

Desalination is an extra source of water that doesn't rely on rain

The desalination plant at Kurnell can produce 90 billion litres of water a year – that's 15 percent of greater Sydney's current needs.

Desalinated water was added to Sydney's water supplies in January 2010. When operating at full capacity, the desalination plant can provide 15 percent of greater Sydney's water needs, helping to provide water for people and the environment.

Sydney's desalination plant

All mainland states in Australia have built or are building a desalination plant. Over 20 other large plants are being built internationally and there are over 3,500 land-based desalination plants around the world.

Desalination was one of the major initiatives of the 2006 *Metropolitan Water Plan*. Desalination was introduced to the Sydney water supply in response to the deepening drought and to provide an extra source of water that doesn't rely on rain.

The desalination plant began supplying water on 28 January 2010.

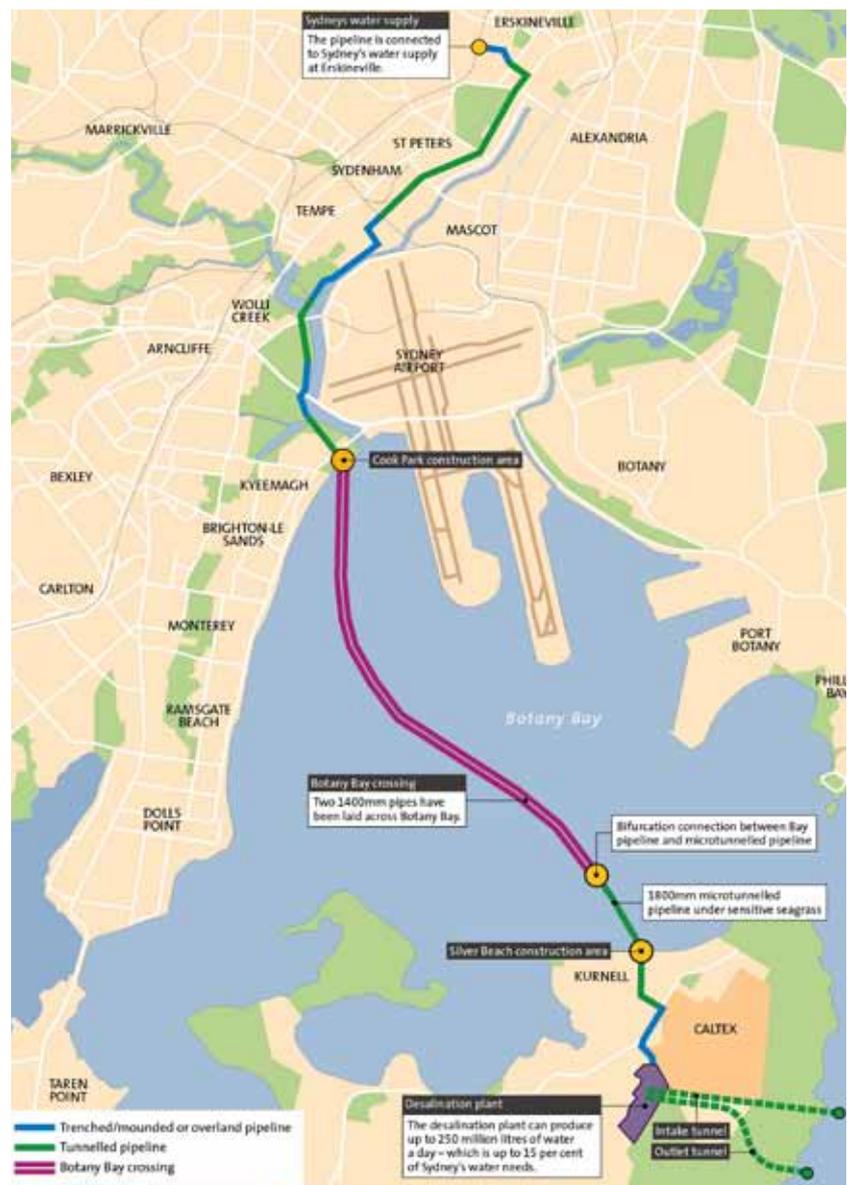
When operating at full capacity, the plant can produce 90 billion litres of water a year, enough water to supply up to 15 percent of greater Sydney's current water needs.

The energy requirements of the plant are 100 percent offset by renewable energy produced at the 67-turbine Capital Wind Farm near Bungendore.

Water from the desalination plant enters the system at Erskineville and is distributed to approximately 1.5 million people across the Sydney CBD, inner west, eastern suburbs, southern Sydney and parts of the Sutherland shire, and at times as far west as Auburn.

The plant has been designed and constructed so that if needed it can be upscaled to produce up to 180 billion litres of water each year.

The desalination plant project has won a number of national awards for excellence in government partnership, environmental and project management, as well as the use of innovative technologies and techniques.



The desalination pipeline connecting to Sydney Water's supply at Erskineville.

When will we use the desalination plant?

Consistent with the design and construct contract, the desalination plant will run at full capacity during a two year 'defects correction period' which will end in mid June 2012. During this period, the operation of the plant will be monitored for water quality, performance and impacts on the supply system.

After this period, the following operating rule will apply: the plant will operate at full production capacity and supply desalinated water to Sydney Water's area of operations when the total dam storage level is below 70 percent and will continue to do so until the total dam storage level reaches 80 percent.

During the review of the 2006 *Metropolitan Water Plan* a number of operating options were modelled. Operating the plant under this regime strikes the right balance between maximising water available for people and the environment, while minimising the potential for the plant to be operating when the dams are full. If it produced water only when dams fell to the very low levels of a deep drought, it may not produce enough water to stop Sydney's total dam storages falling to a critical level and Sydney facing severe water restrictions or other extreme drought measures.

This operating regime benefits the community by reducing the likelihood of spending time in drought restrictions, reducing the probability of having to further supplement the water supply system, and providing increased water security, which helps maintain environmental flows for river health.

If necessary, the Government will be able to operate the desalination plant at other times to secure water supplies (for example if availability of water from other parts of the supply system were affected by technical or other problems).

The operating regime for the desalination plant meets the community planning principles of ensuring a dependable long-term water supply for current and future generations, and providing water that is affordable and safe to drink.

The costs of operating the plant are included in current water prices. They comprise about \$35 of the typical annual residential water and wastewater bill which was around \$1,045 in 2009–10.



The power required to operate the desalination plant is 100 percent offset with renewable energy generated at the Capital Wind Farm near Bungendore.

“Using the desalination plant as a buffer system for the water supply of Sydney seems a crucial part of future usage and management.”

*Community comment,
Consultation workshop 2009*

Our major achievements

- The *2006 Metropolitan Water Plan* stated that construction contracts for a desalination plant would be awarded in the event that severe drought conditions saw Sydney's total dam storage level fall to record lows (around 30 percent). In accordance with the plan, in February 2007 as Sydney's total dam storage level approached about 30 percent, the government announced a request for tenders to build the desalination plant.
- Construction of the desalination plant began in late 2007 and the plant began supplying water on 28 January 2010. The plant was delivered on time and more than \$89 million under budget.
- The power requirements of the desalination plant are being 100 percent offset with renewable energy generated at the Capital Wind Farm near Bungendore.
- The project has won a number of national awards for excellence.
- As part of the review of the *Metropolitan Water Plan*, the most effective and efficient operating regime for the desalination plant was identified in the context of the entire portfolio of water supply and demand measures to ensure its optimal use.

What's next

- Introduce new operating rules for the desalination plant following the two-year proving period: the plant will operate at full production capacity and supply desalinated water to Sydney Water's area of operations when the total dam storage level is below 70 percent and will continue to do so until the total dam storage level reaches 80 percent.
- Should Sydney's total dam storage level drop again under severe drought conditions, the government could take the decision to build the second stage of the desalination plant – essentially upscaling the existing plant to supply twice as much water (also see Chapter 8). Exact timing of the decision would be influenced by predicted weather patterns, seasonal and projected demand levels.



A jack-up barge, Seafox 6, was used as a drilling platform for the inlet and outlet shafts for the desalination plant. Construction of the plant was completed on time and under budget.