Padthaway Prescribed Wells Areas

2018–19 groundwater status overview

Padthaway PWA	Confined aquifer		○
	Unconfined aquifer	Flats	○
		Range	○

LEGEND

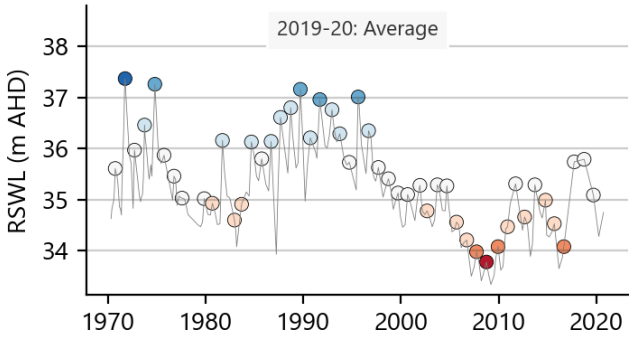
- Highest on record
- Very much above average
- Above average
- Average
- Below average
- Very much below average
- Lowest on record
- Long-term trend

Groundwater level

Water levels in unconfined aquifer monitoring wells in the Padthaway Flats management area were mainly at 'below-average' levels (54% of wells) in 2019 compared to their historic record

- The majority of those wells with below-average water levels are located in the western part of the PWA, down-gradient of the intensive groundwater extraction area
- Water level trends from 2015–19 show a rising trend in all wells. Long-term water level records generally show a correlation with rainfall (see example below).

GLE034



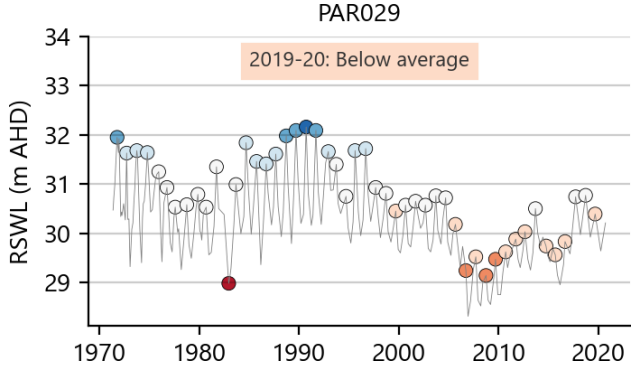
Water levels in unconfined aquifer monitoring wells in the Padthaway Range management area were mainly at 'average' levels (67% of wells) in 2019

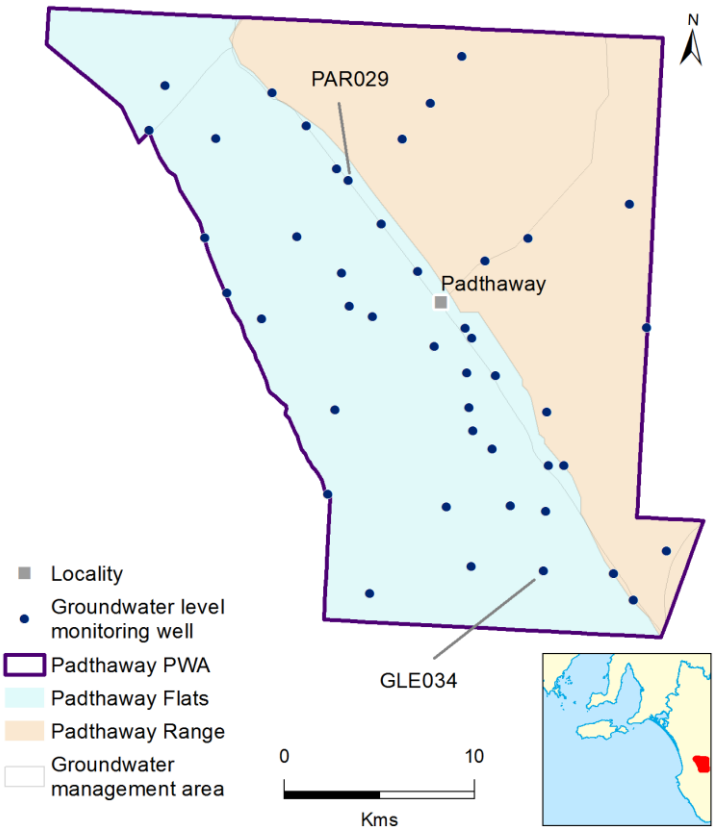
- Water level trends from 2015–19 show a variety of changes; most wells have either stable (33%) or rising (50%) trends, with rates of rise ranging from 0.03 to 0.19 m/y.

Water levels in two of the three confined aquifer monitoring wells were at 'below-average' levels

- Water level trends from 2015–19 were rising in all three wells
- The figure below shows a recovery in confined aquifer levels since 2009.

PAR029





Regional context

The Padthaway Prescribed Wells Area (PWA) is located within the Limestone Coast Landscape Region. The Padthaway PWA covers an area of approximately 750 km^2 in the area around Padthaway and is managed under the Padthaway PWA water allocation plan.

Groundwater resources in the region occur in the shallower unconfined Quaternary and Tertiary limestone aquifer and also in the deeper Tertiary confined sand aquifer.

There are two unconfined aquifer management areas: the Padthaway Flats in the west and the Padthaway Range in the east. Depth to groundwater is generally greater in the Padthaway Range.

The majority of groundwater extraction in the Padthaway PWA occurs from the unconfined aquifer in the Padthaway Flats management area.

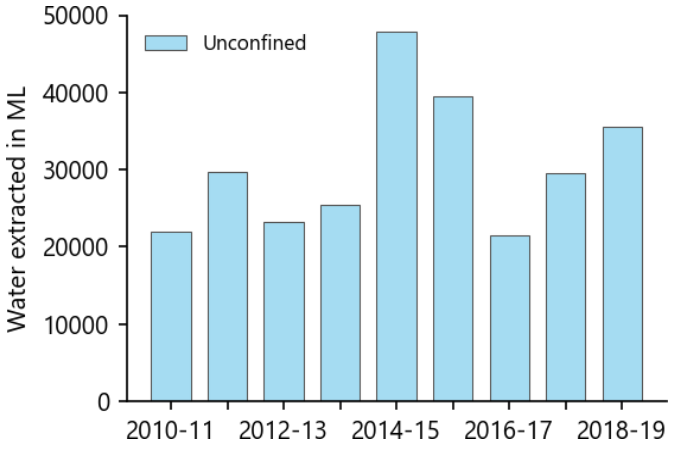
Government of South Australia
Department for Environment and Water

Padthaway Prescribed Wells Area 2018–19 groundwater status overview

Water extraction

In 2018–19, licensed groundwater extractions from the unconfined aquifer were 35 516 ML

- Groundwater is used widely in the South East for irrigation, industry, stock and domestic uses and town water supply.
- Groundwater extractions in 2018–19 increased by 20% from 2017-18. The volume of extraction tends to be driven by whether the rainfall was low or high, although this is a significant increase compared to a 5% decrease in annual rainfall over the same period at Marcollat rainfall station. The increase in groundwater extraction may be due to an extended irrigation season due to very dry conditions from January to April 2019.
- There were no licensed extractions from the confined aquifer in 2018–19 in the Padthaway PWA. The figure below shows licensed extractions from the unconfined aquifer over the last nine years.



Salinity

In 2019, groundwater samples collected from 26 unconfined aquifer wells had a median salinity of 1537 mg/L

- Salinities ranged from 974 mg/L to 9370 mg/L
- The median salinity was 1308 mg/L and 1124 mg/L in the Padthaway Flats and the Padthaway Range management areas, respectively
- Trends in water salinity from 2015 to 2019 in the Padthaway Flats are either stable (50% of wells) or rising (50% of wells), with the percentage change in salinity ranging from a decrease of 8% to an increase of 31% (median change of 12% increase). Seven out of eight wells in the Padthaway Range show stable trends

  Wells with rising salinity trends tend to be located on the western edge (down-gradient) of the intensive irrigation area and may be influenced by the recycling of irrigation water in the shallow aquifer.

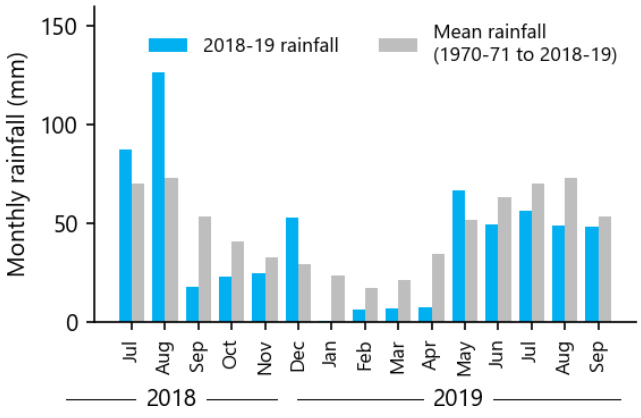
Climate-driven trends in water resources

Climate is one of the primary drivers of trends in the local water resources. Surface water and groundwater resources in the prescribed areas of the South East 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 the unconfined aquifer. This coupled with increased water extractions can cause groundwater levels to decline even in deeper confined aquifers. Conversely, higher than average rainfall can cause increased recharge and lower irrigation extraction, resulting in potential groundwater level increase. These changes are more pronounced in the plains areas where the watertable is relatively shallow.

Rainfall was lower than average for 2018–19

- Rainfall at Marcollat (486 mm) was 8% below average (1970–71 to present)
- Above-average rainfall occurred in July, August and December 2018, and also May 2019, while below-average rainfall occurred between September and November 2018 and between January and April 2019
- In particular, January through April 2019 was very dry compared to average conditions
- Long-term data trends indicate a decline in rainfall
- The figure below shows monthly rainfall at Marcollat in blue for July 2018 to September 2019 compared to monthly averages in grey:



More Information

This fact sheet is a high level summary of information provided in the 2018-19 Water Resources Assessment for the Prescribed areas of the South East. Full details of the assessment can be found at: https://www.waterconnect.sa.gov.au/

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