Musgrave Prescribed Wells Area

2018–19 groundwater status overview

Musgrave PWA	Bramfield	○
	Polda	○

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

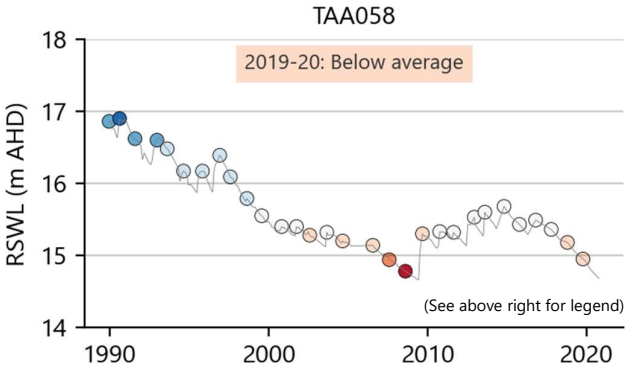
LEGEND (2019 water level ranked against historic variation)

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

Groundwater level

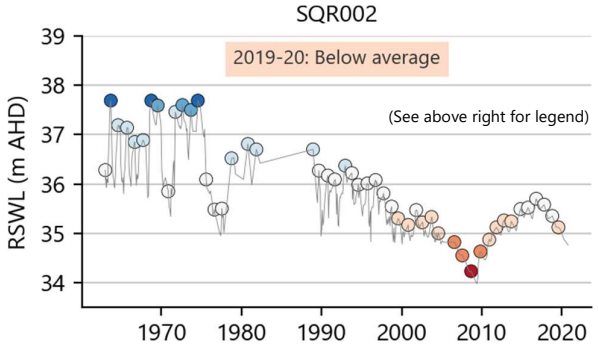
Water levels in Quaternary limestone aquifer wells in Bramfield were at 'below-average' and 'very-much-below-average' levels in 2019 compared to their historic period

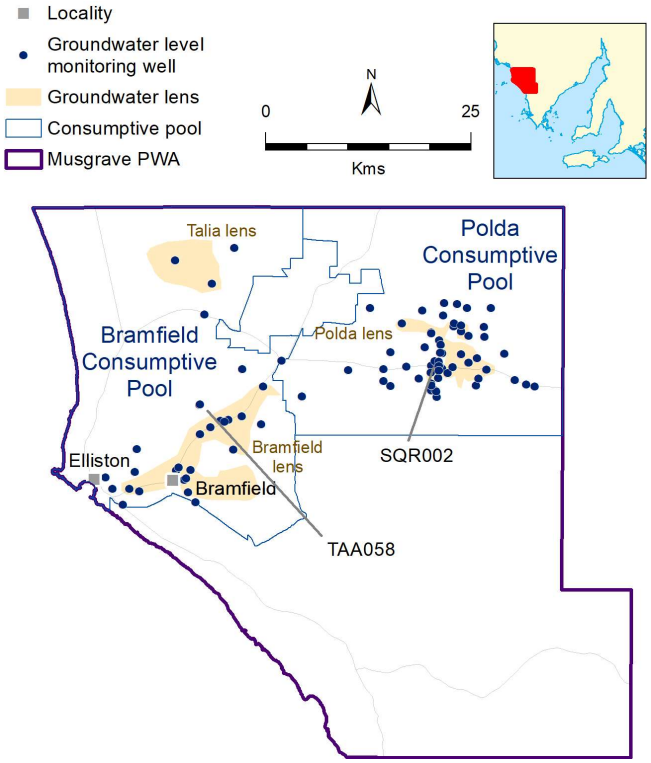
- Water level trends from 2015–19 show declining trends in 84% of wells
- The majority of wells (4 out of 8) had 'very-much-below-average' water levels in 2019, but no wells have yet reached levels lower than those encountered at the end of the Millennium drought in 2009
- The figure below shows the long-term water level record for a well in Bramfield; increasing or decreasing water levels over time are driven by periods of higher or lower rainfall.



All Quaternary limestone aquifer wells at Polda were at 'below-average' or lower levels in 2019

- 64% of wells were at 'below-average' water levels, with 8% of wells at their lowest water level on record
- Water level trends from 2015–19 show declining trends in all wells
- The figure below is from a well at the now-decommissioned Polda water supply extraction trench.





Regional context

The Musgrave 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 and irrigation 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, an aquifer in Jurassic sedimentary rocks in the Musgrave PWA 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 Musgrave PWA. The resources are divided into consumptive pools for management purposes, with the two largest resources being the Bramfield and Polda Consumptive Pools.

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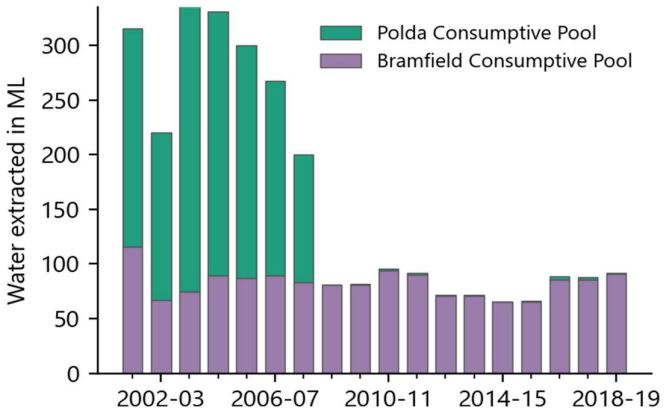
Musgrave Prescribed Wells Area 2018–19 groundwater status overview

Water extraction

Metered water extraction in 2018–19 was 92 ML

- Groundwater is used for a variety of purposes, including town water supply, stock and domestic use and irrigation
- Licensed groundwater extractions from Bramfield were 91 ML in 2018–19. This is an increase of 7% compared to 2017–18
- Licensed groundwater extractions from Polda were 940 kL in 2018–19. This is significantly less than historical patterns due to the cessation of extraction (greater than 150 ML/y) for public water supply from the Polda resource in 2007–08
- The figure below shows the last 18 years of extraction.



Salinity

In 2019, groundwater samples collected from 11 Quaternary limestone aquifer wells in Bramfield had a median salinity of 572 mg/L

- Salinities ranged from 403 mg/L to 1005 mg/L
- Salinity trends from 2015 to 2019 were largely stable (3 out of 5 wells).

In 2019, groundwater samples collected from 14 Quaternary limestone aquifer wells at Polda had a median salinity of 826 mg/L

- Salinities ranged from 466 mg/L to 2681 mg/L
- Salinity trends from 2015 to 2019 were stable in 79% of wells.

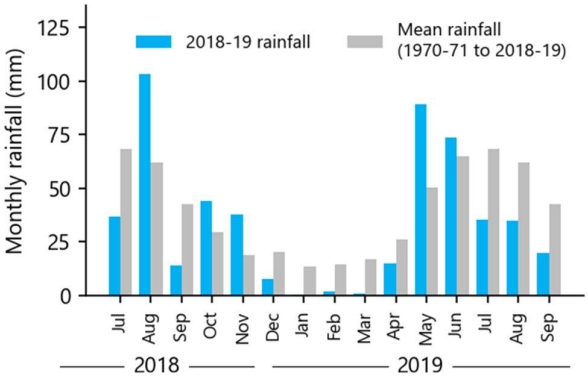
Climate-driven trends in water resources

Climate is one of the primary drivers of trends in the local water resources. Groundwater levels and salinities in the Musgrave PWA are highly responsive to recharge from rainfall.

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).

Rainfall was average for 2018–19

- Annual rainfall totals at Elliston (424 mm) and Terrah Winds (366 mm) were 1% below the long-term averages (1970–71 to 2018–19) at both stations
- Well-above-average monthly rainfall was recorded in August and November 2018 and May 2019 and well-below-average monthly rainfall was recorded during summer (December 2018 to March 2019) at all three stations
- Long-term data trends indicate a decline in rainfall
- The figure below shows monthly rainfall at Elliston 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

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