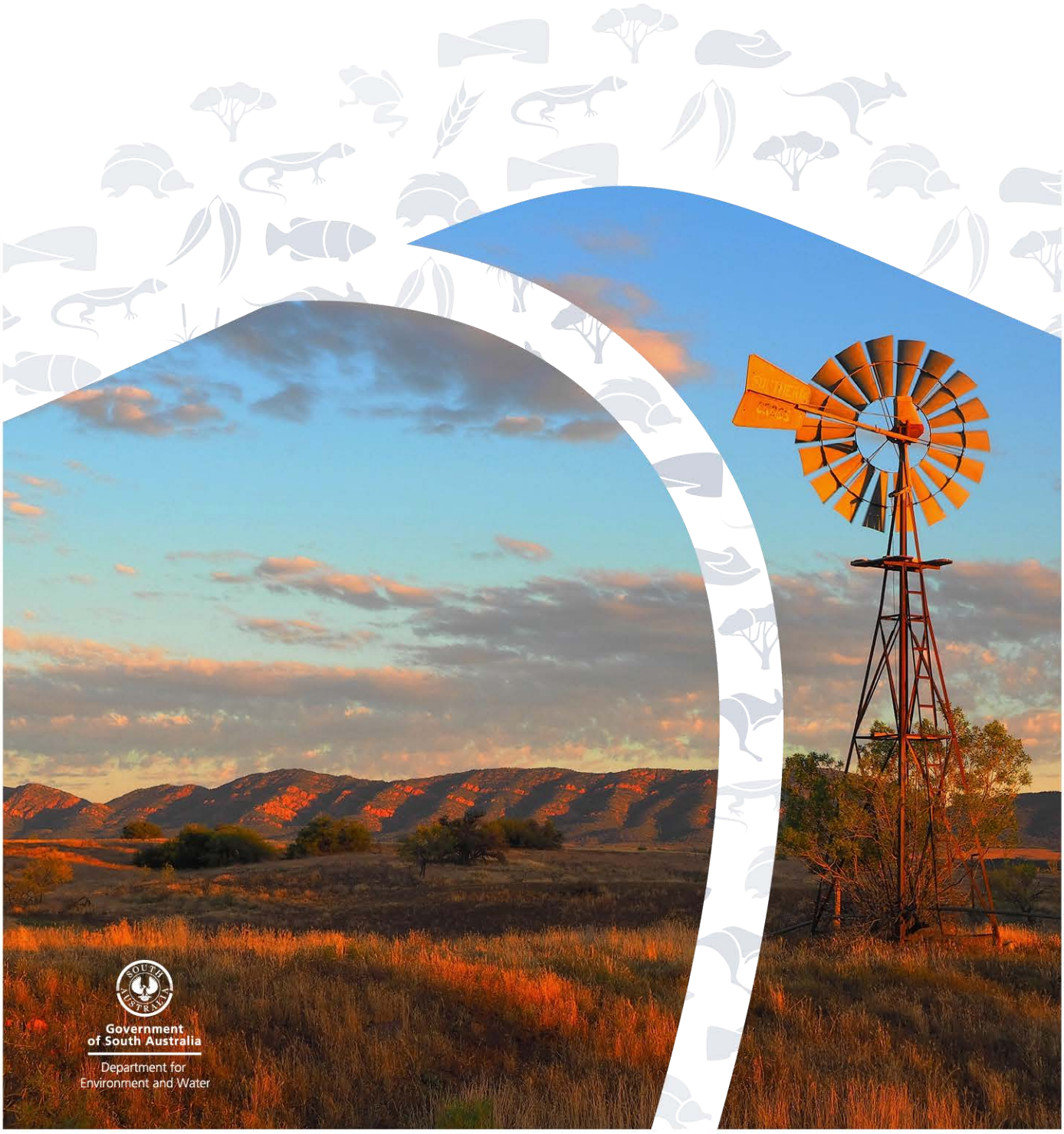
Barossa PWRA
Upper Aquifer

2017 Groundwater level and salinity status report



Government of South Australia
Department for Environment and Water

Department for Environment and Water
GPO Box 1047, Adelaide SA 5001

Telephone	National	(08) 8463 6946
	International	+61 8 8463 6946
Fax	National	(08) 8463 6999
	International	+61 8 8463 6999
Website	www.environment.sa.gov.au	

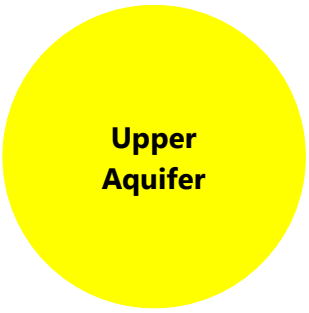
ISBN 978-1-925668-95-7

Preferred way to cite this publication

DEW (2018). *Barossa PWRA Upper Aquifer 2017 Groundwater level and salinity status report,* Government of South Australia, Department for Environment and Water, Adelaide.

Download this document at www.waterconnect.sa.gov.au

2017 Status summary
Barossa PWRA
Upper Aquifer



The Upper Aquifer of the Barossa Prescribed Water Resources Area (PWRA) has been assigned a ***yellow*** status for 2017 because minor adverse trends have been observed over the past five years.

The status is based on five-year trends: over the period 2013–17, 53% of wells show rising or stable groundwater levels.

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 23318, located in the central-west of the Barossa PWRA
Annual total[1]	650 mm 130 mm (25%) greater than the five-year average of 520 mm 102 mm (19%) greater than the long-term average of 548 mm
Monthly summary	Well-above average rainfall recorded in September, December, January and February Well-below average rainfall recorded in March, May and June
Spatial distribution	Rainfall in 2016–17 was well above average across the entire PWRA

Water use

See Figure 3

Total allocated volume: 2016–17	7867 ML across all three aquifers (Upper, Lower and Fractured Rock)
Licensed groundwater extractions*	242 ML[2] from the Upper Aquifer (3% of total allocations)
Extraction volume comparison	41% less than the previous year 36% less than the five-year average

*Stock and domestic use is not included in licensed extractions

[1] For the water-use year 1 July 2016 to 30 June 2017
[2] Total licensed extractions are subject to change as extraction data have not yet been verified in full – see More information

Groundwater level

See Figure 4

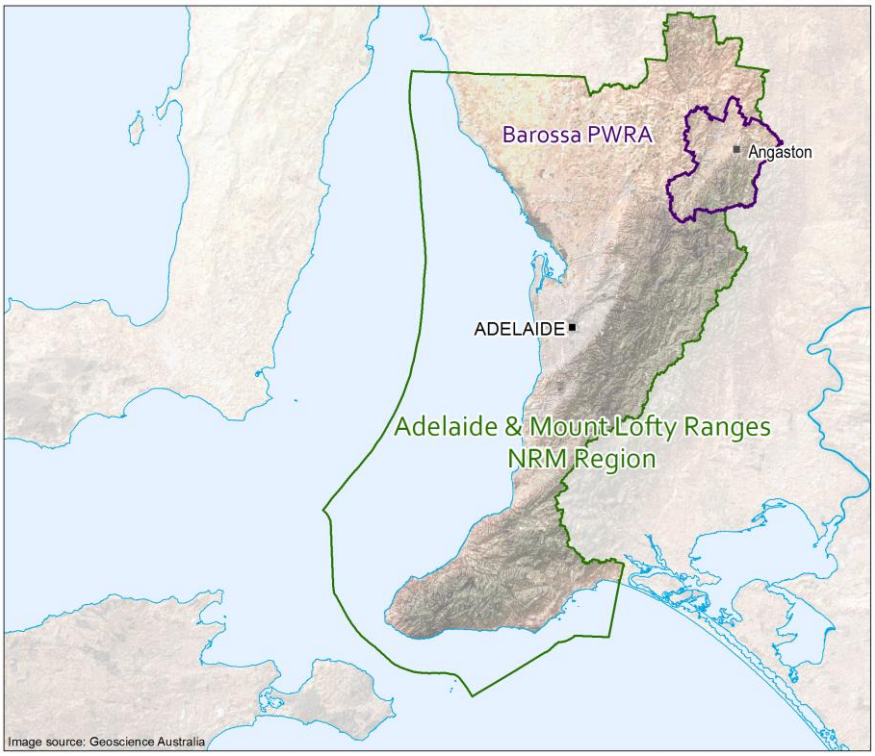
Five year trend: 2013–17	11 out of 32 wells (34%) show rising trends, at rates of 0.02–0.12 m/y (median of 0.05 m/y) 6 wells (19%) are stable 15 wells (47%) show declining trends, at rates of 0.02–0.31 m/y (median of 0.13 m/y); three of these show their lowest level on record

Groundwater salinity

2017 salinity	Data not available
Citizen science	Since 2018, irrigators in the Barossa PWRA have submitted salinity samples and once validated, these will augment the existing DEW monitoring network[3]

[3] The salinity data collected from irrigation wells can be viewed at WaterConnect

Regional setting



The Barossa PWRA encompasses both the highland areas of the Mount Lofty Ranges (MLR) 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*. A water allocation plan (WAP) provides for the sustainable management of these regional-scale water resources.

The Barossa PWRA consists of three major groundwater systems: two sedimentary aquifers (Upper and Lower) that are located within the region's largest valley, and fractured rock aquifers that underlie the sedimentary aquifers and also crop out in the MLR towards the eastern and western margins of the valley. The sedimentary Upper Aquifer of the Barossa PWRA is the focus of this report.

Groundwater flow within the Upper Aquifer is in a south-westerly direction in the northern part of the valley, and in a northerly direction near Lyndoch. Recharge to the Upper Aquifer is from local rainfall, with contribution from streamflow in some areas.

Trends in groundwater levels and salinity in the Upper Aquifer of the Barossa PWRA 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 irrigation extractions, and both elements can cause groundwater levels to decline and salinities to increase. Conversely, increases in rainfall can results in increases in recharge, decreases in irrigation extractions and groundwater levels may rise and salinities may stabilise or decrease. Seasonal responses to recharge are common, except where there is overlying Quaternary clay.

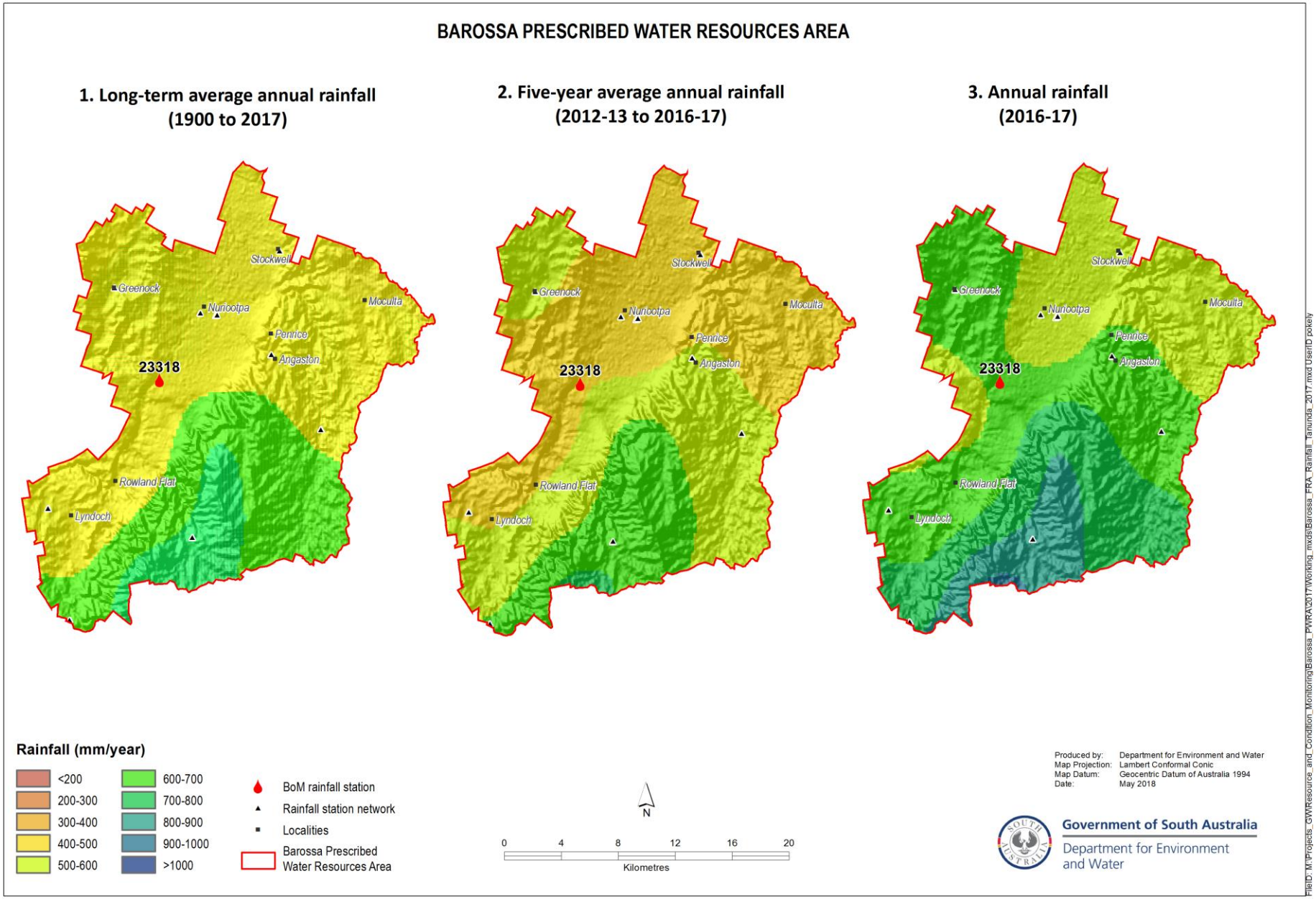


Figure 1. Spatial distribution of (1) Long-term and (2) five-year average annual rainfall, and (3) annual rainfall[4]

[4] Data sources: SILO Patched Point Dataset https://silo.longpaddock.qld.gov.au/ and BoM Australian Water Availability Project (http://www.bom.gov.au/jsp/awap/) – see More information

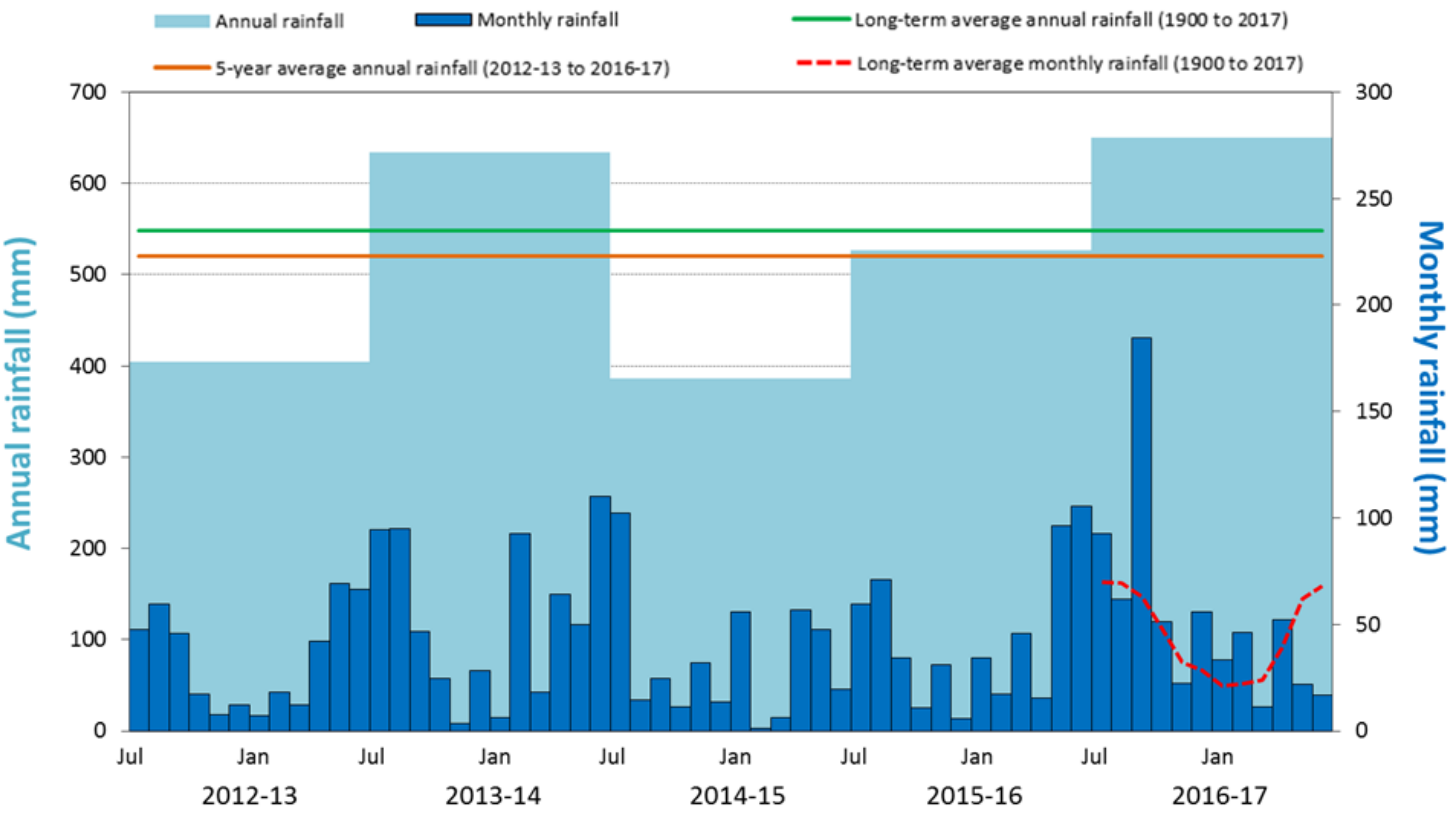


Figure 2. Annual and monthly rainfall for the past five water-use years recorded at Tanunda (BoM Station 23318)[5]

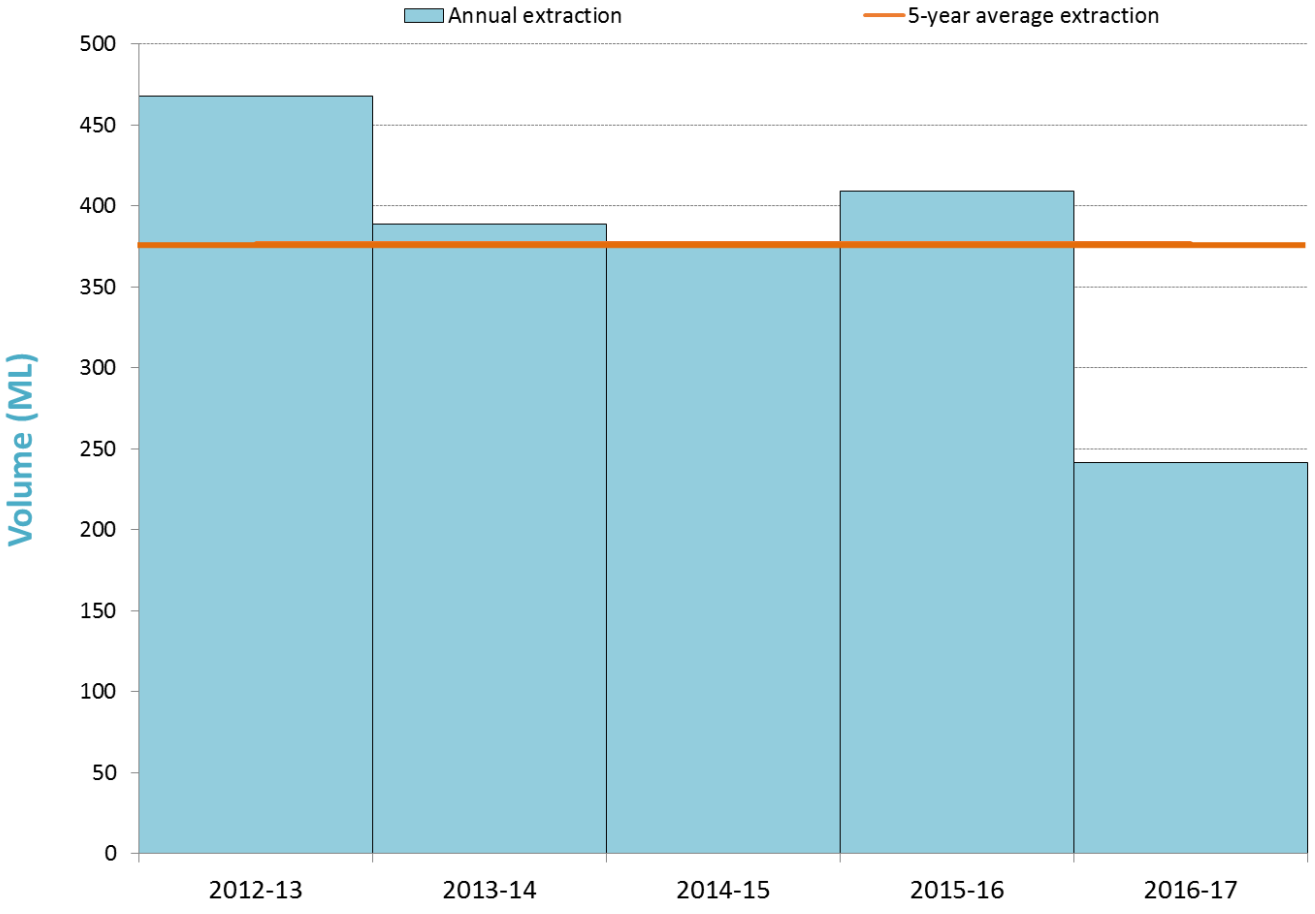


Figure 3. Licensed groundwater extraction volumes[6] for the past five water-use years

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

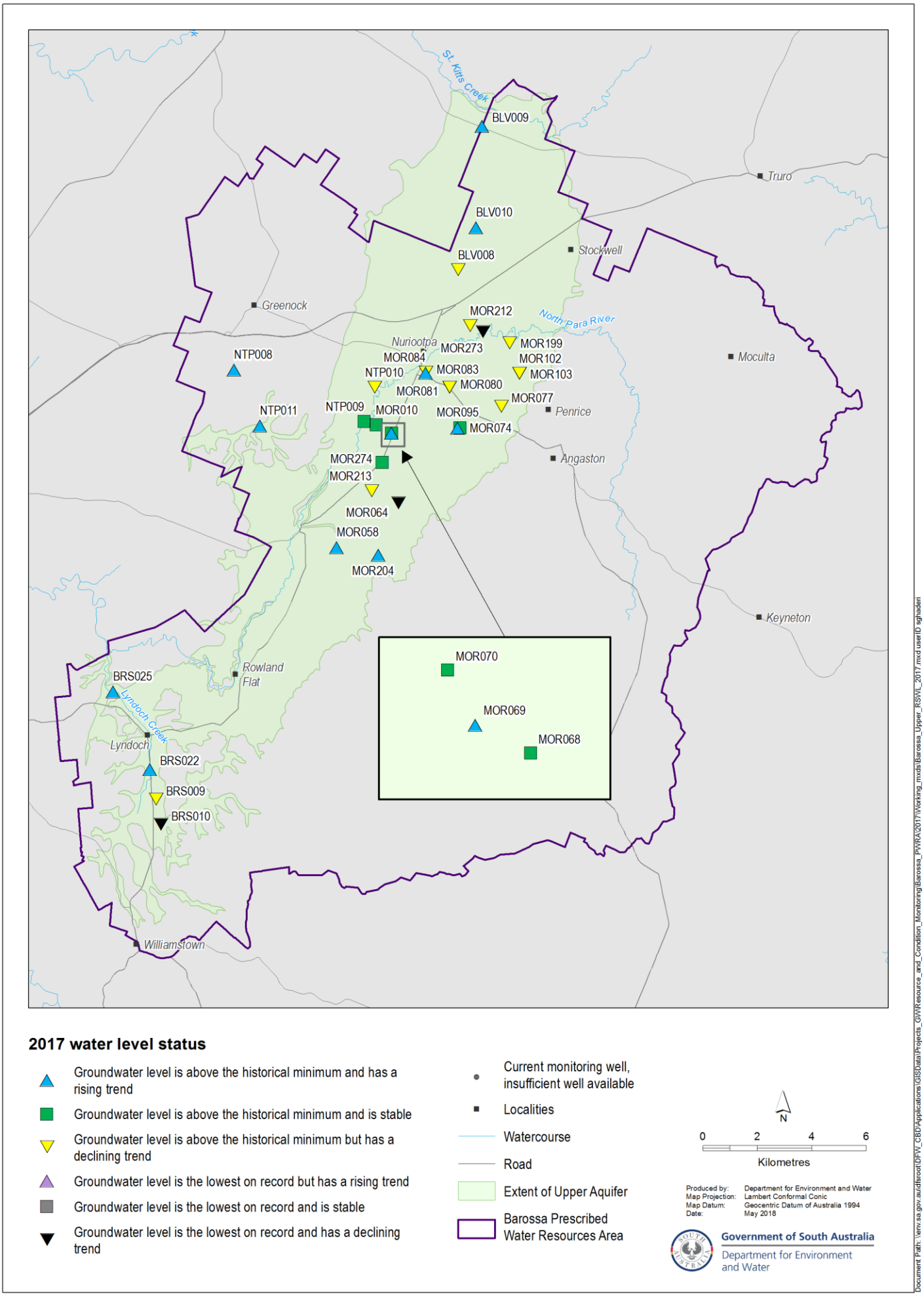


Figure 4. Five-year trends (2013–17) in groundwater pressure levels: Upper Aquifer

More information

To determine the status of the Upper Aquifer for 2017, the trends in groundwater levels and salinities over the past five years (2013 to 2017, 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, and to review the full historical record of the monitoring wells, 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 licenced groundwater use for the 2016–17 water-use year is based on the best data available as of January 2018 and may 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 is sourced from the SILO Patched Point Dataset, which uses original BoM daily rainfall measurements and is available online at https://silo.longpaddock.qld.gov.au/. Rainfall maps have been compiled using daily gridded data produced by the BoM Australian Water Availability Project (www.bom.gov.au/jsp/awap/).

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

Government of South Australia

Department for Environment and Water

Published 2018

www.environment.sa.gov.au