

Southern Basins Prescribed Wells Area Uley Wanilla

2018 Groundwater level and salinity status
report



**Government
of South Australia**

Department for
Environment and Water

2018 Status summary

Southern Basins PWA

Uley Wanilla



The Uley Wanilla lens of the Southern Basins Prescribed Wells Area (PWA) has been assigned an **orange** status for 2018 because moderate adverse trends have been observed over the past five years.

The status is based on five-year trends: over the period 2014–18, 100% of wells show declining groundwater levels of which 53% show their lowest levels on record.

The status is based on five-year trends. To view the *Southern Basins PWA groundwater level and salinity status report 2011*, 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 Southern Basins 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	Big Swamp Bureau of Meteorology (BoM) rainfall station, number 18017, is located approximately 3 km east of the Uley Wanilla lens.
Annual total ¹	508 mm 25 mm (5%) less than the five-year average of 533 mm 50 mm (9%) less than the long-term (1900-2018) average of 558 mm

Groundwater extraction

See Figure 3

Allocated volume ^{1,2}	224 ML
Licensed groundwater extractions ^{1,3}	164 ML
Extraction volume comparison	54% greater than the previous year 49% greater than the five-year average

¹ For the water-use year 1 July 2017 to 30 June 2018

² Allocated volume does not include rollover, carry over or recharge allocations

³ 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

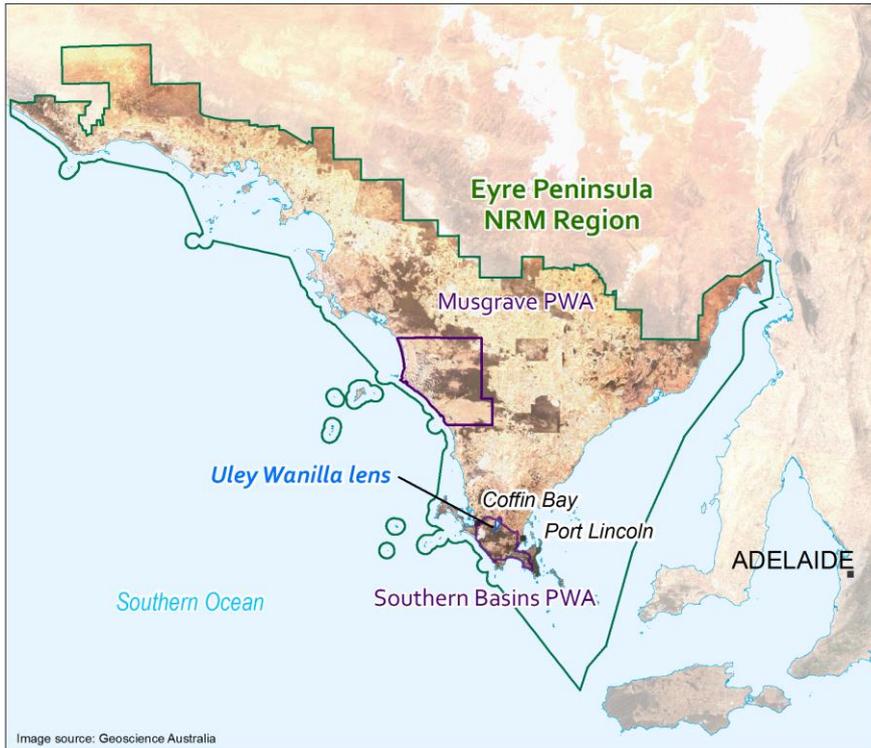
Five-year trend: 2014–18	All 15 wells (100%) show declining trends, at rates of 0.03–0.4 m/y (median of 0.1 m/y); 8 of these wells show their lowest level on record
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Groundwater salinity

See Figures 5 and 6

2018 salinity	524–761 mg/L (6 wells; median of 597 mg/L)
Five-year trend: 2014–18	5 out of 6 wells (83%) are stable 1 well (17%) shows an increasing trend, at a rate of 27 mg/L/y

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 provides for their sustainable use. The Uley Wanilla lens is situated in the northern part 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. The Bridgewater Formation sediments are continuous across the PWA, however aquifers occur in discrete lenses such as the Uley Wanilla lens, separated by areas where the sediments are thin or dry. 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 which may cause groundwater levels to rise and salinities to 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

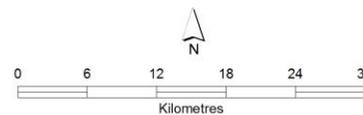
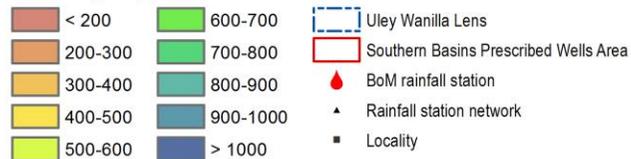
**1. Long-term average annual rainfall
(1900 to 2018)**

**2. Five-year average annual rainfall
(2013-14 to 2017-18)**

**3. Annual rainfall
(2017-18)**



Rainfall (mm/y)



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 Map Projection: Lambert Conformal Conic
 Map Datum: Geocentric Datum of Australia 1994
 Date: February 2019



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

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

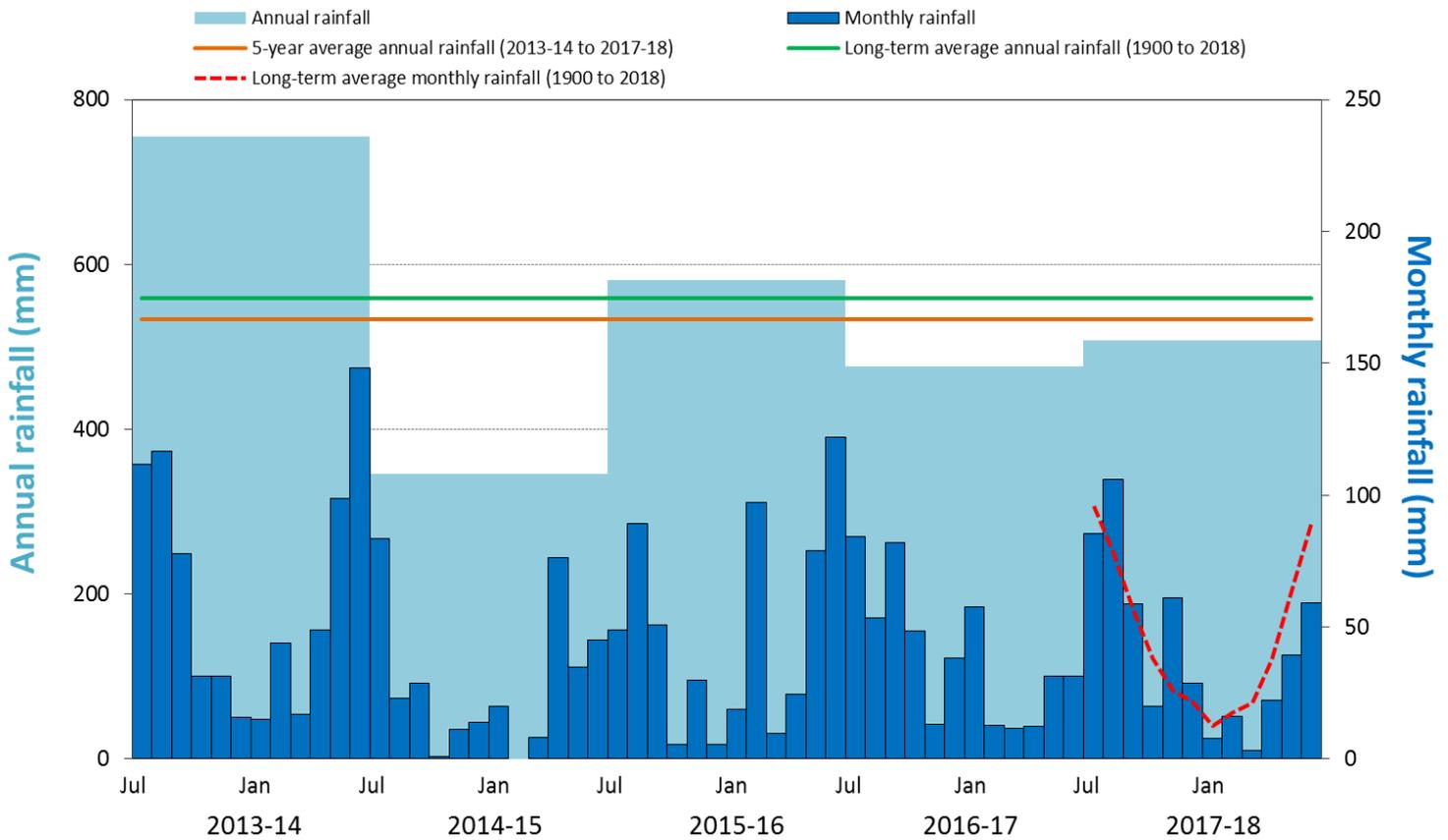


Figure 2. Annual and monthly rainfall for the past five water-use years recorded at Big Swamp (BoM Station 18017)⁵

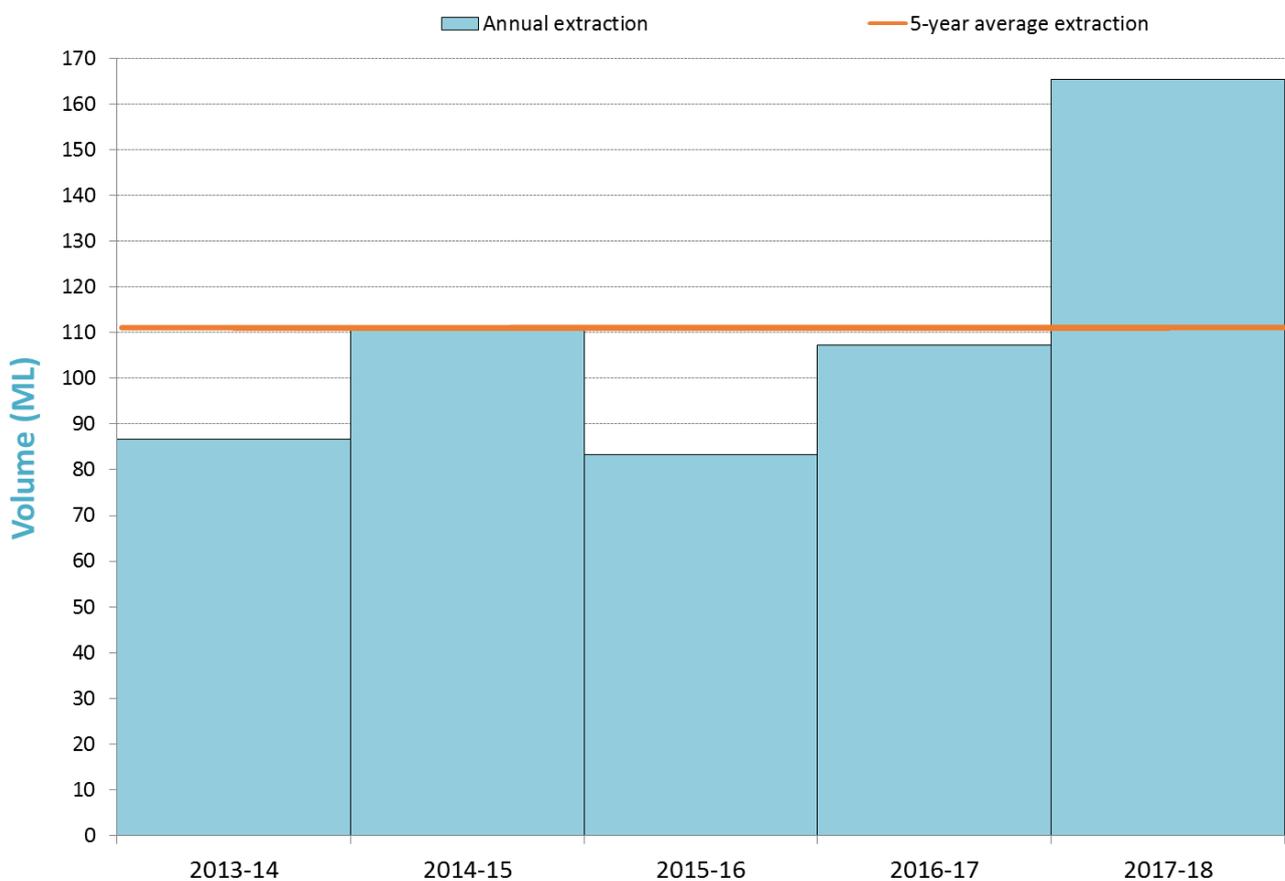
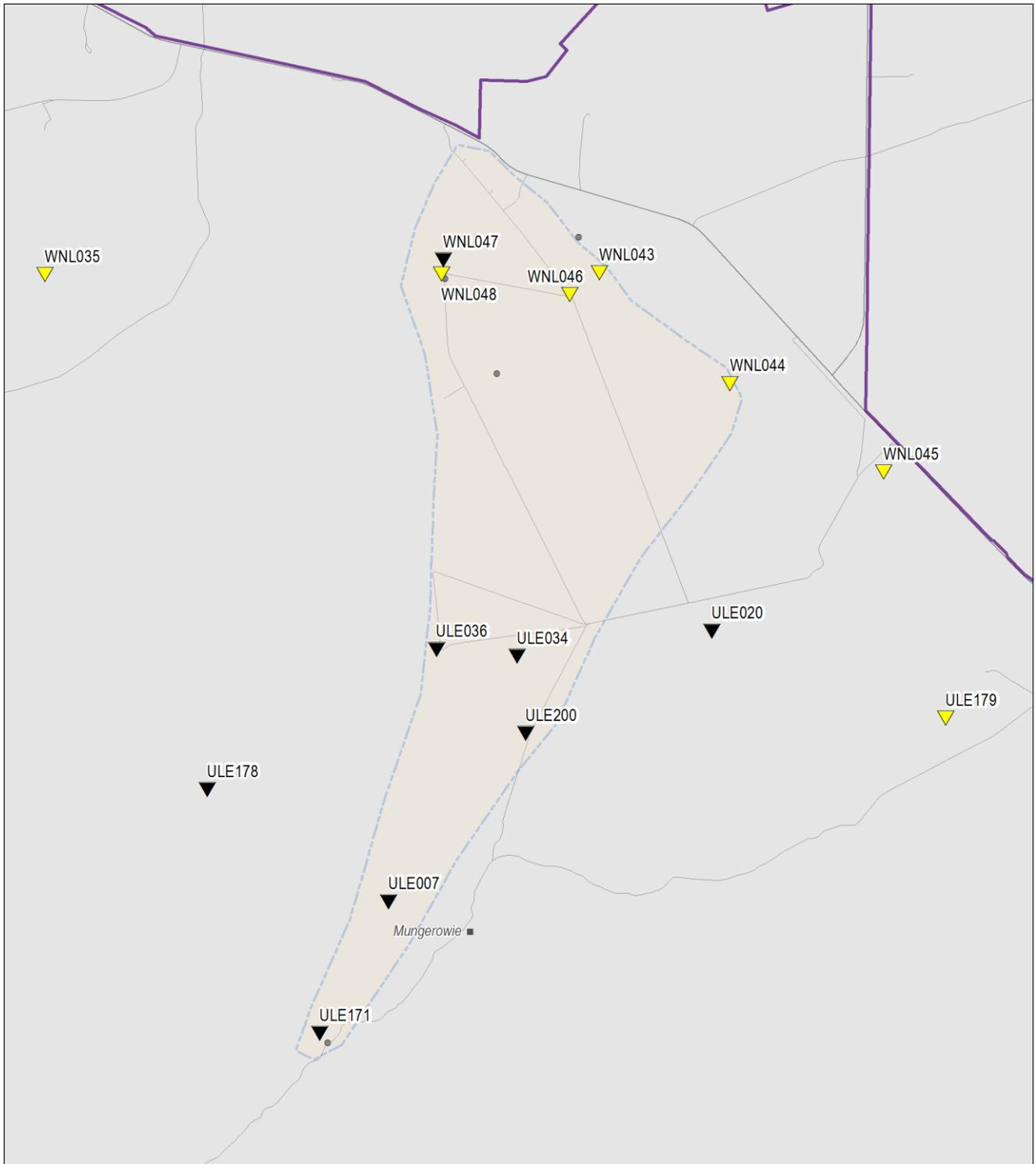


Figure 3. Licensed groundwater extraction volumes⁶ for the past five water-use years

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

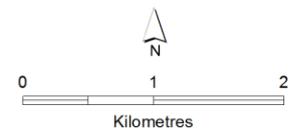
⁶ Total licensed extractions are subject to change as extraction data have not yet been verified in full – see [More information](#)



2018 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 falling 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 falling trend

- Current monitoring well, insufficient data available
- Locality
- Road
- Uley Wanilla Lens
- Southern Basins Prescribed Wells Area

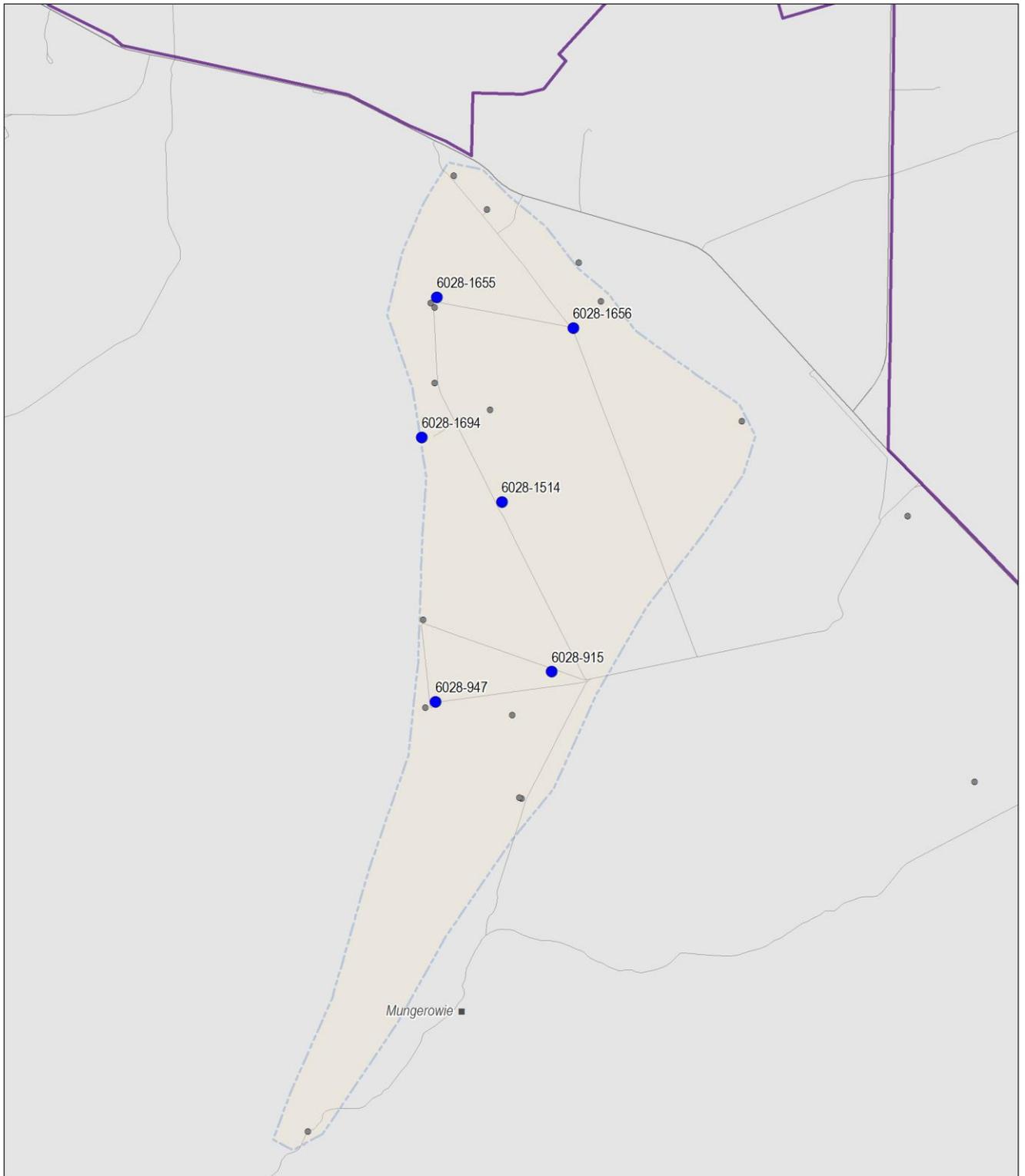


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Figure 4. Five-year trends (2014–18) in groundwater levels: Uley Wanilla lens

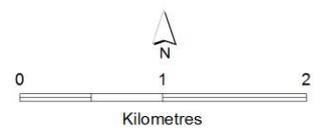
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2018 salinity (mg/L)

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

- Current monitoring well, insufficient data available
- Locality
- Road
- ▭ Uley Wanilla Lens
- ▭ Southern Basins Prescribed Wells Area

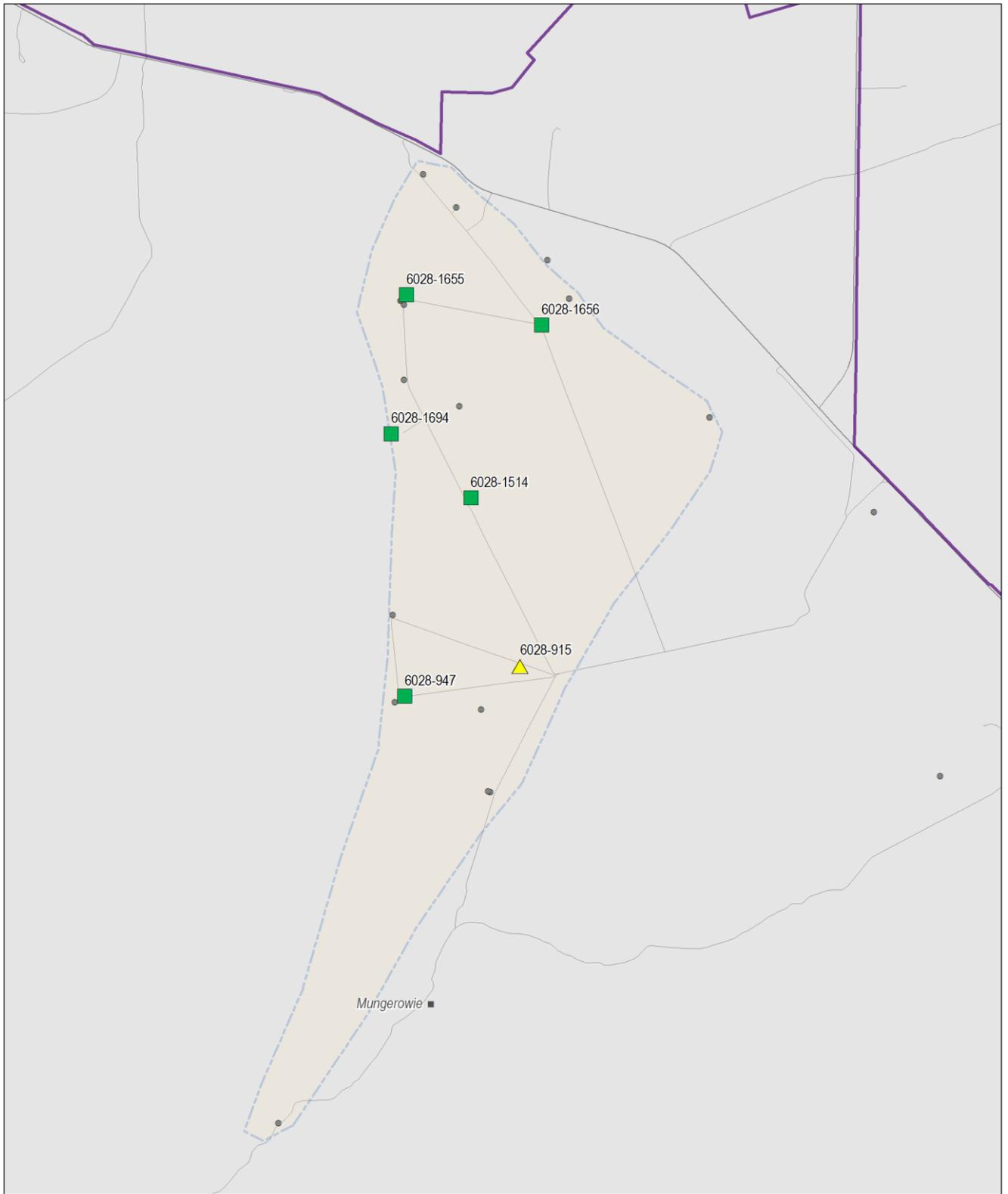


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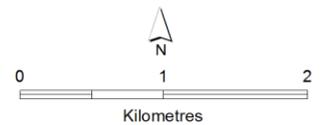
Figure 5. 2018 groundwater salinities: Uley Wanilla lens



2018 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 a rising 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 a rising trend

- Current monitoring well, insufficient data available
- Locality
- Road
- ▭ Uley Wanilla Lens
- ▭ Southern Basins Prescribed Wells Area



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Figure 6. Five-year trends (2014–18) in groundwater salinities: Uley Wanilla lens

More information

To determine the status of the Uley Wanilla lens 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 extraction for the 2017–18 water-use year is based on the best data available as of February 2019 and could 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 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 *Southern Basins PWA 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 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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