

Southern Seawater Desalination Project

Desalination is part of our water future



Over the past 30 years, Western Australia's rainfall has dropped to about a third of the long-term average. That means that water flowing into our dams is only a third of what we had come to expect. At the same time, our population and economy are both growing, increasing demand for water.

Since 2001, per person annual water consumption in Western Australia has actually dropped 18 per cent from 185 to 151 kilolitres per annum. Around 45 gigalitres (45 thousand million litres) are saved each year by Waterwise programs and water efficiency initiatives.

We work hard to use the water sources we have more efficiently and reduce any losses.

We also recycle as much water as possible and look for new ways to increase reuse.

However, the reality is that to provide the water that is fundamental to our way of life – we must develop new sources that are not dependent on our climate and how much rain falls.

Desalination – reliable, economical, sustainable

Although it is only one of a range of new water source, conservation and recycling options, desalination is very important – primarily because it is totally climate-independent and water is always available.

Desalination is simply the production of drinking water by removing dissolved salts and other impurities from seawater, groundwater or surface water.

Apart from the 45 gigalitre a year Perth Seawater Desalination Plant at Kwinana which supplies about 17 per cent of our drinking water, there are many other desalination plants across Western Australia producing fresh water from salty groundwater or seawater.

There are desalination plants supplying the towns of Denham, Ravensthorpe and Hopetoun and smaller ones at Merredin and several other locations. On Rottnest Island, 100 per cent of its drinking water is desalinated.

The Water Corporation also has desalination plants supplying water for mining across the State, and for industrial uses on the Burrup Peninsula. Many more private plants service mining and other industry.

Across the world, desalination is a very important water source. The Middle East is the world's largest user of desalination and there are many plants throughout the region. There are also large plants in the United States of America and European countries such as Spain and France.

The island nations of Cyprus, Malta, Singapore and Trinidad in the Caribbean all rely on seawater desalination.

Modern reverse osmosis desalination technology is highly reliable and improvements in technology have reduced energy consumption and processing costs.

There tends to be a perception that desalination is expensive. Although it certainly costs more and uses more energy than collecting rain in dams, if we were to use

desalinated water for everything an average Perth family uses – inside and outside the house – providing all that water would cost about as much over a year as running one fridge for the same time.

By obtaining all their energy requirements from renewable sources such as wind power, the Perth and Southern Seawater Desalination Plants will significantly reduce their overall environmental impact and contribution to greenhouse gas emissions.



The Southern Seawater Desalination Plant

This new desalination plant is due to become fully operational in 2011. It will have a capacity of 50 gegalitres per year, with the potential to increase its output to 100 gegalitres with future expansion of the initial plant.

It will be situated near Binningup, between Bunbury and Mandurah, and water from the plant will be fed into the Integrated Water Supply Scheme near Harvey, approximately 30 kilometres inland.

Although it's probably common sense that the best place for a seawater desalination plant is by the sea – as transporting heavy water inland uses a great deal of energy – when Western Australia has about 13,000 kilometres of beaches and coastline; “Why Binningup?” is a common question.

The current Perth Seawater Desalination Plant site at Kwinana is only 6.7 hectares, so there is simply no room to increase the plant capacity or build another one. A new 50 gegalitre plant, with the capacity to increase to 100 gegalitres

requires around 20 hectares minimum site area to allow for all plant components.

Since early 2004, all possible sites between Jurien Bay and Bunbury have been examined. A significant number of practical factors were considered – any suitable site had to:

- ❖ Be close to the ocean
- ❖ Offer easy integration into the Integrated Water Supply Scheme
- ❖ Offer access to a suitable power source
- ❖ Be environmentally compatible, with minimal environmentally sensitive areas
- ❖ Be at least 20 hectares to accommodate plant components
- ❖ Have compatible surrounding land uses (industrial, rural, park and recreation)

In addition, a very long list of environmental constraints applied, as well as Aboriginal and other heritage considerations.

Preliminary investigations of the local marine environment and the way the ocean at Binningup works, as well as sea floor mapping, indicate it is well suited to desalination and that a plant situated there is unlikely to have any adverse environmental impact.

Looking after today – and tomorrow

Western Australia is recognised as Australia's leader in climate change response.

Further reducing water consumption, increasing the efficiency with which we use our current sources, and increasing water recycling and reuse are critical initiatives which we must continue to pursue.

With the construction of the Southern Seawater Desalination Plant – and other elements of our *Security through Diversity* strategy – we will continue to conserve, manage and develop our water resources sustainably for the benefit of present and future generations.