

Barossa PWRA

Lower aquifer

2016 Groundwater level and salinity status report



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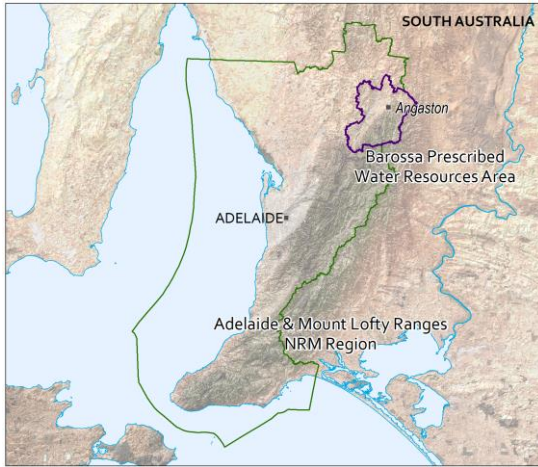
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Regional Setting



The Barossa Prescribed Water Resources Area (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.

Barossa PWRA 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 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 Lower aquifer of the Barossa PWRA is

the focus of this report.

Although the aquifer shows large seasonal fluctuations in groundwater pressure levels due to extraction, groundwater flow generally persists in a south-westerly 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 pressure levels and salinity in the Lower aquifer. Below-average summer rainfall can result in increases in irrigation extractions, and can cause groundwater pressure levels to fall and salinity to increase. Conversely, increases in rainfall may result in decreases in irrigation extractions, and groundwater pressure levels may rise and salinity stabilise or decline.

2016 Status

The Lower aquifer of the Barossa PWRA has been assigned an orange status for 2016:

2016 Status



Moderate adverse trends have been observed over the past five years

The 2016 status of the Lower aquifer is based on:

- most monitoring wells (96%) showing a five-year trend of declining in groundwater pressure levels.

Rainfall

In 2015–16, the Angaston rainfall station (BoM Station 23300) recorded 390 mm rainfall, which is 145 mm below the long-term average of 535 mm (1900–2016) and 77 mm below the five-year average of 467 mm (Figs 1 and 2). A trend of declining rainfall is evident over the long term (1900–2016) (Fig. 1) and three of the past five years show rainfall below the long-term average (Fig. 2). Monthly rainfall data show January, March, May and June recording above-average monthly rainfall, with the remaining months below their long-term average at a median reduction of 26 mm/month.

Water use

In 2015–16, licensed groundwater extractions from the Lower aquifer totalled 1123 ML¹, a 35% increase from the previous water-use year of 830 ML and 34% greater than the five-year average of 835 ML (Fig. 3). In the 2015–16 water-use year, the Lower aquifer accounts 30% of the total groundwater extracted from the Barossa PWRA. This increase in groundwater extraction for the 2015–16 water-use year is likely due to below-average monthly rainfall recorded in the summer months of December and February.

Groundwater pressure levels

In the five years to 2016, almost all monitoring wells (96%) have shown a declining trend in groundwater pressure levels. In 2016, seven of these wells (30%) show their lowest level on record (Fig. 4). The rate of decline in groundwater levels ranges between 0.07 and 2.63 m/y with a median decline of 0.33 m/y. Wells that show the greatest declines of between 2.7 and 3.5 m/y are located towards the centre of the valley, to the east and south-east of Nuriootpa. Only one well shows a rising trend and is located near Angaston (Fig. 4).

Groundwater salinity

Due to the limited salinity data available for the Lower aquifer in recent years, salinity has not been used when assessing the status of the resource in this report.

¹ The licenced groundwater use for the 2015–16 water-use year is based on the best data available as of February 2017 and could be subject to change, as some extraction volumes may be in the process of verification.

More information

To determine the status of the Lower aquifer for 2016, the trends in groundwater pressure levels over the past five years (2012 to 2016, inclusive) are analysed, in contrast to the year-to-year assessments that have been used in past *Groundwater level and salinity status reports*. Please visit the [Frequently Asked Questions](#) on the *Water Resource Assessments* page on WaterConnect for a detailed explanation of the new method of status assessment.

To view descriptions for all status symbols, please visit the *Water Resource Assessments* page on [WaterConnect](#).

To view the *Barossa PWRA Groundwater Level and Salinity Status Report 2011*, which includes background information on hydrogeology, relevant groundwater-dependent ecosystems and location of rainfall stations, please visit the *Water Resource Assessments* page on [WaterConnect](#).

To view or download groundwater level and salinity data from monitoring wells within the Barossa PWRA, please visit [Groundwater Data](#) 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](#).

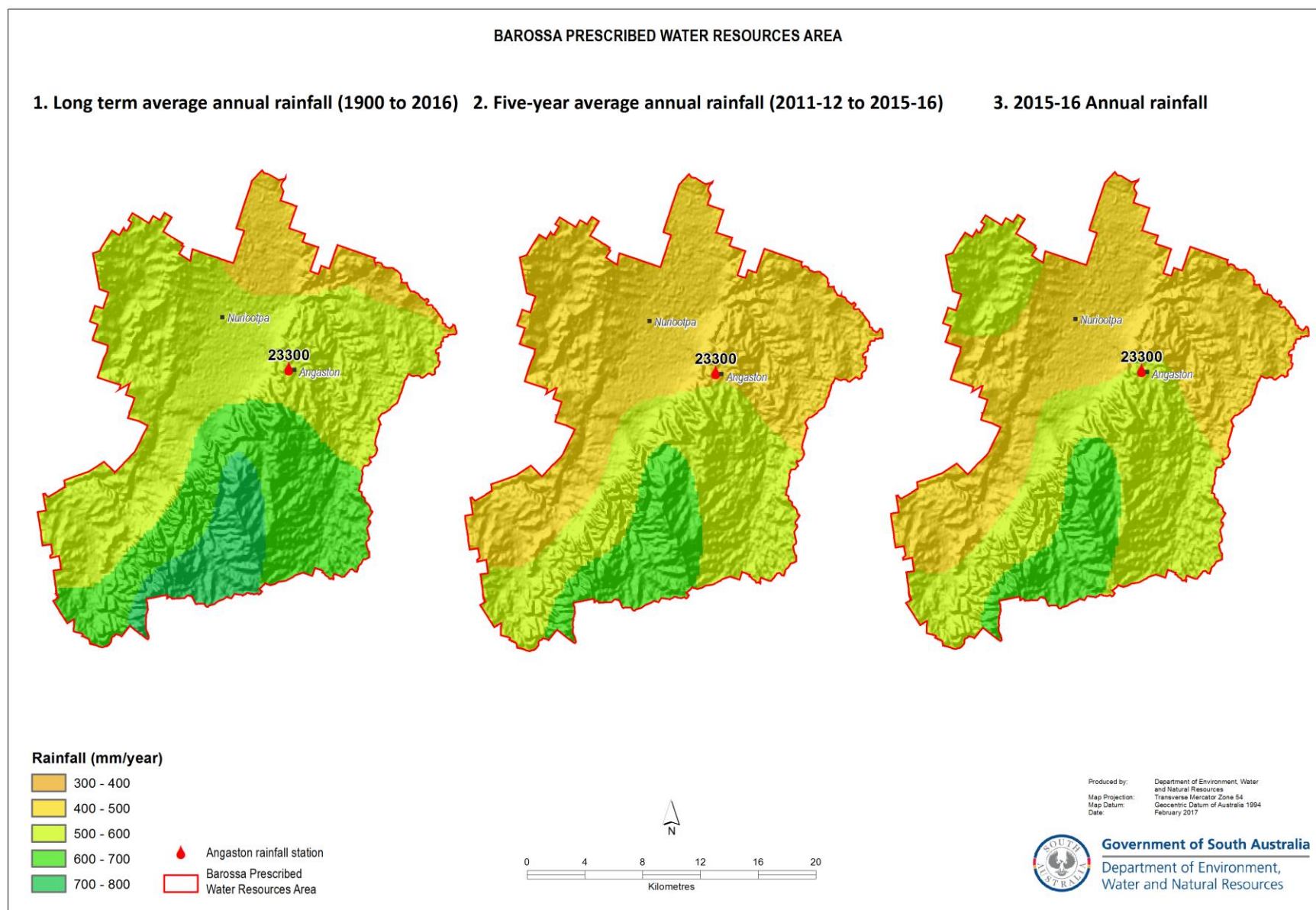


Figure 1. (1) Long-term and (2) five-year average annual rainfall, and (3) annual rainfall for the 2015–16 water-use year in the Barossa PWRA²

² Rainfall data used in this report is sourced from the SILO Patched Point Dataset, which uses original Bureau of Meteorology daily rainfall measurements and is available online at www.longpaddock.qld.gov.au/silo.

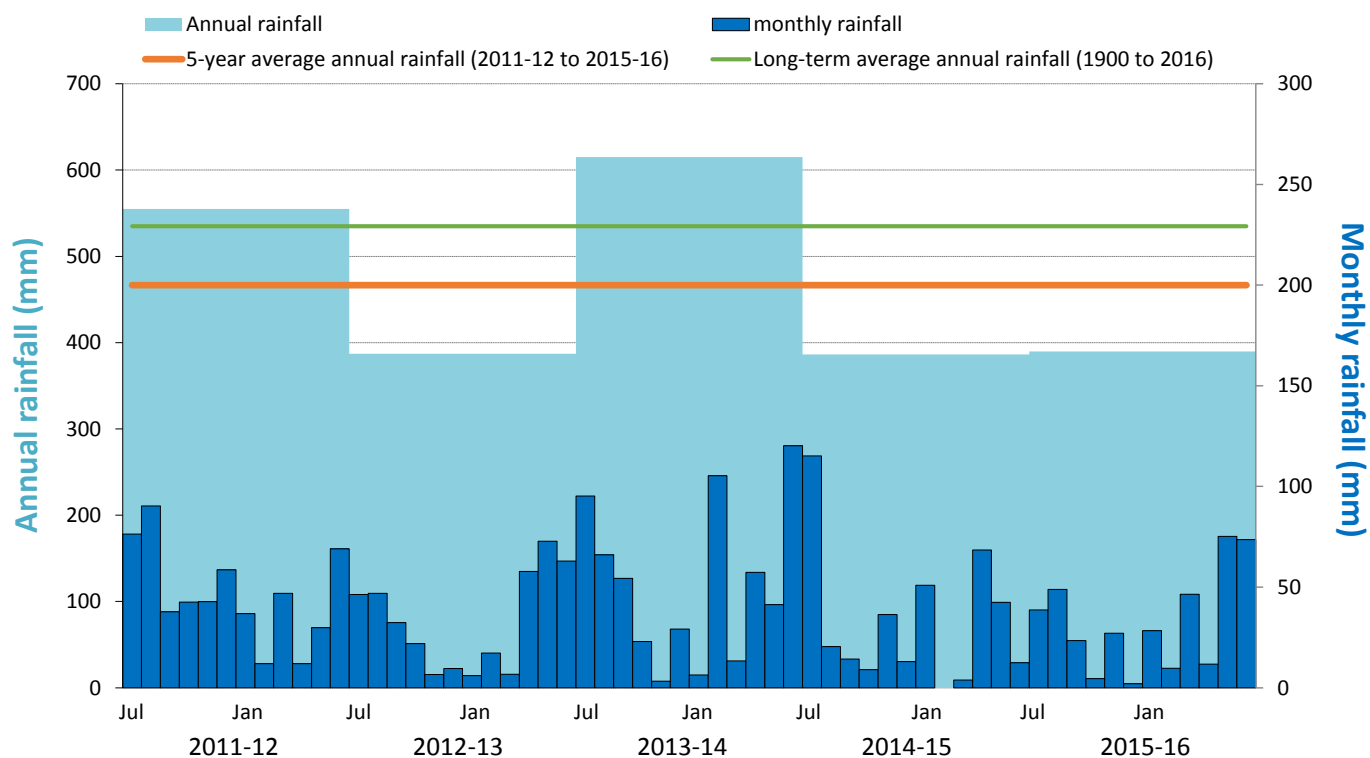


Figure 2. Annual (July–June) and monthly rainfall for the past five water-use years, and the five-year and long-term average annual rainfall recorded at Angaston (BoM Station 23300)³

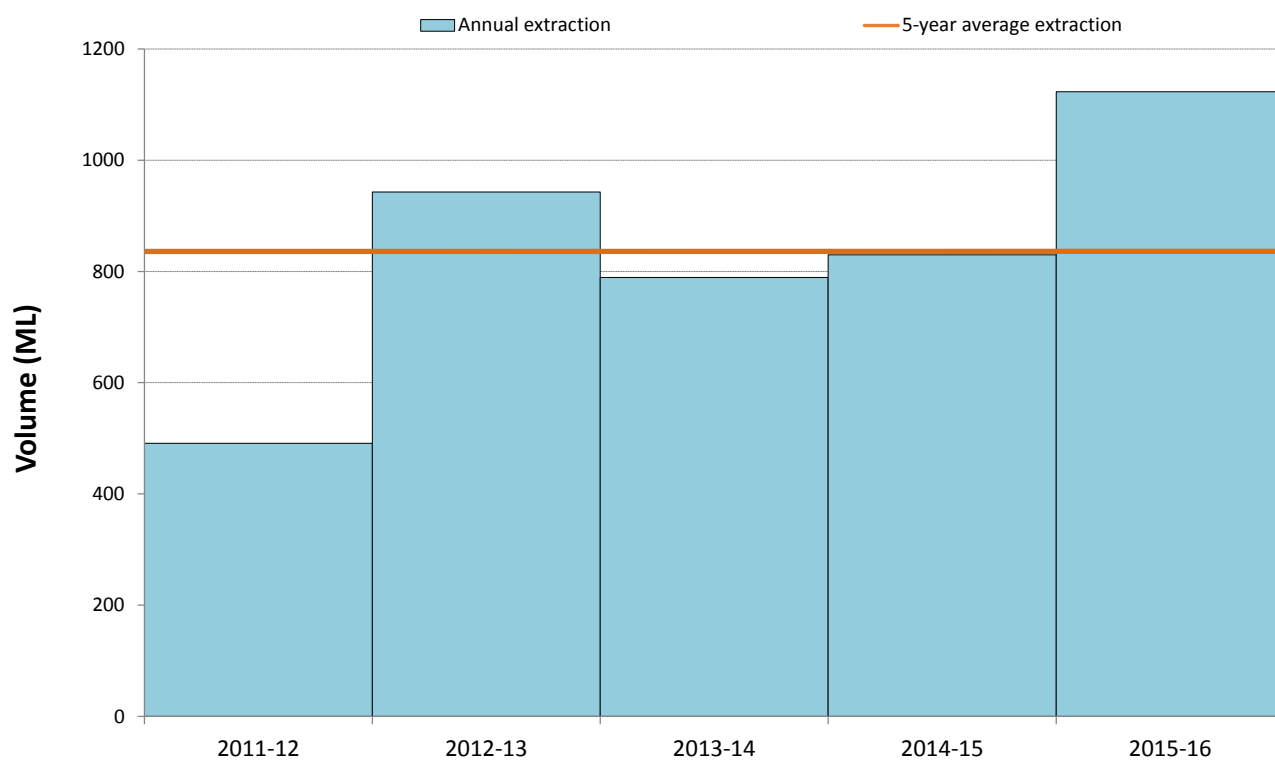
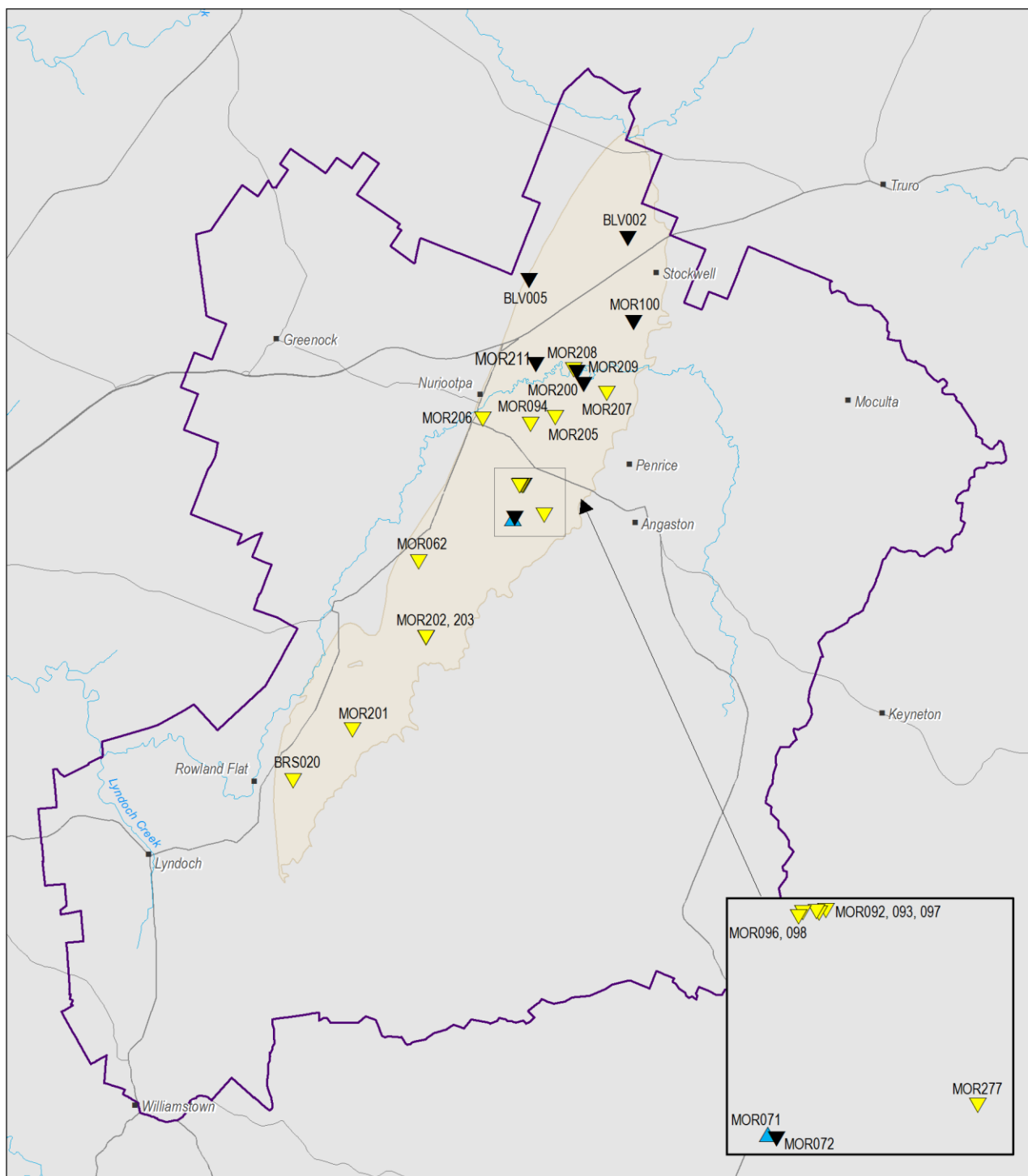


Figure 3. Licensed groundwater extraction volumes⁴ for the past five water-use years, for the Lower aquifer

³ Rainfall data used in this report is sourced from the SILO Patched Point Dataset, which uses original Bureau of Meteorology daily rainfall measurements and is available online at www.longpaddock.qld.gov.au/silo.

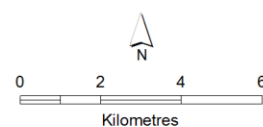
⁴ The licenced groundwater use for the 2015–16 water-use year is based on the best data available as of February 2017 and could be subject to change, as some extraction volumes may be in the process of verification.



2016 water level status

- ▲ Groundwater level is above the historical minimum and has a rising trend
- Groundwater level is above the historical minimum and is stable
- ▼ Groundwater level is above the historical minimum but has a declining trend
- ▼ Groundwater level is the lowest on record but has a rising trend
- Groundwater level is the lowest on record and is stable
- ▼ Groundwater level is the lowest on record and has a declining trend

- Watercourse
- Road
- Extent of Lower Aquifer
- Barossa Prescribed Water Resources Area



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 Date: February 2017



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Figure 4. 2016 status of the groundwater pressure levels in the Lower aquifer (Barossa PWRA), based on the five-year trend from 2012 to 2016



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