

# **McLaren Vale Prescribed Wells Area Fractured rock aquifers**

2018 Groundwater level and salinity status  
report



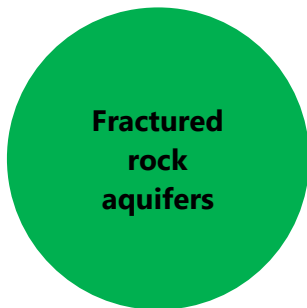
**Government  
of South Australia**

Department for  
Environment and Water

# 2018 Status summary

## McLaren Vale PWA

### Fractured rock aquifers



The fractured rock aquifers (FRAs) of the McLaren Vale Prescribed Wells Area (PWA) have been assigned a **green** status for 2018 because positive trends have been observed over the past five years.

The status is based on five-year trends: over the period 2014–18, 68% of wells show rising or stable groundwater levels.

The status is based on five-year trends. To view the *McLaren Vale PWA groundwater level and salinity status report 2009–10*, which includes long-term trends in rainfall, groundwater levels and salinity, please visit the [Water Resource Assessments](#) page on WaterConnect. To download the full record of groundwater level and salinity data for the McLaren Vale PWA, please visit the *Groundwater Data* page on [WaterConnect](#).

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, number 23734, located near the northern boundary of the McLaren Vale PWA is representative of recharge conditions for the FRAs.
Annual total <sup>1</sup>	820 mm 1 mm less than the five-year average of 821 mm 22 mm (3%) less than the long-term (1900–2018) average of 842 mm

#### Groundwater extraction

See Figure 3

Allocated volume <sup>1,2</sup>	~1600 ML
Licensed groundwater extractions <sup>1,3</sup>	835 ML
Extraction volume comparison	48% greater than the previous year 2% less than the five-year average

<sup>1</sup> For the water-use year 1 July 2017 to 30 June 2018

<sup>2</sup> Allocated volume does not include rollover, carry over or recharge allocations

<sup>3</sup> 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

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Five-year trend: 2014–18	12 out of 19 wells (63%) show rising trends, at rates of 0.02–2.27 m/y (median of 0.18 m/y); 1 well (5%) is stable 6 wells (32%) show declining trends, at rates of 0.02–0.37 m/y (median of 0.06 m/y); 1 well shows its lowest level on record
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## Groundwater salinity

See Figure 5

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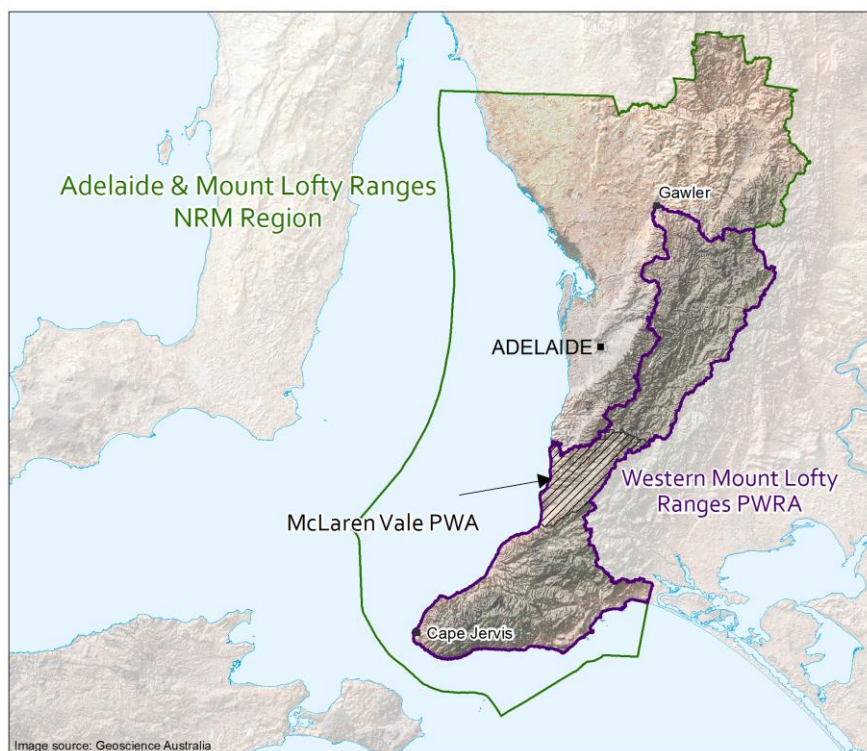
2018 salinity	733–3264 mg/L (28 wells; median of 1555 mg/L)
Citizen science	Since 2017, irrigators in the McLaren Vale PWA have submitted groundwater samples that DEW have tested for salinity concentration. Data that have been validated are augmenting the existing DEW monitoring network. <sup>4</sup>

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<sup>4</sup> The salinity data collected from irrigation wells can be viewed at [WaterConnect](#)

# Regional setting



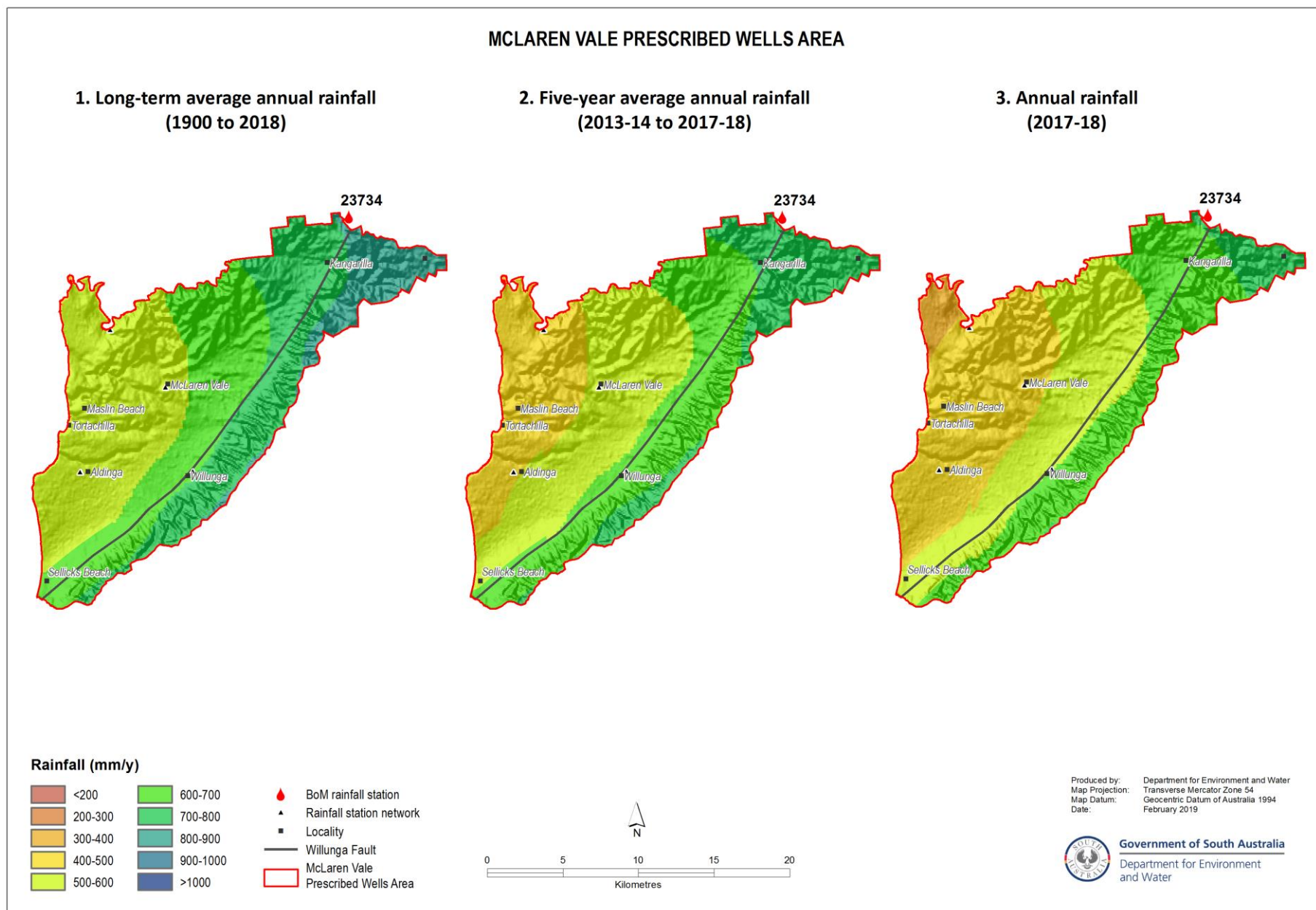
The McLaren Vale PWA is located approximately 35 km south of Adelaide within the Adelaide and Mount Lofty Ranges Natural Resources Management Region. It is a regional-scale resource for which groundwater has been prescribed under South Australia's *Natural Resources Management Act 2004* and a water allocation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

The McLaren Vale PWA is located within the boundary of the Western Mount Lofty Ranges (WMLR) Prescribed Water Resources Area (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 FRAs, which comprise 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 FRAs are confined where it underlies the sedimentary aquifers of the Willunga Embayment.

Groundwater flow within the FRAs are variable and strongly influenced by the size, density and orientation of the fractures, but generally follow 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 FRAs changes to a south-west direction towards the coast.

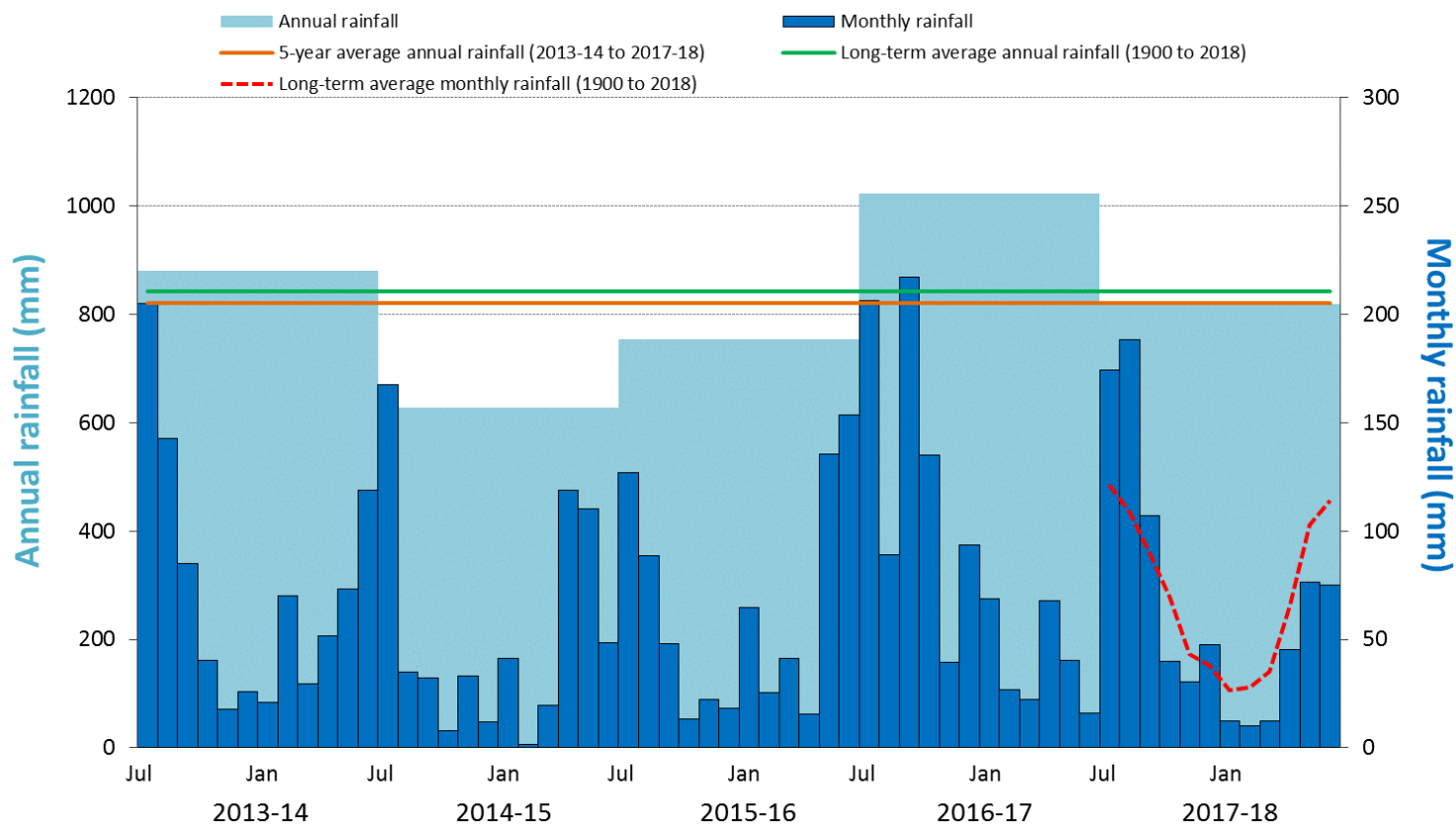
Trends in groundwater level and salinity within the FRAs are primarily climate driven: below-average rainfall results in reduced recharge to the aquifer. Below-average rainfall can also results in increased extractions for irrigation, which can cause groundwater levels to decline and salinities to increase. Conversely, above-average rainfall may result in increased recharge and decreases in irrigation extractions, which can cause groundwater levels to rise and salinities to stabilise or decrease.



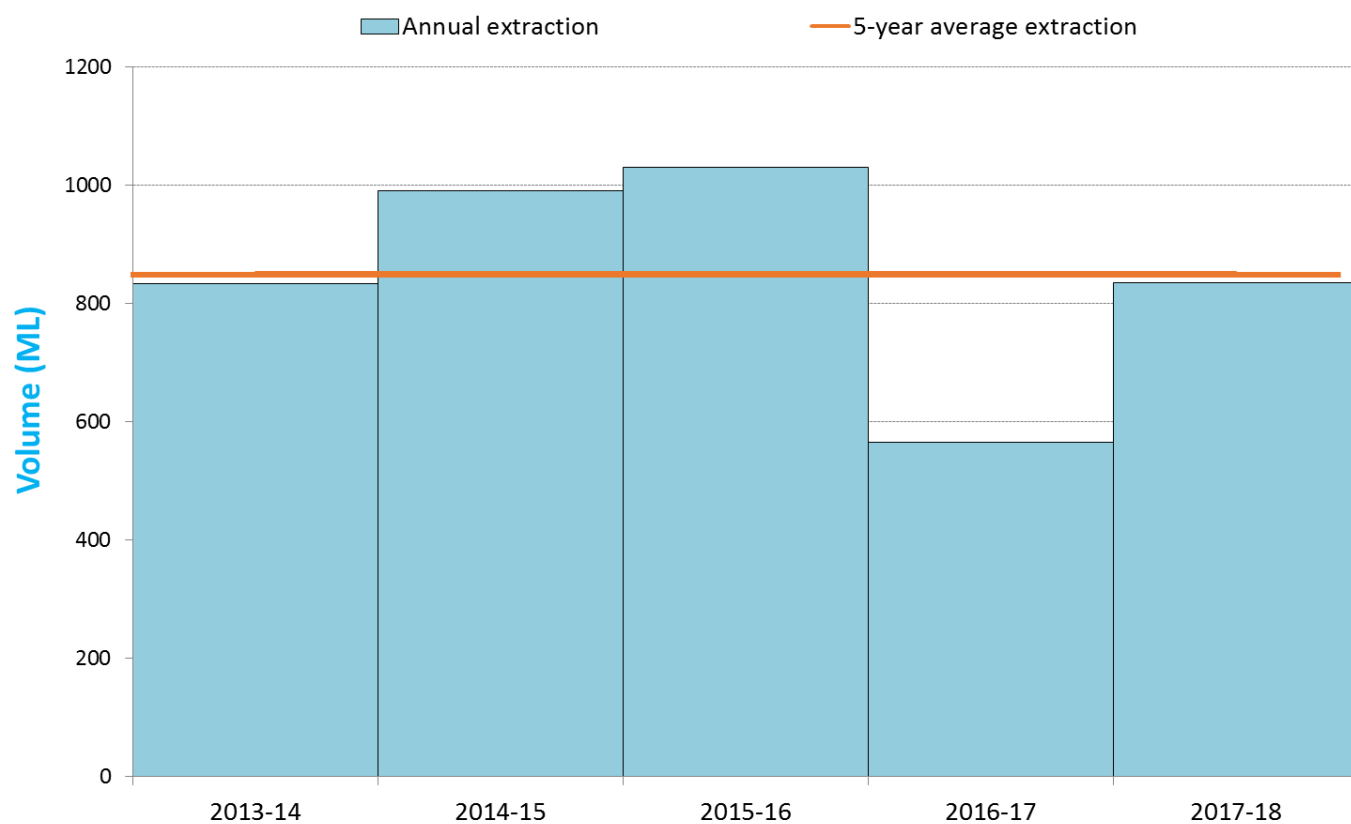
**Figure 1. Spatial distribution of (1) long-term and (2) five-year average annual rainfall, and (3) annual rainfall<sup>5</sup>**

<sup>5</sup> Data sources: SILO interpolated point and gridded datasets available at <https://legacy.longpaddock.qld.gov.au/silo/> – see [More information](#)





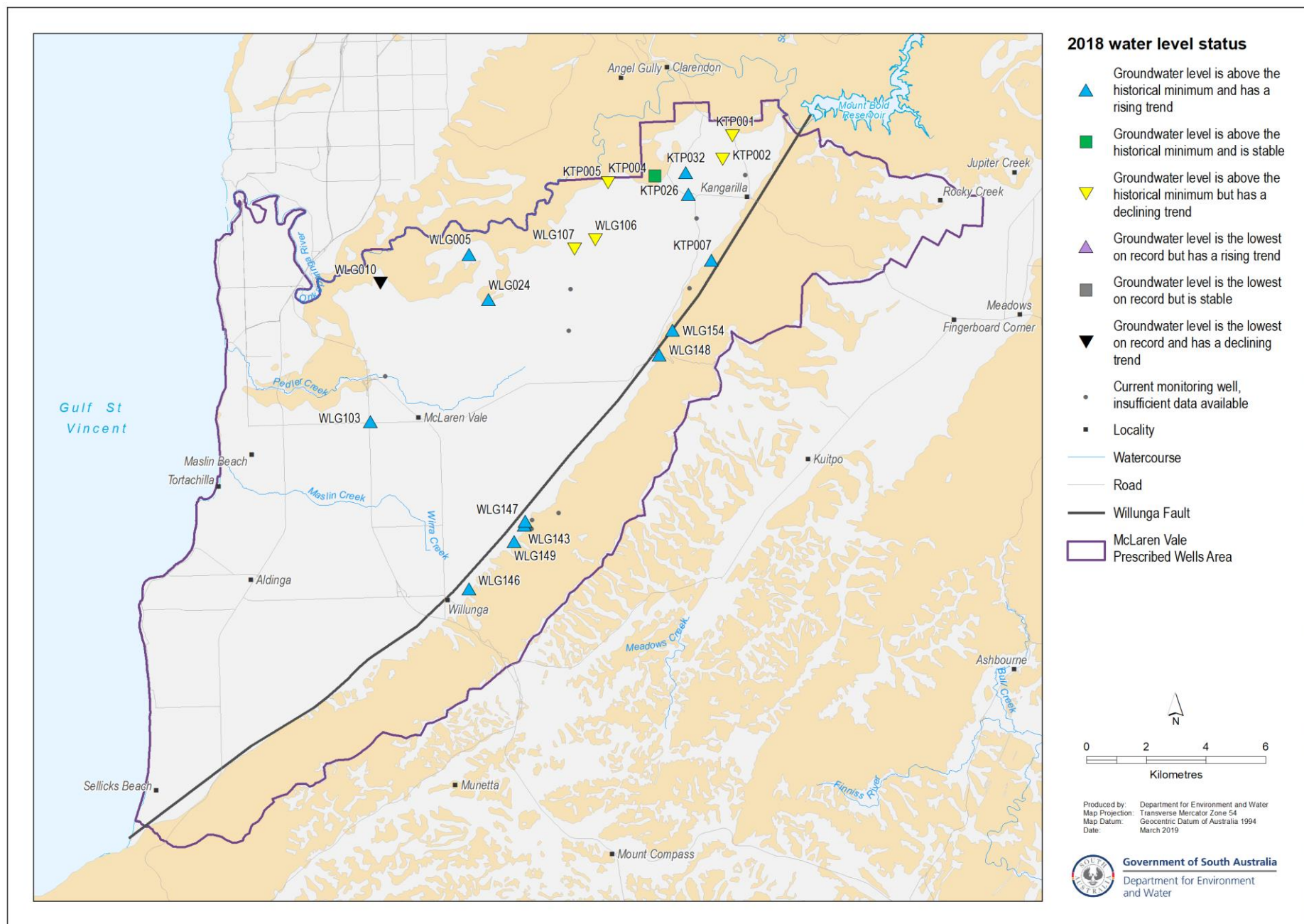
**Figure 2. Annual and monthly rainfall for the past five water-use years recorded at Mount Bold Reservoir (BoM Station 23734)<sup>6</sup>**



**Figure 3. Licensed groundwater extraction volumes<sup>7</sup> for the past five water-use years**

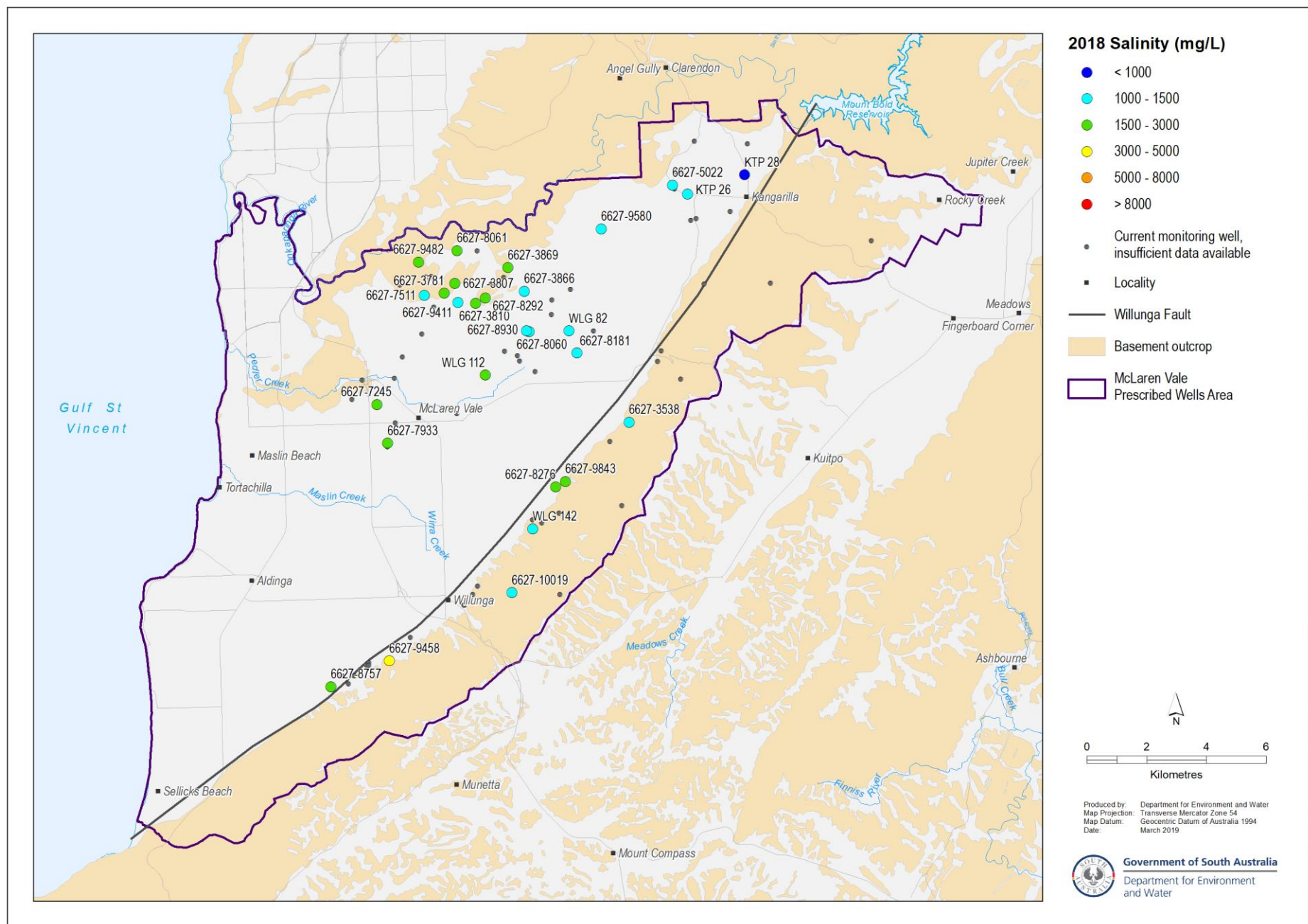
<sup>6</sup> Data source: SILO Patched Point Dataset, available <https://legacy.longpaddock.qld.gov.au/silo/> – see [More information](#)

<sup>7</sup> 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 (2014–18) in groundwater levels: fractured rock aquifers**





**Figure 5. 2018 groundwater salinities: fractured rock aquifers**



# More information

To determine the status of the FRAs for 2018, the trends in groundwater levels and salinities over the past five years (2014 to 2018, 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, 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 extraction for the 2017–18 water-use year is based on the best data available as of February 2019 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 are sourced from the SILO interpolated point and gridded datasets, which are calculated from BoM daily and monthly rainfall measurements and are available online at <https://legacy.longpaddock.qld.gov.au/silo/>.

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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