Polda

Eyre Peninsula Groundwater Dependent Ecosystems monitoring site

2018 Report Card

The **Polda** Groundwater Dependent Ecosystems monitoring site is situated thirty three kilometres east of Bramfield, on the Birdseye Highway. The site includes a remnant patch (approximately 65 ha) of Red gum (*Eucalyptus camaldulensis)* Woodland. The understory is dominated by native and introduced grasses.

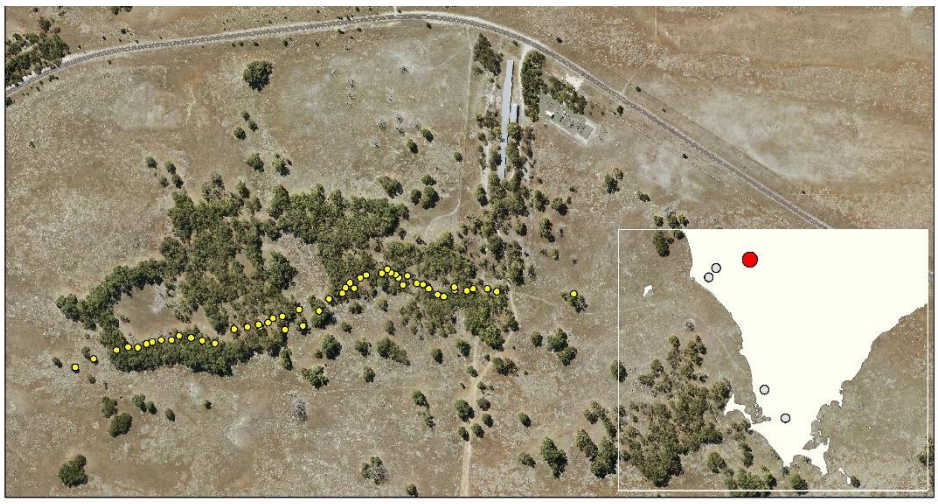
The Polda site is in a Licensed Extraction Area. This means there are a number of users that hold licenses to use a limited amount of water for private commercial purposes. Access to water extraction details can be found on WaterConnect in the relevant 2018 Groundwater level and salinity status report.

There is also extraction of water for stock and domestic purposes for which a water licence is not necessary. This extraction is assumed to be low compared to extraction for licensed consumptive purposes.

Adult Red gums assessed as in 'moderate' condition, during the 2018 GDE monitoring at Polda.

Red gum condition

Tree condition monitoring was undertaken in 2016 and repeated in 2018. In 2016 the average Red gum Condition Index (RCI) score was 0.51. In 2018 the average RCI score was 0.41, showing a 10% decline in Red gum condition over this period.



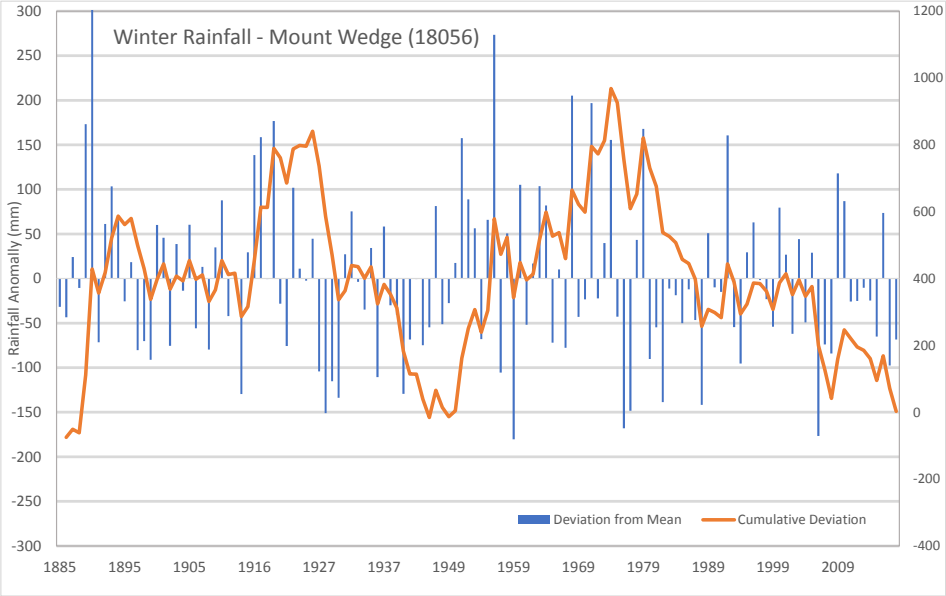
Polda site map. *Note: yellow dots represent 50 surveyed trees.*

Climate assessment

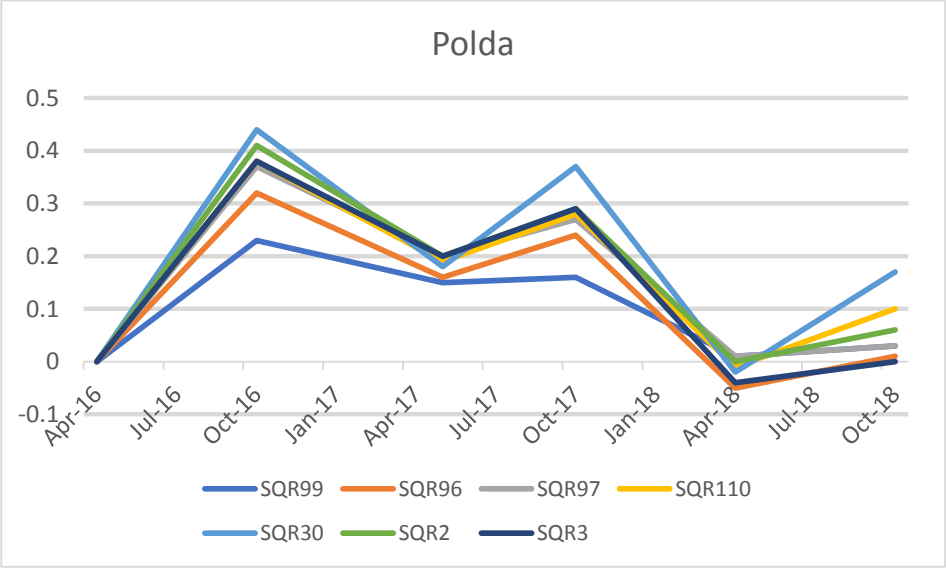
Statistical analysis of air temperature, rainfall and groundwater depth indicates that this change in condition is likely due to the effects of climate variability. Average annual maximum air temperature at Elliston has increased by 1.3 degrees Celsius between 1968 and 2004.

Graphs on the right show:

- The rainfall trend amounts are in decline since 1976 including from 2016 to 2018. It should be pointed out that we would rather have rainfall data from closer to the site but Mount Wedge (17km away) was the closest rainfall station with an appropriate dataset. It must also be noted that it is thought that intense rainfall events maybe more important to Red gum health than changes in annual rainfall. This concept will need further data analysis into the future.
- Groundwater levels increased slightly during 2016 and 2017 but in 2018 they returned to similar levels to early 2016.



Graph 1 Winter rainfall from 1882 – 2017.



Graph 2 Change in groundwater levels at seven wells, from 2016 to 2018.
(*Note: all measurements are in metres*)

Monitoring into the future

Tree condition monitoring will continue on a yearly basis. As time goes on more data will identify a trend if there is one.

In addition to more data, new monitoring infrastructure was installed at Polda in 2019 to improve the site specific accuracy of data collection. Additions include:

- a water level data-logger at one well
- a rain gauge to measure rainfall intensity and amount.

For more information

Access the full report 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, Port Lincoln, South Australia.

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