

New strategy to light path for sustainable groundwater use



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South Africa has huge volumes of groundwater available for potential development, but, just like the country's surface water resources, it needs to be managed holistically to ensure that any use is sustainable. The National Groundwater Strategy, currently under development, hopes to achieve just that.

For decades groundwater was considered the 'poor cousin' of water resources in South Africa. Its mysterious and hidden nature, coupled with an overall lack of knowledge about the country's aquifers, resulted in groundwater development being largely confined to small, rural areas of South Africa.

The problem has been compounded by groundwater's historic status as a 'private' water resource under the country's former national water laws. Prior to 1998 groundwater was legally the property of the owner of the land under which it was found, making it difficult to assess and manage regionally. "Indeed, the State had little control over groundwater, except in certain areas where groundwater had been declared part of a subterranean government water control

area," explains Jude Cobbing of Water Geosciences Consulting.

While South Africa's surface water resources are nearly fully allocated, at present only a small fraction of the national groundwater resource is used. The latest groundwater resource assessment shows that South Africa has about 10 000 million m³/year of groundwater available for development (under normal rainfall conditions) of which only 2 000 m³/year is being used at present. This compares to the yield of nearly 3 000 m³/year obtained from the Vaal River system through its series of dams and inter-basin transfers.

"Groundwater's role in South Africa is often underestimated – two thirds of our population depend on groundwater for their domestic needs," notes

Cobbing, who was speaking at the Biennial Groundwater Conference held at Somerset West last year. "Although most large-volume water users rely on surface water, the majority of small water supplies, which are critical to livelihoods, health and dignity, depend on groundwater."

Groundwater is also essential to the water supplies of towns such as Beaufort West, Prince Albert, Graaff Reinet, Atlantis and Musina. Even large cities such as Pretoria and Johannesburg are partly dependent on groundwater.

IMPROVING GROUNDWATER'S STATUS

The need to raise groundwater's status to equal that of surface water in meeting the country's growing water demand

has been recognised. To this end, the Department of Water Affairs has selected a team comprising hydrogeologists, integrated water resource management managers and policy and strategy development experts to build a National Groundwater Strategy.

The aim of the strategy is to capture the understanding, position and value of groundwater so that it can fulfil its role as equal partner in integrated water resource management and use. The strategy will identify strategic objectives and develop an associated implementation matrix that will consider phasing and sequencing, operationalisation, financial requirements, funding options, human resources mobilisation and risks. A monitoring and evaluation scheme will also be developed.

Importantly, the strategy will also inform the National Water Resource Strategy (NWRS), which is now due for revision. "If groundwater is not included in the NWRS in a way that is proportionate to groundwater's current use and potential in South Africa, it will be difficult to ensure strategic and political support for better development of the resource," said Cobbing. "The greatest challenge facing the groundwater sector in South Africa is the present lack of skills and resources. Without high-level support from strategy documents such as the NWRS the sector has little hope of recovering to fulfil its potential."

BUILDING ON THE PAST

This is not the first attempt at a national strategy for groundwater. In 2001, the need for a consolidated and strategic groundwater input to the first National Water Resource Strategy was identified. The resultant project identified a suit of strategies for areas such as institutional arrangements, human resources and capacity building. That information, along with the Framework for a National Groundwater Strategy (published in 2007) is being used as building blocks for the new groundwater strategy.

The focus to date has been on laying the foundations of knowledge and information regarding groundwater in South Africa. A number of stakeholders have been identified and workshops have been held across the country.

Reviews covering groundwater resource assessment methodologies, institutional strength and weaknesses, and capacity and training have also been undertaken.

RECOGNISING THE CHALLENGES

These reviews have uncovered several major challenges experienced by the country's groundwater fraternity. Perhaps one of the significant of these is the lack of adequate capacity in the field of hydrogeology not only in the national department, but in South Africa as a whole. "This impacts negatively on all functions of groundwater operations and management as well as on the efficiency of water resource management institutions," notes Dr Kevin Pietersen of Water Geosciences Consulting and part of the national groundwater strategy team. "Adequate capacity plays a very important role in the realisation of the successful implementation of the National Groundwater Strategy."

Another issue is that of groundwater assessment and storage of data. Groundwater data in South Africa is stored in several public sector databases, and also by many private groundwater contractors, drillers and consultants. Increasing the submissions of data by the private sector to public databases (for example, requiring drilling contractors to supply

details of boreholes) is a vital issue to ensure information concerning groundwater is available nationally. Integration and upgrading of existing public sector groundwater databases is also necessary.

Just like surface water resources, groundwater resources are vulnerable to threats such as acid mine drainage and other forms of pollution, over-abstraction and mismanagement, and climate change. Groundwater's role in terms of environmental functions is often overlooked. Many ecosystem services have a direct linkage with groundwater storage, recharge and discharge. However, the interdependencies between ecosystem services and groundwater are not yet recognised and valued in decision-making and in the management of water resources and river basins. "Groundwater is generally interpreted as falling outside the function of the Ecological Reserve, except where groundwater discharges sustain surface water bodies," notes Dr Pietersen. This is something that requires careful reconsideration.

With the building blocks in place, the national groundwater strategy team are now working towards putting together the actual National Groundwater Strategy, which will soon become available for review. It is hoped that this strategy will go a long way in ensuring the sustainable use of groundwater resources in South Africa. 

The majority of the rural population depend on groundwater resources.

