Western Mount Lofty Ranges Prescribed Water Resources Area

2018 Surface water status report

Government of South Australia
Department for Environment and Water

2018 Status summary
Western Mount Lofty Ranges PWRA

Torrens & Onkaparinga

The River Torrens and Onkaparinga catchments are assigned a ***green*** surface water status for 2018, with streamflow being higher than the average observed for the region.

Green status means that the total annual streamflow was above the 75th percentile[1] for the period of data availability.

The status prescribed is based on the combined streamflow recorded at the River Torrens and Onkaparinga streamflow 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 ***yellow*** surface water status for 2018, with streamflow being higher than the average observed for the region.

Yellow status means that the total annual streamflow was between the 50th and 75th percentile[1] for the period of data availability.

The status prescribed is based on the combined streamflow recorded at the Myponga, Inman and Yankalilla Rivers streamflow 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. Median streamflow: 50% of the records were above this value and 50% below.

Rainfall

Figures 1 and 5

Rainfall station	Mount Bold rainfall station (M023734) Reporting period: 1973–74 to 2017–18, in line with streamflow data availability
Annual total[2]	820 mm This was 17 mm above the average annual rainfall of 803 mm (1973–74 to 2016–17).
Monthly rainfall summary	Higher than average rainfall was recorded in July, August, September and December 2017, accounting for 63% of the annual rainfall in 2017–18. Lower than average rainfall was recorded in October and November 2017 and in January to June 2018. In August 2017, the Mount Bold rainfall station recorded 188 mm, more than two times the average monthly rainfall of 88 mm. Trends were consistent with data from Cudlee Creek (M023731), Mount Pleasant (M023737), Yankalilla (M023754) and Port Elliot (M023742) rainfall stations.
Spatial distribution	2017–18 and the five-year average (2013–14 to 2017–18) annual rainfall distribution across the Prescribed Water Resources Area (PWRA) shows very similar rainfall conditions when compared to the average annual data. Areas around Stirling experienced annual rainfall in excess of 1000 mm in 2017–18. This is consistent with average annual rainfall over the period 1973–74 to 2016–17 and over the five-year period (2013–4 to 2017–18).
Rainfall trend	Long-term trend – Annual rainfall volumes recorded at the Mount Bold rainfall station are stable. Trends were consistent with data from Cudlee Creek (M023731), Mount Pleasant (M023737), Yankalilla (M023754) and Port Elliot (M023742) rainfall stations. 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 2017 to 30 June 2018

Streamflow

Figure 2, 3 and 6

Streamflow gauging stations	Eight gauging stations located in the River Torrens, Onkaparinga River and Fleurieu catchments: River Torrens catchment: Mount Pleasant (A5040512), Sixth Creek (A5040523) and Kersbrook Creek (A5040523) gauging stations Onkaparinga River catchment: Scott Creek (A5030502) and Bakers Gully (A5030503) gauging stations Fleurieu Peninsula: Myponga River (A5020502), Inman River (A5010503) and Yankalilla River (A5011006) gauging stations Common streamflow data availability period: 1973–74 to 2017–18
Annual total[2]	Sixth Creek, Kersbrook Creek, Scott Creek, Inman River and Yankallila River recorded above average annual streamflow during 2017–18.

	Average annual streamflow (1973–4 to 2016–17) (ML)	2017–18 Streamflow (ML)	Percentile rank
Mount Pleasant	2168	947	32nd
Sixth Creek	7966	20 161	98th
Kersbrook Creek	2918	3011	59th
Scott Creek	3476	3882	59th
Bakers Gully	4815	5758	75th
Myponga River	7538	7235	57th
Inman River	8421	13 133	84th
Yankalilla River	6263	7001	70th
Combined	43 166	61 127	

Monthly streamflow summary	Except for August 2017, which had higher than average streamflow, the remainder of the period had lower than average flow at the majority of sites.
Streamflow trend	Long-term trend – Annual recorded streamflow volumes indicate an increasing long-term trend (1973–74 to 2017–18) on the Inman River, Bakers Gully, Sixth Creek, Myponga River and Yankallila River. A decreasing long-term trend can be observed at Scott Creek and a stable long-term trend at Kersbrook Creek and Mount Pleasant. Short-term trend – The last five years of streamflow indicate an increasing trend at almost all sites, primarily due to much higher-than-average rainfall in 2016–17. However, Mount Pleasant shows a decreasing trend.

[2] For the water-use year 1 July 2017 to 30 June 2018

Water extraction

Surface water allocation and extraction[2]	Total water allocation for the WMLR PWRA was estimated to be 160 342 ML (compared to 179 403 in 2016–17). Licensed surface water sources: 20 228 ML (based on allocation data) Licensed watercourse sources: 11 775 ML (based on allocation data) Non-licensed water demand: 4956 ML (30% of the existing stock and domestic dam capacity) SA Water extraction: 105 970 ML (compared to 128 146 ML in 2016–17). SA Water extraction 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 extraction. Estimated extraction for plantation forestry: 17 413 ML – based on data from the Water Allocation Plan (WAP)

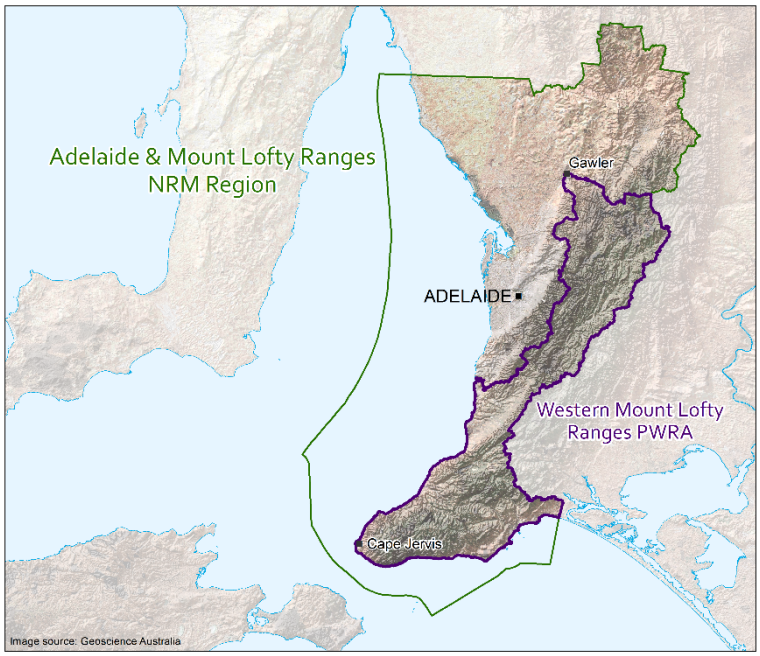
Surface water salinity

Figure 4

Salinity monitoring	Onkaparinga River upstream of the Hahndorf dissipater gauging station (A5031001) – data available from 2002 River Torrens downstream of Hollands Creek gauging station (A5041003) – data available from 2003
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: 2017–18 water-use year	Highest salinity recorded at Onkaparinga River gauging station: 883 mg/L Highest salinity recorded at River Torrens gauging station: 733 mg/L
Salinity: 2002–03 to 2017–18	Salinity recordings at Onkaparinga River were lower than 1000 mg/L for 99% of the salinity data period. Salinity recordings at River Torrens were below 1000 mg/L for 97% of the salinity data period.

[2] For the water-use year 1 July 2017 to 30 June 2018

Regional setting



The Western Mount Lofty Ranges 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 part 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 the Fleurieu Swamps, listed under the *Environment Protection and Biodiversity Conservation Act 1999*. The most south-easterly parts of the PWRA comprise the Hindmarsh and Inman Rivers which drain the Fleurieu Peninsula 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 raise salinity levels 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 and decreased irrigation extractions, and salinities may stabilise or decline.

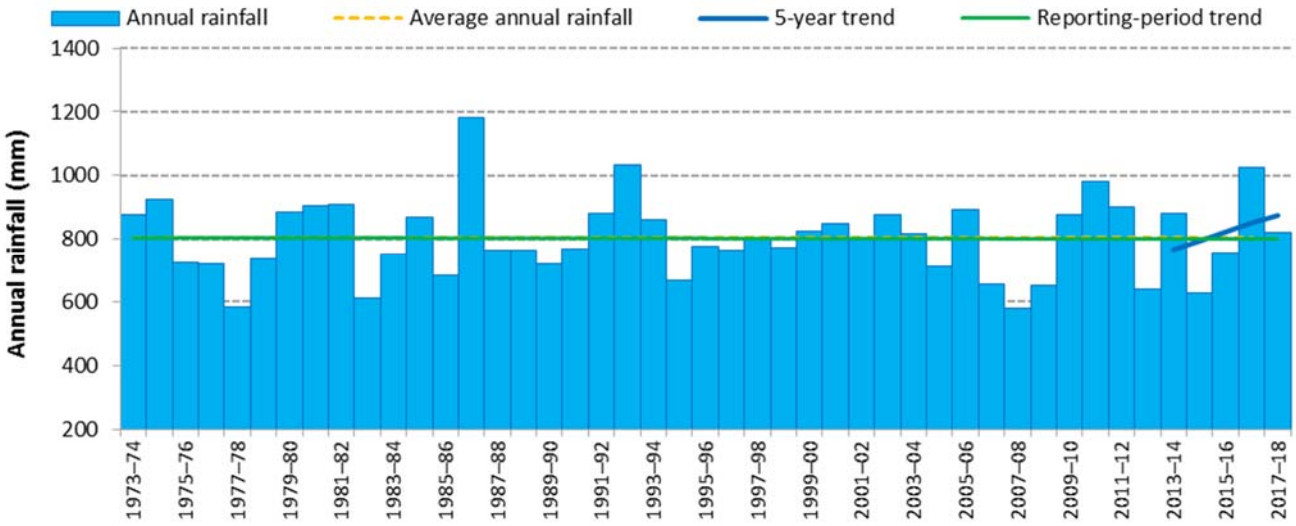


Figure 1. Annual rainfall for 1973–74 to 2017–18 at Mount Bold rainfall station (M023734)

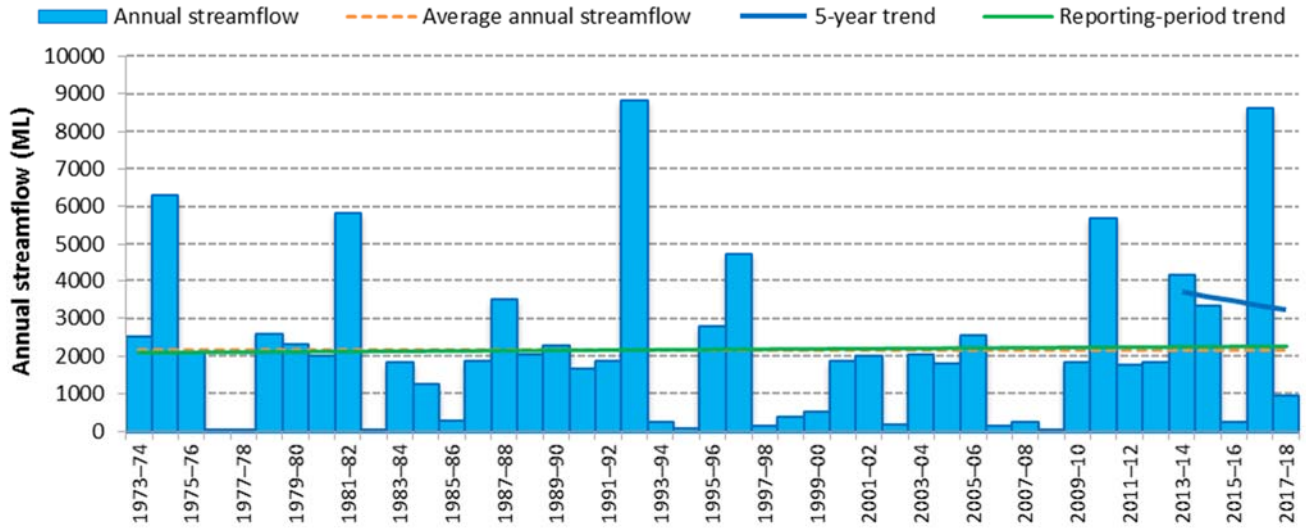


Figure 2. Annual streamflow for 1973–74 to 2017–18 at Mount Pleasant gauging station (A5040512)

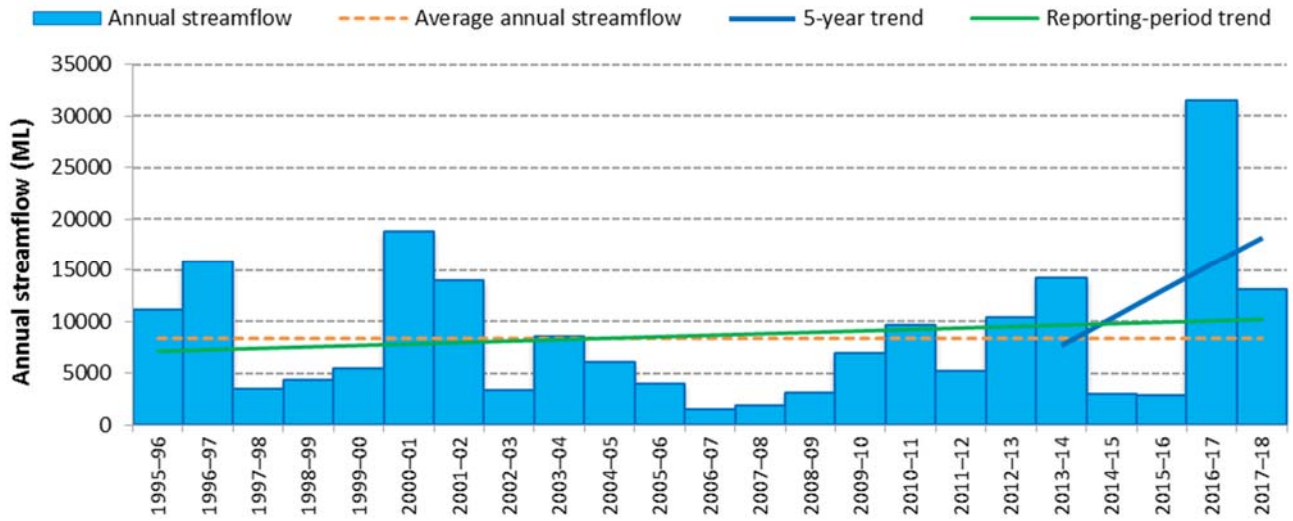


Figure 3. Annual streamflow for 1995–96 to 2017–18 at the Inman River gauging station (A5010503)

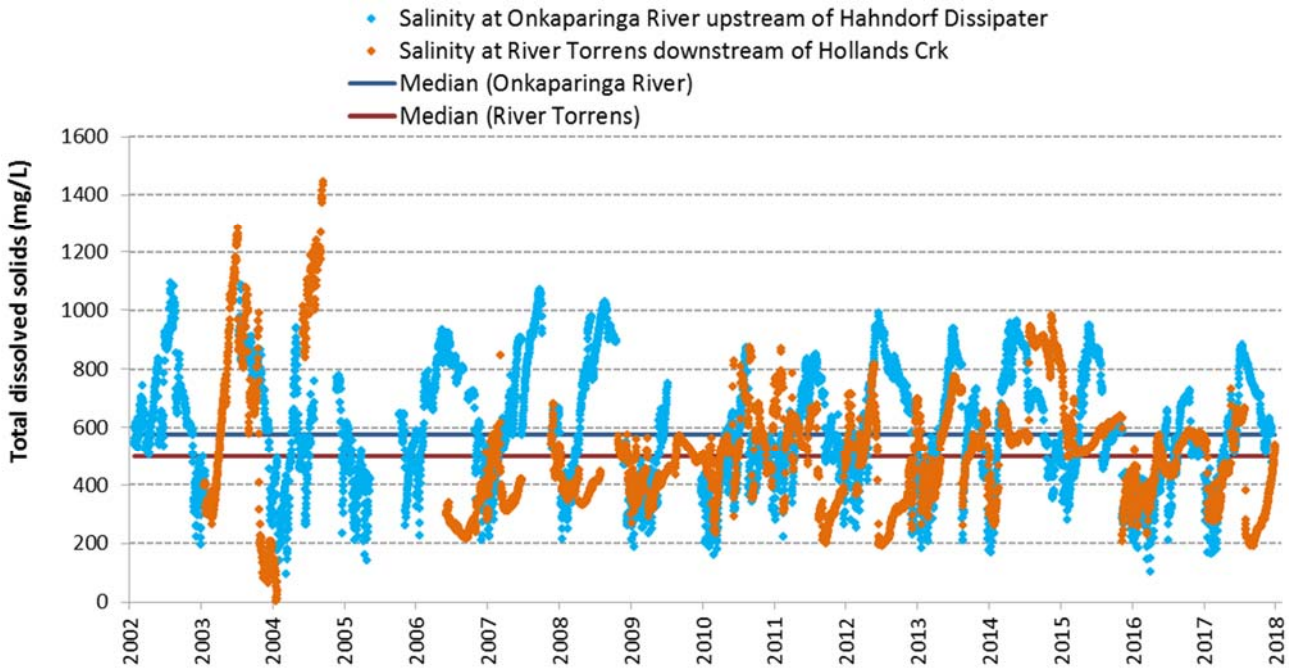


Figure 4. Salinity data for 2002 to 2018 at Onkaparinga River upstream of Hahndorf Dissipater (A5031001) and 2003 to 2018 at River Torrens downstream of Hollands Creek (A5041003) gauging stations

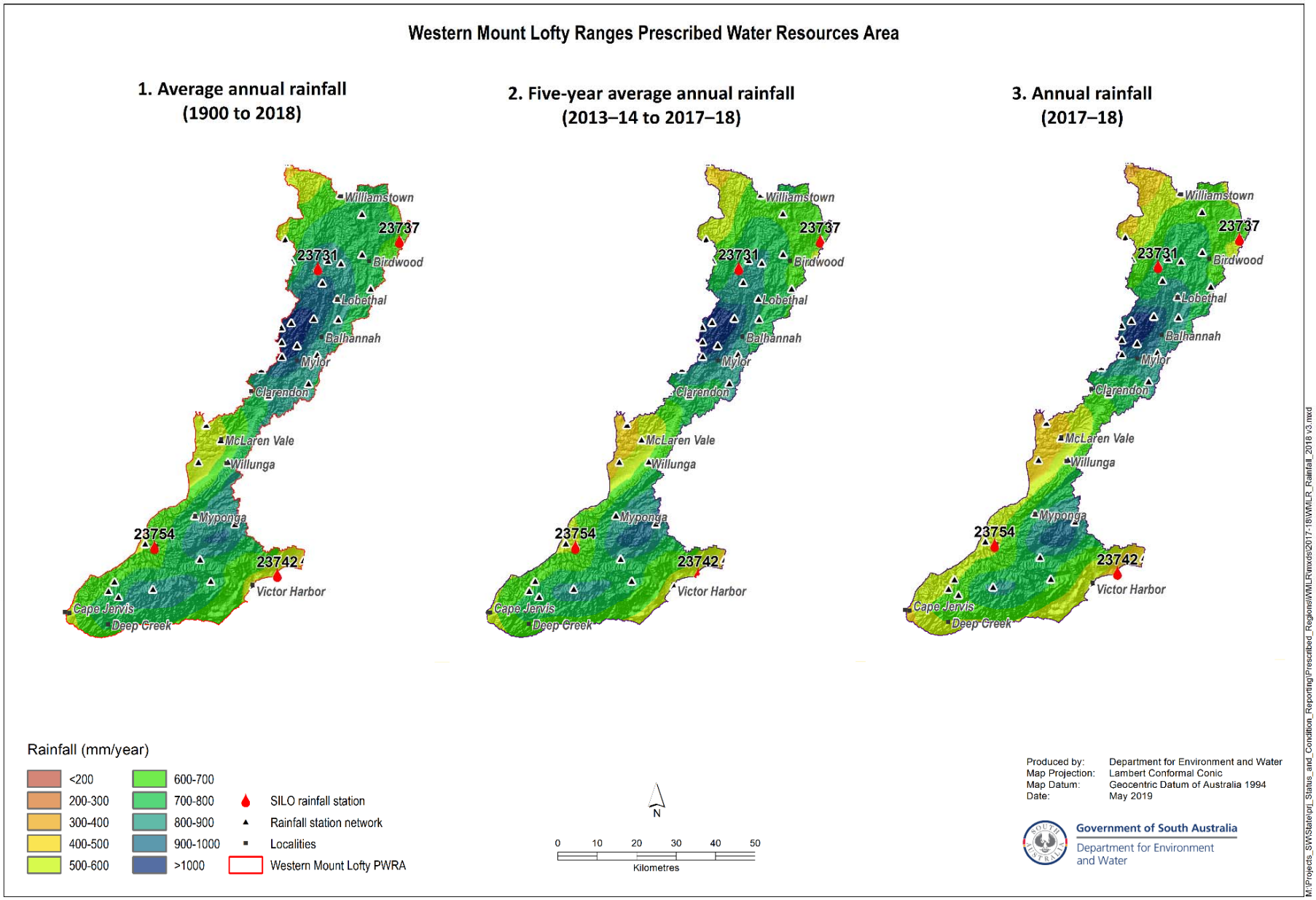


Figure 5. (1) Average annual (2) five-year average annual rainfall and (3) annual rainfall for 2017–18 in the Western Mount Lofty Ranges PWRA[3]

[3] Data sources: SILO interpolated point and gridded datasets, available at https://legacy.longpaddock.qld.gov.au/silo/.

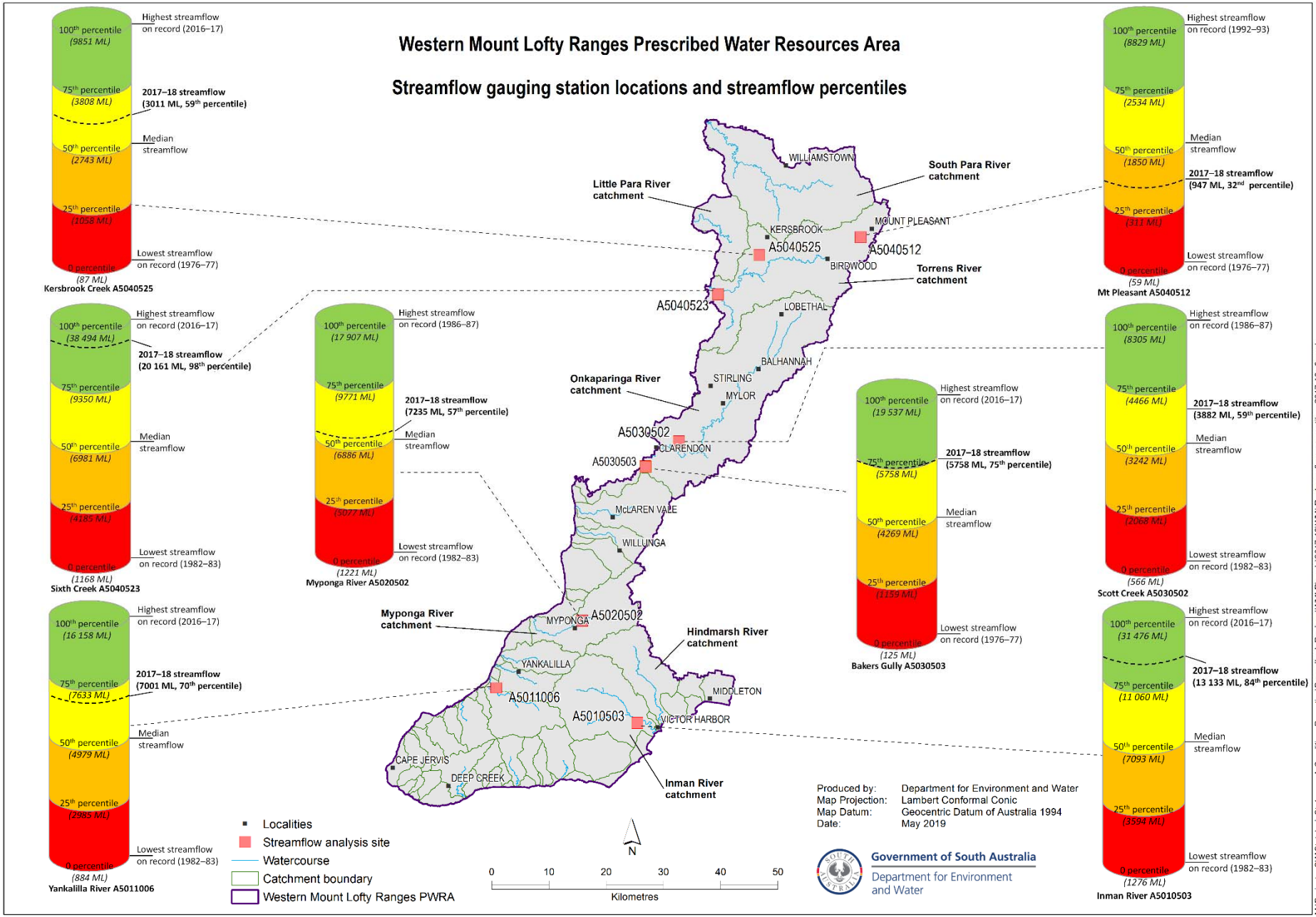


Figure 6. Surface water gauging stations and streamflow percentiles in the Western Mount Lofty Ranges PWRA

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 to 2017–18 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 2017–18 streamflow for the central WMLR was 33 759 ML, which represents the 86th percentile over the period of record. The 2017–18 streamflow in the Fleurieu Peninsula was 27 369 ML, which represents the 73rd percentile over the period of 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 at http://www.waterconnect.sa.gov.au.

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 are sourced from the SILO interpolated point and gridded datasets, which are calculated from Bureau of Meteorology daily and monthly rainfall measurements and are available online at https://legacy.longpaddock.qld.gov.au/silo/.

To view the *Western Mount Lofty Ranges PWRA Surface water status report 2012–13*, which includes background information on rainfall, streamflow, salinity, water extraction and water dependent ecosystems, please visit the *Water Resource Assessments* page on http://www.waterconnect.sa.gov.au.

Streamflow and salinity data are available via WaterConnect at http://www.waterconnect.sa.gov.au.
SA Water is data custodian 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 site at https://www.naturalresources.sa.gov.au/adelaidemtloftyranges/home.

Published by the Department for Environment and Water.
Government of South Australia
July 2019

Head Office
Level 7
81-95 Waymouth St
ADELAIDE SA 5000

Telephone +61 (8) 8463 6946
Facsimile +61 (8) 8463 6999

ABN 36702093234
ISBN 978-1-925805-65-9

Report prepared by:
Department for Environment and Water
Water Science and Monitoring Branch
Strategy, Science and Corporate Services Directorate

www.environment.sa.gov.au

Preferred way to cite this publication

DEW, 2019, *Western Mount Lofty Ranges Prescribed Water Resources Area 2018 surface water status report*, Government of South Australia, Department for Environment and Water, Adelaide.

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

Government of South Australia

Department for Environment and Water