Southern Basins Prescribed Wells Areas

2023–24 Groundwater status overview

Southern Basins PWA	Coffin Bay
	Lincoln South
	Uley South
	Uley Wanilla

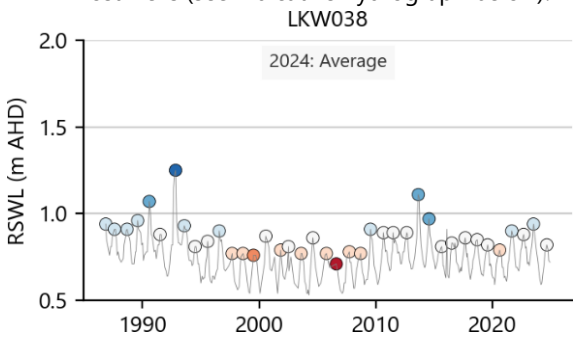
LEGEND

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

Groundwater levels

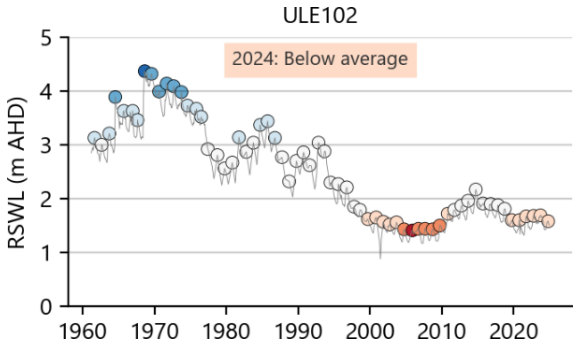
Groundwater levels in most Quaternary Limestone (QL) aquifer wells (88%) within the Coffin Bay consumptive pool were classified 'Average'.

- Five-year trends (2020 to 2024) show rising water levels in most wells (see indicative hydrograph below).



Groundwater levels in most QL aquifer wells (53%) in the Uley South Public Water Supply (PWS) consumptive pool were classified 'Below average' or lower.

- Five-year trends (2020 to 2024) show rising groundwater levels in the majority of wells (67%).
- The long-term hydrograph for observation well ULE102 shows levels were 'Lowest on record' during the Millennium drought (2001 to 2009) but, in 2024 were within 1 m of the lowest recorded water level.

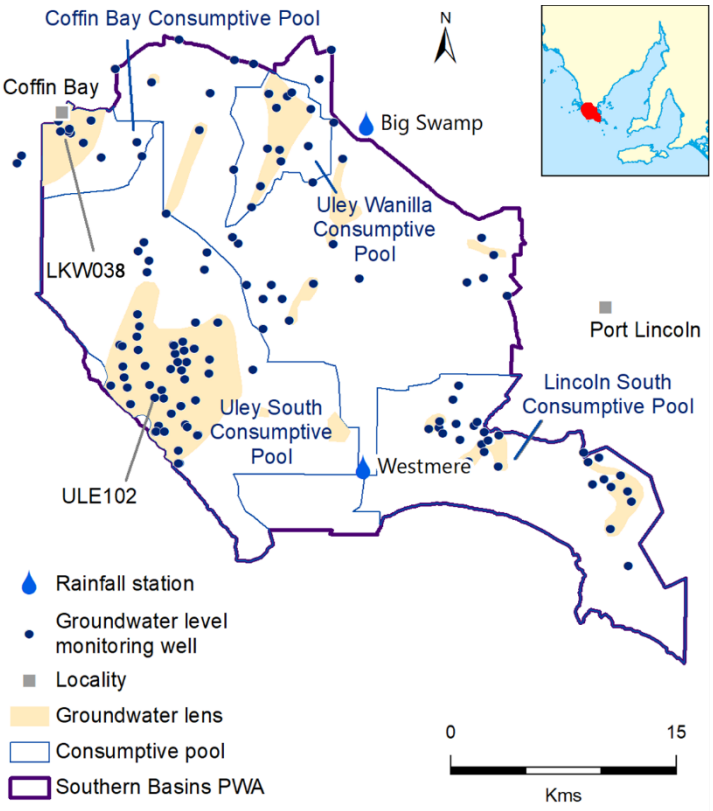


Groundwater levels in most QL aquifer wells (87%) in the Uley Wanilla PWS consumptive pool were classified 'Below average' or lower.

- Five-year trends (2020 to 2024) show declining groundwater levels in most (81%) wells.

Groundwater levels in all QL aquifer wells in the Lincoln South PWS consumptive pool were classified 'Below average' or lower.

- Five-year trends (2020 to 2024) show declining groundwater levels in the majority of wells (64%).



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 mainly for public water supply, stock and domestic use and for industrial purposes.

There are three main groundwater systems located in the region: the uppermost unconfined Quaternary Limestone aquifer, an unconfined to confined aquifer in underlying Tertiary sediments and a fractured rock aquifer occurring in basement rocks. The main supplies of potable groundwater are found in the Quaternary Limestone aquifer and these are known as fresh groundwater lenses.

The groundwater resources are divided into management zones – the zone with the highest use is the Uley South PWS consumptive pool, which supplies most of the reticulated supply for Eyre Peninsula. The River Murray augments reticulated supply via the Iron Knob–Kimba pipeline, while the township of Coffin Bay relies mainly on a localised fresh groundwater lens.

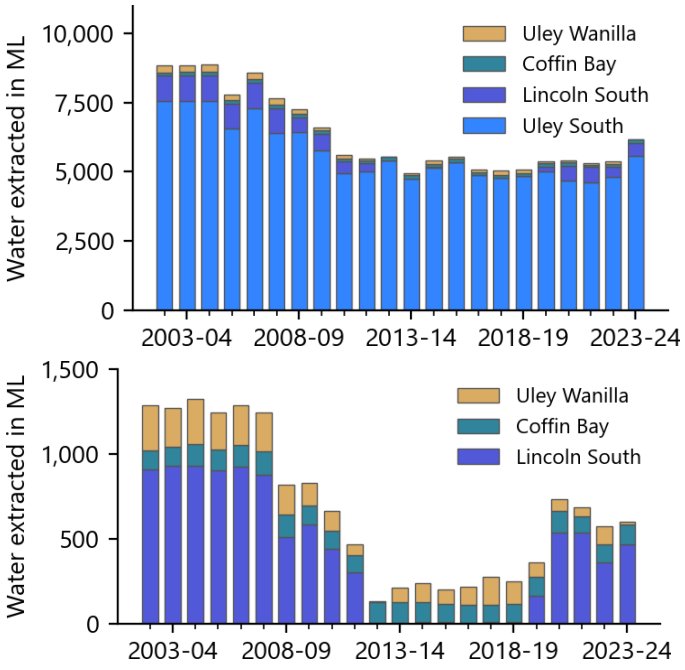
Southern Basins PWA 2023–24 Groundwater status overview

Groundwater use

Licensed extractions from the Southern Basins PWA totalled 6,228 ML, 15% more than 2022-2023. This includes licensed groundwater extractions from:

- Coffin Bay consumptive pool – 118 ML, an increase of 13% from 2022-23.
- Uley South PWS consumptive pool – 5,578 ML, an increase of 16% from 2022–23.
- Uley Wanilla PWS consumptive pool – 12 ML.
- Lincoln South PWS consumptive pool – 467 ML.

Annual extraction volumes are shown below (the second figure excludes the Uley South PWS consumptive pool).



Salinity

Groundwater samples from QL aquifer monitoring wells and PWS production bores across the Southern Basins PWA showed a median salinity of 557 mg/L.

- Coffin Bay consumptive pool ranged between 355 and 1,177 mg/L, (median of 423 mg/L). In the past 10 years, all wells showed a gradual and consistent increasing trend in salinity.
- Uley South PWS consumptive pool ranged between 448 and 3,195 mg/L (median of 544 mg/L). In the past 10 years, most wells (82%) showed increasing salinity.
- Uley Wanilla PWS consumptive pool ranged between 488 and 1,086 mg/L (median of 570 mg/L). In the past 10 years, most wells (78%) showed increasing salinity.
- Lincoln South PWS consumptive pool ranged between 671 and 1,625 mg/L (median of 1,168 mg/L). In the past 10 years, most wells (89%) showed increasing salinity.

Rainfall

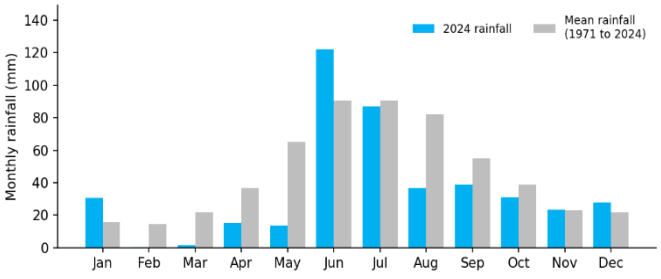
In general, below-average rainfall results in a reduction in groundwater recharge. Furthermore, below-average rainfall can result in increasing extractions and together both elements can cause groundwater levels to decline and salinities to increase. Conversely, above-average rainfall can result in increases in recharge, decreases in extractions and groundwater levels may rise and salinities may stabilise or decrease.

In the Southern Basins PWA rainfall is the main driver of changes in groundwater levels and salinity. In particular, groundwater levels are highly responsive to recharge from incident rainfall, due to the nature of the PWA's surface and subsurface geology.

Historical rainfall data indicate that trends of above or below-average rainfall can last for up to 25 years and suggest that, when matched with groundwater level data, high-intensity rainfall events can result in rapid groundwater level responses (i.e., groundwater recharge).

Rainfall at both Westmere and Big Swamp rainfall stations was below the long-term average.

- Rainfall at Big Swamp rainfall station (BoM station 18017) was 401 mm compared to the long-term average of 555 mm/y (1971 to 2024).
- Rainfall at Westmere rainfall station (BoM Station 18137) was 391 mm compared to the long-term average of 556 mm/y (1971 to 2024).
- Long-term rainfall data (1971 to 2024) at both stations indicate that total annual rainfall is declining.
- The figure below shows monthly rainfall (blue) during 2024 at Big Swamp compared to monthly averages (grey). June rainfall was above average however subsequent winter months were below average.



More Information

This fact sheet is a high-level summary. More information (including metadata) is available in the suite of Water Resource Assessments for the Musgrave and Southern Basins Prescribed Area can found at:
https://www.waterconnect.sa.gov.au/Systems/GSR/Pages/Default.aspx.

Government of South Australia
Department for Environment and Water