

Airborne electromagnetic survey of the South West to map seawater interface



Image of airborne electromagnetic surveying

The discovery

For the first time, the Department of Water's scientists have been able to precisely map the location of the seawater interface along the South West region's coastline. New maps of the seawater interface between Bunbury to Dunsborough, and Augusta to just east of the mouth of the Warren River, have been completed as part of our \$1.6 million Royalties for Regions funded groundwater investigation.

This study gives us new information about the location of the seawater interface. We now know that the seawater interface in the regionally important Superficial and Leederville aquifers extends up to 2.2 km inland of the coast and can be found up to 140 m below the ground surface in some places.

This discovery has been made possible by combining existing water information with the results of innovative airborne electromagnetic (AEM) surveys and sophisticated ground-based geophysics (using Transient Electro-magnetic and Electrical Resistivity imaging), in areas where we could not fly.

What is the seawater interface?

The seawater interface is a zone where dense salty water from the ocean meets the fresh water flowing out to sea below the surface of the land along our coastlines. In many parts of Western Australia this line does not exactly follow the coastline and can be inland, or even out underneath the ocean.

By the numbers



5283

line kilometres of AEM
flown at a spacing of 600 m.



28

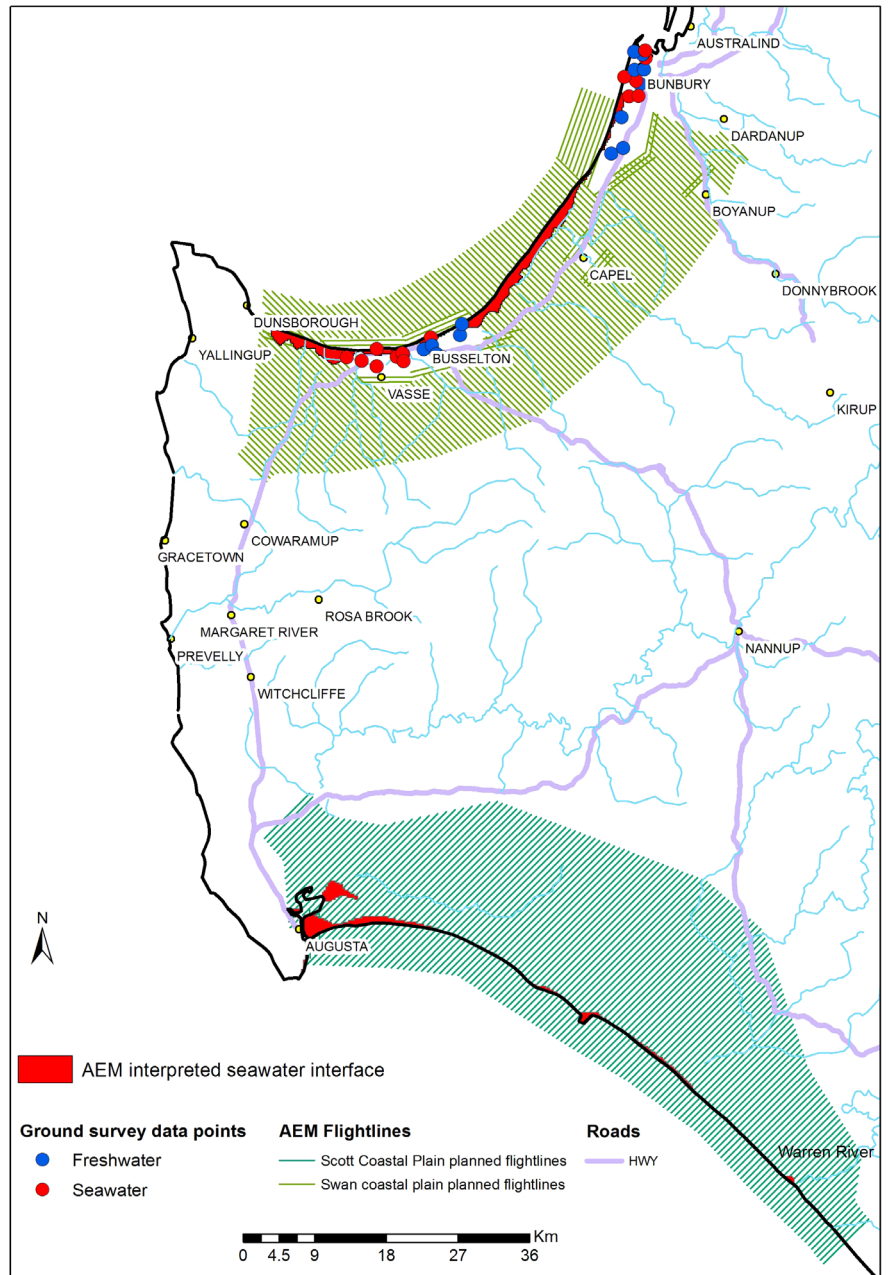
additional areas were surveyed
using Transient Electro-magnetic
and Electrical Resistivity imaging.

How does this discovery benefit the South West region?

Locating the seawater interface is important because it lets us know where bores can be drilled to access fresh, usable groundwater. Groundwater is a vital resource for public water supply, self-supply, industry and agriculture in the South West. Horticulturalists, water utilities and town planners will be able to use this information for locating new bores to make best use of freshwater resources.

Precisely locating the position of the seawater interface helps us understand how it may be affected by future groundwater pumping and changes in the climate. This is important because we know that rainfall will continue to reduce across the region, while demand for groundwater is expected to grow.

The Department of Water is now incorporating these seawater interface findings into a new groundwater model of the region. This will help set the direction for managing the local aquifers, helping to ensure a reliable water supply for people and the groundwater-dependent environment.



Map of South West AEM interpretation and flight lines

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