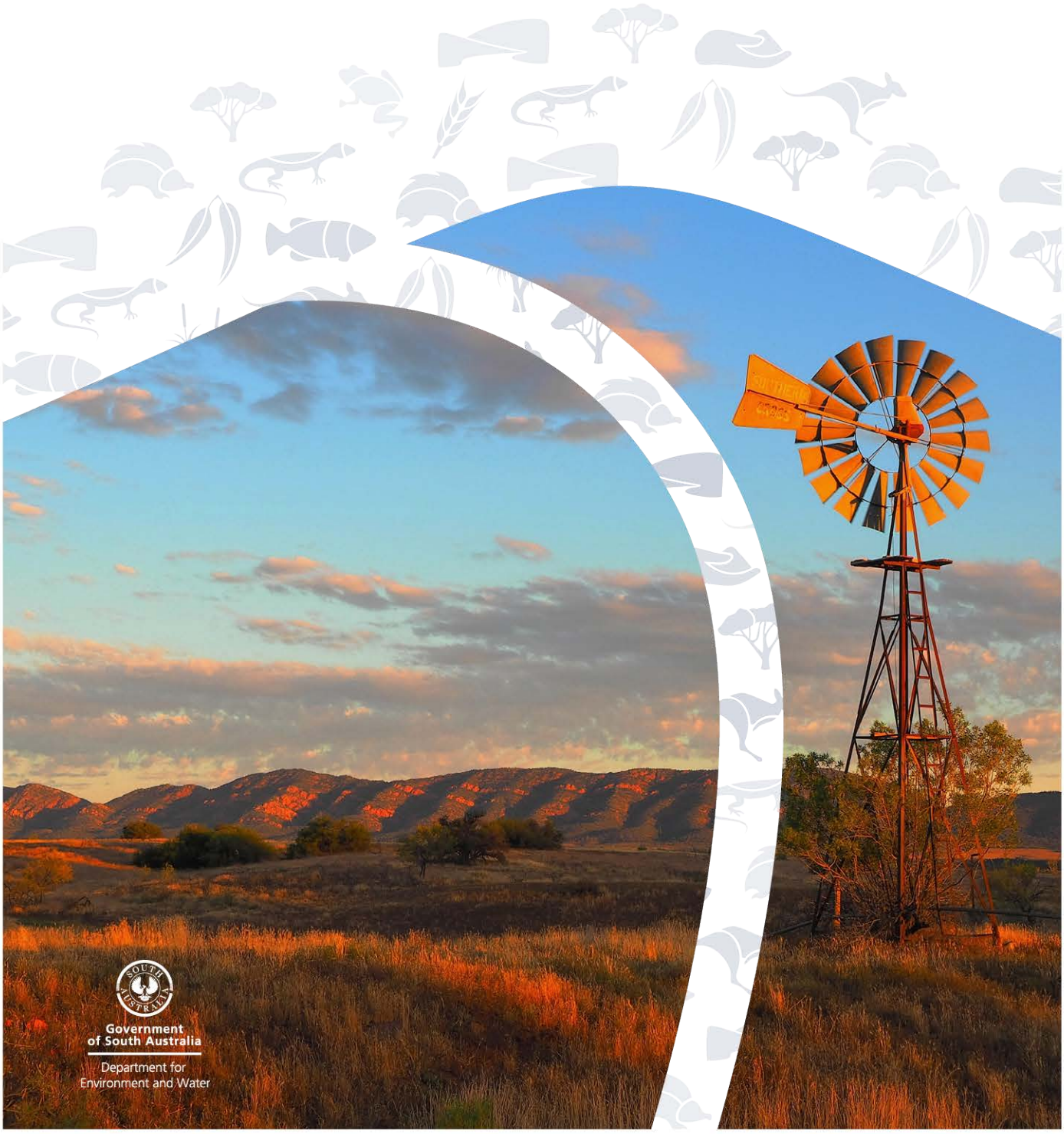
Western Mount Lofty Ranges PWRA Permian Sand aquifer

2017 Groundwater level and salinity status report



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2017 Status summary
Western Mount Lofty Ranges PWRA
Permian Sand aquifer

The Permian Sand aquifer within the Myponga and Hindmarsh Tiers Basins of the Western Mount Lofty Ranges (WMLR) Prescribed Water Resources Area (PWRA) has been assigned a ***green*** status for 2017 because positive trends have been observed over the past five years.

The status is based on five-year trends: over the period 2013–17, all wells show rising or stable groundwater levels.

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.

Rainfall

See Figures 1 and 2

Rainfall station	Hindmarsh Valley Bureau of Meteorology (BoM) rainfall station 23823, located in the central part of the PWRA
Annual total[1]	1077 mm 228 mm (27%) greater than the five-year average of 849 mm 131 mm (14%) greater than the long-term average of 946 mm
Monthly summary	Well-above average rainfall recorded in July, September, October, December and January Well-below average rainfall recorded in November, March and June
Spatial distribution	Rainfall in 2016–17 was well above average across the entire PWRA

Water use

Total allocated volume: 2016–17	50 241 ML across the entire WMLR PWRA
Licensed groundwater extractions*	577 ML[2] (1% of total allocations of the entire PWRA)

*Stock and domestic use is not included in licensed extractions

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

[2] Total licensed extractions are subject to change as extraction data have not yet been verified in full; installation of water meters by licensed users is still in progress across the WMLR PWRA (by 2016–17, 57% of licensees have installed their meters) – see More information

Groundwater pressure level

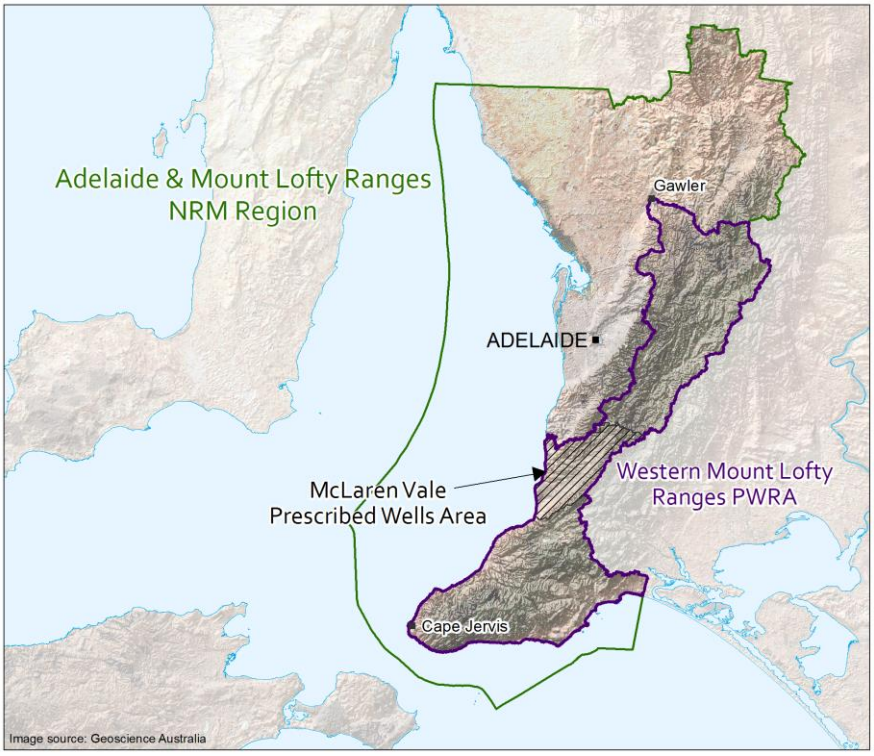
See Figure 3

Five year trend: 2013–17	9 out of 10 wells (90%) show rising trends, at rates of 0.08–0.22 m/y (median of 0.17 m/y) 1 well (10%) is stable

Groundwater salinity

2017 salinity	Data not available; however the salinity of the Permian Sand aquifer within the Myponga and Hindmarsh Tiers Basins is typically less than 1000 mg/L

Regional setting



The WMLR PWRA is located within the Adelaide and Mount Lofty Ranges Natural Resources Management Region and covers an area of approximately 2750 km^2, stretching from Cape Jervis on the south coast to Gawler in the north. It is a regional-scale resource for which groundwater, surface water and watercourse water are prescribed under South Australia's *Natural Resources Management Act 2004,* and a water allocation plan (WAP) provides for the sustainable use of these resources. This report focuses on the Permian Sand aquifer, which is found only on the Fleurieu Peninsula, toward the south of the PWRA in the Myponga and Hindmarsh Tiers Basins (Fig. 1).

The McLaren Vale Prescribed Wells Area (PWA), located within the boundaries of the WMLR PWRA, is managed separately and separate groundwater level and salinity status reports have been prepared for the aquifers in this PWA. These reports can be found on the WaterConnect website.

There are three main sedimentary groundwater systems within the WMLR PWRA: the Permian Sand, Tertiary Limestone and Quaternary aquifers. Also known as the Cape Jervis Formation, it consists of unconsolidated sands, silts and clays with occasional gravel beds. This aquifer is generally low-yielding, except in the northern Myponga Basin where the Tertiary limestone aquifer, which otherwise overlies the Permian Sand aquifer, is absent. Here, the aquifer shows generally good yields and low salinities; however, high clay content in some areas can lead to lower yields and higher salinities.

Rainfall and groundwater extractions are important factors that govern changes in groundwater level and salinity of the Permian Sand aquifer. Below-average rainfall results in a reduction in recharge to the aquifer. Below-average summer rainfall can also result in increased irrigation extraction, which may cause groundwater levels to decline and salinities to increase. Conversely, increased rainfall may result in increased recharge and decreased irrigation extraction. This may cause groundwater levels to rise, and salinities to stabilise or decrease.

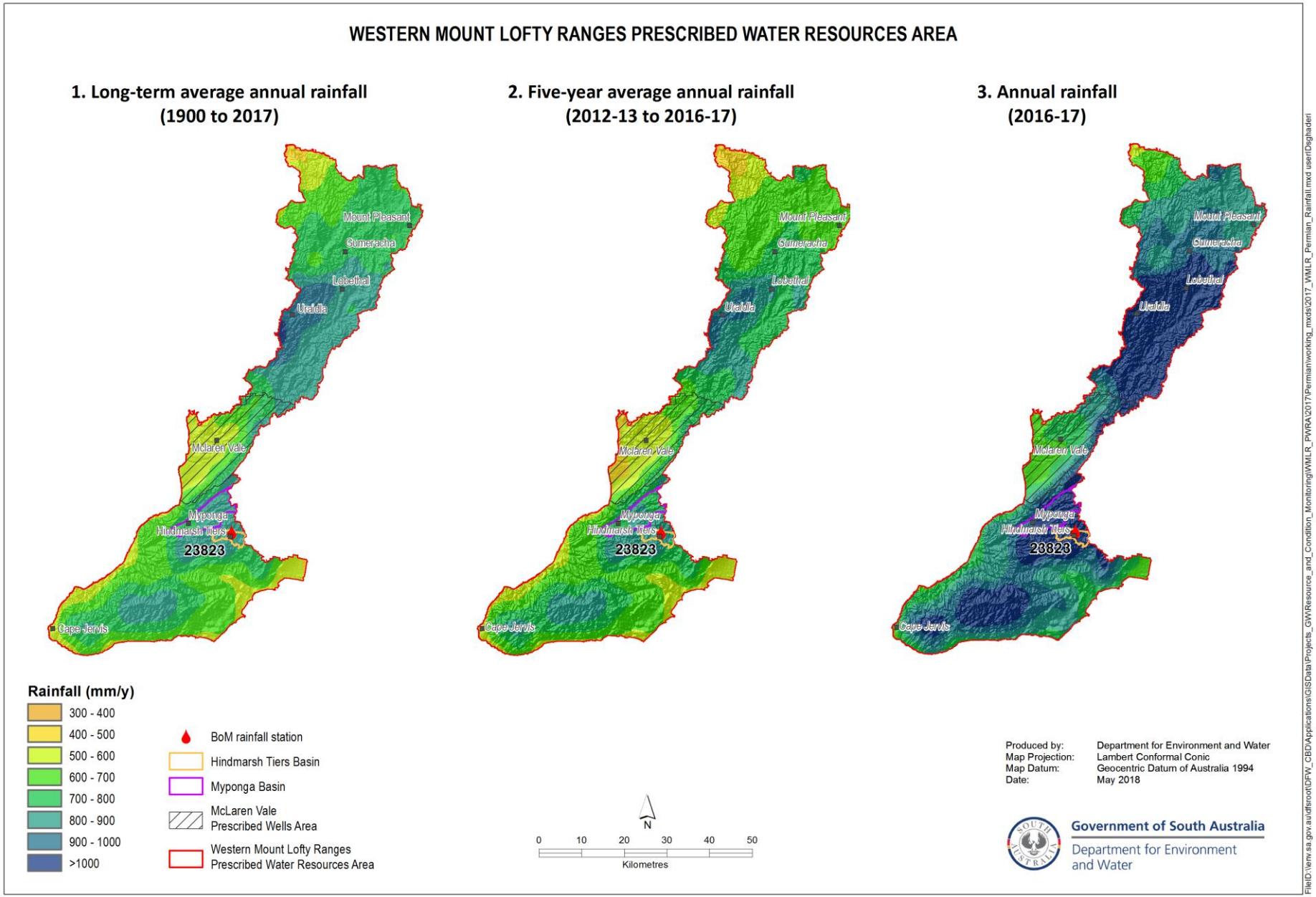


Figure 1. Spatial distribution of (1) Long-term and (2) five-year average annual rainfall, and (3) annual rainfall[3]

[3] Data sources: SILO Patched Point Dataset https://silo.longpaddock.qld.gov.au/ and BoM Australian Water Availability Project (http://www.bom.gov.au/jsp/awap/) – see More information

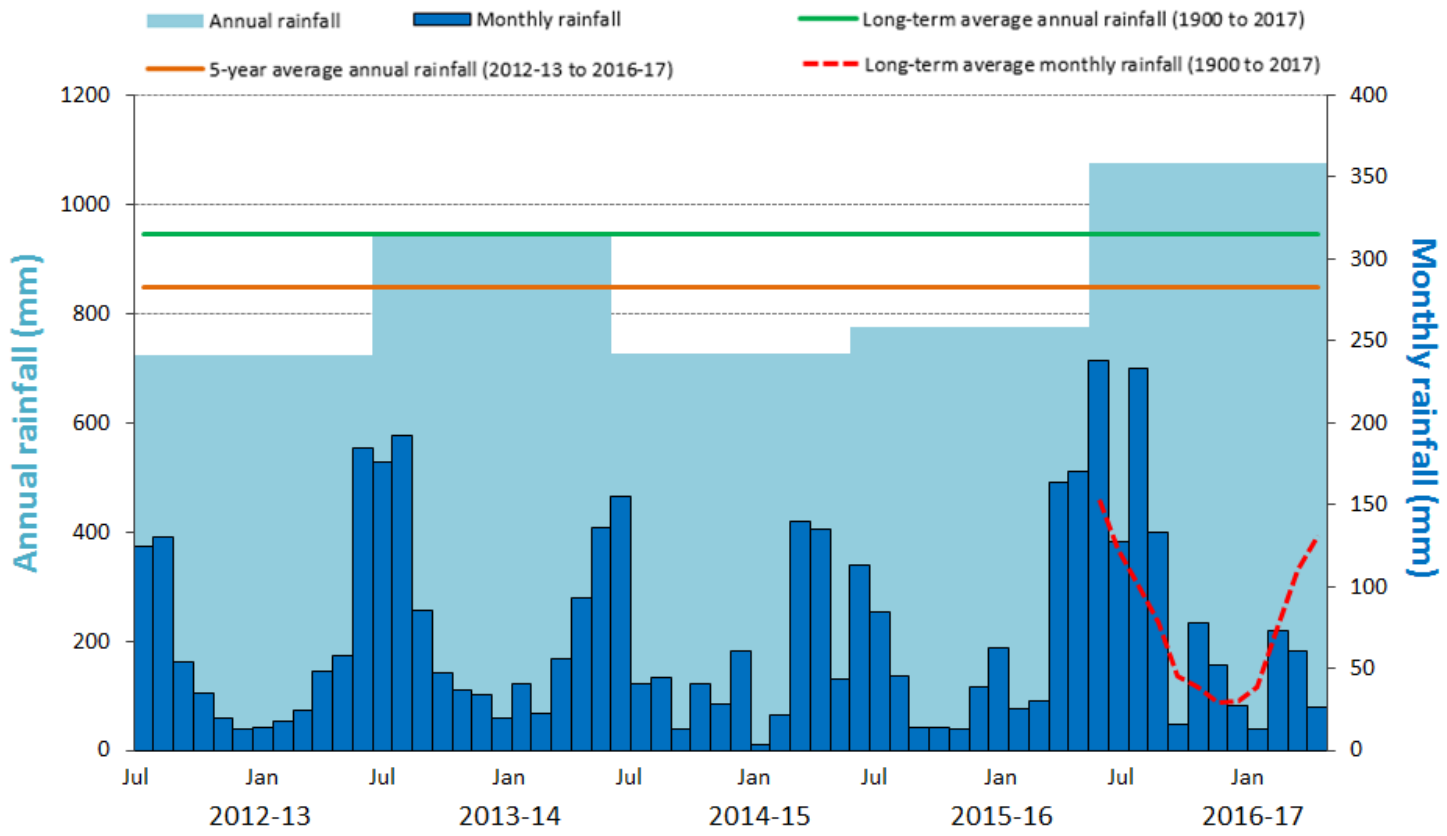


Figure 2. Annual and monthly rainfall for the past five water-use years recorded at Hindmarsh Valley (BoM Station 23823)[4]

[4] Data source: SILO Patched Point Dataset, available https://silo.longpaddock.qld.gov.au/ – see More information

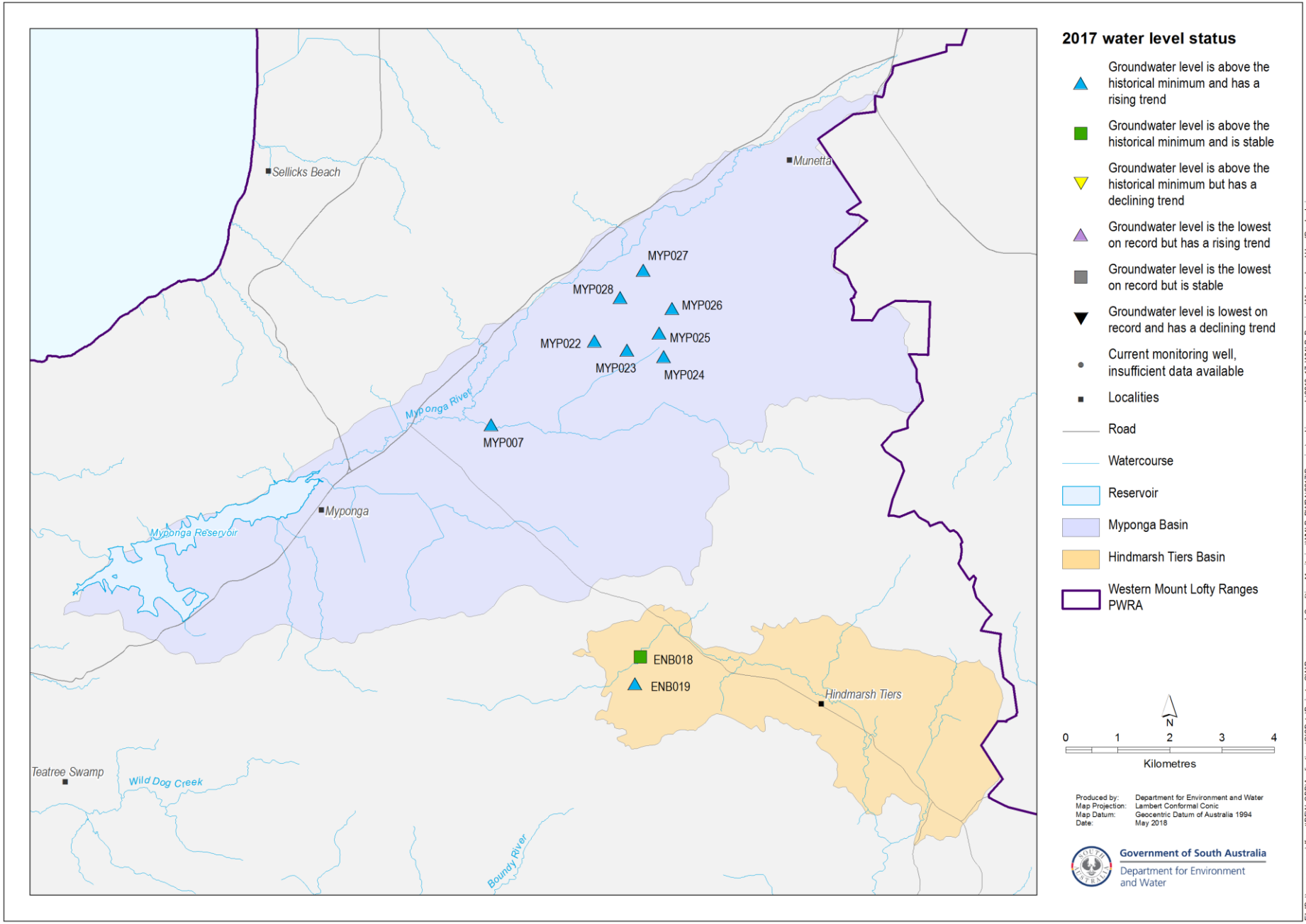


Figure 3. Five-year trends (2013–17) in groundwater pressure levels: Permian Sand aquifer

More information

To determine the status of the Permian Sand aquifer for 2017, the trends in groundwater levels and salinities over the past five years (2013 to 2017, inclusive) were analysed, in contrast to the year-to-year assessments that have been used in *Groundwater level and salinity status reports* published prior to 2015. 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 groundwater resources.

To view descriptions for all status symbols, and to review the full historical record of the monitoring wells, please visit the *Water Resource Assessments* page on WaterConnect.

For additional information related to monitoring wells nomenclature, please refer to the *Well Details* page on WaterConnect.

The licensed groundwater use volumes for the 2016–17 water-use year is based on the best data available as of January 2018 and may be subject to change, as some extraction volumes may be in the process of being verified; installation of water meters is still in progress across the WMLR PWRA.

For information completeness and consistency across all the groundwater and salinity status reports, the legend on each map herein shows the full range of water level and salinity status that could possibly be reported. However, the measured data that appear on each map may not span this full range.

Rainfall data used in this report is sourced from the SILO Patched Point Dataset, which uses original BoM daily rainfall measurements and is available online at https://silo.longpaddock.qld.gov.au/. Rainfall maps have been compiled using daily gridded data produced by the BoM Australian Water Availability Project (www.bom.gov.au/jsp/awap/).

To view the W*estern Mount Lofty Ranges PWRA Groundwater Level and Salinity Status Report 2011*, which includes background information on hydrogeology, rainfall and relevant groundwater-dependent ecosystems, please visit WaterConnect. To view all past published *Groundwater level and salinity status reports*, please visit the Water Resource Assessments page on WaterConnect.

To download groundwater level and salinity data from monitoring wells within the WMLR PWRA, please visit the *Groundwater Data* page under the Data Systems tab on WaterConnect.

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

Units of Measurement

mm	millimetre
ML	megalitre
m/y	metres per year
mg/L	milligrams per litre
mg/L/y	milligrams per litre per year
mm/y	millimetres per year

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