Southern Basins Prescribed Wells Areas

2018–19 groundwater status overview

Southern Basins PWA	
	Coffin Bay
	Lincoln South
	Uley South
	Uley Wanilla

(2019 water level ranking for the median ranked well in each resource)

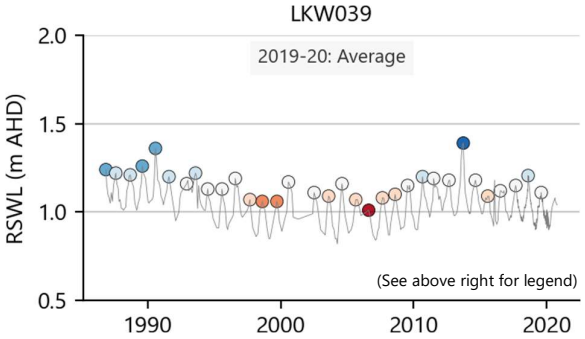
LEGEND (2019 water level ranked against historic variation)

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

Groundwater level

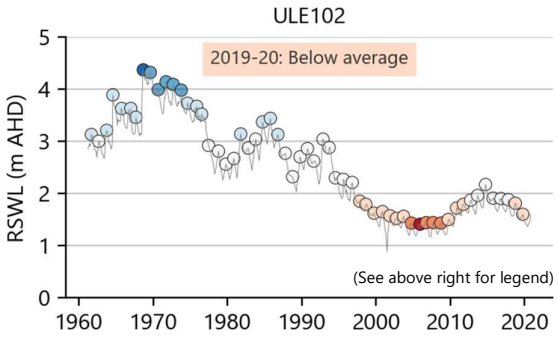
Water levels in four out of seven Quaternary limestone (QL) aquifer wells in Coffin Bay were at 'average' levels in 2019 compared to their historic record

- Water level trends from 2015–19 show rising trends in four wells, with very small rates of change (median of 2 cm/y). The figure below shows occasional recharge events due to high rainfall in the early 1990s and in 2013:



Water levels in QL aquifer wells in Uley South were mainly at 'below-average' levels in 2019 (53% of wells)

- Water level trends from 2015–19 show declining trends in 90% of wells with a median decline of 7 cm/y
- The figure below shows a long-term decline with lowest levels on record reached during the Millenium drought.

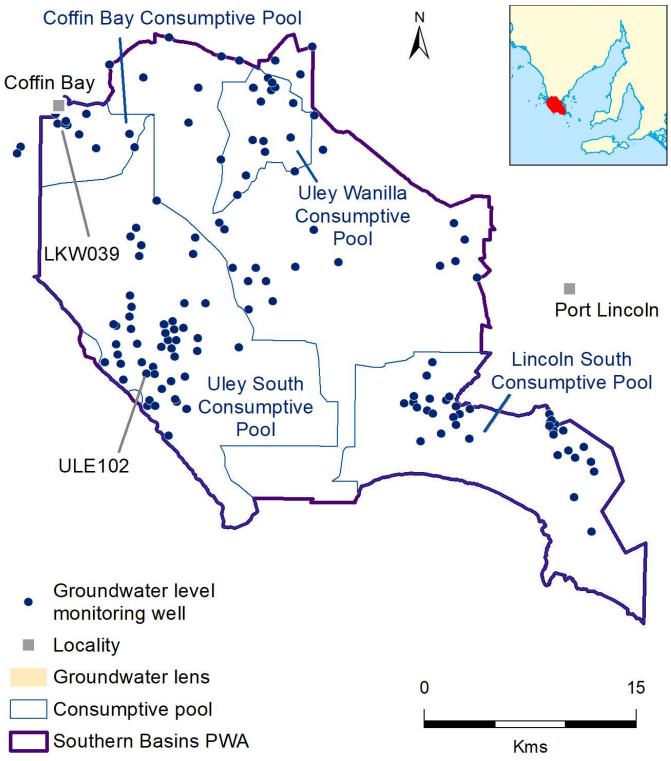


Water levels in the QL aquifer in Uley Wanilla were mainly at their 'lowest level on record' in 2019 (73% of wells)

- Water level trends from 2015–19 show declining trends in all wells, with a median decline of 16 cm/y.

Water levels in QL aquifer wells in Lincoln South were at 'below-average' or lower levels in 2019 (86% of wells)

- Water level trends from 2015–19 show declines in 90% of wells; 23% of wells are at their 'lowest level on record'.



Regional context

The Southern Basins Prescribed Wells Area (PWA) is located within the Eyre Peninsula Landscape Region. Groundwater is the major water resource in the area and is used for town water supply, stock and domestic, irrigation and mining use.

There are at least four aquifer systems located in the region: the uppermost unconfined aquifer in Quaternary limestone deposits, an unconfined to confined aquifer in underlying Tertiary sediments and a fractured rock aquifer occurring in basement rocks.

The largest and most reliable supplies of low-salinity groundwater are found in the Quaternary limestone, which is widely used in the Southern Basins PWA, including for the Port Lincoln public water supply. The resources are divided into consumptive pools for management purposes.

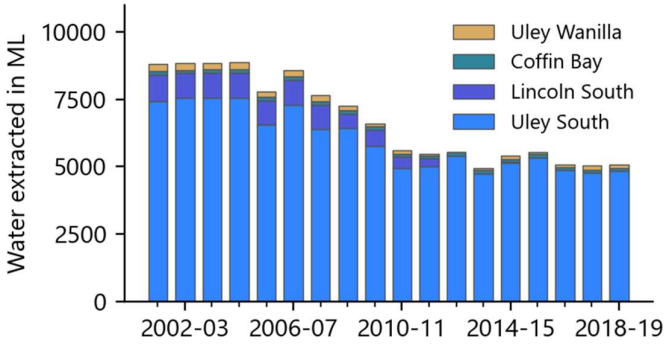
Government of South Australia
Department for Environment and Water

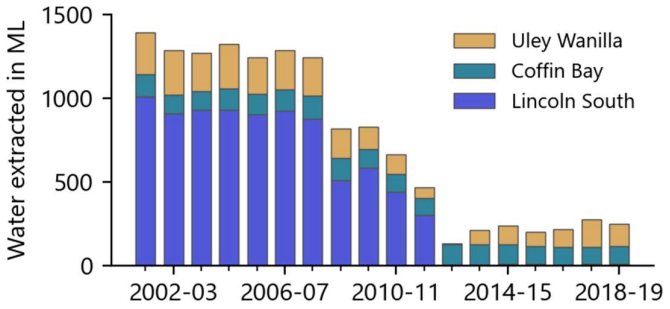
Southern Basins PWA 2018–19 groundwater status overview

Water extraction

Total metered water extraction in 2018–19 was 92 ML across the Southern Basins PWA

- Groundwater is used for a variety of purposes, including town water supplies, stock and domestic use, irrigation and mining
- Licensed groundwater extractions from Coffin Bay were 91 ML in 2018–19, an increase of 5% from 2017–18, while 2018–19 extractions from Uley South (4838 ML) and Lincoln South (6 ML) were similar to previous years. Uley Wanilla extractions were 133 ML, a decrease of 19% from 2017–18
- The figures below show major historical changes in volumes (the second figure excludes Uley South):





Salinity

In 2019, groundwater samples collected from QL aquifer monitoring wells and SA Water production wells across the Southern Basins PWA had a median salinity of 562 mg/L

- Salinity samples from Coffin Bay ranged from 367 to 1127 mg/L, with a median salinity of 422 mg/L. Salinity trends from 2015–19 were largely stable (3 out of 4 wells)
- Salinity samples from Uley South ranged from 389 to 699 mg/L, with a median salinity of 509 mg/L. Salinity trends from 2015–19 were almost all stable (13 out of 14 wells)
- Salinity samples from Uley Wanilla ranged from 448 to 1121 mg/L, with a median salinity of 595 mg/L. Salinity trends from 2015–19 were stable in 4 of 6 wells, with the median rate of change being an increase of 6% over five years.
- Salinity samples from Lincoln South ranged from 621 to 1508 mg/L, with a median salinity of 1104 mg/L. Salinity trends from 2015–19 were all stable.

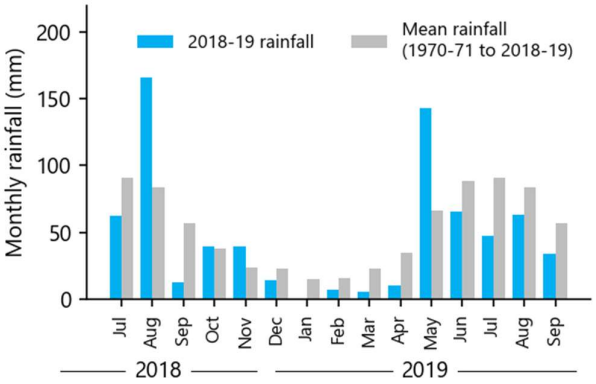
Climate-driven trends in water resources

Trends in groundwater level or salinity are primarily climate driven: below-average rainfall results in a reduction in recharge to the aquifers. Below-average summer rainfall can also result in increasing extractions and both elements can cause the groundwater levels to decline and salinities to increase. Conversely, above-average rainfall can result in increases in recharge, decreases in extractions and groundwater levels may rise and salinities may stabilise or decrease. Historical rainfall data indicate that trends of above or below-average rainfall can last for up to 25 years and that high-intensity rainfall events can result in rapid groundwater level responses (i.e. recharge).

Previous studies have indicated that recharge to the Quaternary limestone aquifer is likely to occur when there are more than 10 days of rainfall of more than 10 mm between the months of May and October.

Rainfall in 2018–19 was similar to the average

- Rainfall at Big Swamp rainfall station, located near Uley Wanilla was 564 mm, 1% above average (1970–71 to present)
- Monthly rainfall at these two long-term monitoring sites was well-above-average for August 2018 and May 2019, while rainfall was well-below-average in particular for September 2018 and between January and April 2019
- In 2018, there were more than 10 days of more than 10 mm of rainfall at three of eight stations (Westmere, Shoal Point and Coomunga West) and in 2019 at two of eight stations (Big Swamp and Westmere)
- Long-term data trends indicate a decline in rainfall
- The figure below shows monthly rainfall at Big Swamp 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 Musgrave and Southern Basins PWAs. Full details of the assessment can be found at: https://www.waterconnect.sa.gov.au

This report is a work in progress. As resource monitoring improves, so too will our ability to describe trends in condition. Licensed under Creative Commons Attribution 4.0 International License. © Crown in right of the State of South Australia.

Government of South Australia
Department for Environment and Water