

ESTUARIES

Environmental flows and the health and value of the Berg River Estuary

While the Berg River Estuary is considered a regional natural treasure, much needs to be done to restore the ecosystem to a healthier state. Article by Jane Turpie, Annabel Horn & Wilna Kloppers.

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A bokkom producer drying fish at Bokkomlaan, Velddrif.

The Berg River Estuary, situated on the Cape West Coast of South Africa, has been rated as one of the three most important estuaries in the country. The 70 km-long estuary, located in a region known for its rugged nature and colourful fishing culture, is a national treasure featuring vast tidal mud flats and salt pans teeming with waterbirds and fringed with extensive salt marshes.

The estuary inspires artists, attracts nature lovers, sailing enthusiasts and canoeists and has captured the hearts of many anglers. It is also the lifeblood of the adjoining Weskus towns of Velddrif and Laaipek. The estuary is a nursery area for harders that are caught out to sea and then returned to the estuary banks where they are dried and sold as “*bokkoms*”. These

bokkoms are the most iconic food of the area, an invaluable part of the local cultural heritage and an important source of protein for many families.

Property values are strongly influenced by proximity to the estuary, and the towns inhabitants derive significant income from the many visitors that come to enjoy the area’s unique appeal. The salt marshes and reed marshes harbour a store of carbon, the preservation of which is important for climate regulation. Based on its many ecosystem services, the value of this natural asset was estimated to be over R5 billion. But its beauty and sense of place can never be fully captured in monetary terms.

The delivery of ecosystem goods and services from the Berg River Estuary is contingent on two broad sets of policy decisions: (1) adequate quantities and quality of freshwater inflows in relation to seasonal requirements, and (2) management of activities in and around the estuary itself. The freshwater flow requirements were gazetted as Resource Quality Objectives following the Classification of the system in 2018.

The *in situ* management of the system is guided by the Berg River Estuary Management Plan (EMP), updated in 2019.

However, there are concerns that the Berg River Estuary still faces significant threats to its biodiversity, sense of place and value. Critically, the gazetted freshwater requirements were set on the basis of historical climate conditions and may not achieve the intended C-category (on a scale from A = near-natural to F = critically modified), especially with the expected reduction in rainfall under climate change.

Results from the recent study conducted by the Western Cape Department of Environmental Affairs and Development Planning - "**Environmental flows and the health and value of the Berg River Estuary: potential trade-offs between estuary value and regional water supply under a changing climate**" - confirmed that the health of the Berg River Estuary is already in severe jeopardy. During the 2015 to 2018 drought, no freshwater from the catchment reached the estuary at all, and monitoring data collected by the Western Cape Government showed that the upper reaches of the estuary became saltier than the sea.

There was a severe dieback of reed marshes, and the estuary's heronry at Kersefontein – one of the largest on the subcontinent – was abandoned. Count data from the Coordinated Waterbird Counts (CWAC) show that there has been an exponential decline in numbers of waterbirds on the estuary since 1994, with numbers having dropped by two thirds since then. Meanwhile, water demands on the system have been rising exponentially.

The study found that the estuary's condition is now in a D-category, with only a 53% resemblance to its natural condition, with the physical health scoring 49% and the biotic health scoring 57%. The system is thus not compliant with the gazetted RQOs. Moreover, the estuary could deteriorate to an E-category within the next 20 years as a result of the combination of increasing demands on its water and reduced rainfall under climate change.

If this were allowed to happen, it would lose a third of its value. To maintain its ecological and economic value, the system needs to be in a C-class. This means not only providing better protection of its habitats and fish, but ensuring that at least the quantity and quality of water, currently provided for by law reaches the estuary. Furthermore, after updating the hydrological understanding of the system it was determined that maintaining the estuary in a C-category would require more water than previously estimated. It was estimated that 65% of natural mean annual runoff (MAR) would be needed to achieve a C category, rather than 46% as estimated previously. This could be up to 30% less if water quality issues were also addressed. Could that be justified in our increasingly water-stressed region? The estuary competes with the City of Cape Town as

well as agriculture and local industry for a share of water from its catchment. But the extra water that needs to be freed up for the estuary can be found without sacrificing the amount of water available to these users. Water availability can be bolstered through increasingly affordable new technologies such as desalination, as well as through relatively low cost measures, such as clearing thirsty alien trees from the river catchment and implementing water demand management in urban areas.

Supplying enough water to the estuary to restore it to a C category would currently cost an estimated R0.6 with to R1.2 billion in water demand and supply measures, but this would increase the ecosystem asset value by an estimated R1.5 billion. Under climate change, the Western Cape Water Supply System's water yields would be reduced by 56%, and the cost of making up the shortfall through other means (including desalination) would cost between R1.7 and R2.3 billion.

This is less than the projected loss in value of the estuary of around R3.7 billion, if nothing is done. Given that the full value of the estuary goes beyond economic outputs and can never be fully quantified, these results suggest that as much as possible should be done to free up water for the estuary to allow it to recover to and remain in a C-category, as befitting its biodiversity importance and highly-regarded sense of place.

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The estuary's vast intertidal areas and other bird habitats support waterbirds.



The Salt Pans provide important habitat for birds, and need to be restored.

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