

Tatiara Prescribed Wells Area

2018–19 groundwater status overview



Tatiara PWA	Confined aquifer		○
	Unconfined aquifer	Highlands	○
		Plains	○

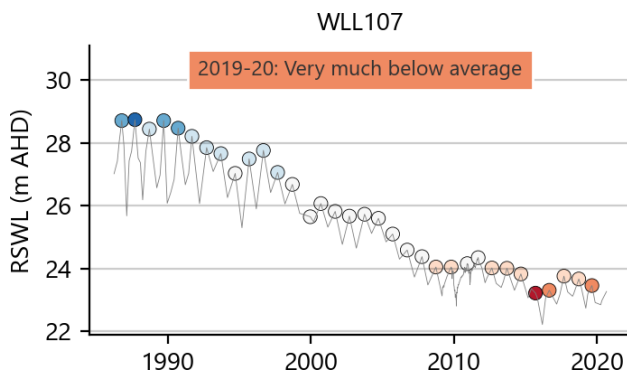
LEGEND

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

Groundwater level

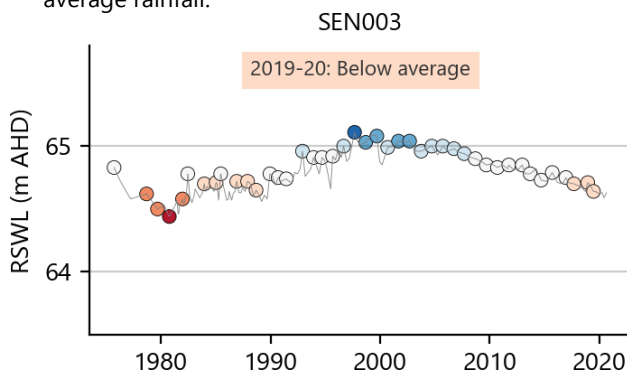
Water levels in 95% of the unconfined aquifer wells in the plains management areas were at 'below-average' or lower levels in 2019 compared to their historic record

- 39% of wells were at their 'lowest water level on record' in 2019. Water level trends from 2015–19 were declining for 52% of wells and rising for 31% of wells
- Long-term water level records generally show a correlation with rainfall (see example below).

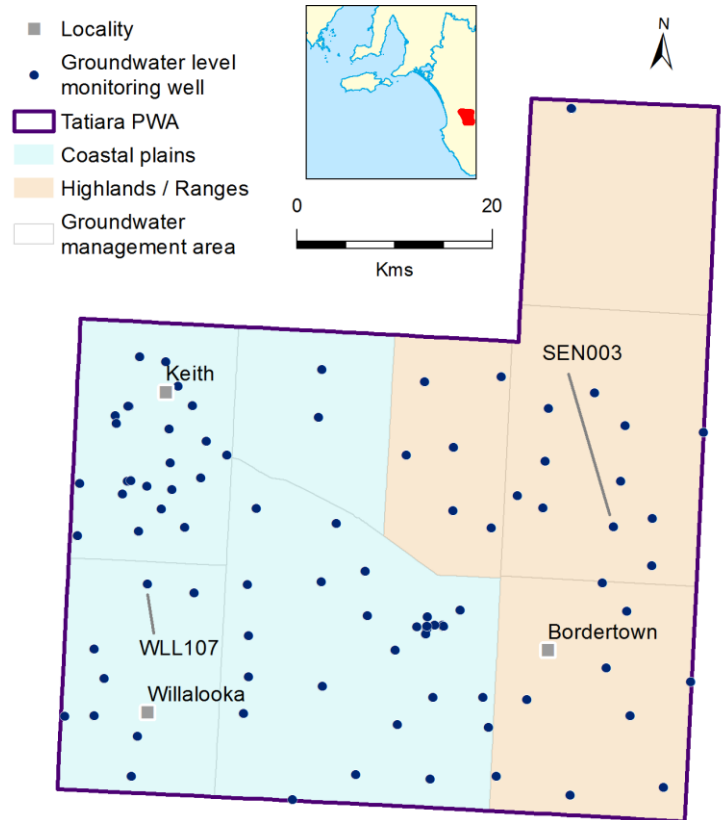


All unconfined aquifer wells in the highlands management areas were observed to have water levels below the historical average in 2019, including 7 out of 24 wells (29%) which were at their lowest water level on record

- Water level trends from 2015–19 were declining for 87% of wells
- The figure below shows the effect of widespread clearance of native vegetation (rising groundwater levels) throughout the 1980s and 1990s, followed by a decline due to below-average rainfall.



Water levels in two of the five confined aquifer monitoring wells were at their lowest level on record



Regional context

The Tatiara Prescribed Wells Area (PWA) is located within the Limestone Coast Landscape Region. The Tatiara PWA covers an area of approximately 3500 km² in the area between Keith and Bordertown, extending north to Ngarkat Conservation Park and is managed under the Tatiara 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 eight management areas for the unconfined aquifer, with these divided into 'Plains' and 'Highlands' due to different hydrogeological characteristics and groundwater management issues.

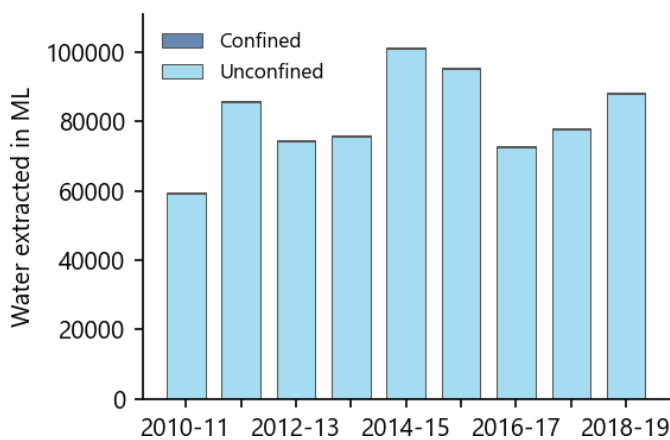
The majority of groundwater extraction in the Padthaway PWA occurs from the unconfined aquifer.



Water extraction

In 2018–19, licensed groundwater extractions from the unconfined aquifer were 87 197 ML

- Groundwater is used widely for irrigation, industry, stock and domestic uses and town water supply
- Groundwater extractions in 2018–19 increased by 12% from 2017–18. The volume of extraction tends to be driven by whether the rainfall was low or high and this increase corresponds with a 14% reduction in annual rainfall over the same period at Keith rainfall station
- In 2018–19, licensed groundwater extractions from the confined aquifer were 368 ML
- The figure below shows licensed extractions from both aquifers over the last nine years.



Salinity

In 2019, groundwater samples collected from 47 unconfined aquifer wells had a median salinity of 2420 mg/L

- Salinities ranged from 393 mg/L to 8748 mg/L
- The median salinity was 2702 mg/L and 1499 mg/L in the plains and highlands management areas, respectively
- In general, higher salinities above 4500 mg/L are found in the north-western part of the Tatiara PWA, where intensive flood irrigation is carried out
- Trends in water salinity from 2015–19 are stable for all but one well.

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/>

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 Keith (390 mm) was 14% below average (1970–71 to present)
- Above-average rainfall occurred in August, November and December 2018 and May 2019. The months of September and October 2018 and January through April 2019 saw significantly below-average rainfall
- Long-term data trends indicate a decline in rainfall
- The figure below shows monthly rainfall at Keith in blue for July 2018 to September 2019 compared to monthly averages in grey.

