

# The Well

## Desalination

Desalination is the process that removes dissolved salts and impurities from a water source, such as seawater or groundwater, and turns it into fresh water.



Of our nine desalination plants across South Australia, two are seawater desalination plants: one on Kangaroo Island and the Adelaide Desalination Plant in Lonsdale.

Seawater desalination plays an important role in our state's water security. When we experience drought, having access to seawater as a source for drinking water reduces our dependency on other water sources such as the River Murray and reservoirs. In fact, the Adelaide Desalination Plant can provide the greater Adelaide metro region with approximately half its water requirements every year!

The other seven desalination plants around our state are connected to groundwater supplies and remove salts and minerals to ensure our customers have clean, safe drinking water.

All nine desalination plants in South Australia use reverse osmosis to remove the unwanted salts and impurities. Reverse osmosis uses enormous amounts of pressure to force salty water through a membrane. Picture a membrane as a very thin wall, with lots and lots of microscopic holes in it. The pressure forces the salty water through the tiny holes, but salt molecules and water molecules are different sizes.

While salt molecules are too big to squeeze through the holes, the water molecules are small enough to pass through. This leaves the salt on one side of the membrane and fresh water on the other side.

Desalination occurs naturally in the environment when the sun heats up ocean water causing water molecules to evaporate into the atmosphere. The salt molecules are left behind in the ocean, and the water molecules create clouds and come down as fresh rain, hail or snow.

The final product after the reverse osmosis is too pure for human consumption. During reverse osmosis, lots of minerals are lost as well, so they need to be added back in. This process is called remineralisation. Chlorine is added to make it safe to drink and fluoride is added on behalf of SA Health.

In metropolitan Adelaide, the remineralised water travels from the Adelaide Desalination Plant to Happy Valley Water Treatment Plant. There it is mixed with treated water from the River Murray before being sent to customers through our largely hidden, underground water pipes. Water from the Adelaide Desalination Plant reaches nearly all metropolitan Adelaide residents.



### Did you know?

- Desalination enables us to deliver water all year round regardless of rainfall, and even in times of drought.
- The Gulf St Vincent loses 12,000GL of water each year through evaporation. That's enough to fill the Adelaide Oval more than 24,000 times.
- The Adelaide Desalination Plant can produce 300ML of fresh water a day. That's about 136 Olympic-sized swimming pools.
- The Adelaide Desalination Plant is one of the biggest of the six major desalination plants in Australia.

## Adelaide Desalination Plant process

