Barossa Prescribed Water Resources Area

2019–20 surface water and groundwater status overview

Barossa PWRA	Fractured rock aquifers	○
	Lower aquifer	●
	Upper aquifer	○
	Surface water	●

LEGEND

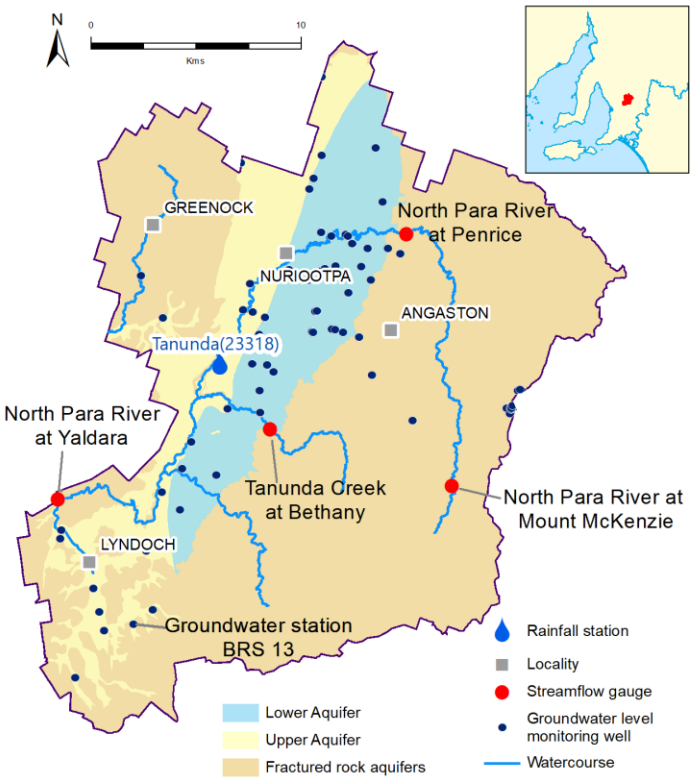
- Highest on record
- Very much above average
- Above average
- Average
- Below average
- Very much below average
- Lowest on record
- Long-term trend

Regional context

The Barossa Prescribed Water Resources Area (PWRA) relies on both surface water and groundwater resources that are managed under the Water Allocation Plan for the Barossa PWRA, which was adopted in 2009.

The Barossa PWRA consists of three major aquifers: two sedimentary aquifers (Upper and Lower) and fractured rock aquifers.

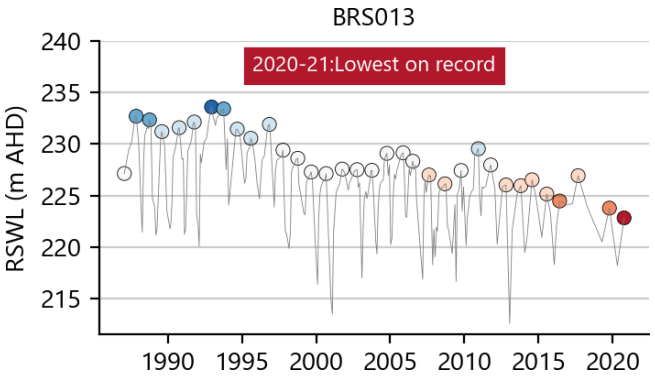
The North Para River is the main watercourse in the PWRA. All streams are ephemeral and feature seasonally disconnected permanent pools that are sustained predominantly by groundwater.



Groundwater level

93% of monitoring wells show 'below-average' to 'lowest-on-record' water levels

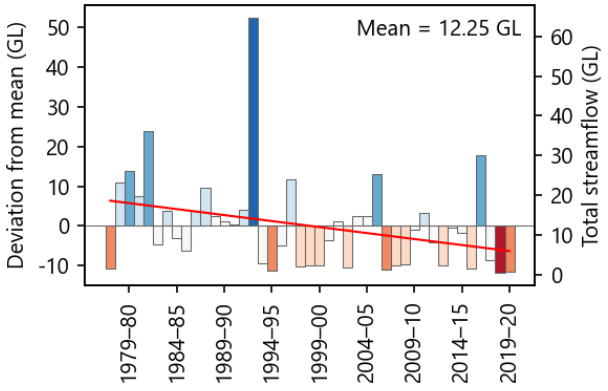
- In 2020, nearly half (47%) of wells with longer records show their lowest ever winter-recovered water level
- Five-year trends in water level indicate that the majority of wells show declining water levels
- The figure below shows long-term water levels at a monitoring site for a fractured rock aquifer near Angaston.



Streamflow

Lower-than-average streamflow was recorded at all 4 representative gauging stations

- There are four principal streamflow gauging stations operational in the Barossa PWRA, with Penrice recording the lowest streamflow on record for 2019–20
- Long-term data trends show a decline in streamflow (Yaldara data presented below).

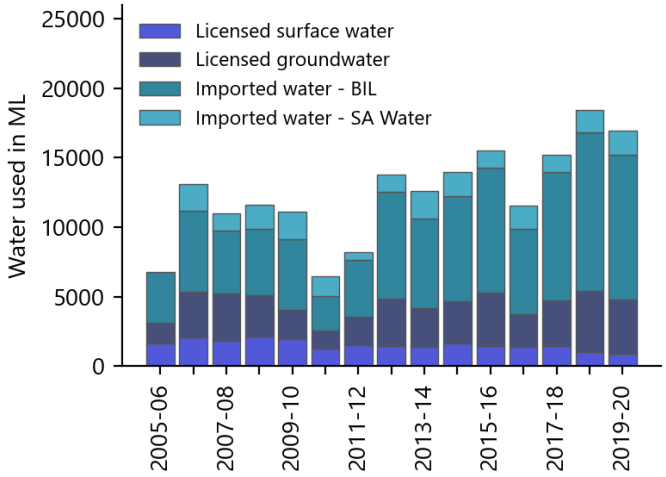


Barossa PWRA 2019–20 surface water and groundwater status overview

Water use

Approximately 67% of water use was from imported sources

- Water use for irrigation, commercial, stock and domestic purposes in the Barossa PWRA comes from a variety of sources. These include pumping and diversions from watercourses and aquifers, interception and storage by farm dams, imported water from the SA Water mains network and water supply from Barossa Infrastructure Ltd via SA Water infrastructure
- Water use in 2019–20 totalled 18 034 ML, which was the second-highest volume in the past 15 years
- Water use was high due to irrigation demand; this is likely to be due to below-average spring and summer rainfall.



Salinity

Surface water salinity in 2019–20 was high but values remained within historical ranges

- Surface water salinity levels in 2019–20 were above-average for the majority of the year, with peak levels at Yaldara reaching 3841 mg/L
- The higher salinity is likely to be the result of below-average rainfall and therefore reduced streamflow. However, values for 2019–20 remained within the historical ranges experienced at each site
- Groundwater salinity is highly variable within the Upper Aquifer and in 2020 ranged between 666 mg/L and 2704 mg/L, with a median of 1519 mg/L
- In 2020, the salinity of the Lower Aquifer ranged between 497 mg/L and 2504 mg/L, with a median of 1284 mg/L
- Groundwater salinity is also highly variable in the fractured rock aquifers – in 2020, salinity ranged between 727 mg/L and 2278 mg/L, with a median of 1140 mg/L.

Climate-driven trends in water resources

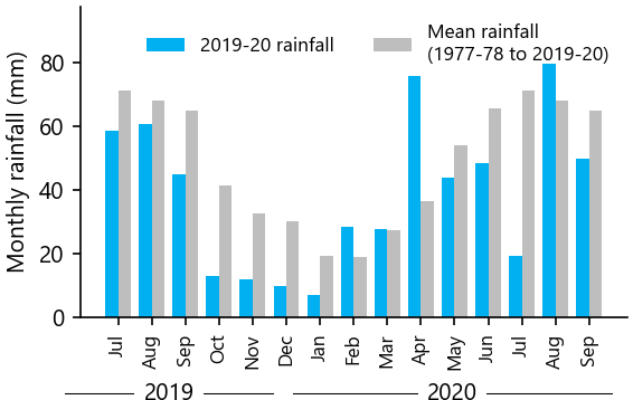
Climate is one of the main drivers of trends in the local water resources. Surface water and groundwater resources in the Barossa PWRA are highly dependent on rainfall.

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. Together with increased water extractions, this can cause groundwater levels to decline even in deeper confined aquifers. Conversely, above-average rainfall can cause increased recharge and lower irrigation extraction, which can cause groundwater levels to rise.

Rainfall below-average for 2019–20

- Rainfall is typically higher over the Tanunda and Jacobs Creek sub-catchments, decreasing to the north-east and south-west
- Rainfall at Tanunda measured 430 mm, which was lower than the average of 530 mm
- Reduced winter and spring rainfall was observed across the PWRA, consistent with observations across other areas in South Australia (data for Tanunda presented below)
- Long-term data at Tanunda indicate a stable trend in rainfall (1977–20) but the last 3 years have been below-average.



More Information

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

Government of South Australia
Department for Environment and Water