

Summary of Beca Hunter H2O Desalination Options Report 2024

The Northern Rivers Desalination Options Assessment, commissioned by Rous County Council, was completed in June 2024 by Beca Hunter H2O. The driver for these investigations was to increase our understanding of the viability of using desalination in a drought emergency and as a potential stage 3 option in Rous's Future Water Project. The investigations looked at temporary desalination plants that are re-deployable and permanent desalination plants that could be brought online to augment the regional supply in times of dry weather. A permanent desalination plant could also offer a new rainfall-independent supply source to increase the region's future water security.

Temporary Desalination – Limited capacity to mitigate impact of drought

The report details how implementing temporary desalination in a drought emergency is problematic due to the time it takes to plan, procure and commission a plant. The extended lead time would have significant implications for drought management planning as it would require a major commitment of resources in timeframes that are potentially unachievable.

Rous has a relatively unique supply system which is characterised by high annual rainfall with relatively modest water storages. This means that while Rous has appropriate water security, the depletion rate of our water supply in severe or catastrophic drought conditions can be quite rapid.

Seeking planning approval for a temporary desalination plant ahead of a drought and initiating the associated procurement and commissioning activities would incur significant costs that may well prove to be unfounded. Deferring advanced preparation costs and taking a 'just-in-time' approach presents different risks, the largest being that suitable equipment may not be available to procure when needed and that the plant may not be up and running in the required timeframe. Multiple organisations could be impacted by the same drought event, and it would be reasonable to expect competition for the modest inventory of temporary desalination plants available in the Australian market. This means a strong likelihood of high costs and long lead times in procuring equipment and services in a drought.

Seeking planning approval upfront is one way Rous can lower some of the risk, as it means that Rous would not have to rely on a 'state of emergency' fast-tracked approval, which would be up to the discretion of the NSW Water Minister. While approval risk can be resolved, approval

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alone will not ensure successful implementation, especially where temporary treatment plants are scarce.

Another important consideration that was explained in the report is that as an emergency option in a severe drought and under strict water restrictions, a temporary desalination plant might only offer somewhere between 5 ML to 10 ML/day. However, the inherent delivery risk, limited time available and limited capacity mean that temporary desalination cannot be relied upon to maintain target levels of water supply during emergency conditions.

This report has provided valuable information that Rous will use to inform future drought management planning.

Permanent Desalination Plants – informing future decision making

The report confirmed the technical feasibility of the desalination plant while clarifying the significant constraints created by the Cape Byron Marine Park and the impact this has on associated capital costs.

The Marine Park extends from the Brunswick River to Lennox Head. To comply with the objectives of the Marine Park zones, a desalination's intake and outfall structures to the ocean would need to be significantly lengthened to reach beyond the sanctuary zone. Marine intake and outfall are major pieces of infrastructure and extending their length increases engineering complexity and costs. The cost of intake and outfall structures are estimated to be greater than \$20,000 per metre, adding between \$135 to \$300 million dollars for the full-scale permanent desalination shortlisted sites with a production capacity between 10 – 25 ML/day.

This report provides valuable, contemporary and contextualised information regarding the feasibility of desalination as a future water source in the Northern Rivers region. The report will help inform strategic planning investigations and ultimately inform future decision making regarding the full suite of stage 3 supply options, inclusive of surface water, groundwater and purified recycled water.

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