

'There are steps everyone can take to be more efficient and use less water.'



## Splash out with water savings

Water is an important issue for us all. Even if your business doesn't use a lot of water it's likely to be facing some restriction on use and increase in cost.

If your business relies on water and operates in drought-affected areas, you would be acutely affected already.

The water problems Australia faces are predicted to worsen over coming decades. However, there are steps everyone can take to be more efficient and use less water to lessen the problem, while also maintaining business operations.

### **Your water use**

Before you can better manage your water use, you need to understand it. Doing so requires some life-cycle thinking to look at all your direct and indirect water using activities.

## Direct water use

1. Calculate your baseline use – that is, the total amount of water your business consumes. If you're not clear on how to do this, call your water utility for assistance.
2. Track variables such as seasonal differences, downtime or holidays, changes in employee numbers, number of customers, or differences in work undertaken.
3. Identify equipment and activities that use water. If you have high-demand areas consider sub-metering to better measure where and how your business uses water.

## Indirect water use

Every good or service contains what is called 'embodied water'. This is a measure of the total water used in producing that good or service. For example, it is estimated that a kilogram of potatoes takes about 500 litres to produce; a kilogram of rice about 1550 litres; and a kilogram of beef 50,000–100,000 litres.<sup>95</sup> A typical ream of paper, weighing 2.5 kilograms, takes about 60 litres of water to make; while a vehicle weighing 1.5 tonnes uses about 71,000 litres in its manufacture.<sup>96</sup>

Mining, growing, processing, manufacturing, packaging, transporting, storage and waste disposal all consume water. SMEs that minimise consumption by reducing, reusing and recycling resources can help to save very large amounts of water. Recycling one tonne of paper, for example, can save up to 31,780 litres of water.<sup>97</sup> This saving may be out of sight and out of mind but the savings are significant all the same.

## Your water saving strategy

A water-efficiency strategy for SMEs involves four key elements:

- the use of water-efficient appliances and fittings
- the capturing and reuse of waste water
- maintaining equipment at maximum operational efficiency
- educating and raising awareness about the need to minimise water use.

95 See [www.clw.csiro.au/issues/water](http://www.clw.csiro.au/issues/water)

96 'The Future of Water' in *Future Dilemmas: Options to 2050 for Australia's population, technology, resource and environmental*, CSIRO Sustainable Ecosystems, October 2002

97 See [www.csiro.au/helix/sciencemail/activities/hand-madepaper.html](http://www.csiro.au/helix/sciencemail/activities/hand-madepaper.html)

## Using water-efficient appliances and fittings

The Water Efficiency Labelling Scheme (WELS) can tell you which products are more water-efficient than others. Devices receive a rating to a maximum of six stars. More stars means less water is used and there is an associated saving on water and energy costs.

The WELS scheme covers tap equipment, urinals, toilet equipment, showers, flow controllers, washing machines and dishwashers. Go to [www.waterrating.gov.au](http://www.waterrating.gov.au) for more information about the scheme.

The savings from buying water-efficient equipment can be significant:

- toilet equipment accounts for 22% of the water saving from the WELS scheme; modern dual-flush toilets use only four litres of water – an old single flush toilet can use three times that amount
- according to the WELS site, the average urinal uses about 2.2 litres per flush, whereas a water-efficient urinal will use 1.5 litres
- a water-efficient dishwasher can use half the water of less efficient models.

### Finding out more about water-efficient appliances

Check out [www.waterrating.gov.au](http://www.waterrating.gov.au) for the water-efficiency ratings of the 12,700 products that carry the WELS symbol.

The sister scheme to WELS for other water products and services is the Smart Approved WaterMark. More than 160 products now carry the Smart Approved WaterMark label. For more information, go to [www.smartwatermark.org](http://www.smartwatermark.org) or call 02 9290 3322.

Visit [www.greenplumbers.com.au](http://www.greenplumbers.com.au) to find a plumbing service that can advise on the most water-efficient products and appliances for your needs.

## Capturing and reusing waste water

Your scope for doing this will depend on the nature of your business. It could be as simple as diverting water from bathroom basins to toilet cisterns in a small office. In larger companies, it could include a comprehensive wastewater management plan involving treatment and recycling where water is used an industrial input.

As these solutions, and the savings to be made, are very site-specific it is best to seek advice from a qualified plumber, your local water authority or a waste-management specialist.

Water systems that handle black and grey water can also be found at the [www.smartwatermark.org](http://www.smartwatermark.org) website.

## Maintain equipment

Improving the operational efficiency of equipment is one of the simplest ways to reduce water consumption. A study by Sydney Water found nearly a third (28 per cent) of water consumption in the average commercial building can be due to leaks.<sup>98</sup>

Solutions to the problem of leaks include:

- read water meters regularly to help detect leaks and to identify equipment that may be operating in error
- check the meter when no one is in the office or your plant is not running – if the meter is running ask your water authority to investigate
- conduct regular inspections of hot water systems, steam boilers and air-conditioning units, as well as pipes, hoses and connections
- put food dye in a toilet cistern overnight; if the water in the bowl is coloured in the morning, you have a cistern leak that needs to be fixed.

## Educating and raising awareness

Effective training and communication is vital if you are to achieve your water-saving goals. Here are a few ideas to encourage water-conscious behaviour in your business:

1. Place signs on all water-using fixtures, explaining how much water they use and how to use them most efficiently, such as not running a dishwasher before it is full.

98 Sydney Water: *Best Practice Guidelines for water conservation in commercial office buildings and shopping centres*

### **Saving money on bottled water:**

- Australians spend more than half a billion dollars a year on bottled water – SMEs can pay more for a litre of water than they do for a litre of petrol
- Westpac removed bottled water from its offices and branches and replaced it with filtered water – this is the better environmental option as it can save your business money and at the same time reduce the need to bottle and transport large drum bottled water and small single-use bottles; for more case studies on corporate bottled water reduction visit [www.gotap.com.au](http://www.gotap.com.au)
- in 2009, in a move that generated global headlines, all the small business retailers in the NSW town of Bundanoon banned single-use still bottled water; they now sell refillable bottles instead – their customers fill them up for free and the retailers make money on the refillable bottles
- according to DECC, it takes up to 200 millilitres of oil to produce, transport, refrigerate and dispose of one litre of bottled water.

2. Look out for leaks. Place posters around your business that give a phone number or email so people can report leaks in bathrooms, kitchens and other areas of your business. It makes sense to put these posters in the areas where water is being used.
3. Install shower timers to encourage shorter showers. Using a water-efficient shower and reducing shower durations from seven minutes to four minutes can save up to 30 litres or more per shower. As you're also reducing the amount of water you have to heat, the savings from this move can be significant.

4. Include water conservation in employee inductions and invite a representative from a municipal or state government water-efficiency program to address an employee seminar.
  5. Use newsletters, email or pay-slip notifications to communicate water-saving tips, new measures and positive feedback on water saving reductions.
  6. Promote your water-saving initiatives within the local community via media releases and the local newspaper. Such steps can enhance your business profile, raise your awareness with consumers and potential customers and generally raise awareness in the community. See chapter 13 for more information on communicating your commitment to sustainability.
  7. Provide opportunities for your employees and contractors to play a leadership role in water-saving initiatives. Make sure you provide a mechanism to acknowledge their contribution as well as incentives to encourage better outcomes.
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### **Getting assistance**

Most water authorities and suppliers offer assistance to businesses to reduce their water usage and water bills.

They do this through a range of services such as site assessments to conduct a water efficiency appraisal and comprehensive reports providing your business with a water-saving plan.

Different authorities offer different options for these services – some provide initial advice for free and then either charge directly for more detailed work or offer pay-by-saving programs that charge a scheduled payment over time as your business reduces water use and costs.

Go to [www.savewater.com.au/programs-and-events/savewater-efficiency-service](http://www.savewater.com.au/programs-and-events/savewater-efficiency-service) for more information and to see if this service is available in your area.

## **Actions for your water strategy**

### **Kitchens:**

1. Install water-efficient dishwashers. A six-star rated model under the Water Efficiency Label Scheme (WELS) can use half the water of older models. Also avoid running dishwashers until they are fully loaded.
2. Use WELS-certified plumbing fixtures, such as low-flow and aerator devices on taps.
3. Replace wok stoves with waterless models. Traditional stoves use an average of 5500 litres of water a day in cooling and cleaning, costing thousands of dollars in water.<sup>99</sup> A waterless wok stove can pay for itself in about a year.
4. Turn off combi ovens when not in use.
5. Avoid the use of running water to wash or thaw produce.
6. Clean floors with brooms and mops, rather than hosing them down.
7. Use a water filter on taps instead of buying bottled water.
8. Put water aerators and flow restrictors on kitchen taps.

### **Bathroom areas**

1. Use water-efficient plumbing fixtures. Flow control valves on taps reduce average flow from 12 litres to four litres or less a minute. Water-efficient showerheads can reduce flow from about 15 litres to nine litres or less a minute. The latest 4.5/3L dual-flush toilets use 30 to 60% less water than older models.
2. Install water-efficient urinals with infrared 'smart' flushing controls. One single inefficient urinal in a high-use location can use up to 700 litres of water a day. To cut water use to virtually nothing (besides cleaning) consider waterless urinals – though make sure you have piping that can cope with them as the undiluted ammonia in urine can corrode copper pipes.
3. Insulate hot water pipes and minimise the distance between hot water tanks and taps. This avoids running the tap to get hot water, thereby helping you to save money by reducing the energy needed to heat the water.

<sup>99</sup> *The Waterless Wok Stove*, Sydney Water. See [www.sydneywater.com.au](http://www.sydneywater.com.au)

## Waterless urinals

A bathroom with a waterless urinal system can save up to 150 kilolitres of water each year.<sup>100</sup>

### Laundry areas:

1. Replace top-loading washing machines with water-efficient front-loading models. The best rated machines can use up to two-thirds less water than older models. Avoid running them until there is a full load.
2. Washing in cold water will also help to reduce the cost of heating the water – which in turn helps to reduce greenhouse emissions.
3. Ensure equipment such as boilers, pumps, chillers and water heaters are maintained to prevent water loss due to leaks, steam or condensation. Try to make sure that they are used according to actual loads and are shut down when not in use.
4. Install timers to turn off equipment when it's not in use.
5. Install a system to reuse water where the opportunity exists.

### Plants and outdoor areas:

1. Choose water-efficient products, such as trigger nozzles on hoses, and service providers displaying the Smart Approved WaterMark. The label certifies products and services that help to reduce indoor and outdoor water use.<sup>101</sup>
2. Use native and drought-tolerant plants and replace ornamental or unused lawn areas with ground cover or a bush garden.

100 *Water Efficiency Guide: Office and Public Buildings*, Department of Environment and Heritage, October 2006

101 See [www.smartwatermark.info](http://www.smartwatermark.info)

## **Case study: Caroma – saving water and money with the dual-flush toilet**

How much water can efficiency measures save? Consider the case of the humble toilet. Prior to 1981 the standard toilet used about 12 litres of water per flush. Then Bruce Thompson, working for the Caroma company in Adelaide, developed a dual-flush design with a federal industry grant of \$130,000.

A trial in South Australia found the dual-flush toilet, which used 11 litres for every full flush or 5.5 litres per half flush, saved 32,000 litres of water per household a year. Soon after, all states except NSW made the dual-flush toilet compulsory in new buildings.

In addition to stopping money from being flushed away, the dual-flush toilet is now exported to 30 countries around the world. It's another example of the business potential of environmental innovation.

About 75 per cent of toilets in Australian homes are now dual-flush and the water savings are an estimated 214 gigalitres a year. The Institute of Sustainable Futures at the University of Technology Sydney has estimated that replacing the remaining 3.1 million single-flush toilets with 4.5/3-litre dual-flush toilets would save a further 79 gigalitres of water a year.

### **Did you know?**

We are sometimes not aware of the water our businesses waste. The Nursery and Garden Industry Australia's (NGIA) Best Practice Guidelines state that: "Water use efficiencies as low as 10 per cent are common in Australian nurseries."

3. Cover garden beds with mulch. This will reduce evaporative water loss from the soil by up to 70%.
4. Use timers and moisture sensors to avoid over-watering. Group plants with similar water requirements together (this is called hydro-zoning).
5. Minimise untreated run-off going straight down stormwater drains by routing drain pipes to ponds or bioswales (landscaped areas designed to remove silt and pollution from surface run-off water).
6. Use permeable pavers or paving designs that provide gaps for water to reach the Earth, where it can be filtered by the soil before entering the water table.

## Be inspired

Want to see what other businesses are doing to reduce water use? Then visit [www.savewater.com.au](http://www.savewater.com.au) and check out the entries in the small business section of the Save Water! Awards.

The Dugine Native Plant Nursery won the 2009 awards by reducing its use of potable water by 100 per cent. They did this by switching to new rainwater tanks and bore water.

Go to [www.savewater.com.au/how-to-save-water/in-business](http://www.savewater.com.au/how-to-save-water/in-business) for tips on water saving in hospitality, food processing, nurseries, construction, textiles and manufacturing.

The Geelong Racing Club, a finalist in 2009, used 80 megalitres of water every year. From May 2008–9 it reduced its use of potable water by 69 per cent. This was achieved through rainwater tanks that were used for washing horses, a groundwater bore for maintenance of the sand track, the use of drought tolerant plants and mulch in its gardens. It also used a Siemens data logging system that alerted employees to water leaks.

How can your business reduce its water use?

## Increased water costs for SMEs

According to the Water Services Association, which represents the companies who provide water to 15 million Australians, the cost of water is likely to rise by 50 to 100 per cent in the next few years.

There are no easy or cheap solutions. Except one – water efficiency.

As the price of water goes up, there will be good reasons to make your business water-efficient. That's because water efficiency:

- saves your business money – not just in direct supply charges but also through lower sewage and trade waste charges, as well as associated costs like water heating or pumping
- encourages better business practices – the discipline of measuring and managing water use contributes to overall business efficiencies
- demonstrates your commitment to being an environmentally and socially responsible business – both to customers and employees.

As with energy efficiency, water efficiency helps to protect the environment and your bottom line at the same time.

### Did you know?

1. Just 3% of the world's water is fresh. Two-thirds of that is locked up in polar ice.
2. A slowly dripping tap or toilet can waste a couple of litres each hour – that's 15,000 to 20,000 litres a year.<sup>102</sup>

102 See [www.savewater.com.au](http://www.savewater.com.au)

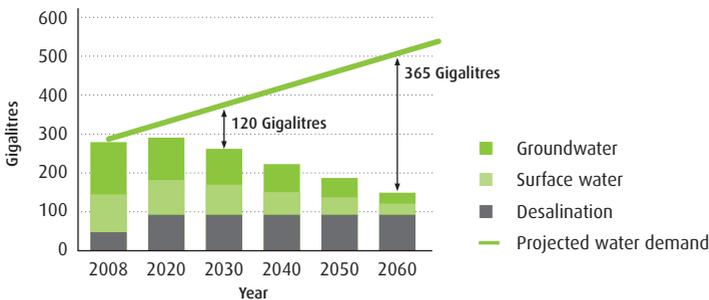
## How bad is the problem?

Australia's 'food bowl', the Murray-Darling Basin, which produces two-fifths of the nation's fruit, vegetables and grain production, is facing an ecological and economic crisis after a decade of drought. This pressure has been magnified by many more decades of unsustainable farming practices that have taken too much water from local rivers. The CSIRO estimates that warming temperatures have lowered rainfalls and these lower rainfalls have reduced surface flows across the basin's nearly two dozen river valleys by 40 per cent since 1950.

The once mighty Murray-Darling system, on which thousands of SMEs and about three million Australians depend directly for their water needs, is in danger due to lack of sufficient water flow.

Over the next two decades, the CSIRO predicts a warming climate will reduce rainfall further – by an average of 15 per cent in the catchment areas providing water to Australia's 10 largest cities.<sup>103</sup> At the same time the nation's population could grow from about 22 million people to 35 million by 2049, with the Australian Bureau of Statistics tipping Brisbane, Perth, Melbourne and Sydney as the cities experiencing the most growth. These cities and the SMEs within them have already grappled with shortfalls in water supplies. Such changes will only serve to undermine our water security even further.

### Projected shortfall in Perth's water supply by 2060



Source: CSIRO

This graph shows the scenario for Perth, where rainfall is predicted to drop 20 per cent in the next two decades. The underground aquifers which supply most of the city's water are facing increased stress. Australia's first large-scale desalination plant, costing \$387 million, was opened in 2006, and now supplies about 17 per cent of the city's water. Although this plant

103 'Stormwater – helping to tackle Australia's water crisis' – *NOVA Science in the news* published by the Australian Academy of Science, June 2008

has already supplied more than 100 billion litres of water, the West Australian government has already announced the need for a second plant. This time, the total price tag for construction and integration with the water supply system is approaching \$1 billion.

For more water information and tips, you can download a water efficiency guide from: [www.environment.gov.au/settlements/publications/government/pubs/water-efficiency-guide.pdf](http://www.environment.gov.au/settlements/publications/government/pubs/water-efficiency-guide.pdf)

## Case study: the 321 Water Bottle – water innovation

People who travel a lot often end up spending a small fortune on bottled water. However, a group of Australian designers from a small business in Victoria have come up with an innovative water purification system that provides clean water for long journeys.

Designed by Gretha Oost, Paul Charlwood and Andrew Howley, the 321 Water Bottle is an inexpensive purifier for the health-conscious traveller. Working like a French-press coffee maker, the portable water filter is very simple to use. All the user has to do is fill the bottle with water from the nearest tap, slot in the filter and push it down. The filter is good for 100 uses (approximately 50 litres).

The 321 Water Bottle doesn't just filter water on the go; it also helps to reduce the use of single use plastic water bottles. And that doesn't just save the environment. With bottled water costing more per litre than petrol, it could save you money too.

It's a good example of a small business coming up with a money-making solution to an environmental problem.<sup>104</sup>



104 See [www.321-water.com](http://www.321-water.com)