

Western Mount Lofty Ranges PWRA

2015 Surface water status report



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Department of Environment,
Water and Natural Resources

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This document is available online at www.waterconnect.sa.gov.au/Systems/GSR/Pages.

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](http://www.waterconnect.sa.gov.au/Systems/GSR/Pages).

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](http://www.waterconnect.sa.gov.au/Systems/GSR/Pages).

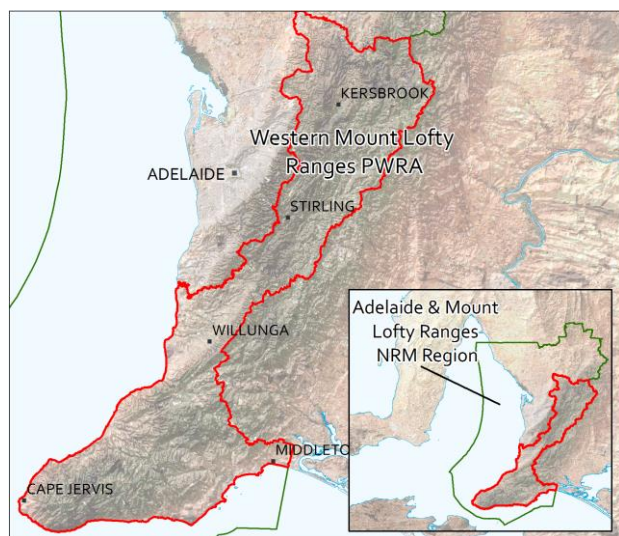
Gridded rainfall data was sourced from the Bureau of Meteorology (BoM). Station rainfall data was sourced from the Scientific Information for Land Owners database (SILO) and is Patched Point Data. Further information on SILO climate data is available at: <http://www.longpaddock.qld.gov.au/silo/index.html>.

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.

To view descriptions for all status symbols, please visit [WaterConnect](http://www.waterconnect.sa.gov.au/Systems/GSR/Pages).

2015 Summary



Description of the Prescribed Area

The Western Mount Lofty Ranges Prescribed Water Resource Area (WMLR PWRA) is located 10 km east of Adelaide. Surface water (including within 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) developed by the Adelaide and Mount Lofty Ranges Natural Resources Management Board and adopted in 2013, seeks to provide for sustainable management of water resources.

The PWRA's topography includes the higher elevations of the Mount Lofty Ranges along the eastern extent, which guides watercourses through urban areas of metropolitan Adelaide and surrounding suburbs before draining to Gulf St Vincent. The main watercourses that drain to the west are the South Para, Little Para, Torrens, Onkaparinga

and Myponga Rivers. The south western extent of the WMLR PWRA includes the Fleurieu Peninsula, which is characterised by smaller catchments referred to as the Fleurieu Coastal catchments. Watercourses in the Fleurieu Coastal catchments, which are not as major as those in the north, drain outward from a central plateau. The Fleurieu Coastal catchments support numerous wetlands including *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) listed Fleurieu Swamps. The Hindmarsh and Inman Rivers in the south of the WMLR PWRA drain towards the south east.

Surface water resources 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 to increase by 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.

Rainfall summary

Mount Bold rainfall station (M023734) is located in the central part of the WMLR PWRA where annual rainfall totalled 627 mm in the 2014–15 water-use year, 70 mm below the long-term average annual rainfall (Fig. 1). Last year's rainfall was the fourth lowest of the past 43 years (for the period 1973–2015, to align with available streamflow data). During the 12 months to June 2015, only four months (July, January, April and May) had above average rainfall, with the late spring months of October and November recording below average rainfall during the last four consecutive years. This trend of consecutive below average spring rainfall is commensurate with the data recorded at Cudlee Creek (M023731), Mount Pleasant (M023737), Yankalilla (M023754) and Port Elliot (M023734) rainfall stations. The spatial distribution of rainfall for the past five-years shows average annual rainfall below the long-term average in the central part of the WMLR PWRA, and comparable to the long-term average in the north and south (Fig. 7). The spatial distribution of rainfall for 2014–15 shows well below average rainfall across the entire WMLR PWRA.

Streamflow summary

Streamflow data was analysed from eight gauging stations located in the Torrens River, Onkaparinga River and Fleurieu Peninsula catchments. All gauging stations within the WMLR PWRA recorded streamflow below the long-term average in 2014–15 except the Mount Pleasant gauging station (A5040512) in the Torrens River catchment. The spring and early summer months of October to December and the autumn month of March recorded below average streamflow the past three consecutive years at the majority of gauging stations analysed. The Mount Pleasant (A5040512), Sixth Creek (A5040523) and Kersbrook Creek (A5040525) gauging stations are located in the Torrens River catchment and recorded annual streamflow of 3332 ML (83rd percentile (%ile) (Fig. 2), 5448 ML (39th %ile) and 2596 ML (44th %ile) respectively in the 2014–15 water-use year. The Scott Creek (A5030502) and Bakers Gully (A5030503) gauging stations are located in the Onkaparinga River catchment and recorded annual streamflow of 2068 ML (24th %ile) and 4241 ML (51st %ile) respectively in the 2014–15 water-use year. The Myponga River (A5020502), Inman River (A5010503) and Yankalilla River (A5011006) gauging stations are located on the Fleurieu Peninsula and recorded annual streamflow of 4265 ML (20th %ile), 3040 ML (10th %ile) (Fig. 3) and 3018 ML (27th %ile) respectively in the 2014–15 water-use year.

Scott Creek, Myponga River and Inman River ranked in the 0-25th percentile range of streamflow. Sixth Creek, Kersbrook Creek and Yankalilla River ranked in the 25-50th percentile range of streamflow. Bakers Gully ranked in the 50-75th percentile range of streamflow and Mount Pleasant in the 75-100th percentile range.

Water use summary

Water use in the WMLR, described at a whole PWRA scale, includes licensed extractions from dams and watercourses, SA Water licensed extractions for public water supply, estimated non-licensed demand (stock and domestic) and forestry. Water use for the WMLR PWRA in 2014-15 was estimated to be 120 249 ML, more than the previous year's total of 103 615 ML (Fig. 4). Water use in 2014-15 from licensed surface water sources (based on allocation data in the absence of total actual usage data) totalled 19 680 ML (15 147 ML in 2013-14) while SA Water extracted 78 200 ML (66 099 ML in 2013-14). Estimated annual non-licensed water demand is taken from the WMLR WAP and is estimated to be 4956 ML and this volume equates to approximately 30% of the existing stock and domestic dam capacity. Estimated use for forestry is also taken from the WAP and this equates to 17 413 ML.

Salinity summary

Despite some data gaps with no recorded information, the Onkaparinga River (A5031001) and Torrens River (A5041003) gauging stations provide a good indication of salinity (measured as Total Dissolved Solids) from July 2002 and 2003 respectively (Fig. 5 and Fig. 6). A clear pattern of increasing salinity in the spring and summer months and decreasing salinity in the autumn and winter months is shown in Figures 5 and 6, highlighting the climatic influence. In the Onkaparinga River, 98% of salinity data is less than 1000 mg/L, while 96% is less than 1000 mg/L in the Torrens River.

Status summary

The hydrological behaviour of the surface water catchments in the WMLR PWRA are variable in that the volume of streamflow generated per unit of catchment area varies from one catchment to another, making it challenging to assign a status based on the WMLR PWRA as a whole. Therefore, the gauging stations used for analysis have been separated into two groups of similar yielding characteristics. A group of higher yielding catchments includes the Torrens and Onkaparinga River catchments, while the lower yielding catchments include those located on the Fleurieu Peninsula. Annual streamflow from the eight gauging stations were extended and combined each year for the common period 1973-74 to 2014-15 and then weighted based on gauging station catchment area and ranked. The total 2014-15 streamflow of 17 685 ML from the grouped Torrens and Onkaparinga River streamflow gauges is the 46th percentile (%ile) and ranks in the 25-50th percentile range of streamflow over the period of record, which means 46% of the total annual streamflow values during the period 1973-74 to 2014-15 were equal to or below the 2014-15 total annual streamflow. The total 2014-15 streamflow of 10 323 ML from the grouped Fleurieu Peninsula streamflow gauges is the 17th %ile and ranks in the 0-25th %ile range of streamflow over the period of record, which means 17% of the annual streamflow values during the period 1973-74 to 2014-15 were equal to or below the 2014-15 total annual streamflow. The %ile range of individual streamflow gauging stations is included later in the report (Fig. 8). Status is defined based on which percentile grouping the current years' total streamflow percentile value occurs within. This is a new approach, compared to assessments used in past *Surface water status reports*. 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 surface water resources.

2015 Status



Torrens &
Onkaparinga
2015

The higher yielding Torrens and Onkaparinga River catchments is assigned an amber surface water status for 2015 based on the combined streamflow recorded at the Torrens and Onkaparinga River gauging stations:

'Total annual streamflow was between the 25-50th percentile of the period of record'



Fleurieu
2015

The lower yielding Fleurieu Peninsula catchments is assigned a red surface water status for 2015 based on the combined streamflow recorded at the Myponga, Inman and Yankalilla River gauging stations:

'Total annual streamflow was between the 0-25th percentile of the period of record'

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.

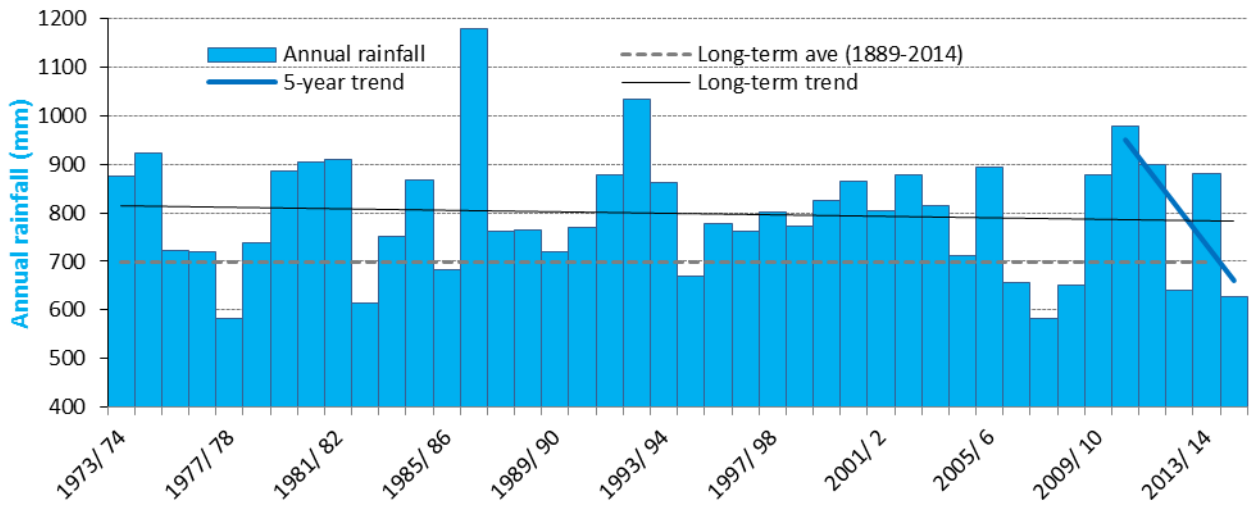


Figure 1. Annual rainfall (mm) for the 1973–74 to 2014–15 water-use years (July–June), the long-term trend and long-term average annual rainfall, and the short-term trend for the past five-years recorded at Mount Bold rainfall station (M023734)

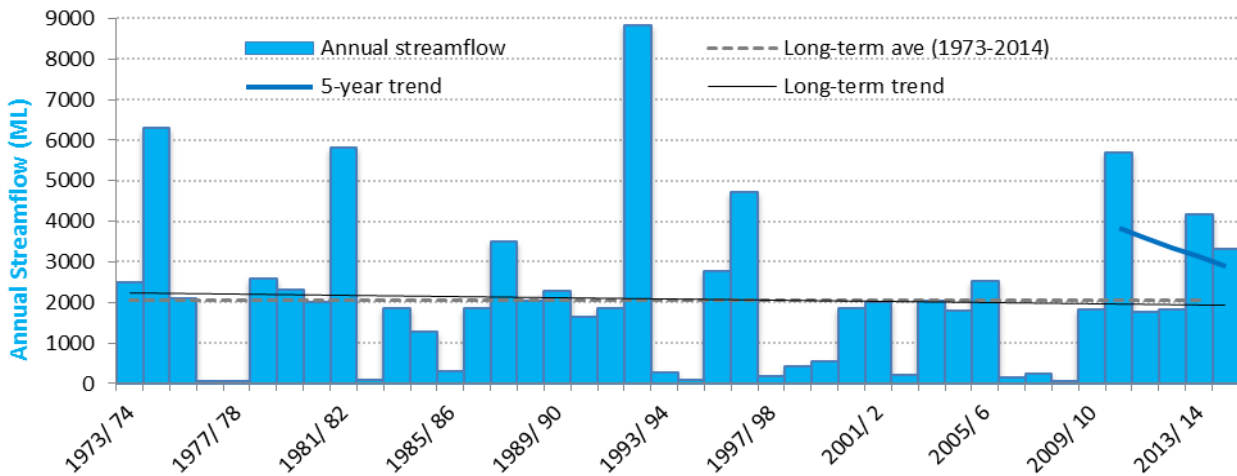


Figure 2. Annual streamflow (ML) for the 1973–74 to 2014–15 water-use years (July–June), the long-term trend and long-term average annual streamflow, and the short-term trend for the past five-years recorded at Mount Pleasant gauging station (A5040512)

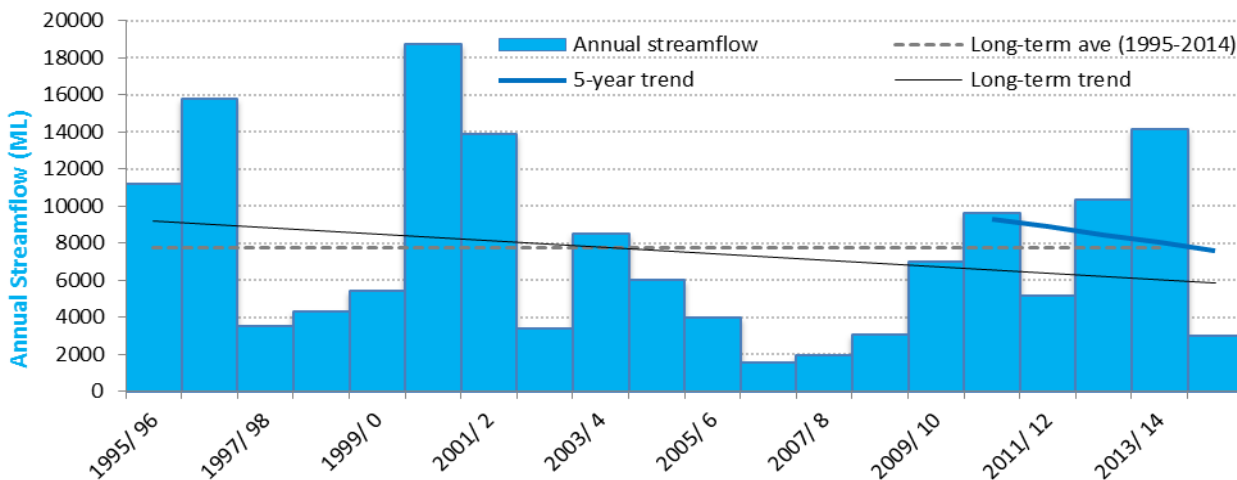


Figure 3. Annual streamflow (ML) for the 1995–96 to 2014–15 water-use years (July–June), the long-term trend and long-term average annual streamflow, and the short-term trend for the past five-years recorded at Inman River gauging station (A5010503)

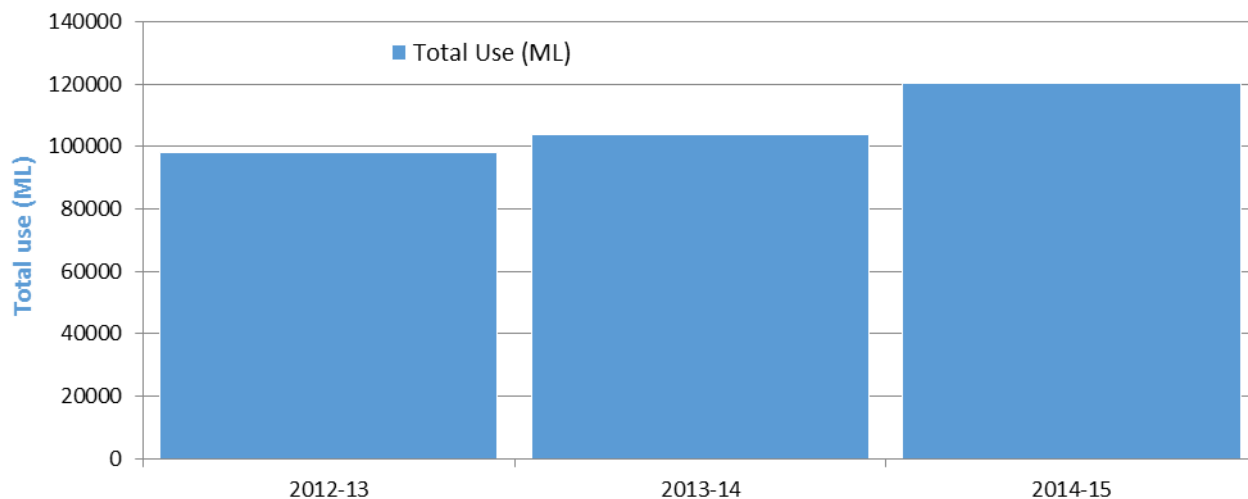


Figure 4. Surface water use data for the 2012–13 to 2014–15 water-use years for the Western Mount Lofty Ranges PWRA

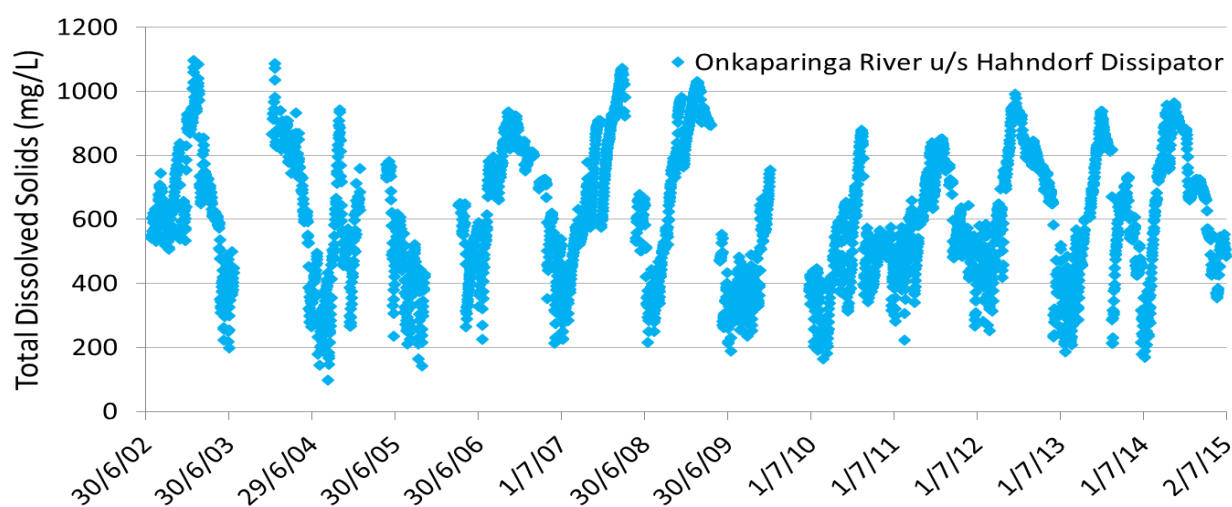


Figure 5. Salinity data (TDS mg/L) for the 2002–03 to 2014–15 water use years at Onkaparinga River u/s Hahndorf Dissipator (A5031001) gauging station

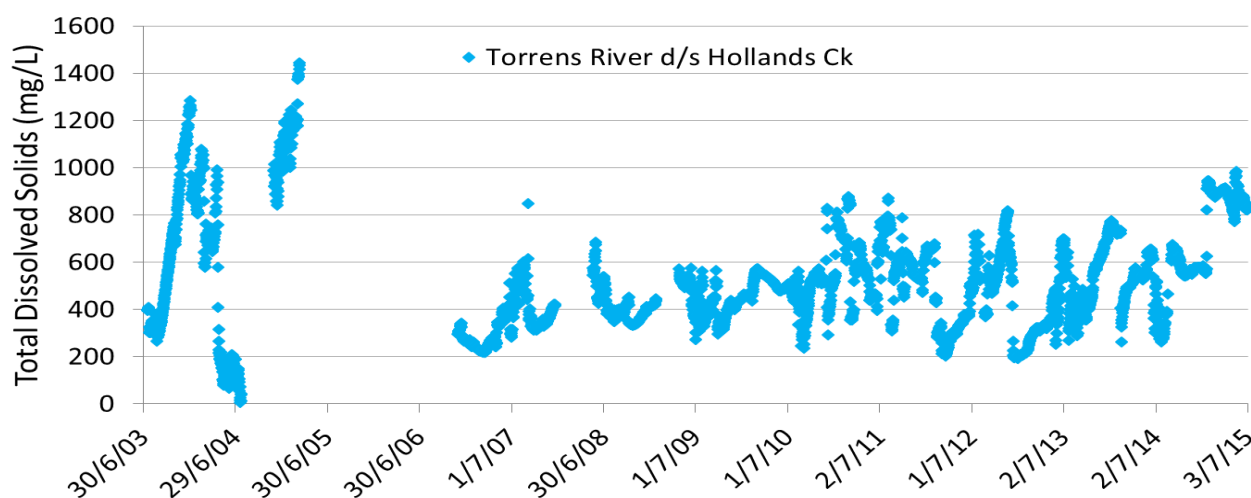


Figure 6. Salinity data (TDS mg/L) for the 2003–04 to 2014–15 water use years at Torrens River d/s Hollands Creek (A5041003) gauging station

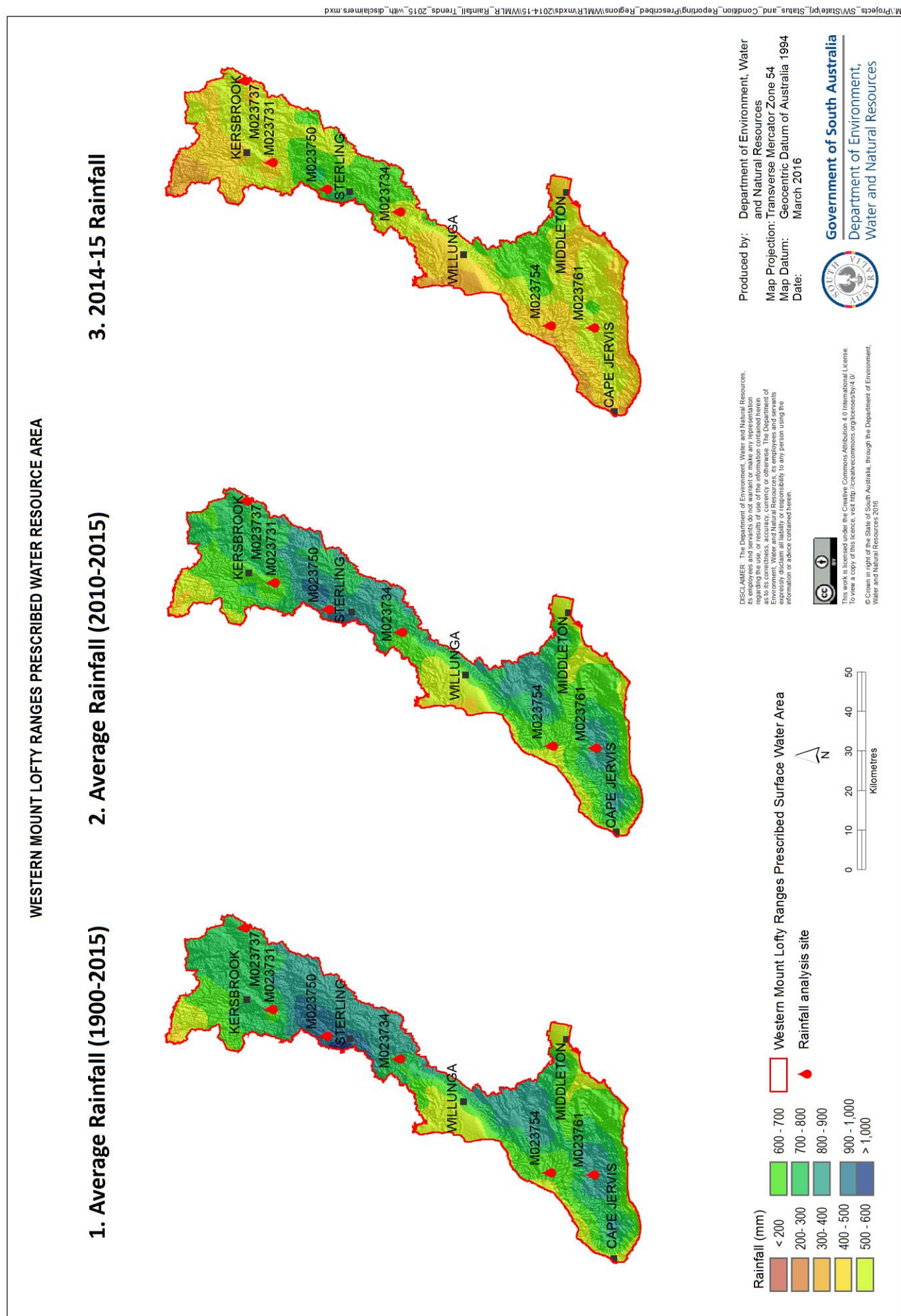


Figure 7. (1) Long-term and (2) five-year average annual rainfall and (3) annual rainfall for the 2014–15 water-use year in the Western Mount Lofty Ranges PWRA

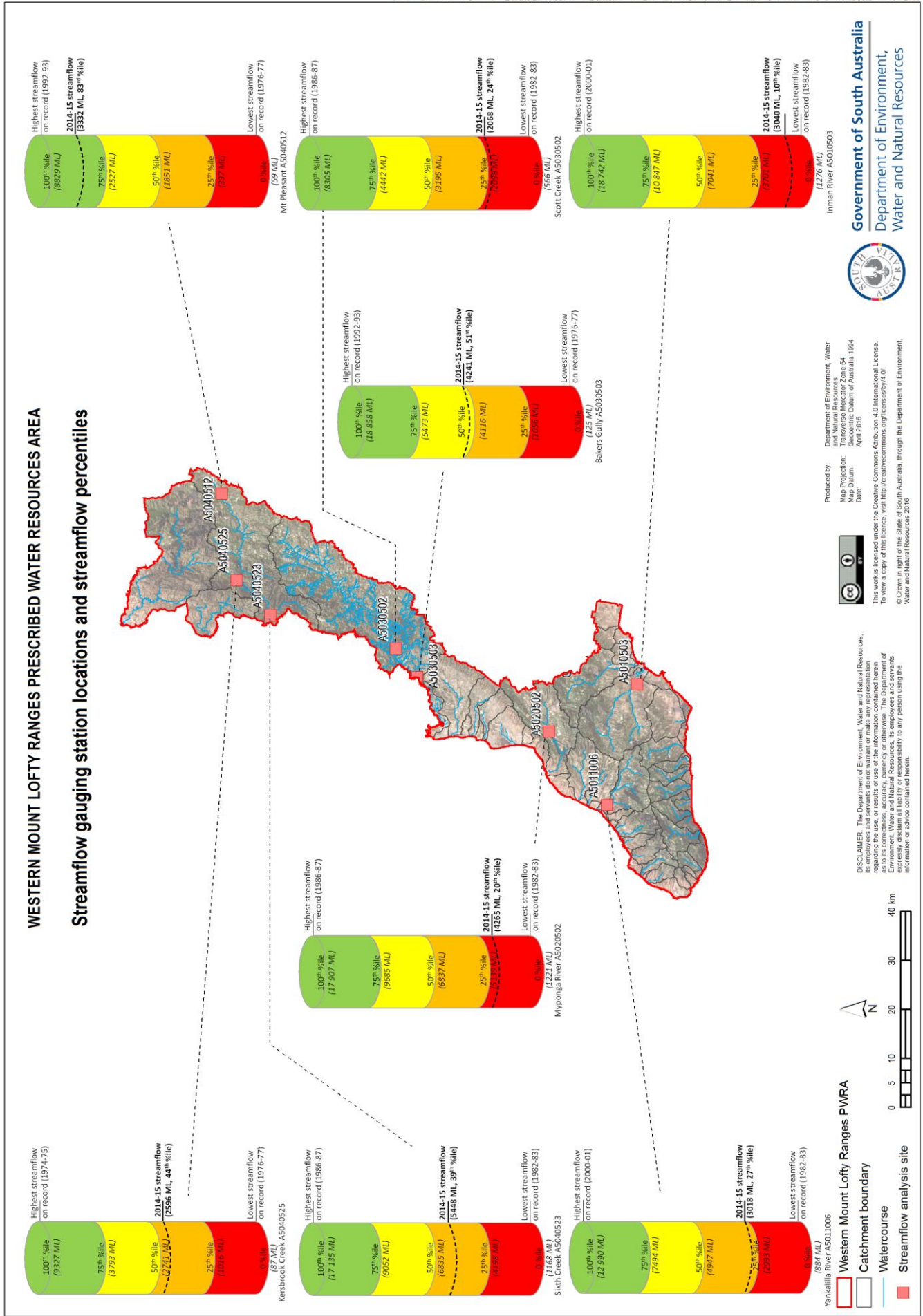


Figure 8. Surface water gauging stations and streamflow percentiles in the Western Mount Lofty Ranges PWRA

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