

Eastern Mount Lofty Ranges Prescribed Water Resources Area

2020–21 Surface water and groundwater status overview



Angas Bremer PWA	Murray Group Limestone	
	Fractured rock aquifers	
EMLR PWRA	Murray Group Limestone	Currency
	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

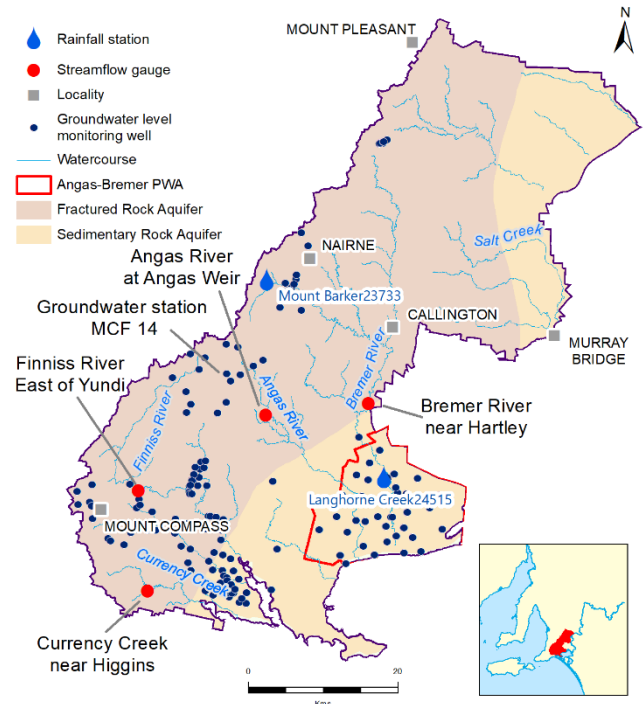
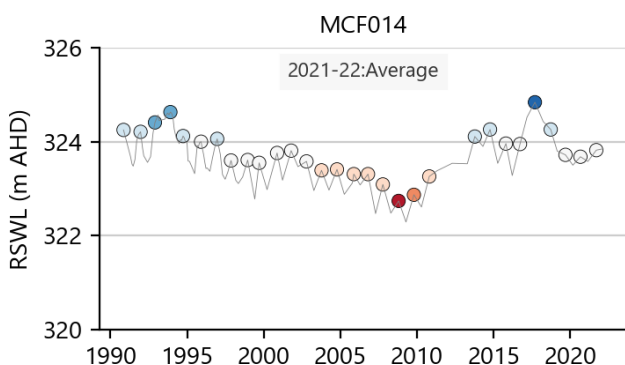
The Eastern Mount Lofty Ranges (EMLR) Prescribed Water Resources Area (PWRA) relies on both surface water and groundwater resources which are managed under the Water Allocation Plan for the EMLR PWRA, which was adopted in 2013. The PWRA lies within the Murray-Darling Basin and includes the Angas-Bremer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

Recovered water levels in 2021 are classified 'Average' or higher in 80% of monitoring wells of the EMLR PWRA.

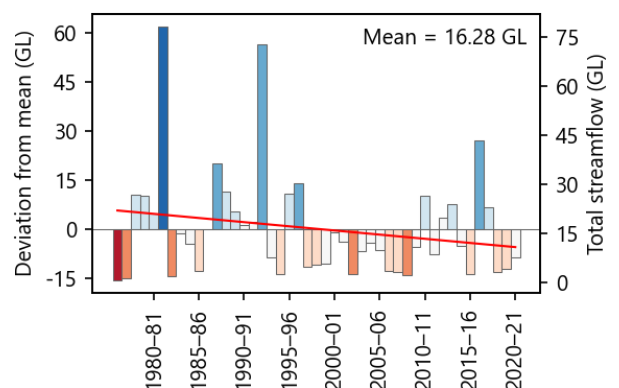
- In the Murray Group Limestone aquifer, water levels in all wells are 'Average' or higher.
- In the fractured rock aquifers, groundwater levels are variable, with 44% of wells classified 'Average'.
- In the Permian Sand aquifer, the Finniss catchment is classified 'Average'; while groundwater levels within the Tookayerta catchment are classified 'Below average'.
- The figure below shows long-term trends in groundwater level near Macclesfield, with declines evident during the Millennium drought (circa 2001 to 2009).



Streamflow

Streamflow is classified 'Average' for 3 out of 4 stations and the flow regime across the PWRA showed more flowing days.

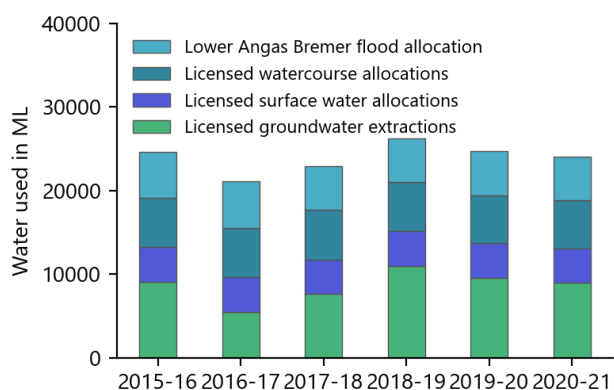
- Streamflow in 2020–21 was classified 'Below average' for Currency Creek and 'Average' for Angas, Bremer (shown below) and Finniss gauging stations.
- The flow regime observed in 2020–21 is likely to have helped maintain current aquatic species' distribution and diversity.
- The 1976 to 2021 data show a declining trend in streamflow for all stations.



Water use

Estimated total water use from surface water and groundwater resources in 2020–21 was 30,701 ML.

- This total water use comprises metered groundwater use and total surface water allocations (in lieu of metered surface water use). Licensed water use is shown in the graph below.
- 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 through interception and storage by farm dams.



8,919 ML was extracted from groundwater sources.

- Groundwater extraction in the Angas-Bremer PWA decreased by 39% from 2019–20 to 916 ML; extraction volumes are much lower than during the Millennium drought due to improved access to water from the River Murray.
- 45% of licenced groundwater extraction in the EMLR PWRA is from the fractured rock aquifers.

Salinity

Surface water salinity in 2020–21 remains within historical ranges; groundwater samples collected from 483 wells range from 66 to 14,862 mg/L (median of 1,255 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.
- Most monthly salinity levels are below the 1994 to 2021 median salinity values for the Bremer River (northern catchment), with peak levels reaching 1,811 mg/L.
- The majority of wells in the Murray Group Limestone aquifer show salinity 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

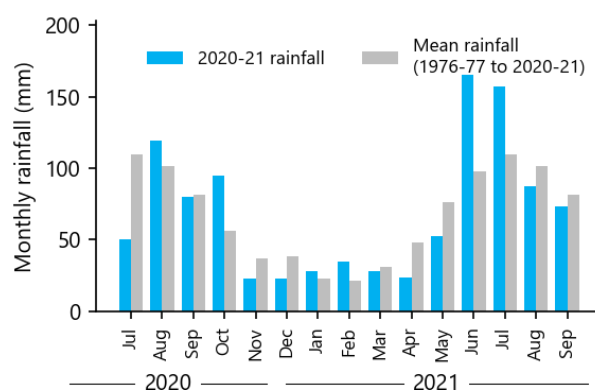
Climate is one of the main drivers of trends in the local water resources. Surface water and groundwater resources in the EMLR PWRA are highly dependent on rainfall.

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 and 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 in 2020-21 was 'Average'.

- Rainfall typically ranges from 500 to 900 mm/y on the west of the EMLR and from less than 300 mm/y to 500 mm/y on the eastern plains.
- Total annual rainfall recorded in 2020–21 is 723 mm at Mount Barker (west) and 387 mm at Langhorne Creek (east), which are both commensurate with the long-term average annual rainfall.
- Above average rainfall was experienced in June–July 2021 at both stations (monthly data for Mount Barker presented below).
- The 1976 to 2021 data at Mount Barker indicate an increasing trend in total annual rainfall and, at Langhorne Creek, total annual rainfall is stable.



More Information

This fact sheet is a high level summary of information provided in the 2020–21 Water Resources Assessment for the EMLR PWRA. Full details of the assessment can be found at: <https://www.waterconnect.sa.gov.au>