



Water Issues



South Australia is the driest state in the driest continent in the world and we face lots of challenges in making sure we have enough water for all of our needs. South Australia is currently experiencing severe water shortages which have resulted in domestic water restrictions and a reduction in rural water allocations.

Water supplied to the urban settlements of South Australia is taken from the Murray River, surface water reservoirs (mostly in the Mount Lofty Ranges), groundwater in the south-eastern, northern and western areas of the state, and more recently extracted from the sea. Prior to water restrictions, South Australians used around 40% of their mains treated water supply (tap water) to maintain gardens, but now this is likely to be around 25-30%.

Improved watering practices could reduce this demand but alternative sources of water, such as urban run-off or treated wastewater, could provide a substitute for uses other than drinking. In response to the severe water shortage many South Australians have installed rainwater tanks and greywater use systems. Wastewater from baths, showers, washing machines and other household sources is called greywater and it can be used in a number of ways including watering gardens and irrigating sports ovals.

Every year around 230,000 megalitres (ML) of stormwater and treated effluent is pumped out to sea. This is more than Adelaide consumes each year (216,000 ML), which means that we waste more water than we need and Adelaide's water supply could largely be met by re-using stormwater and wastewater.

“ Freshwater is one of the world's most valuable resources but we waste more water than we need. ”

Trends



The quality of mains water supplied to Adelaide continues to **comply** with the national drinking water quality guidelines.



Water consumed per person in the Adelaide metropolitan area has **decreased**.



Re-use of treated wastewater for horticulture and other non drinking uses **increased** from 7.6% in 1995 to 29.7% in 2007.



The amount of stormwater being reused each year (3,500 ML) is **increasing**.



South Australia generates on average 87,000 ML of stormwater per year: the trend in stormwater generation is **uncertain**.

Water

What is the Current Water Situation?

The urban settlements of South Australia are primarily reliant on two key water sources - the Murray River and the Mount Lofty Ranges reservoirs. In dry years, Adelaide and much of South Australia relies heavily on the Murray Darling Basin Catchment and 91% of our tap water in South Australia came from the Murray River in 2006-07.

Climate change may mean that less water is available from surface and ground water sources as the frequency and severity of drought is likely to increase. South Australia's population is currently growing and this trend is likely to continue in line with the government population target of 2 million people in South Australia by 2050. If this occurs, then the amount of water South Australia needs will increase if water is not re-used or water efficiency does not improve.

Increasing salinity in the Murray River is a critical issue for the quality of our drinking water. Long-term below average rainfall over the past 10 years has reduced river flows and salt has accumulated in the floodplains and disconnected wetlands. While the water quality meets drinking water guidelines at the moment, when river flows are increased, this accumulated salt may reduce water quality.



Pressure Indicators

Total mains water consumption

Around 66% of all mains water is supplied to households. A typical South Australian household uses approximately 30-40% of their mains water to irrigate the garden. Water consumption in 2006/07 has been reduced by about 10% when compared to the previous five year average, and the residential sector is responsible for the majority of this reduction.

Water consumption per person

Adelaide's per capita (per person) water consumption is among the lowest when compared with other Australian capital cities, but is relatively high compared to world standards. The figures for per capita daily consumption have decreased steadily since 2002-03 from 454 litres per day per person to 388 litres per day per person in 2006-07.



Condition indicators

Water quality

Water quality is measured by a number of microbiological, physical and chemical indicators and assessed against the Australian Drinking Water Guidelines (ADWG) 2001. South Australia's water supplies undergo lots of sampling and monitoring. These tests show that most indicators are within the limits of national guidelines. The most common and widespread health risk is the presence of micro-organisms such as E coli, Cryptosporidium and Giardia.

Mains water quality in some country areas is poorer than in the Adelaide metropolitan area but during 2002-07, major treatment initiatives have led to better water quality for communities in rural areas and the Adelaide Hills.

Freshwater algal blooms

Cyanobacteria or blue-green algae are naturally occurring organisms that can increase in numbers to produce a freshwater algal bloom, under certain conditions. Some human activities, such as farming with lots of fertilisers, produce high levels of nutrients in water, which can lead to algal blooms. These occur when more than 500 algal cells are found per millilitre of water. A total of 53 blooms were recorded in SA Water Reservoirs between 2002 and 2007, while a further 100 blooms were detected along the Murray River.

Water



Responding to Water Issues

In 2005 the South Australian Government released **Water Proofing Adelaide: a Thirst for Change Strategy 2005-2025** which includes strategies to manage existing water resources, address responsible water use and investigate additional water supplies. Amongst other strategies, Water Proofing Adelaide aims to increase stormwater use by 11,000 ML per year and it requires rainwater tanks to be added to most new homes, saving another 4,000 ML per year.

Response Indicators

Re-use of treated wastewater

In 2006/07, Adelaide's four major metropolitan wastewater treatment plants (WWTPs) treated 85,000 ML of wastewater. Around 30% of this treated wastewater was re-used and the rest was discharged to the sea. The re-use of treated wastewater from Adelaide WWTPs has been slowly increasing from 7.6% in 1995 to the current level of around 30% in 2006/07.

South Australia is an international leader in developing technology to re-use treated wastewater and stormwater, with more opportunities under development to increase the level of re-use.

“ Imagine how much we could relieve the pressure on the Murray River if we could re-use our water, rather than waste it. ”



Water



Taking Action for Water Consumption in Urban Settlements

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 dual 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 Water Consumption in Urban Settlements



Atmosphere

Increasing demand for water means that we will need to pump more water and therefore use more energy. Traditional forms of energy production contribute to the greenhouse effect and air pollution.



Inland waters

Most of the water that households use ends up in stormwater drains or sewage systems. In turn, our stormwater ends up in rivers, streams and wetlands and may lead to pollution.



Coasts and the sea

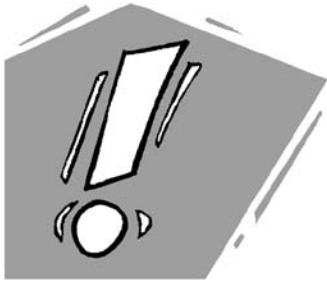
Most stormwater ends up being discharged into the sea causing pollution and impacting on fish stocks important to fisheries.



Economic

Significant damage to the marine environment is caused by stormwater discharge. In particular, damage is caused to seagrasses, which provide important habitats for fish breeding. This is estimated to cost South Australia \$7.98 million each year in lost fish catch.





Attention!!

What is stormwater?

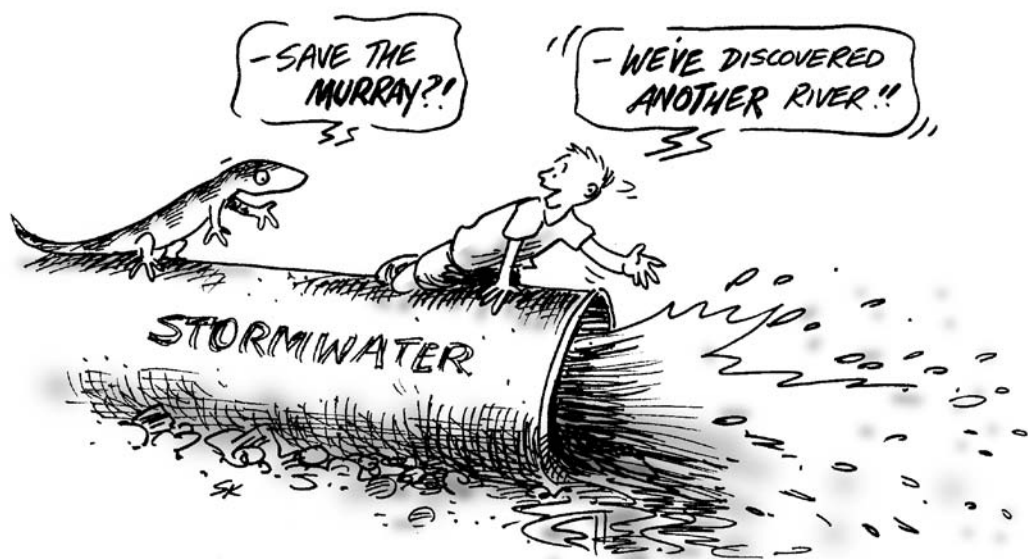
Stormwater is the name given to water that runs off hard surfaces when it rains like roads, car parks, footpaths and roofs. More stormwater is generated in urban areas than rural areas as more land is covered by houses, roads and footpaths. So much stormwater and wastewater is generated each year that Adelaide's water supply could be almost entirely met just by the reuse of stormwater and wastewater providing it can be collected, treated and distributed!

Stormwater is generally captured by a drainage network that eventually takes the stormwater out to sea. When stormwater enters the sea it can cause significant damage to the marine and coastal environment. Sea grasses are particularly affected by polluted stormwater and waste water and many hectares of seagrasses in our marine environment have been destroyed. Sea grasses provide important fish breeding habitat that support our commercial and recreational fishing industries.

We are gradually changing the way we handle stormwater and it is now more common for stormwater to be collected, treated and reused. New techniques (together called Water Sensitive Urban Design) include the use of permeable paving (allows water to flow through rather than run off), underground water storage tanks, aquifer storage and recovery schemes and the creation of urban wetlands.

Wetlands can act as filters for urban and polluted stormwater that would otherwise go into the marine environment. Once the water has been naturally filtered by the wetland it can then be used for irrigation. Wetland areas are currently being constructed at the Grange, Royal Adelaide and Glenelg golf clubs to capture and filter stormwater which will be recharged to an aquifer.

Greater amounts of stormwater and wastewater are being reused and recycled in South Australia than anywhere else in urban Australia. Reuse of stormwater and wastewater will reduce pressure on our scarce natural water resources.





Research Ideas about Water Consumption in Urban Settlements

- 1 What is meant by 'water consumption'?

- 2 What is meant by 'wastewater'? How is it produced?

- 3 How does water consumption in urban settlements impact on the environment in your community, South Australia, Australia and globally?

- 4 What does the State of the Environment report tell us about water consumption in urban settlements in South Australia?

- 5 What might happen in the future if things continue as they are?

- 6 What are government, business and industry doing to address water consumption issues?

- 7 What can we do individually, or in communities, to reduce our consumption of water?

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.



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