

# WINEWS

## Sea water sucked 1 kilometre inland as Kwinana bores placed under intense pressure

By Elicia Kennedy

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**Groundwater bores are designed to draw fresh water out of the ground, but the pressure on bores has been so intense in some locations along Perth's south coast that the bores have begun pulling up salt water instead.**

A Department of Water and Environmental Regulation report has found the amount of groundwater being extracted in the Kwinana industrial area was causing sea water from deeper underground to rise up and take its place.

Effectively it meant the sea water was being sucked back under the land, and once salt water moved into stores of fresh water the damage was difficult to reverse.

The department claimed the issue of sea water turning bores salty was the biggest problem facing groundwater users — residents, market gardeners and industry — along the coast.

### Key points:

- Tests show salinity levels in freshwater bores along the coast are increasing
- Once salt water moves into freshwater stores, it's hard to reverse the damage
- Water supplies to homes, market gardens and industry are under threat



PHOTO: Groundwater supplies along the Kwinana coast are showing increased levels of salinity. (ABC News: Marcus Alborn)

Fresh water and sea water typically meet along the coast, with lighter fresh water sitting on top of a wedge of salt water. But in parts of the Kwinana industrial area that balance has changed, and the so-called "seawater interface" has pushed up to 1 kilometre inland.

"The salinity in the production bores closest to the coast in many places up and down this strip are showing increased levels of salinity," said Chris Oughton, director of the Kwinana Industries Council.

"Once a bore goes saline on the coast it's no good, so that puts more pressure on the remaining bores."

Drawing more water from fewer freshwater bores not only increased the risk of more saltwater contamination, but also threatened to disturb decades-old contamination plumes laying dormant underground.





PHOTO: Mr Oughton says the problem will place more pressure on remaining bores. (ABC News: Marcus Alborn)

## Saltwater intrusion threatens wetlands

The department has recommended new limits on water use in the area as part of the "Cockburn Groundwater Allocation Plan".

It wanted to decrease the maximum amount of water that could be extracted from the ground. The plan stated that the limits last set in 2007 were not sustainable.

It was concerned about the high risk of more "seawater intrusion" and diminishing groundwater levels near important wetlands.

"There are quite a number of important wetlands there," Department of Water hydrologist Sandie McHugh said.

"By reducing the amount of groundwater that is available we are ... protecting the wetlands from saltwater interface moving inland towards them."

The Cockburn area contains a number of high-conservation-value wetlands, including Thomson's lake, which is classified as having international importance.

Scientist and wetlands expert Mike Bamford has watched wetlands in the area change dramatically over the past 20 years. He said salt intrusion into the lakes system was inevitable if groundwater continued to be used as it had been in the past.

"It's quite threatening really — these wetlands are such a part of Perth or part of our coastal plain before Perth was here," Dr Bamford said.

"So it worries me a lot, the potential risk to wetlands from saltwater intrusion."





PHOTO: Ecologist Mike Bamford says he has seen dramatic changes to the coastal wetlands over the past three decades. (ABC News: Elicia Kennedy)

## Water supply issues threaten industry expansion

The new recommended water plan affects about 300 water licence holders in the area.

"That doesn't mean that people who currently have water will have that water taken off them," Dr McHugh said.

"What it does mean is that going into the future there won't be any additional groundwater available for use."

That raised significant questions for industry in the Kwinana area, which was expected to expand significantly, almost doubling its water needs.

"Some say that the expansion is being crippled because future water supply isn't there for those companies coming into the place. And if it doesn't get fixed, that is correct," Mr Oughton said.

"Those companies that need water won't come here if they can't get water."

Currently 58 per cent of the water used by industry in this area came from the ground.

Mr Oughton said this was the most cost-effective option, at a minimum of 40 cents per kilolitre. Scheme water, by comparison, cost six times that at \$2.37 per kilolitre.

Recycled wastewater was also used, but because it was so pure in many cases it needed to be mixed with ground water to make it suitable.



PHOTO: A decade ago thousands of migratory birds used Thomson's lake, but changing water levels means birdwatchers are now lucky to see just a few. (ABC News: Elicia Kennedy)

## Is there a solution?

Rainfall in the area is currently tracking in line with "worst-case" predictions. It is expected to decrease 15 per cent by 2030, meaning less recharge of the groundwater aquifer.

The most likely water solution would need to be engineered, and the CSIRO, supported by industry, has undertaken a study into the feasibility and cost of "managed aquifer recharge".

This involved treating wastewater and then pumping it back down into the aquifer. A pipeline carrying treated wastewater out to sea already runs straight through the centre of the Kwinana industrial strip.

Scientists found this solution to be the most cost effective for future water supply.

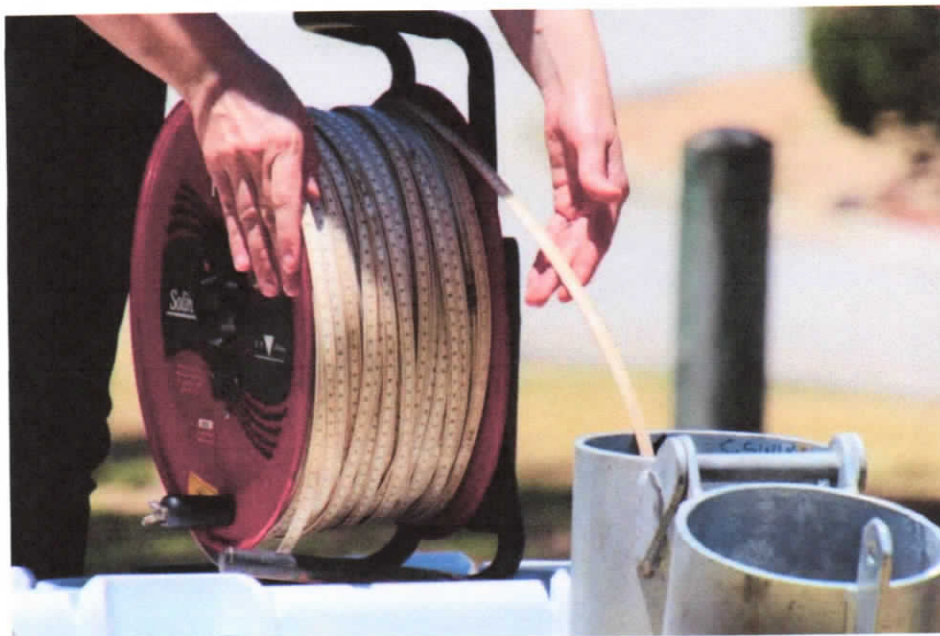


PHOTO: Monitors take hourly readings from some of the bores in the area. (ABC News: Elicia Kennedy)

But Mr Oughton said that despite having a viable solution, red tape was getting in the way.

"I actually don't think the departments are on board with this," he said.

"We all want managed aquifer recharge to happen, but if the regulators are putting up all sorts of barriers about potential risks that get dreamed up but have no, or not much, factual reality around them — it's a dreamt-up potential constraint.

"There's actually a solution in amongst all of this, but we have all just got to talk together because we have all got to be part of the solution."

The Cockburn Groundwater Allocation Plan is expected to be released early 2019.

Topics: perth-6000, wa

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