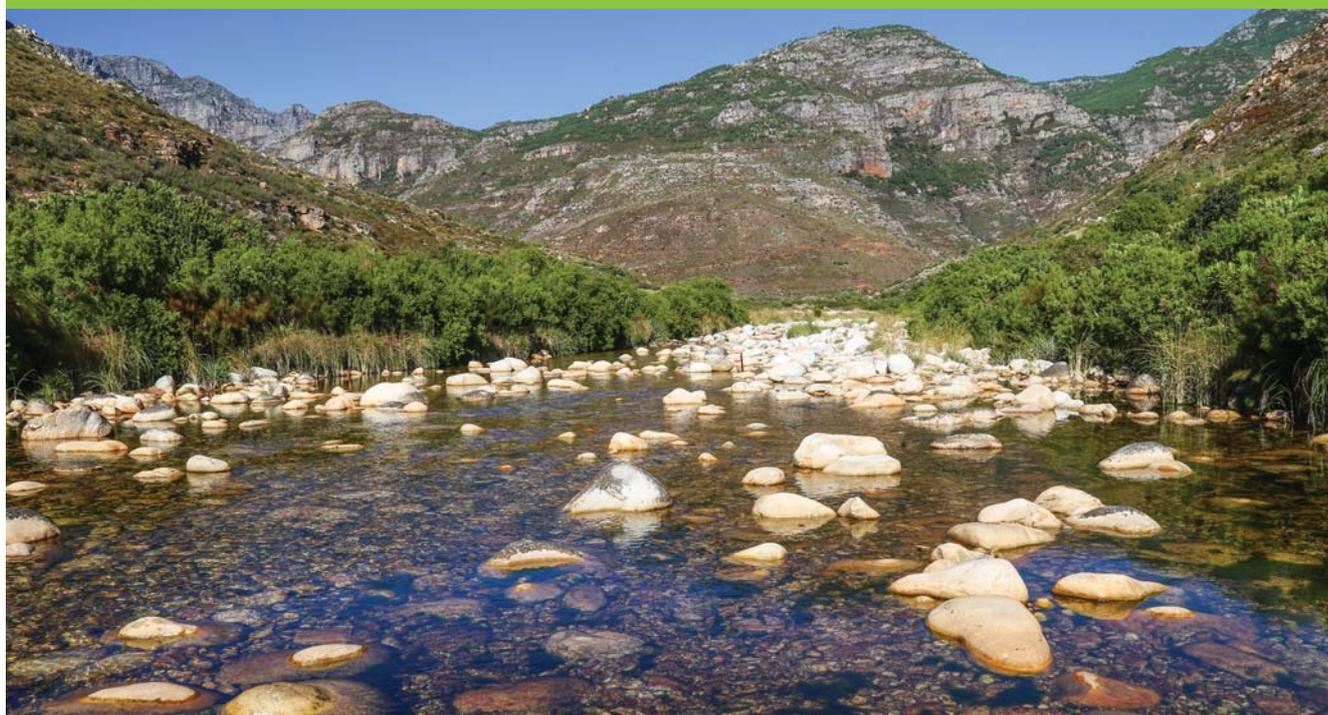


DROUGHT AND AGRICULTURE

Berg River study points to importance of monitoring in managing catchments

A recently completed research project has investigated ways to adapt farming in the Berg River Catchment to drought conditions and urbanisation with increased monitoring and economic modelling. Article by Annabel Horn, Leanne Seeliger, Marlé Kunneke, Willem Hoffman, James Cullis, Nico Rossouw, Lloyd Fisher-Jeffes and Wilna Kloppers.



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Low water levels in the Berg River Catchment have resulted in increased pollution in places, triggering the need for farmers to consider adapting their farming practices to ensure future profitability. The Berg River that rises in the Groot Drakenstein Mountains, near Franschhoek, and discharges in the Atlantic Ocean at Velddrift, supports land uses such as agriculture, forestry, urban development and conservation. It is an important producer of table and wine grapes in South Africa, with more than a fifth of the country's wine cellars located here.

Agricultural experts already expressed concerns in 2008 that deteriorating water quality might affect the ability of the region to export grapes and other fruit. This would have a significant impact not only on the regional economy of the Western Cape,

but also the national economy. The area is a major contributor to foreign currency earnings, and is important for the welfare of thousands of people who are dependent for their livelihoods on the agricultural sector in the region.

The current drought conditions in the Western Cape, combined with the possibility that these might be the signs of climate change, the poor state of some treatment plants and the continued rapid rate of urban developments in the Berg River Catchment have further highlighted these risks.

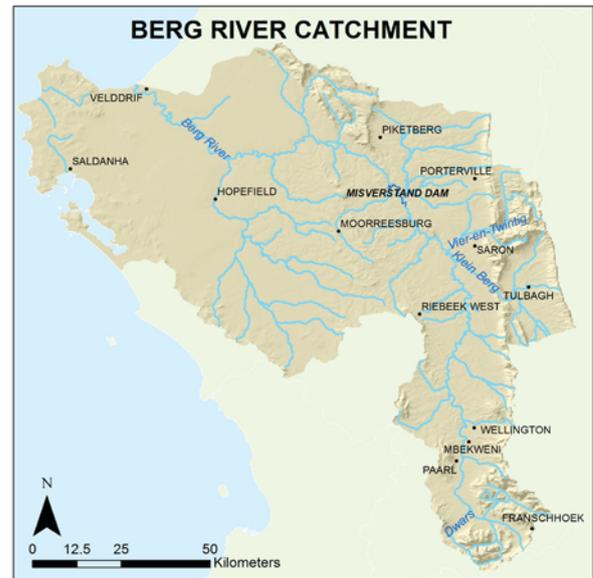
How these conditions might impact on the future water quality risks in the Berg River and the associated options for farmers to adapt to changing water quality risks were the subject of a

recent study initiated by the Western Cape Government as part of the Berg River Improvement Project (BRIP).

The study modelled three typical economic whole farm scenarios in different regions in the Berg River Catchment to evaluate the likely impacts and associated cost of different on-farm adaptation scenarios. These could then be contrasted against alternative solutions aimed at addressing the root causes of the problems in the catchment, which might be harder to achieve.

In the baseline scenario, farms were modelled to have good quality river water for irrigation and continue to place about 70% of the produce into higher priced export markets. In scenario two, farmers found it difficult to reach the irrigation water quality standards for fruit export and placed the fruit into the domestic market with lower prices and moved from table grape production to wine production. In scenario three, farmers were compelled to put a water treatment system into place for the cleansing of river water prior to irrigation. This significantly affected the capital outlay of farmers.

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The Berg River Catchment.

For scenario 2, the modelling showed that while selected red wine cultivars might fetch a better market price here due to lower yields, overall there would be a significant loss in productivity. Moreover, it was predicted that if farmers switched to wine farming to remain profitable there would be an added infrastructure cost of cellars that would need to be built.

The analyses showed that profitability fell in scenario two, where the modelled farm had to adjust to the lower domestic prices as compared with export prices. In scenario three, where farmers had found a solution to manage the water quality themselves



Inflow into the Berg River Dam was affected severely by the recent drought.



Wetlands below the Berg River Dam.

with a private water treatment facility, profitability was better than scenario two.

A number of recommendations were suggested to address the situation. These included:

- The continuous monitoring and analysis of water quality in the Berg River, both over time and along the length of the river.
- The inclusion of stormwater management, stormwater quality and timely wastewater treatment work upgrades into municipal services development plans.
- The monitoring and analysis of population and building trends that impact on water quality.
- The recording of water user association data with regular updates and collated information for each section of the river being made accessible to relevant authorities. During times of drought this will enable individual farms to put the required curtailments in place to avert a crisis in both water allocation and water quality in the river caused by reduced dilution.
- The conveying of real-time water quality data to farmers. This could be in the form of bulk short message services via cell phones. This information would be useful for an emergency, like a spill, as monitoring and laboratory analysis takes time and so cannot be completed in real time.
- The possible establishment of water treatment systems for river irrigation water of sensitive crops on farms.

Researchers believe this study has relevance for decision-making in the whole of South Africa and other areas in the world that face challenges like declining water quality, increasing urbanisation and climate change. It pointed to the importance of monitoring water quality and quantity to successfully manage water catchment areas.



Marle Kunneke, DEA&DP, Western Cape Government, monitoring in the Berg River

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