

How will climate change affect our wetlands?

Predicting the impacts of climate change on groundwater dependent ecosystems

This project was undertaken using the SA Climate Ready data, which is helping to improve planning and decision making and make South Australia the most climate ready State in the nation.

Project partners:



Government of South Australia
Department of Environment,
Water and Natural Resources

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Less rainfall in the future will reduce the amount of water recharging groundwater resources. This will impact the condition of wetlands that rely on groundwater. Better planning now will help to manage the impacts on these important natural assets.

Why undertake the project?

The South East of South Australia has a large and diverse array of wetlands, a number of which are recognised nationally and internationally for their conservation significance. Water levels in many of these wetlands are heavily reliant on inflows from regional groundwater.

Changes in the amount of rainfall can affect the recharge of groundwater, which in turn affects the surface water level in groundwater dependent wetlands. In turn this impacts the quality and extent of wetland habitat.

What was done?

Modelling was used to identify the risk of climate change to Middlepoint Swamp, a groundwater dependent ecosystem in the Lower South East region of South Australia. The study assessed the effects of historic groundwater level decline and the predicted impacts of climate induced groundwater decline.

Rainfall projections from SA Climate Ready data, representative of intermediate and high emissions scenarios to 2030, were used in hydrological models to predict future changes in groundwater levels and consequent changes to surface water levels at Middlepoint Swamp.

What did we learn?

By 2030, the surface water level in Middlepoint Swamp was predicted to fall by up to 1 m, almost completely drying the wetland.

The assessment found that the wetland at Middlepoint Swamp was at moderate risk of becoming dry by 2030. Vegetation with the highest water requirements were predicted to no longer occur in any of the 2030 scenarios, being replaced by brackish hermland and introduced pasture grasses. The scale of change was shown to have negative impacts for all wetlands dependent on groundwater in the region.

The assessment helped to identify a number of management options to address climate change, including considering climate change in future water allocation planning. will increase water levels in a way that could damage the lowered roadway.

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The Goyder Institute for Water Research is a partnership between the South Australian Government through the Department of Environment, Water and Natural Resources, CSIRO, Flinders University, University of Adelaide and the University of South Australia.

