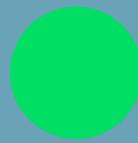


# Coulta

Eyre Peninsula Groundwater Dependent Ecosystems monitoring site

## 2021 Report Card



### Summary

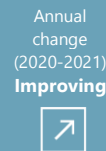
**Type of site:** Control site for Wanilla.

**Status:** **Green**, improving trends in the short term (2016 to 2021). Stable condition (2020-2021) likely due to ongoing good winter rainfall, and increasing groundwater levels.

**Red Gums:**

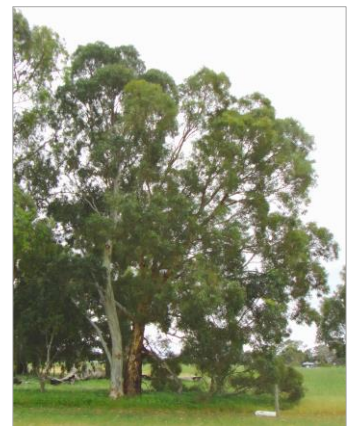


**Groundwater levels:**



**Climate:** Below average maximum summer temperatures and above average June and July rainfall, with good groundwater recharge events.

This Report Card should be read in conjunction with the *Overview and Red Gum GDE Condition Summary* which provides information about Groundwater Dependent Ecosystem (GDE) monitoring and summary information for all monitored Red Gum GDE sites.



Adult Red Gum at Coulta assessed as in 'very good' condition in Oct 2021.

The **Coulta** Groundwater Dependent Ecosystem (GDE) monitoring site is situated three kilometres south of Coulta, on the Flinders Highway. The site includes a remnant patch, of approximately 17 ha, of Red Gum (*Eucalyptus camaldulensis*) Woodland. The understorey is dominated by native and introduced grasses.

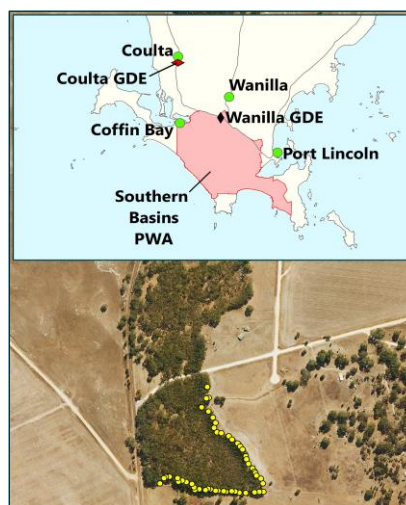
Coulta is a control GDE Site, and is monitored to assess the impact of factors other than licensed extraction (e.g. climate) on GDE condition. It is located outside the zone of influence of any current or known historic licensed extraction.

While there is unlicensed extraction of water for stock and domestic purposes, this is assumed to be low compared to extraction for licensed consumptive purposes at other sites, and there is a low likelihood of it having any impact on the GDE.

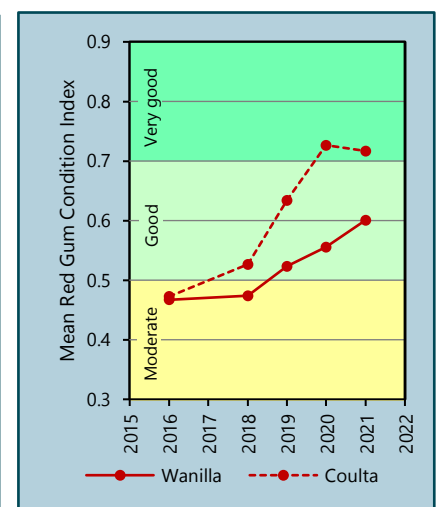
### Red Gum condition

Tree condition monitoring is carried out in late October to early November. First completed in 2016, monitoring has been repeated annually since 2018.

In 2016, when the monitoring commenced, the Red Gum condition was moderate, with an average Red Gum Condition Index (RCI) score of 0.47. In 2020 the Red Gum condition was very good, with average RCI score of 0.73. This was a 25% improvement in Red Gum condition between 2016 and 2020. The condition has remained very good through 2021 (average RCI score of 0.72), with high levels of both reproduction (flower and fruit) and tip growth observed in the trees. The dataset is too short to enable determination of any long term trends.



Coulta site map (yellow dots represent 50 surveyed trees)



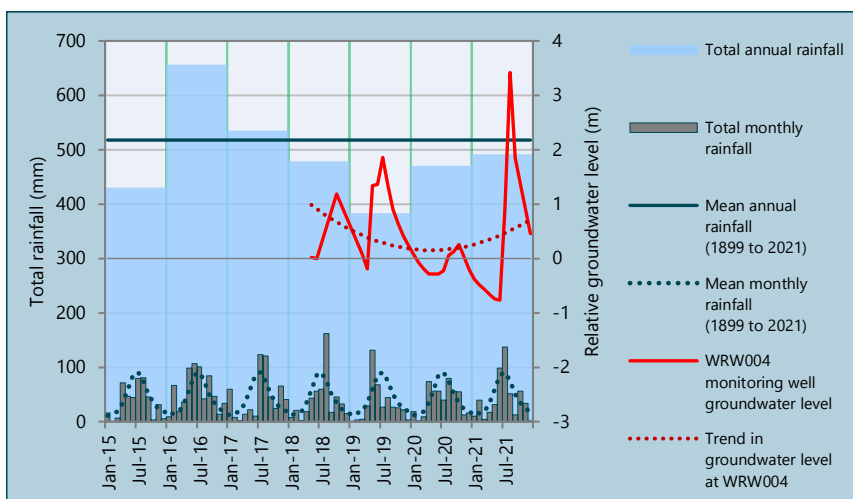
**Graph 1** Change in Red Gum Condition Index at Coulta (control site for Wanilla) and Wanilla from 2016 to 2021

## Groundwater and climate assessment

Red Gum condition remained very good through 2021, with trees supported by increased groundwater levels, higher than average rainfall during June and July, and cooler than average maximum daily temperatures.

As detailed below, graphs on the right show climatic factors contributing to groundwater recovery, and associated stable Red Gum condition:

- Although still 27 mm below the long term<sup>1</sup> mean annual rainfall (518 mm), total annual rainfall increased from 471 mm in 2020 to 491 mm in 2021 (Graph 2).
- The lower than average total annual rainfall, was offset by high total monthly rainfall in June and July. Rainfall in these months was 12 mm (15%) and 47 mm (52%) higher than the long term<sup>1</sup> monthly means (Graph 2). This is indicative of rainfall events of good intensity (how hard the rain falls) and duration during these months, both of which are important for groundwater recharge.
- Groundwater levels at Couлта fluctuate seasonally. Through the early summer months of 2021, levels in monitoring well WRW004 continued to fall and in May 2021 were the lowest since monitoring commenced in May 2018. This decline was, however, followed by rapid recharge of groundwater in June and July, caused by the higher than average rainfall during these months. Groundwater levels increased by over 4 m during this period (Graph 2).
- Even though groundwater levels again declined after this recharge occurred, levels have recovered such that in late December 2021 they were the highest observed in WRW004 in any December since May 2018 (Graph 2).
- Temperatures were cooler than usual, with the monthly average of daily maximum temperature for the summer months (November to March) 0.8°C below the long term<sup>1</sup> mean (Graph 3). These cooler temperatures could result in improved groundwater recharge, with less evaporation occurring after rainfall events. They can also contribute to improved Red Gum condition, with the trees being impacted less by heat stress.

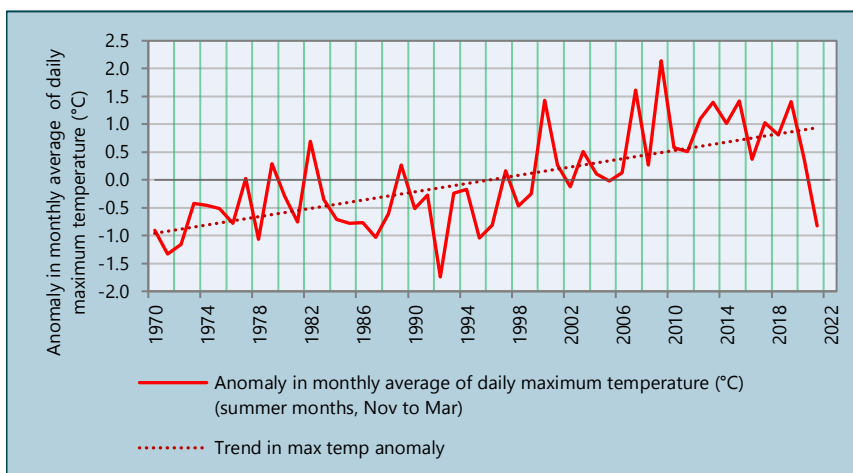


**Graph 2** Total annual and total monthly rainfall<sup>^^</sup>, and change in groundwater level<sup>\*\*</sup> at one monitoring well WRW004

Notes:

<sup>^^</sup>Rainfall data for 2016 to 2018 is obtained from the Bureau of Meteorology station, Couлта (number 18019). Rainfall data for 2019 and 2021 is site specific data obtained from a rainfall gauge installed at the Couлта GDE site.

<sup>\*\*</sup>The groundwater levels shown for monitoring well WRW004 (5929-0737) are relative to the groundwater level at June 2018, which is shown as zero.



**Graph 3** Anomaly in monthly average of daily maximum temperature<sup>^</sup> for summer months (November to March) from 1970 to 2021

Note:

<sup>^</sup> This is the difference between the mean monthly averages of the daily maximum temperature for November to March in any one year and the long term<sup>1</sup> mean of the same parameter. Maximum daily temperature is measured at the Bureau of Meteorology station, Couлта (number 18019).

Couлта is located outside the zone of influence of licensed extraction from the Uley Vanilla groundwater lens. The increase in groundwater levels observed at Couлта during 2020-21 therefore indicates that, in the absence of licensed extraction, during 2020-21, an increase in groundwater levels should have been observed in most other wells on the Uley Vanilla groundwater lens. Similarly, Red Gum condition at other Red Gum GDE sites should at least have remained stable, if not improved, during 2020-21.

## Monitoring into the future

Tree condition monitoring will continue on a yearly basis. As time goes on, more data will allow for the identification of any long term trends in the GDE condition.

<sup>1</sup>All long term averages are for the period 1 Jan 1899 to 31 Dec 2021.

### For more information

Access the full report on assessment of Red Gum condition in 2018 [here](#):

Muller K. L., N.J. Souter and Australian Water Technology (2019). *Eyre Peninsula Groundwater Dependent Ecosystem Data Analysis: Red Gum tree condition data (five sites)*. A report for Natural Resources Eyre Peninsula, Department for Environment and Water (DEW), Port Lincoln, South Australia.

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