

Clare Valley Prescribed Water Resources Area

2019–20 surface water and groundwater status overview



Clare Valley PWRA

Fractured rock aquifers

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 Clare Valley Prescribed Water Resources Area (PWRA) relies on both surface water and groundwater resources which are managed under a Water Allocation Plan (WAP) adopted in 2009.

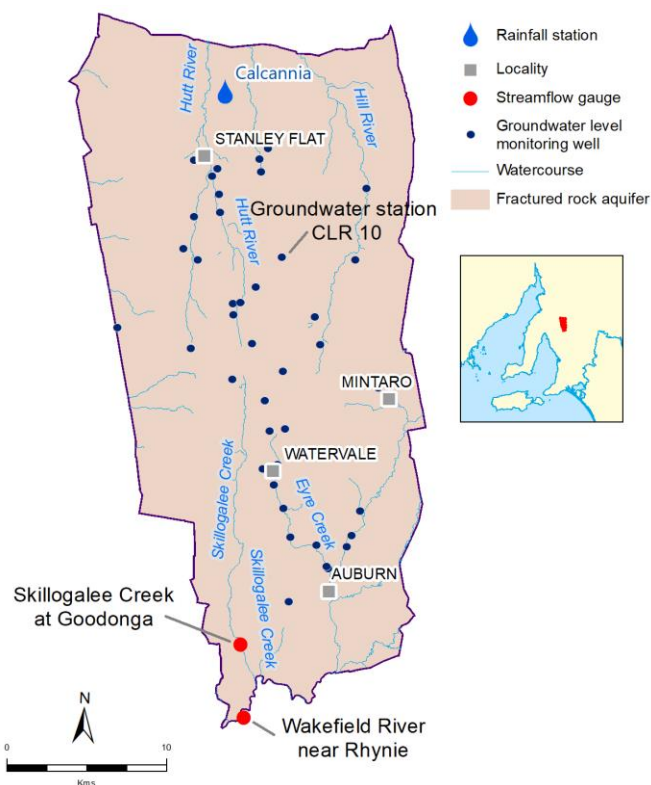
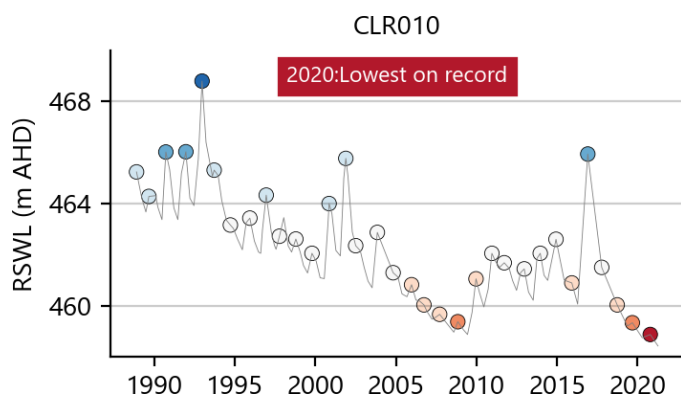
The Clare Valley PWRA consists of two main groundwater systems: a Quaternary alluvial aquifer in the valley floors and extensive fractured rock aquifers throughout the area. The fractured rock aquifers are the main groundwater resource. The Quaternary alluvial aquifer provides only a small proportion of the PWRA's groundwater supply, mainly in the vicinity of Stanley Flat.

The Broughton River, Hill River and Hutt River catchments are located in the north and the Wakefield River drains to the south of the PWRA. These main watercourses are ephemeral with permanent pools occurring in many places that are primarily sustained by groundwater.

Groundwater level

Recovered water levels in 2020 were at 'below-average' or lower levels in 94% of monitoring wells, compared to their historical record

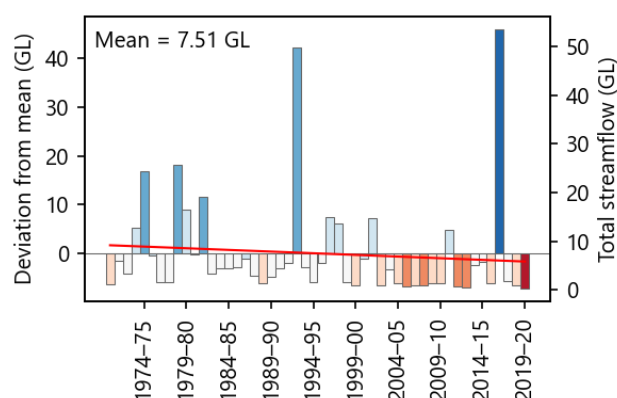
- In 2020, groundwater levels observed in 53% of fractured rock aquifer monitoring wells were at their lowest levels on record
- Five-year trends in water level from 2016–20 are declining for 97% of monitoring wells
- The figure below shows long-term water levels at a monitoring well near Clare.



Streamflow

Streamflow was below-average for the third consecutive year at all 3 representative streamflow gauging stations in 2019–20

- The Hill River and Wakefield River recorded 'lowest on record' streamflow and the Hutt River recorded 'very much below average' streamflow
- There is an overall declining trend with 13 of the past 15 years recording a below-average annual streamflow (Wakefield River data presented below).



Clare Valley PWRA 2019–20 surface water and groundwater status overview

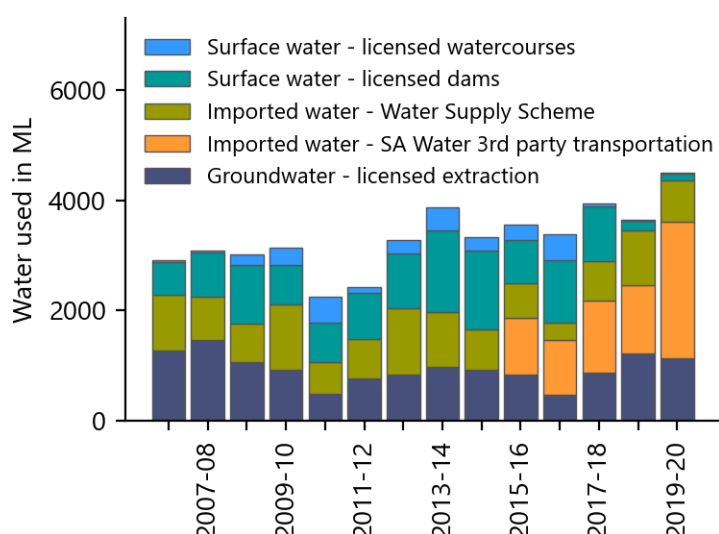
Water use

Approximately 62% of water use was from imported sources

- Water sources include watercourses, farm dams, groundwater and imported water from SA Water's Clare Valley Water Supply Scheme (including third party transportation), which brings River Murray water into the PWRA for municipal water supply and irrigation.

Water use for consumptive purposes was 5177 ML in 2019–20. 1144 ML of this total was extracted from groundwater, the second highest amount since 2007–08

- There was greater reliance on imported water sources and groundwater in 2019–20 due to below-average rainfall.



Salinity

Surface water salinity in 2019–20 remained within historical ranges; groundwater salinity from 15 wells ranged from 638 to 3120 mg/L with a median of 1233 mg/L

- Surface water salinity levels in 2019–20 were variable in the Wakefield River but remained within the historical ranges (1992–2020), with peak levels reaching 6772 mg/L
- Peak surface water salinity in the Skillogalee Creek reached 2415 mg/L
- Ten-year salinity trends in the fractured rock aquifers are increasing in most wells (93%). The salinity trends over the period varies from a decrease of 0.10% per annum to an increase of 4.25% per annum, with a median rate of 0.42% increase per annum.

Climate-driven trends in water resources

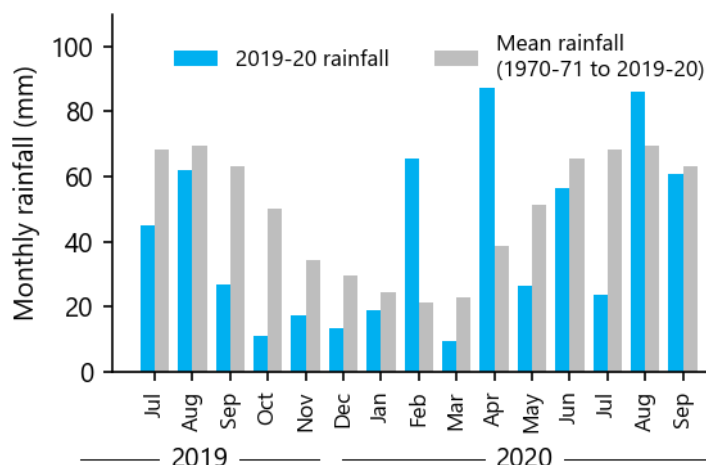
Climate is one of the main drivers of trends in the local water resources. Surface water and groundwater resources in the Clare Valley PWRA are highly dependent on rainfall.

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 in turn can 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. Conversely, above-average rainfall can cause increased recharge and lower irrigation extraction, which can cause groundwater levels to increase.

Rainfall was below-average for 2019–20

- Rainfall typically ranges from 500 to 620 mm across the PWRA, with the higher rainfall in the central and elevated areas
- Rainfall at Calcannia measured 439 mm, which was lower than the average of 539 mm. This pattern was consistently observed across the PWRA
- Rainfall from late-winter 2019 through to January 2020 was below-average (data for Calcannia presented below)
- Long-term data trends indicate a decline in rainfall (1970–20) and the last 3 years were below-average.



More Information

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

