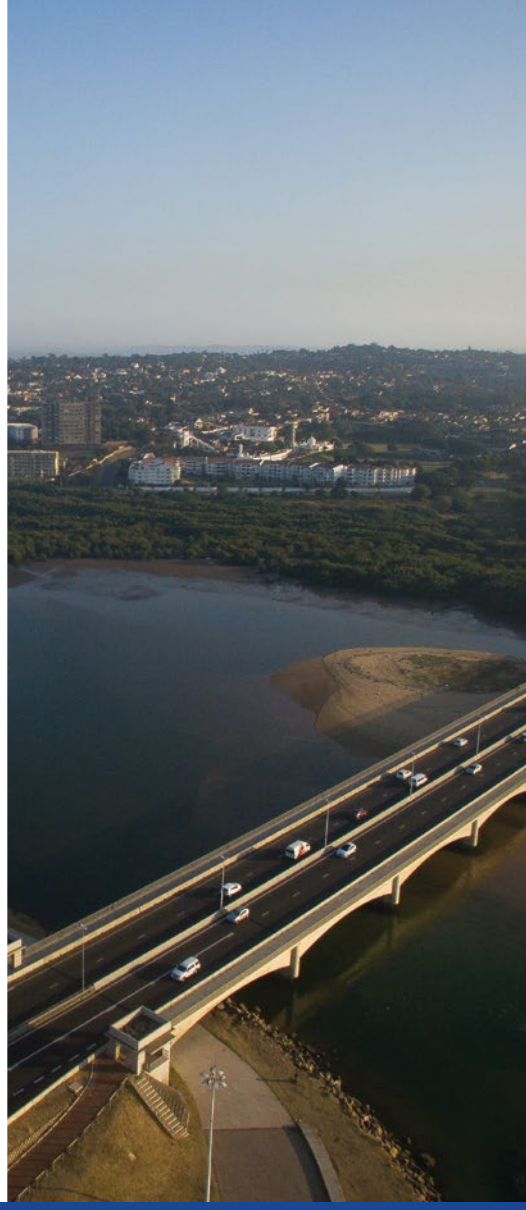


# Ecological Infrastructure for Water Security project

## Demonstrating how investing in ecological infrastructure can improve water security

Biodiversity and water are inextricably linked in our catchments, rivers, wetlands and estuaries. These vital ecosystems provide people with many water-related services, from delivering water into dams, to removing pollutants, and lessening the risk of floods and droughts. Naturally functioning ecosystems that provide benefits to people are known as ecological infrastructure. Just like built infrastructure, it is as important to manage and maintain ecological infrastructure to prevent it becoming degraded. The Department of Forestry, Fisheries and the Environment (DFFE), together with the Development Bank of Southern Africa (DBSA) and the South African National Biodiversity Institute (SANBI) have secured a grant from the Global Environment Facility (GEF) of US$7.2 million, together with considerable in country co-finance, to scale up investment in the management of ecological infrastructure in catchments. The *Ecological Infrastructure for Water Security* (EI4WS) project was initiated in 2018 to show the potential for ecological infrastructure to contribute to water security in South Africa.

forestry, fisheries & the environment
Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

SANBI
Biodiversity for Life
South African National Biodiversity Institute

gef

DBSA
DEVELOPMENT BANK OF SOUTHERN AFRICA
Building Africa's Prosperity

# Rationale for the project

## Biodiversity

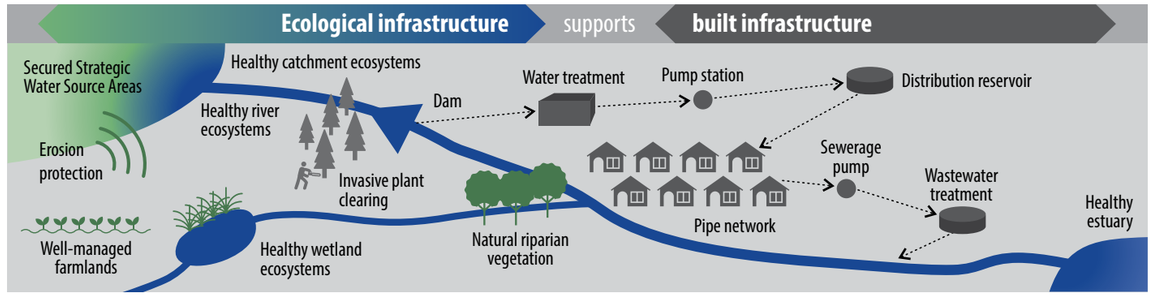
South Africa is considered one of the most biologically diverse countries in the world due to its high numbers of species and ecosystems, many of which are not found anywhere else. This diversity supports the delivery of ecosystem services that benefit the economy and livelihoods. Ecosystems such as wetlands, rivers and catchments that receive high rainfall are important to the delivery of clean and abundant water. Unfortunately, the National Biodiversity Assessment of 2018 reveals that rivers and wetlands are the most threatened and least protected ecosystems in South Africa. Almost 80% of the country's wetlands are threatened and only 6% have adequate protection.

## Water

Water is a fundamental basis for South Africa's development and a basic human right. It is essential to social stability and economic growth. However, as a water scarce country, there is a growing gap between rising demand and diminishing supply. The effects of a lack of water are evident through the severe impacts of recent droughts on people's lives and livelihoods. There is a growing recognition that South Africa is running out of options to build new engineered solutions like dams, which are also technologically demanding and costly. Instead, we need to seek new and innovative solutions that make the most of the water that we have, including harnessing ecological infrastructure to support built infrastructure.

## Ecological infrastructure

Ecological infrastructure refers to naturally functioning ecosystems that deliver benefits to people. Since biodiversity and water are closely linked in the environment, some of the most common examples of ecological infrastructure are related to water. Healthy ecological infrastructure, such as wetlands, rivers and Strategic Water Source Areas, can directly support water security by increasing run-off and water storage in soils, preventing or delaying the build-up of sediment in dams, improving water quality and reducing flood damage by storing and slowly releasing flood waters. If ecological infrastructure is degraded or lost, the flow of ecosystem services will diminish. Ecological infrastructure is the nature-based equivalent of built infrastructure, and just as with build infrastructure, it is important to manage, invest in and maintain it. Ecological infrastructure has the potential to complement and, in some cases, substitute for built infrastructure solutions for water resource management. Investing in ecological infrastructure will not only have gains for biodiversity and water, it also creates jobs and strengthens local economies.




The current approach to planning, finance and development in the water sector (including local and provincial government) does not optimise water security by properly considering ecological infrastructure. Addressing limitations in institutional capacity, resourcing and understanding will allow ecological infrastructure to make its full contribution to water security.

| CHALLENGES | SOLUTIONS |
|---|---|
| Institutional capacity constraints and poor co-ordination. | Stable institutions that work well together in partnership. |
| Lack of sustainable resourcing (human and financial). | The true price of water informs budget allocations. |
| Ecological and socio-economic data are not well integrated. | Capacity to conduct regular Natural Capital Accounting. |
| Projects fail to internalise dependencies on the environment. | Environmental dependencies included in costings. |
| Weak enforcement for impacts to water resources. | Strengthened monitoring and enforcement. |

# The Ecological Infrastructure for Water Security project

The Ecological Infrastructure for Water Security (EI4WS) project is funded by the Global Environmental Facility (GEF), and led by the South African National Biodiversity Institute (SANBI) in partnership with the Development Bank of Southern Africa (DBSA), the Department of Forestry, Fisheries and the Environment (DFFE) and the Department of Water and Sanitation (DWS) along with a range of organisations and institutions. The project started in 2018 and focuses on demonstrating how ecological infrastructure can contribute to water security in South Africa.

The overall objective of the project is

> *"to develop policy and capacity incentives for mainstreaming biodiversity and ecosystem values into national, regional and local development policy and finance in the water sector, with application demonstrated in two catchments"*

The EI4WS project is divided into three components that all work together.

## **Component 1:** Enabling environment

**1.1 Natural Capital Accounting:** The project develops natural capital accounts for water-related ecological infrastructure at national and catchment level, and tests their application in policy, planning and decision-making. Working closely with Statistics South Africa and other key role players, the project is working to strengthen capacity, data and institutional arrangements for regular production of accounts.

**1.2 Water policy:** Recognising that land and water resource management is complex, the EI4WS project seeks to strengthen the enabling environment. It works with relevant policies at the national level, such as the National Water Resource Strategy and the Water Pricing Strategy, to include ecological infrastructure and support implementation.

**1.3 Financial mechanisms:** The project explores financial mechanisms for investment in ecological infrastructure. Options include the use of existing public finance such as the Expanded Public Works Programmes and realising more funding through the Water Pricing Strategy. By working with financial organisations, it will ensure that new water infrastructure projects include in their budgets some of the costs to maintain the supporting ecological infrastructure.

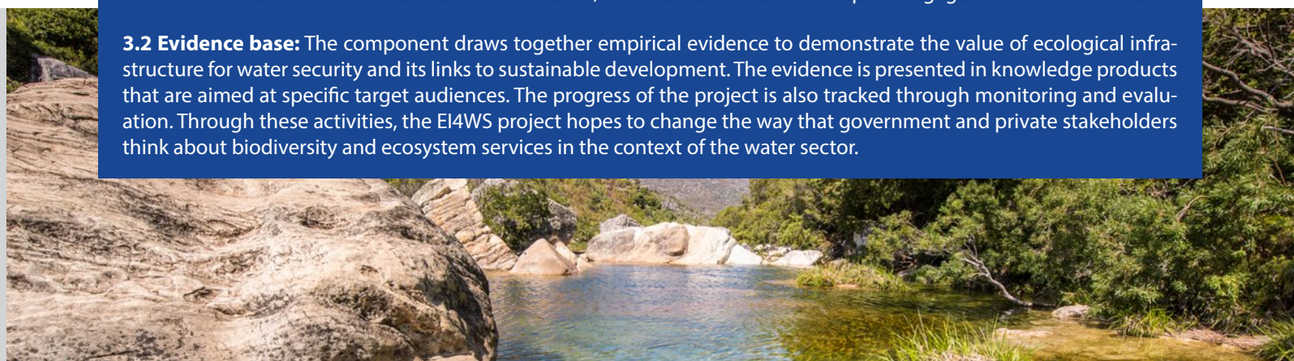
## **Component 2:** Demonstration catchments

The EI4WS project puts its theory into practice in two demonstration catchments, the **2.1 Berg-Breede Catchment** and **2.2 Greater uMngeni Catchment**. An important aspect is to strengthen institutional capacity by supporting entities responsible for water resource management, such as Catchment Management Agencies (formally established or proto CMAs) – which are central structures with a legal role in water resource management. The CMAs are supported to develop Catchment Management Strategies that bring ecological infrastructure into water resource management to show how water security can be improved. Full time Ecological Infrastructure Co-ordinators are appointed in the two demonstration catchments. Options to fund active management of ecological infrastructure are being explored in the demonstration catchments, for example for restoring riparian ecosystems or removing infestations of invasive alien plants.

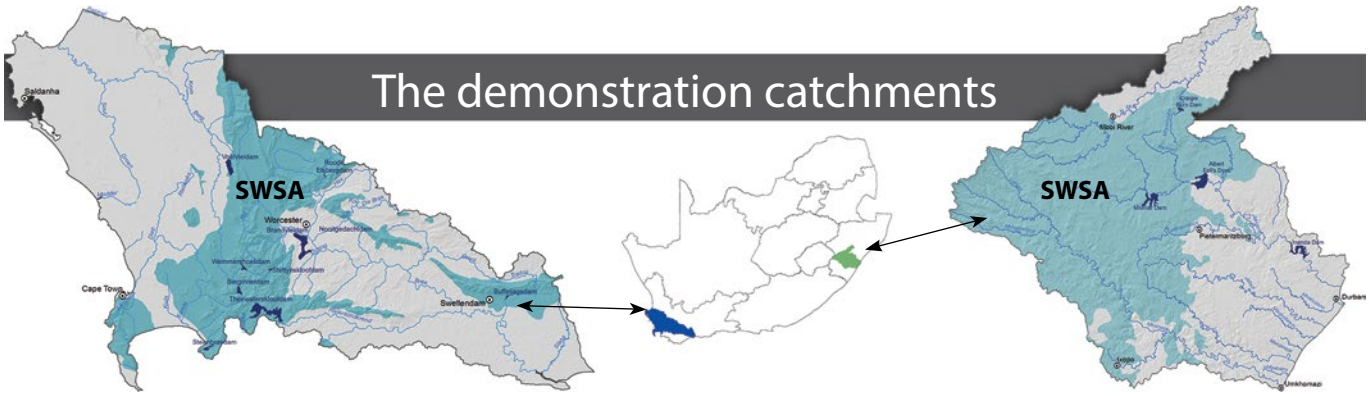
## **Component 3:** Learning and knowledge management

**3.1 Social learning:** Over the course of the EI4WS project some important practical lessons will be learned, that can be shared more broadly. The project places a strong emphasis on social learning across all components. It maps key stakeholders to understand their interests and constraints, and then facilitates and deepens engagements between them.

**3.2 Evidence base:** The component draws together empirical evidence to demonstrate the value of ecological infrastructure for water security and its links to sustainable development. The evidence is presented in knowledge products that are aimed at specific target audiences. The progress of the project is also tracked through monitoring and evaluation. Through these activities, the EI4WS project hopes to change the way that government and private stakeholders think about biodiversity and ecosystem services in the context of the water sector.



# The demonstration catchments




## Berg-Breede

The Berg-Breede system lies predominantly in the Fynbos biome, home to the Cape Floristic Region, a global biodiversity hotspot and one of the world's six floral kingdoms. The Berg-Breede system extends across four different Strategic Water Source Areas (SWSA), predominantly the Boland and Groot Winterhoek. It contains a number of Ramsar wetlands of international importance.

Although the Berg and Breede River catchments are adjacent to each other, they are hydrologically connected through inter-basin transfers. Together they form a major part of the Western Cape Water Supply System that serves 5 million people in the City of Cape Town and surrounding towns. The water also supports a significant agricultural economy, including fruit orchards, cereal crops and livestock farming. One of the biggest threats in this area is rampant infestation of invasive alien plants, which cause significant water loss from the system. A secondary issue is increasing nutrient loads from poorly maintained sewerage infrastructure and urban and agricultural runoff.

Water resources will be managed by the newly amalgamated Breede-Olifants Catchment Management Agency, which has yet to develop a Catchment Management Strategy. The Berg and Breede catchments also have an extensive network of irrigation boards, water use associations and active stakeholders.

## Greater uMngeni

The Greater uMngeni system lies predominantly in the Grasslands biome, encompassing parts of the Maputaland-Pondoland-Albany biodiversity hotspot. Already more than 30% of the catchment area has been transformed to other land uses, notably agriculture and plantation forestry. The Greater uMngeni system coincides with the Southern Drakensberg SWSA, which delivers the greatest volume of water of any SWSA.

The Greater uMngeni Water Supply System is an increasingly connected array of dams and inter-basin transfer schemes. The system is managed by Umgeni Water, the second largest water utility in South Africa. It provides water to the cities of Pietermaritzburg and Durban, all together about 5 million people. However, demand already exceeds supply. Pollution from poorly performing sewerage systems, as well as runoff from urban, agricultural, and informal settings, has led to water quality that is a risk to human health.

Although the Pongola-Mzimkhulu Proto-Catchment Management Agency is partly operational, the development of a Catchment Management Strategy is the next important step. Fortunately, in the absence of an operational CMA and a CMS, the uMngeni Ecological Infrastructure Partnership is an existing network of stakeholders including government, business, civil society and academia, that together plan and co-ordinate the protection and rehabilitation of ecological infrastructure in the catchment.

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