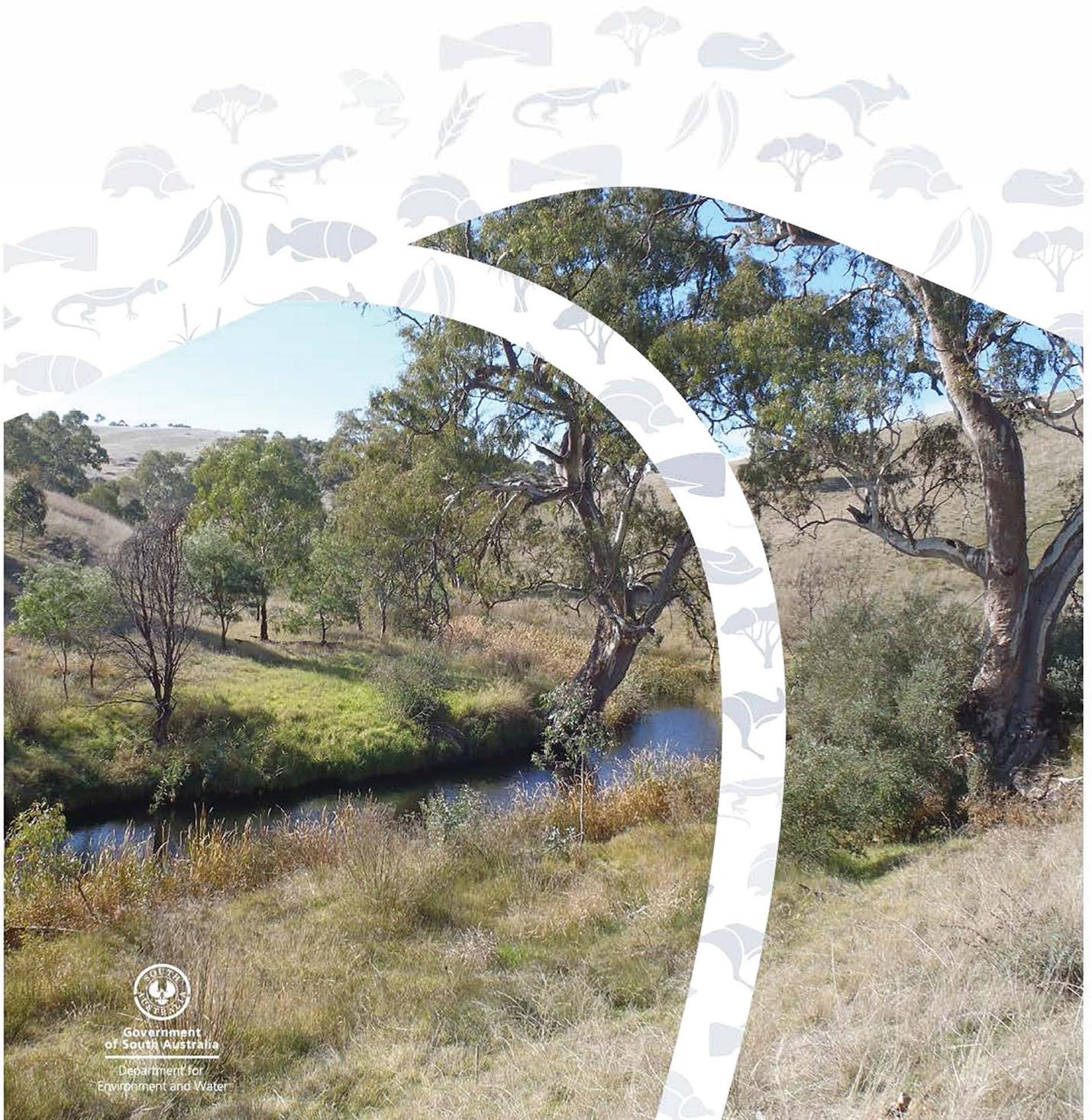


# Barossa Prescribed Water Resources Area

**2017 Surface water status report**



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# 2017 Status summary

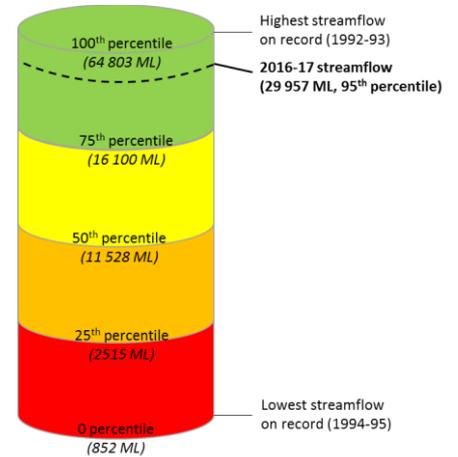
## Barossa PWRA



The Barossa at a whole PWRA scale is assigned a **green** surface water status for 2017, a wet year, with streamflow being much higher than the average observed for the region.

Green status means that the total annual streamflow was above the 75<sup>th</sup> percentile<sup>1</sup> of the period of data availability.

The status presented is based on the streamflow recorded at the main gauging station located at Yaldara.



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.

<sup>1</sup> The n<sup>th</sup> percentile of a set of data is the value at which n% of the data is below it. For example, if the 75<sup>th</sup> percentile annual flow is 100 ML, it means 75% of the years on record had annual flow of less than 100 ML.

## Rainfall

Figure 1 and 5

Rainfall station	Angaston rainfall station (M023300), located approximately 6 km south-east of Nuriootpa Reporting period: 1977/78-2016/17, in line with streamflow data availability
Annual total <sup>2</sup>	496 mm, This was 35mm lower than the average annual rainfall of 531 mm (1889/90-2016/17) Neighbouring rainfall stations at Tanunda (M023318) and Williamstown (M023752) recorded 650 mm and 855 mm respectively for the 2016/17 period, which are higher than the annual averages for these locations
Monthly rainfall summary	September 2016 recorded over 2 times the average monthly rainfall (147 mm compared to 61 mm) December 2016, January and February 2017 also experienced above-average monthly rainfall Drier than average conditions were recorded in the autumn months of 2017
Spatial distribution	Rainfall in 2016–17 across the entire region was higher than the five year average and average annual rainfall patterns
Rainfall trend	Long-term trend - Annual rainfall volumes recorded at the Angaston rainfall station are stable Short-term trend - The last five years of rainfall are stable

## Streamflow

Figure 2 and 6

Streamflow gauging stations	3 stations on the North Para River: Mt McKenzie (A5050533), Penrice (A5050517) and Yaldara (A5050502); 1 station on the Tanunda Creek: Bethany (A5050535) Streamflow data availability: 1977/78-2016/17			
Annual total <sup>2</sup>	All gauging stations analysed recorded streamflow above the average annual streamflow in 2016/17			
	<b>2016/17 streamflow (ML)</b>	<b>Average annual streamflow (1977-2016) (ML)</b>	<b>Percentile Rank</b>	
	Mt McKenzie	5499	1648	92 <sup>nd</sup>
	Penrice	10 068	4578	95 <sup>th</sup>
	Yaldara	29 957	12 617	95 <sup>th</sup>
	Tanunda Creek	4572	1815	96 <sup>th</sup>

<sup>2</sup> For the water-use year 1 July 2016 to 30 June 2017

Monthly streamflow summary	<p>Yaldara experienced September flows over 5 times the average monthly streamflow. October flows were over 3 times the average</p> <p>Flow was recorded in all months in 2016/17 at the Yaldara gauging station, while upstream monitoring stations experienced minimal or no streamflow between January-June 2017</p>
Streamflow trend	<p>Long-term trend - Annual streamflow volume recorded at Yaldara gauging station (1977-2017) indicates a declining long-term trend, with similar trends being observed at both Penrice and Mt McKenzie gauging stations</p> <p>Short-term trend - The last five years of streamflow at Yaldara indicate an increasing trend as a result of the high rainfall experienced in 2016/17</p>

## Water use

Figure 3

Surface-water use <sup>2</sup>	<p>Licensed surface water sources (dams and watercourses): 1413 ML (compared to 1431 ML in 2015/16)</p> <p>Non-licensed water demand (stock and domestic): 1100 ML (non metered and estimated at 30% of dam capacity)</p> <p>Imported water: 7814 ML (6139 ML BIL Scheme and 1675 ML SA Water). River Murray water is transferred to the PWRA for irrigation by the Barossa Infrastructure Limited (BIL) Scheme</p>
Resource Volume <sup>2</sup>	<p>Total resource volume: 32 470 ML:</p> <ul style="list-style-type: none"> <li>• 29 957 ML Streamflow recorded at Yaldara gauging station; and</li> <li>• 2513 ML Surface water extraction (licensed and non-licensed).</li> </ul> <p>Surface water extraction was approximately 8% of the total resource volume (compared to 62% in 2015/16)</p>

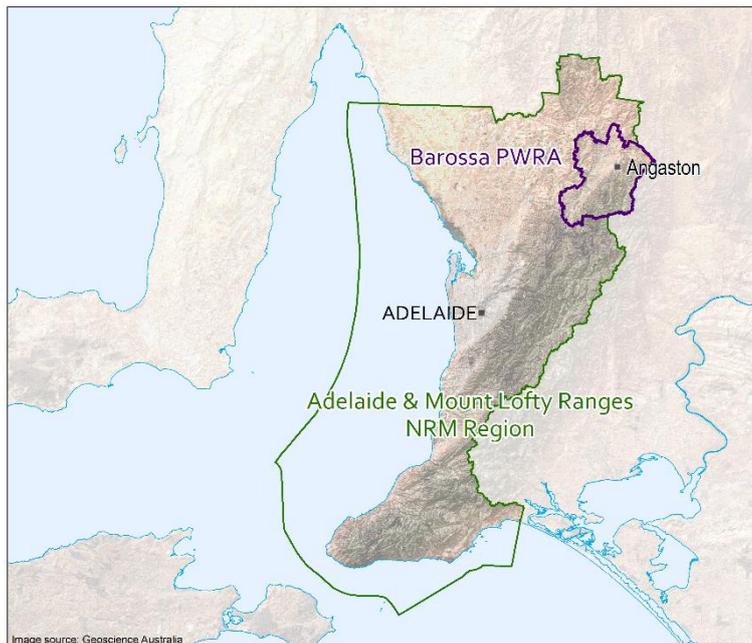
## Surface water salinity

Figure 4

Salinity monitoring sites	Yaldara (A5050502) and Tanunda Creek (A5050535) gauging stations
General observations	Salinity increases during sustained summer events while decreasing throughout the winter months as a result of higher dilution capacity as flow volumes increase
Salinity – 2016/17 water-use year <sup>2</sup>	<p>Highest salinity recorded at Yaldara: 3167 mg/L</p> <p>Highest salinity recorded at Tanunda Creek: 1853 mg/L</p>
Salinity - 1994/95–2016/17	<p>Salinity levels in the North Para River are generally greater than 1000 mg/L, increasing further down the catchment</p> <p>Salinity levels at Yaldara exceeded 2500 mg/L (median 2074 mg/L) for approximately a third of the salinity data period.</p> <p>Salinity levels at Tanunda Creek are less saline, less than 1000 mg/L (median 598 mg/L) for 82% of data period</p>

<sup>2</sup> For the water-use year 1 July 2016 to 30 June 2017

# Regional setting



The Barossa Prescribed Water Resources Area (PWRA) is located approximately 60 km north-east of Adelaide.

Surface water, watercourses, and groundwater resources in the PWRA have been prescribed under South Australia's *Natural Resources Management Act 2004*. A water allocation plan (WAP) was adopted in 2009 to provide for sustainable management of these water resources.

The Barossa PWRA is situated in the north of the Adelaide and Mount Lofty Ranges NRM Region, and is characterised by rolling hills and valleys, extending into localised flat plains in the north-west of the region. The North Para River is the region's main watercourse and flows south to north in the eastern-side of the Mount Lofty Ranges, before heading south near Penrice. Major tributaries include Tanunda and Jacobs Creeks. All streams are ephemeral and feature seasonal disconnected permanent pools, fed predominantly by groundwater.

Surface water resources are highly dependent on rainfall, with trends in streamflow and salinity primarily climate driven, i.e. lower than average winter rainfall will result in reduced annual streamflow volumes. Below-average summer rainfall can also result in increased irrigation extractions. These two elements can cause salinities to increase by reducing the amount of streamflow available to dilute salts. Conversely, higher rainfall will result in increased surface water availability, decreased irrigation extractions, with potential decline or stabilisation of salinity.

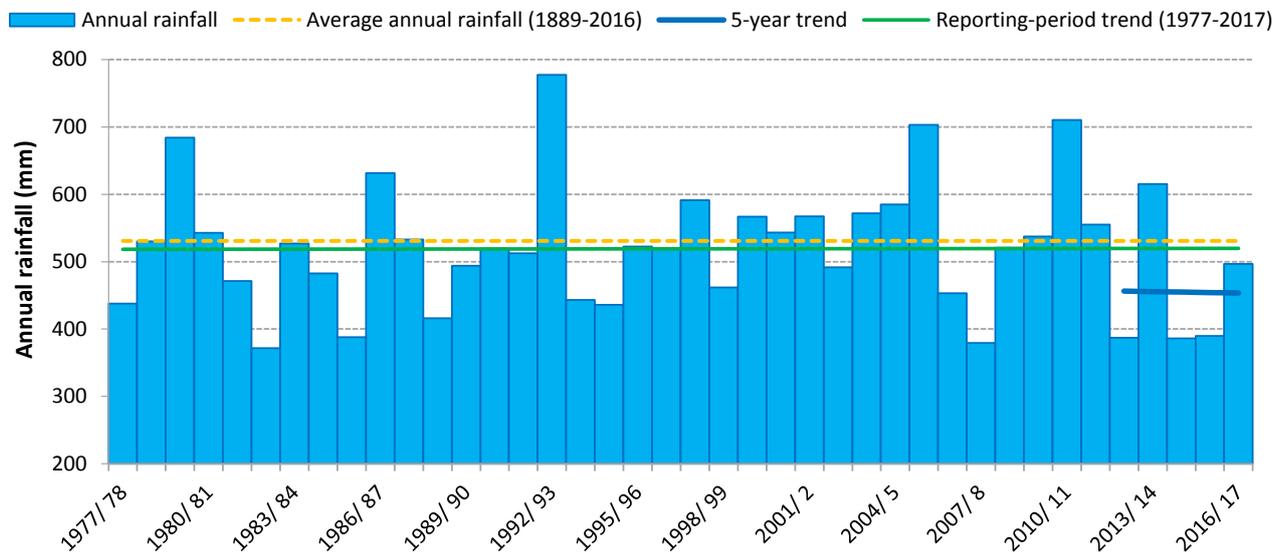


Figure 1. Annual rainfall (mm) for 1977/78–2016/17 at the Angaston rainfall station (M023300)

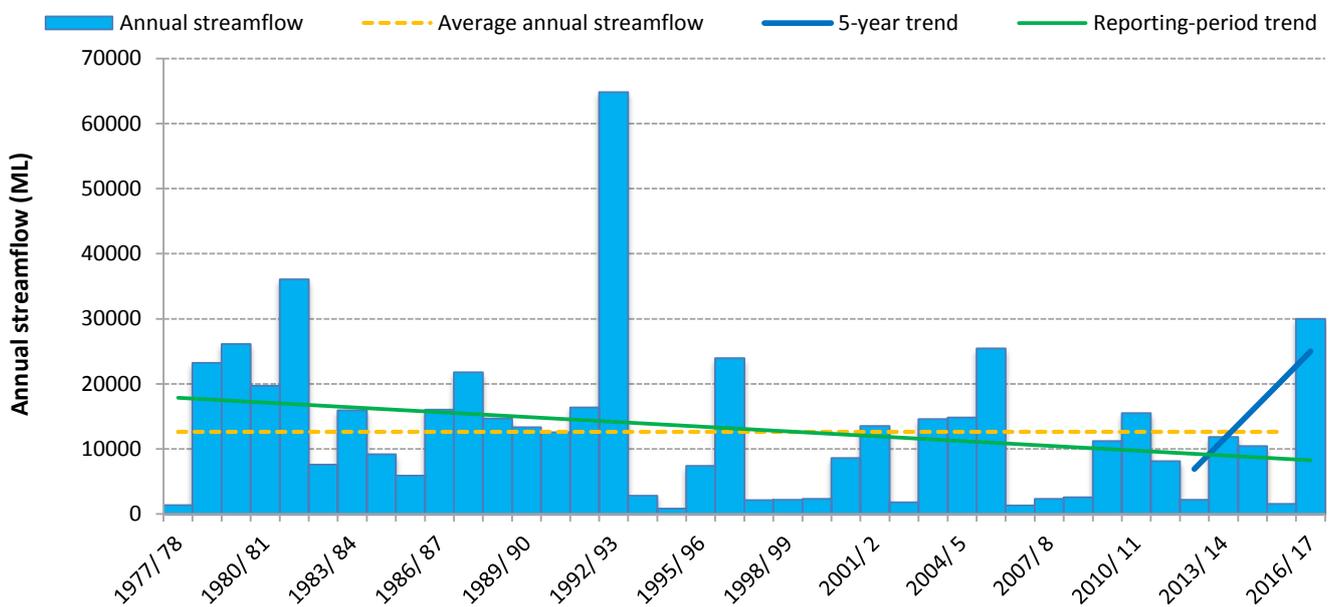


Figure 2. Annual streamflow (ML) for 1977/78–2016/17 at the Yaldara gauging station (A5050502)

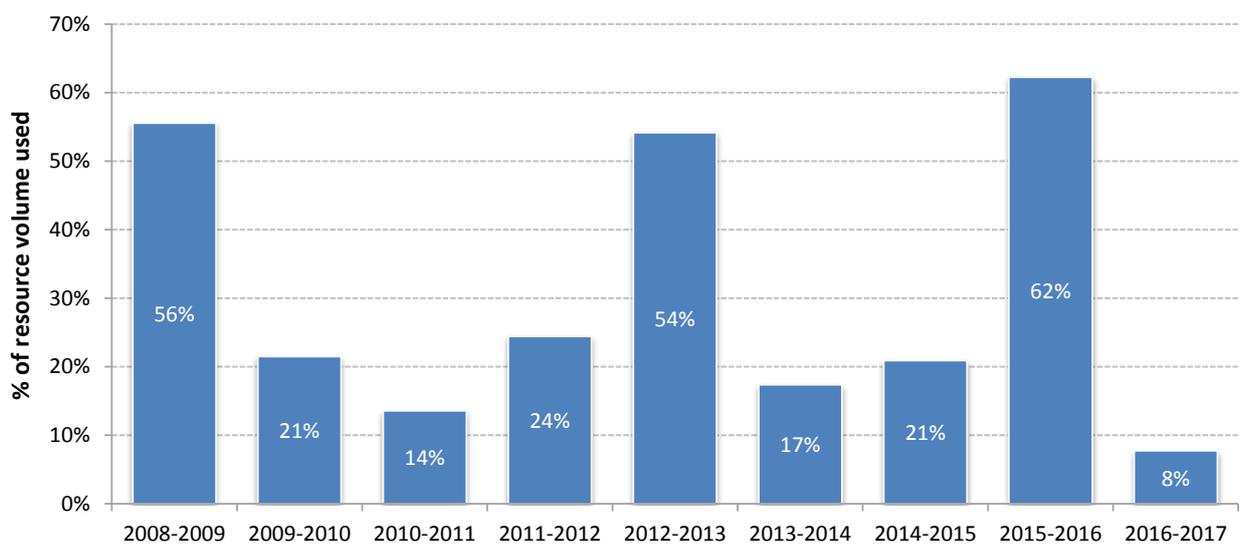
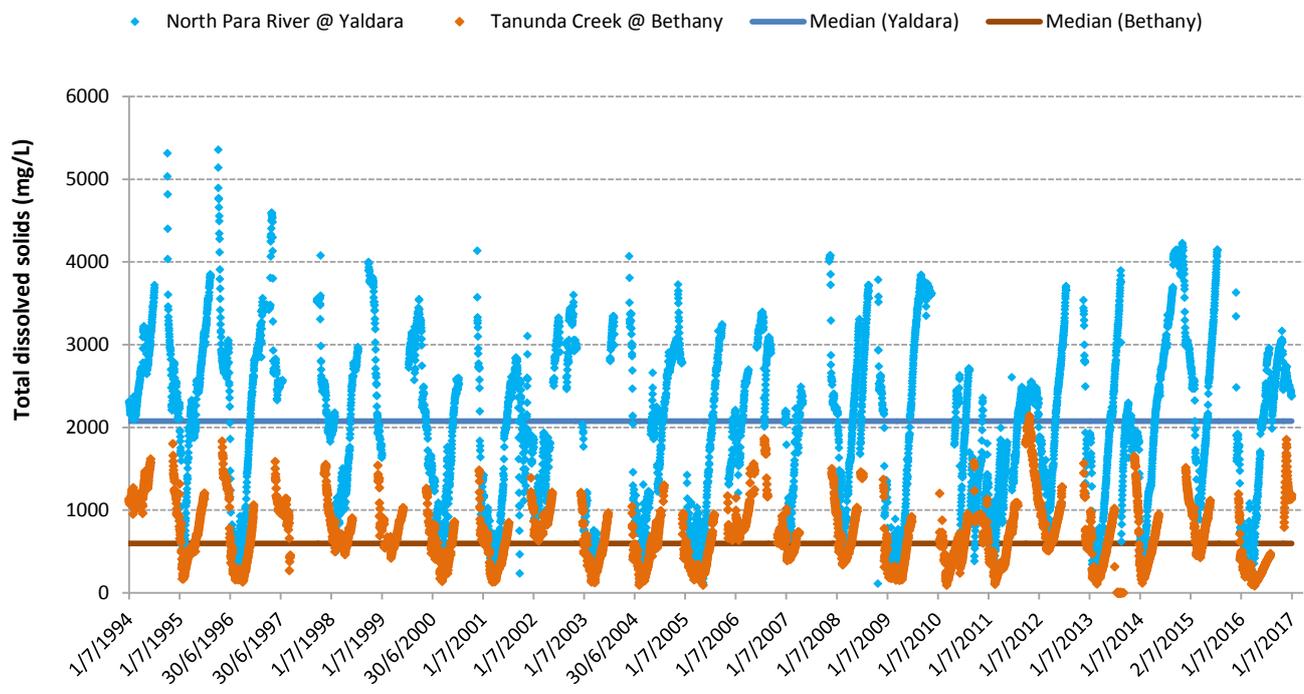
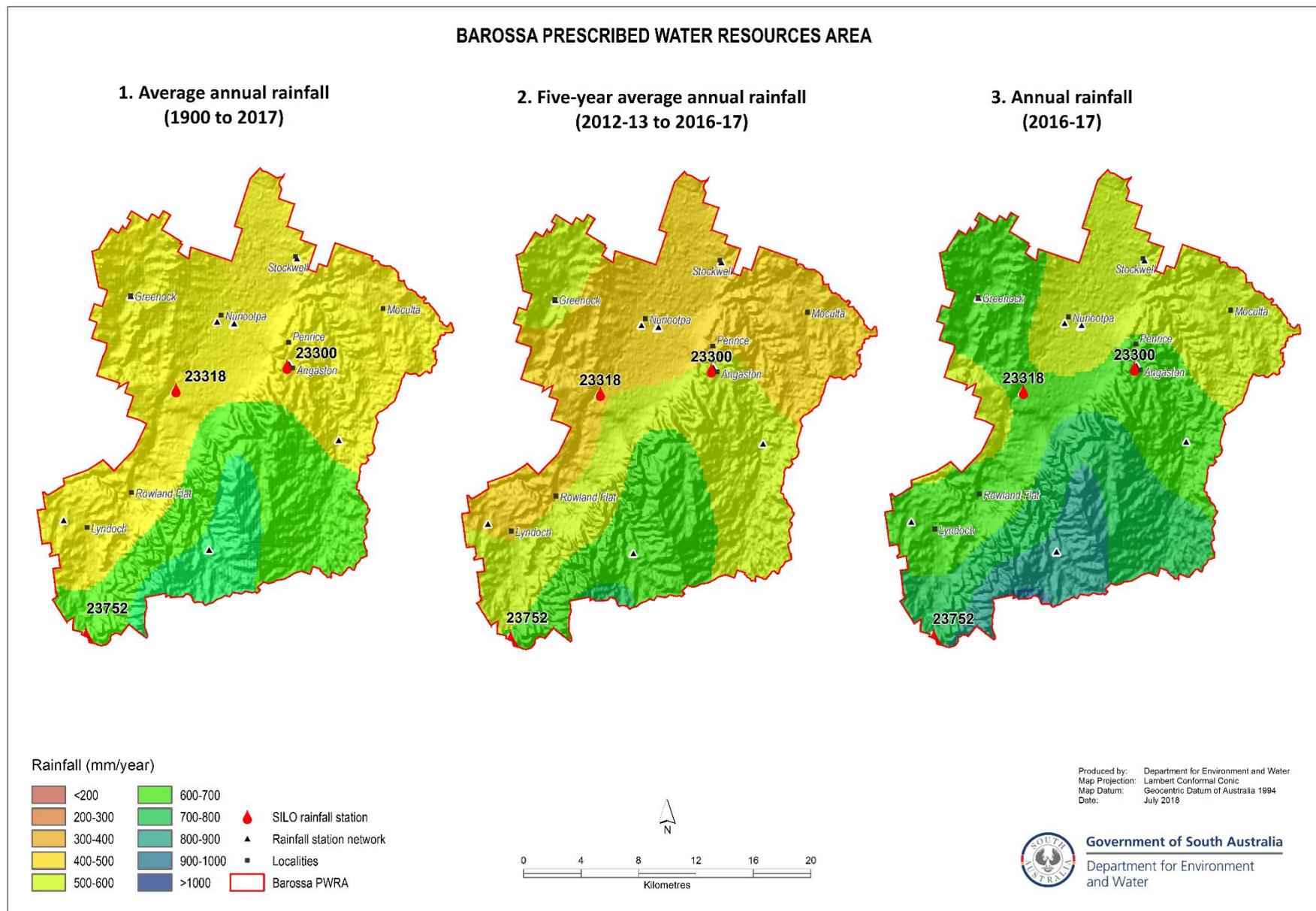


Figure 3. Surface water use as a percentage of total resource volume for 2008/09–2016/17 for the Barossa PWRA



**Figure 4. Salinity data (TDS mg/L) for 1994/95–2016/17 at the Yaldara (A5050502) gauging station on the North Para River, and the Tanunda Creek at Bethany gauging station (A5050535)**



**Figure 5. (1) Average annual rainfall (2) five-year average annual rainfall and (3) annual rainfall for the 2016/17 in the Barossa PWRA<sup>3</sup>**

<sup>3</sup> Data sources: SILO Patched Point Dataset <https://legacy.longpaddock.qld.gov.au/silo/> and BoM Australian Water Availability Project (<http://www.bom.gov.au/jsp/awap/>)



**Figure 6. Streamflow gauging stations in the Barossa PWRA**

# More information

The status of the Barossa was determined by expressing the annual Yaldara streamflow for 2016/2017 as a percentile of the total annual streamflow for the period (1977/78–2016/17).

The total 2016/17 streamflow from the Yaldara gauging station (29 957 ML) represents the 95<sup>th</sup> percentile, i.e. 95% of the annual streamflow totals in the record since 1977/78 were less than the streamflow observed in 2016/17.

To view descriptions for all status symbols, and to review the full historical record of the gauging stations (streamflow and salinity), please visit the *Water Resource Assessments* page on [WaterConnect](#).

Further information may be found among the [Frequently Asked Questions](#) on the *Water Resource Assessments* page of [www.waterconnect.sa.gov.au](http://www.waterconnect.sa.gov.au).

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 <https://legacy.longpaddock.qld.gov.au/silo/>. Rainfall maps have been compiled using daily gridded data produced by the BoM Australian Water Availability Project (<http://www.bom.gov.au/jsp/awap/>).

To view the *Barossa PWRA Surface water status report 2010–11*, which includes background information on rainfall, streamflow, salinity, water use and relevant water-dependent ecosystems, please visit the *Water Resource Assessments* page on [WaterConnect](#)

Streamflow and salinity data are available via Water Connect: <http://www.waterconnect.sa.gov.au>

For further details about the *Barossa PWRA*, please see the *Water Allocation Plan* for the Barossa PWRA on the Natural Resources Adelaide and Mount Lofty Ranges [website](#).



**Government  
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