

Far North Prescribed Wells Area

2021-22 Groundwater status overview



Far North PWA

GAB (J-K) aquifer



LEGEND

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

Regional context

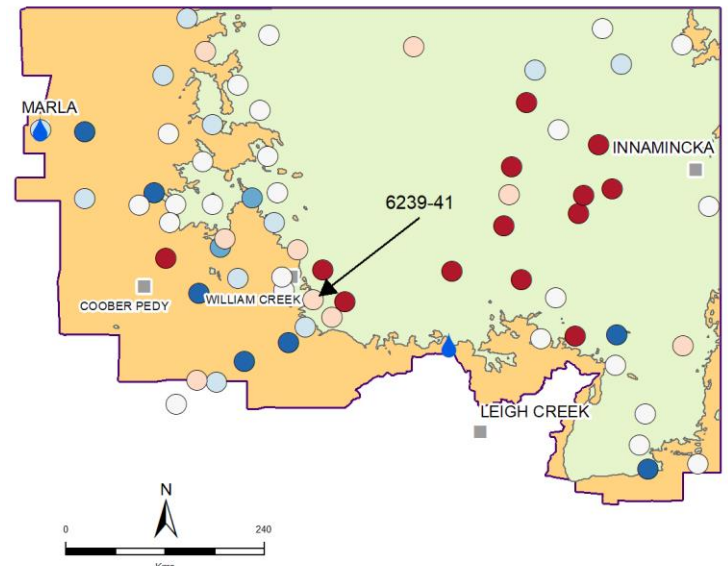
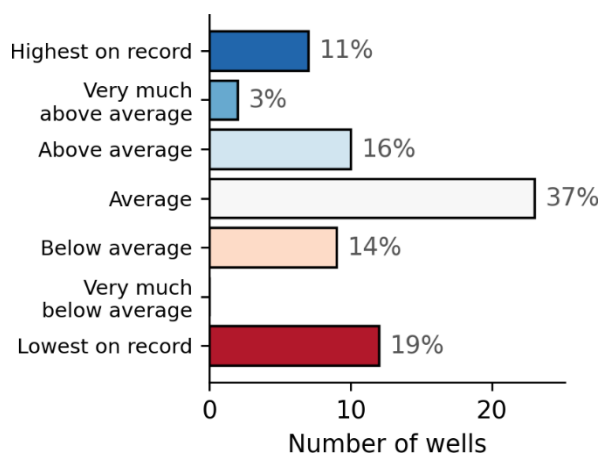
The Far North Prescribed Wells Area (PWA) is located in the South Australian Arid Lands Landscape Region. Groundwater resources are managed under the principles in the Water Allocation Plan for the Far North PWA (adopted in 2021). Groundwater in the Far North PWA is vital to the sustainability of high-value Great Artesian Basin (GAB) spring complexes and the ecosystems that rely upon them, as well as the viability of the mining, petroleum, pastoral and tourism industries and the provision of water for critical human needs.

Groundwater in the Far North PWA is predominantly sourced from the Cadna-owie Formation and Algebuckina Sandstone (and lateral equivalents) of the Great Artesian Basin (GAB) which form a single hydrogeological unit known as the Jurassic-Cretaceous (J-K) aquifer. The J-K aquifer contains the largest and regionally most important groundwater resource within the Far North PWA.

Groundwater levels

In 2022, groundwater levels in 67% of wells in the GAB (J-K) aquifer are classified 'Average' or higher.

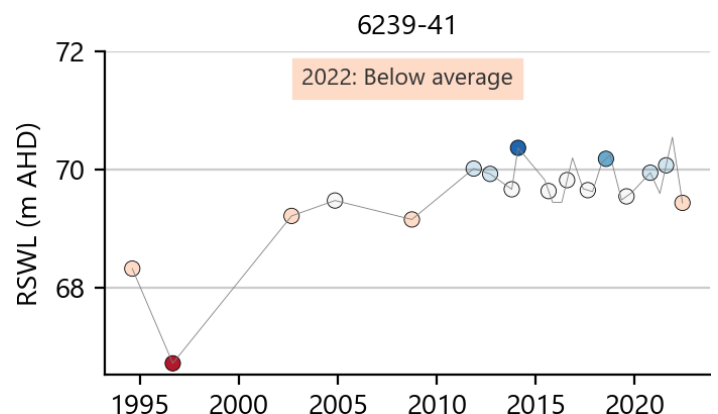
- 11% of monitoring wells, mainly located in the western part of the basin, are classified 'Highest on record'.
- 19% of monitoring wells are classified 'Lowest on record'; these wells are predominantly located in the south-central to north-east of the PWA.
- Five-year trends show that water levels in most wells (72%) are stable or are rising.
- A summary of water levels in 2022 compared to their historical levels is shown below.



- Groundwater level monitoring well
- Locality
- Far North PWA
- Artesian groundwater
- Non-artesian groundwater
- Rainfall station



An example of long-term rising trends in groundwater level in the western part of the basin is Unit No. 6239-41, a monitoring site south-east of William Creek (shown below). This site shows a gradual rise since 1996 which is likely due to decommissioning in 1993 of the original free-flowing well at the same location. In 2021, the groundwater level is classified 'Above-average'.

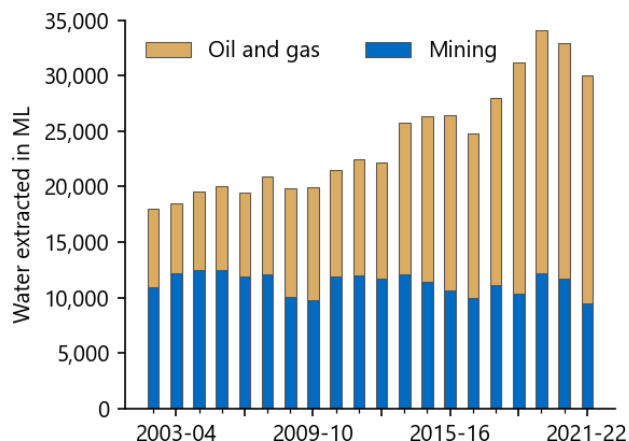


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Groundwater use

The Great Artesian Basin is the source for 76% of groundwater allocated in the Far North PWA.

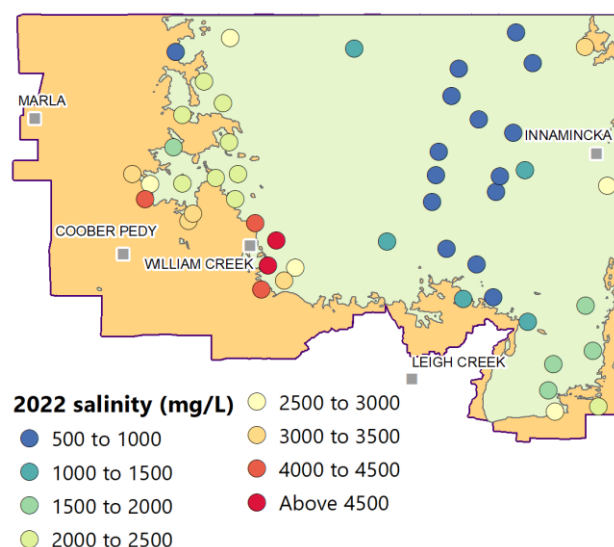
- Groundwater is predominantly extracted for mining, petroleum, stock and domestic purposes.
- Groundwater use for mining and petroleum purposes in 2021-22 is 9% less than the previous water use year and 24% above the twenty-year average.



Salinity

Groundwater salinity in the J-K aquifer over the past 10 years is generally stable.

- In the ten years to 2022, rates of change in salinity vary from a decrease of 2.7% per year to an increase of 1.2% per year with a median rate of 0.4% decrease per year.
- In 2022, salinity results from 49 wells range between 497 mg/L and 5,280 mg/L with a median of 1,867 mg/L.
- Natural groundwater salinity tends to be fresher in the central to north-eastern area and more saline near the springs in the west and south (see figure below).



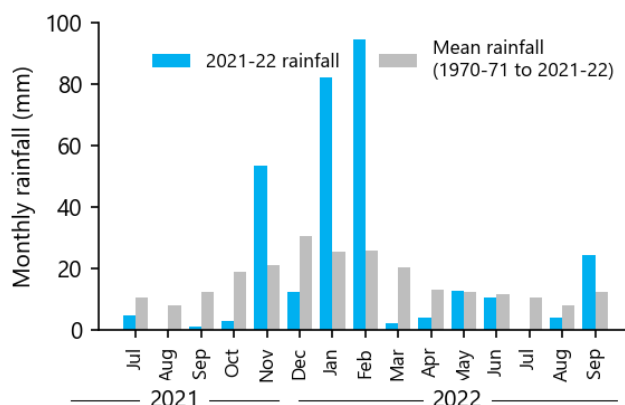
Rainfall

Rainfall in the Far North PWA is generally less than 250 mm per year and has very little direct influence on groundwater levels in most of the GAB JK aquifer because it is predominantly confined. Rainfall may influence groundwater levels in the unconfined portion of the J-K aquifer which is found along the western margin of the basin as well as shallow aquifers that are recharged locally.

Rainfall occurrence and intensity is episodic, sometimes with very little rainfall for many years, while intense rainfall can deliver annual amounts in a single event. Consequently, rainfall statistics such as averages can sometimes be misleading.

Rainfall is above average for 2021-22.

- Rainfall at Marree (BoM station 17031) is 284 mm, 60% above the long-term (1970 to 2022) average of 177 mm/y.
- Rainfall at Marla (BoM station 16085) is 282 mm, 34% above the long-term (1970 to 2022) average of 211 mm/y.
- The figure below shows monthly rainfall at Marla in blue for July 2021 to September 2022 compared to long-term monthly averages in grey.



Water allocation plan

A new water allocation plan was adopted in 2021.

- The previous Water Allocation Plan was adopted in 2009 and underwent a 10-year statutory review.
- The new Water Allocation Plan was adopted in February 2021.
- The new Water Allocation Plan was developed after a community and stakeholder consultation period that occurred between 12 November 2019 and 17 April 2020.

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 Far North Prescribed Area at: <https://www.waterconnect.sa.gov.au/Systems/GSR/Pages/Default.aspx>