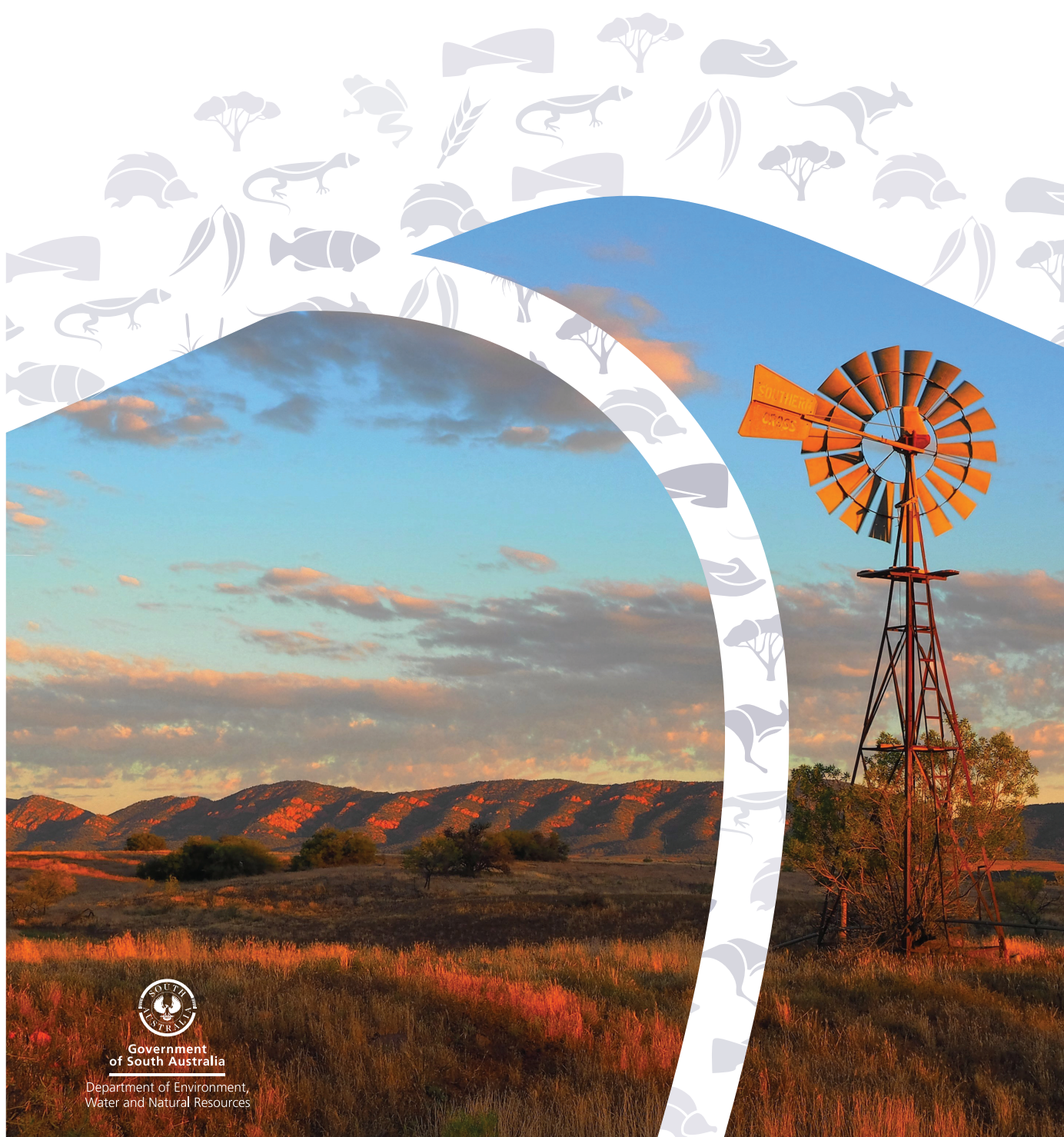


# Southern Basins PWA

## Uley Wanilla

**2016 Groundwater level and salinity status report**



Government  
of South Australia

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Water and Natural Resources

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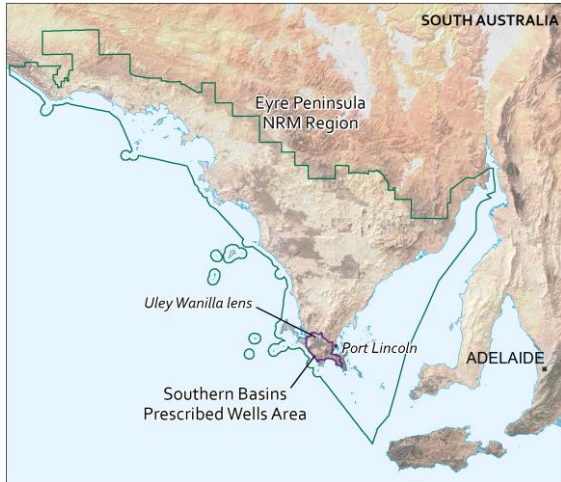
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# Regional setting



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 Wanilla fresh groundwater lens (herein "Uley Wanilla") is located towards the north 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 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 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 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 Wanilla, 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 Wanilla is based on:

- most monitoring wells (56%) show a five-year trend of rising groundwater levels
- most monitoring wells (83%) show a five-year trend of stable groundwater salinity.

### Rainfall

The Big Swamp rainfall station (BoM Station 18017), located approximately 3 km east of Uley Wanilla, recorded 556 mm of rain in 2015–16. This is 6 mm below the long-term average of 562 mm and 8 mm greater than the five-year average of 548 mm (Figs 1 and 2). Notable variations include: the unusually wet winter of 2013 (June, July and August rainfall totals were greater than 110 mm); April 2015 monthly rainfall which was twice the long-term average; and monthly rainfall for February 2016 exceeds the long-term average by a factor of six. 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 Wanilla 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 Wanilla totalled 83 ML, which represents a 25% decrease from the previous water-use year and is 18% greater than the five-year average annual extraction (Fig. 3). This volume of extraction equates to 54% of the total allocation limit of 155 ML for Uley Wanilla and accounts for 1.5% of the total licensed extractions within the Southern Basins PWA. During 2012–13, which was a period of low demand for water, groundwater extractions were intentionally minimised in order to observe the dynamics of the system (Fig. 3).

### Groundwater levels

Groundwater levels in Uley Wanilla show a positive correlation with Big Swamp rainfall. In the past five years, nine of 16 monitoring wells (56%) show a trend of rising water levels ranging between 0.01 and 0.08 m/y and a median of 0.03 m/y, while the remaining 44% show declining trends at rates between 0.01 and 0.1 m/y (Fig. 4). Wells with a rising trend are concentrated in the northern part of Uley Wanilla.

### Groundwater salinity

In 2016, nine available monitoring wells recorded salinities of less than 1000 mg/L, ranging from 411 and 733 mg/L (Fig. 5). In the five years to 2016, five wells (83%) have shown trend of stable salinities, while the remaining well (17%), located at the eastern boundary of the area, shown a trend of increasing salinity, at a rate of 18 mg/L/y (Fig. 6).

# More information

To determine the status of Uley Wanilla 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](#).



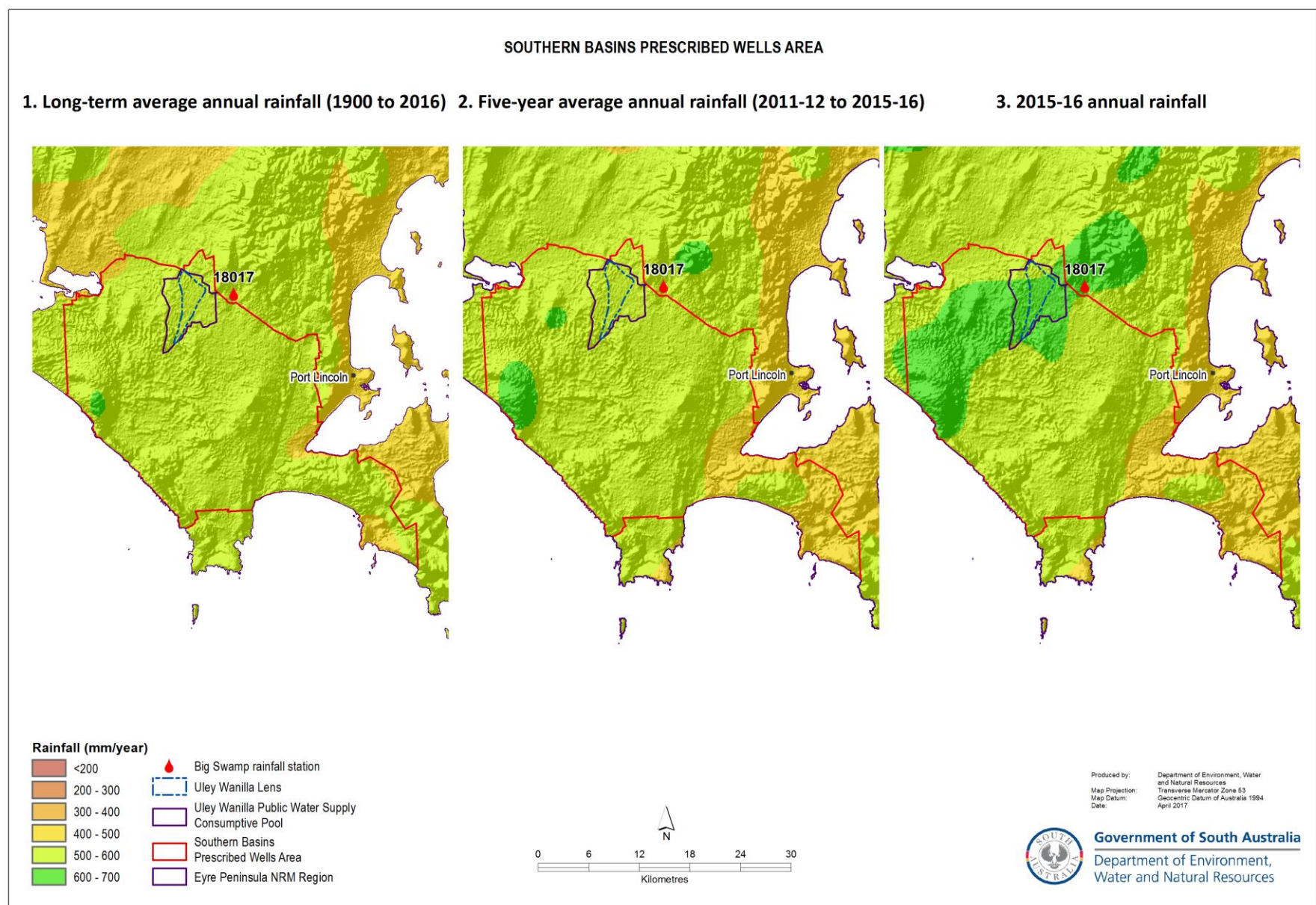


Figure 1. (1) Long-term and (2) five-year average annual rainfall, and (3) annual rainfall for the 2015–16 water-use year in the Southern Basins PWA<sup>1</sup>

<sup>1</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)

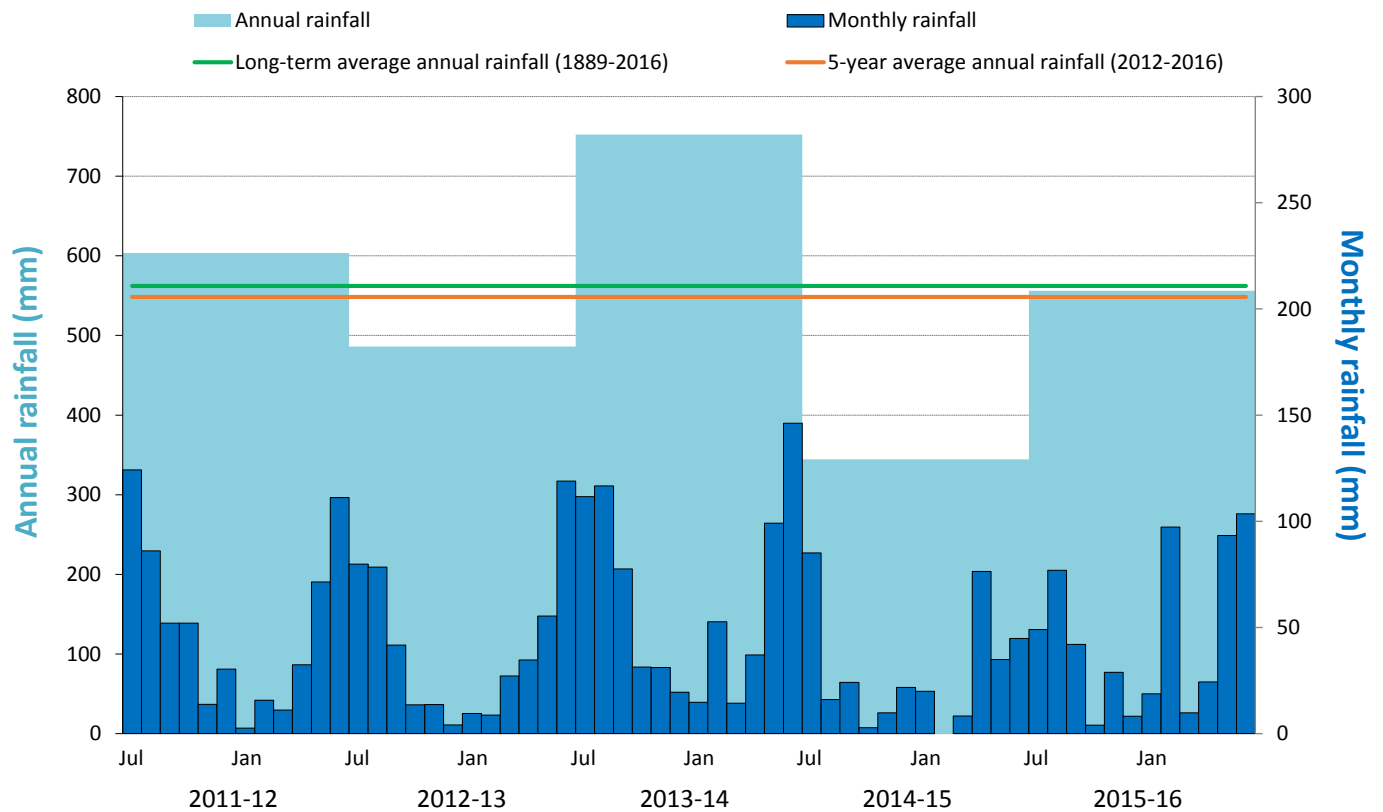


Figure 2. Annual (July–June) and monthly rainfall for the past five water-use years, and the five-year and long-term average annual rainfall recorded at the Big Swamp rainfall station (BoM Station 18017)<sup>2</sup>

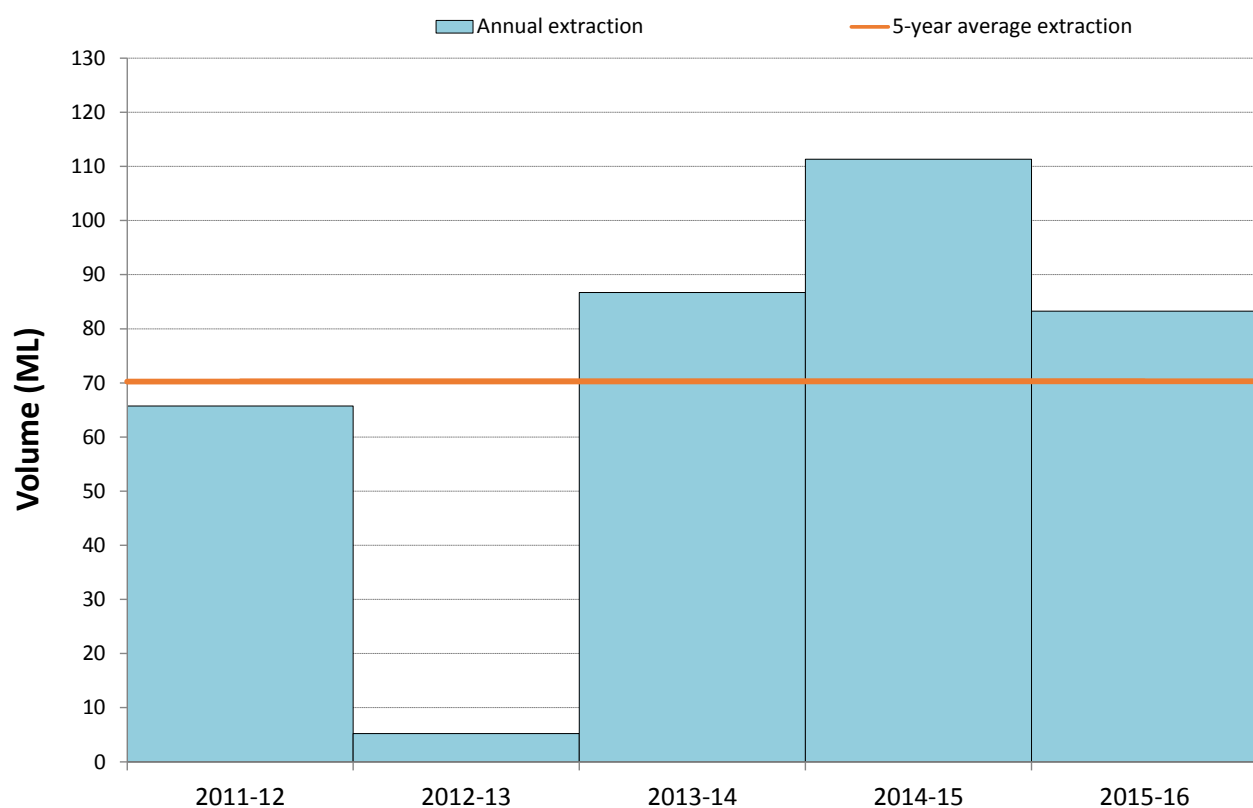
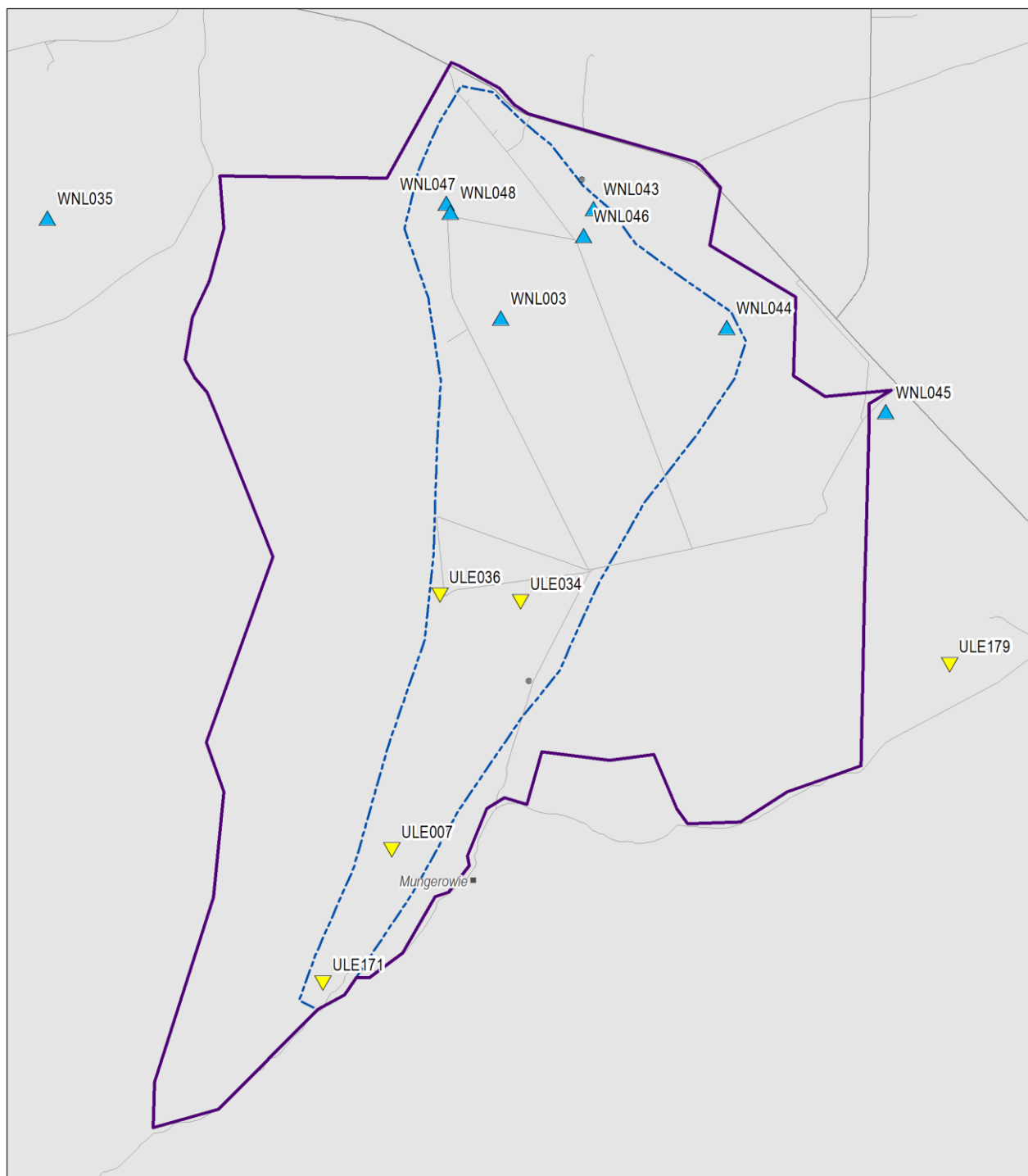


Figure 3. Licensed groundwater extraction volumes for the past five water-use years, for Uley Wanilla in the Southern Basins PWA

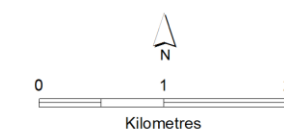
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#### 2016 water level status

- ▲ 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
- Road
- Uley Wanilla Public Water Supply Consumptive Pool
- ▭ Uley Wanilla Lens



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 Date: April 2017



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



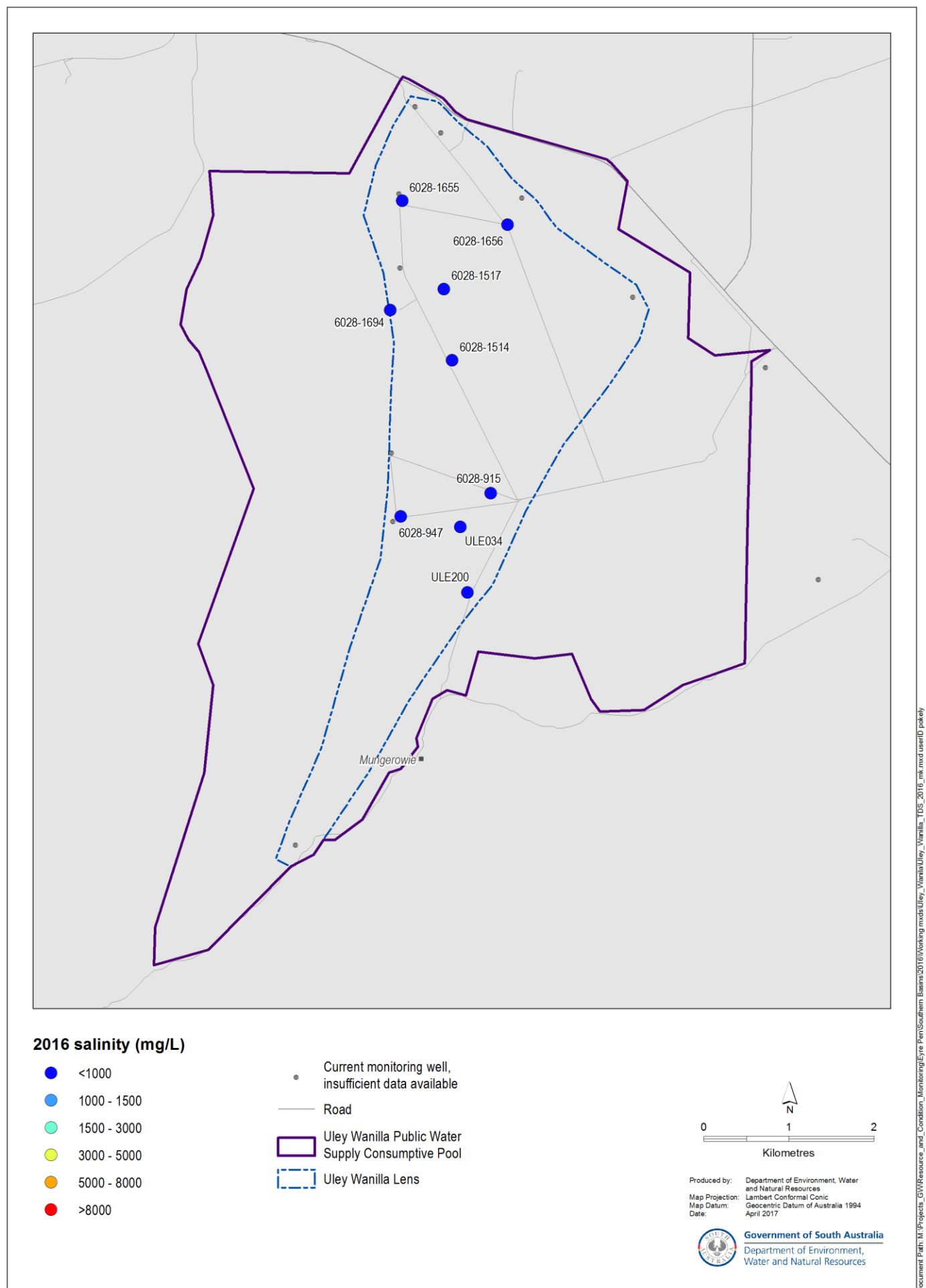


Figure 5. 2016 groundwater salinity of the Uley Wanilla (Southern Basins PWA)

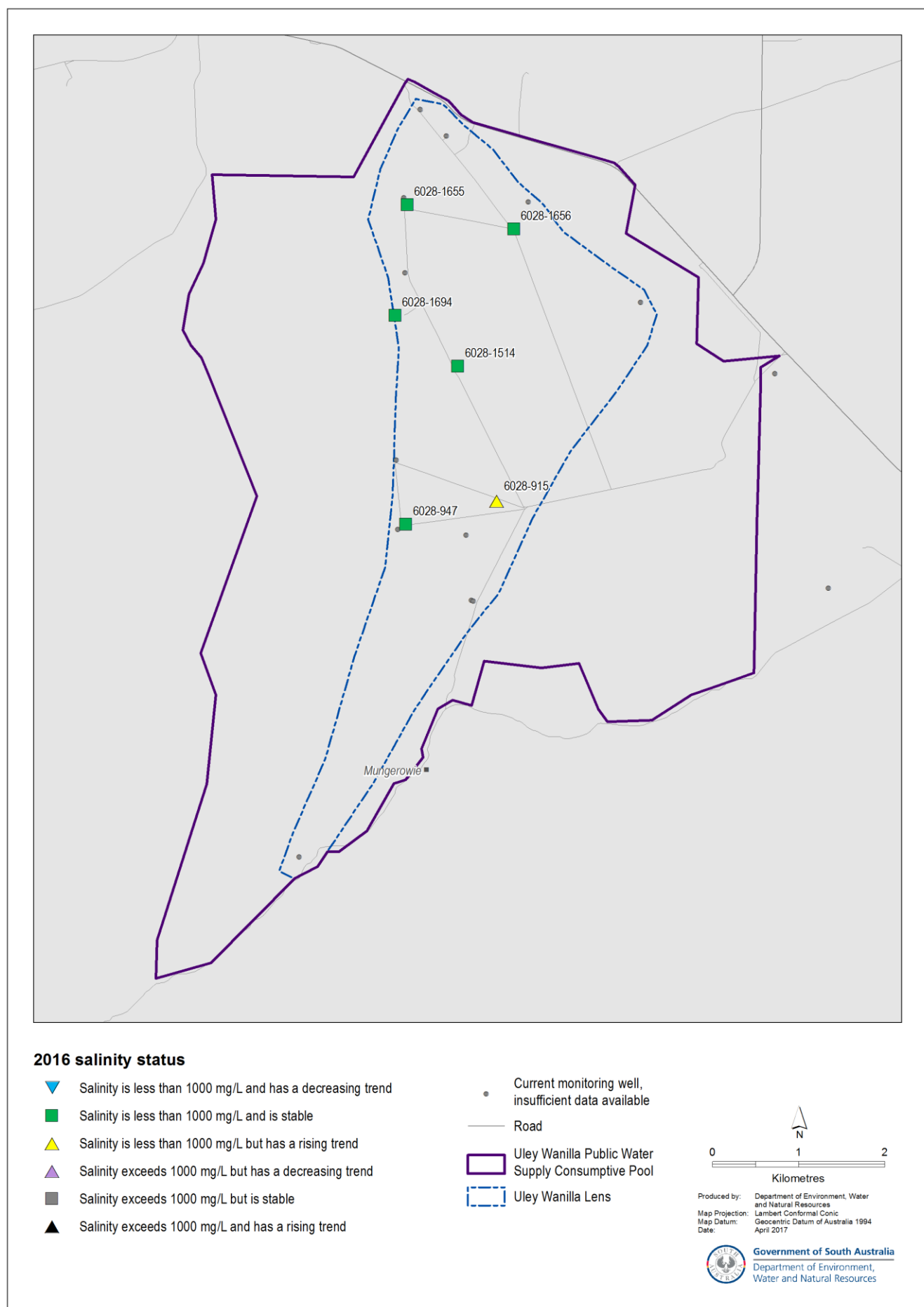


Figure 6. 2016 status of groundwater salinities in the Uley Wanilla (Southern Basins PWA), based on the five-year water level trend from 2012 to 2016



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