

## Water services

### Assessing the impact of expansion of bulk infrastructure on the capital requirements of water boards

## A WRC-funded study investigated the potential impact of expanding areas of activity on the financial viability of South Africa's water boards.

### Background

Water boards were established under the Water Services Act of 1997 to provide bulk water to other water services institutions, and to serve as water services providers when contracted by municipalities. There are currently 12 water boards with a very large range in size.

A number of recent initiatives have been aimed at expanding the operations of Water Boards. Firstly, the Department of Water Affairs (DWA) Institutional Realignment Project of 2008 raised the possibility of regional water utilities with Provincial boundaries. DWA's Institutional Reform and Realignment (IRR) Project of 2011/12 has taken this idea further.

Secondly, the Department of Cooperative Governance and

Traditional Affairs' (COGTA) Municipal Infrastructure Support Agency (MISA) envisions water boards playing a key role in improving service provision in areas where municipalities have limited capacity.

Expanding the areas of activity of water boards will have an impact on their financial viability, most notably on capital expenditure requirements. As a result, the WRC funded research on the impact of expansion of bulk infrastructure on the capital requirements of water boards.

The project involved two main streams of work. The first stream focused on modelling the impact of expanding areas of activity on the financial viability of water boards, while the second focused on identifying indicators for assessing the ability of water boards to access capital finance, particularly under expansion.



*Figure 1:  
Geographic  
location of the  
12 water boards*

## Modelling and case study applications

A key deliverable of the study was the development of a model to assess the impact of expanding areas of activity on the financial viability of water boards. The model was then to be applied to several case studies in order to determine its usefulness and applicability and make recommendations for possible improvements and extensions to the model in future.

An Excel-based modelling tool, called the Regional Water Boards Model (RWBM), was consequently developed, making use in some instances of the logic of a previous WRC model, called the Regional Water Supply Services Model.

DWA initiated a process of IRR in 2007 to ensure that the water sector effectively contributes to government's national development and transformation priorities through the development of effective, accountable and sustainable institutions. A new phase of the IRR process was initiated in 2011. Included in this phase was a review of the role of the water boards.

This IRR review was taking place in parallel to the WRC study. It became apparent that the modelling work conducted under the study could provide insights into the impact of IRR proposals regarding realigning the footprints and functions of water boards on the financial sustainability of those water boards. The case studies represented in the final study report were thus applied as part of the analysis for the IRR process. In most respects, the expansion scenario considered in the case studies was defined by the IRR process.

Eight case studies were conducted, aligned with possible regional water boards identified under the DWA IRR process. Each regional water board is centred on an existing water board, and with the incorporation of three smaller water boards into these regional entities.

The case study results only provide a rough and indicative first cut of results. They should not be used as absolute indications of the likely performance of the water boards under an expansion

scenario. For the purposes of the WRC study, which was to test the prototype model and make recommendations for possible improvements and extensions, the data was considered adequate.

## Summary of model results

The expansion scenario considered results in a significant increase in the value of assets managed by water boards, with Lepelle Northern and Amatola experiencing the most significant impact (approximately a 250% and a 50% increase in value of assets respectively).

There is a significant need for new capital expenditure, mainly for bulk water schemes. Expenditure on water resources infrastructure is relatively small for all but Lepelle Northern Water where the scale of transfer of this infrastructure is projected to be relatively large. The expenditure in the case of water resources is largely related to rehabilitation of infrastructure.

Regarding capital finance, the modelling suggests that all water boards aside from Umgeni and Magalies Water will face a capital financing gap. In terms of absolute size of funding gap, Lepelle North, Rand Water and Bloem Water face the largest gaps. However, Rand Water's gap is small as a percentage of total funding required. When percentage split is assessed, Bloem Water, Sedibeng Water and Lepelle North face the biggest challenges, with Amatola close behind.

On the operating account, significant tariff increases will be required to ensure that financial statements remain balanced over time. Whether or not tariff increases of this magnitude will be possible, both in terms of approval from DWA and in terms of affordability of the resultant tariff to consumers, was not considered in the modelling, but is a key area of concern.

## Capital financing indicators

Assessing the ability of an entity such as a water board to borrow is a complex process, part art and part science. While a comprehensive assessment of capacity to borrow really requires

### Case study statistics related to size and expansion

Water board name (existing core water board and 'place holder' name for new entity)	Bulk water sold (million m <sup>3</sup> pa)		Assets (R million)		Opex (Rmillion pa)		Capex (Rbillion)
	2011	2012	2011	2012	2011	2012	10 yrs
Rand (East Central)	1 344	1 897	70 810	88 984	5 627	8 978	28.3
Umgeni (Eastern)	423	586	13 344	24 361	1 140	1 952	8.0
Mhlatuze (North Eastern)	41	87	2 745	5 909	231	615	2.4
Sedibeng (Western)	86	130	8 100	10 641	455	621	3.0
Lepelle Northern (Northern)	70	255	1 904	51 098	302	1 771	11.5
Amatola (Southern)	28	124	778	5 746	260	988	2.5
Bloem (Central)	87	133	4 700	7 917	271	514	3.1
Magalies (North Western)	114	152	3 000	8 742	460	712	2.4

a full shadow credit rating exercise, a fairly standard set of indicators can be used to obtain a first assessment.

Assessing the economic risks faced by a water board is a key element of a credit rating exercise. By their nature, water boards have narrow customer bases: they are each dependent on a handful of municipal customers for revenue. This means that they are very exposed to risk related to municipal performance. For example, a municipality that struggles to collect revenue for the retail water services that it provides is probably more likely to default on payment to the water board than one that has strong revenue collection systems in place.

A composite indicator assessing the performance of a group of municipalities underlying an individual water board was developed under this project. A comparison of a composite financial performance scores for water boards with the composite performance in the underlying municipal area shows a very strong correlation.

This provides strong support for the hypothesis that strongly performing water boards are those who serve strongly performing municipalities, and that an assessment of the ability of a water board to borrow requires an assessment of the vulnerability of the municipal areas underlying that water board.

The implication is that the performance and structure of the municipal areas into which water boards are being asked to expand should be assessed as an indicator of the likely impact of expansion on the financial viability of water boards.

## Conclusions

The RWBM has been shown to be a useful tool, but needs to be considered only as a prototype. More work is needed to use it more interactively with water boards, improve the model, refine the options to be investigated and improve the data.

The results of the case studies conducted should be treated with significant caution, due to limitations in the datasets used. However, they do highlight the fact that the expansions to water boards footprints and activities proposed under the IRR process pose considerable challenges.

**Expansion will require the water boards to take on significant new assets, and incurring considerable capital expenditure over the next 20 years. This will place strain on operating accounts, and on the ability to raise capital.**

While a comprehensive assessment of capacity to borrow really requires a full shadow credit rating exercise, a fairly standard set

of indicators can be used to obtain a first assessment. Using the financial indicators for the eight water boards included as case studies for this project suggests that Rand Water, Umgeni Water, and Mhlathuze Water would have relatively strong ability to borrow; Bloem Water and Sedibeng Water would have moderate ability; and Lepelle North, Amatola and Magalies would have little or no ability to borrow.

When considering the implications of expansion, an assessment of the performance and structure of the municipal areas into which the water boards are being asked to expand is vital.

Key issues to be addressed, should horizontal expansion be considered, relate to the implications for cross-subsidisation. In most cases, horizontal expansion implies expansion from urban areas into rural areas. The viability of many rural schemes is poor. The impact of this expansion on tariffs in the current water board footprint, and the limits to cross-subsidisation, must be carefully assessed. This requires a sound assessment of the affordability limits in both the existing and expanded water board footprints. The issue of access to grant funding by water boards is important in this regard.

The key issues to be addressed should vertical expansion be considered are two-fold. Firstly, water resources assets should be transferred into a carefully managed manner. It is assumed that these resources will be transferred free of charge. However, water resource schemes have differing viability, with most potable schemes having fairly strong viability but many non-potable schemes having questionable viability. Asset transfer should be staggered, with the more viable potable water schemes transferred first.

Secondly, even if assets are transferred free of charge, transfer carries implications for capital expenditure on rehabilitation. A funding mechanism for rehabilitating these assets, particularly those in poor condition, should be established in order to prevent over-burdening the water boards.

The RWBM model is available freely for download at [www.wrc.org.za/software/rwbm](http://www.wrc.org.za/software/rwbm)

### Further reading:

To order the report, *Assessing the impact of expansion of bulk infrastructure on the capital requirements of water boards (Report No. 2086/1/12)*, contact Publications at Tel: (012) 330-0340, Email: [orders@wrc.org.za](mailto:orders@wrc.org.za), or Visit: [www.wrc.org.za](http://www.wrc.org.za) to download a free copy.