

Regulating Agricultural Water Use With a Pollution Potential: An Introduction[©]

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An introduction is provided to the present overarching regulatory framework in South Africa (SA) and how it is being implemented for agricultural water-use activities that can pollute the resource. Mention is made of source-directed controls and its linkage to resource directed measures as used within the SA context. The general water-use authorization process is described. More detail is provided on the strategy being finalized to regulate water use with a pollution potential. The strategic objective set is to ensure that there is a measurable trend in reduction of pollution from agricultural sources — from both point and non-point sources — by 2013. Eight programme objectives were set to achieve this. The importance of awareness raising, capacity building, and training for departmental officials is emphasized while the main other challenges facing agricultural water use in general are mentioned. The agricultural water-use sector is in conclusion encouraged to use the scarce water prudently and with care.

INTRODUCTION

The South African Department of Water Affairs and Forestry (DWAF) aims to contribute with other government departments and spheres, to improve the quality of life of the citizens of the country. Where water is specifically concerned the department regulates provision of water and sanitation by the local sphere but also has the overall responsibility as custodian and manager of the water resources.

Water is a scarce resource in South Africa which makes its sustainable use all the more important. The Directorate Resource Protection and Waste's responsibility mainly lies in ensuring that this scarce resource is protected from pollution during its use by the various sectors. A key aspect of its work thus consists of ensuring that water resource impacts are sufficiently mitigated to ensure long-term sustainability.

The mandate of the department complements that of other departments such as agriculture, environment and minerals & energy, and co-operation to limit duplication or minimize remaining gaps in legislation is crucial.

POLICY AND LEGISLATIVE FRAMEWORK

The foundation for water resource management and its regulation and protection is found in the Constitution of the Republic of South Africa, 1996. It is a national competency and peoples' right to an environment that is not harmful to their health or well-being is entrenched (Section 27). Other important sections require friendly co-operation within government (Chapter 3) and principled administrative action (Chapter 10) when exercising mandates.

The National Water Act (NWA), 1998 describes various instruments to be used for protection of the resource (Chapter 3). Resource Directed Measures (RDM) primarily provide for its classification (mainly entailing the setting and achieving of Resource Quality Objectives) and for a quantity and quality of water required to sustain its use, to be reserved. (Note that a certain quality and quantity of water is also included in a Reserve to secure basic human needs). Pollution should furthermore be prevented or remedied where it occurred.

Another important instrument is regulation of the use of water (Chapter 4) through source-directed controls (SDC). These consist of the control of the use of water by a specific user such as a mine or industry. The values set during the classification of the resource provide the limits when determining SDC requirements for authorising water-use activities.

The close relationship between RDM and SDC is indicated in Fig. 1.

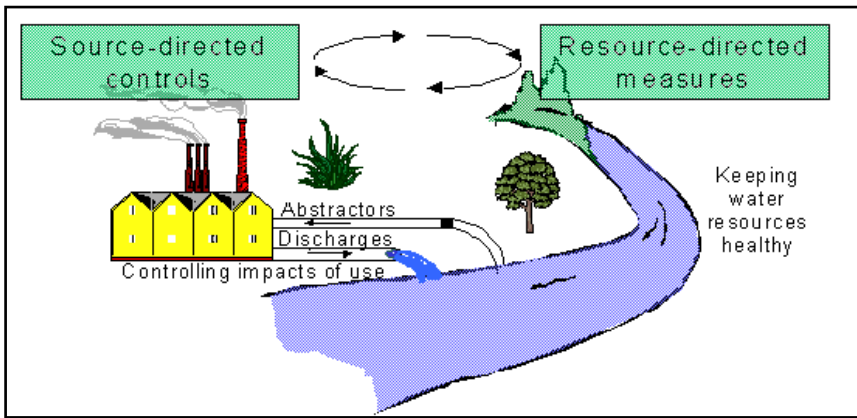


Figure 1. Measures to protect water resources (Department of Water Affairs and Forestry, 2003).

The NWA also provides for charging for water usage (the water resource management charge) and for the polluter to pay (the waste discharge charges).

Another innovation in the NWA is the provision for the establishment of catchment management agencies. The purpose being that water resource management would be delegated to the regional or catchment level and these institutions would then provide the means through which local communities can participate directly.

Chapter 14 provides for monitoring, recording, assessing, and dissemination of information. Various procedures and mechanisms are described for different organs of state, water-management institutions, and water users to carry out the function.

Proper management of the resource through strategic planning is furthermore achieved through the publishing and regular review of the National Water Resource Strategy — “our blue print for survival”. The first edition was published in 2004. It provided strategic direction on RDM, SDC, protection of groundwater resources, wetlands, water use authorization, and the other aspects covered in the NWA. On a more local level provision for strategic management is provided for through development of catchment management strategies. The first of these is being developed by the Inkomati Catchment Management Agency established in Mpumalanga.

SOURCE-DIRECTED CONTROLS

As mentioned, Resource Quality Objectives and the reserve requirements set the limits within which the resource could be used. These limits are then specified through SDCs.

The main approach used in SDC is the hierarchical approach to decision-making (Fig. 2). Pollution should thus as far as possible be prevented and minimized, after which a precautionary and differentiated approach is followed for the discharge of the remaining water containing waste.

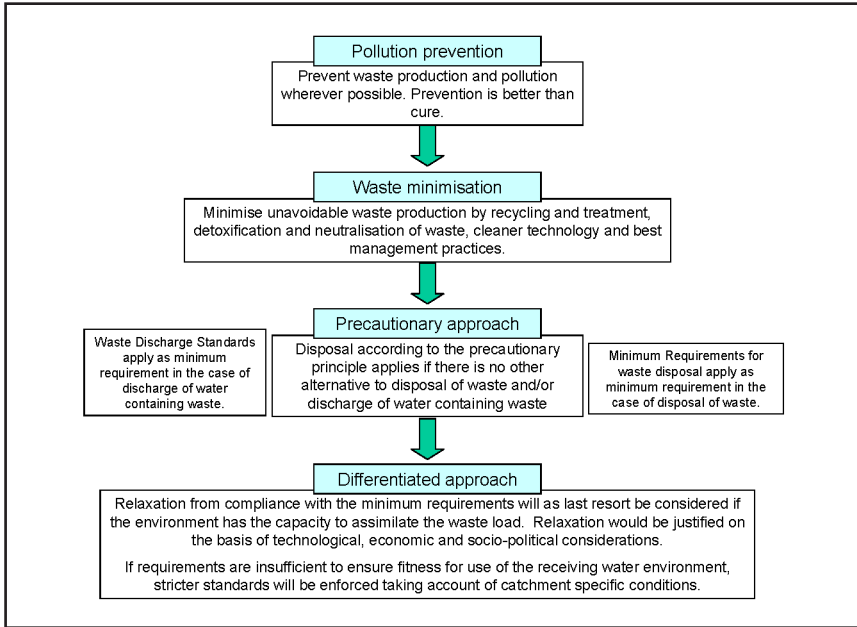


Figure 2. Department of Water Affairs and Forestry (DWAF) hierarchy of decision making with regard to water resource protection and waste management (DWAF, 1991: 13 & 14).

Other principles applied in SDC include the integrated regulation of water use, the polluter pays and participation by parties involved and affected.

SDCs consist of regulatory instruments (regulations, general authorizations, and licensing), market-based instruments such as the waste discharge charge, and self-regulatory instruments such as International Organization for Standardization (ISO) certification. These are indicated in more detail in Table 1.

Table 1. Measures used in water use source control (Department of Water Affairs and Forestry, 2007a).

<p>Statutory measures</p> <p>Schedule 1 (NWA, 1998) water uses</p> <p>Regulations</p> <p>General authorizations</p> <p>Licensing</p> <p>Compliance Monitoring</p> <p>Auditing</p> <p>Directives</p> <p>Enforcement</p>	<p>Persuasive measures</p> <p>Contracts</p> <p>Voluntary agreements</p> <p>Influencing</p> <p>Self-regulation (e.g., ISO 14000 certification)</p> <p>Monitoring</p> <p>Advocacy, education, and awareness creation</p>
<p>Co-operative governance</p> <p>Dispensing licensing</p> <p>Integrated planning</p> <p>Support</p> <p>Protocols</p> <p>Deregulation (WUAs and CMAs)</p> <p>EMPs, landfill site permits, EIAs</p>	<p>Economic measures</p> <p>Waste Discharge Charge</p> <p>Penalties</p>

WATER USE AUTHORIZATION

Water use authorization is a tool to enable the Department to give effect to the principles of sustainable, equitable, and efficient use of the water resources. A person may only use water if authorised by the NWA. Eleven water uses are described in the NWA (section 21). These include taking of water and its storage, impeding or diverting flow, engaging in stream flow reduction (through commercial forestry), and the discharge related ones, such as discharging waste water directly into the water resource, disposal of waste water into for example evaporation dams or slurry dumps, and irrigation with water containing waste.

A differentiated approach is used in authorizing the above water uses as depicted in Fig. 3.

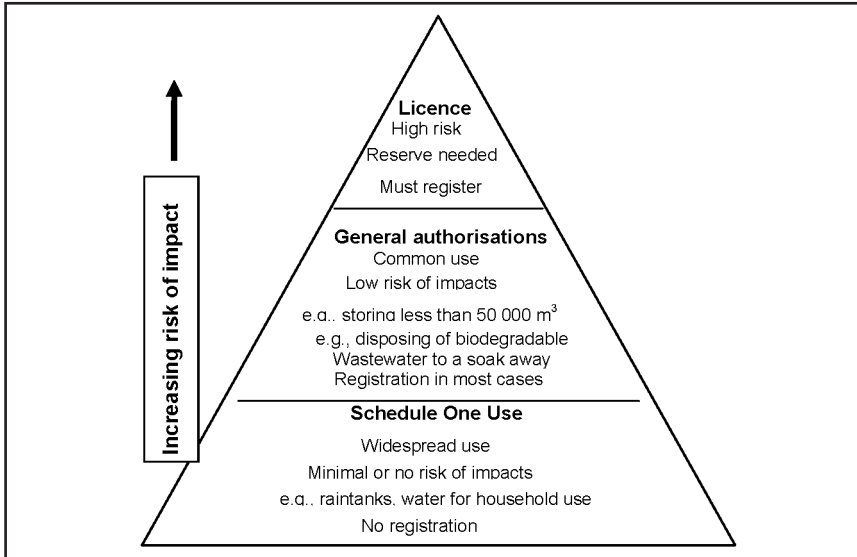


Figure 3: Differentiated approach applied in water use authorizations (Department of Water Affairs and Forestry, 2004).

WATER USE AUTHORISATIONS

As indicated licensing is only used for high risk water use activities. The licensing process is comprehensive and complicated and is described in guidelines produced for that purpose (DWA 2007b). Different units (with specific skills and expertise) are required to evaluate license applications. These include people with the required skills in evaluation of engineering designs, groundwater protection and use, legal services, abstraction, waste discharge and disposal, and others. To complicate the process further, the regional offices (based in the different provinces) are involved in discussions and receiving applications, while some of the expertise and evaluation skills are in the national office. Licenses are issued in terms of a delegation from the Minister to the Chief Director of Water Use (based in the national office).

Managers of water use activities such as mines and industries are encouraged to progressively manage their water through an integrated water and waste water management plan. An example of a good practice for farms has been found in the literature (Northern Ireland Department of Agriculture and Rural Development, undated). The code addresses good practices on collection and storage of farm wastes, its land spreading, fertilisers, pesticides, sheep dip, dead animals, and fuel oils. The department is at present developing a generic guideline for officials on the content of such plans.

A renewed effort has been made during the last year to streamline the water use authorization process. This was mainly due to pressure from water use applicants, but also due to departmental initiatives for continuous improvement. An electronic tracker system (to indicate where the applications are in the process) is being developed and implemented, a single format external and internal guidelines have been finalized, consultants have been appointed to assist the department in determining

and handling backlogs at the regional and national office, and intensified training is being conducted.

The main challenges for SDC remain to provide a consistent, efficient, and effective authorization process; to protect the water resource to ensure sustainable use; for officers to be credible and technically competent; to improve communication especially within the department and also with the public at large, and most importantly, to progressively build and improve co-operative governance in service delivery by government. The department is also starting to focus in a consolidated manner on compliance monitoring and enforcement of authorization related legislation.

REGULATING AGRICULTURAL WATER USE WITH A POLLUTION POTENTIAL

Introduction. The sub-directorate agriculture of the directorate RP&W was established as a separate entity in February 2005. It was decided to follow a strategic approach to regulate water use activities by the sector and the process for its development was initiated.

Strategy Development and Implementation. The process consisted of conducting a survey on needs of the regional officers and water users; compiling a literature survey and situation assessment; drafting a vision, strategic and programme objectives, and developing a customized manual for water use authorization. The strategic and programme objectives are indicated in Table 2. Comments are also provided in the table to elaborate on the objectives stated. Preliminary actions to achieve these were already determined and included in the document (DWAf 2007c). These will now be further developed and implemented.

Table 2. Strategy to regulate agricultural water use with a water resource pollution potential: strategic and programme objectives (Department of Water Affairs and Forestry, 2007c).

OBJECTIVE	COMMENT
Strategic Objective By the year 2013, there will be a measurable trend in reduction of pollution from agricultural sources, both point and non-point.	To achieve this strategic objective, while still adhering to the principles, eight programme objectives (POs) were identified:
PO1: Ensure the strategy is coherent and harmonised with existing instruments.	These two were defined as "process objectives," not having tangible outcomes but necessary to ensure that the resulting strategy was in harmony with both existing Departmental procedures and instruments and with the values that inform the operations of the Public Service.
PO2: Ensure that the strategy is developed in a collaborative and participatory manner.	
PO3: The programme to deal with point-source pollution from agriculture will be in place by the beginning of 2008.	From the situation analysis it was determined that point-source pollution was both acute and could be dealt with early and efficiently through regulation. For these reasons, this programme is the one requiring most urgent attention.

PO4:	The programme to deal with non-point source pollution from agriculture will be in place by the end of 2009.	It was found in the situation analysis that the primary targets needing attention were salinity and sedimentation: salinity because of its wide ranging occurrence and the threat of permanent damage to irrigation potential; and sedimentation because it is linked to other types of non-point source pollution so that they can be dealt with simultaneously.
PO5:	By the end of 2013, avoidance of pollution from agricultural sources and prudence in the decisions that might cause it has become a national norm.	The range of people affected by this programme will include agricultural operators; the management structures of water use, i.e., water user associations and catchment management agencies; the field departments that support agriculture; the population at large which needs to be better informed of the impact of agricultural pollution on their health; and the companies supplying potential polluting inputs.
PO6:	By the end of 2011, co-operative governance protocols will be developed with each of the departments involved in the prevention and control of pollution from agriculture.	This is in effect a cross-cutting programme supporting all of the output objectives, because of the institutional complexity inherent in agricultural pollution. Whatever the individual pollution problem needing to be dealt with, progress will be faster and more effective if DWAF has a co-governance understanding in place with whatever other departments are involved in the problem.
PO7:	By the end of 2013, the systems and infrastructure will be in place to assemble and record the information needed to monitor pollution from agricultural sources.	The problems created by the lack of appropriate information when either investigating pollution or planning to counter it is mentioned in almost every research report consulted for this strategy. It is cited as hampering not only the development of local predictive models, but also more direct approaches to minimising pollution based on empirical data.
PO8:	By the end of 2010 a programme will be in place to deal with pollution disasters.	Included here are events such as spillage from holding ponds, raw effluent escaping to river systems and fertilisers or pesticides entering streams as a result of accidents or neglect.
<p>In summary, the core programmes in the strategy are PO3 and PO4, dealing directly with the pollution problems. The process objectives are to ensure that the strategy is developed within the principles laid down. The balance of the output objectives deal with cross-cutting issues that will affect both the core programmes, but which require formal programmes themselves to be completed.</p>		

Training and Capacity Building. During the strategy development it was also decided to provide literature to the regional offices on relevant regulatory measures available in South Africa and internationally to assist them in their regulatory role. An “Information Package” containing the information was provided to them and information sharing and capacity building were done on the content in all nine

regional offices. The same was done for various directorates in the national office and department of Agriculture, the Agricultural Research Council and the Water Research Commission.

Other Projects. The sub-directorate is also involved in developing a policy and an operational guideline for best practices relating to nutrient management and eutrophication prevention and remediation. This was a direct result of the finding in 2003 that water quality deterioration due to eutrophication of the resource is increasing at an alarming rate and that the use of the special phosphate standard has thus proved not to have been sufficient in addressing it. These would be finalized in 2008.

A regulatory framework for specifically the winery water use sector is also in the process of being finalized. The sector identified the need to have a specific general authorization for the irrigation of their water containing waste. The general authorization will provide for treatment of waste water to a specific standard where after it could be used for fertigation of specific crops such as vineyards.

Challenges. Main challenges facing the sub-directorate, other sections, and departments involved in agricultural water use and the agricultural sector at large in South Africa at present are the following:

- Access to sufficient, safe, and nutritious food. This is especially important as about 40% of the population is still poor and not food secure. Establishing good practices for protection and use of the water resource would be crucial when addressing this challenge.
- Enhancement of sustainable management of agricultural and water resources. The aspect of protection is again at the centre of the activities.
- Transformation of the sector to improve racial and gender equity and equality as well as to improve productivity.
- Improved water use efficiency and conservation — again while ensuring that the resource is also protected.
- Economic growth and diversification.

CONCLUSIONS

South Africa is experiencing exciting times regarding racial and gender transformation. A new water act was published that put the country at the forefront regarding water resource management. Its implementation requires wisdom, hard work, diligence, and commitment from officials. The agricultural sector has been provided with an improved legislative framework but also with challenges to continue to contribute to economic growth and social equity. Water should be used with care. Pollution should be prevented. Soils should be conserved and waste should be dealt with responsibly and be used as a resource where possible.

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