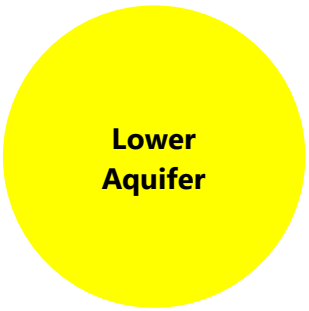
Barossa Prescribed Water Resources Area Lower Aquifer

2018 Groundwater level and salinity status report

Government of South Australia
Department for Environment and Water

2018 Status summary
Barossa PWRA
Lower Aquifer



The Lower Aquifer of the Barossa Prescribed Water Resources Area (PWRA) has been assigned a ***yellow*** status for 2018 because minor adverse trends have been observed over the past five years.

The status is based on five-year trends: over the period 2014–18, 46% of wells show declining groundwater levels.

The status is based on five-year trends. To view the *Barossa PWRA groundwater level and salinity status report 2011*, which includes long-term trends in rainfall, groundwater levels and salinity, please visit the Water Resource Assessments page on WaterConnect. To download the full record of groundwater level and salinity data for the Barossa PWRA, please visit the *Groundwater Data* page on WaterConnect.

This status report does not seek to evaluate the sustainable limits of the resource, nor does it make any recommendations on management or monitoring of the resource. These actions are important, but occur through separate processes such as prescription and water allocation planning.

Rainfall

See Figures 1 and 2

Rainfall station	Tanunda Bureau of Meteorology (BoM) rainfall station, number 23318, is located near the township of Tanunda in the western part of the Barossa PWRA.
Annual total[1]	475 mm 62 mm (12%) less than the five-year average of 537 mm 70 mm (13%) less than the long-term (1900-2018) average of 545 mm

Groundwater extraction

See Figure 3

Allocated volume[1,2]	7862 ML across all aquifers (Upper, Lower and fractured rock)
Licensed groundwater extractions[1,3]	1029 ML from the Lower Aquifer
Extraction volume comparison[4]	25% greater than the previous year 12% greater than the five-year average

[1] For the water-use year 1 July 2017 to 30 June 2018
[2] Allocated volume does not include rollover, carry over or recharge allocations
[3] Total licensed extractions are subject to change as extraction data have not yet been verified in full – see More information
[4] Extraction volumes for Lower Aquifer only

Groundwater level

See Figure 4

Five year trend: 2014–18	13 out of 24 wells (54%) show rising trends, at rates of 0.04–1.42 m/y (median of 0.62 m/y) 11 wells (46%) show declining trends, at rates of 0.03–0.30 m/y (median of 0.12 m/y); 3 of these wells show their lowest level on record

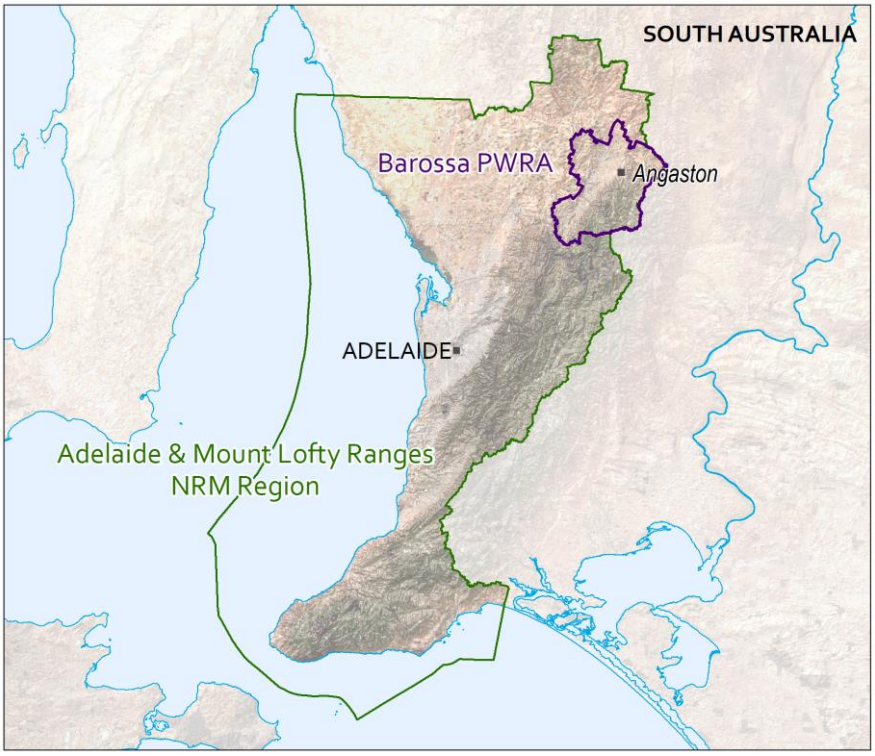
Groundwater salinity

See Figure 5

2018 salinity	631–2301 mg/L (54 wells; median of 1260 mg/L)
Citizen science	Since 2018, irrigators in the Barossa PWRA have submitted groundwater samples that DEW have tested for salinity concentration. Data that have been validated are augmenting the existing DEW monitoring network.[5]

[5] The salinity data collected from irrigation wells can be viewed at Groundwater Data or via WaterConnect

Regional setting



The Barossa PWRA encompasses both the highland areas of the Mount Lofty Ranges and the Barossa Valley. It is located approximately 60 km north-east of Adelaide and lies within the Adelaide and Mount Lofty Ranges Natural Resources Management Region. It is a regional-scale resource for which groundwater, surface water and watercourse water are prescribed under South Australia's *Natural Resources Management Act 2004* and a water allocation plan provides for their sustainable management.

The Barossa PWRA consists of three major groundwater systems: two sedimentary aquifers (Upper and Lower) and fractured rock aquifers that underlie the sedimentary aquifers and crop out in the ranges to the east and west of the valley. The sedimentary Lower Aquifer of the Barossa PWRA is the focus of this report.

Although the aquifer shows large seasonal fluctuations in groundwater levels due to extraction, groundwater flow generally persists in a south-west direction.

Despite being a confined aquifer that does not receive direct recharge from incident rainfall, the intensity and timing of rainfall, and variations in rates of groundwater extraction, can have an effect on groundwater levels and salinities in the Lower Aquifer. Below-average summer rainfall can result in increases in irrigation extractions, which can cause groundwater levels to decline and salinities to increase. Conversely, above-average rainfall may result in increased recharge and decreases in irrigation extractions, which can cause groundwater levels to rise and salinities to stabilise or decrease.

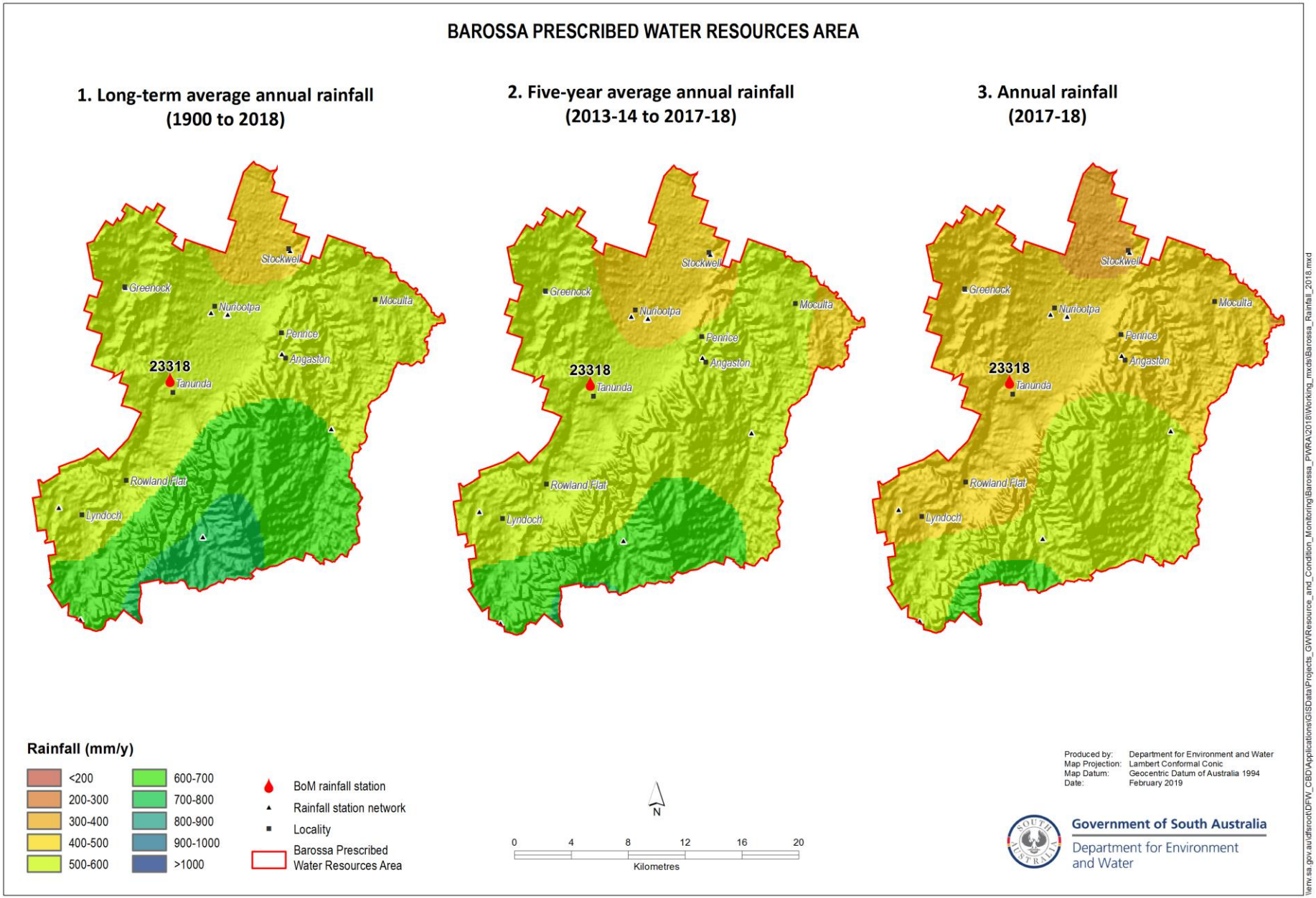


Figure 1. Spatial distribution of (1) long-term and (2) five-year average annual rainfall, and (3) annual rainfall[6]

[6] Data sources: SILO interpolated point and gridded datasets available at https://legacy.longpaddock.qld.gov.au/silo/ – see More information

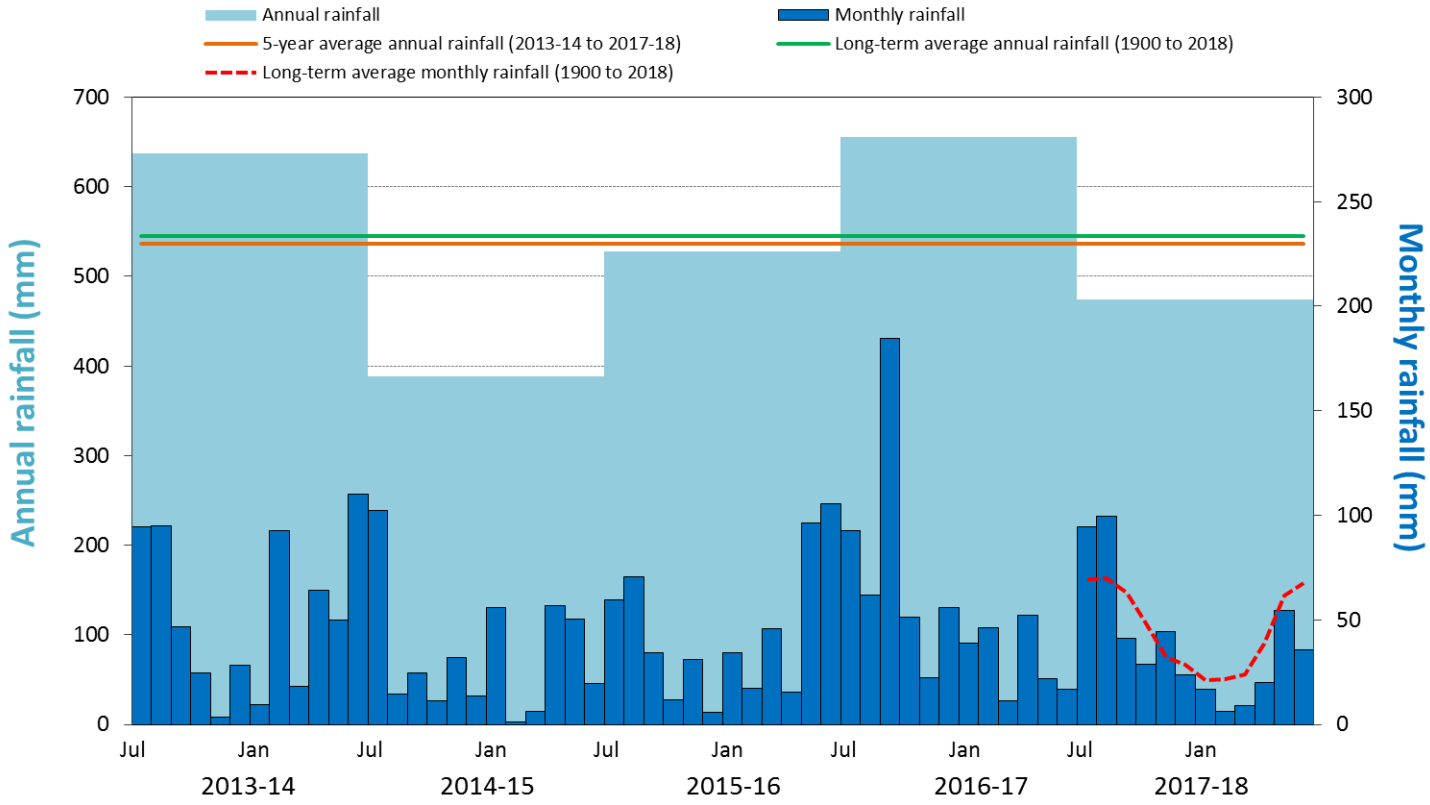


Figure 2. Annual and monthly rainfall for the past five water-use years recorded at Tanunda (BoM Station 23318)[7]

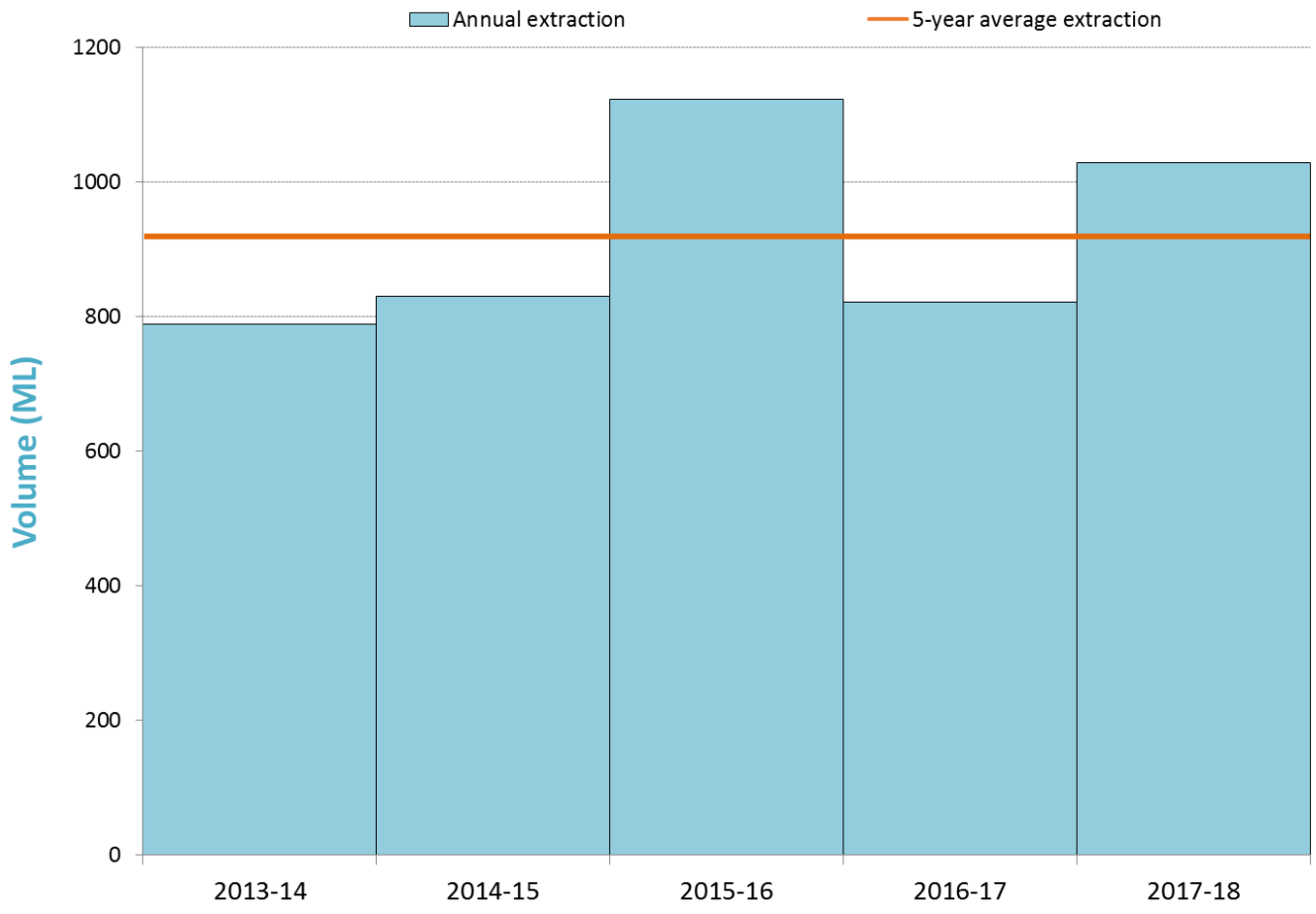


Figure 3. Licensed groundwater extraction volumes[8] for the past five water-use years

[7] Data source: SILO Patched Point Dataset, available https://legacy.longpaddock.qld.gov.au/silo/ – see More information
[8] Total licensed extractions are subject to change as extraction data have not yet been verified in full – see More information

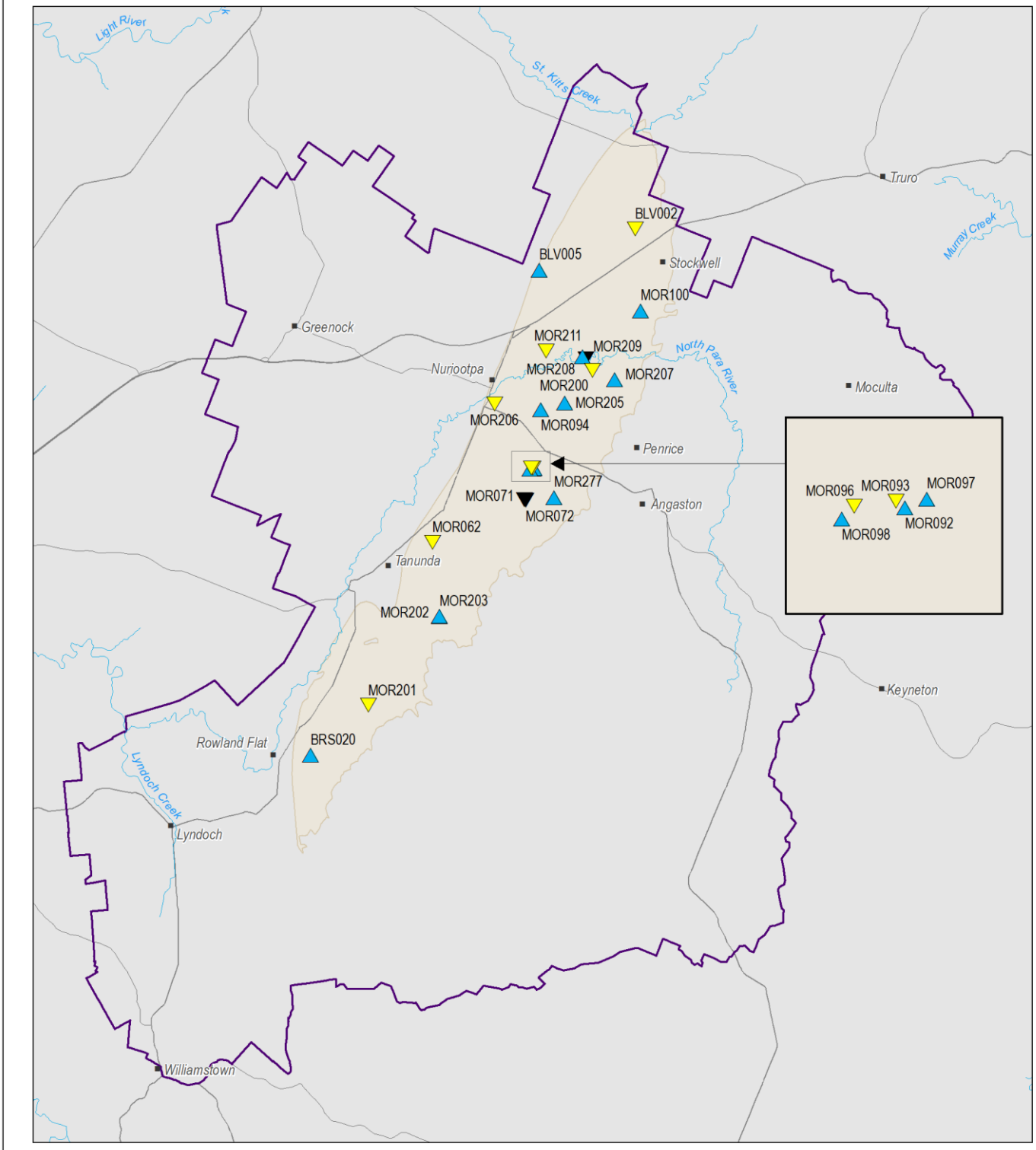


Figure 4. Five-year trends (2014–18) in groundwater levels: Lower Aquifer

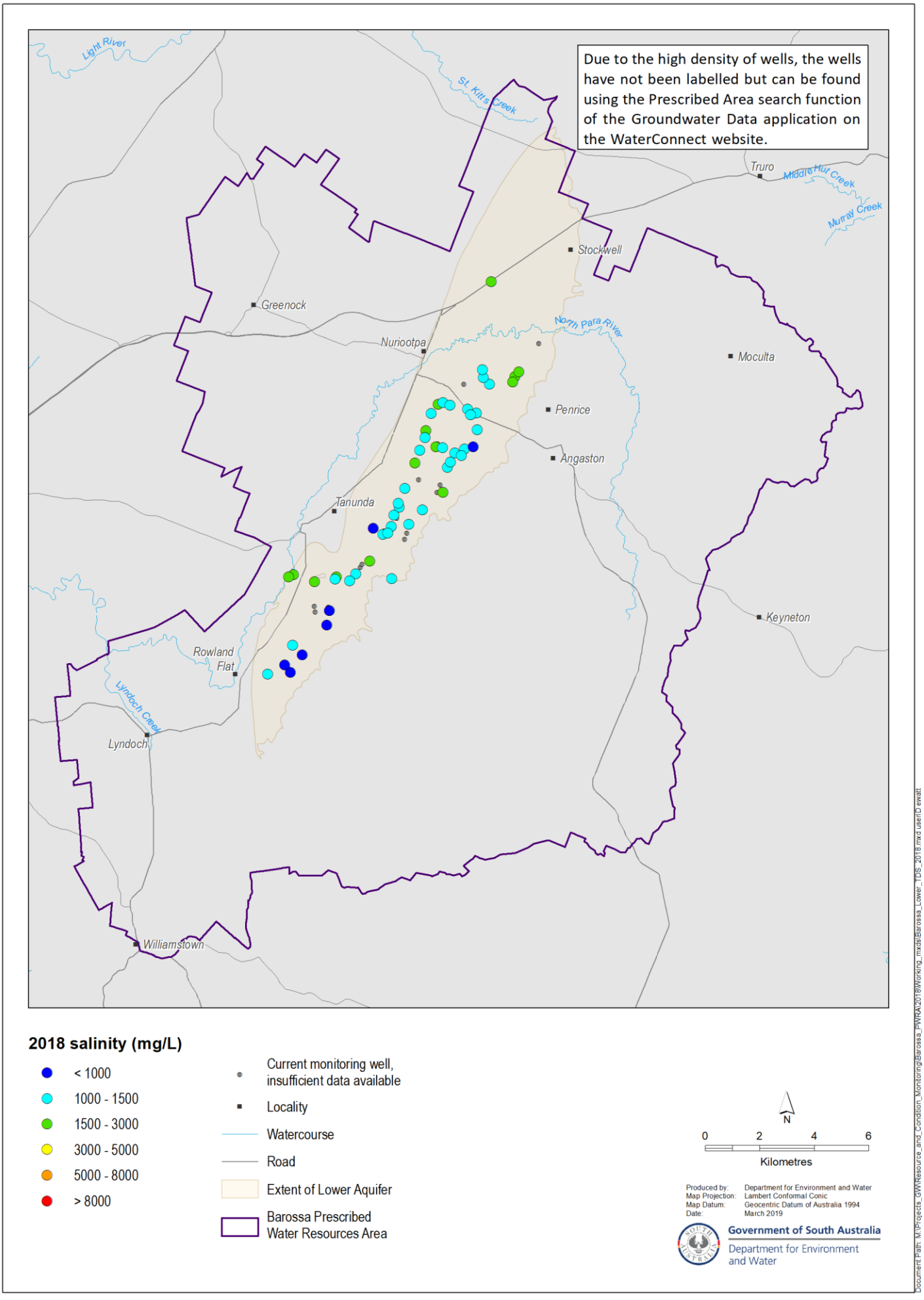


Figure 5. 2018 groundwater salinities: Lower Aquifer

More information

To determine the status of the Lower Aquifer for 2018, the trends in groundwater levels and salinities over the past five years (2014 to 2018, inclusive) were analysed, in contrast to the year-to-year assessments that have been used in *Groundwater level and salinity status reports* published prior to 2015. Please visit the Frequently Asked Questions on the Water Resource Assessments page on WaterConnect for more detail on the current method of evaluating the status of groundwater resources.

To view descriptions for all status symbols, please visit the *Water Resource Assessments* page on WaterConnect.

For additional information related to monitoring wells nomenclature, please refer to the Well Details page on WaterConnect.

The licensed groundwater extraction for the 2017–18 water-use year is based on the best data available as of February 2019 and could be subject to change, as some extraction volumes may be in the process of being verified.

For information completeness and consistency across all the groundwater and salinity status reports, the legend on each map herein shows the full range of water level and salinity status that could possibly be reported. However, the measured data that appear on each map may not span this full range.

Rainfall data used in this report are sourced from the SILO interpolated point and gridded datasets, which are calculated from BoM daily and monthly rainfall measurements and are available online at https://legacy.longpaddock.qld.gov.au/silo/.

To view the *Barossa PWRA groundwater level and salinity status report 2011*, which includes background information on hydrogeology, rainfall and relevant groundwater-dependent ecosystems, please visit WaterConnect. To view all past published *Groundwater level and salinity status reports*, please visit the Water Resource Assessments page on WaterConnect.

To download groundwater level and salinity data from monitoring wells within the Barossa PWRA, please visit the *Groundwater Data* page under the Data Systems tab on WaterConnect.

For further details about the Barossa PWRA, please see the *Water Allocation Plan for the Barossa Prescribed Water Resources Area* on the Natural Resources Adelaide and Mount Lofty Ranges website.

Units of Measurement

mm	millimetre
ML	megalitre
m/y	metres per year
mg/L	milligrams per litre
mg/L/y	milligrams per litre per year
mm/y	millimetres per year

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