

Western Mount Lofty Ranges Prescribed Water Resources Area

2017 Surface water status report



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2017 Status summary

Western Mount Lofty Ranges PWRA

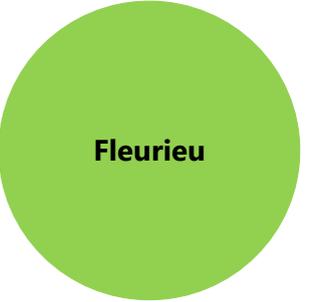


Torrens & Onkaparinga

The River Torrens and Onkaparinga catchments are assigned a **green** surface water status for 2017, a wet year, with streamflow being much higher than average.

Green status means that the total annual streamflow was above the 75th percentile¹ of the period of data availability.

The status prescribed is based on the combined streamflow recorded at the River Torrens and Onkaparinga gauging stations. The percentile range of the stations used to inform the status is presented in Figure 6.



Fleurieu

The Fleurieu Peninsula catchments are 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 75th percentile¹ of the period of data availability.

The status prescribed is based on the combined streamflow recorded at the Myponga, Inman and Yankalilla Rivers gauging stations. The percentile range of the stations used to inform the status is presented in Figure 6.

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.

¹ The nth percentile of a set of data is the value at which n% of the data is less than this value. For example, if the 75th percentile annual flow is 100 ML, 75% of the years on record had annual flow of less than 100 ML.

Rainfall

Figure 1 and 5

Rainfall station	Mt. Bold rainfall station (M023734) Reporting period: 1973/74-2016/17, in line with streamflow data availability
Annual total ²	1023 mm This was 314 mm above the average annual rainfall of 710 mm (1889/90-2016/17) 2016/17 annual rainfall was the 3rd highest of the past 38 years of rainfall recorded at the Mt. Bold rainfall station
Monthly rainfall summary	Higher than average rainfall was recorded in July and September 2016, and September 2016 to February 2017, accounting for approximately 70% of the annual rainfall in 2016/17 Lower than average rainfall was recorded in August 2016 and March, May and June in 2017 September recorded 217 mm, 3-times the average monthly rainfall of 75 mm Trends were consistent with data from Cudlee Creek (M023731), Mount Pleasant (M023737), Yankalilla (M023754) and Port Elliot (M023742) rainfall stations
Spatial distribution	5-year average annual rainfall distribution across the PWRA shows very similar rainfall conditions when compared to the long-term average annual data Spatial distribution of rainfall during 2016/17 was considerably higher than both the 5-year and long-term average annual rainfall Large areas around Stirling, Willunga and the Fleurieu Peninsula experienced annual rainfall in excess of 1000 mm during 2016/17
Rainfall trend	Long-term trend - Annual rainfall volumes recorded at the Mt. Bold rainfall station are stable Short-term trend - An increasing rainfall trend was observed over the past 5 years, primarily in response to the high rainfall in 2016/17

² For the water-use year 1 July 2016 to 30 June 2017

Streamflow

Figure 2, 3 and 6

Streamflow gauging stations	<p>8 gauging stations located in the River Torrens, Onkaparinga River and Fleurieu catchments</p> <p>River Torrens catchment: Mount Pleasant (A5040512), Sixth Creek (A5040523) and Kersbrook Creek (A5040523) gauging stations</p> <p>Onkaparinga River catchment: the Scott Creek (A5030502) and Bakers Gully (A5030503) gauging stations</p> <p>Fleurieu Peninsula: the Myponga River (A5020502), Inman River (A5010503) and Yankalilla River (A5011006) gauging stations</p> <p>Common streamflow data availability period: 1973/74-2016/17</p>																																								
Annual total ²	<p>All gauging stations within the PWRA recorded above average annual streamflow during 2016/17. These records are at or above the 95th percentile for annual streamflow</p> <p>Sixth Creek, Kersbrook Creek, Bakers Gully, Inman River and the Yankalilla River gauging stations all recorded the highest flow on record (100th percentile)</p>																																								
	<table border="1"> <thead> <tr> <th></th> <th>2016/17 streamflow (ML)</th> <th>Average annual streamflow (1976-2016) (ML)</th> <th>Percentile Rank</th> </tr> </thead> <tbody> <tr> <td>Mount Pleasant</td> <td>8605</td> <td>2047</td> <td>98th</td> </tr> <tr> <td>Sixth Creek</td> <td>38 494</td> <td>6972</td> <td>100th</td> </tr> <tr> <td>Kersbrook Creek</td> <td>9851</td> <td>2754</td> <td>100th</td> </tr> <tr> <td>Scott Creek</td> <td>7125</td> <td>3382</td> <td>95th</td> </tr> <tr> <td>Bakers Gully</td> <td>19 537</td> <td>4451</td> <td>100th</td> </tr> <tr> <td>Myponga River</td> <td>15 599</td> <td>7358</td> <td>95th</td> </tr> <tr> <td>Inman River</td> <td>31 476</td> <td>7775</td> <td>100th</td> </tr> <tr> <td>Yankalilla River</td> <td>16 158</td> <td>6015</td> <td>100th</td> </tr> <tr> <td>Combined</td> <td>146 843</td> <td></td> <td></td> </tr> </tbody> </table>		2016/17 streamflow (ML)	Average annual streamflow (1976-2016) (ML)	Percentile Rank	Mount Pleasant	8605	2047	98 th	Sixth Creek	38 494	6972	100 th	Kersbrook Creek	9851	2754	100 th	Scott Creek	7125	3382	95 th	Bakers Gully	19 537	4451	100 th	Myponga River	15 599	7358	95 th	Inman River	31 476	7775	100 th	Yankalilla River	16 158	6015	100 th	Combined	146 843		
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Monthly streamflow summary	<p>High flows were recorded in September 2016 at all sites ranging between 3 and 7-times the respective monthly averages</p>																																								
Streamflow trend	<p>Long-term trend - Annual recorded streamflow volumes indicate an increasing long-term trend (1973/74-2016/17)</p> <p>Short-term trend - The last five years of streamflow indicate an increasing trend as a result of the high rainfall experienced in 2016/17</p>																																								

² For the water-use year 1 July 2016 to 30 June 2017

Water use

Surface water use data ²	<p>Total water use for the WMLR PWRA was estimated to be 179 403 ML (3 times the previous year's total of 63 347 ML)</p> <p>Licensed surface water sources: 19 861 ML (based on allocation data)</p> <p>Watercourse extractions: 9027 ML (based on allocation data)</p> <p>Estimated use for forestry: 17 413 ML (based on data from the WAP)</p> <p>SA Water: 128 146 ML (compared to 21 108 ML in 2015/16). SA Water use is related to rainfall. In high rainfall years, SA Water extracts the majority of its public water supply from the WMLR, while in dry years the River Murray provides a larger percentage of SA Water's total use</p> <p>Non-licensed demand estimated to be 4956 ML (approximately 30% of existing stock and domestic dam capacity)</p>
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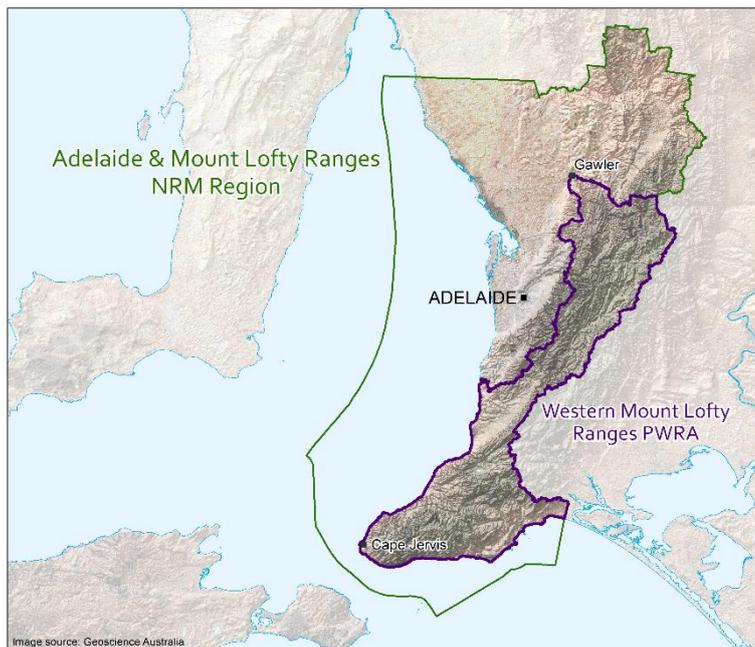
Surface water salinity

Figure 4

Salinity monitoring	<p>Long-term gauging stations:</p> <p>Onkaparinga River upstream of the Hahndorf dissipator (A5031001)</p> <p>River Torrens downstream of Hollands Creek (A5041003)</p>
General observations	<p>Salinity increases during sustained summer events while decreasing throughout the winter months as a result of higher dilution capacity as flow volumes increase</p>
Salinity – 2016/17 water-use year ²	<p>Highest salinity recorded at Onkaparinga River gauging station: 591 mg/L</p> <p>Highest salinity recorded at River Torrens gauging station: 728 mg/L</p>
Salinity - 2002/03–2016/17	<p>Salinity recordings at Onkaparinga River were lower than 1000 mg/L for 99% of the salinity data period.</p> <p>Salinity recordings at River Torrens were below 1000 mg/L for 96% of the salinity data period</p>

² For the water-use year 1 July 2016 to 30 June 2017

Regional setting



The Western Mount Lofty Ranges (WMLR) Prescribed Water Resources Area (WMLR PWRA) is located 10 km east of Adelaide.

Surface water, watercourses, and groundwater resources in the WMLR PWRA have been prescribed under South Australia's *Natural Resources Management Act 2004*. A water allocation plan (WAP) adopted in 2013 provides for sustainable management of water resources.

The eastern regions of the PWRA include the highest hills in the area, and form the upland eastern extent of the Mount Lofty Ranges watershed. Several important watercourses drain the northern and central parts of the PWRA, flowing west through metropolitan Adelaide and its surrounding suburbs, before entering Gulf St Vincent, including: the South Para, Little Para, Torrens, Onkaparinga and Myponga Rivers. The south-western parts of the PWRA includes the Fleurieu Peninsula, which is characterised by smaller, coastal catchments, draining a central plateau. The Fleurieu Peninsula contains numerous wetlands including *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) listed Fleurieu Swamps. The most south-easterly parts of the PWRA comprise the Hindmarsh and Inman Rivers which drain the Fleurieu towards the south-east.

Surface water resources in the PWRA are highly dependent on rainfall, with trends in streamflow and salinity primarily climate driven, i.e. below-average winter rainfall results in a reduction in annual streamflow volumes. Below-average summer rainfall can also result in increased irrigation extractions, and these two elements can cause salinities by increasing salt loads entering watercourses from the soil (through increased irrigation) and reducing the amount of streamflow available to dilute salts. Conversely, increased rainfall results in increased streamflow volumes, decreased irrigation extractions and salinities may stabilise or decline.

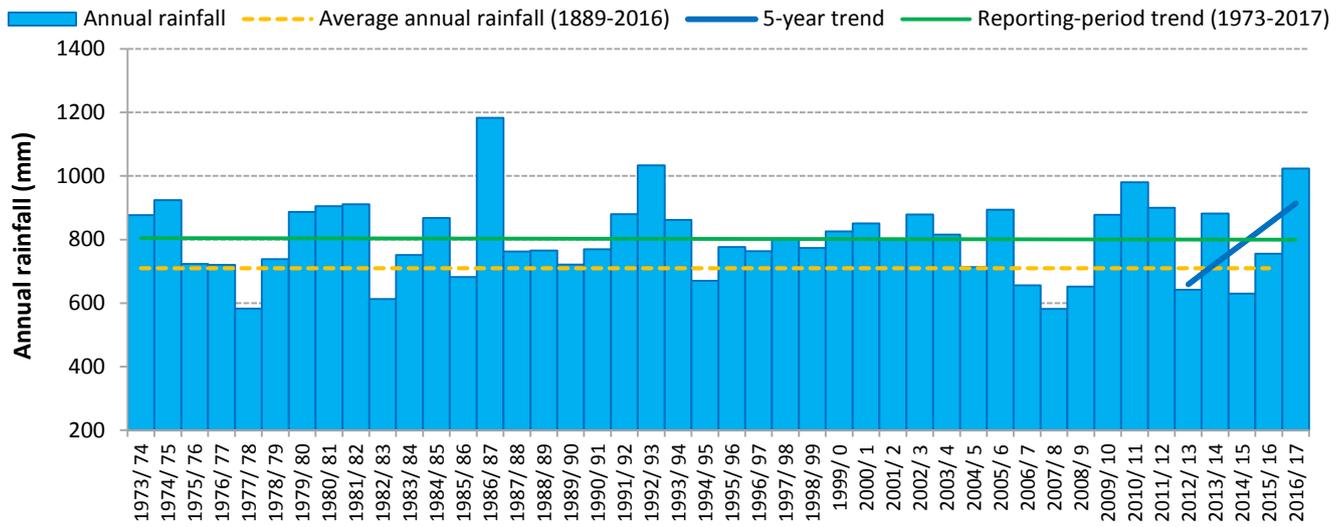


Figure 1. Annual rainfall (mm) for 1973/74–2016/17 at Mt Bold rainfall station (M023734)

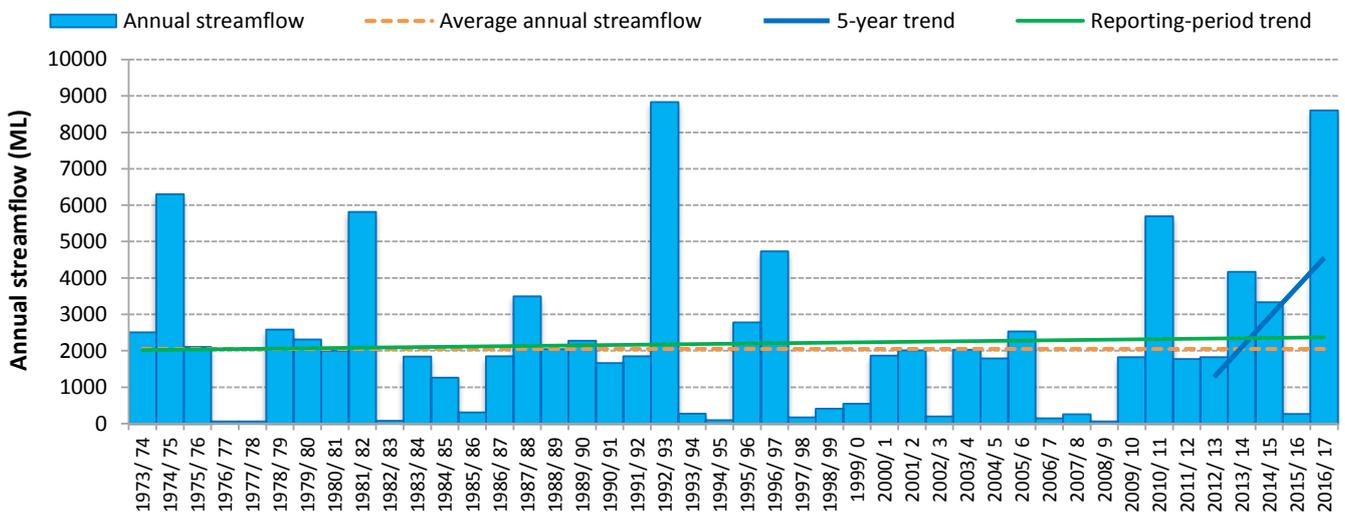


Figure 2. Annual streamflow (ML) for 1973/74–2016/17 at Mount Pleasant gauging station (A5040512)

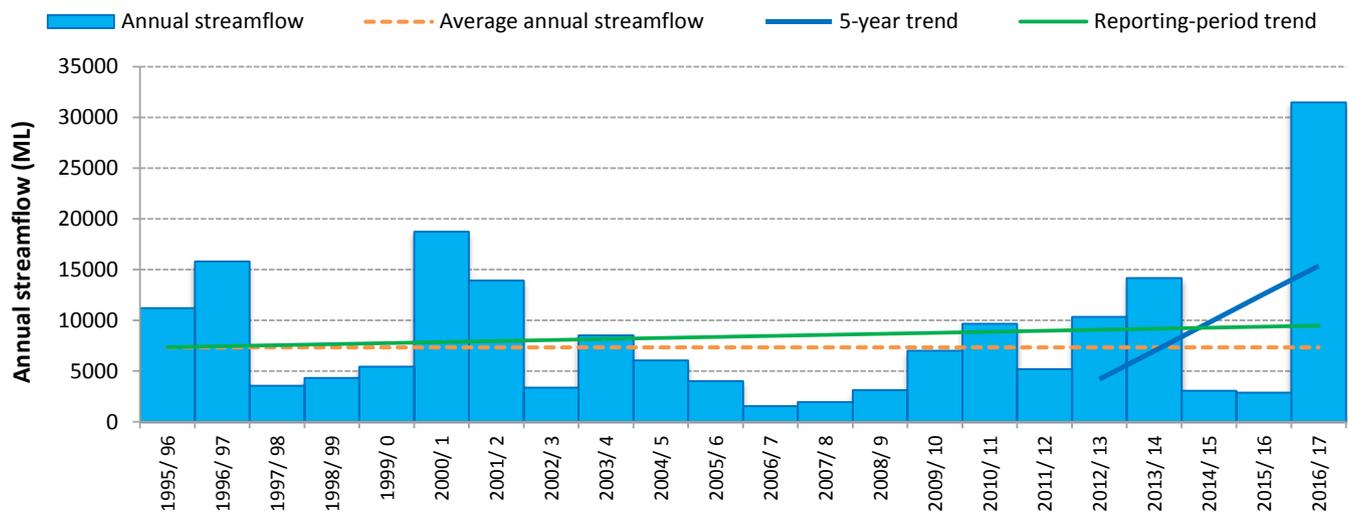


Figure 3. Annual streamflow (ML) for 1995/96–2016/17 at the Inman River gauging station (A5010503)

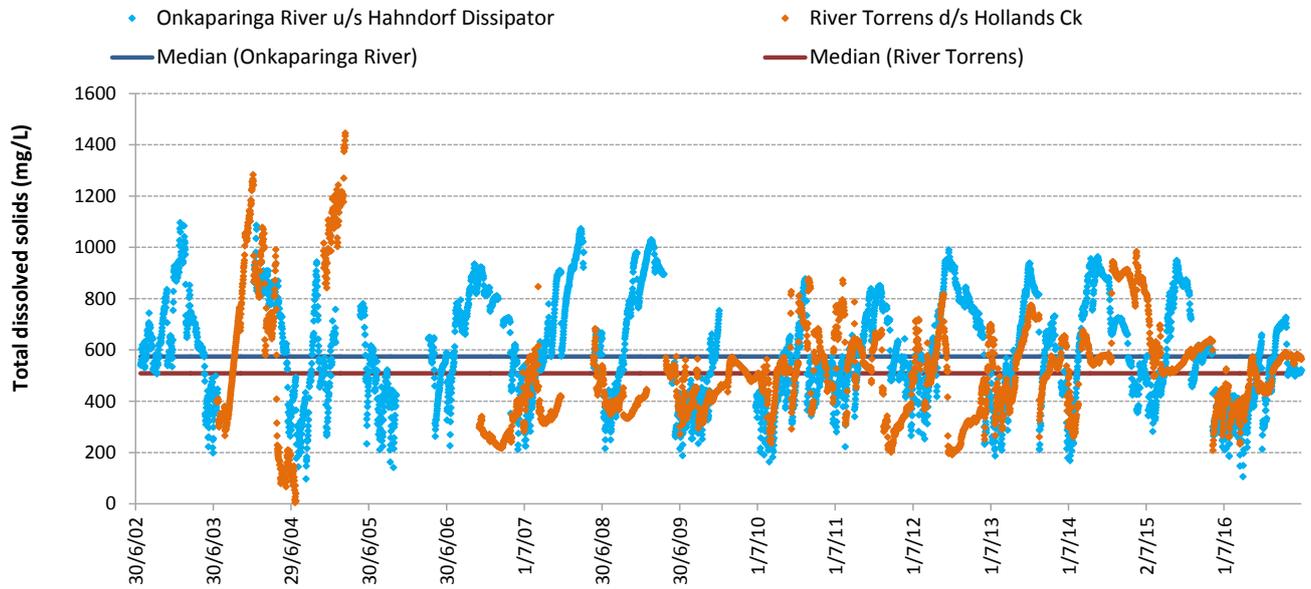


Figure 4. Salinity data (TDS mg/L) for 2002/03–2016/17 at Onkaparinga River u/s Hahndorf Dissipater (A5031001) and 2007/08–2016/17 at River Torrens d/s Hollands Creek (A5041003) gauging stations

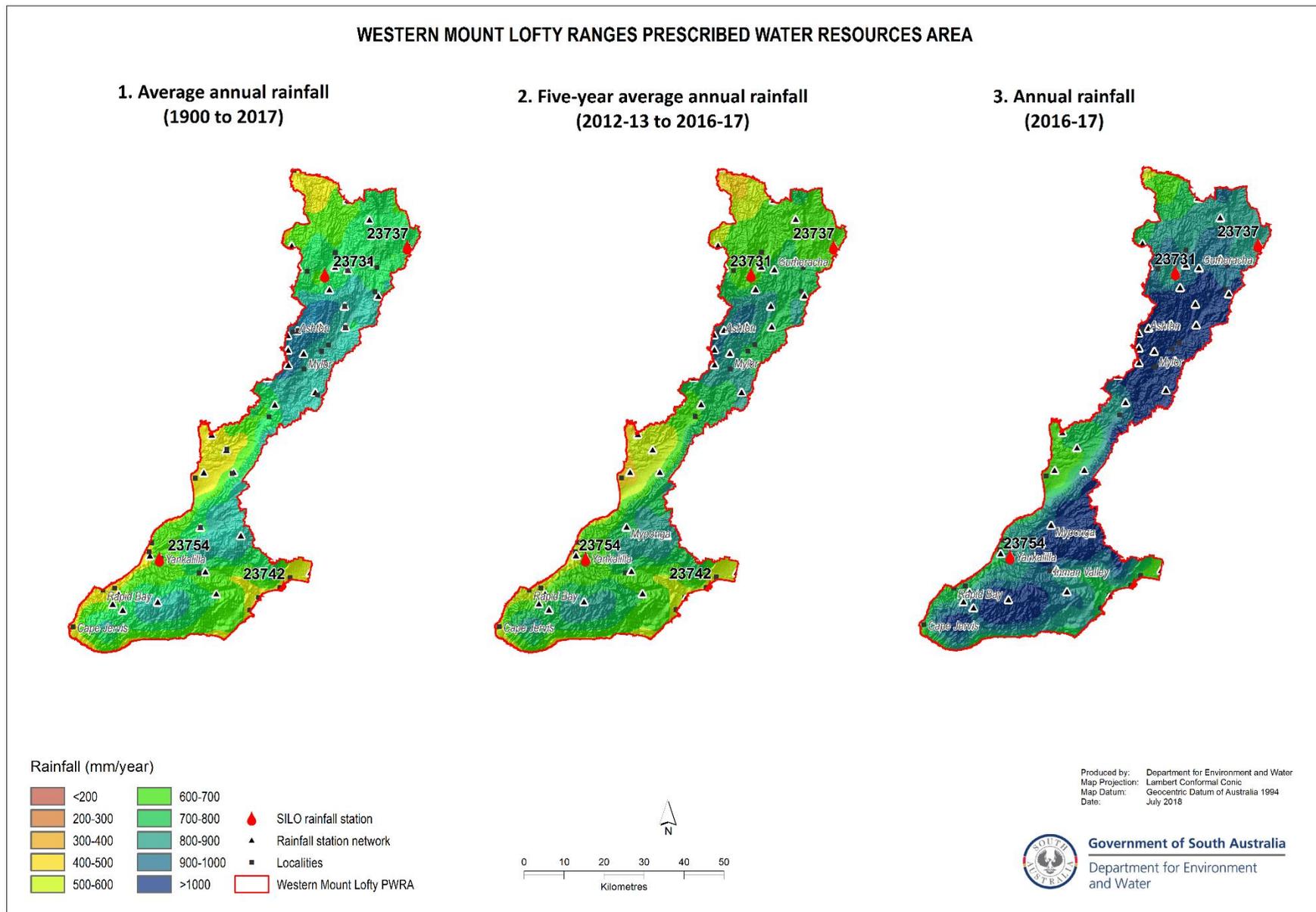


Figure 5. (1) Average annual (2) five-year average annual rainfall and (3) annual rainfall for the 2016/17 in the Western Mount Lofty Ranges PWRA³

³ 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/>)

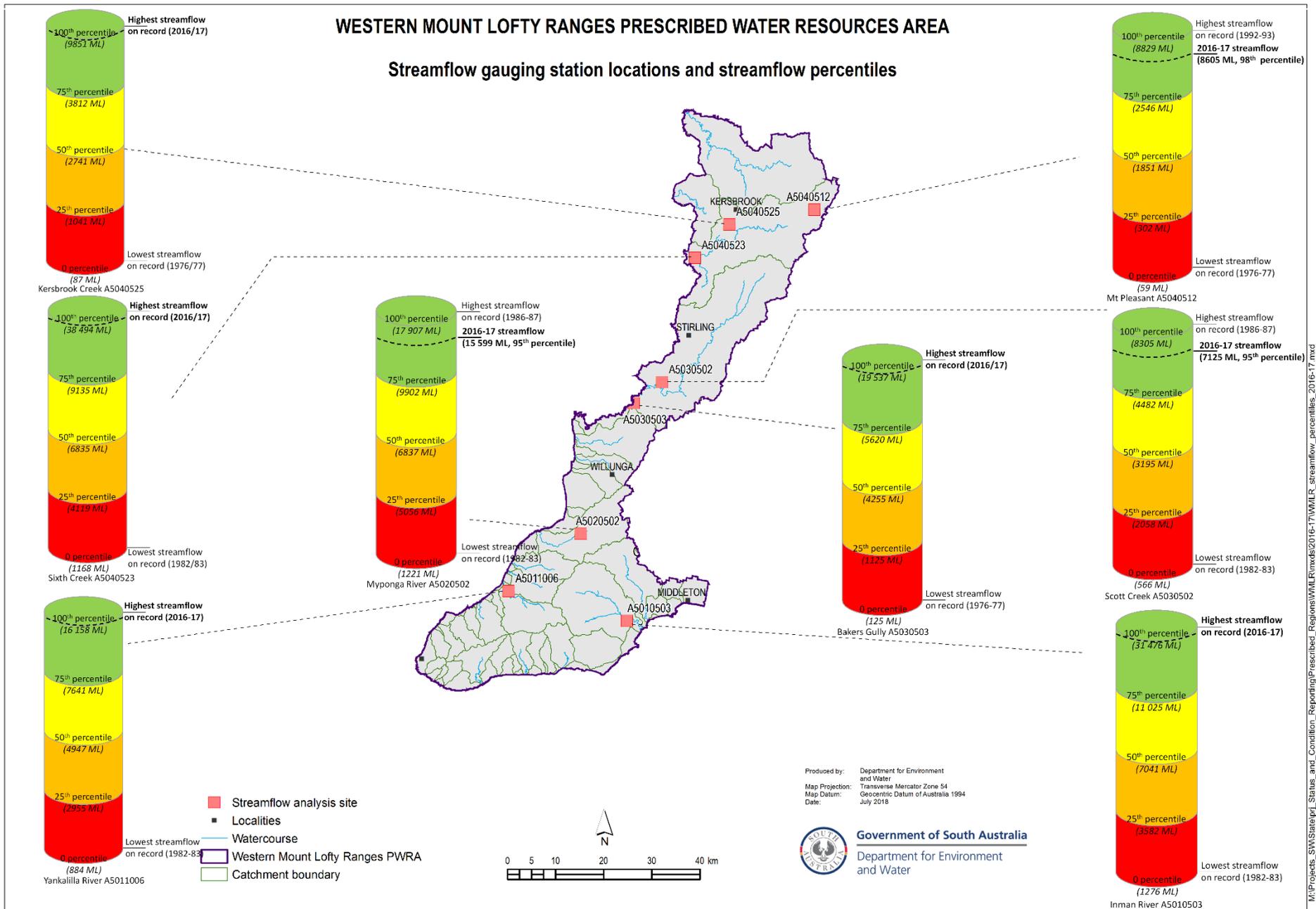


Figure 6. Surface water gauging stations and streamflow percentiles in the Western Mount Lofty Ranges PWRA

More information

The spatial variability in hydrological behaviour of the surface water catchments within the WMLR makes it challenging to assign a single water resource status for the PWRA. Therefore streamflow gauging stations used for analysis were chosen to be representative of the central, and southern portions of the WMLR PWRA. The River Torrens and Onkaparinga catchments represent the central part, while the southern part of the region is represented by streamflow gauging stations located on the Fleurieu Peninsula.

Annual streamflow records from the River Torrens and Onkaparinga River gauging stations were combined each year for the common period 1973/74 – 2016/17 to represent total streamflow for the central part of the PWRA. A similar exercise was undertaken with the gauging stations located on the Fleurieu Peninsula. The total annual streamflow data for each area was then ranked to derive the relative rank of each year's streamflow in comparison to the annual stream flows for the entire period of data availability. The total 2016/17 streamflow for the central WMLR was 83 611 ML was the highest flow on record (representing) the 100th percentile over the period of data availability (1973/74-2016/17). Similarly, the 2016/17 streamflow in the Fleurieu Peninsula (63 233 ML) was the highest on record. Streamflow percentiles of individual gauges are shown in Figure 6.

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.

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 *Western Mount Lofty Ranges PWRA Surface water status report 2012–13*, which includes background information on rainfall, streamflow, salinity, water use and water dependent ecosystems, please visit the *Water Resource Assessments* page on [WaterConnect](#).

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

SA Water are data custodians of the Kersbrook Creek (A5040525) and Myponga River (A5020502) gauging stations.

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



**Government
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