

Gloucester
Our local
matters



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AGL

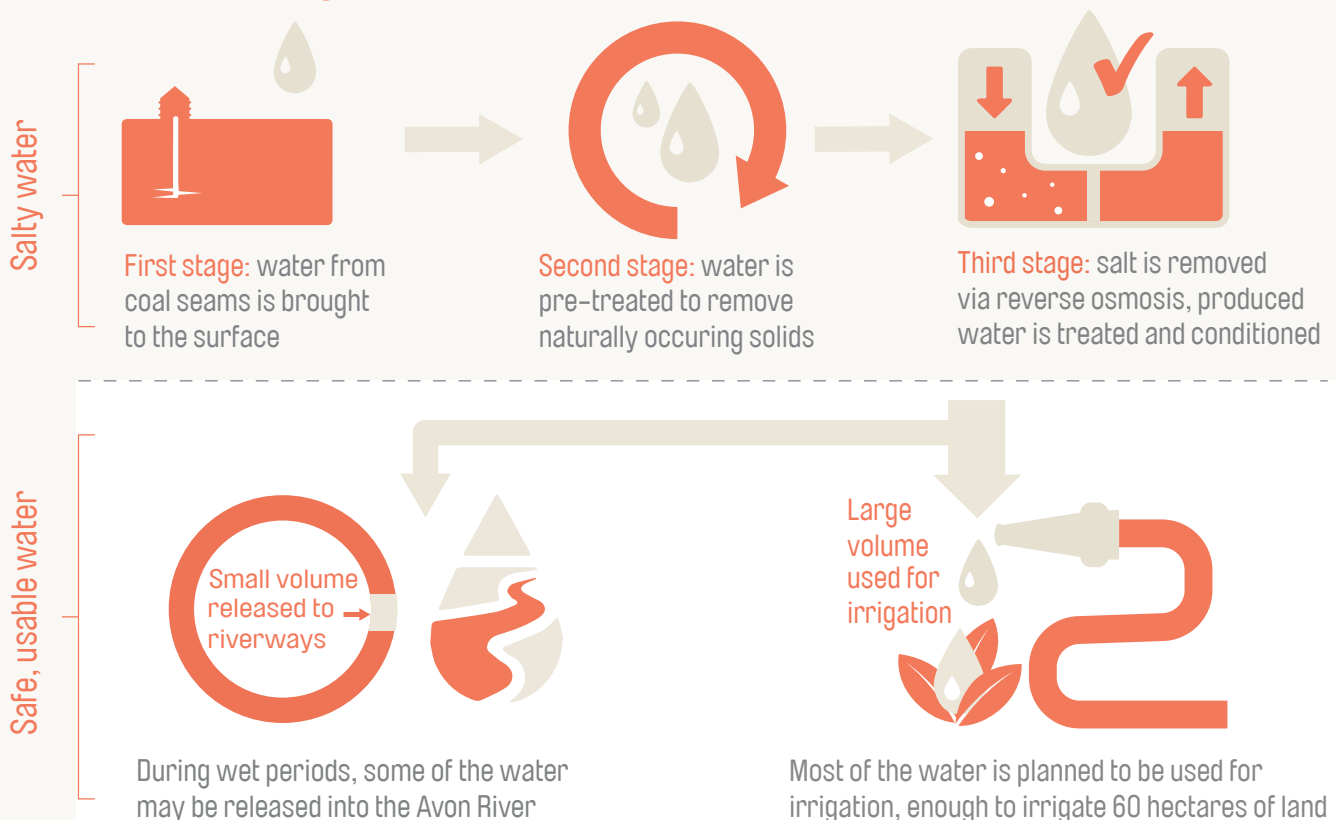
Our plan for produced water.

Produced water is a by-product of the extraction of coal seam gas.

Produced water is old salty groundwater that occurs naturally in groundwater systems below beneficial aquifers. It is brought to the surface in order to extract natural gas from coal seams. It is not as salty as seawater, but salty enough so that it cannot be used for agriculture or human consumption without treatment or blending with fresh water.

As part of the Gloucester Gas Project, AGL is planning to treat produced water using a desalination technology called "reverse osmosis". This process will reduce the amount of salt to a point where the water can be used for irrigation or returned to the environment.

The desalination cycle.



How does desalination work?

The first step is pre-treatment. This involves removing solid particulate matter, such as silt and specks of coal, from the produced water so that it does not interfere with the rest of the desalination process.

Next, the water is pumped through semipermeable membranes that remove most of the dissolved salt from the water – a process called reverse osmosis. A semipermeable membrane is like a sieve or filter that only allows certain dissolved ions and molecules to pass through.

Reverse osmosis is one of the most efficient ways to remove salt from water. About 90% of the water that comes through the process is recovered. Water suitable for a variety of beneficial uses after treatment, conditioning and testing.

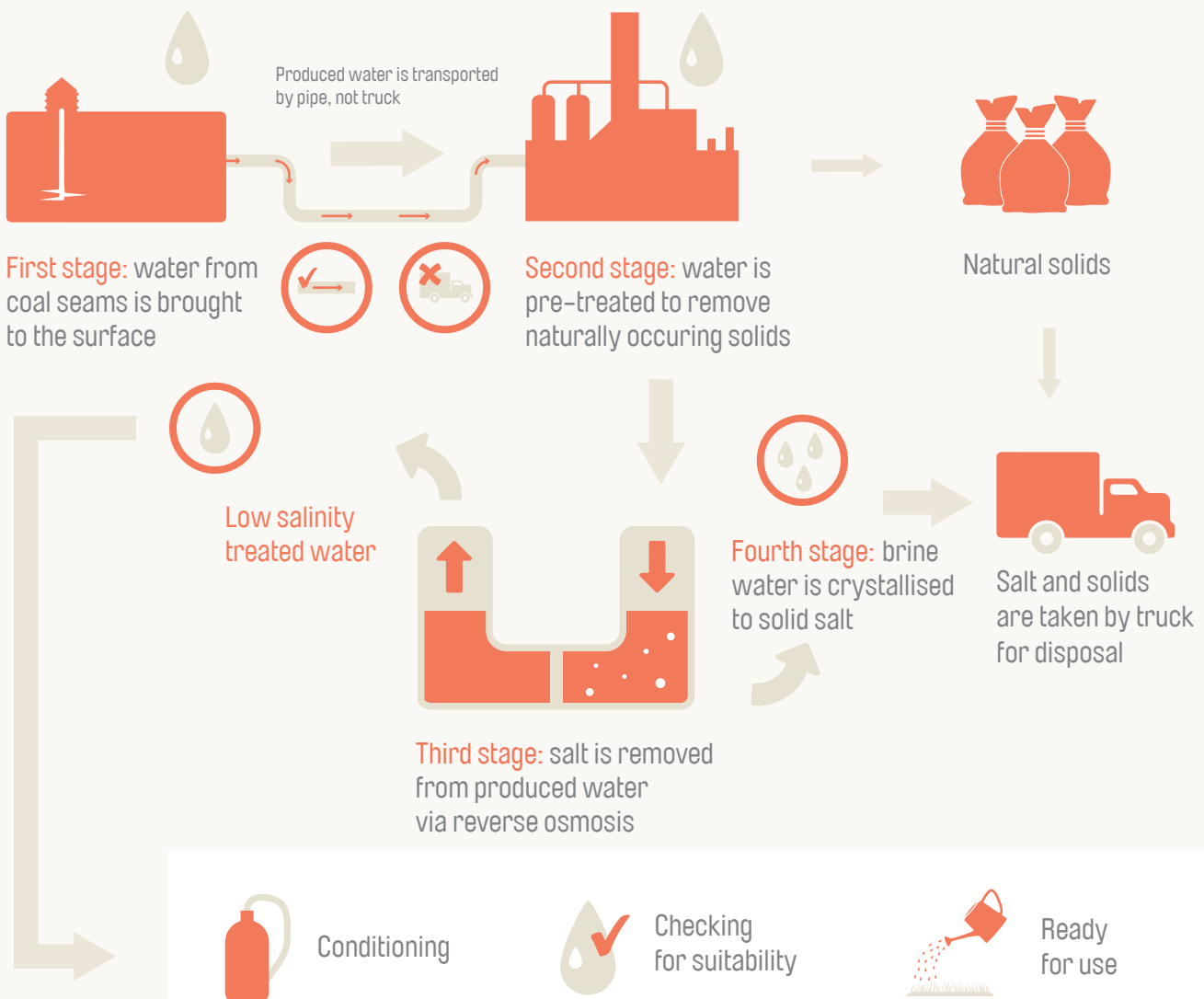
The left over brine is treated to recover a further five to eight per cent of desalinated water. Remaining brine is crystallised to a mixed solid salt, bagged and removed to suitably licensed landfill sites – about two trucks a week of salt is expected at peak production, declining to one per fortnight (or less).

Water at the end of the desalination process contains about the same salt content as drinking water.

In fact, it is generally less salty than a freshwater river.



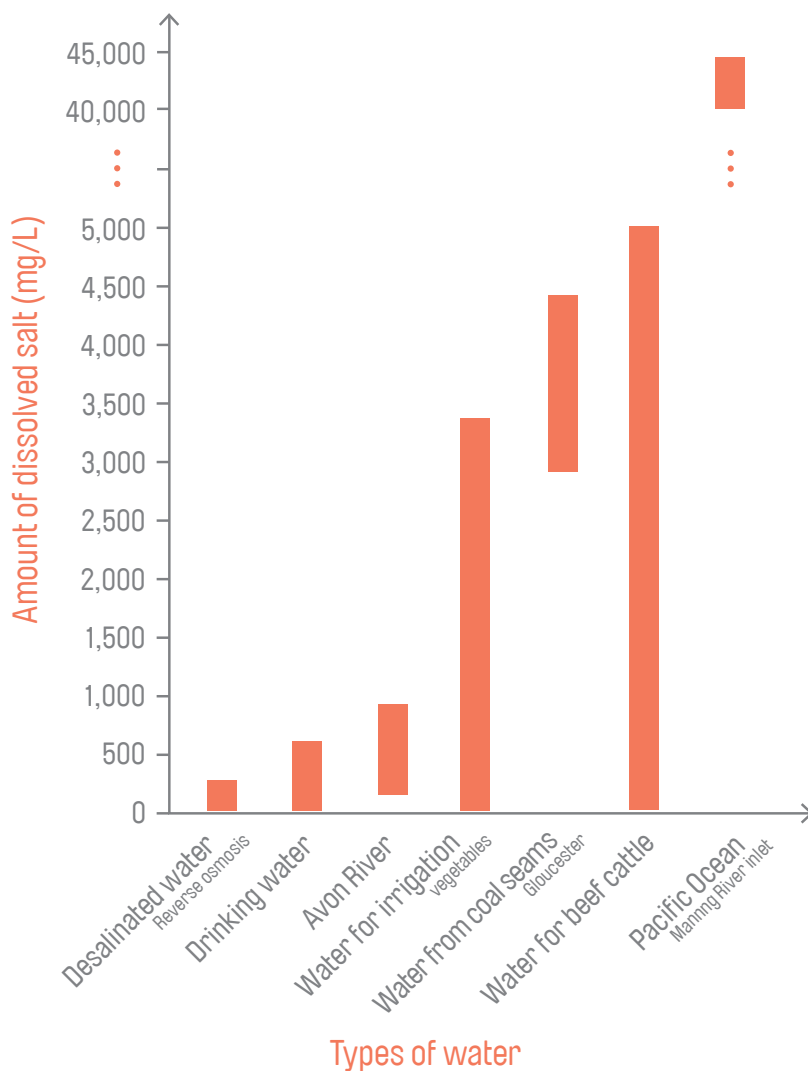
Desalination at a glance.





Water monitoring site at AGL's Waukivory Pilot Program.

How does desalinated water compare with other types of water?



What comes next?

The final desalinated, treated water can be used for a variety of purposes. Right now, our plan is to use the water for stock and to irrigate crops and permanent pasture at our properties in the Gloucester Basin to grow feed crops for dairy and beef cattle.

In the future, AGL may offer this water to interested third parties and agriculture industry partners.

NSW Landfill.

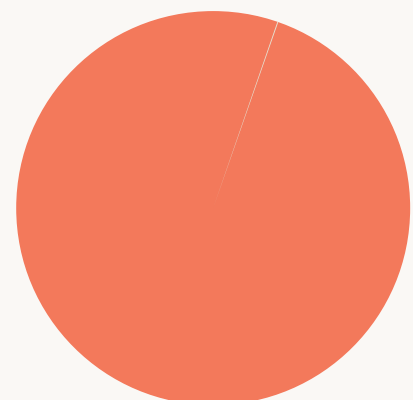
The crystallised, mixed solid salt waste is expected to be classified as Industrial and Commercial General Solid Waste (GSW) under the NSW Waste Classification Guidelines (Department of Environment and Climate Change, 2009).

AGL has identified at least seven sites in the Sydney-Newcastle region which are licensed to receive GSW. These sites are licensed to receive a total of 2.3 million tonnes of this waste type per year.

It is expected that peak salt production from the Gloucester Gas Project will contribute less than 0.1% of the annual disposal capacity of the seven identified sites.

Legend

- AGL GSW contribution
- Remaining GSW licensed disposal capacity at 7 sites



Taking care of the environment.

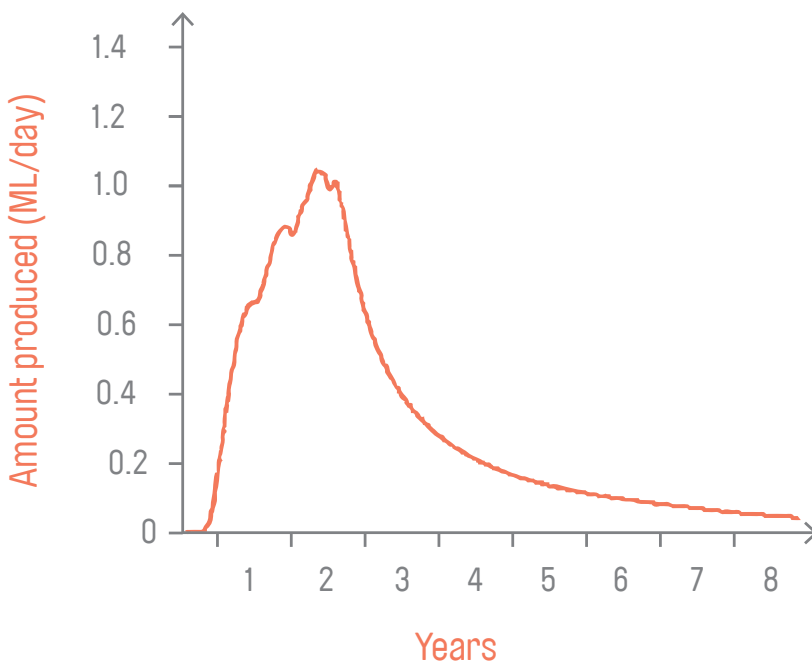
We are committed to securing the energy future of NSW while making sure we minimise any impact on the environment. We have 14 years' experience managing natural coal seam gas wells in the Camden area south-west of Sydney. We have done this side by side with landholders in agricultural and urban-fringe settings, and we will ensure our footprint in the Gloucester Basin is just as unobtrusive.

Desalination and the use of safe, treated water for agriculture is part of our commitment and is further evidence of the way farming and the gas industry can coexist.

Over the life of each gas well, it is expected that the volumes of produced water extracted will decline dramatically after peaking in the first year or two. As this occurs, the amount of brine waste produced will also decline, meaning that even less material will need to be transported to a suitably licensed site for disposal.

There may be times when a small amount of desalinated water will be released into the Avon River, but this is only expected to happen when the river is in flood and the water has been tested to ensure it is compatible with the wider environment.

Expected volumes of produced water.



The Avon River at Gloucester.



Did you know?

Reverse osmosis around Australia and around the world.

Years of research and experience in Australia show that reverse osmosis is an effective and safe way to turn salty water into water fit for human consumption, agriculture, and other uses.

In Western Australia locals have been drinking desalinated seawater since 2006 when the Perth Seawater Desalination Plant came online, delivering 140 megalitres (ML) of water per day – or about 17 per cent of the city's water supply.

Today, according to the International Desalination Association, there are over 13,000 desalination plants in operation across the globe providing safe water for humans, animals, agriculture, and industrial processes.

Learn more.

Join AGL's online community
yoursayagl.com.au

AGL Natural Gas website
www.agl.com.au/naturalgas

NSW Government
csg.nsw.gov.au

NSW Office of Water
water.nsw.gov.au

The NSW Chief Scientist & Engineer's interim report on coal seam gas
chiefscientist.nsw.gov.au

Energy Resource Information Centre
energyresourceinformationcentre.org.au

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