

Eastern Mount Lofty Ranges Prescribed Water Resources Area

2019–20 surface water and groundwater status overview



Angas Bremer PWA	Murray Group Limestone	
	Fractured rock aquifers	
	Murray Group Limestone	Currency
EMLR PWRA	Permian sand	Finniss
		Tookayerta
	Surface water (Angas & Bremer)	
	Surface water (Finniss & Currency)	

LEGEND

- Highest on record
- Very much above average
- Above average
- Average
- Below average
- Very much below average
- Lowest on record
- Long-term trend

Regional context

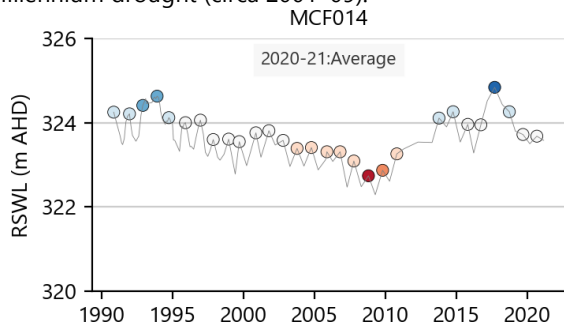
The Eastern Mount Lofty Ranges (EMLR) Prescribed Water Resources Area (PWRA) relies on both surface water and groundwater resources which are managed under the Water Allocation Plan for the EMLR PWRA, which was adopted in 2013. The PWRA lies within the Murray-Darling Basin and includes the Angas-Bremer Prescribed Wells Area (PWA).

The EMLR PWRA contains a number of different groundwater resources: fractured rock aquifers form the main resources in the Mount Lofty Ranges, the Permian Sand aquifer within valleys of the Tookayerta Creek and Finniss River catchments, and the Murray Group Limestone aquifer in the Murray Basin near Currency Creek and Langhorne Creek. Eleven of the sixteen surface water catchments in the PWRA have watercourses that drain from the eastern slopes of the Mount Lofty Ranges to the River Murray and Lake Alexandrina. The Bremer River, Angas River and Finniss River are the largest watercourses.

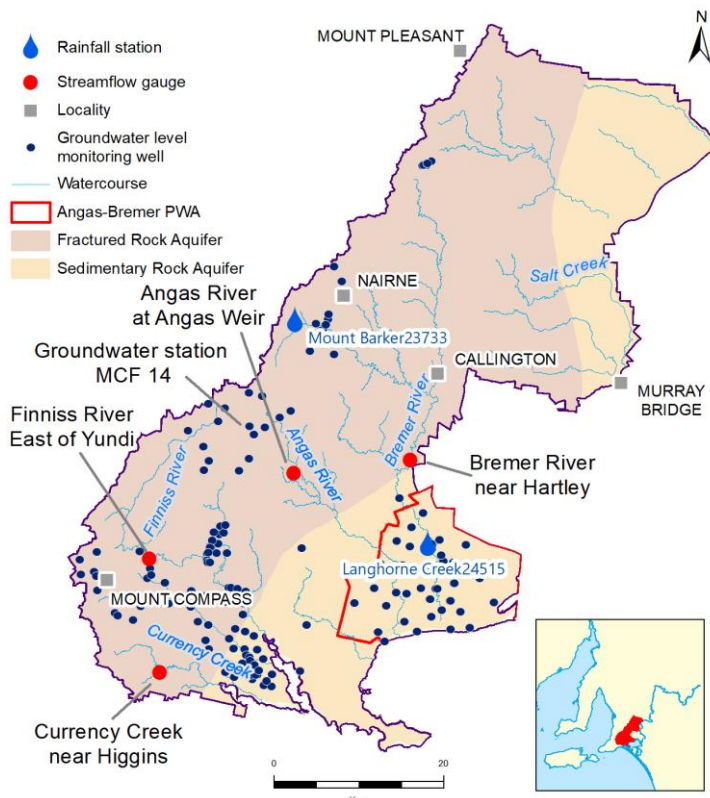
Groundwater level

Recovered water levels in 2020 were classified 'Average' in 54% of monitoring wells of EMLR PWRA

- In the Murray Group Limestone aquifer, water levels in all monitoring wells is classified 'Average' or greater.
- In the fractured rock aquifers, groundwater levels are variable, with 58% of wells classified 'Average'.
- In the Permian Sand aquifer, the Finniss catchment is classified mainly 'Average'; while variable groundwater levels were observed within the Tookayerta catchment.
- The figure below shows long-term trends in groundwater level near Macclesfield, with declines evident during the Millennium drought (circa 2001–09).



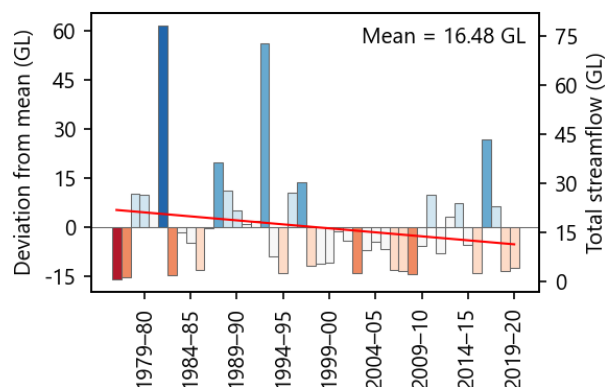
In 2020, winter-recovered water levels in 97% of monitoring wells were classified 'Average' or greater



Streamflow

Streamflow was classified 'average' or 'below average' for all four gauging stations

- Streamflow during 2019–20 at the Angas and Finniss gauging stations is classified 'average'. Streamflow at Currency Creek and the Bremer River (shown below) are classified 'below average'.
- Long-term data (1976–20) show a declining trend in streamflow.



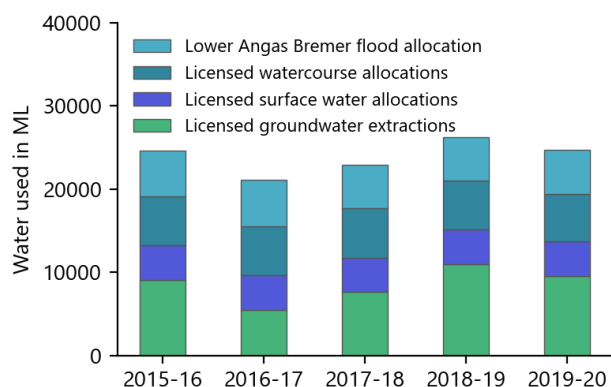
Water use

Estimated total water use from surface water and groundwater resources in 2019–20 was 31 349 ML

- Total water use of 31 349 ML comprises metered groundwater use and total surface water allocations (in lieu of metered surface water use).
- Consumptive water use includes a variety of licensed purposes (irrigation, industrial, intensive animal production, environmental and recreational uses) and non-licensed uses such as stock and domestic and plantation forestry; water is sourced through pumping and diversions from watercourses and aquifers and interception and storage by farm dams.

9559 ML was extracted from groundwater sources

- Groundwater extraction in Angas-Bremer PWA decreased by 2% from 2018–19 to 1497 ML and extraction volumes are still much lower than during the Millennium drought due to improved access to water from the River Murray.



Salinity

Surface water salinity in 2019–20 remained within historical ranges; Groundwater samples collected from 343 wells ranged from 69 to 14271 mg/L (median of 1239 mg/L)

- In general, the high rainfall and streamflow catchments in the south show lower surface water salinities than the lower rainfall and streamflow northern catchments.
- Salinity levels were variable on the Bremer River but remained within the historical ranges, with peak levels reaching 1618 mg/L
- Peak surface water salinity was 790 mg/L on the Finniss River
- The majority of wells in the Murray Group Limestone aquifer show increases of greater than 10% over the past 15 years.
- Groundwater salinity in the Angas Bremer PWA is highly variable as it is heavily influenced by fresh surface water that is injected into the aquifer via managed aquifer recharge.

Climate-driven trends in water resources

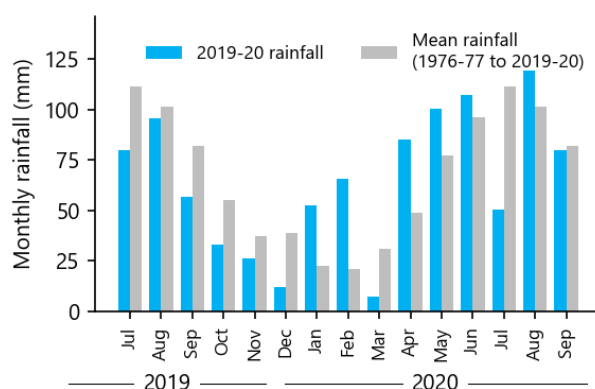
Climate is one of the main drivers of trends in the local water resources. Surface water and groundwater resources in the EMLR PWRA are highly dependent on rainfall.

Below-average winter rainfall results in a reduction in annual streamflow volumes. Below-average summer rainfall can increase the need for irrigation and therefore lead to higher water extraction. This can in turn lead to an increase in salinity. Conversely, increased rainfall results in increased surface water availability, decreased irrigation extractions, with potential decline or stabilisation of salinity.

Below-average rainfall also results in reduced recharge to shallow aquifers. This coupled with increased water extractions can cause groundwater levels to decline even in deeper confined aquifers. Conversely, above-average rainfall can cause increased recharge and lower irrigation extraction, resulting in potential groundwater level increase.

Rainfall was below-average for 2019–20

- Rainfall typically ranges from 500–1000 mm/y in the EMLRs and from less than 300 mm/y to 500 mm/y on the Murray Plains.
- Total rainfall in 2019–20 at Mount Barker measured 722 mm/y, commensurate with the long-term average of 722 mm/y.
- Rainfall at Langhorne Creek measured 468 mm and was above the long-term average of 381 mm/y.
- Below average rainfall was experienced in spring 2019 and early-summer 2019 (data for Mount Barker presented below).
- Long-term data at Mount Barker indicate an increasing trend in rainfall and Langhorne Creek indicates a stable trend (1976–2020).



More Information

This fact sheet is a high level summary of information provided in the 2019–20 Water Resources Assessment for the EMLR PWRA. Full details of the assessment can be found at: <https://www.waterconnect.sa.gov.au>