

Barossa Prescribed Water Resources Area

2020–21 Surface water and groundwater status overview



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

LEGEND

● Highest on record	○ Below average
● Very much above average	○ Very much below average
○ Above average	● Lowest on record
○ Average	— 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.

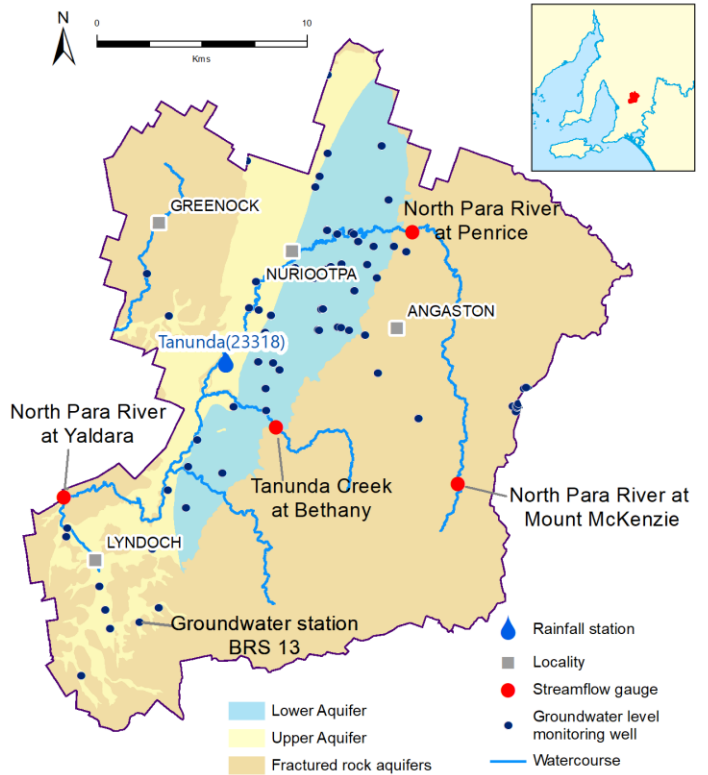
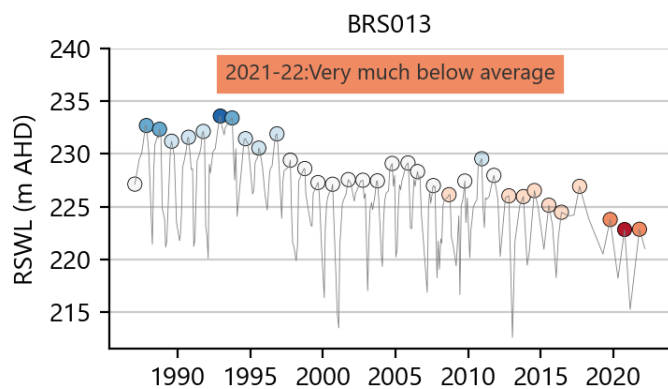
The Barossa PWRA consists of three major aquifers: two sedimentary aquifers (Upper and Lower) and fractured rock aquifers.

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

Groundwater levels

Water levels in 82% of monitoring wells are classified 'Below-average' or lower.

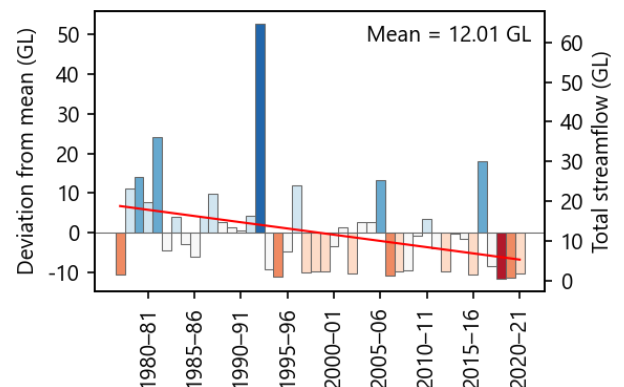
- In 2021, water levels in 34% of wells are classified 'Lowest on record'.
- Five-year trends indicate that the majority of water levels (81%) are declining.
- The figure below shows long-term water levels at a monitoring site for a fractured rock aquifer near Angaston.



Streamflow

Streamflow is classified 'Average' at 2 out of 4 gauging stations.

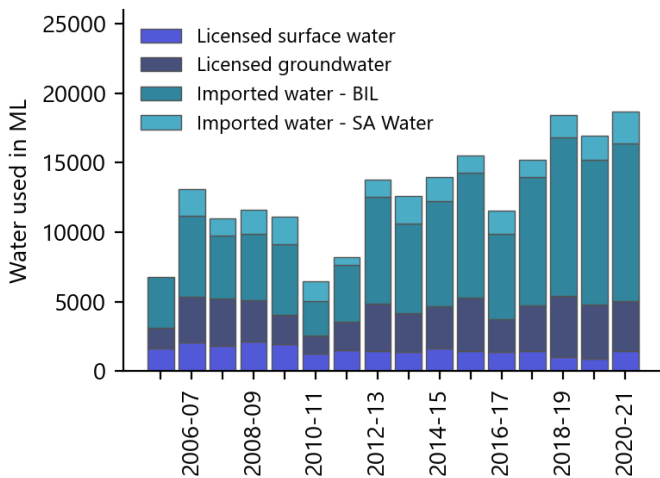
- There are four principal streamflow gauging stations operational in the Barossa PWRA; Penrice station streamflow is classified 'Very much below average' in 2020–21.
- Long-term data trends show a decline in annual streamflow (Yaldara data presented below).



Water use

Approximately 69% of water use is 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 (BIL) via SA Water infrastructure.
- Water use in 2020–21 totals 19,801 ML, which is the highest volume in the past 16 years.
- Water use is high due to irrigation demand; this is likely to be due to below-average rainfall.



Salinity

Surface water salinity in 2020–21 is high, but values remain within historical ranges.

- Surface water salinity in 2020–21 is above-average for the majority of the year, with peak levels at Yaldara reaching 2,526 mg/L.
- The higher salinity is likely to be the result of below-average rainfall and therefore reduced streamflow.
- Groundwater salinity is variable within the Upper Aquifer and in 2021, sampling results ranged between 930 mg/L and 2,824 mg/L, with a median of 1,514 mg/L.
- In 2021, Lower Aquifer salinity ranges between 637 mg/L and 2,205 mg/L, with a median of 1,373 mg/L.
- Groundwater salinity is also variable in the fractured rock aquifers. In 2021, sampling results range between 461 mg/L and 2,973 mg/L, with a median of 1,407 mg/L.

Climate

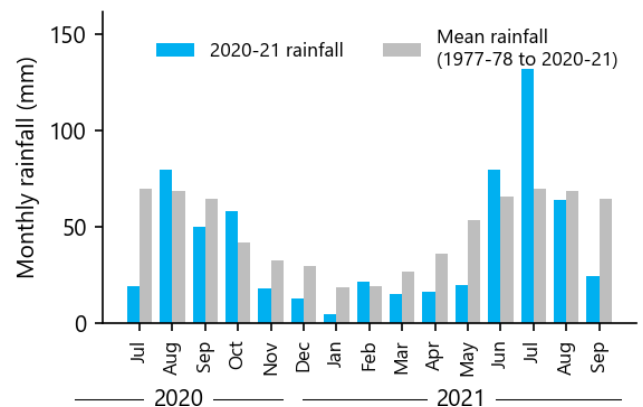
Climate is one of the main drivers of trends in the local water resources. Surface water and groundwater resources in the Barossa PWRA are highly dependent on rainfall.

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 and 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 is below-average for 2020–21.

- Rainfall is typically higher over the Tanunda and Jacobs Creek sub-catchments, decreasing to the north-east and south-west.
- Rainfall at Tanunda measures 394 mm, which is 25% lower than the average of 527 mm.
- Long-term data at Tanunda indicate a stable trend in rainfall (1977 to 2021), but the last 4 years have seen 'Below-average' rainfall.
- Drier than average conditions are observed across the PWRA (monthly data for Tanunda presented below).



More Information

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