



INDEPENDENT REVIEW OF SCIENCE UNDERPINNING WATER ALLOCATION REDUCTIONS IN THE SOUTH EAST REGION, SOUTH AUSTRALIA

INDEPENDENT REVIEW OF SCIENCE UNDERPINNING REDUCTIONS TO LICENSED WATER ALLOCATION VOLUMES IN THE LOWER LIMESTONE COAST WATER ALLOCATION PLAN

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Project Duration: 6 months

Project Partners: Flinders University and CSIRO. Commissioned by the South East Natural Resources Management Board



WHY HAS AN INDEPENDENT REVIEW BEEN CARRIED OUT?

The 2013 Lower Limestone Coast Water Allocation Plan (LLC WAP) sets out the rules to protect water resources in the region for all water users, now and into the future. It includes proposed reductions to water allocations based on a risk assessment undertaken in 2012. The six management areas subject to the largest reductions are Coles, Short, Frances, Hynam East, Zone 3A and Zone 5A. The LLC WAP identified that water allocation cuts were to take place in 2016, 2018, 2020 and 2022. Due to concerns raised about the science that underpinned the 2012 risk assessment, the Minister for Environment and Water, The Honourable David Speirs, put the 2018 reductions on hold to allow an independent review to be conducted by an Expert Panel.

The South East Natural Resources Management Board commissioned the Goyder Institute for Water Research to undertake the independent review by an Expert Panel so that information gathered could feed into an updated risk assessment and a full review of the WAP.

WHAT ARE THE MAIN OUTCOMES OF THE INDEPENDENT REVIEW?

The Expert Panel found that a substantial body of scientific work underpins water allocation planning in the LLC WAP, and is supported by quantitative data and information regarding water level trends. However, it considered the risk assessment (the final part of the technical process) to have some limitations, which has potential

implications for the final risk ratings for different management areas.

The Panel also noted that although efforts have been made to understand the effects of water extraction and climate change on groundwater levels in the management areas, this remains an important line of inquiry for future scientific investigations.

The Panel made multiple recommendations in the main report and highlighted five high-level ones:

1. Expand the existing groundwater level and salinity monitoring network to better describe water level trends over time.
2. Update groundwater modelling to include a suite of subregional models that can answer specific management questions at a range of spatial and temporal scales.
3. Use modelling to examine whether salinity increases are due to historic clearing of vegetation and/or recycling of groundwater associated with irrigation activities.
4. Expand the hydrological and ecological monitoring of wetland groundwater-dependent ecosystems (GDEs) and assess what GDEs occur in the LLC in addition to wetland GDEs.
5. Improve confidence in the risk assessment process by describing the influence of different factors on risks at finer scales, better justifying how each risk level was determined, and examining how each factor influences the final risk assessment.

HOW DID THE EXPERT PANEL ARRIVE AT THESE RECOMMENDATIONS?

The Goyder Institute's Expert Panel reviewed the documented science that underpinned the 2012 risk assessment and undertook additional analysis of water level trends. It considered a wide range of questions raised by various stakeholders in the South East. To clarify these questions, it met with these stakeholders and interviewed subject matter experts from government agencies and industry. The Panel concentrated its review on four key areas: estimating total available recharge (TAR), water level and salinity trends, GDEs and risk assessments. These are briefly outlined below.

Estimates of total available recharge

In the WAP, total potential water demand is compared with the estimated amount of recharge to the groundwater aquifers of the South East that occurs through rainfall - the total available recharge. Despite multiple technical investigations, the uncertainty of recharge estimates across the region remains high, and the large fraction of recharge assigned to be available for allocation (90%) lacks a strong scientific basis. The Panel concluded that the current TAR estimates are too imprecise to be used as indicators of sustainable groundwater use, a situation that is common to groundwater management in many parts of the world. However, it noted that TAR estimates are still an important management tool.

Water level and salinity trends

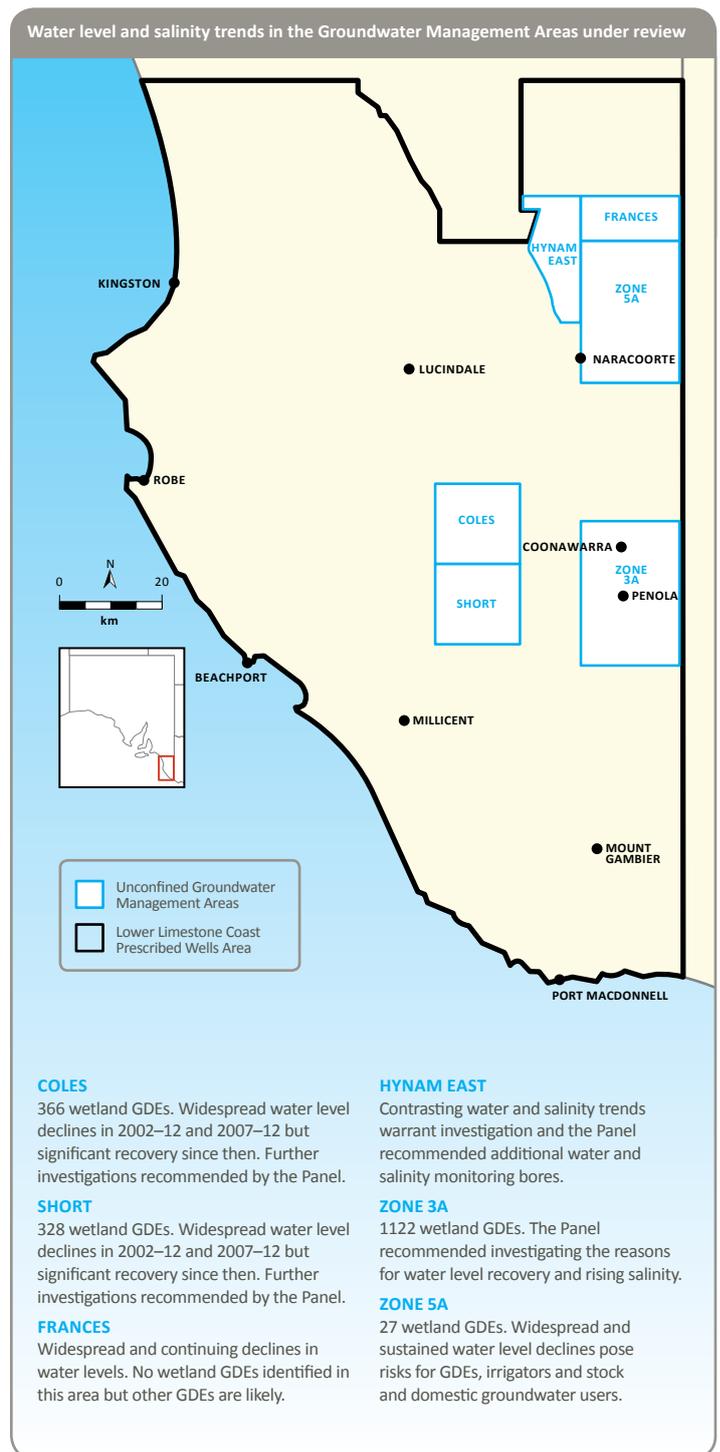
Water levels declined in 28 out of 80 bores in the six management areas in 2007–12, and salinity increased in 10 of 33 bores. However, in 2014–18 there was some recovery in water levels. The reasons for the changes in trends over time have not been systematically investigated across the LLC or within the six key management areas. Therefore, it is unclear whether the recent rising trends and/or reduced rates of decline will continue in the future. The Panel also identified that almost a third of the bores used to inform the initial risk assessment are no longer being monitored, which limits the capacity to predict changes that may occur in the future.

Groundwater-dependent ecosystems (GDEs)

The science and information used to inform the values and risk to wetland GDEs in the WAPs were better than most cases across Australia. However, far less is known about groundwater-dependent native terrestrial vegetation in the South East. The Panel believes that the rate of water level decline considered unsustainable over a five-year window should depend on the presence, value and resilience of all GDEs within the area. This approach relies on all GDEs being identified and assessed, and their likely ecological responses understood. This is currently not the case.

Risk assessment

The Panel was of the view that appropriate risk assessment is a crucial component of scientifically robust water management and that the general risk assessment approach was commendable. However, it identified several anomalies which led to specific concerns with risk ratings and generally undermined confidence in the process. In particular, cut-off values between the different risk levels were unclear and, in some cases, this may have affected the final risk rating.



MORE INFORMATION

Visit www.goyderinstitute.org/publications/technical-reports/ to access the full report and complete list of recommendations.