



Monitoring water quality in Cockburn Sound, Western Australia, where concentrated brine from Perth's desalination plant is discharged. Water Corporation

## Desalination: OPTION OR DISTRACTION?

Perth already has one and is planning its second, Melbourne is getting a bigger one, Sydney has finally decided to get one, and Queensland and South Australia are likely to follow suit.

Spurred on by the recent drought, pressure has mounted on government to solve Australia's urban fresh water supply crisis, sparking a boom in desalination plants.

In November last year an Australian Government report – *Securing Australia's Urban Water Supplies: Opportunities and Impediments*<sup>1</sup> – concluded that, 'All capital cities with the exception of Darwin and Hobart now have inadequate water supplies.'

Clearly our major cities are facing a problem, but a recent WWF report – *Making Water. Desalination: Option or Distraction for a Thirsty World?*<sup>2</sup> – warns that the tempting lure of using our oceans as an abundant source of potential fresh water should have 'a limited place in water supply'.

The report says that while desalination plants may have a role in providing water in certain circumstances, they are diverting attention away from less costly and more environmentally benign alternatives such as water conservation, water use efficiency improvements and water recycling.

However, Ross Young, Executive Director for Water Services Association of Australia – the peak body of the Australian urban water industry – believes the move to desalination plants is timely.

He points out that while Australia leads the world in implementing water conservation programs and supplying recycled water to industry, our cities need additional water sources.

'All options need to be put on the table and carefully evaluated on their merits.'

'For coastal cities, desalination is becoming an increasingly attractive option – climate change and unreliable rainfall mean cities have to diversify their water supply so they are not totally reliant on surface run-off.'

According to Young, the energy efficiency of desalination plants has been reduced in recent years and with it, energy costs.

The *Securing Australia's Urban Water Supplies* report estimates that the price of urban water per kilolitre is between \$0.63 and \$1.59, depending on the city. According to Western Australia's Water Corporation, which runs Perth's Kwinana desalination plant, desalinated water there costs \$1.16 per kilolitre.

The key to reducing the cost of desalination is improving the technology. In Australia, the Advanced Membrane Technologies Research Cluster is developing new membranes to improve the efficiency of reverse osmosis – forcing saline water through a membrane to separate the salt and water.

Nevertheless, desalination still requires a lot of energy. The Australia Institute predicts the emissions of the proposed Sydney plant 'are the equivalent of putting another 220 000 cars on the road, or burning two litres of petrol for every 1000 litre of water.'<sup>3</sup> In WA, the Water Corporation purchases wind power to offset the Kwinana plant's energy needs.

CSIRO's Dr Karen Wild-Allen reviewed the Environmental Impact Statement for the Kwinana plant and says the salty discharge has an effect on the environment of surrounding coastal waters, which provide habitat for sea life.

'Dense salty water sits around in a hollow or a dip in the sea bed, and oxygen can become depleted in this layer, which can have a significant effect on the benthic in-fauna,' says Wild-Allen.

She adds that while some marine organisms may die in very low oxygen environments, many can cope with short events of low dissolved oxygen and others can recover rapidly when the system is flushed. Chemical discharges and water intake can also affect marine life.

Diffusers to spread the discharge, such as those at Kwinana, can disperse concentrated brine to minimise its negative effect.

The WWF report acknowledges the role of desalination plants within a broader water supply strategy, but says they should 'be sited, constructed and operated to best minimise or mitigate their environmental impacts'. The urban water industry also recognises they are not the silver bullet to our urban fresh water supply woes, but they do now seem an inevitable part.

● Sophie Clayton

<sup>1</sup> *Securing Australia's Urban Water Supplies: Opportunities and Impediments*. [www.pmc.gov.au/water\\_reform/docs/urban\\_water\\_report.pdf](http://www.pmc.gov.au/water_reform/docs/urban_water_report.pdf)

<sup>2</sup> *Making Water. Desalination: Option or Distraction for a Thirsty World?* [www.wwf.org.au/publications/desalinationreportjune2007](http://www.wwf.org.au/publications/desalinationreportjune2007)

<sup>3</sup> The Australia Institute report on greenhouse implications of the proposed Sydney desalination plant. [www.tai.org.au/documents/downloads/WP78.pdf](http://www.tai.org.au/documents/downloads/WP78.pdf)