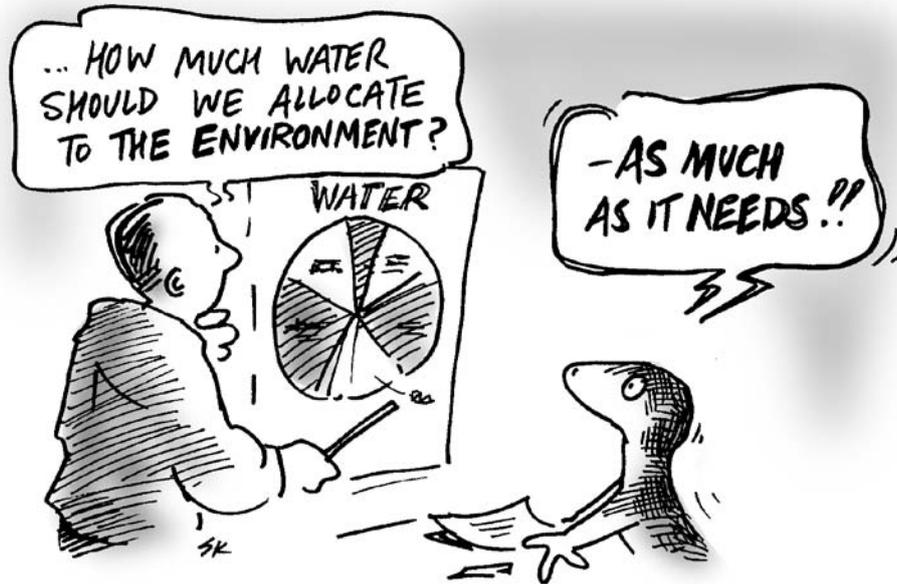


4

Water Quantity

Inland Waters



Water Quantity Issues



South Australians mainly use water from two source types – groundwater and surface water. Groundwater is water that occurs naturally below ground level and is accessed by pumping from bores and wells. Surface water is any water that occurs on the land surface including run-off, creeks, rivers, streams, dams and reservoirs. The River Murray is an important source of surface water for South Australia.

In some areas of South Australia, a licence is required before water can be taken for irrigation or other purposes. Urban and agricultural development since European settlement has had big impacts on our water resources, and in some areas they are being used beyond sustainable levels. Increasing and unmanaged demand for water can adversely affect the environment, affect the ability of existing water users to access water and limit opportunities for further urban and agricultural development. In localised areas in the state's north, the mining industry also has a significant impact on water resources.

“ The River Murray is an important source of surface water for South Australia. ”

Trends



Water use in areas of the state where licenses are required is relatively **stable**.



Use of groundwater is currently above estimated **sustainable** limits in the Northern Adelaide Plains and parts of the South East.



Use of surface water is currently above estimated **sustainable** limits in some areas of the Mount Lofty Ranges.



Water use in areas of the state where licences are not required is uncertain and likely to be **increasing**.



Areas of South Australia where water resources are subject to formal management arrangements is **increasing**.



Comprehensive and scientifically based information on the extent of South Australia's wetlands is **increasing**.

Water Quantity



What is the Current Water Quantity Situation?

South Australia used 1,365 gigalitres (1 gigalitre = 1 billion litres) in 2004/05 for agricultural, industrial, commercial, recreational and domestic activities. One gigalitre would cover the Adelaide Oval to a depth of 15 metres. This is about 7% of the total national water use. The agricultural sector was the largest consumer of water in South Australia during 2004/05, using 75% of South Australia's water.

On average, 49% of the water we use in the state is taken from the River Murray, 38% from groundwater resources and 11% from other surface water sources. Only about 2% of our water is supplied from re-using stormwater run-off and treated wastewater from wastewater treatment plants. To help reduce the pressure on rivers and groundwater sources, it is important that we try and use alternative sources of water.

Condition Indicator

The extent of wetlands

Wetlands are the swamps and marshes found along rivers, floodplains and along the coast as mudflats and salt marshes. Wetlands are generally areas of standing water rather than flowing water such as rivers. They can be permanently, seasonally or occasionally full; some of them may even dry out completely for many months of the year. Since 2003, information on the extent and distribution of wetlands in the state has increased significantly.

Wetlands are threatened by many different pressures from humans including:

- agricultural development,
- transport infrastructure (roads),
- extraction of water for irrigation,
- pest plants and animals,
- grazing (stock trampling native vegetation) and decreased water quality through faecal contamination,
- land clearing and burning, and
- fragmentation.

The wetlands of the Adelaide and Mount Lofty Ranges region are under significant pressure from many of these factors and large areas of permanent and non-permanent wetlands have been lost from the region over the last 100 years. The Fleurieu Peninsula swamps are listed as a critically endangered ecological community and they face an extremely high risk of extinction in the immediate future.

Agricultural development and human settlement have also significantly affected around 98% of the wetlands in the South East. Little of this area remains in its original condition. The extraction of groundwater, grazing, mining development and pest plants and animals also pose a threat to wetlands in the Arid Lands and Alinytjara Wilurara Natural Resource Management region.

“ The wetlands of the Adelaide Mount Lofty Ranges are under significant pressure. ”

Water Quantity



Responding to Water Quantity issues

The environment is now recognised as a legitimate user of water since greater understanding about the importance of water for aquatic environments. The South Australian Government, industry and the community are now placing more of a focus on the needs of the environment when considering the management and use of water resources.

The re-use of water resources such as stormwater and treated wastewater are initiatives aimed at reducing the pressure on more traditional water resources and reducing pollution of the marine environment. These non-traditional sources of water are being used more in some parts of South Australia, particularly Adelaide, to supplement water supplies. Although South Australia is a world leader in the field of water re-use technology, we still only re-use a small proportion of available stormwater and treated wastewater.

Areas of Concern

Mount Lofty Ranges Region

There is growing concern about the amount of water used in the Mount Lofty Ranges watershed. Surface and ground water use has been estimated at 191 gegalitres, but the sustainable limit is thought to be around 158 gegalitres per year. There are no licences for water use in the Mount Lofty Ranges at the moment, but the potential over-use will lead to more careful monitoring and assessment. Increasing the re-use of stormwater and wastewater could increase sustainable water use.

Groundwater resources

Groundwater resources are being used beyond sustainable limits on the Northern Adelaide Plains and in some parts of the South East. Increasing irrigation development is the main reason for over-use of groundwater supplies.

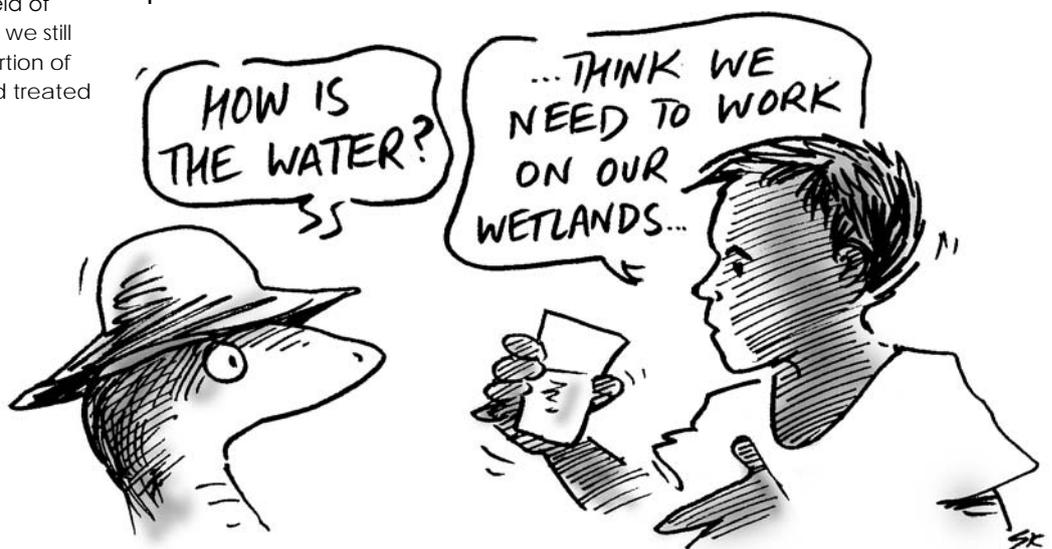
Ecosystems that are dependent on groundwater are only now

being recognised. Better understanding of these systems will enable better estimates of sustainable limits for groundwater systems.

Climate change

It is predicted that climate change may lead to increases in temperature, higher evaporation rates and lower rainfall. This is likely to result in increasing rainfall variability, increased risk of drought and reduced availability of water for inland regions of the state. Surface and ground water resources across all regions of South Australia will be affected by these changes.

It is estimated that the rivers and streams in the Murray-Darling Basin may have flows reduced by up to 30% by 2050, and 45% by 2070, which will further increase competition for already scarce water resources. For more information on climate change see the 'Climate Change' fact sheet.



Water Quantity



Taking Action for Water Quantity

Think about all the ways in which you can reduce the amount of water that you use. Perhaps you could:

- take shorter showers,
- install a half-flush in your toilet,
- turn off the tap while cleaning your teeth,
- fix all leaking taps around home and school, and
- talk to your friends and family about the need to conserve water.

Impacts of over-using water resources



Biodiversity

Taking too much water out of rivers means that the plants and animals living downstream are not able to receive the water they need. The loss of water quality and flows also affects these ecological communities.



Economy

There are a lot of costs associated with a decline in water availability. If we continue to use too much water in the Mount Lofty Ranges, we will need to cover the costs of finding an alternative water supply, and increased pumping costs from the River Murray to supplement supplies. A decline in tourism and recreation values will also have associated economic impacts.

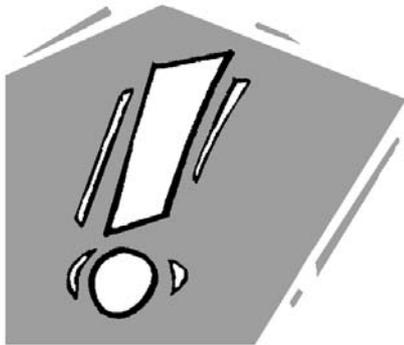


Culture

Sites of cultural significance, such as the Tjilbruke Dreaming Trail freshwater springs on the Fleurieu Peninsula, are threatened by declining groundwater levels.



Water Quantity



Attention!!

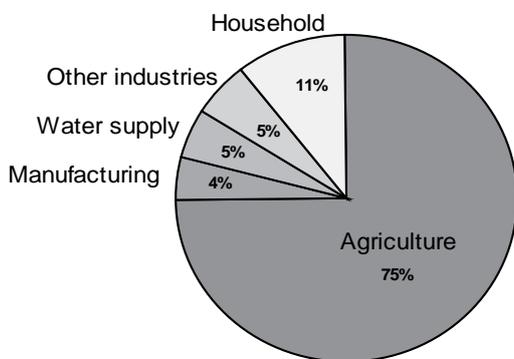
Efficient water use in agriculture

Urban and agricultural development since European settlement has had a big impact on the nature of water resources in South Australia. The largest consumer of water in South Australia during 2004/05 was the agriculture sector. This sector includes livestock, pasture, grains, grapes and fruit as well as other forms of agriculture. Around 184,000 Ha of crops were irrigated in South Australia in 2004/05 and these crops had a gross value of \$128 billion or around 33% of the state's total agriculture production.

One way to decrease the amount of water used in agriculture is to ensure that irrigation is efficient and that any water applied to the crop is used effectively. In 2003 the Yalumba Wine Company with its growers, started a program in the Riverland to increase the efficiency of irrigation on grapevines. One of the ways they chose to improve water efficiency was to use under canopy drip irrigation. Drip irrigation means that water is dripped onto the soil while other forms of irrigation can include sprinklers. Water applied by drip irrigation is more likely to be used directly by the vines as it is put in a specific area. Sprinklers often spread more water over a wider area and pooling of water on the ground can make the water more likely to evaporate before the vines get a chance to use it.

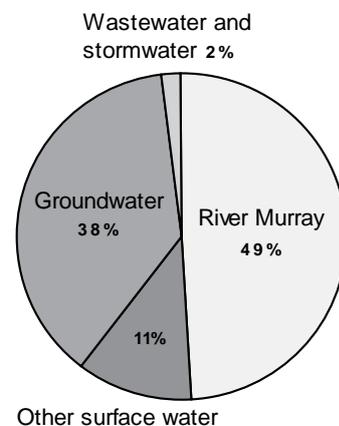
The Yalumba Wine Company set a target to convert to under-canopy drip systems by 2007 (1,000 Ha) and as the conversion process is finished it is expected that 2.5 ML of water per Ha per year will be saved. In the Riverland this is estimated to save between 940 ML and 1,140 ML per year from the entire area. As well as saving water, the drip irrigation systems also improved yield for some growers.

South Australian water consumption by sector



Source: SA Water

South Australian water use by source (GL)



Source: SA Water

Water Quantity



Research Ideas about Water Quantity

- 1 What is meant by 'water quantity'?

- 2 How does our water quantity affect the environment?

- 3 In what way does the environment use water?

- 4 How have human activities impacted on the water quantity in your community, South Australia, Australia and globally?

- 5 What does the State of the Environment report tell us about the issues of water quantity in South Australia?

- 6 What might happen in the future if we continue to use as much water as we are?

- 7 What are government, business and industry doing to address water quantity issues?

- 8 What can we do individually, or in communities, to reduce our water use?

Resources

For more detailed information on the issue and actions you can take see the State of the Environment report for South Australia 2008.

This is available at:
www.epa.sa.gov.au/soe



This fact sheet is part of a set of 20 fact sheets about the key environmental issues identified in the State of the Environment report 2008, produced for the Environment Reporting Education Resource. You can access the fact sheets and learn more about taking action for the environment at the Education Resource website: www.epa.sa.gov.au/soe. For more information call the Environmental Education Unit of the Department for Environment and Heritage (08) 8463 3911.

