DEVELOPMENT, HEALTH AND WELL-BEING DEPEND ON WATER

Why we must secure our water source areas now

THE BACKDROP

South Africa is a water-scarce country with uneven distribution of rainfall. Our mean annual rainfall is 490mm. This is only half the global average. Further, high evaporation rates result in less than 9% of the rainfall ending up in our rivers.

South Africa made considerable investments into engineered infrastructure (including dams and inter-basin transfer schemes) in the 1930s, 70s and 80s. This network supplies water to drier parts of the country and our urban centres. The cost to maintain and upgrade this critical infrastructure is estimated at R680 billion over the next decade. But water does not come from pipes and dams.

Most of our water comes from precious areas (in the highest parts of our catchments) that receive the highest rainfall. These are South Africa's water source areas - the "crown jewels" - and the headwaters from which our water originates.

South Africa's water source areas produce disproportionately greater volumes of water in relation to their size. Only 8% of our land provides us with 50% of our surface run-off (water in wetlands, streams and rivers).

Thus, our water supply is dependent on the health of the natural systems (ecological infrastructure) that underpins our built infrastructure.

Our water source areas

South Africa has 22 water source areas, situated in five provinces. Our water source areas are the source of most of our major river systems. Together, our water source areas form the heart of our water supply, with our major rivers being the blood vessels which sustain our country.

Approximately 63% of our water source areas are in natural condition. Cultivation is the most prominent land-use in water sources areas (15%), followed by plantations (13%). Although prospecting and mining rights coincide with less than 1% of our water source areas, there is a considerable overlap (70%) of mining activities in Mpumulanga water source areas.

Water source areas are working landscapes, where human activities are part of, and sometimes integral to, their functioning. Nevertheless, our water source areas are confronted with a multiplicity of threats including cultivation, urban development, alien invasive vegetation, overgrazing, climate change, fires and mining. Arguably, land use degradation stemming from cultivation, plantations and over-grazing as well as mining pose the greatest threats to our water source areas.

Our water source areas supply water to South Africa's largest urban centres and support downstream economies and ecosystems. Our national economy depends on these areas.

Benefit flows from water source areas

On a national scale, our water source areas support approximately:

- 60% of South Africa's population.
- 67% of our national economic activity.
- Supplies approximately 70% of irrigation water.

Of our major urban centres:

- The City of Cape Town receives 98.8% of its water from the Boland Mountains and Table Mountain water source areas.
- About 65.0% of the water supplied to the city region of Gauteng (Johannesburg and Pretoria) is derived from the Maloti Drakensberg, Northern Drakensberg, Upper Vaal, Enkangala and Upper Usutu water source areas.
- eThekwini and Pietermaritzburg receive 97.8% of their water from the Southern Drakensberg water source area.
- Bloemfontein derives 70% of its water from the Maloti Drakensberg water source area.

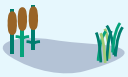
waterbodies
2%

degradation
3%

urban built-up
4%

plantations
13%

cultivation
15%

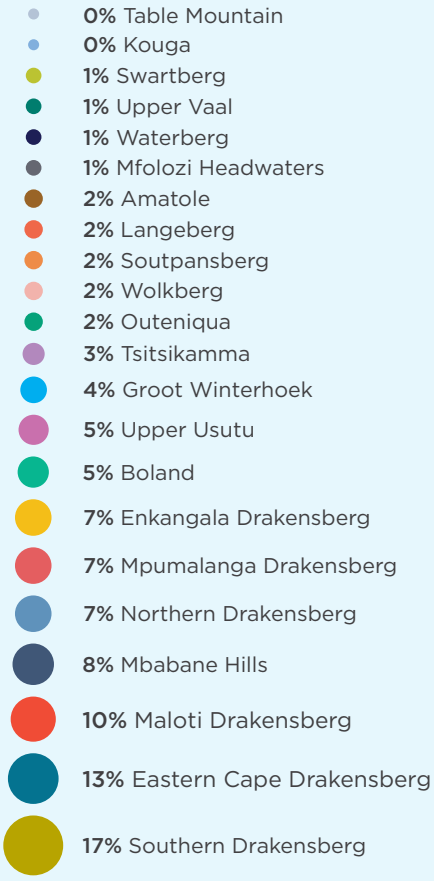


natural
63%

LAND-USE ACROSS WATER SOURCE AREAS

STATE OF PROTECTION

The National Environmental Management: Protected Areas Act, 2000 (NEMPAA) provides various categories of protected areas including national parks, special nature reserves, nature reserves, and protected environments. It also recognises the protection declared for World Heritage Sites, Mountain Catchment Areas and Forest Protected Areas in terms of other legislation. However, currently only 13% of our water source areas are under some level of formal protection in terms of NEMPAA. Although there is a national plan to expand protected area coverage by a further 10.8 million hectares by 2029, this will only contribute marginally to increased protection of our water source areas. Due to low levels and uneven distribution of protection, our water source areas are highly vulnerable to inappropriate development.



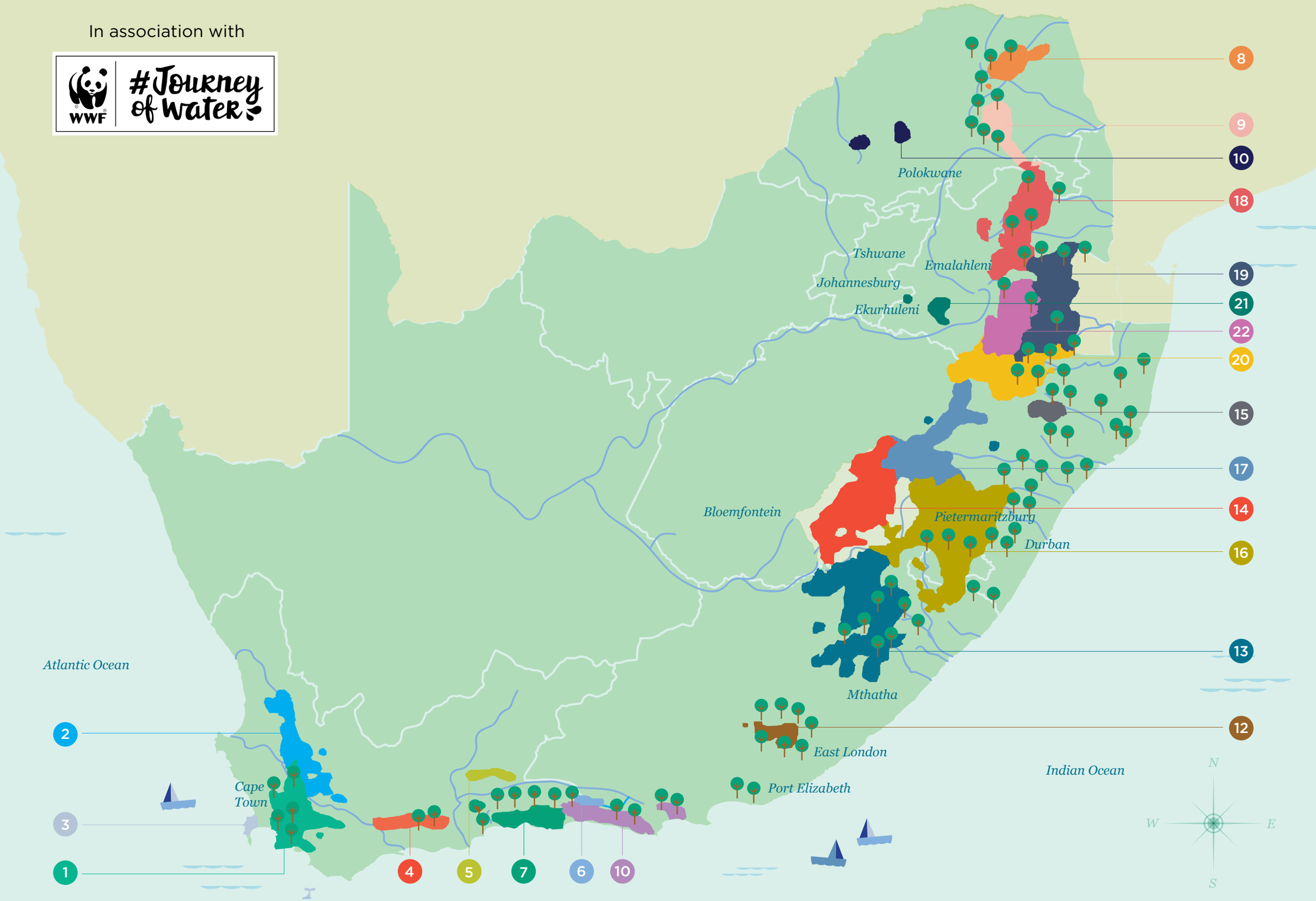
SIZE OF EACH WSA AS % OF ENTIRE WSA NETWORK

DID YOU KNOW?

- 37% of water is lost once it enters our water distribution systems.
- 98% of our available reliable water has already been allocated.
- 18% of South Africans rely on communal taps, whilst another 9% rely directly on springs, rivers and wetlands.
- 60% of our river ecosystems are threatened and 23% are critically endangered.
- 65% of our wetlands are threatened and 48% are critically endangered.
- There will be a 17% deficit between water supply and demand by 2030.

In association with

WWF #Journey of water



MAP INTRODUCTION

South Africa has 22 water source areas spread across five provinces (KwaZulu-Natal, Mpumalanga, Western Cape, Eastern Cape and Limpopo). The total size of our water source areas is 12.32 million hectares. A number of these areas extend and are shared with Lesotho and Swaziland; approximately 1.91 million hectares in Lesotho and 0.93 million hectares in Swaziland.

The total volume of water supplied by these areas per year is approximately 2 457 million cubic metres. The greatest volume of recharge is generated by the Southern Drakensberg, followed by the Eastern Cape Drakensberg and the Boland Mountains.

WATER SOURCE AREAS IN EACH PROVINCE

The following water source areas are found in the following provinces:

KwaZulu-Natal

Southern Drakensberg
Northern Drakensberg
Umfolozi Headwaters

Mpumalanga

Mpumalanga Drakensberg
Enkangala Drakensberg
Mbabane Hills
Upper Vaal
Upper Usuthu

Western Cape

Table Mountain
Boland Mountains
Langeberg
Swartberg
Outeniqua
Groot Winterhoek
Kouga

Eastern Cape

Eastern Cape Drakensberg
Maloti Drakensberg
Tsitsikamma
Amatole

Limpopo

Wolkberg
Waterberg
Soutpansberg

GENERAL INFORMATION

Below is a map key to help you link each water source area to its geographical location on the map foldout on your left. Keep the map open as you discover some interesting facts and statistics related to each water source area.

On the following page you will find a THREATS section followed by a LEGAL TOOLBOX section, which outlines a range of potential legal tools and measures that are available to protect our water source areas. As you page through the booklet, consider the types of legal tools that may be well suited for each water source area. Remember to consider the protection status, particular threats and existing land-uses of each water source area, so that your choice of legal protection would be effective, relevant and mitigate potential detrimental impacts.

MAP KEY OF ALL WATER SOURCE AREAS

South Africa	10 Tsitsikamma
Countries outside of South Africa	11 Waterberg
Plantations	12 Amatole
River	13 Eastern Cape Drakensberg
1 Boland Mountains	14 Maloti Drakensberg
2 Groot Winterhoek	15 Mfolozi Headwaters
3 Table Mountain	16 Southern Drakensberg
4 Langeberg	17 Northern Drakensberg
5 Swartberg	18 Mpumalanga Drakensberg
6 Kouga	19 Mbanane Hills
7 Outeniqua	20 Enkangala Drakensberg
8 Soutpansberg	21 Upper Vaal
9 Wolkberg	22 Upper Usutu

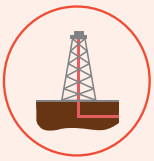
THREATS

COAL AND GOLD MINING

Coal and gold mining causes acid mine drainage (AMD) as water reacts with sulphides in the ore and rock, making sulphuric acid. Acid dissolves toxic metals more easily than neutral water, and these metals damage the health of people, livestock and fish in the rivers. Acidic water can generally not be used to irrigate crops and runs the risk of contaminating ground water.

LEAKING WASTE WATER TREATMENT

Leaking, spillage or flooding of waste water can result in completely untreated sewage entering rivers, streams and dams. This contamination has significant negative impacts on water quality, biodiversity and human health. Notably, waste water contamination in our water source areas can enhance the spread of diseases such as e-coli, diarrhea and hepatitis A.



FRACKING

Hydraulic fracturing or 'fracking' associated with natural and shale gas extraction poses significant threats to our water source areas. Potential negative impacts on water quality include stress on surface water and groundwater supplies from the withdrawal of large volumes of water, contamination of ground and surface water resulting from spills or faulty well construction and adverse impacts from discharges into surface waters or disposal into underground injection wells.

CLIMATE CHANGE

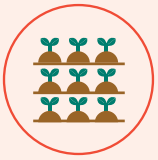
Climate change is hitting South Africa harder than countries in the north and is being felt first through water impacts. Higher temperatures will mean that plants need more water, evaporation rates increase and algal blooms are more likely to make the water in dams unusable.

LAND DEGRADATION

Land degradation happens when land is over-used, over-grazed and poorly managed. Water runoff increases, transporting nutrients and soil from poorly managed crop and range lands into rivers and wetlands. Degraded land cannot recover easily from inevitable droughts and floods.

LARGE-SCALE PLANTATIONS

Large-scale plantations of pine and wattle use much more water than natural vegetation cover and reduce stream flows. Where plantations are poorly managed they can further reduce available water to other users and are a source of invasive plants.



LARGE-SCALE CULTIVATION

Irrigation is South Africa's largest water user and reduces water availability to others. Large-scale cultivation of mono-crops such as sugarcane can reduce the amount of water available in rivers, wetlands and aquifers. These crops use more water than the natural vegetation and accordingly may reduce stream flow.

FIRES

Fires are a part of the natural life cycle. Today we are seeing a very high frequency of fires, which doesn't allow enough time for natural ecosystems to recover; and results in soil erosion which then clogs up rivers and dams.

ALIEN PLANTS

Alien plants (black wattle, pine) invade landscapes, outcompeting natural plants. They reduce the natural biodiversity, degrade ecosystems and use more water than indigenous plants. Roughly 3% of South Africa's available water resources are lost to alien plants.

BENEFITS AND OUTCOMES

Benefits and outcomes of effective management and protection of our water source areas

Maintenance, restoration and rehabilitation of ecosystems, ecological processes and biodiversity are the most cost-effective ways of guaranteeing the water quantity and quality flowing from our water source areas. Equally, our water source areas are multi-functional landscapes that sustain and support important economic activities, which may correspondingly impact on water quantity and quality. Management of our water source areas thus requires a balance between protecting them and the ecosystem services they provide and continued human activities.

A set of principles and management outcomes provide a means to achieve this balance effectively and sustainably.

These include:

- Maintaining healthy functioning riparian zones and wetlands to regulate water quantity and quality, including protecting them from adjacent land-uses with suitable buffer strips.
- Ensuring sound agricultural and soil management and conservation that supports the water cycle and minimises adverse impacts.
- Avoiding, prohibiting or regulating activities that reduce stream flow through water abstraction, such as water use in mining and irrigated cultivation or by decreasing streamflows, such as commercial forestry plantations.
- Avoiding activities that reduce infiltration including vegetation and soil degradation, hard surfacing or unwise cultivation practices.
- Ensuring that activities that adversely affect water quality such as mining and discharges from untreated waste water are effectively managed and that the impacts of proposed new developments are properly assessed, avoided, mitigated or where necessary, prohibited.
- Clearing invasive alien plants to protect ecosystem structure and function and enhance stream flows.
- Restoring the hydrological functioning of degraded landscapes.

Significant benefits would arise from establishing legal mechanism and tools and ensuring proper management of our water source areas. These include:

Increased supply: Improved forestry management, clearing of alien invasive vegetation and sustainable management of irrigated agriculture will increase the amount of water coming out of our water source areas.

Improved quality: Restricting and prohibiting coal mining (and other mining), improving the maintenance and management of waste water treatment works and ensuring better management of agricultural effluents and runoffs will improve the water quality coming out of our water source areas.

Improved climate resilience: Proper management of water source areas will reduce impacts of floods (by inter alia softening catchments) and reduce impacts of droughts (by inter alia restoring and protecting wetlands and groundwater).

Decrease costs: Water treatment costs increase when poor quality water enters water treatment facilities. The maintenance costs related to water infrastructure such as dams and pipes is higher when there is high silt content as a result of erosion.

Sustainable job creation: There is a pressing need to support rural economies and provide sustainable jobs to the rural poor. The 'Working For' programmes have proven that landscape management can provide a sustainable source of rural employment.

Legal protection of our water source areas would provide the impetus for effective landscape management of these areas, which will in turn provide opportunities for small and medium sized enterprises to service this need. Securing our water source areas will thus help to create sustainable, regenerative rural jobs and help to diversify rural economies.

Sustaining communities: Approximately 9% of South Africans live directly off water from rivers and springs. By protecting water source areas we ensure that these communities receive good quality water. Land degradation and soil erosion is not only a threat to water quality, but also a threat to rural livelihoods. Poor management of our water source areas thus reduces the capacity of land to support rural farmers and herders. Conversely, proper protection and management of our water source areas supports rural and urban livelihoods.

Protect biodiversity: Managing and controlling alien invasive vegetation, restoring wetland and river ecosystems and reducing erosion will help to preserve South Africa's incredible biodiversity.

BENEFITS OF PROTECTING OUR WATER SOURCE AREAS

INCREASED SUPPLY

IMPROVED QUALITY

DECREASED COST

DECREASED RISK

LEGAL TOOLBOX

Which of these legal tools and measures are suitable for protecting each water source area?

1 SECTION 24(2A), NATIONAL ENVIRONMENTAL MANAGEMENT ACT

In terms of this section, the Minister of Environmental Affairs may restrict or prohibit environmental authorities from granting environmental authorisation for specified activities such as mining, forestry and agriculture in specified geographical areas when such restriction or prohibition is necessary to ensure the protection of the environment, the conservation of resources or sustainable development.

2 WATER AND SANITATION DRAFT BILL

The National Water Act currently does not have a tool that allows the Minister of Water & Sanitation to protect an area that is important for water security and supply. The Department of Water and Sanitation is in the process of preparing a draft bill for water and sanitation in South Africa. If the draft bill is passed by Parliament, it will replace the National Water Act. This presents an opportunity for law-makers to create legal provisions for the protection of water source areas.

3 SECTION 49, MINERAL & PETROLEUM RESOURCES DEVELOPMENT ACT

This section authorises the Minister of Mineral Resources to restrict or prohibit the granting of rights for mining, prospecting, exploration or production operations in specified geographical locations for a specified period of time. One of the factors the Minister must consider when exercising his or her power in terms of this section is the need to ensure that the development of the nation's mineral or petroleum resources is sustainable.

4 CHAPTER 4 OF THE BIODIVERSITY ACT

The Minister of Environmental Affairs may declare specified ecosystems as ecosystems that are threatened or in need of protection. Specified activities may not be conducted in such ecosystems without environmental authorisation from a competent authority.

5 PROTECTED AREAS ACT

The Minister of Environmental Affairs, or an MEC responsible for environmental affairs in a province, may declare a specified geographical area as a protected area in terms of this Act. Protected areas include national parks, special nature reserves, nature reserves and protected environments. Varying degrees of protection are afforded to the different types of protected areas. Prospecting, mining, exploration and production operations are prohibited in most protected areas. Each protected area must have a management plan. A management plan may limit or prohibit specified activities in a protected area.

6 CHAPTER 3 OF THE NATIONAL WATER ACT

The National Water Act compels the Minister of Water and Sanitation to set resource quality objectives for every significant water resource in South Africa. The Minister is also obliged to determine the reserve for every significant water resource. The reserve is the minimum quality and quantity of water necessary to meet basic human needs and protect aquatic ecosystems. The reserve and the resource quality objectives may not be exceeded.

7 SPATIAL PLANNING AND LAND USE MANAGEMENT ACT

This Act deals with land use planning by municipalities. It makes provision for principles that guide municipal land use planning decisions. It also regulates the content and legal effect of spatial development frameworks and land use schemes. In terms of the Act, municipal land use planning decisions may not be inconsistent with applicable spatial development frameworks. It also provides that land may not be used for purposes other than the purposes for which it is zoned in terms of an applicable land use scheme.

1

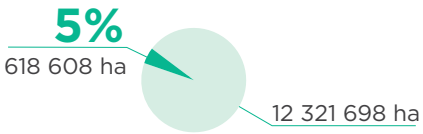
BOLAND MOUNTAINS

FACTS
IN NUMBERS

Situated to the northeast of Cape Town, the Boland Mountains water source area is responsible for supplying the City of Cape Town with 97.1% of its water. It also provides water to Worcester, Robertson, Swellendam, Overberg and the Winelands Municipality.

SIZE: 618 608 ha

Size of this water source area as % of entire water source area network



MAIN RIVERS

The Berg, Breede and Riviersonderend rivers are the main rivers which flow from the Boland Mountains water source area.

DID YOU KNOW?

- The Breede River is the largest river in the Western Cape and is a key resource for many economic activities in the region.
- The Boland Mountains water source area supports over 4 million people.
- This water source area is South Africa's frog hotspot and is home to a large variety of frog species, including mossy, marsh, and micro frogs.
- The "rooibos tea" colour of the river flowing from this water source area is caused by tannins that has leached from fynbos found on the mountains.

THREATS

- Large scale plantations
- Land degradation
- Climate change
- Alien invasive vegetation
- Fires

LAND USE (IN %)

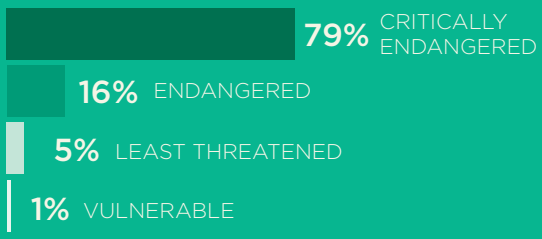
mining **0.03%**	wetlands **2.28%**	urban **2.71%**	cultivation (irrigated) **12.90%**
waterbodies **2.04%**	plantation/woodlot **2.28%**	cultivation (dryland) **8.19%**	natural **69.78%**

68% PROTECTED

5 15 8 10 2

Approximately 68% of this water source area is under legal protection. This includes five mountain catchment areas, fifteen forest protected areas, eight provincial nature reserves and ten local nature reserves. The Hottentots Holland Nature Reserve and Jonkershoek Nature Reserve are within this water source area.

THREAT STATUS OF BOLAND MOUNTAINS WETLAND ECOSYSTEMS



APPROXIMATELY **70%** IN NATURAL CONDITION

Approximately 70% of this water source is still in its natural condition. However, approximately 79% of the wetland ecosystems found within this water source are critically endangered and 12% is endangered.

MANAGEMENT TOOLS FOR ALIEN INVASIVE VEGETATION

In response to the most severe drought in 30 years, the City of Cape Town recently implemented level five water restrictions. This water source area supplies the City with 97.1% of its water. What legal mechanisms could be used to ensure the optimal functioning of this water source area in light of threats such as alien invasive vegetation and large-scale plantations?

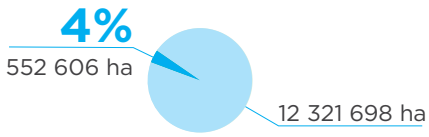
GROOT WINTERHOEK

FACTS
IN NUMBERS

Forming part of the Cape Fold Belt, the Grootwinterhoek water source area supplies water to Atlantis, Ceres and Saldanha.

SIZE: 552 606 ha

Size of this water source area as % of entire water source area network



DID YOU KNOW?

- The Doring River, the longest free-flowing river in the Western Cape (200 km), flows from the Groot Winterhoek water source area.
- Some of South Africa's greatest San rock art is found here.
- This water source area is home to the Cape Mountain Leopard.

MAIN RIVERS

The Olifants, Klein Berg, and Doring rivers flow from Groot Winterhoek water source area.

THREATS

Land degradation

Climate change

Alien invasive vegetation

Fires

LAND USE (IN %)

mining
0.01%

urban
0.25%

plantation/woodlot
0.27%

waterbodies
0.90%

wetlands
1.46%

cultivation (irrigated)
6.41%

cultivation (dryland)
7.71%

natural
82.99%

72%
PROTECTED

5 7 2 2

The Groot Winterhoek water source area is well protected (72%). This includes five mountain catchment areas, seven forest protected areas, two provincial nature reserves and two local nature reserves. The Groot Winterhoek Wilderness Area and Cederberg Wilderness Area are found within this water source area. Further, two Ramsar Sites (Langebaan and Verlorenvlei) are downstream this water source area.

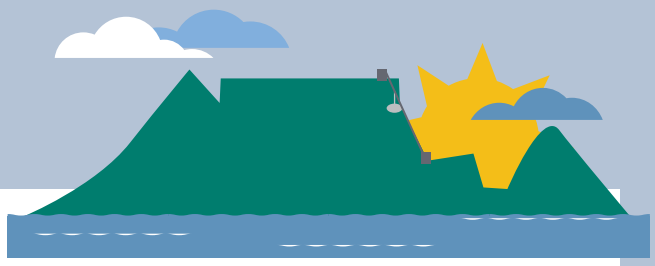
MORE THAN 50%
OF ITS WETLAND ECOSYSTEMS
ARE CRITICALLY
ENDANGERED

Approximately 83% of this water source is still in its natural condition. However, more than half of its wetland ecosystems (56%) are critically endangered.

LEGAL MECHANISMS TO PROTECT WETLAND ECOSYSTEMS

The Groot Winterhoek is well protected and largely in natural condition. Nevertheless, the threat status of its wetland ecosystems are high. What legal or management mechanisms can be used to protect and mitigate threats to its wetland ecosystems?

TABLE MOUNTAIN



FACTS IN NUMBERS

There are currently seven dams in and around Cape Town supplying water to the metro. However, the Table Mountain water source area only supplies the City with 1.6% of its water.

SIZE: 45 943 ha

Spanning only 45 943 hectares, Table Mountain water source area is the smallest of South Africa's 22 water source areas.

MAIN RIVERS

The Hout and Diep rivers are the main rivers which flow from Table Mountain water source area.

DID YOU KNOW?

- *CAMISSA*, meaning 'the place of sweet waters' is the ancient Khoi name for Cape Town.
- Cape Town was established as a port city and a trade route centuries ago because of the availability of clean drinking water from Table Mountain.
- The Table Mountain National Park is home to a whopping 8 200 plant species (80% fynbos).
- The Table Mountain National Park receives approximately 4.2 million visitors each year and is the most visited of all SA's National Parks. Over a period of six years, it contributed R377 million to SA's Gross Domestic Product.

THREATS

Climate change

Alien invasive vegetation

Fires

LAND USE (IN %)

mining **0.71%**	plantation/woodlot **1.97%**	wetlands **1.94%**	cultivation (dryland) **1.3%**
urban **45,48%**	waterbodies **1,82%**	cultivation (irrigated) **0,97%**	natural **45,81%**

39%

PROTECTED

Despite its iconic significance, only 39% of the Table Mountain water source area is protected. This includes the Table Mountain National Park and three local nature reserves.

ONLY 45%

OF THIS WATER SOURCE IS IN ITS **NATURAL**

CONDITION

Less than half of this water source remains in its natural condition. Further, 40% of river ecosystems and a shocking 75% of wetland ecosystems within the Table Mountain water source area are critically endangered.

LAND-USE PLANNING TOOLS TO SECURE AN URBAN NATURAL WONDER

The Table Mountain water source area is an iconic natural wonder and a global tourism hot-spot. Nevertheless, urban development covers 45% of this water source area and only 39% is legally protected. With this in mind, consider potential municipal spatial and land-use planning tools that could protect this water source area.

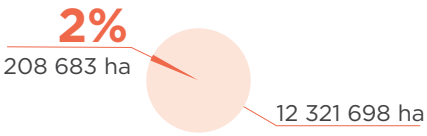
LANGEBERG

FACTS
IN NUMBERS

Stretching from the east to the west of the Western Cape, the Langeberg water source area supplies water to Swellendam, Barrydale and Heidelberg.

SIZE: 208 683 ha

Size of this water source area as % of entire water source area network



MAIN RIVERS

The Breede, Gouritz, Doring, Duiwenhoks, and Naroo rivers flow from the Langeberg water source area.

DID YOU KNOW?

- The Langeberg mountains were home to the Khoi and San, evident by the rock art left behind.
- In the Langeberg Mountains heated groundwater, driven up from several thousand meters below the earth's surface, bubbles out of the ground as hot springs. These are found at Calitzdorp, Montagu and Warmwaterberg.
- A Ramsar Site, De Hoop Vlei (within De Hoop Nature Reserve) falls within the Langeberg water source area.

THREATS

Climate change

Alien invasive vegetation

Fires

LAND USE (IN %)

mining
0.01%

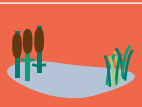
urban
0.35%

waterbodies
0.29%

cultivation (irrigated)
1.93%

plantation/woodlot
2.32%

cultivation (dryland)
19.42%



wetlands
2.51%

natural
73.18%

60%

PROTECTED

3 9 1 3

Approximately 60% of the Langeberg Mountains water source area is protected. This includes one national park, three mountain catchment areas, nine forest protected areas and three provincial nature reserves. The Bontebok National Park, Grootvaderbosch Nature Reserve and Boosmansbos Wilderness Area are within this water source area.

APPROXIMATELY **73%**

IN NATURAL CONDITION

Approximately 73% of this water source remains in natural condition. However, 68% of its river ecosystems are critically endangered.

LEGAL MECHANISMS TO PROTECT RIVER ECOSYSTEMS

Langeberg is currently well protected (60%). Nevertheless 68% of its river ecosystems are critically endangered. Importantly, approximately 20% of this area is under cultivation. What legal or management mechanisms can protect and restore these river ecosystems, in landscapes comprised of a mix of private and public land ownership?

SWARTBERG

FACTS
IN NUMBERS

Stretching from the east to west along the Klein Karoo, the Swartberg water source area supplies water to Beaufort West and Oudtshoorn.

SIZE: 71 502 ha

Spanning only 71 502 hectares, Swatberg is a relatively small water source area.

MAIN RIVERS

The Gamka, Gouritz, Sand, Dorp, and Olifants rivers flow from the Swartberg water source area.

DID YOU KNOW?

- The Swartberg Nature Reserve was declared a World Heritage Site in 2004.
- The Klein Karoo forms part of the Succulent Karoo biome, the most diverse arid biome in the world.
- The rivers from the Swartberg drain into the Karoo and the Klein Karoo. Towns in the Karoo rely on river water stored in dams as well as groundwater for their water supply.

THREATS

- Climate change
- Alien invasive vegetation
- Fires
- Fracking

LAND USE (IN %)

mining **0.00%**	plantation/woodlot **0.00%**	cultivation (irrigated) **0.11%**	cultivation (dryland) **4.11%**
urban **0.00%**	waterbodies **0.09%**	wetlands **0.46%**	natural **95.22%**

78%

PROTECTED AREAS

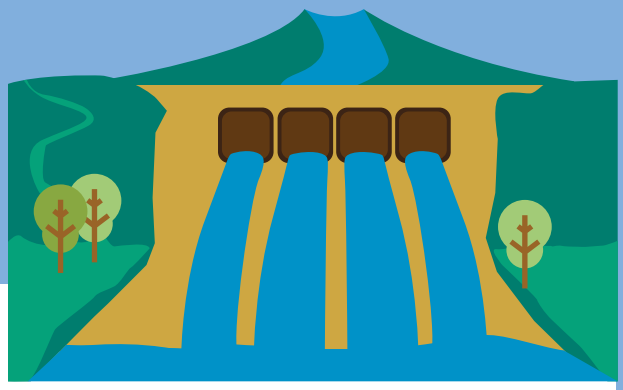
Approximately 78% of Swartberg is formally protected. This includes one mountain catchment area, two forest protected areas and one provincial nature reserve. Gamkaspoort Nature Reserve and Gamkaskloof Nature Reserve are found within this water source area.

The Swartberg water source area is almost entirely in natural condition (95%). Nevertheless, its wetland ecosystems are highly threatened. Approximately 70% of its wetland ecosystems are critically endangered and 11% are vulnerable.

MORATORIUM ON HYDRAULIC FRACTURING

Planned fracking activities are a major risk to this areas ground water supply. In 2014 the Department of Mineral Resources established a moratorium on fracking using Section 49 of the Mineral and Petroleum Resources Development Act (see LEGAL TOOLBOX section). Keep this mechanism in mind and consider whether it is suitable for protecting any of our other water source areas.

KOUGA



FACTS
IN NUMBERS

In the eastern parts of the Western Cape, the Kouga water source area supplies Port Elizabeth and Uitenhage with water.

SIZE: 50 796 ha

Covering only 50 796 hectares of land, Kouga is the second smallest of South Africa's water source areas.

MAIN RIVERS

The Kouga, Gamtoos-Gouritz, Olifants and Baviaanskloof rivers flow from this water source area.

DID YOU KNOW?

- The Kouga water source area has the highest proportion of natural vegetation (98.58%) of all of South Africa's water source areas.
- It is also the best protected water source area - 75% is protected in a nature reserve or conservancy.

THREATS

- Climate change
- Alien invasive vegetation
- Fires

LAND USE (IN %)

mining **0.00%**	urban **0.00%**
waterbodies **0.00%**	plantation/woodlot **0.00%**
cultivation (irrigated) **0.02%**	cultivation (dryland) **0.10%**
wetlands **1.29%**	natural **98.58%**

77% PROTECTED

The Kouga water source area is strongly protected (77%). The Garden Route National Park, Addo Elephant Park and the Bavaainskloof Nature Reserve fall within this water source area.

98.58% IN NATURAL CONDITION

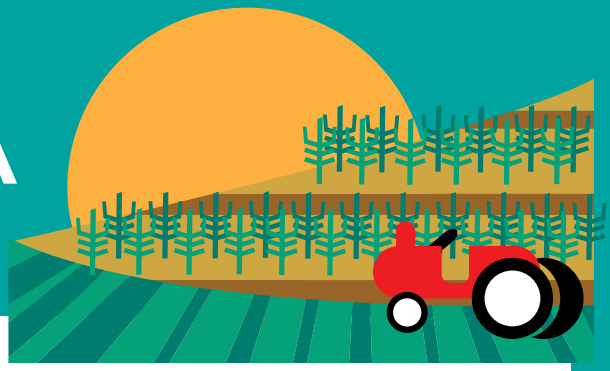
NOTHING CRITICALLY ENDANGERED

The Kouga water source area is almost entirely in natural condition (98.5%). None of its river and wetland ecosystems are threatened.

WORKING FOR WATER SOURCE AREAS

The Kouga water source area is well protected (77%) and almost entirely in natural condition (98.58%). Nevertheless, alien invasive vegetation and fires pose a threat to this water source area. What programmes are specifically intended to control alien invasive vegetation and mitigate fire risks?

OUTENIQUA

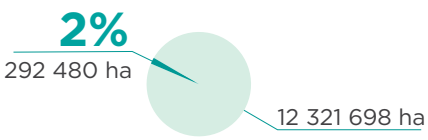


FACTS
IN NUMBERS

Located in the eastern parts of the Western Cape, the Outeniqua water source area supplies George, Oudtshoorn and the Garden Route area with water.

SIZE: 292 480 ha

Size of this water source area as % of entire water source area network



DID YOU KNOW?

- The name “Outeniqua” means “honey collectors” in Khoi San. All of South Africa’s hops are grown in 2 small catchments within this area.
- The National Protected Areas Expansion Strategy seeks to fully protect (100%) the Outeniqua water source area.
- This water source provides 100% of water supplied to George and 94% of water in the Mosselbay water supply scheme.

MAIN RIVERS

The Groot Brak and Olifants rivers flow from this water source area.

THREATS

- Large scale plantations
- Climate change
- Fires
- Alien invasive vegetation

LAND USE (IN %)

mining **0.01%**	wetlands **1.29%**	urban **2.93%**	plantation/woodlot **14.12%**
waterbodies **1.23%**	cultivation (irrigated) **1.94%**	cultivation (dryland) **8.47%**	natural **70.01%**

1 | 1 | 2 | 3 | 4 | 3

Only 30% of this water source area is protected. This includes one national park, one special nature reserve, two mountain catchments, three forest protected area, four provincial nature reserves and three local nature reserves. Notably, the Garden Route National Park and Goukamma Nature Reserve are within this water source area.

46% OF WETLAND ECOSYSTEMS

CRITICALLY ENDANGERED

Although 70% of this water source is in natural condition, 46% of its wetland ecosystems and 18% of its river ecosystems are critically endangered.

MECHANISMS TO MITIGATE RISKS OF WILD FIRES AND PROTECT OUR WATER RESOURCES

Consider legal and management mechanisms or a combination of mechanisms (including mechanisms in the Conservation of Agricultural Resources Act, National Water Act, National Environmental Management Act and National Forest Act) that may potentially mitigate risks of fires, secure our water resources and at the same time protect biodiversity.

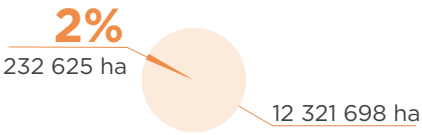
SOUTPANSBERG

FACTS
IN NUMBERS

Situated in Limpopo, the Soutpansberg water source area supplies Louis Trichardt and Thohoyandou with water.

SIZE: 232 625 ha

Size of this water source area as % of entire water source area network



MAIN RIVERS

The Luvuvhu Little Letaba, Mutale, Mutamba and Nzhelele rivers flow from this water source area are.

DID YOU KNOW?

- One of South Africa's largest freshwater lakes – Lake Fundudzi – is found here. This lake carries spiritual significance for the VhaVenda people.
- Major plans are underway to import more water to Limpopo to support mining development.
- 41% of the water supplied to Thohoyandou is derived from the Soutpansberg water source area.

THREATS

Large scale plantations

Land degradation

Cultivation

LAND USE (IN %)

mining
0.03%

waterbodies
0.51%

wetlands
0.20%

cultivation (dryland)
4.56%

cultivation (irrigated)
7.19%

urban
16.52%

plantation/woodlot
8.46%

natural
62.54%

1%

PROTECTED

Soutpansberg is one of our least protected water source areas (only 1% protected). Portions of Kruger National Park, Happy Rest Nature Reserve and Nzhelele Nature Reserve are situated within Soutpansberg.

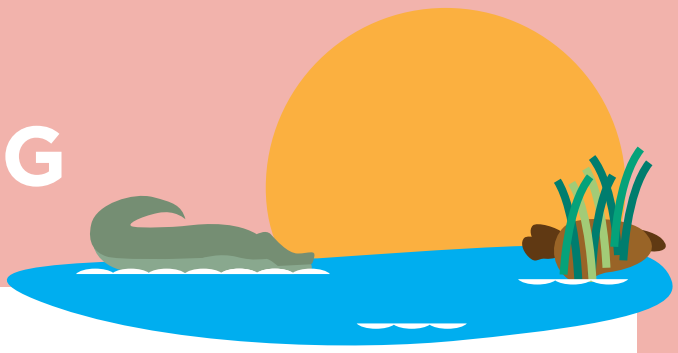
APPROXIMATELY **63%**
IN NATURAL CONDITION

Approximately 63% of Soutpansberg water source area is in natural condition. However, 64% of its wetland ecosystems are critically endangered.

RESTRICTIONS ON ENVIRONMENTAL AUTHORISATIONS FOR HARMFUL ACTIVITIES IN WATER SOURCE AREAS

Soutpansberg has almost no legal protection (only 1%) in terms of NEMPAA. It is comprised of a mix land-use including cultivation (11.75%), plantations (8.46%), and urban development (16.52%). What legal mechanisms can provide restrictions, or if needed, prohibitions, on a range of activities with environmental impacts, within a specified area?

WOLKBERG

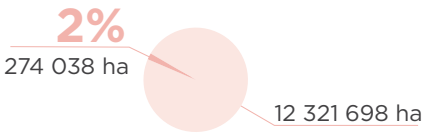


FACTS
IN NUMBERS

Situated in Limpopo, the Wolkberg water source area supplies Polokwane and Tzaneen with water.

SIZE: 274 038 ha

Size of this water source area as % of entire water source area network



DID YOU KNOW?

- The Letaba river flows through the Kruger National Park into Mozambique. It is home to hippos, crocodiles and other freshwater life.
- 41% of the water supplied to Tzaneen is derived from the Soutpansberg water source area.
- The east-west flowing rivers in the Lowveld are part of migration routes for herds of elephants, buffalo and wildebeest across Southern Africa.

MAIN RIVERS

The Middle Letaba, Olifants and Ngwabitsi rivers flow from this water source area.

THREATS

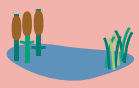
Large scale plantations

Climate change

Land degradation

LAND USE (IN %)

mining
0.03%



wetlands
0.72%

urban
3.95%

plantation/woodlot
16.82%

waterbodies
0.67%

cultivation (dryland)
2.32%

cultivation (irrigated)
6.39%

natural
69.11%

7

22%
PROTECTED

Only 22% of Wolkberg water source area is protected. Seven provincial nature reserves fall within Wolkberg including Wolkberg Caves Nature Reserve, Bewaarkloof Nature Reserve, Legalameetse Nature Reserve and Wolkberg Wilderness Area.

100% OF WETLAND ECOSYSTEMS
CRITICALLY ENDANGERED

Approximately 69% of this water source area is in natural condition. Nevertheless, all of its wetland ecosystems (100%) are critically endangered. These wetland ecosystems cover 30671487 square meters. Further, 19% of its river ecosystems are critically endangered.

MECHANISMS TO PROTECT WETLAND ECOSYSTEMS

Alarmingly, all wetland ecosystems (30671487m^2) in Wolkberg are critically endangered. Only 22% of this water source area is protected. Major land-uses include plantations (16.82%), cultivation (7.59%) and urban development (3.95%). What legal mechanisms would best protect this water source area in general and its wetland ecosystems in particular?

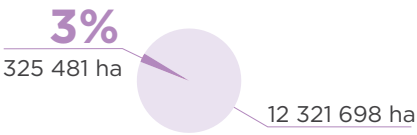
TSITSIKAMMA

FACTS
IN NUMBERS

Tucked between the mountain and the sea, on a mountain range that cuts across the Western and Eastern Cape, the Tsitsikamma water source area supplies the Garden Route, Port Elizabeth and Uitenhage with water.

SIZE: 325 481 ha

Size of this water source area as % of entire water source area network



DID YOU KNOW?

- "Tsitsikamma" is a Khoi word meaning "a place of abundant water".
- Africa's oldest marine protected area – the Tsitsikamma Marine Protected Area – is adjacent to this water source area.
- 41% of the water supplied to Port Elizabeth is derived from this water source area.
- Dozens of ancient insect species, as old as the dinosaurs, are found in this water source area, making it a "Jurassic Park" of freshwater life.

MAIN RIVERS

The Groot Storms, Klip and Tsitsikamma rivers flow from this water source area.

THREATS

Large scale plantations

Land degradation

Alien invasive vegetation

LAND USE (IN %)

 mining **0.01%**	 wetlands **1.16%**	 cultivation (irrigated) **3.26%**	 cultivation (dryland) **10.10%**
 waterbodies **0.30%**	 urban **1.42%**	 plantation/woodlot **7.55%**	 natural **76.20%**


2


2


2

Approximately 41% of the Tsitsikamma water source area is under legal protection. This includes the Garden Route National Park, two provincial nature reserves (Soetkraal and Formosa Nature Reserves) and two local nature reserves.

76.2% IN NATURAL CONDITION

Up to 76% of this water source area is in natural condition. Nevertheless, 18% of its wetland ecosystems are critically endangered and 43% are endangered.

FORESTRY AND AGRICULTURAL CONTROL MECHANISMS IN WATER SOURCE AREAS

The Tsitsikamma water source area is relatively well protected (41%) and up to 76% in natural condition. However, up to 7.5% is under commercial plantations and up to 14% under cultivation. Alien invasive vegetation and fires are significant threats to the water source area. Which legal and management mechanisms are available to support improved forestry and agricultural resource management within water source areas?

WATERBERG

FACTS
IN NUMBERS

Located in Limpopo, this water source area is an important regional water source in a relatively dry area. The Limpopo River flows from this water source area. It supplies water to a number of towns. No major urban centres are downstream.

SIZE: 83 961 ha

The Waterberg water source area is made up of two areas which total 83 961 hectares.

DID YOU KNOW?

- The Waterberg supplies water for the Medupi power station. Additional water for the power station is transferred from the Crocodile River in Gauteng.
- Existing coal fields are situated to the north of the Waterberg. Consequently, areas in the Waterberg water source area have been identified for future coal mining. This would have severe and cumulative impacts on the health of this water source area.
- This water source area supplies several towns with water.
- The water source area is important for sustaining downstream floodplain wetlands.

MAIN RIVERS

The Mokolo, Lephalala and Mokgalakwena rivers flow from this water source area. These rivers flow northwestwards to their confluence with the Limpopo River. This forms the boundary between Botswana and South Africa.

THREATS

- Climate change
- Mining
- Alien invasive vegetation
- Land degradation

LAND USE (IN %)

mining
0.01%

plantation/woodlot
0.07%

urban
0.06%

waterbodies
0.18%

wetlands
0.33%

cultivation (dryland)
6.24%

cultivation (irrigated)
1.35%

natural
91.75%

ALMOST 91.75%

IN NATURAL CONDITION

Approximately 91.75% of this water source area is in natural condition. Nevertheless, a large portion of natural rangeland vegetation has been degraded by overgrazing and bush encroachment.

4%

PROTECTED

Only 4% of this water source area is under formal protection. This includes a section of the Marakele National Park as well as private nature reserves and game farms. However, the Waterberg is an important node for the Limpopo Conservation Plan due to the presence of critical biodiversity areas and river ecosystems that are vital biodiversity corridors.

LEGAL MECHANISMS TO RESTRICT MINING AND ASSOCIATED IMPACTS

The Waterberg water source area is almost entirely in natural condition, with limited cultivation, plantations and urban development. Nevertheless, future coal mining may have considerable environmental and socio-economic impacts on the area. What legal mechanism may potentially restrict or prohibit prospecting and mining activities in a specified region?

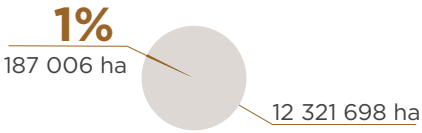
AMATOLE

FACTS
IN NUMBERS

The Amatole water source area is situated in the Eastern Cape across a densely forested mountain range. It supplies water to Bisho, Fort Beaufort, Grahamstown and Queenstown.

SIZE: 187 006 ha

Size of this water source area as % of entire water source area network



MAIN RIVERS

The Great Fish, Great Kei, Keiskamma and Tyume rivers flow from this water source area.

DID YOU KNOW?

- The Amatole water source area is home to forests and mountains which are considered sacred by the Gcaleka people.
- The area receives rainfall mostly in summer and autumn, ranging between 800 mm and 2 000 mm annually.
- 91% of the water supplied to King William's Town and East London is derived from the Amatole water source area.

THREATS

Land degradation

Alien invasive vegetation

Fires

LAND USE (IN %)

mining
0.01%

wetlands
0.39%

urban
6.16%

plantation/woodlot
10.85%

waterbodies
0.38%

cultivation (irrigated)
0.86%

cultivation (dryland)
7.62%

natural
73.72%

15% PROTECTED

Only 15% of the Amatole water source area is formally protected. This includes over ten forest protected areas (such as the Hogsback State Forest and Kubisi Indigenous State Forest) and one provincial nature reserve (Mpofu Nature Reserve).

74% IN NATURAL CONDITION

Approximately 74% of the Amatole water source is in natural condition. Up to 74% of its river ecosystems are vulnerable but none (0%) are critically endangered. Further, only 1% of its wetland ecosystems are critically endangered.

STEWARDSHIP OF WATER SOURCE AREAS

Up to 74% of Amatole water source area is in natural condition. Only 15% is currently protected and the National Protected Areas Expansion Strategy aims to protect approximately 29% of the area. A significant portion of the water source area is subject to private land ownership including approximately 8.5% cultivated and 10.85% plantations. What mechanisms are available to ensure land stewardship and conservation benefits in privately-owned land?

EASTERN CAPE DRAKENSBERG

FACTS
IN NUMBERS

Set at the southernmost portion of South Africa's largest mountain range, the Eastern Cape Drakensberg water source area feeds into the the Orange River and supplies water to Umtata and Queenstown.

SIZE: 1 636 789 ha

The Eastern Cape Drakensberg stretches approximately 1 636 789 hectares. It is the second largest of South Africa's water source areas.

DID YOU KNOW?

- A large dam is being planned on the Mzimvubu River at an estimated cost of R20 billion.
- South Africa has 62 free-flowing rivers (long stretch of rivers that haven't been dammed), 27 of which are in the Eastern Cape. This water source area feeds into six of these free-flowing rivers.
- The Eastern Cape Drakensberg water source area provides 100% of Umtata's water.

MAIN RIVERS

The main rivers which flow from the Eastern Cape Drakensberg include Mzimvubu, Orange, Bokspruit and Mthatha rivers. Free-flowing rivers that flow from this water source area include the Kobonqaba, iNxaxo, Qhora, Shixini, Nqabarha and Mncwasa rivers.

THREATS

Fires

Climate change

Land degradation

LAND USE (IN %)

mining
0.01%

cultivation (irrigated)
0.02%

waterbodies
0.22%

wetlands
1.49%

plantation/woodlot
3.64%

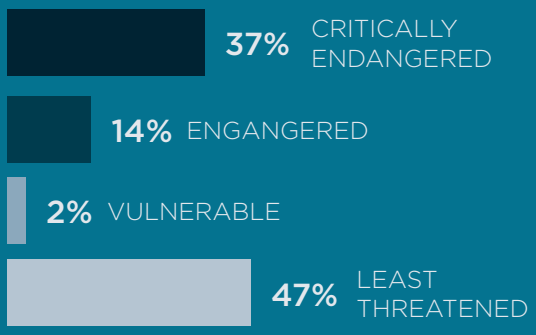
urban
6.58%

cultivation (dryland)
12.99%

natural
75.06%

! THERE ARE NO PROTECTED AREAS IN THIS WATER SOURCE AREA

Shockingly, this water source area has no protection (0%).



APPROXIMATELY **75%** IN NATURAL CONDITION

Approximately 75% of the Eastern Cape Drakensberg is in natural condition. Nonetheless, 37% of its wetland ecosystems are critically endangered. Further, 14% of its wetlands are endangered.

PROTECTED AREAS OR RESTRICTED ACTIVITIES?

The Eastern Cape Drakensberg has no protection at all (0%) and it is not prioritised for protection in terms of the National Protected Areas Expansion Strategy. Nevertheless, 73% of it is in natural condition. Further, up to 13% of it is under cultivation. What mechanism would be suited to restricting and prohibiting negative environmental impacts from a range of activities in this water source area?

MALOTI DRAKENSBERG

FACTS
IN NUMBERS

The Maloti Drakensberg water source area is located in the Eastern Cape, nestled between Lesotho and the Free State border. It supplies water to Gauteng, the Free State, Delmas and eMbalenhle in Mpumalanga and Upington in the Northern Cape.

SIZE: 1 636 789 ha

The Maloti Drakensberg stretches over 1 636 789 hectares. It is the third largest water source area in South Africa.

MAIN RIVERS

The Mzimvubu, Orange, Bokspruit, and Mthatha rivers flow from the Maloti Drakensberg water source area.

DID YOU KNOW?

- The Maloti Drakensberg is a critical water source area, supporting almost 50% of South Africa's GDP.
- The Maloti Drakensberg supplies Gauteng, South Africa's biggest economic hub, with water.
- This water source area supplies up to 70% of Bloemfontein's water.
- Water is Lesotho's biggest export to South Africa. Phase 2 of the Lesotho Highland Water Project will be finished in 2020 at a cost of R20 billion.

THREATS

Land degradation

Large-scale cultivations

LAND USE (IN %)

 mining **0.00%**	 cultivation (irrigated) **0.00%**	 plantation/woodlot **0.07%**	 cultivation (dryland) **2.19%**
 waterbodies **0.00%**	 urban **0.00%**	 wetlands **0.49%**	 natural **97.26%**

ONLY 1% PROTECTED

Only 1% of this water source area is protected. This includes the Goldern Gate Highlands National Park, Ukahlamba Drakensberg World Heritage Site, Ntsikeni Wildlife Reserve and Sterkfontein Dam Nature Reserve. The Ukhahlamba Drakensberg Park (a Ramsar site) falls within this water source area.

97% IN NATURAL CONDITION

Approximately 97% of the Maloti Drakensberg water source area is in natural condition and none of its river (0%) or wetland (0%) ecosystems are critically endangered.

TRANSBOUNDARY WATER SOURCE AREAS

The Maloti Drakensberg is a trans-boundary water source area. Consider whether there are any provisions in international law (including the Treaty on the Lesotho Highlands Water Project, 1986; SADC Protocol on Shared Watercourses; or SADC Regional Water Policy) to protect this shared water source area. Also consider policy mechanisms, such as public-private partnerships, that could facilitate private sector support to municipalities in delivering water-related services.

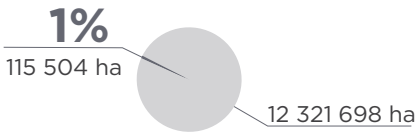
MFOLOZI HEADWATERS

FACTS
IN NUMBERS

Situated in the heart of KwaZulu-Natal, the Mfolozi Headwaters supplies water to Richards Bay, eSikhawini and Vryheid.

SIZE: 115 504 ha

Size of this water source area as % of entire water source area network



MAIN RIVERS

The Black Mfolozi, Pongola and Lenjane rivers are the main rivers which flow from Mfolozi Headwaters. It feeds a number of free-flowing rivers including the Mkuze, Nsonge, Nondweni, Ngogo, Mfule and Nyalazi.

DID YOU KNOW?

- The Black Mfolozi, a flagship river, flows freely for more than 100km.
- Coal fields in Vryheid are located within the Mfolozi Headwaters. This places considerable pressure on the ecological and hydrological functioning of this water source area.
- Three Rasar sites; Kosi Bay, Lake Sibaya and St Lucia fall within this water source area.
- Agriculture is the largest water user in this area, predominantly for sugarcane and forestry.

THREATS

- Land degradation
- Coal mining
- Large-scale cultivations
- Large scale plantations

LAND USE (IN %)

mining
0.02%

waterbodies
0.04%

wetlands
0.34%

cultivation (irrigated)
0.63%

urban
4.64%

cultivation (dryland)
7.86%

plantation/woodlot
23.00%

natural
63.46%

63% IN NATURAL CONDITION

WETLAND ECOSYSTEMS

1% CRITICALLY ENDANGERED

7% VULNERABLE

19% ENDANGERED

72% LEAST THREATENED

A significant portion (63%) of this water source area is in natural condition. Only 1% of its wetland ecosystems are critically endangered and 19% is endangered. Up to 72% of its wetland ecosystems are least threatened.

1

1% PROTECTED

Only 1% of the Mfolozi Headwaters is protected. This section falls within the Hluhluwe-Mfolozi Game Reserve.

LEGAL MECHANISM TO RESTRICT MINING AND NEGATIVE IMPACTS OF PLANTATIONS

Only 1% of the Mfolozi Headwaters is protected and no expansion of protection is planned in terms of the National Protected Areas Expansion Strategy. Coal mining and plantations (23%) are foremost threats to this water source area. Which legal mechanism can restrict or prohibit a number of activities, based on environmental impact?

16

SOUTHERN DRAKENSBERG

FACTS
IN NUMBERS

The Southern Drakensberg is a trans-boundary water source area that straddles KwaZulu-Natal and Lesotho. It supplies water to Durban, Pietermaritzburg and Port Shepstone.

SIZE: 2 049 626 ha

The Southern Drakensberg is South Africa's largest water source area. It spans 2 049 626 hectares.

DID YOU KNOW?

- The longest free-flowing river, the Mkomazi, starts at this water source area.
- South Africa's three highest mountains – Mafadi, Njesethu and Champaign Castle – are found within this water source area.
- The uMgeni Vlei (recently declared a Ramsar Site) falls within this water source area.
- The Midmar Dam, within this water source area, hosts the world's largest open water swimming event, the Midmar Mile, with over 20 000 participants recorded in 2009.

MAIN RIVERS

Main rivers that flow from the Southern Drakensberg include the uMgeni, Thukela, Mooi and uMzimkulu. Free-flowing rivers that flow from this water source area include the Mtamvuna, Mkomazi, Mzimkhulu and Nsonge.

THREATS

Large scale plantations

Land degradation

Fracking

LAND USE (IN %)

mining **0.00%**	cultivation (irrigated) **1.85%**	urban **6.39%**	plantation/woodlot **15.22%**
waterbodies **0.55%**	wetlands **2.49%**	cultivation (dryland) **12.66%**	natural **60.84%**

>30

ONLY 14% PROTECTED

Over 30 provincial nature reserves fall within this water source area. This includes Karkloof Nature Reserve, Midmar Nature Reserve, Ukhahlamba Drakensberg World Heritage Site and Qudeni Forest Reserve. Nevertheless, only 14% of the Southern Drakensberg water source area is protected.

60% IN NATURAL CONDITION

Approximately 60% of this water source area is in natural condition. Nevertheless, 22% of its wetland ecosystems are critically endangered and 45% are endangered.

LEGAL PROTECTION FOR MULTI-FUNCTIONAL LANDSCAPES

The Southern Drakensberg water source area is vast, with mixed land-use and land-ownership including 14.5% under cultivation, 15.2% plantations and 6.39% urban. What category of protection in the Protected Areas Act is well suited to areas with mixed agricultural, forestry and urban landscapes as well as mixed public-private land ownership?

17

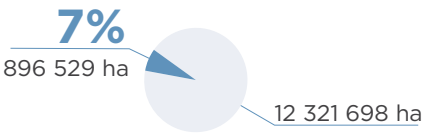
NORTHERN DRAKENSBERG

FACTS
IN NUMBERS

The Northern Drakensberg is a trans-boundary water source areas (shared with Lesotho) and the KwaZulu-Natal and Free State border. It supplies water to Gauteng, the Free State, parts of the North-West province and parts of KwaZulu-Natal. An important inter-basin transfer system (Thukela to Vaal Basin) stems from this water source area.

SIZE: 896 529 ha

Size of this water source area as % of entire water source area network



MAIN RIVERS

The Caledon, Orange, Thukela, Vaal and Senqu rivers flow from the Northern Drakensberg water source area.

DID YOU KNOW?

- The Orange River, South Africa's longest river, has the largest dam – the Gariep Dam – with a capacity of 5 340 000 megalitres.
- "Gariep" was a San name for the Orange River.
- The Thukela River flows 900m down the escarpment of the Northern Drakensberg water source area, forming the second highest waterfall in the world.
- 80% of Newcastle's water is supplied by the Northern Drakensberg water source area.

THREATS

Land degradation

Coal mining

Fracking

LAND USE (IN %)

mining
0.03%

urban
3.71%

waterbodies
0.84%

plantation/woodlot
2.63%

cultivation (irrigated)
1.78%

cultivation (dryland)
8.81%

wetlands
1.60%

natural
80.59%

1 6

ONLY 8% PROTECTED

Only 8% of Northern Drakensberg is protected. This includes the Golden Gate Highlands National Park, the Ukhahlamba Drakensberg Park World Heritage Site (Ramsar Site) and six provincial nature reserves.

80% IN NATURAL CONDITION

Up to 80% of the Northern Drakensberg is in natural condition. Nevertheless, 34% of its wetland ecosystems are critically endangered.

RESTRICTIONS ON MINING

Coal mining is a significant threat to this water source area. Nevertheless, only 8% is formally protected. What legal mechanism is available to restrict or prohibit mineral prospecting or mining in a specified area?

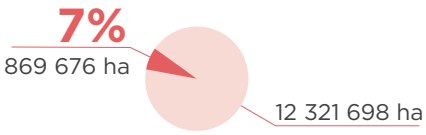
MPUMALANGA DRAKENSBERG

FACTS
IN NUMBERS

The Mpumalanga Drakensberg water source area supplies water to parts of Mpumalanga (eMalahleni, Middleburg and Nelspruit) as well as Phalaborwa in Limpopo.

SIZE: 869 676 ha

Size of this water source area as % of entire water source area network



MAIN RIVERS

The Olifants, Sabie, Elands and Crocodile rivers flow from Mpumalanga Drakensberg. Free-flowing rivers that flow from this water source area include Elands, Mbyamiti and Nwanedzi-Sweni.

DID YOU KNOW?

- Approximately 6000 old mines in South Africa have been abandoned. Coal and gold mines leak acid mine drainage (AMD) into nearby rivers.
- The Mpumalanga Drakensberg supplies the Olifants catchments with freshwater. The Olifants catchment has been significantly impacted by acid mine drainage.
- A Ramsar Site, the Verloren Vallei Nature Reserve, is located within this water source area.

THREATS

- Large scale plantations
- Coal mining
- Land degradation

LAND USE (IN %)

mining
0.00%

wetlands
1.57%

cultivation (irrigated)
2.05%

plantation/woodlot
37.95%

waterbodies
0.33%

cultivation (dryland)
2.05%

urban
2.51%

natural
53.45%

10

12

2

Only 9% of the Mpumalanga Drakensberg water source is formally protected. This includes ten provincial nature reserves, twelve forest protected areas and two local nature reserves. The Kruger National Park is downstream this water source area.

Approximately 53% of the Mpumalanga Drakensberg is in natural condition. Up to 26% of its wetland ecosystems and 6% of its river ecosystems are critically endangered.

APPROXIMATELY **53%**
IN NATURAL CONDITION

PROTECTION FROM MULTIPLE ACTIVITIES

Coal mining is a significant threat to the Mpumalanga Drakensberg. Further, 37% of the water source is under large-scale plantation. Only 53% is in natural condition and only 9% is protected. Which legal mechanism may provide protection from environmental impacts of mining, cultivation and forestry activities?

MBABANE HILLS

FACTS
IN NUMBERS

The Mbabane Hills is a trans-boundary water source area that straddles Swaziland and Mpumalanga. It supplies water to Nelspruit, Standerton and Ermelo in Mpumalanga as well as Swaziland and Mozambique.

SIZE: 1 039 211 ha

The Mbabane Hills spans 1 039 211 hectares. The largest portion falls within Swaziland (779 408 ha). Approximately 259 803 ha is situated in Mpumalanga.

MAIN RIVERS

The Usutu, Pongola, Inkomati and Lusushwana rivers a flow from Mbabane Hills.

DID YOU KNOW?

- The Inkomati River flows through South Africa, Swaziland and Mozambique.
- Mbabane Hills is named after Swaziland's capital and largest city.
- More than 60% of South Africa's river run-off is shared with other countries.

THREATS

Large scale plantations

Land degradation

LAND USE (IN %)

mining
0.08%

waterbodies
0.19%

wetlands
1.71%

cultivation (irrigated)
2.52%

cultivation (dryland)
2.73%

urban
2.76%

plantation/woodlot
29.04%

natural
60.97%

3%
PROTECTED AREAS

3

2

Only 3% of Mbabane Hills is formally protected. This includes a small portion of Kruger National Park, three provincial nature reserves and two local nature reserves (Barberton and Mountainlands Nature Reserve).

61% IN NATURAL CONDITION

Approximately 61% of Mbabane Hills is in natural condition. Nevertheless, 58% of its wetland ecosystems are critically endangered and 82% of its river ecosystems are endangered.

REGIONAL COOPERATION

More than 60% of South Africa's river run-off is shared with other countries. This stresses the need for cooperation and collaboration between neighbouring countries. Can you think of any provisions in international law, regional treaties or agreements between South Africa and Swaziland that can ensure the healthy functioning of Mbabane Hills?

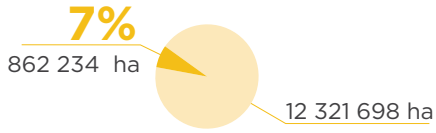
ENKANGALA DRAKENSBERG

FACTS IN NUMBERS

Situated in Mpumalanga, the Enkangala Drakensberg water source area supplies water to parts of Mpumalanga, KwaZulu-Natal, Gauteng and the Northern Cape. The Drakensberg Mountains form the watershed between rivers flowing to the Indian Ocean (via the Thukela) or to the Atlantic Ocean (via the Vaal and Orange).

SIZE: 862 234 ha

Size of this water source area as % of entire water source area network



MAIN RIVERS

The Vaal, Thukela, Pongola, Assegaai and Wilge rivers flow from the Enkangala Drakensberg. It feeds a number of free-flowing rivers including Ntombe, Hlelo and Upper Vaal.

DID YOU KNOW?

- This water source area supplies water to Gauteng, the economic hub of South Africa. It is also important for the agricultural sector in KwaZulu-Natal and Free State.
- About 45% of this water source area overlaps with coal fields in Ermelo, Vryheid, Highveld and Utrecht. Coal mining is thus a significant threat to its healthy functioning.
- The Enkangala Drakensberg water source area supplies water to eMbalenhle, Standerton, Delmas, Volksrust, and Ermelo, Newcastle, Richard's Bay, Vryheid, Dundee, eSikhawini and Kimberley.

THREATS

Large scale plantations

Coal mining

Land degradation

LAND USE (IN %)

mining **0.02%**	cultivation (irrigated) **0.54%**	urban **1.52%**	plantation/woodlot **12.18%**
waterbodies **0.34%**	wetlands **2.6%**	cultivation (dryland) **9.57%**	natural **73.24%**

ONLY 1% PROTECTED

Only 1% of this water source is formally protected. The Paardeplaats Nature Reserve, Pongola Bush Nature Reserve and Mabola Protected Environment are located within the Enkangala Drakensberg water source area. A number of Ramsar Sites (Kosi Bay, Lake Sibaya and iSimangaliso) are downstream the Enkangala Drakensberg.

UP TO 73% IN NATURAL CONDITION

Approximately 73% of the Enkangala Drakensberg is in natural condition. Nevertheless, 45% of this water source area overlaps with coal fields.

MITIGATING IMPACTS OF COAL MINING IN WATER SOURCE AREAS

Coal mining is the most significant threat to the Enkangala Drakensberg. Currently only 1% of the water source area is formally protected whereas 45% of it coincides with coal fields. Which legal mechanism may restrict or prohibit the granting of rights for mining and prospecting in specified geographical locations for a specified period of time?

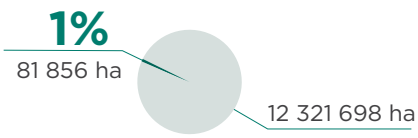
UPPER VAAL

FACTS
IN NUMBERS

Located in Mpumalanga, the Upper Vaal is a critical water source for downstream users and supplies water to the Gauteng city-region. A few towns, such as Ermelo, are found in the Upper Vaal catchment.

SIZE: 81 856 ha

Size of this water source area as % of entire water source area network



MAIN RIVERS

The Vaal River flows from this water source area. The Vaal flows eastwards through to its confluence with the Orange River, forming the boundary between the Free State and Gauteng.

DID YOU KNOW?

- The Upper Vaal is critical for supplying water to South Africa's economic hub, the Gauteng city-region.
- The Upper Vaal, together with the Northern Drakensberg, Maloti Drakensberg and Upper Usutu, supports more than 13 million people.
- The Vaal River is a conduit for transferring water from the Tugela in KwaZulu-Natal and the Orange/Senqu Rivers to Gauteng.
- The Vaal River further sustains many towns, including Sasolburg, on its way to its confluence with the Orange River.
- It supplies water to Eskom used for cooling two of its coal-fired power stations.

THREATS

LAND USE (IN %)

cultivation (irrigated)
0.02%

mining
0.05%

plantation/woodlot
0.14%

waterbodies
0.22%

urban
2.32%

wetlands
3.95%

cultivation (dryland)
33.73%

natural
59.57%

THERE ARE CURRENTLY

NO FORMALLY PROTECTED

AREAS IN UPPER VAAL

The Upper Vaal currently has no (0%) formal protection.

APPROXIMATELY

60%

IN NATURAL CONDITION

Approximately 60% of the Upper Vaal water source area is in natural condition. However, up to 40% of the Upper Vaal is under cultivation for dryland crops such as maize. A range of critical biodiversity areas fall within the water source area and it is vital for sustaining downstream freshwater ecosystems.

COAL MINING, FARMING AND WATER SOURCE AREAS

Coal fields in Ermelo, Evander, the Highveld and Witbank overlap almost entirely with the Upper Vaal water source area. Nevertheless, it currently has no legal protection. Further, it is a critical agricultural area, with up to 40% under cultivation. Which legal mechanisms may be used to protect this water source area and associated agricultural resources from the impacts of coal mining?

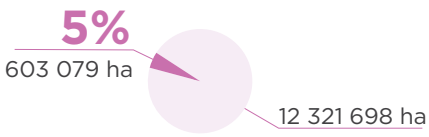
UPPER USUTU

FACTS
IN NUMBERS

The Upper Usutu is a trans-boundary water source area located mainly in Mpumalanga and partly in Swaziland. It supplies much of the water required for Eskom's coal-fired power stations in Mpumalanga.

SIZE: 603 079 ha

Size of this water source area as % of entire water source area network



MAIN RIVER

The Usuthu River flows from this water source area, through Swaziland and into Mozambique. The headwaters of the Upper Usutu also feeds the Vaal River system.

DID YOU KNOW?

- The Upper Usutu, together with the Upper Vaal, Northern Drakensberg and Maloti Drakensberg supports South Africa's economic hub, the Gauteng city-region and more than 13 million people.
- It supplies up to 44% of the water used by Eskom for cooling its coal-fired power stations.
- Commercial forestry is the main economic activity in the area.

THREATS

Climate change

Land degradation through overgrazing

Alien invasive vegetation

Coal mining

LAND USE (IN %)

mining
0.13%

waterbodies
1.40%

wetlands
5.73%

plantation/woodlot
40.30%

cultivation (irrigated)
0.42%

urban
2.41%

cultivation (dryland)
7.06%

natural
42.56%

<0.1% UNDER FORMAL PROTECTION

Less than 0.1% of this water source area is under formal protection. A few private nature reserves fall within the Upper Usutu. These cover less than 0.5% of the water source area.

43% IN NATURAL CONDITION

Only 43% of this water source area is in natural condition. The largest land-use modifier is commercial forestry plantations which cover 40% of the area. The Upper Usutu contains irreplaceable critical biodiversity areas, particularly wetlands and river floodplains.

PROTECTING WATER SOURCE AREAS IN REGIONS WITH INTENSIVE COMMERCIAL FORESTRY

Only 43% of the Upper Usutu is in natural condition and 0.03% is formally protected. The largest land-use modifier in this water source area is plantations (40%). Which legal mechanisms may be used to maintain the healthy functioning of the Upper Usutu in view of intense forestry and threats such as land degradation and alien invasive vegetation?

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Securing Strategic Water Source Areas Using the Law is a WWF Nedbank Green Trust funded project

The WWF Nedbank Green Trust, founded in 1990, has been bringing people and nature together for their mutual benefit for a quarter of a century. Our slogan, igniting new ways for people and nature to thrive, is our key reason for existence and we have, over the past 25 years, sought new paths, points of connections and solutions to ensure that people and their ecosystems prosper. Our projects have, throughout the years, had a strong community-based focus as we are constantly and consistently conscious of the fact that conservation cannot succeed without people.

The main sources that informed this document are:

WWF-SA (2013). An introduction to South Africa's Water Source Areas
WWF-SA (2013). Defining South Africa's Water Source Areas

For further information on South Africa's Water Source Areas please visit www.journeyofwater.co.za

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