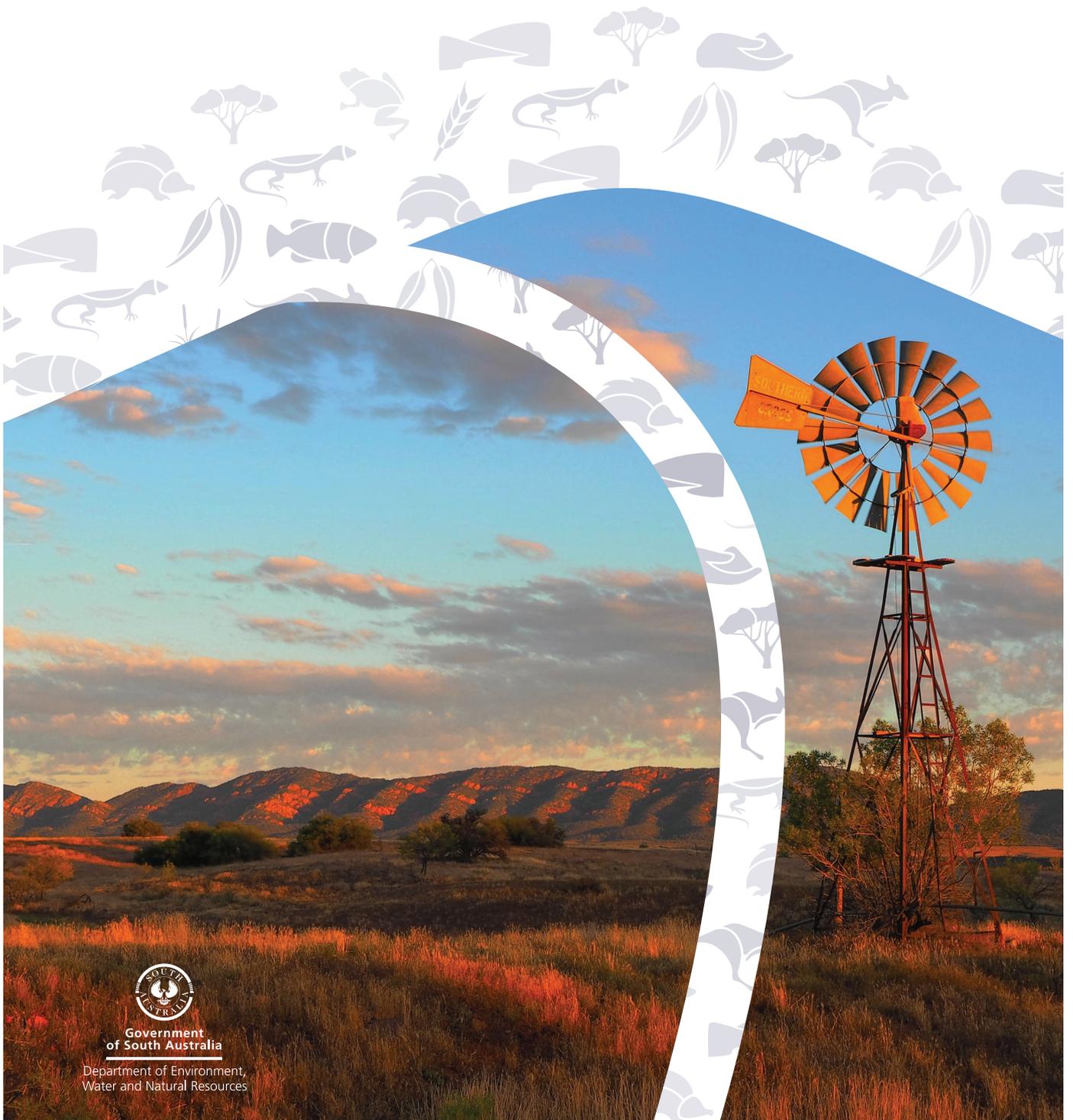


# Southern Basins PWA

## Uley South

2016 Groundwater level and salinity status report



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of South Australia

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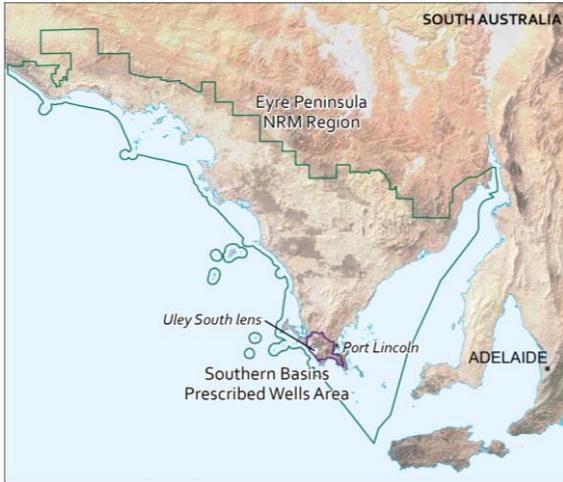
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# Regional setting



Within the Eyre Peninsula Natural Resources Management Region, the Southern Basins Prescribed Wells Area (PWA) is located at the southernmost part of the Eyre Peninsula, between the townships of Port Lincoln and Coffin Bay. It is prescribed under South Australia's *Natural Resources Management Act 2004* and a water allocation plan provides for the sustainable use of the groundwater resources. The Uley South fresh groundwater lens (herein "Uley South") is located towards the south of the Southern Basins PWA and discharges to the Southern Ocean.

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 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 and 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 these two elements can cause the groundwater levels to fall and salinities to increase. Conversely, above-average rainfall can result in increases in recharge, decreases in extractions and groundwater levels may rise and the salinity may stabilise or decline. Historical rainfall data indicate that trends of above or below-average rainfall can last for up to 25 years, and that high-intensity rainfall can result in greater and more-rapid water level (i.e. recharge) responses.

# 2016 Status

Uley South, in the Southern Basins PWA, has been assigned a green status for 2016:

## 2016 Status



Positive trends have been observed over the past five years

The 2016 status for Uley South is based on:

- most monitoring wells (86%) show a five-year trend of rising or stable groundwater levels
- all monitoring wells show a five-year trend of stable or decreasing groundwater salinity.

### Rainfall

The Westmere rainfall station (BoM Station 18137) is located approximately 10 km east of Uley South, and recorded 499 mm of rainfall in the 2015–16 water-use year. This is 71 mm below the long-term average of 570 mm (1900–2016) and 29 mm below the five-year average of 529 mm (2012–16) (Figs 1 and 2). Notable seasonal variations over the past five years include the unusually dry spring–summer of 2012–13, the wet summer of 2013–14 and dry winter of 2015. The total rainfall in the summer of 2015–16 was twice the long-term average, being dominated by the particularly high rainfall recorded in February of 75.2 mm. There appears to be a trend of increasing rainfall in the west and north-western parts of the PWA when comparing 2015–16 rainfall with five-year and long-term average annual rainfall (Fig. 1).

### Water use

Within the Southern Basin PWA, the Uley South Public Water Supply consumptive pool (Fig. 1) has been reserved exclusively for the purpose of providing public water supply. Licensed groundwater extractions occur predominantly from the fresh groundwater lenses within the Quaternary limestone aquifer. In 2015–16, metered extractions from Uley South totalled 5344 ML, which represent a 4% increase from both the previous water-use year and the five-year average annual extraction (Fig. 3). This volume of extraction equates to 73% of the total allocation limit for the Uley South consumptive pool and accounts for 96% of the total licensed extractions within the Southern Basins PWA.

### Groundwater levels

Groundwater levels in Uley South show a positive correlation with Westmere rainfall. In the past five years, 24 of 36 monitoring wells (67%) show a trend of rising water levels, at a median rate of 0.03 m/y while seven wells (19%) show stable water levels. The remaining five wells (14%) show a declining trend, at a median rate of 0.013 m/y. Of these wells, 3% show their lowest water level on record (Fig. 4). The wells that show declining trends are concentrated mostly in the north-western part of Uley South (Fig. 4).

### Groundwater salinity

In 2016, all 17 available monitoring wells recorded salinities of less than 1000 mg/L, ranging between 442 and 661 mg/L (Fig. 5). In the five years to 2016, 93% of wells with sufficient data for a five-year analysis have shown a trend of stable salinity, while the remaining well, located at the centre of the area, shown a trend of decreasing salinity, at a rate of 12 mg/L/y (Fig. 6).

# More information

To determine the status of Uley South for 2016, the trends in groundwater levels and salinities over the past five years (2012 to 2016, inclusive) were analysed, in contrast to the year-to-year assessments that have been used in past *Groundwater level and salinity status reports*. 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](#).

To view the *Southern Basins Prescribed Wells Area Groundwater Level and Salinity Status Report 2011*, which includes background information on hydrogeology, rainfall and relevant groundwater-dependent ecosystems, please visit the *Water Resource Assessments* page on [WaterConnect](#).

To view or download groundwater level and salinity data from observation wells within the Southern Basins PWA, please visit [Groundwater Data](#) on WaterConnect.

For further details about the Southern Basins Prescribed Wells Area, please see the *Water Allocation Plan for the Southern Basins and Musgrave Prescribed Wells Area* on the Natural Resources Eyre Peninsula [website](#).



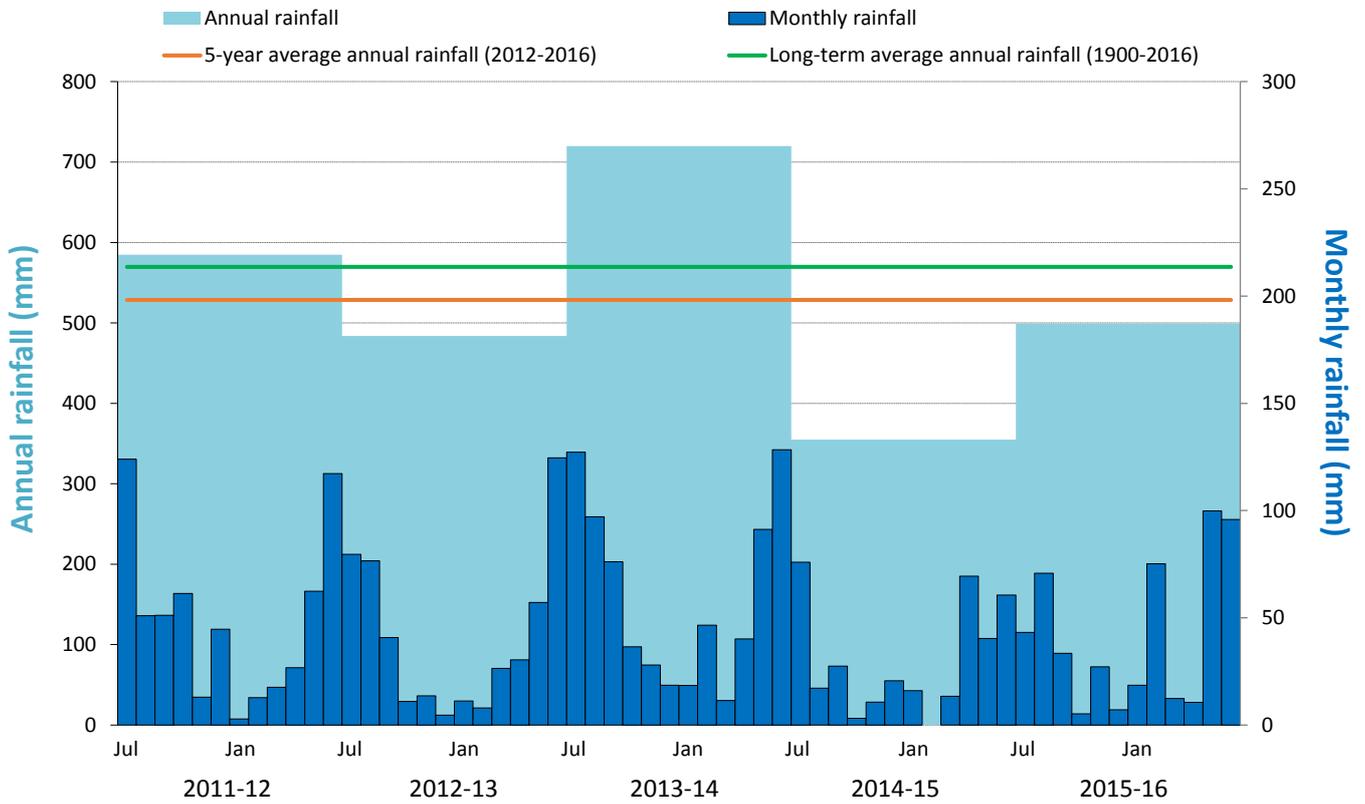


Figure 2. Annual (July–June) and monthly rainfall for the past five water-use years, and the five-year and long-term average annual rainfall recorded at the Westmere rainfall station (BoM Station 18137)<sup>2</sup>

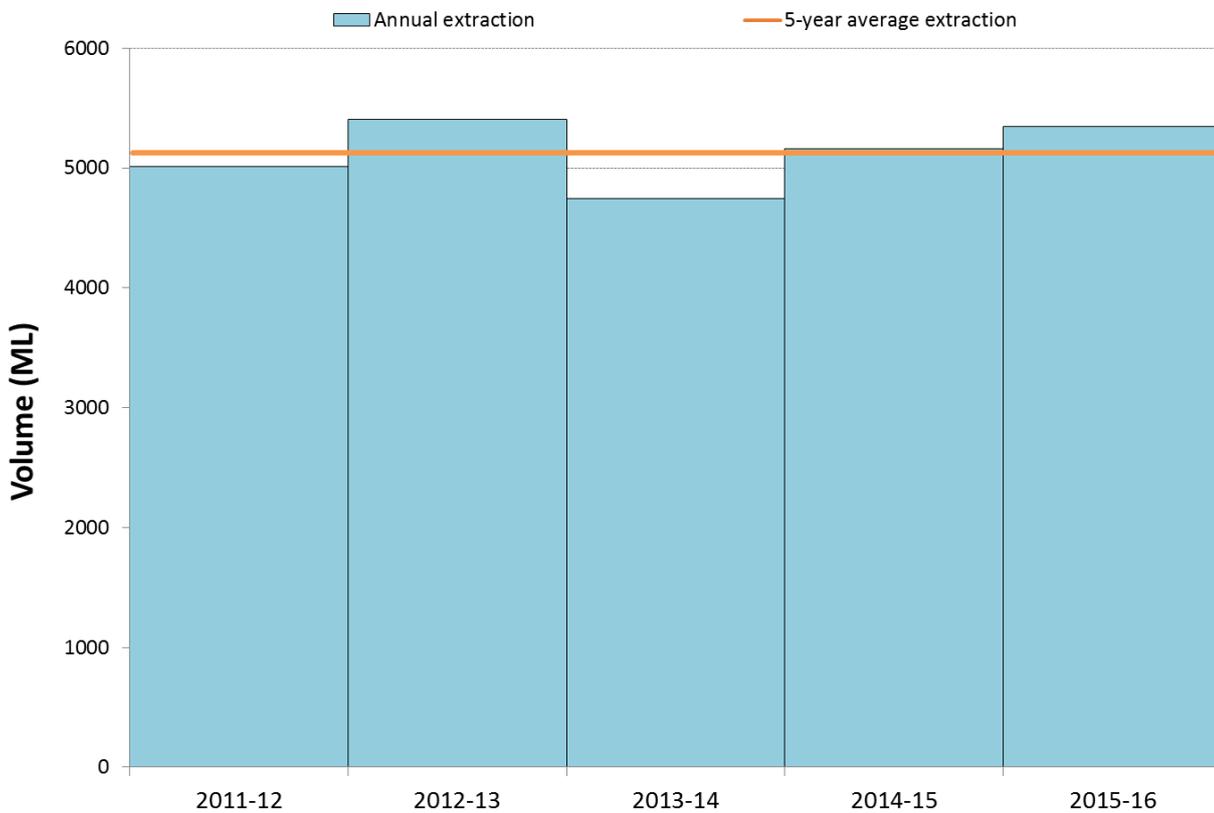


Figure 3. Licensed groundwater extraction volumes for the past five water-use years, for Uley South in the Southern Basins PWA

<sup>2</sup> Rainfall data used in this report is sourced from the SILO Patched Point Dataset, which uses original Bureau of Meteorology daily rainfall measurements and is available online at [www.longpaddock.qld.gov.au/silo](http://www.longpaddock.qld.gov.au/silo).

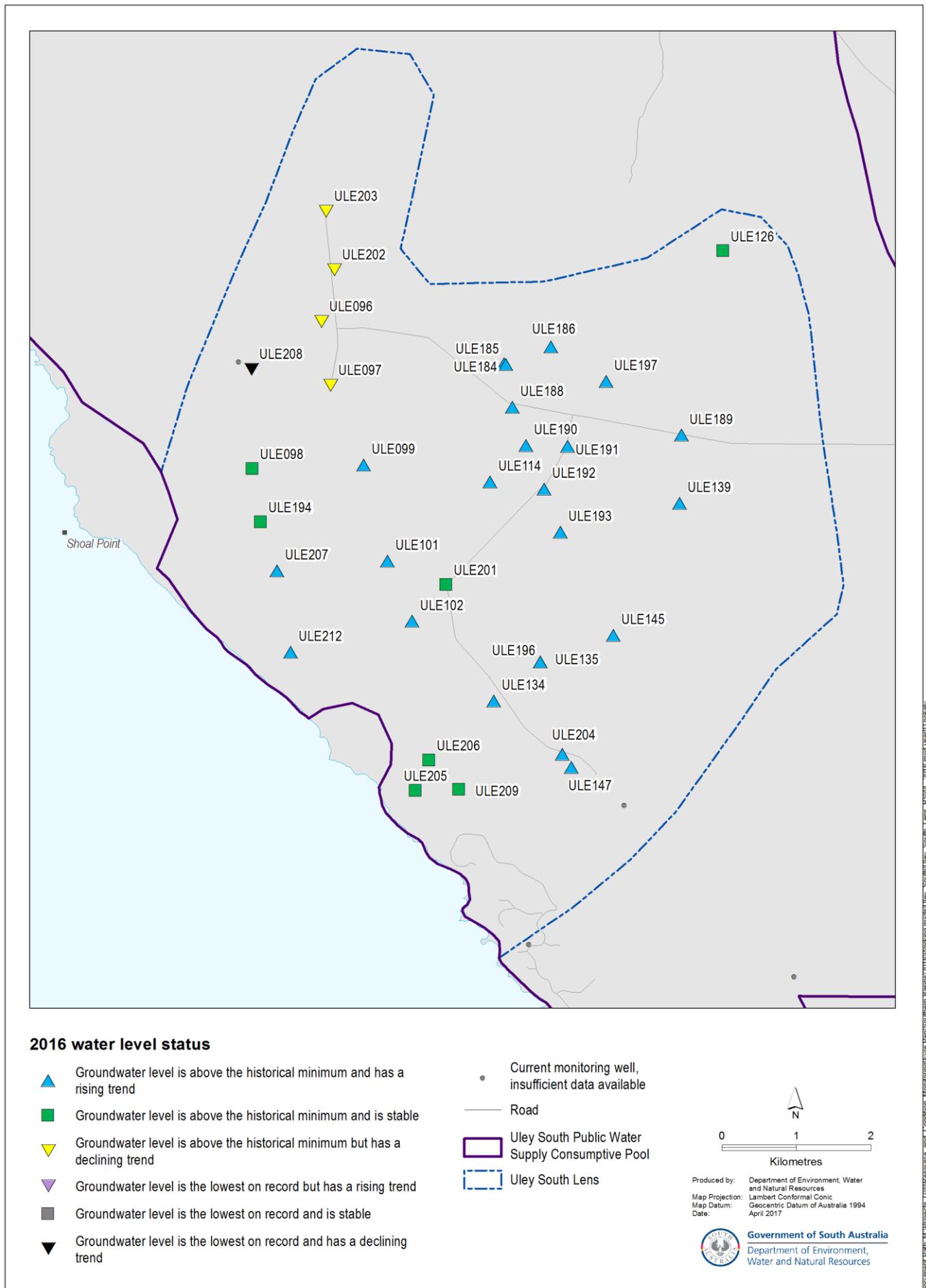


Figure 4. 2016 status of groundwater levels in Uley South (Southern Basins PWA), based on the five-year water level trend from 2012 to 2016

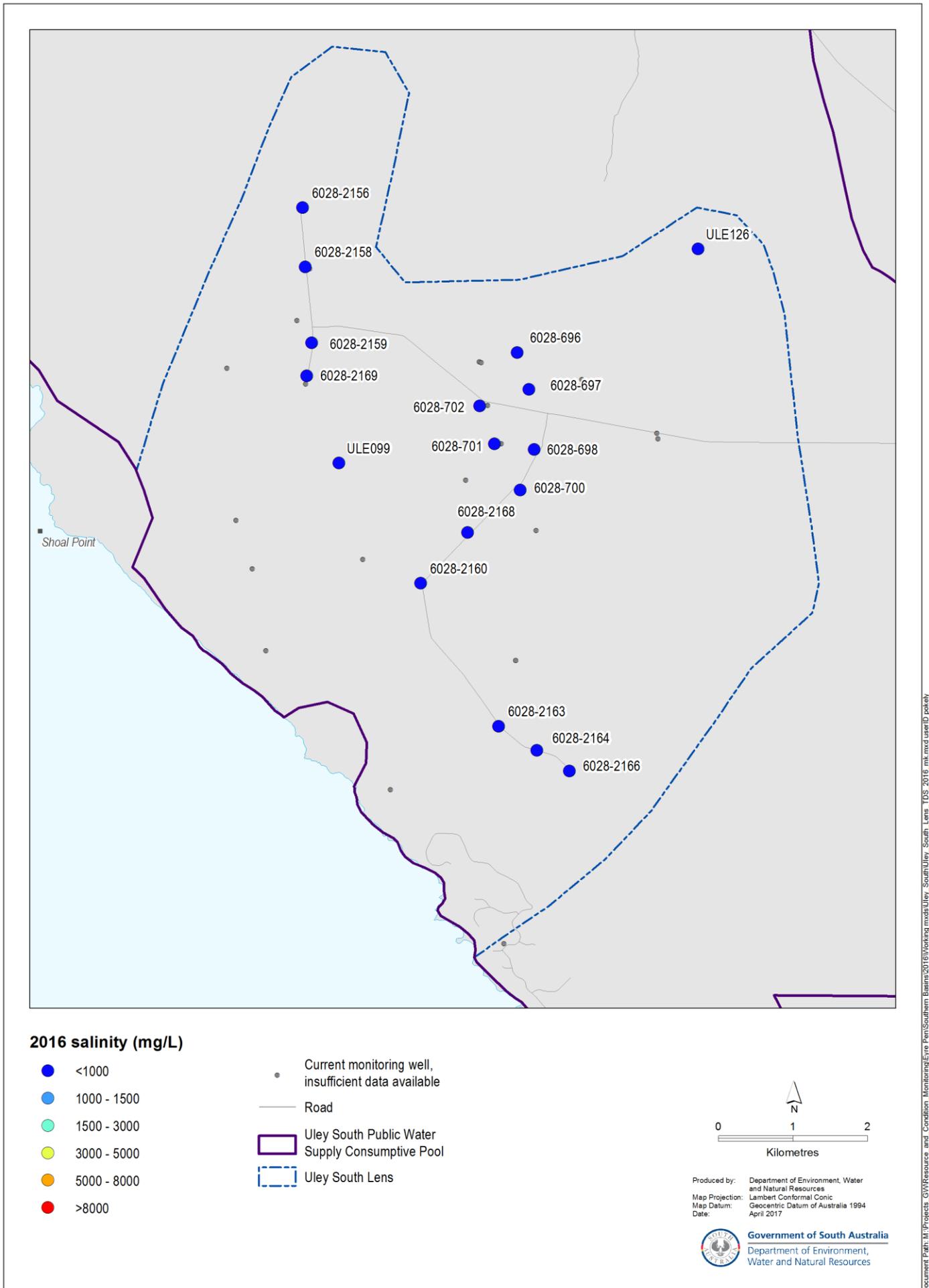


Figure 5. 2016 groundwater salinity of Uley South (Southern Basins PWA)

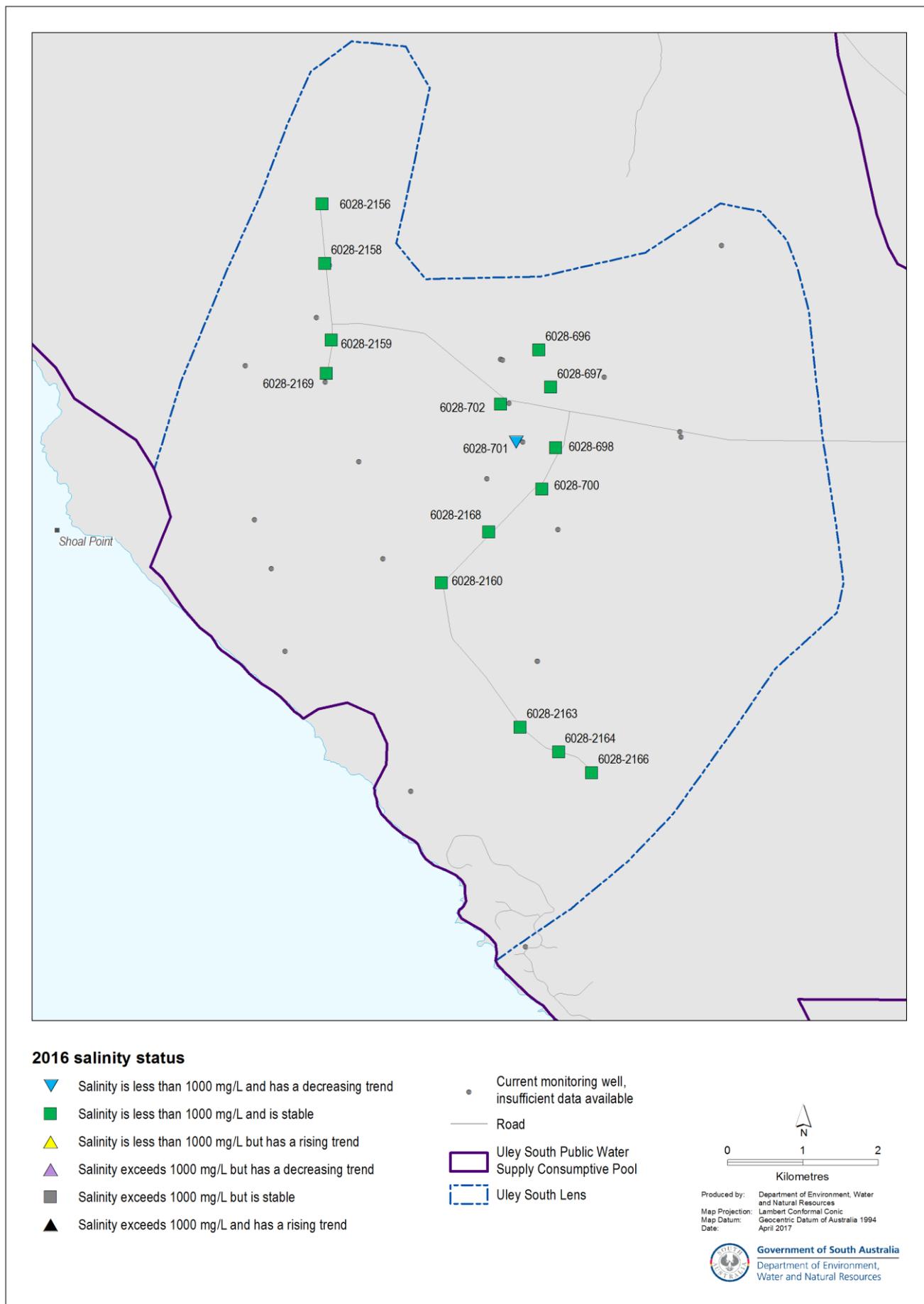


Figure 6. 2016 status of groundwater salinities in Uley South (Southern Basins PWA), based on the five-year water level trend from 2012 to 2016



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