SANBI
Biodiversity for Life
South African National Biodiversity Institute

Strategic Water Source Areas

Vital ecological infrastructure for national water security

Strategic Water Source Areas (SWSAs) are the 10% of the land area of South Africa, Lesotho and eSwatini that supply 50% of water to these countries. They are a vital form of ecological infrastructure, feeding major dams and providing water that is essential for people and the economy, often in urban centres some distance from the SWSAs themselves. Sound science has been used to delineate SWSAs for surface water and groundwater, and to better understand their contributions and the pressures they face. Securing SWSAs will involve implementing a range of different mechanisms to protect, restore, manage and monitor them. Doing so across this small fraction of land will help to reduce risks to water security now and in the future. The benefits for water security will become even more important as South Africa adapts to the impacts of climate change.

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

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

gef global environment facility
INVESTING IN OUR PLANET

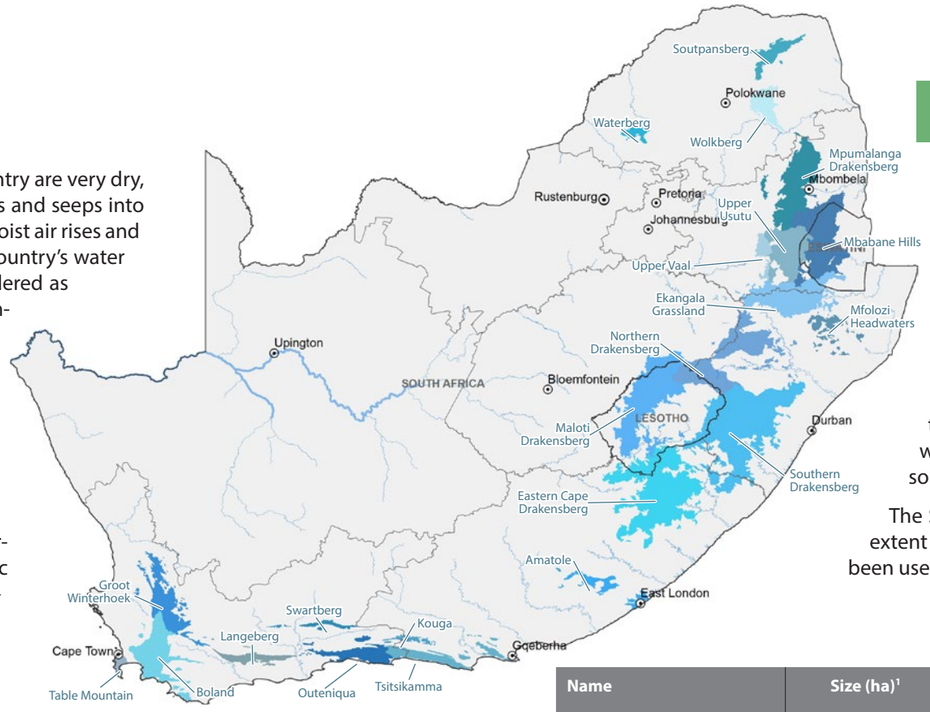
DBSA
DEVELOPMENT BANK OF SOUTHERN AFRICA
Building Africa's Prosperity

What are Strategic Water Source Areas?

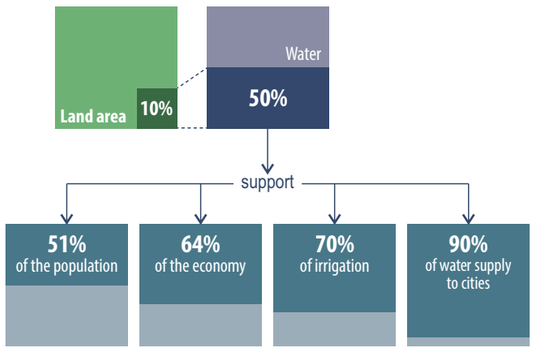
South Africa is a water-scarce country with uneven rainfall. Large parts of the country are very dry, but in some areas abundant rain falls and collects in streams, rivers and wetlands and seeps into the ground. The areas with the most water tend to be around mountains, where moist air rises and falls as rain, and steep slopes channel it into rivers. This means that a lot of the country's water comes from a very small portion of the land, and that these areas can be considered as vital ecological infrastructure. Ecological infrastructure refers to naturally functioning ecosystems that provide services and benefits for people and the economy. Since water is such a precious resource, it is important to know where these areas are located.

Over the years, South Africa's research institutions have refined the science to help identify the most important source areas for water. Using detailed rainfall and runoff data, they have been able to delineate Strategic Water Source Areas (SWSAs) for surface water with increasing accuracy.

SWSAs are formally defined as natural source areas for water that supply disproportionately large volumes of water per unit area and that are considered of strategic significance for water security from a national planning perspective, either for surface water or groundwater or both.



Strategic Water Source Areas are the 10% of the land area of South Africa, Lesotho and eSwatini that supplies 50% of the water in these countries.



A note on groundwater

In addition to the water that runs from the surface of the land into rivers and wetlands, South Africa also has important water resources underground. Groundwater is recharged from water soaking into the ground, and there are overlaps between SWSAs for groundwater and surface water. Some parts of the country, especially in drier areas, depend heavily on groundwater from aquifers. SWSAs for groundwater were first delineated in 2018 and more work is needed to better understand these resources and how to protect them. This factsheet focuses on the Strategic Water Source Areas for surface water, which have been delineated in greater detail.

Why are Strategic Water Source Areas important?

It has been shown that the water from SWSAs supports half of South Africa's population and people in cities rely on SWSAs for almost all of their water. As much as 70% of the water used to irrigate crops and pastures comes from SWSAs, making them vital for food security. From an economic perspective, two-thirds of the economy depends on SWSAs, which support as much as R907 billion of goods and services produced in major urban centres alone (2017).

The National Development Plan recognises that access to water is fundamental for human dignity, social stability and economic development. As South Africa's population and economy grows, more water is needed to sustain the farms, cities and industries that make up our society and economy. The National Water Resource Strategy highlights that many of the country's water resources are already fully allocated, and that appropriate management and protection of SWSAs as strategic national assets is essential for water security.

The water that fills many of South Africa's major dams originates from SWSAs. This means that the activities that take place in SWSAs impact the quantity and quality of water that reaches the dams. Land uses that reduce stream flow or affect water quality, such as mining, timber plantations or overgrazing, should be avoided in SWSAs, wetlands in SWSAs should rehabilitated, and invasive alien plants should be cleared. Doing so can ensure that SWSAs continue to deliver the maximum amount of clean water. In this way, securing SWSAs can also help people to adapt to the impacts of climate change, as droughts become more common.

Introducing the Strategic Water Source Areas

The 22 SWSAs for surface water are broadly spread across the mountainous areas of South Africa. Seven of the 22 are transboundary SWSAs, shared with the neighbouring countries of Lesotho and eSwatini. The SWSAs fall primarily within the Fynbos, Grasslands and Savanna biomes.

Statistics South Africa published accounts for SWSAs in 2023, which track land use and protection in these areas between 1990 and 2020. The accounts show that most of the land in SWSAs remains largely natural or semi-natural – 69% overall in 2020, but this varies substantially across the SWSAs (see graphic below). Urban areas (5%), cultivation (10%) and timber plantations (14%) are notable land uses in some of the SWSAs. In 2020, 19% of the total area of SWSAs was under formal protection. However, the extent of protection varies greatly, and some SWSAs have very little protection.

The SWSAs also differ in terms of the existing degree of pressures that they face, the extent of downstream dependence and their biodiversity importance. These factors have been used to prioritise SWSAs for the most urgent action.

Name	Size (ha)[1]	Transboundary SWSAs	Dominant biome[2]	Land cover[2]	Natural/Semi-natural (%)	Cultivated	Timber	Urban	Mines	Protected (%)[2]	Runoff (mill m3)[3]	Top priorities[4]	Existing high pressures	High downstream dependence	Institutional readiness	Biodiversity importance
11 prioritised SWSAs																
Table Mountain	47 246		Fynbos		50%					45%	127		●	○	○	○
Boland	608 054		Fynbos		69%					43%	2 182		○	○	○	○
Groot Winterhoek	518 310		Fynbos		87%					64%	1 002		○	○	○	●
Langeberg	171 527		Fynbos		78%					48%	343		○	○	○	●
Swartberg	77 983		Fynbos		99%					77%	96		○	○	○	●
Outeniqua	304 237		Fynbos		74%					41%	580		○	○	●	○
Kouga	63 099		Fynbos		99%					72%	77		○	○	○	○
Tsitsikamma	322 208		Fynbos		75%					34%	708		○	○	●	○
Amathole	200 112		Grassland		74%					3%	333		○	●	○	●
Eastern Cape Drakensberg	1 603 365	●	Grassland		78%					1%	2 673		○	○	●	○
Southern Drakensberg	2 013 693	●	Grassland		60%					14%	4 317		●	●	●	○
Northern Drakensberg	1 031 475	●	Grassland		82%					10%	2 448		○	○	○	○
Maloti Drakensberg	1 204 544	●	Grassland		74%					16%	2 232		○	●	○	○
Mfolozi Headwaters	192 049		Savanna		70%					7%	277		○	○	○	○
Enkangala Grassland	858 643	●	Grassland		72%					9%	1412		○	○	○	○
Upper Vaal	139 415		Grassland		60%					8%	122		○	○	○	○
Upper Usutu	619 675	●	Grassland		41%					8%	722		○	○	●	○
Mbabane Hills	1 000 296	●	Grassland		65%					35%	2 237		○	○	●	○
Mpumalanga Drakensberg	837 248		Grassland		51%					13%	1 929		●	●	●	●
Wolkberg	259 627		Savanna		63%					18%	506		●	●	○	○
Soutpansberg	234 682		Savanna		63%					19%	532		●	○	○	●
Waterberg	103 201		Savanna		93%					37%	99		○	○	●	○

[1]Lotter & Le Maitre (2020); [2]Stats SA (2023); [3]Le Maitre et al. (2018); [4]Prioritisation of SWSAs

Securing Strategic Water Source Areas

Given how important SWSAs are for the country, it is wise to ensure that these areas are kept in good ecological condition through a combination of protection, good management and restoration so that their contribution to water security can be maintained and enhanced. Many SWSAs are found in working landscapes with a wide range of existing land uses, and are spread across the country in different ecological and socio-economic settings. As a result, the work to secure SWSAs calls for strong co-operation, with different sectors working together. A number of mechanisms for securing SWSAs have been identified by government in collaboration with partners, and different combinations of these will be suitable depending on the specific context in a particular SWSA:

'Securing' means…

"The progressive, collaborative and adaptive implementation of a range of mechanisms that aim to enhance the ability of SWSAs to deliver the maximum quantity of good quality fresh water for people, economic activity and ecosystems, both within and downstream, in a way that helps assure efficient, equitable and sustainable water supply and access to water for all." (DFFE, 2022)

Legal: Explore options for restrictions on incompatible land uses in SWSAs in terms of water and environmental laws.	**Spatial planning:** Integrate SWSAs into spatial plans from national to municipal levels.	**Land management:** Encourage production sectors to practice good management for land and water.	**Regulation:** Consider SWSAs during Environmental Impact Assessments and Water Use Licencing to ensure compatible activities.	
	**Governance:** Improve governance in SWSAs by strengthening Catchment Management Agencies and co-operative governance.		**Restoration:** Restore land, rivers and wetlands in poor ecological condition, including by removing invasive alien plants.	**Partnerships:** Maintain partnership platforms in catchments that include government, civil society, communities and the private sector.
Compliance: Enforce penalties for illegal land and water use activities that impact SWSAs.	**Protection:** Declare parts of SWSAs in terms of the Protected Areas Act, including through biodiversity stewardship.	**Research:** Undertake research that supports better understanding of SWSAs and the returns on investment in SWSAs.	**Monitoring:** Monitor and evaluate the outcomes of efforts to secure SWSAs, to inform adaptive management.	
	**Water use efficiency:** Encourage water users to adopt water saving practices and the recycling of wastewater.	**Water resources:** Use mechanisms under water laws to set strict management classes and water quality objectives.	**Financing:** Explore water charges and investment opportunities to realise financial resources to secure SWSAs.	**Awareness:** Increase awareness of SWSAs by targeted communications for policy makers and the public.

For more information:

Statistics South Africa. 2023. Natural Capital Series 3: Accounts for Strategic Water Source Areas, 1990 to 2020. Produced in collaboration with the South African National Biodiversity Institute and the Department of Forestry, Fisheries and the Environment. Statistics South Africa, Pretoria.

Department of Forestry Fisheries and the Environment (DFFE). 2023. Measures to secure Strategic Water Source Areas: Towards securing the Strategic Water Source Areas for Surface Water. A report by DFFE, the Department of Water and Sanitation, the South African National Biodiversity Institute, and the World Wide Fund for Nature.

Le Maitre, D.C., Seyler, H., Holland, M., Smith-Adao, L., Nel, J.L., Maherry, A. and Witthüser, K. 2018. Identification, delineation and importance of the Strategic Water Source Areas of South Africa, Lesotho and Swaziland for surface water and groundwater. Report No. TT 743/1/18, Water Research Commission, Pretoria.

Lötter, M.C. & Le Maitre, D. (2021) Fine-scale delineation of Strategic Water Source Areas for surface water in South Africa using Empirical Bayesian Kriging Regression Prediction: Technical report. Prepared for the South African National Biodiversity Institute (SANBI), Pretoria.

Citation: SANBI. 2023. Strategic Water Source Areas: Vital ecological infrastructure for national water security. SANBI Factsheet Series, South African National Biodiversity Institute, Pretoria.

Photo credits: H. Beukes, D. Cindi, B. Janecke, D. Oosthuizen, Shutterstock, M. Trimble. **Layout:** SANBI Graphics & Editing, 2023