

Water Releases Supporting Red Gum Resilience along Crystal Brook Creek

Monitoring data reveal iconic river red gums along Crystal Brook Creek are responding well to Beetaloo Reservoir environmental flows.



Why are river red gums important?

River red gums are an iconic Australian tree, living for over 1,000 years and growing to a towering 45m tall. Red gum forests typically grow where groundwater is close to the surface, such as watercourses and floodplains.

As these trees age, hollows form in their trunks, creating critical nesting habitat for a huge range of birds and native mammals. These trees also provide food resources for nectivores and essential habitat for aquatic species in the rivers and creeks they grow along.

River red gums are also important for many First Nations Communities, who have used the timber for canoe construction, shields and shelters for many thousands of years.

Environmental flows

Since the opening of Beetaloo Reservoir in 1890, hydrology changes in Crystal Brook Creek have caused a decline in red gums, many estimated to be more than 500 years old. Red gum monitoring in 2009 to 2016 revealed high

levels of stress (e.g., reduced leaf canopy and a lack of young trees), further highlighting significant issues with water stress in this area.

In 2021 and 2022, the first environmental flows (e-flows) were released from Beetaloo Reservoir into Crystal Brook Creek with the aim of improving the condition of river red gums and refreshing critical habitat for native frogs, fish, birds and waterbugs.

This was then followed by another e-flow released in 2024 as part of the Northern and Yorke Landscape Board's Environmental and Cultural Flows Project, working with the Nukunu community and local stakeholders and landowners.



Crystal Brook Creek flowing from the e-flow trial in 2021. Credit: Amy Tutunkoff.



Crystal Brook Creek flowing at Bowman Park after the e-flow trial in 2021. Credit: Mark Zed.

Monitoring tree condition along Crystal Brook Creek

Annual monitoring of river red gum condition along Crystal Brook Creek has taken place in late spring since 2023 and is scheduled to continue over the next few years.

The monitoring protocols being used have been developed with the guidance of Dr Todd Wallace. Seven transects have been established along Crystal Brook Creek. During monitoring 30 trees per transect are visually inspected to determine the crown extent and crown density of the canopy. Trunk diameter is also measured, and the trees are checked for epicormic growth (new growth along branches) and signs of obvious damage and stress (e.g., bark fissuring – cracks and grooves in the bark).

Photo points have also been established along the creek and aerial photos taken of the whole of each transect for later visual comparisons.



Tree health monitoring with Nukunu Wapma Thura Aboriginal Corporation in 2024.

2024 monitoring results

There was substantial improvement in river red gum condition at several sites between the 2023 and 2024 monitoring. In 2023, only one transect had 100% of trees meeting environmental targets. In 2024, this increased to three transects having 100% of trees meeting these targets.

Red gums across four transects were classified in 'excellent' condition in 2024, compared to only one in 2023 (Figure 1).

No trees were lost between 2023 and 2024, and only a single transect (Transect 4) remains at the highest priority level for environmental water delivery. Over half of monitored trees showed epicormic growth, a promising sign of partial recovery from previous water stress.

A lack of young trees (< 50 cm diameter) in the downstream transects is still concerning and suggests e-flows to increase water availability at strategic times would be beneficial to promote increased recruitment.

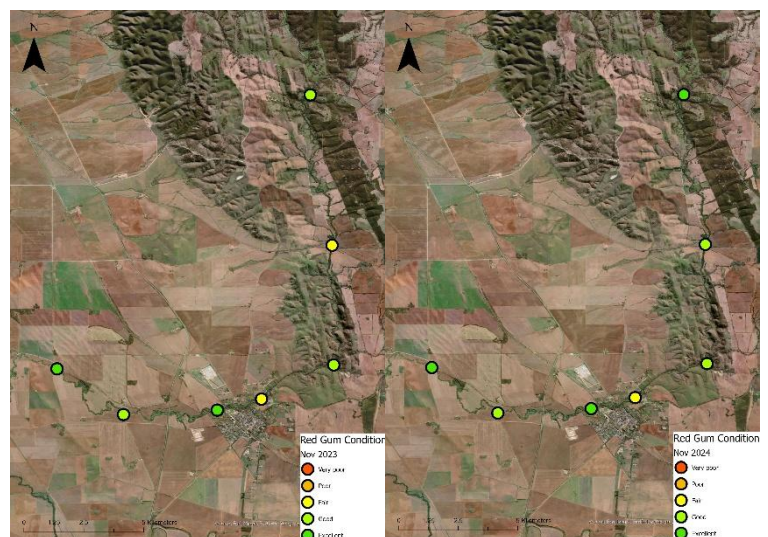


Figure 1. Changes in red gum condition at seven transects along Crystal Brook Creek between 2023 (left) and 2024 (right).

More information

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