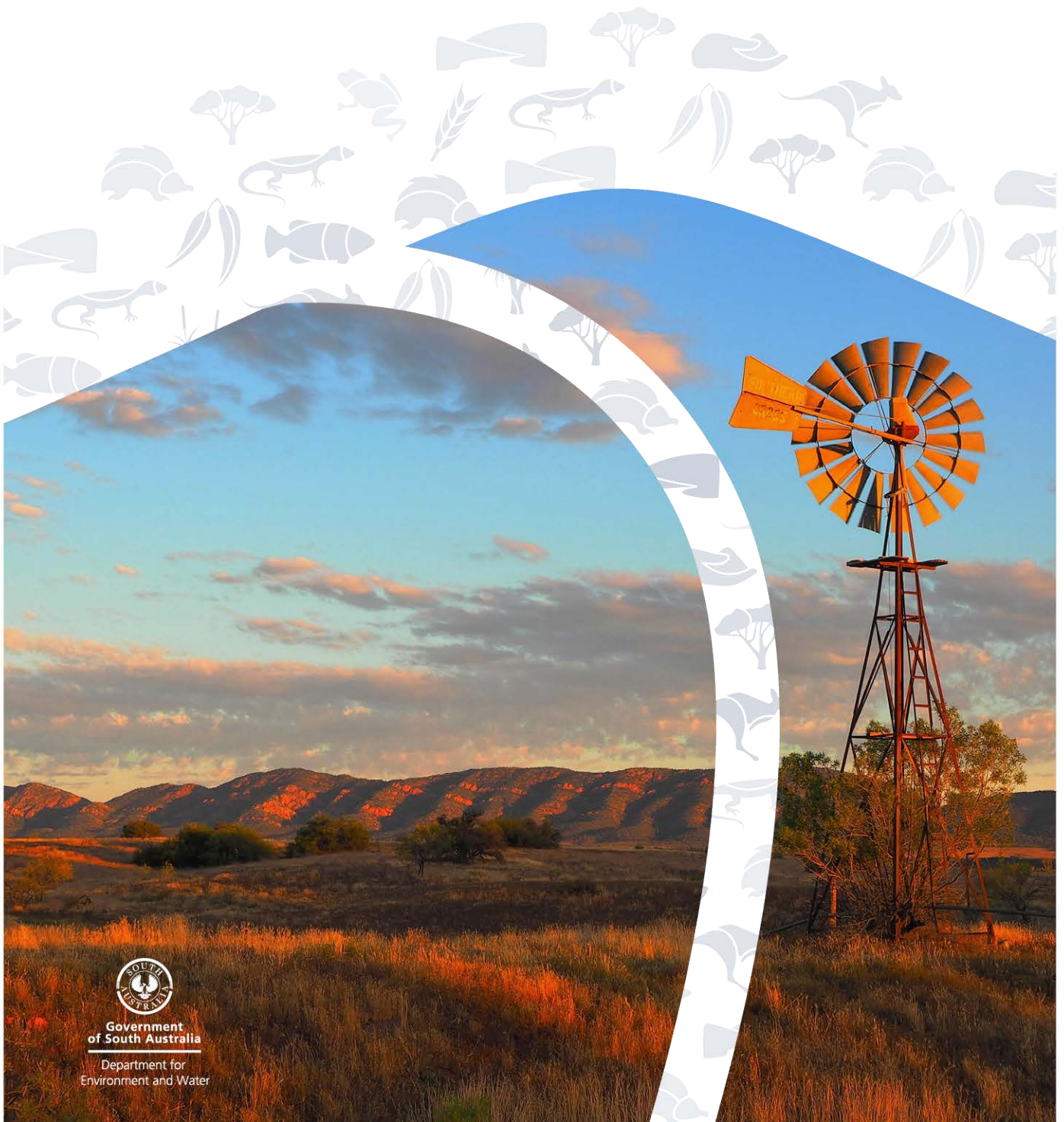


Southern Basins PWA Uley South

2017 Groundwater level and salinity status report



Government
of South Australia

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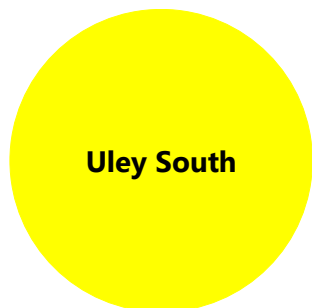
DEW (2018). *Southern Basins PWA Uley South 2017 Groundwater level and salinity status report*, Government of South Australia, Department for Environment and Water, Adelaide.

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2017 Status summary

Southern Basins PWA

Uley South



The Uley South lens of the Southern Basins 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, 91% of wells show declining groundwater levels and 100% show stable salinities.

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	Westmere Bureau of Meteorology (BoM) rainfall station 18137, located in the southern part of the Southern Basins PWA
Annual total ¹	480 mm 22 mm (4%) less than the five-year average of 502 mm 91 mm (16%) less than the long-term average of 571 mm
Monthly summary	Well-above average rainfall recorded in September and January Well-below average rainfall recorded in November and February through to June
Spatial distribution	Rainfall in 2016–17 was below average across the entire PWA

Water use

See Figure 3

Total allocated volume: 2016–17	7250 ML
Licensed groundwater extractions*	4873 ML ² (67% of total allocation)
Extraction volume comparison	9% less than the previous year 5% 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 extractions are subject to change as extraction data have not yet been verified in full – see [More information](#)

Groundwater level

See Figure 4

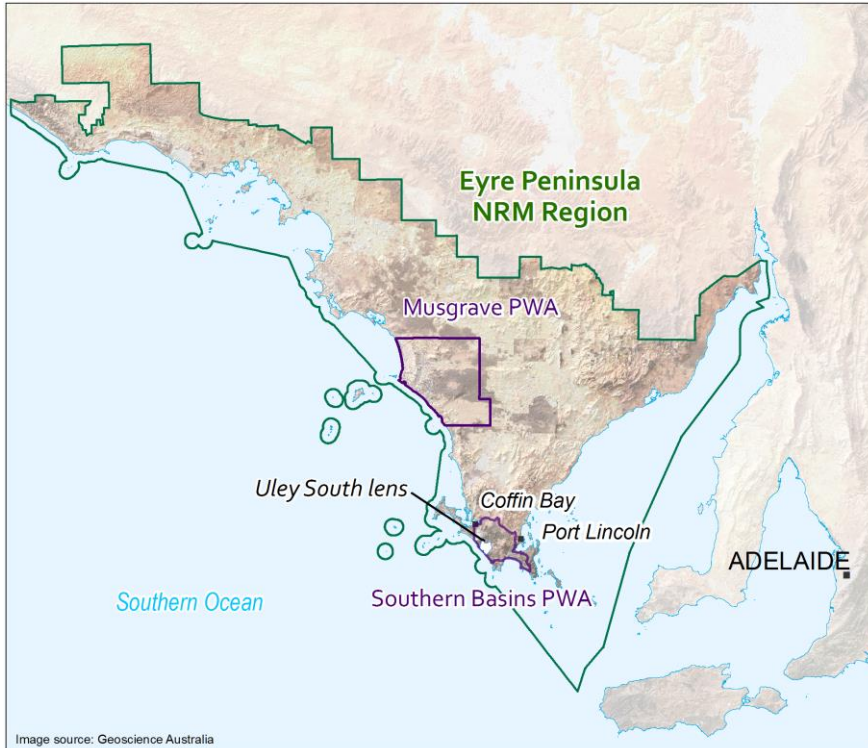
Five-year trend: 2013–17	3 out of 34 wells (9%) show rising trends, at rates of 0.01–0.04 m/y (median of 0.02 m/y) 31 wells (91%) show declining trends, at rates of 0.01–0.06 m/y (median of 0.02 m/y); one of these wells shows its lowest level on record
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Groundwater salinity

See Figures 5 and 6

2017 salinity	441–661 mg/L All 17 wells (100%) show salinities less than 1000 mg/L
Five-year trend: 2013–17	All 9 wells (100%) are stable

Regional setting



The Southern Basins PWA is located within the Eyre Peninsula Natural Resources Management Region, at the southern-most part of the Eyre Peninsula between the townships of Port Lincoln and Coffin Bay. The groundwater resources are prescribed under South Australia's *Natural Resources Management Act 2004*, and a water allocation plan (WAP) provides for their sustainable use. The Uley South lens is situated in the south-west of the Southern Basins PWA.

Within the Southern Basins PWA, there are two main water-bearing sedimentary sequences that overlie basement rocks: the Quaternary limestone aquifer and the underlying Tertiary sands aquifer. The Quaternary limestone aquifer, which is the focus of this report, comprises a generally thin veneer of aeolian sediments of the Bridgewater Formation, and is continuous across the PWA. The main source of recharge to the Quaternary limestone aquifer is the direct infiltration of local rainfall while the direction of groundwater flow is predominantly toward the nearest coastline.

Groundwater levels and salinities in the Southern Basins PWA are highly dependent on recharge from rainfall and any trends in groundwater level or salinity are primarily climate driven: below-average rainfall results in a reduction in recharge to the aquifers. Below-average summer rainfall can also result in increasing extractions, and both elements can cause the groundwater levels to decline, and may cause salinities to increase. Conversely, above-average rainfall can result in increases in recharge, decreases in extractions and groundwater levels may rise and salinities may stabilise or decrease. Historical rainfall data indicate that trends of above or below-average rainfall can last for up to 40 years, and that high-intensity rainfall can result in greater and more-rapid water level responses (i.e. recharge).

SOUTHERN BASINS PRESCRIBED WELLS AREA

**1. Long-term average annual rainfall
(1900 to 2017)**

**2. Five-year average annual rainfall
(2012-13 to 2016-17)**

**3. Annual rainfall
(2016-17)**

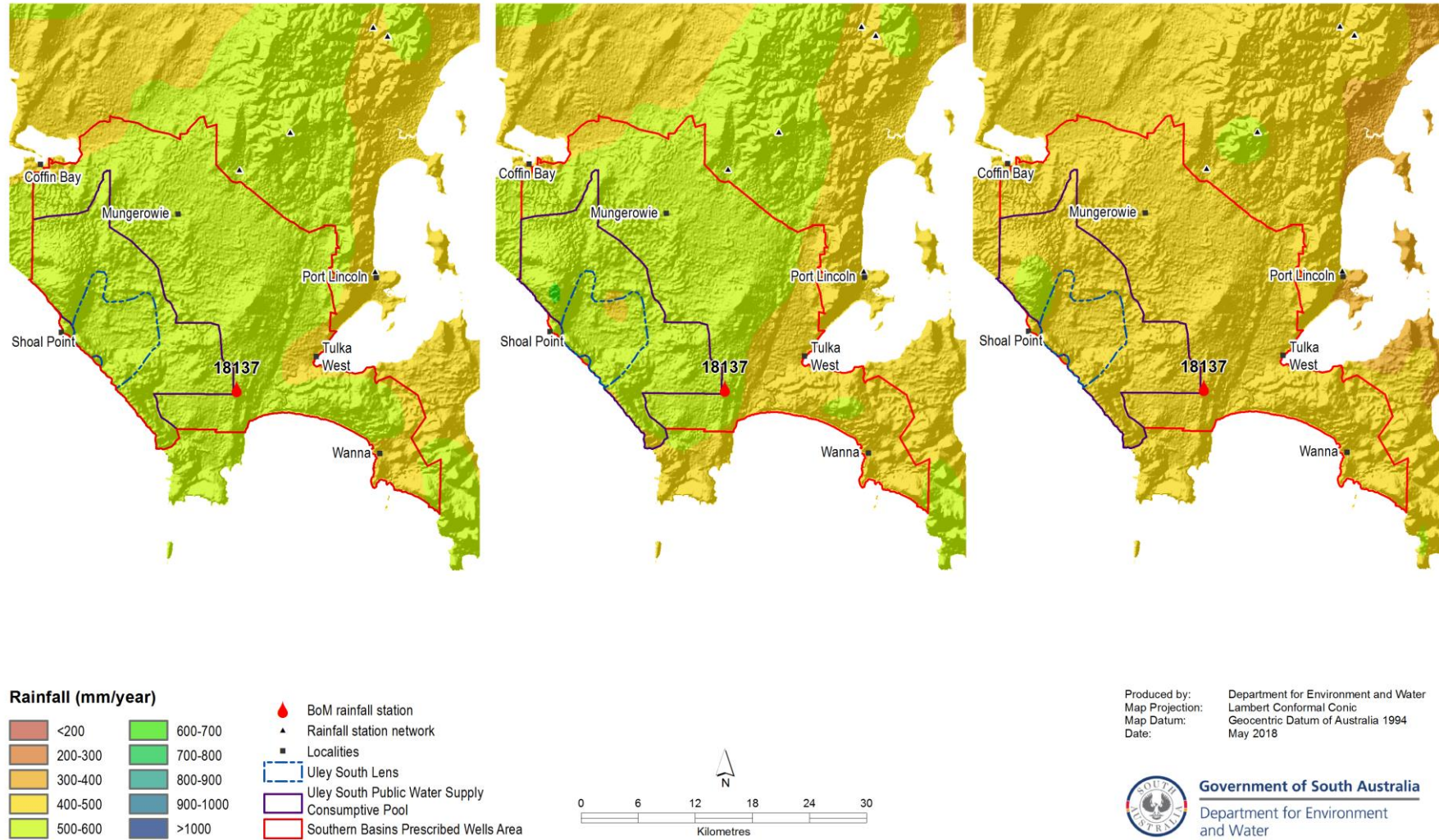


Figure 1. Spatial distribution of (1) Long-term and (2) five-year average annual rainfall, and (3) annual rainfall³

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](#)

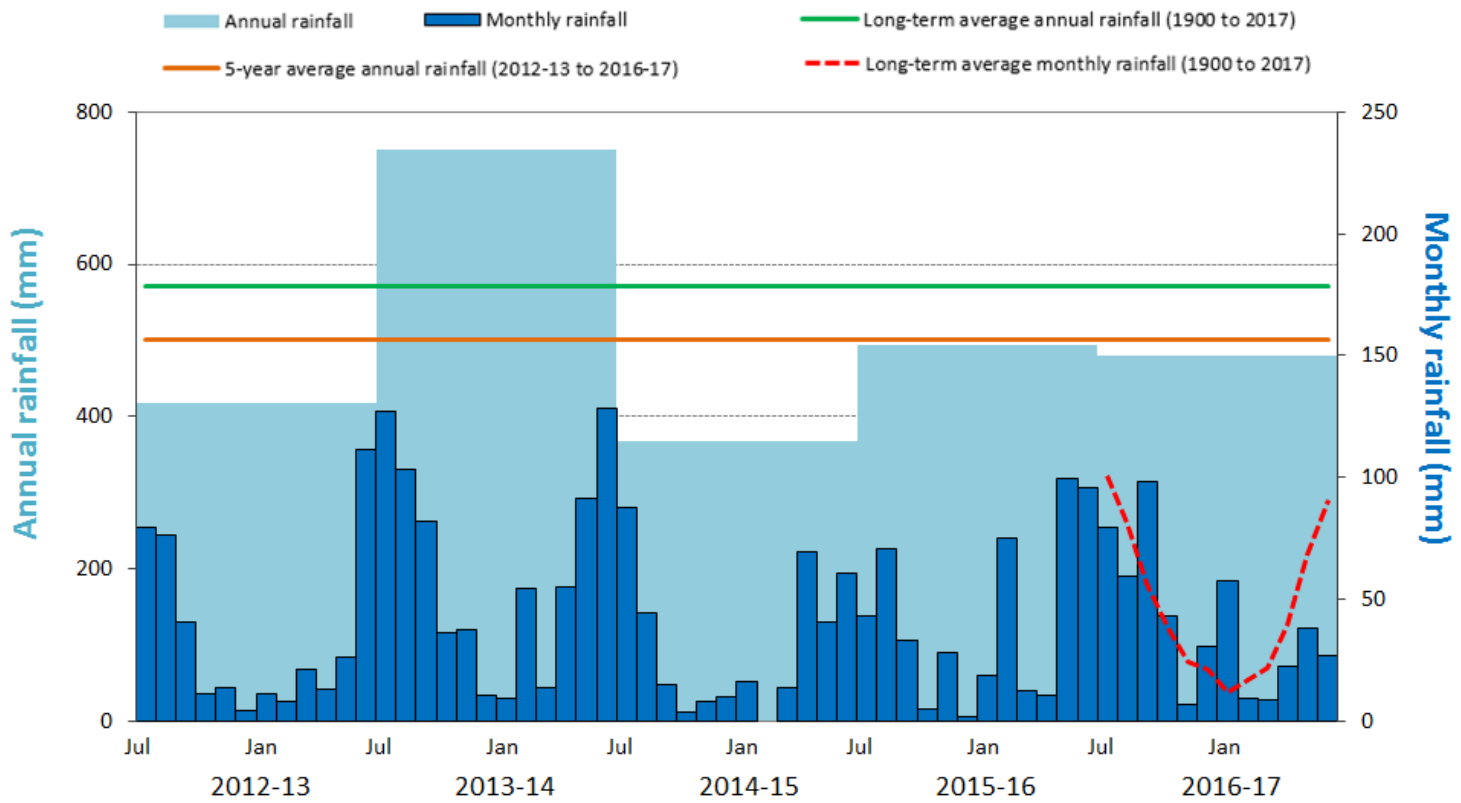


Figure 2. Annual and monthly rainfall for the past five water-use years recorded at Westmere (BoM Station 18137)⁴

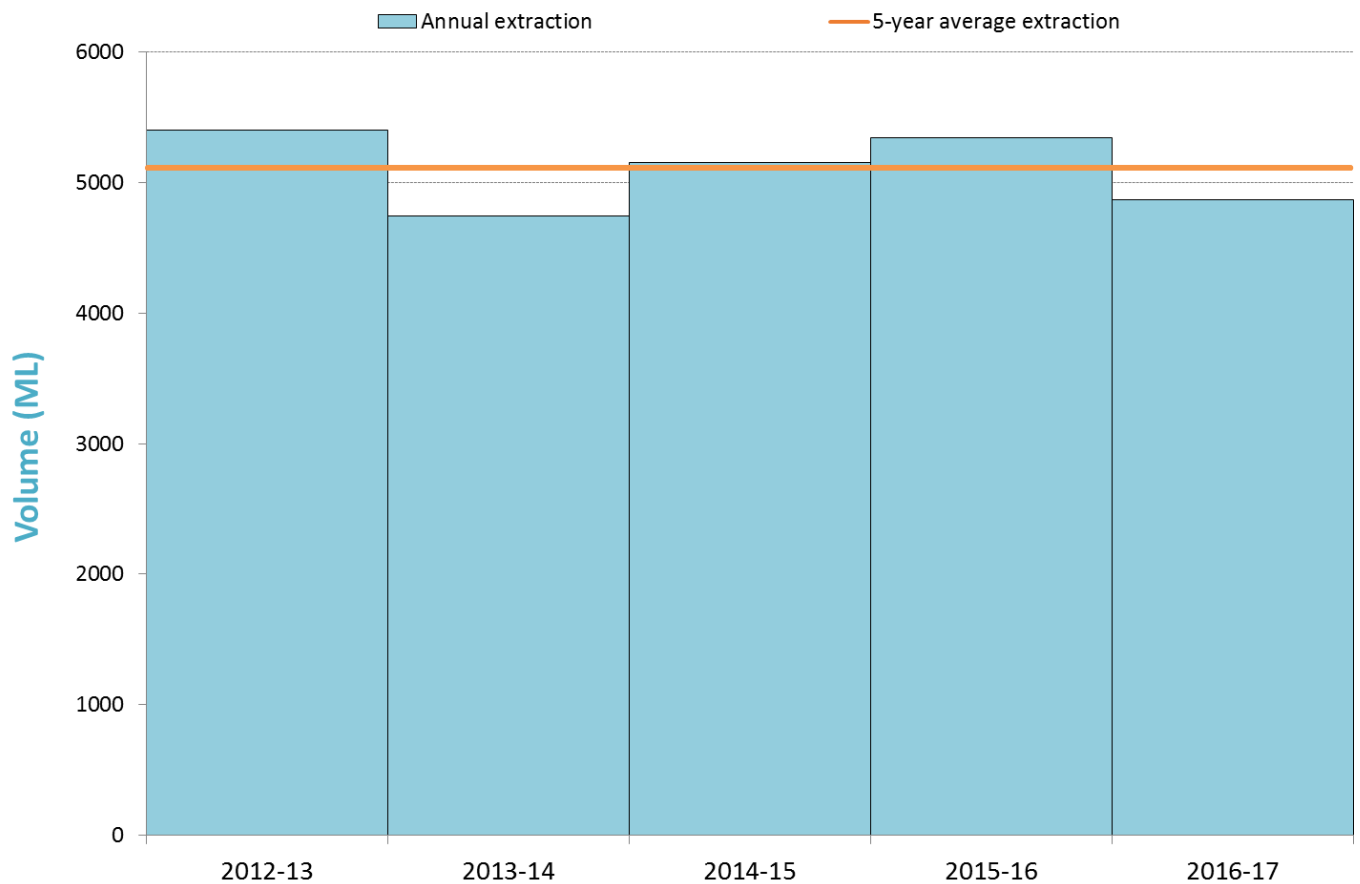
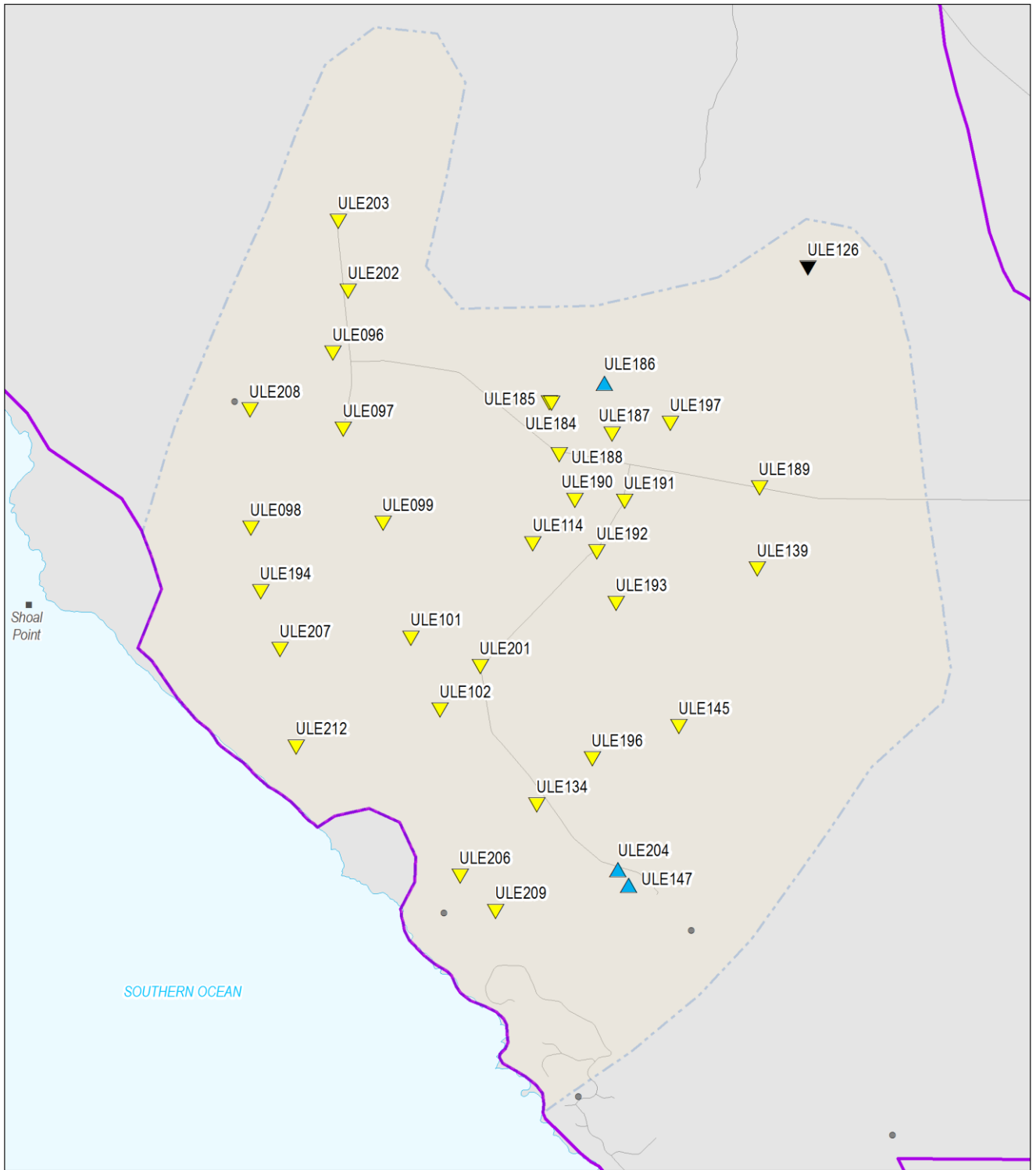


Figure 3. Licensed groundwater extraction volumes⁵ for the past five water-use years

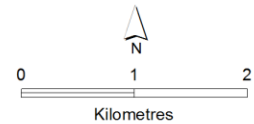
⁴ Data source: SILO Patched Point Dataset, available <https://silo.longpaddock.qld.gov.au/> – see [More information](#)

⁵ Total licensed extractions are subject to change as extraction data have not yet been verified in full – see [More information](#)



2017 water level status

- ▲ Groundwater level is above the historical minimum and has a rising trend
- Groundwater level is above the historical minimum and is stable
- ▼ Groundwater level is above the historical minimum but has a declining trend
- ▲ Groundwater level is the lowest on record but has a rising trend
- Groundwater level is the lowest on record and is stable
- ▼ Groundwater level is the lowest on record and has a declining trend
- Current monitoring well, insufficient data available
- Localities
- Road
- Uley South Lens
- Uley South Public Water Supply Consumptive Pool

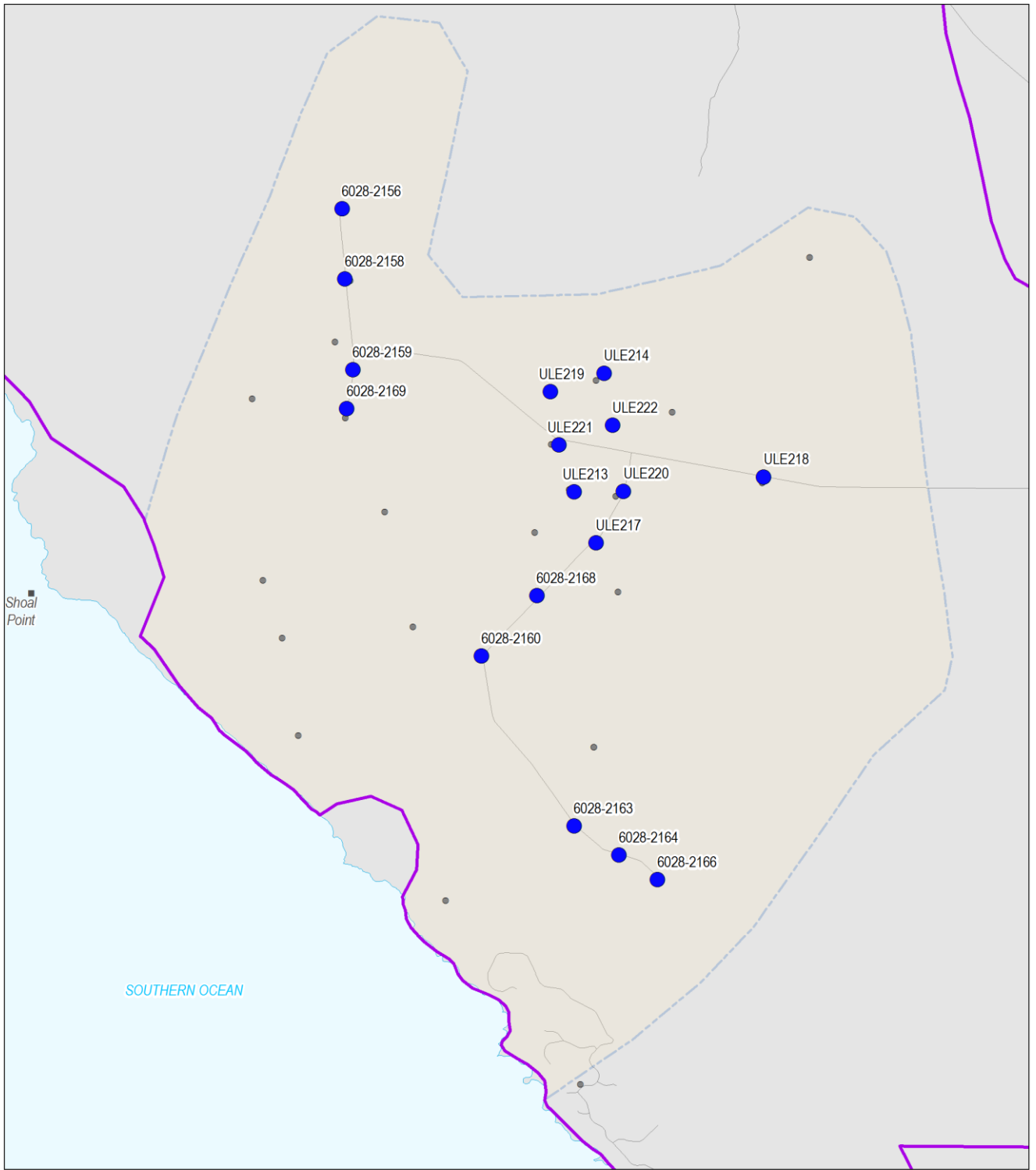


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 Map Projection: Lambert Conformal Conic
 Map Datum: Geocentric Datum of Australia 1994
 Date: May 2018

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Figure 4. Five-year trends (2013–17) in groundwater levels: Uley South lens

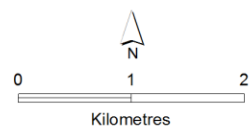
Document Path: K:\DW\CD\Operations\GIS\Projects\2017\Uley_South\Working_mxd\Uley_South_Lens_HSVL_trend_2017.mxd UserID: alondan



2017 salinity (mg/L)

- <1000
- 1000 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 8000
- >8000

- Current monitoring well, insufficient data available
- Localities
- Road
- ▭ Uley South Lens
- ▭ Uley South Public Water Supply Consumptive Pool

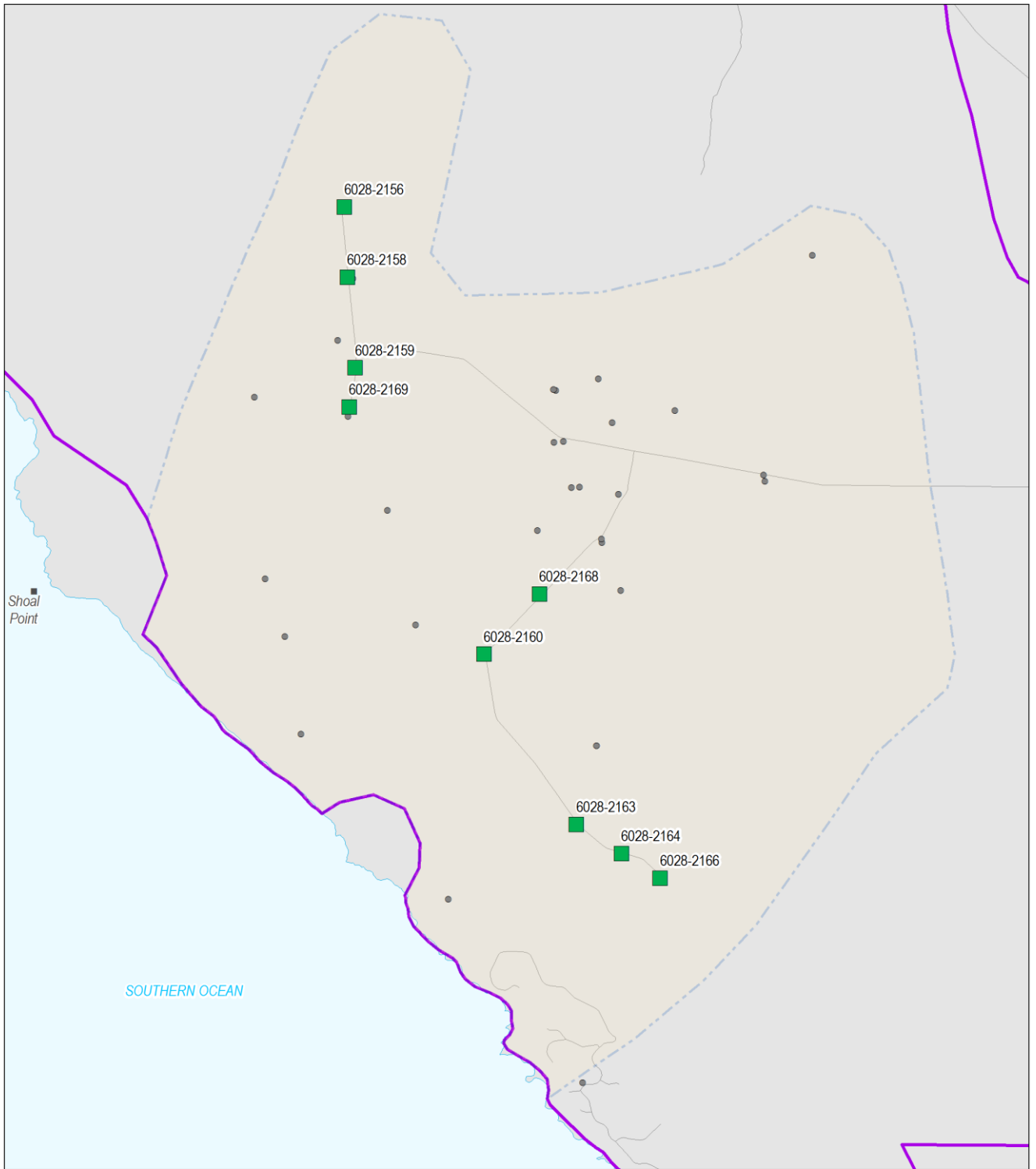


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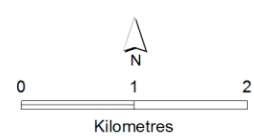
Figure 5. 2017 groundwater salinities: Uley South lens



2017 salinity status

- ▼ Salinity is less than 1000 mg/L and has a decreasing trend
- Salinity is less than 1000 mg/L and is stable
- ▲ Salinity is less than 1000 mg/L but has an increasing trend
- ▼ Salinity exceeds 1000 mg/L but has a decreasing trend
- Salinity exceeds 1000 mg/L but is stable
- ▲ Salinity exceeds 1000 mg/L and has an increasing trend

- Current monitoring well, insufficient data available
- Localities
- Road
- ▭ Uley South Lens
- ▭ Uley South Public Water Supply Consumptive Pool



Produced by: Department for Environment and Water
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 Map Datum: Geocentric Datum of Australia 1994
 Date: May 2018



Figure 6. Five-year trends (2013–17) in groundwater salinities: Uley South lens

More information

To determine the status of the Uley South lens 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](#).

Consumptive pool is defined as the water that will, from time to time, be taken to constitute the resource within a particular part of a prescribed water resource. For further information please see the *Water Allocation Plan for the Southern Basins and Musgrave Prescribed Wells Areas* on the Natural Resources Eyre Peninsula [website](#).

The licensed groundwater 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 level 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 *Southern Basins 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 Southern Basins PWA, please visit the *Groundwater Data* page under the Data Systems tab on [WaterConnect](#).

For further details about the Southern Basins PWA, please see the *Water Allocation Plan for the Southern Basins and Musgrave Prescribed Wells Areas* on the Natural Resources Eyre Peninsula [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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Front Cover © Graham Green, Principal Hydrogeologist, DEW

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