Musgrave Prescribed Wells Area

2023–24 Groundwater status overview

Musgrave PWA	Bramfield	○
	Polda	●

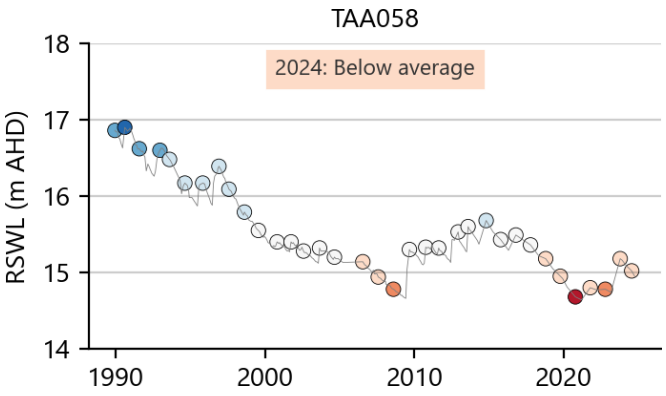
LEGEND

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

Groundwater levels

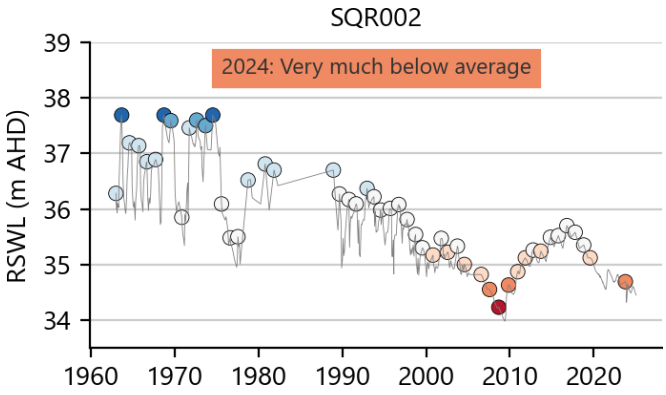
Groundwater levels in most Quaternary Limestone aquifer wells within the Bramfield consumptive pool were classified 'Below average' or lower.

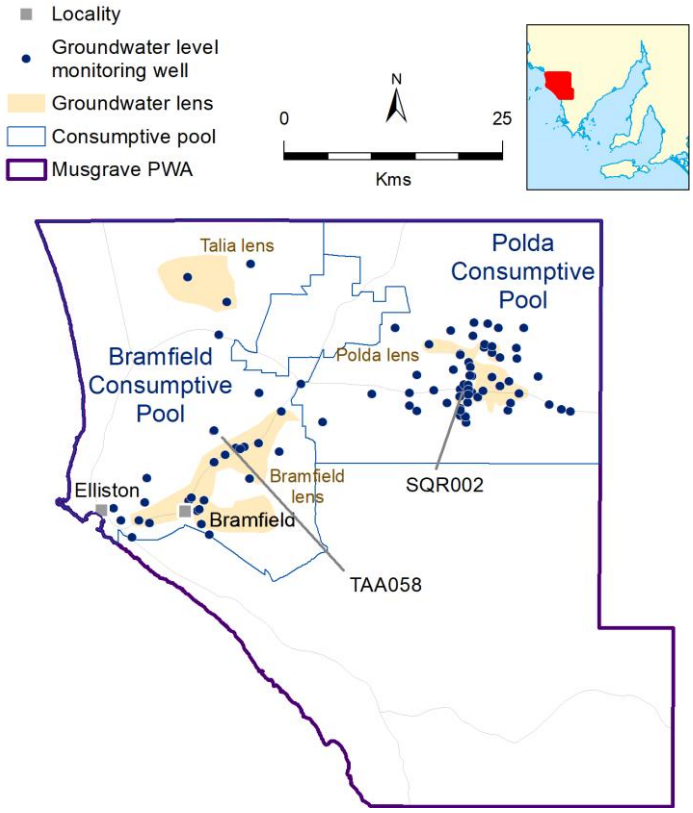
- 62% of wells had water levels classified 'Below average' or lower.
- Five-year trends (2020 to 2024) show groundwater levels are rising in 56% of wells, from long-term declines.
- The figure below shows the long-term water level record for a representative observation well located within the Bramfield consumptive pool.



Groundwater levels in most Quaternary Limestone aquifer wells in the Polda consumptive pool were classified 'Very much below average' or lower.

- Groundwater levels in 100% of wells were classified 'Below average', or lower.
- Five-year trends (2020 to 2024) show groundwater levels are declining in 68% of wells (see indicative hydrograph below).





Regional context

The Musgrave Prescribed Wells Area (PWA) is located within the Eyre Peninsula Landscape region. Groundwater is the main source of water resource across the PWA and is mainly used for town water supply and stock and domestic purposes.

There are four main groundwater systems located in the region: the uppermost unconfined Quaternary Limestone aquifer, a confined aquifer in underlying Tertiary sediments, a high-salinity aquifer in Jurassic sediments and a fractured rock aquifer that occurs in basement rocks. The only supplies of potable groundwater are found in the Quaternary Limestone aquifer.

The resources are divided into management zones – the zone with the highest licensed use is the Bramfield consumptive pool. However, most of the use is unlicensed – for stock and domestic supply – and is mainly sourced from brackish groundwater that resides within the Quaternary Limestone aquifer between the Talia and Bramfield fresh groundwater resources.

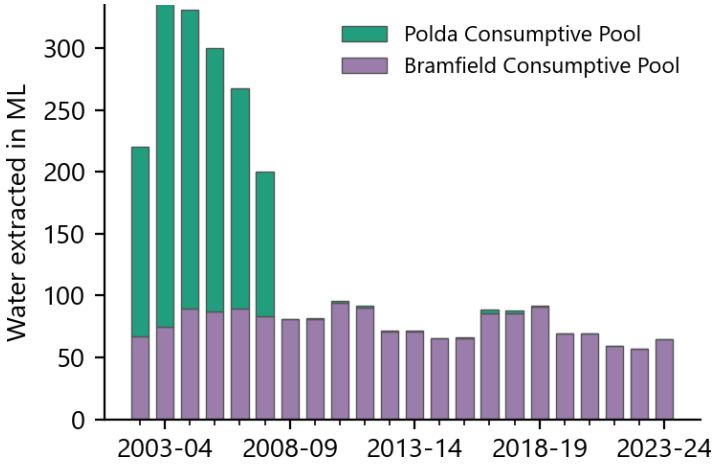
SOUTH AUSTRALIA
Government of South Australia
Department for Environment and Water

Musgrave Prescribed Wells Area 2023–24 Groundwater status overview

Groundwater use

Licensed extractions from the Musgrave Prescribed Wells Area totalled 64 ML.

- Groundwater is used for a variety of purposes but mainly for town water supply and stock and domestic use.
- Licensed groundwater extraction from the Bramfield consumptive pool totalled 64 ML, a 13% increase from the 2022–23 amount of 57 ML.
- Licensed extractions from the Polda consumptive pool are nil due to very low groundwater storages.
- The figure below shows the past 20 years of extraction.



Salinity

Groundwater samples from 15 Quaternary Limestone aquifer wells in the Bramfield consumptive pool showed a median salinity of 646 mg/L.

- Salinity ranged between 464 and 2,789 mg/L.
- Ten-year trends show gradually increasing salinity at rates of less than 1% per year.

Groundwater samples collected from 18 Quaternary Limestone aquifer wells within the Polda consumptive pool showed a median salinity of 902 mg/L.

- Salinity ranged between 501 and 3,552 mg/L.
- Ten-year trends show salinity is increasing in the majority of wells (86%) with rates ranging from a decrease of 0.8% per year to an increase of 3.2% per year (median rate of 0.6% increase per year).

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, available at:
https://www.waterconnect.sa.gov.au/Systems/GSR/Pages/Default.aspx.

Rainfall

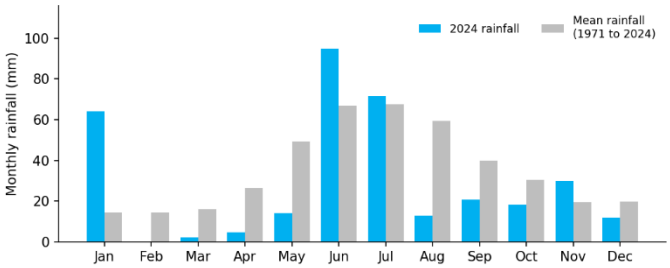
In general, below-average rainfall results in a reduction in groundwater recharge. Furthermore, below-average rainfall can result in increasing extractions and together both elements can cause groundwater levels to decline and salinities to increase. Conversely, above-average rainfall can result in increases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

In the Musgrave 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).

In 2024, annual rainfall was below the long-term average at Elliston and Terrah Winds.

- In 2024, total annual rainfall at Elliston (BoM Station 18069) was 303 mm, which is 29% below the long-term average (424 mm).
- In 2024, total annual rainfall at Terrah Winds (BoM Station 18165) was 316 mm which is 15% below the long-term average (370 mm).
- The long-term trend in annual rainfall (1971 to 2024) is declining at Elliston but relatively stable at Terrah Winds station.
- At both rainfall stations, June and January rainfall were above the monthly average while most other months were below average.
- The figure below shows monthly rainfall (blue) for 2024 at Elliston compared to monthly averages (grey).



SOUTH AUSTRALIA
Government of South Australia
Department for Environment and Water