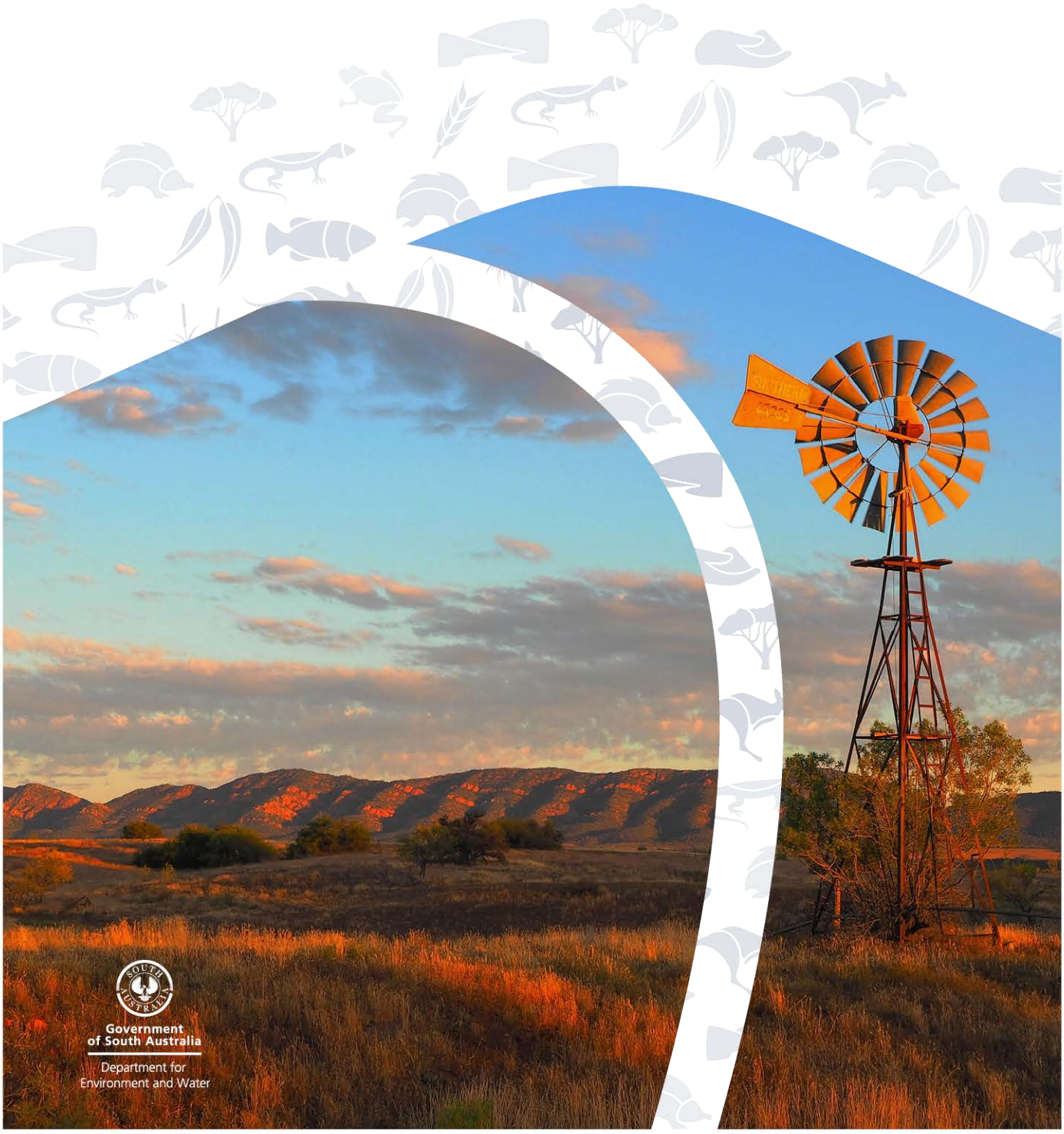
McLaren Vale PWA
Maslin Sands aquifer

2017 Groundwater level and salinity status report



Government of South Australia

Department for Environment and Water

Department for Environment and Water
GPO Box 1047, Adelaide SA 5001

Telephone	National	(08) 8463 6946
	International	+61 8 8463 6946
Fax	National	(08) 8463 6999
	International	+61 8 8463 6999
Website	www.environment.sa.gov.au	

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2017 Status summary
McLaren Vale PWA
Maslin Sands aquifer

The Maslin Sands aquifer of the McLaren Vale Prescribed Wells Area (PWA) 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, 61% of 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	Willunga Bureau of Meteorology (BoM) rainfall station 23753, located in the south-east of the McLaren Vale PWA
Annual total[1]	800 mm 209 mm (35%) greater than the five-year average of 591 mm 159 mm (25%) greater than the long-term average of 641 mm
Monthly summary	Well-above average rainfall in July, September, October, December and January Well-below average rainfall in March, 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	1086 ML[2]
Licensed groundwater extractions*	530 ML[2] (49% of total allocation)
Extraction volume comparison	26% less than the previous year 17% 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	7 out of 18 wells (39%) show rising trends, at rates of 0.03–0.40 m/y (median of 0.03 m/y) 4 wells (22%) are stable 7 wells (39%) show declining trends, at rates of 0.08–0.48 m/y (median of 0.17 m/y); two of these showing their lowest level on record

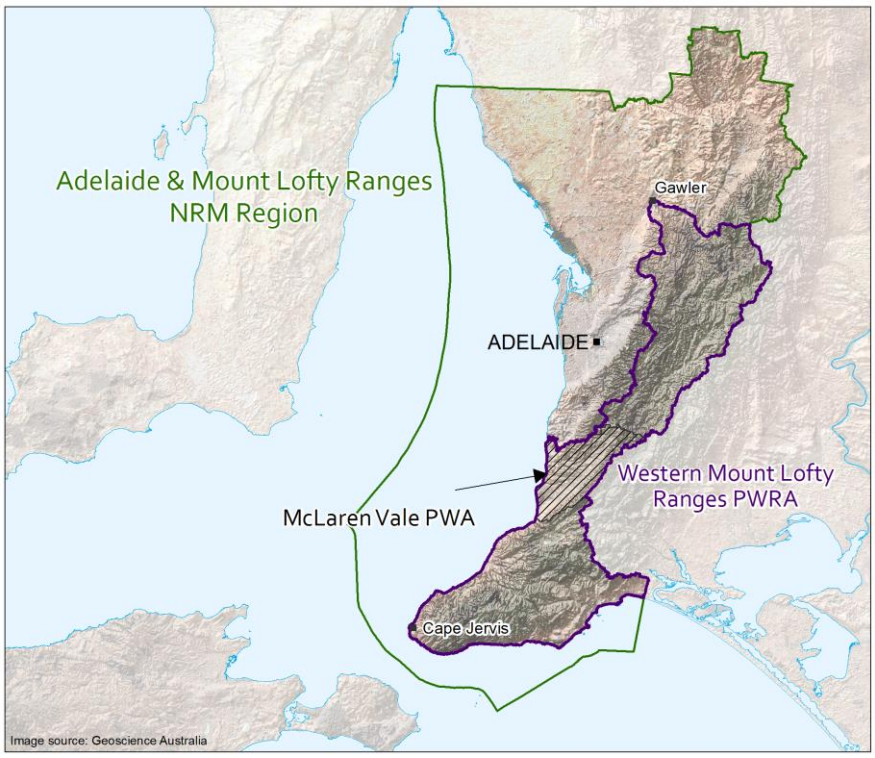
Groundwater salinity

See Figure 5

2017 salinity	788–9533 mg/L 10 out of 14 wells (71%) 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 aquifers of Quaternary and Tertiary age, which is bounded in the south-east by the Willunga Fault and to the north by basement outcrop. This report focuses on the Tertiary Maslin Sands aquifer that comprises fine to coarse sands and clays. It is unconfined in the north-east of the PWA, and crops out to the north and north-east of McLaren Vale. Further to the south-west, it becomes confined and is separated from the overlying Port Willunga Formation aquifer by the Blanche Point Formation confining layer that comprises low-permeability marine mudstones and limestones. Groundwater flows from the elevated recharge areas in the north-east, toward the south-west. Recharge to the Maslin Sand aquifer is thought to occur where it is unconfined, via infiltration through the soil or by percolation of streamflow in drainage lines.

Rainfall and groundwater extractions are important factors that govern changes in groundwater level and salinity in the Maslin Sands aquifer. Below-average rainfall results in a reduction in recharge to the aquifer. Below-average rainfall can also result in increased irrigation extraction, which may cause the 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.

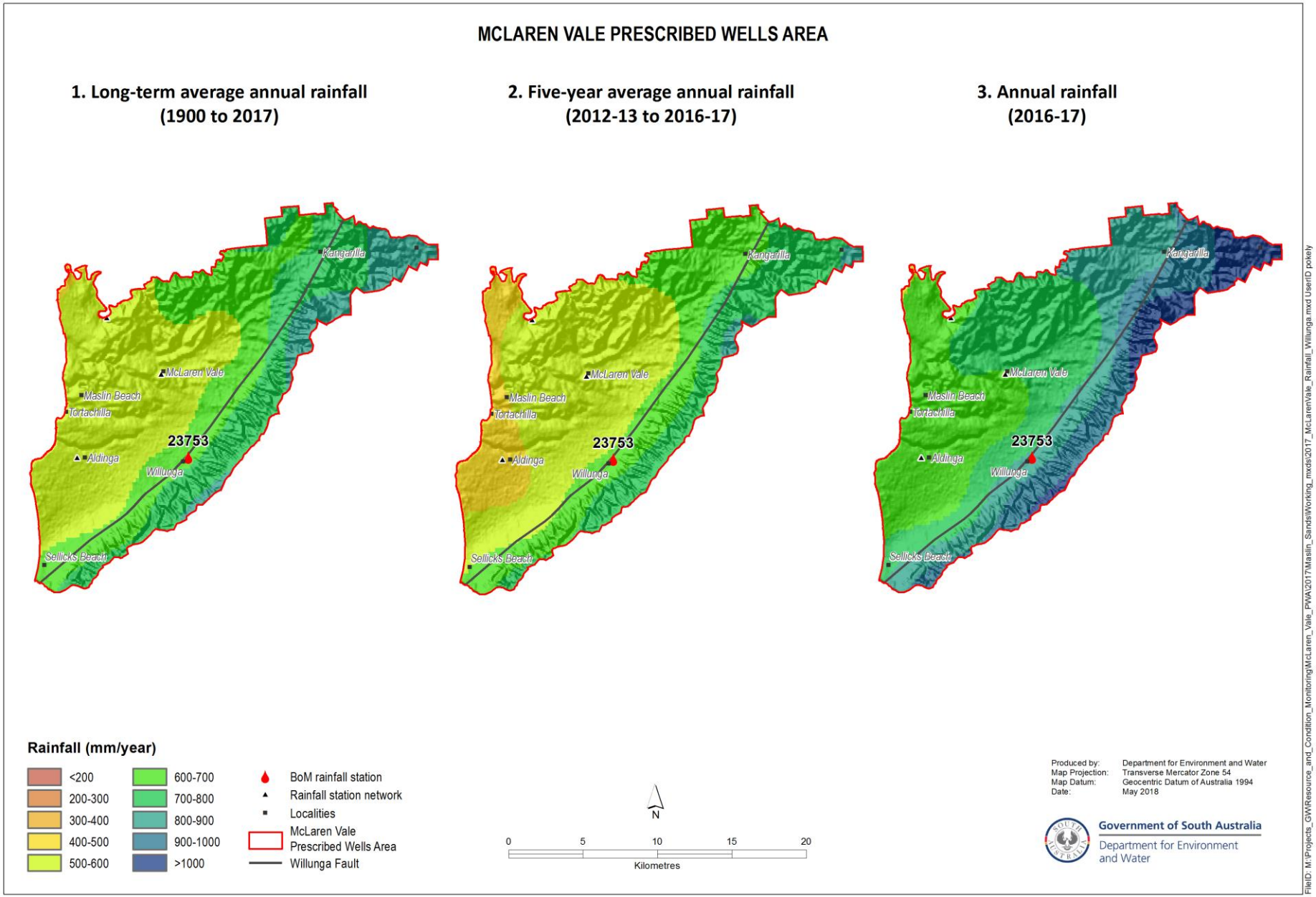


Figure 1. Spatial distribution of (1) Long-term and (2) five-year average annual rainfall, and (3) annual rainfall[4]

[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

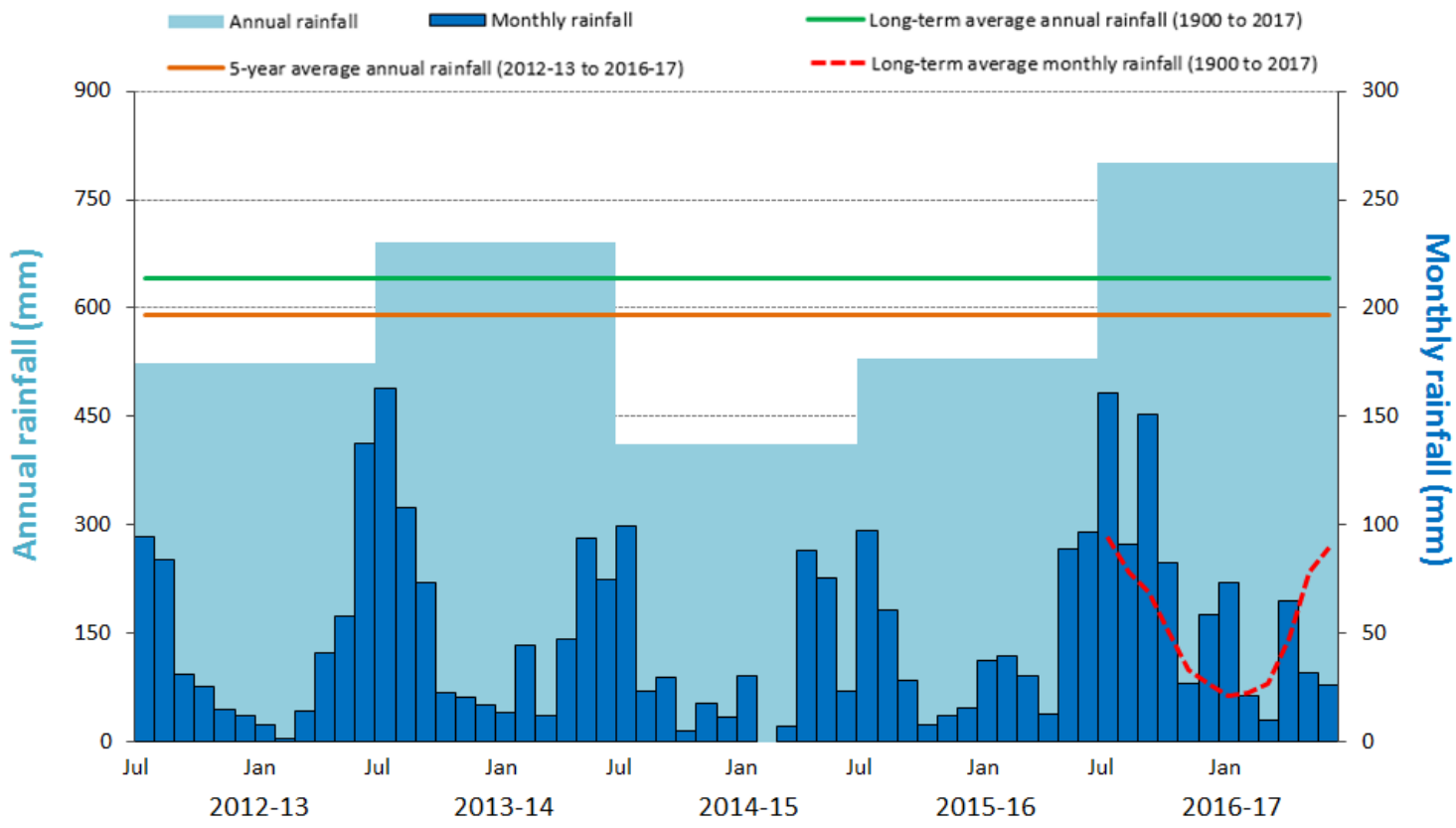


Figure 2. Annual and monthly rainfall for the past five water-use years recorded at Willunga (BoM Station 23753)[5]

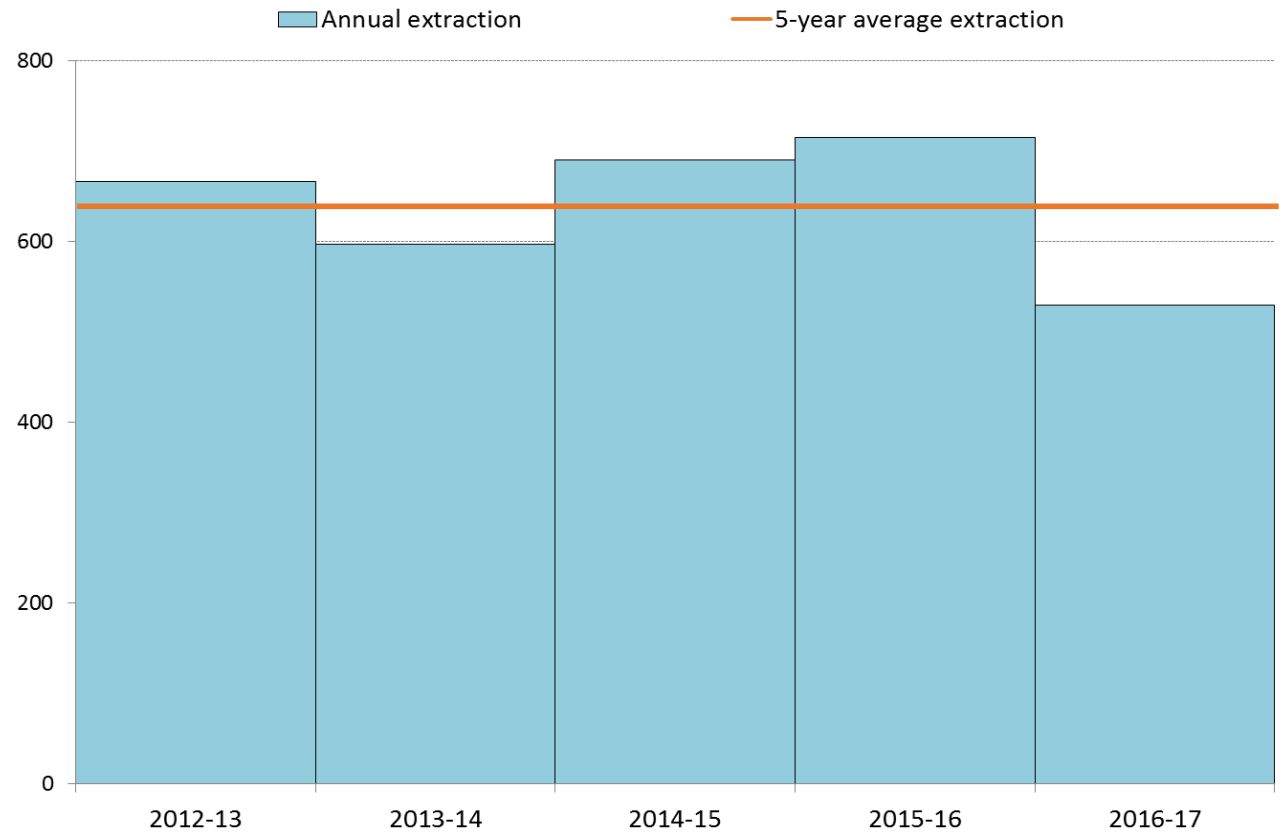


Figure 3. Licensed groundwater extraction volumes[6] for the past five water-use years

[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

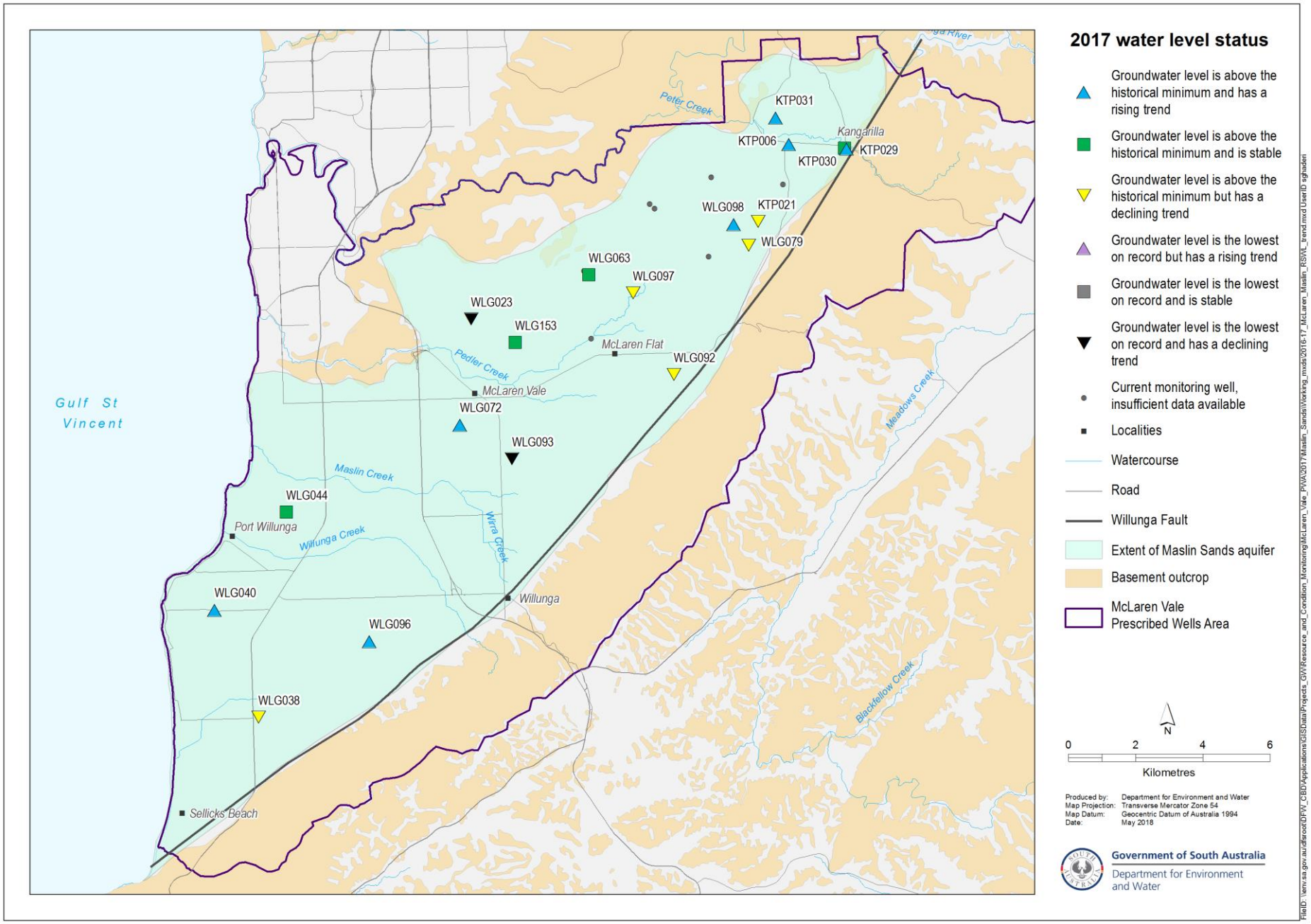


Figure 4. Five-year trends (2013–17) in groundwater levels: Maslin Sands aquifer

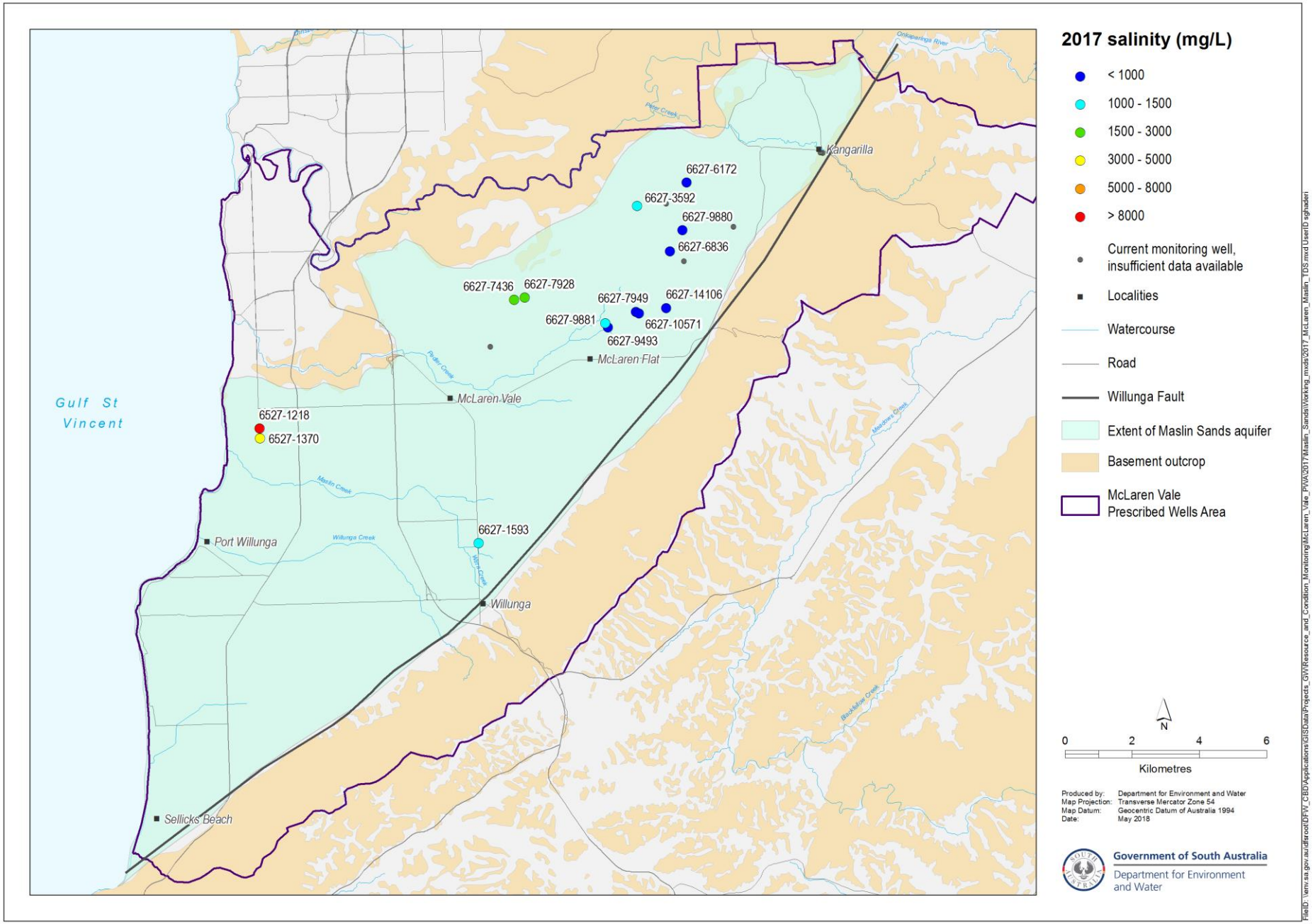


Figure 5. 2017 groundwater salinities: Maslin Sands aquifer

More information

To determine the status of the Maslin Sands 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 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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