

Southern Basins Prescribed Wells Areas

2021–22 Groundwater status overview



Southern Basins PWA

Coffin Bay	○
Lincoln South	○
Uley South	○
Uley Wanilla	●

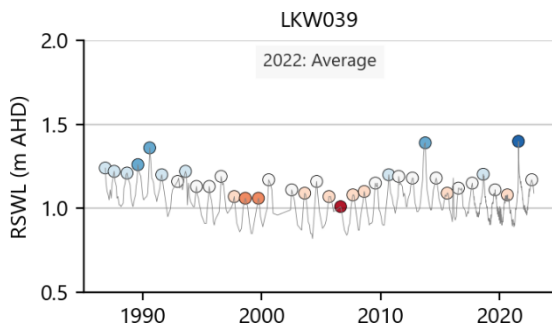
LEGEND

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

Groundwater levels

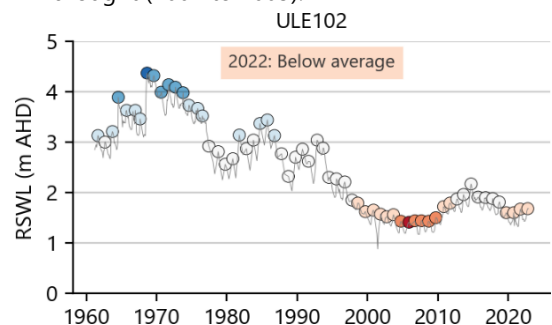
Groundwater levels in all Quaternary Limestone (QL) aquifer wells within the Coffin Bay consumptive pool are classified 'Average' or higher.

- Five-year trends (2018 to 2022) show rising water levels in all of wells (see indicative hydrograph below).



Groundwater levels in most QL aquifer wells (58%) in the Uley South Public Water Supply (PWS) consumptive pool are classified 'Average' or higher.

- Five-year trends (2018 to 2022) show declining groundwater levels in the majority of wells (59%).
- The long-term hydrograph for observation well ULE102 shows levels were 'Lowest on record' during the Millennium drought (2001 to 2009).

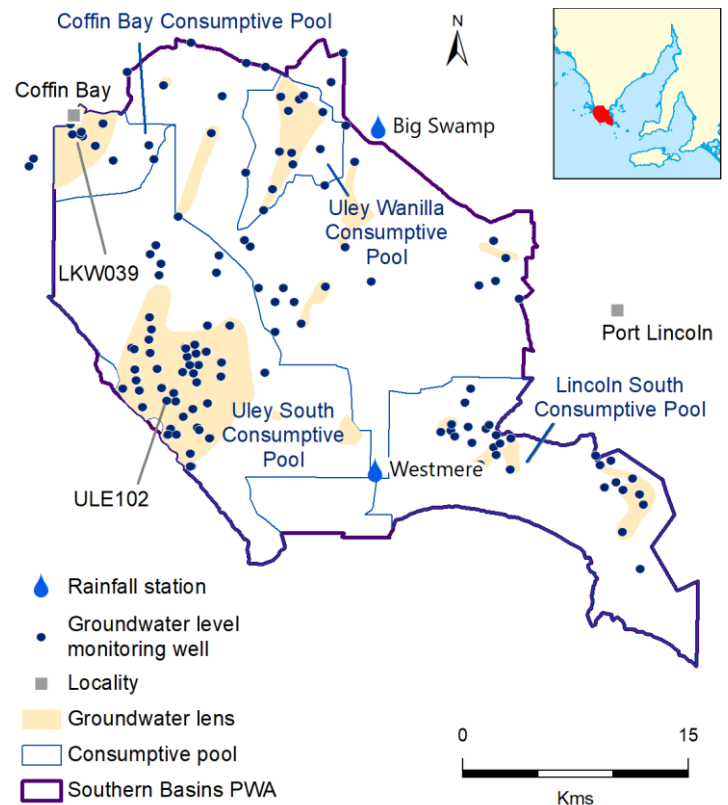


Groundwater levels in most QL aquifer wells (13 out of 14) in the Uley Wanilla PWS consumptive pool are classified 'Below average' or lower.

- Five-year trends (2018 to 2022) show declining groundwater levels in most (87%) wells.

Groundwater levels in most QL aquifer wells (85%) in the Lincoln South PWS consumptive pool are classified 'Below average' or lower.

- Five-year trends (2018 to 2022) show declining groundwater levels in most (77%) wells.



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.

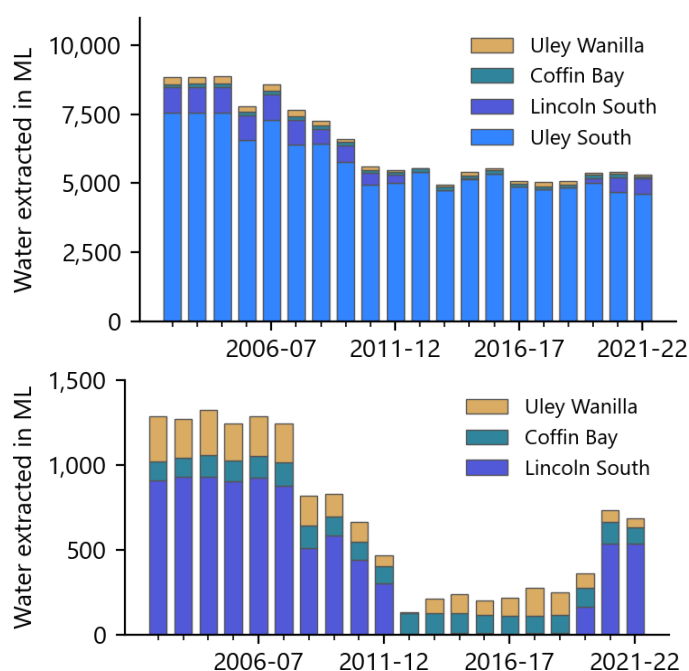


Groundwater use

Licensed extractions from the Southern Basins PWA totalled 5,348 ML. This comprises licensed groundwater extractions from:

- Coffin Bay consumptive pool – 94 ML, a decrease of 26% from 2020–21.
- Uley South PWS consumptive pool – 4,625 ML, a decrease of 1% from 2020–21.
- Lincoln South PWS consumptive pool – 538 ML (no change from 2020–21).
- Uley Wanilla PWS consumptive pool – 54 ML, a 18% reduction from 2020–21.

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 show a median salinity of 586 mg/L.

- Coffin Bay consumptive pool ranges between 349 and 1,149 mg/L (median of 457 mg/L). In the past 10 years, all wells show a slow and consistent increasing trend in salinity.
- Uley South PWS consumptive pool ranges between 443 and 3,834 mg/L (median of 543 mg/L). In the past 10 years, the majority of wells (82%) show increasing salinity.
- Uley Wanilla PWS consumptive pool ranges between 493 and 1,043 mg/L (median of 577 mg/L). In the past 10 years, the majority of wells (67%) show increasing salinity.
- Lincoln South PWS consumptive pool ranges between 643 and 1,546 mg/L (median of 1,093 mg/L). In the past 10 years, the majority of wells (78%) show increasing salinity.

Rainfall

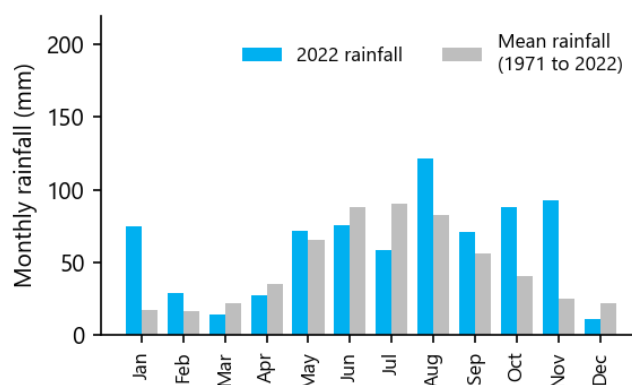
In general, below-average rainfall results in a reduction in groundwater recharge. Furthermore, below-average rainfall can result in increasing extractions and together both elements can cause groundwater levels to decline and salinities to increase. Conversely, above-average rainfall can result in increases 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 is above the long-term average.

- Rainfall at Big Swamp rainfall station is 735 mm compared to the long-term average of 559 mm/y (1971 to 2022).
- Rainfall at Westmere rainfall station (BoM Station 18137) is 700 mm compared to the long-term average of 559 mm/y (1971 to 2022).
- Long-term rainfall data (1971 to 2022) at both stations indicate that total annual rainfall is declining.
- The figure below shows monthly rainfall (blue) during 2022 at Big Swamp compared to monthly averages (grey).



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>