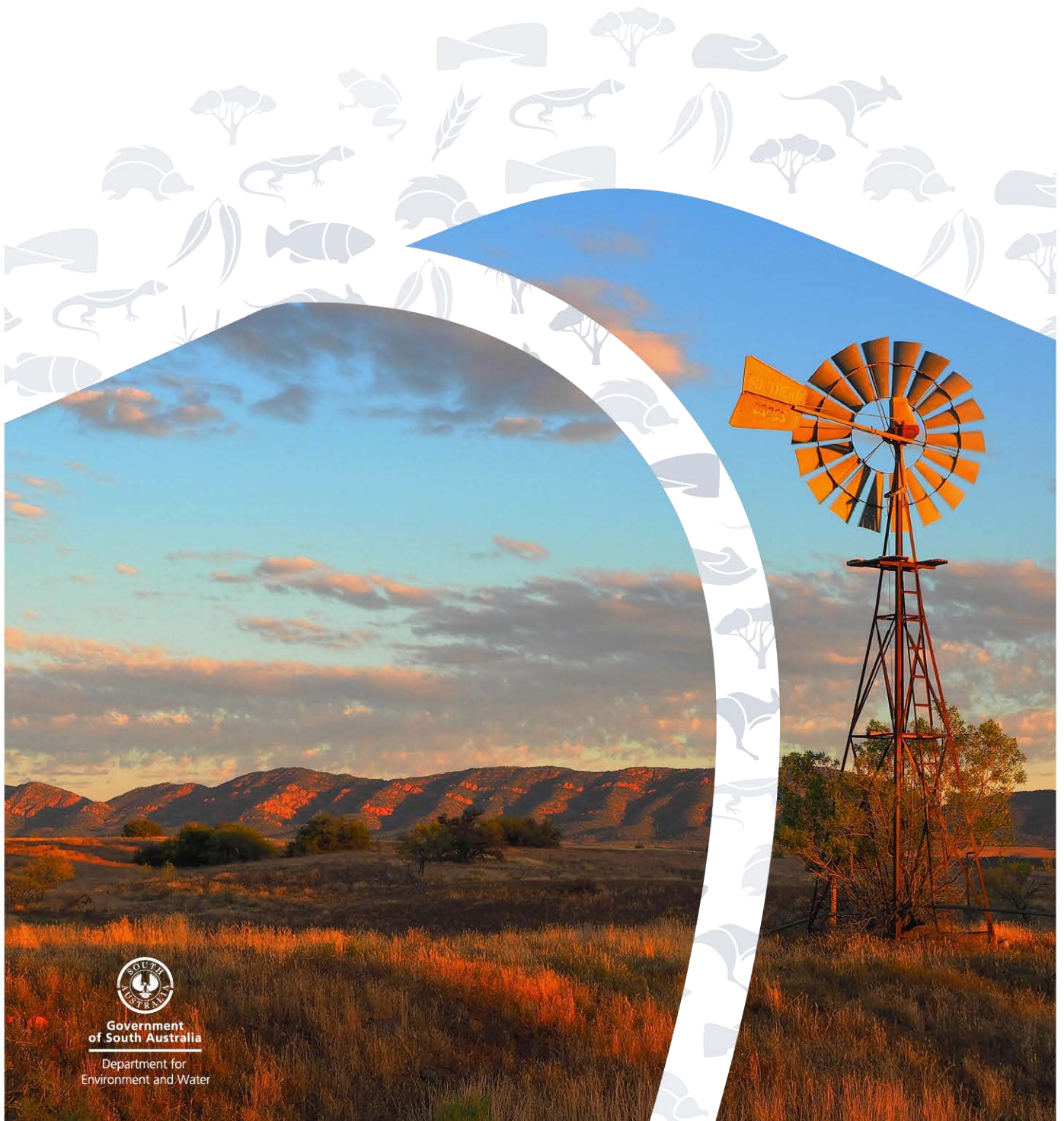


McLaren Vale PWA Fractured Rock Aquifer

2017 Groundwater level and salinity status report



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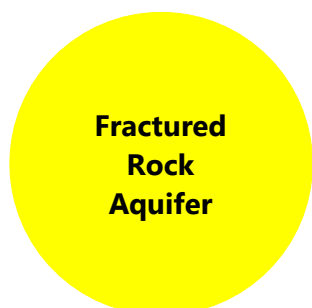
DEW 2018, *McLaren Vale PWA Fractured Rock Aquifer 2017 Groundwater level and salinity status report*, Government of South Australia, through the Department for Environment and Water, Adelaide

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2017 Status summary

McLaren Vale PWA

Fractured Rock Aquifer



The Fractured Rock Aquifer (FRA) of the McLaren Vale Prescribed Wells Area (PWA) has been assigned a **yellow** status for 2017 because minor adverse trends have been observed over the past five years.

The status is based on five-year trends: over the period 2013–17, 55% of wells show declining 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	Mount Bold Reservoir Bureau of Meteorology (BoM) rainfall station 23734, located just outside the north-eastern boundary of the PWA
Annual total ¹	1022 mm 237 mm (30%) greater than the five-year average of 785 mm 317 mm (45%) greater than the long-term average of 705 mm
Monthly summary	Well-above average rainfall in July, September, October, December and January Well-below average rainfall recorded in May and June
Spatial distribution	Rainfall in 2016–17 was well above average across the entire PWA

Water use

See Figure 3

Total allocated volume: 2016–17	1595 ML ²
Licensed groundwater extractions*	566 ML ² (35% of total allocation)
Extraction volume comparison	45% less than the previous year 34% less than the five-year average

*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 allocations and extractions are subject to change as data have not yet been verified in full – see [More information](#)

Groundwater level

See Figure 4

Five-year trend: 2013–17	10 out of 18 wells (55%) show declining trends, at rates of 0.02–1.43 m/y (median of 0.21 m/y); two of these showing their lowest level on record 1 wells (6%) is stable 7 wells (39%) show rising trends, at rates of 0.02–0.46 m/y (median of 0.18 m/y)
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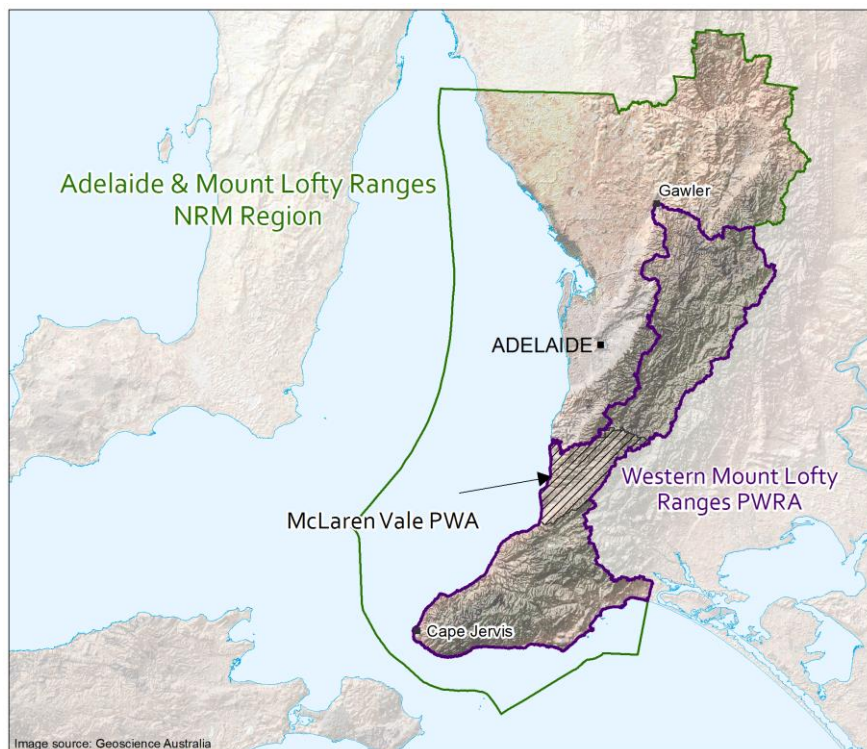
Groundwater salinity

See Figure 5

2017 salinity	1194–2334 mg/L 3 out of 7 wells (43%) show salinities less than 1500 mg/L, which is the salinity threshold for most crop types
Five-year trend: 2013–17	Data not available
Citizen science	Since 2017, irrigators in the McLaren Vale PWA have submitted salinity samples and once validated, these will augment the existing monitoring network ³

³ The salinity data collected from irrigation wells can be viewed at [WaterConnect](#)

Regional setting



The McLaren Vale PWA is located approximately 35 km south of Adelaide within the Adelaide and Mount Lofty Ranges NRM Region. It is a regional-scale resource for which groundwater has been prescribed under South Australia's *Natural Resources Management Act 2004* and a water allocation plan (WAP) provides for sustainable management of the water resources.

The McLaren Vale PWA is located within the boundary of the Western Mount Lofty Ranges Prescribed Water Resources Area (WMLR PWRA). For those groundwater resources located within the WMLR PWRA, but outside the McLaren Vale PWA, separate groundwater level and salinity status reports have been prepared. These reports can be found on the *Water Resource Assessments* page of [WaterConnect](#).

Underlying the McLaren Vale PWA is the Willunga Embayment, a structurally controlled trough containing sedimentary groundwater systems of Quaternary and Tertiary age that is bounded in the south-east by the Willunga Fault, and to the north by basement outcrop. This report focuses on the Fractured Rock Aquifer, which comprises slates, quartzites, shales and limestone that occur within the basement rocks that are expressed at ground surface as outcrop in the north of the PWA, and form the ranges located to the east of the Willunga Fault. Recharge to this aquifer takes place in these elevated areas as a result of infiltration through the soil, or by percolation from streamflow in drainage lines. The FRA is confined where it underlies the sedimentary aquifers of the Willunga Embayment. Groundwater flow within the FRA is variable and strongly influenced by the size, density and orientation of the fractures, but generally follows the topography, flowing from elevated areas along the PWA margins towards lower elevations where discharge to the sedimentary aquifers most likely occurs. Beneath the sediments, the flow direction within the FRA turns south-west toward the coast.

Groundwater level and salinity trends within the FRA are primarily climate driven: below-average rainfall results in reduced recharge to the aquifer. Below-average rainfall can also lead to increased extractions for irrigation, and these two elements combined can cause groundwater levels to decline and salinities to increase. Conversely, higher rainfall may result in increased recharge and decreased irrigation extraction. This may cause the groundwater levels to rise, allowing salinities to stabilise or decrease.

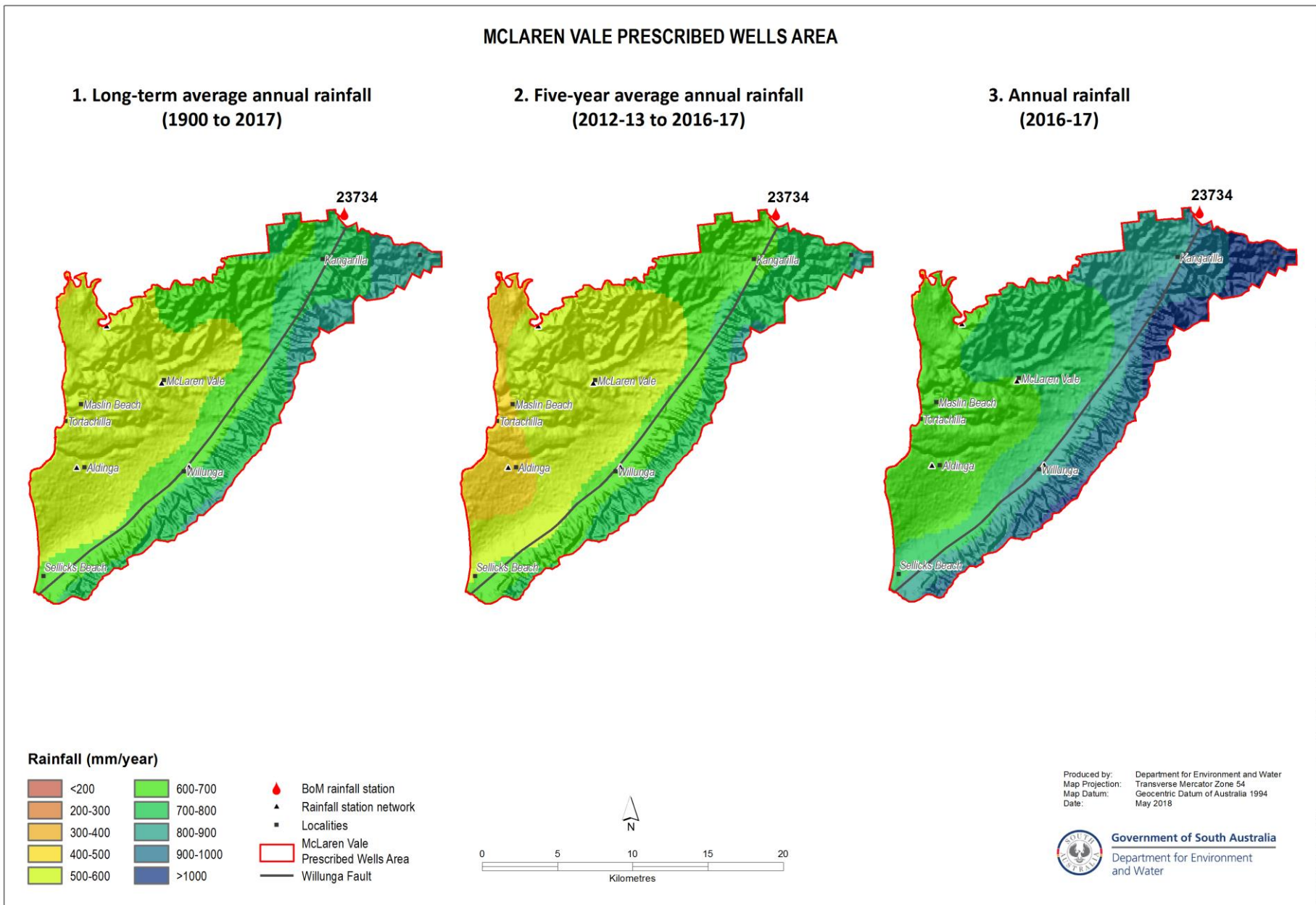


Figure 1. Spatial distribution of (1) Long-term and (2) five-year average annual rainfall, and (3) annual rainfall⁴

⁴ 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](#)

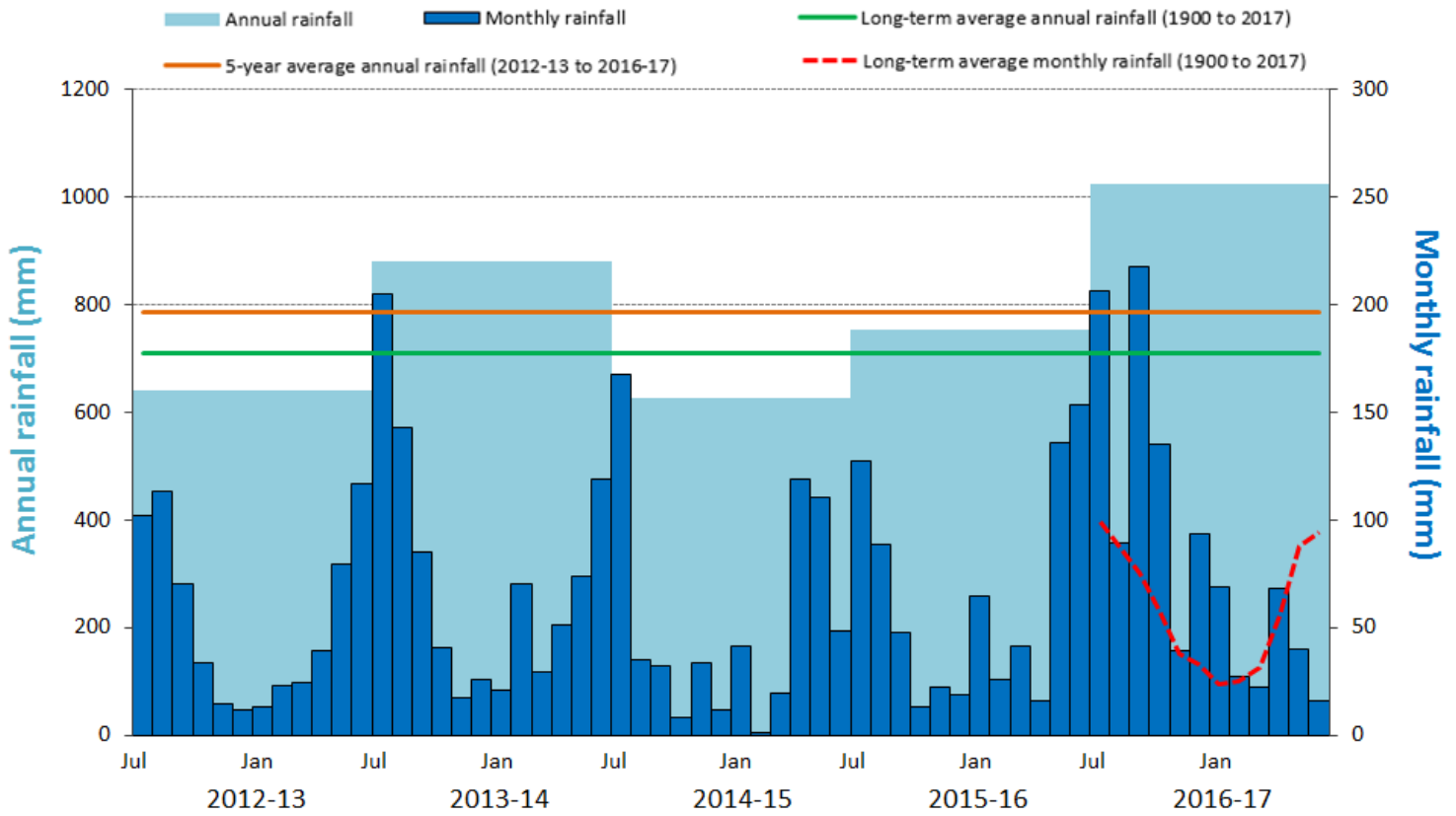


Figure 2. Annual and monthly rainfall for the past five water-use years recorded at Mount Bold Reservoir (BoM Station 23734)⁵

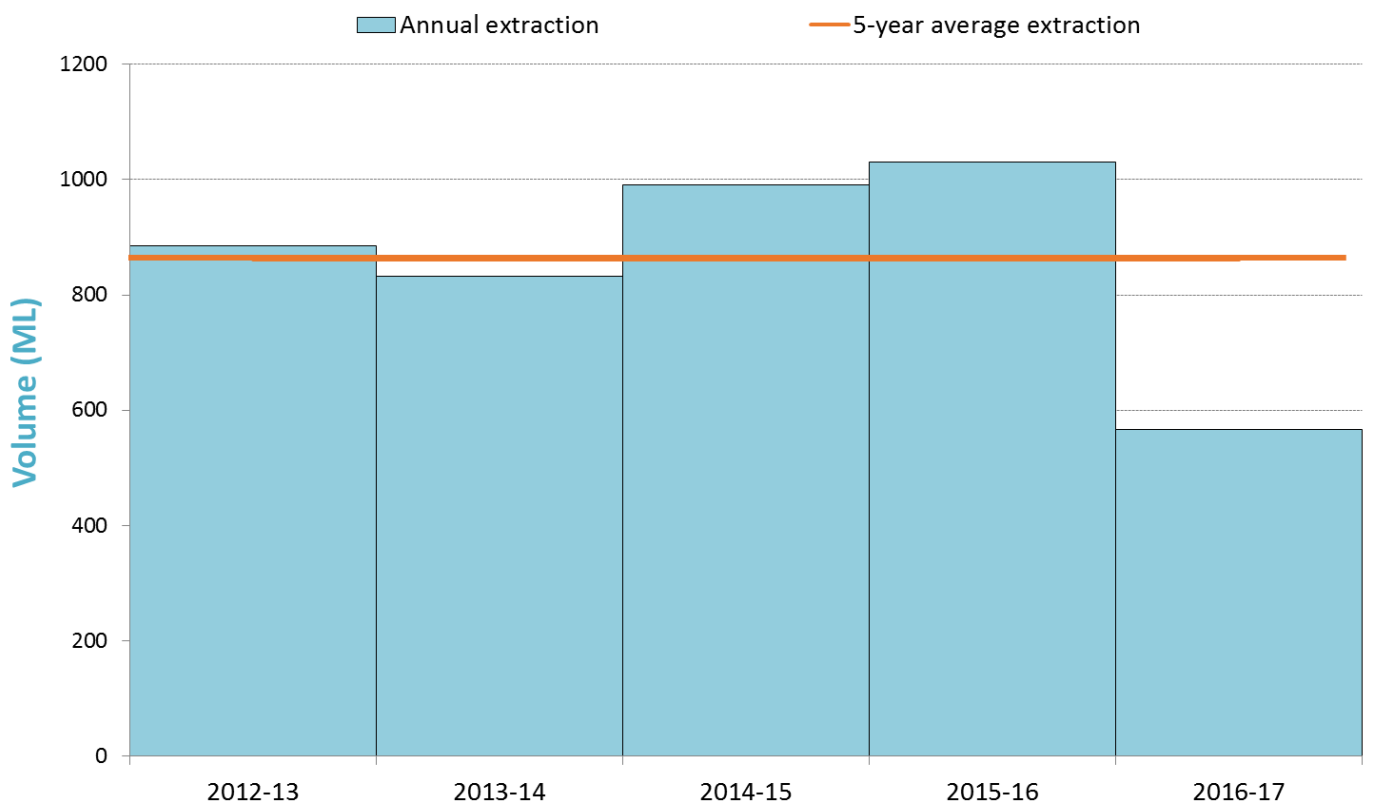


Figure 3. Licensed groundwater extraction volumes⁶ for the past five water-use years

⁵ Data source: SILO Patched Point Dataset, available <https://silo.longpaddock.qld.gov.au/> – see [More information](#)

⁶ Total licensed extractions are subject to change as extraction data have not yet been verified in full – see [More information](#)

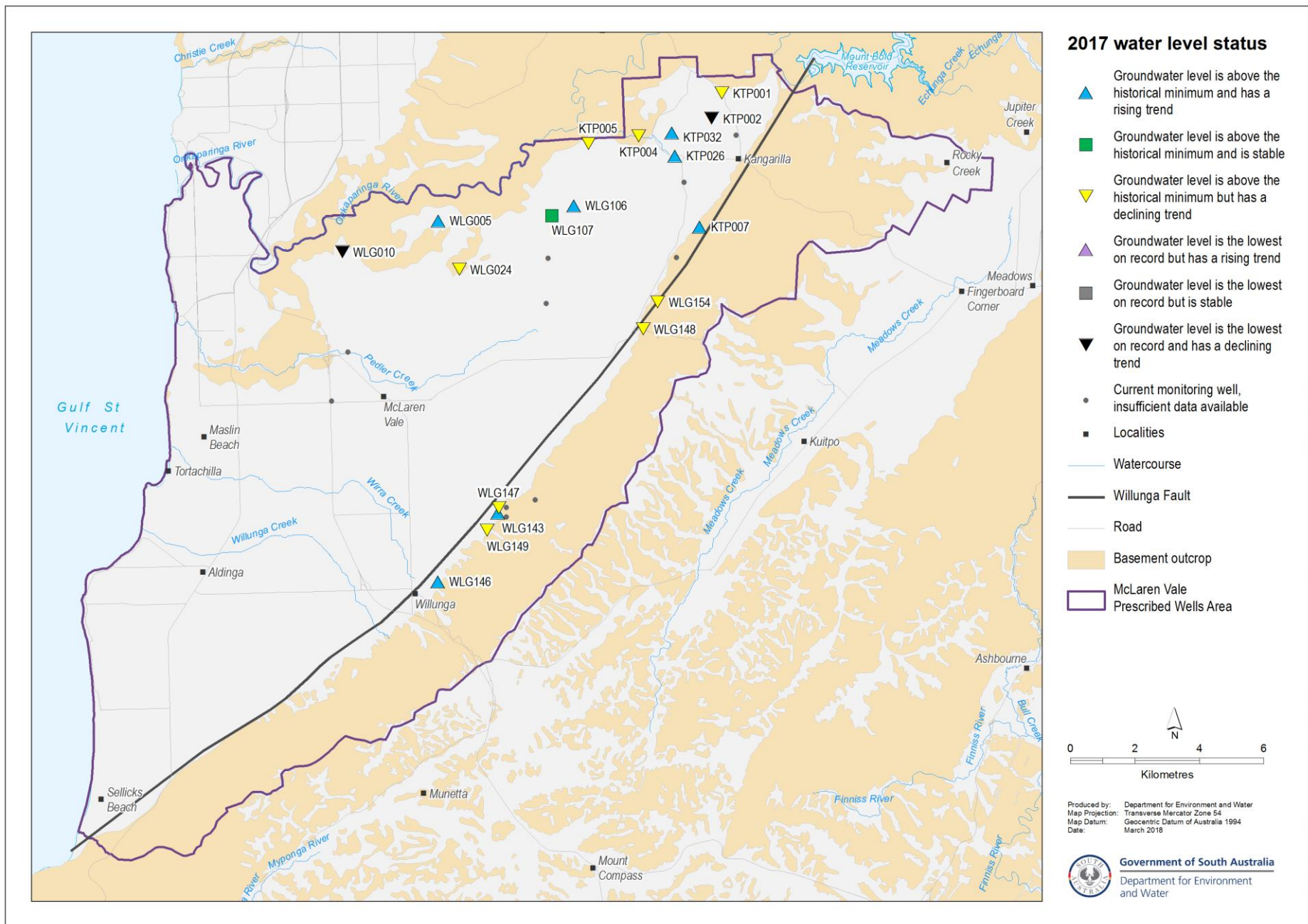


Figure 4. Five-year trends (2013–17) in groundwater levels: Fractured Rock Aquifer

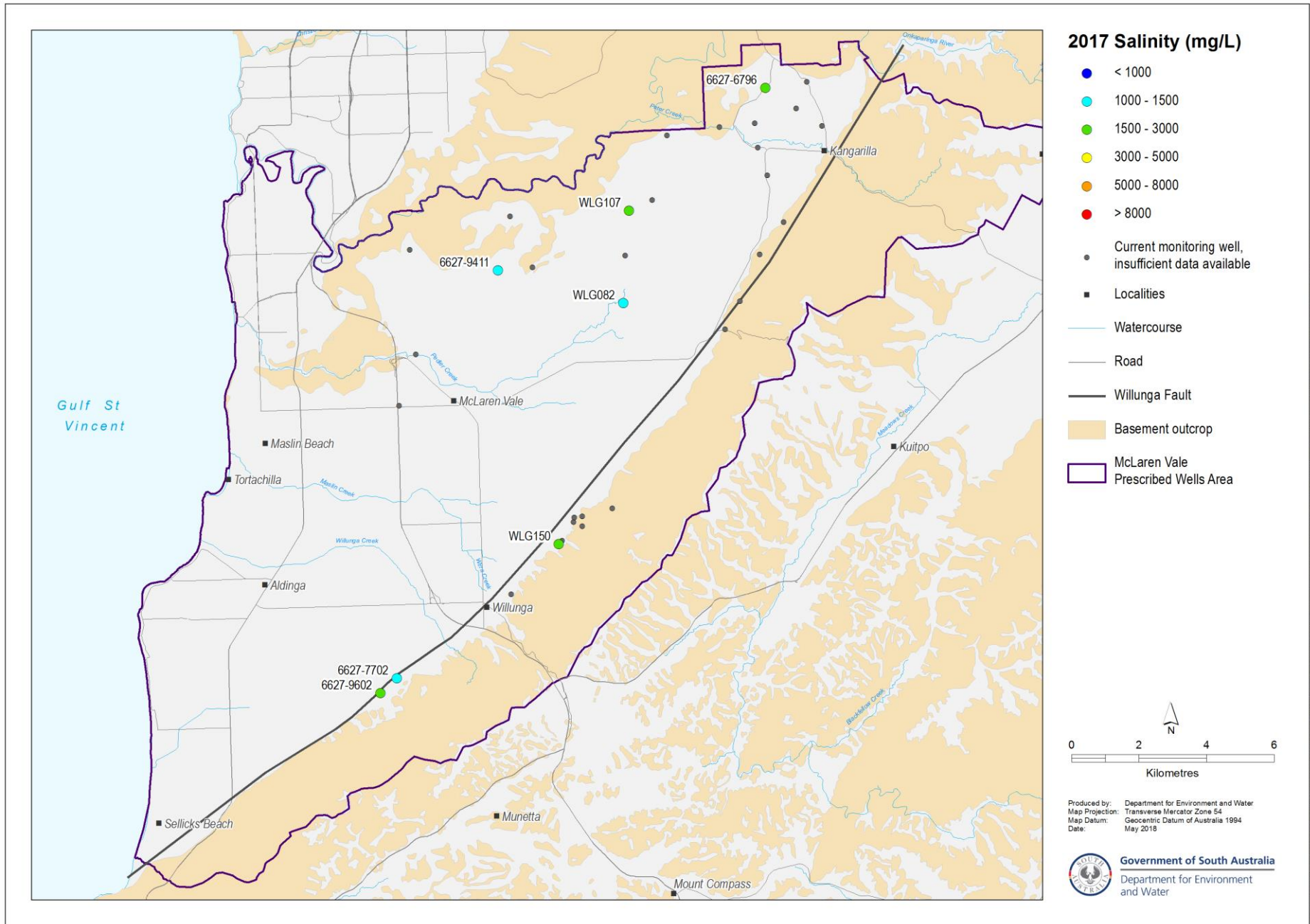


Figure 5. 2017 groundwater salinities: Fractured Rock Aquifer

More information

To determine the status of the FRA 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 allocation and use 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.

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 *McLaren Vale PWA Groundwater Level and Salinity Status Report 2009-10*, 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 McLaren Vale PWA, please visit the *Groundwater Data* page under the Data Systems tab on [WaterConnect](#).

For further details about the McLaren Vale PWA, please see the *Water Allocation Plan for the McLaren Vale Prescribed Wells Area* on the Adelaide and Natural Resources 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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