Information technology Consultative Social Communications Legal International law
<b>3.5 Emergency response interventions</b>	
Implement joint procedures with the Provincial Departments of Health and Environmental Affairs and the National Disaster Management Centre. Execute step-wise in-house response procedures Maintain water tankers and mobile pump/pipe systems Mobilise water tankers, stand-by pumps and mobile pipe systems	Technical water services & WRM Medical/Health Social Communications
Implement joint procedures with Provincial Departments of Environmental Affairs and Health and the National Disaster Management Centre. Execute step-wise in-house response procedures Maintain national data base of pollution clean-up contractors Mobilise clean-up actions Monitor during & after clean-up	Scientific Technical WRM Medical/Health Administrative Communications
<b>3.6 Rehabilitation of water resources</b>	
Perform EIAs Design rehabilitation Manage rehabilitation contracts Monitor recovery	Scientific (Environmental management) Technical Engineering Consultative Align with CMS
<b>Functional Area 4: Institutional Support</b>	
<b>4.1 Establish statutory Water Management Institutions</b>	
Develop, submit and process "Proposal to establish CMA" [s77] Publish notice in Gazette Establish Advisory Committee [s81] Appoint Governing Board [s81] Make Regulations on CMAs [s90]	Institutional development Communications Consultative Technical WRM Financial Legal

PRIMARY TASKS	CAPACITY / COMPETENCE
Develop, submit and process "Proposal to establish WUA" [s91] Publish notice in Gazette Draw up constitution of WUA Establish Terms of Reference for Advisory Committee by Regulation [s100] Appoint members Publish notice in Gazette [s102] Appoint members	Institutional development Consultative Communications Legal Consultative Technical WRM International Law
<b>4.2 Delegate or assign powers, duties and functions to Water Management Institutions</b>	
Assign by notice in <i>Gazette</i> [s73] Delegate by Minister [s63] or CMA [s86] in writing Delegate by Regulation [s100] Delegate by Minister [s63] or CMA [s86] in writing Delegate by notice in <i>Gazette</i> [s102]	Institutional development Technical WRM Consultative Communications Legal Consultative Technical WRM International Law
<b>4.3 Facilitate establishment of non-statutory participatory bodies</b>	
Identify and mobilise WRM-related stakeholders Provide technical and secretarial (& limited financial) support Facilitate meetings of Forums and other participatory groups	Institutional development Communications Consultative Technical water services & WRM
<b>4.4 Build WRM-related capacity in both statutory and non-statutory Water Management Institutions</b>	
Recruit & establish "new" specialised skills: institutional and social development; conflict resolution; public participation; resource economics; process and technical auditing Develop Training Networks to foster all the above "new" skills, including school curricula Develop cross-discipline capacity-building	Institutional development Capacity-building Communications Consultative Technical WRM
Pursue high skill levels in WR planning, surface & groundwater hydrology, water quality science, applied hydraulics; ecological sciences, etc.	Technical-scientific WRM Capacity-building
Facilitate leadership development in WMs Provide basic WRM-technical & social skills & responsibility training courses & material Foster WRM-related community and schools projects Facilitate Forum, etc., membership mix with adequate WRM-related expertise Facilitate sharing of lessons learnt & of common resources	Institutional development Communications Consultative Technical water services & WRM Technical and social development capacity-building
<b>4.5 Coordinate activities of Water Management Institutions</b>	
Link participatory bodies to each other and to the CMA's committees Foster cooperative governance Pursue private-public partnerships Consult participatory bodies on water resource operation strategies Coordinate components of DWAF	Communications Consultative Technical water services & WRM Institutional development

PRIMARY TASKS	CAPACITY / COMPETENCE
<b>4.6 Intervene to support and re-direct WMIs</b>	
Give a directive to a WMI in relation to any power or duty [s74], or to remedy a situation in which it does not operate effectively [s87], [s95]	Consultative Institutional development Legal
<b>Functional Area 5: Information Management</b>	
<b>5.1 Information system design</b>	
Define: aims and objective of WRMAIS office roles and responsibilities of key role players Develop: portfolio of sub-systems to meet the needs of the core functions of water resource management	Institutional development Financial Organizational design Communications Administrative & governance
strategic HR development plan strategic technology plan infrastructure and budget protocols (commercial, agreements etc) to exchange water resource data with non-DWAF organizations Ensure compliance with: corporate IT architecture corporate standards, guidelines & procedures statutory requirements	Technical: WRM and Information & communication technology Legal
Design of WRMAIS Creating or migrating sub-systems making up the WRMAIS Managing master plan execution	Strategic visioning Integrated monitoring design skills Technical: information and communication technology
Development of: GS&P for MIS design GS&P for storage and maintenance of electronic and non-electronic data GS&P for data exchange GS&P for meta-data	Technical: Information And Communication Technology Communication
Development of: QA/QC procedures for DWAF data providers QA/QC requirements for non-DWAF data providers	Technical: Scientific, analytical, Information And Communication Technology
<b>5.2 Data acquisition</b>	
Sub-systems operational and effectively managed. This includes owner and roles and responsibilities defined, service level and contractual agreements have been established, operational data collection procedures exist and adhered to and evaluation of sub-system performance undertaken regularly. Sub-system designed according to WRMAIS criteria Adequate infrastructure and resources secured to maintain sub-system data collection QA/QC procedures are applied data exchange with non-DWAF suppliers is operational	Communication Administrative Auditing Information And Communication Technology Technical: WRM

PRIMARY TASKS	CAPACITY / COMPETENCE
<b>5.3 Data and information storage and management</b>	
Migration of sub-systems onto central WRMAIS Maintenance of sub-systems Auditing sub-system operations	Information technology Administration & auditing
Development of data exchange protocols for non-DWAF sub-systems Implementation of data exchange protocols	Information technology Administration & auditing
<b>5.4 Information generation and dissemination</b>	
Ongoing determination and review of the needs of complex knowledge products Design, maintain and update data and information access systems	Communications Consultative Technical WRM Scientific Information technology
Ongoing determination and review of the information required in standardized report formats Design, maintain and update standardized report formats	Communications Consultative Technical WRM Scientific Information technology
Determine user training needs Develop training material for users of data access and information systems Training of users in data access & information systems	Communications Consultative Information technology
<b>5.5 Support for complex knowledge products</b>	
Identify generic information needs for policy and strategy development Develop generic information products for policy and strategy development	Consultative Technical WRM Scientific Information technology
Identify generic information needs for physical implementation activities Develop generic information products for physical implementation activities	Communications Consultative Regulatory administrative Technical WRM Business management Information technology
Identify generic information needs for auditing functions Develop generic information products for auditing functions	Communications Consultative Regulatory administrative Institutional development Information technology
<b>5.6 Information Management Research</b>	
Development of data acquisition (monitoring) guidelines, standards, procedures and QA/QC protocols Technology transfer of monitoring guidelines, standards, procedures and QA/QC protocols	WR Monitoring
Identify appropriate new water resource assessment technology Pilot test and evaluate new WR assessment technologies Implement new WR assessment technologies where appropriate	Technical WRM Scientific WRM Contract administration Assessment technologies
Identify gaps or shortcomings in current monitoring technologies Identify and evaluate new monitoring technologies Implement new monitoring technologies	Technical –scientific WRM Monitoring technologies

<b>PRIMARY TASKS</b>	<b>CAPACITY / COMPETENCE</b>
Identify needs to new information dissemination technologies Develop and evaluate new user interfaces Implement new information dissemination technologies	Information and communication technology Needs assessment
<b>Functional Area 6: Auditing Water Resources Management</b>	
<b>6.1 Audit strategies and their outcomes</b>	
Identify key outputs and performance indicators for each strategy Develop & execute inspection and auditing procedures, both for outputs and process Identify audit-relevant information bases & procedures for access Develop and implement feed-back and follow-up procedures	Auditing (Non-financial) Technical WRM Consultative Legal
<b>6.2 Audit water use regulation</b>	
Identify performance indicators for each component of authorisation process Develop & execute inspection and auditing procedures for authorisation process Identify audit-relevant information bases & procedures for access Develop and implement feed-back and follow-up procedures	Auditing (Non-financial) Technical WRM Regulatory administrative Consultative Legal
Develop & execute inspection and auditing procedures for compliance Identify audit-relevant information bases & procedures for access Develop and implement feed-back and follow-up procedures	Auditing (Non-financial) Technical WRM Regulatory administrative Consultative Legal
<b>6.3 Audit Water Management Institutions</b>	
Develop & execute inspection and auditing procedures for <i>institutions</i> Identify audit-relevant information bases & procedures for access Develop and implement feed-back and follow-up procedures	Auditing (financial & non-financial) Technical WRM Regulatory administrative Consultative Legal
Develop & execute inspection and auditing procedures for <i>statutory interventions</i> Identify audit-relevant information bases & procedures for access Develop and implement feed-back and follow-up procedures	Auditing (non-financial) Technical WRM Regulatory administrative Consultative Legal
<b>6.4 Audit physical WRM-related interventions</b>	
Develop & execute inspection and auditing procedures for <i>physical WRM-related interventions</i> Identify audit-relevant information bases & procedures for access Develop and implement feed-back and follow-up procedures	Auditing (non-financial) Technical-scientific WRM Regulatory administrative Consultative

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**DOCUMENTS FOR OUTPUT 7: STRATEGIES, TOOLS AND SYSTEMS APPLIED WITHIN THE THREE SELECTED WMAS TO ACHIEVE SUSTAINABLE GROUNDWATER DEVELOPMENT AS AN INTEGRAL PART OF IWRM:**

1. a. Groundwater Management Strategy for National Water Resource Strategy, DWAF/DANCED, 2001
- b. Groundwater Management Strategy: Summary, DWAF/DANCED, 2002
- c. Groundwater Management Strategy: Executive Summary, DWAF/DANCED, 2002
  
2. a. Guidelines for Groundwater Management in Water Management Areas, South Africa, Carl Bro a/s, IZNA Consortium, February 2002
- b. Guidelines for Groundwater Management in Water Management Areas: Summary, South Africa, Carl Bro a/s, IZNA Consortium, February 2002
- c. Guidelines for Groundwater Management in Water Management Areas: Executive Summary, South Africa, Carl Bro a/s, IZNA Consortium, February 2002

**RELATED DOCUMENTS:**

First Edition National Water Resource Strategy, DWAF 2002

Integrated Water Resources Management Communication Strategy, DWAF

Generic Communication Strategy for IWRM, DWAF/DANCED, December 2001.

Institutional Roles and Linkages: Phase 1 Report, Carl Bro a/s, IZNA Consortium, February 2002.

Guidelines for Stakeholder Participation in Integrated Water Resources Management in Water Management Areas in South Africa, Carl Bro a/s, March 2001.

Evaluation of the involvement of Previously Disadvantaged Individuals in the Catchment Management Agency establishment process the three Water Management Areas, date.

Capacity Building Overview Assessment Vol.1, Carl Bro a/s, IZNA Consortium, October 2001.

**Capacity Building Overview Assessment Vol.2, Specific Capacity Building Requirements of Role-Players, Carl Bro a/s, IZNA Consortium, October 2001.**

Capacity Building Implementation Plan, Carl Bro a/s, IZNA Consortium, April 2002

Guideline on the Viability Study for the Establishment of a Catchment Management Agency, Carl Bro a/s, Pegasus Strategic Management, February 2002.