

# Southern Basins PWA

## Lincoln South

**2016 Groundwater level and salinity status report**



Government  
of South Australia

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Water and Natural Resources

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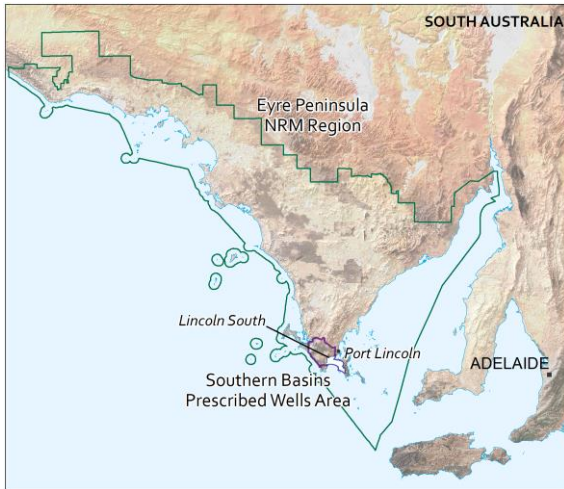
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# Regional setting



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 the *Natural Resources Management Act 2004* and a water allocation plan provides for the sustainable use of the groundwater resources. The Lincoln South fresh groundwater lenses (herein “Lincoln South”) are located towards the southeast 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 levels 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 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

Lincoln, 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 Lincoln is based on:

- most monitoring wells (96%) show a five-year trend of rising or stable groundwater levels
- all monitoring wells show a five-year trend of stable groundwater salinity.

### Rainfall

The Westmere rainfall station (BoM Station 18137) is located approximately 5 km east of Lincoln 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 30 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, wet summer of 2013–14 and dry winter of 2015. Total rainfall in the summer of 2015–16 was twice the long-term average and was dominated by the particularly high rainfall recorded in February of 75 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 Lincoln South Public Water Supply consumptive pool (Fig. 1) has been reserved exclusively for the purpose of providing public water supplies. Licensed groundwater extractions occur predominantly from the fresh groundwater lenses within the Quaternary limestone aquifer. In 2015–16, metered extractions from Lincoln South totalled 8.1 ML, which represents an 8% increase from the previous water-use year but is 87% less than the five-year average annual extraction of 64 ML (Fig. 3). This volume of extraction represents 1.3% of the total allocation limit of 625 ML for Lincoln South and accounts for 0.13% of the total licensed extractions within the Southern Basins PWA for the 2015–16 water-use year.

### Groundwater levels

Most groundwater levels in Lincoln South show a positive correlation with Westmere rainfall. In the past five years, 21 of 25 monitoring wells (84%) show trends of rising water levels, at a median rate of 0.024 m/y, while three wells (12%) show stable water levels. The remaining well shows a declining trend of less than 0.01 m/y (Fig. 4). The wells that show stable or declining trends are localised within the Lincoln-B and Lincoln-C lenses (Fig. 4).

### Groundwater salinity

In 2016, 16 available monitoring wells recorded salinities ranging between 763 and 6820 mg/L, with 38% of these wells showing salinity of less than 1000 mg/L (Fig. 5). In the five years to 2016, all wells with sufficient data to complete a five-year analysis, have shown a stable trend of groundwater salinity; these wells are located in the surrounding of the Lincoln A and C lenses (Fig. 6).

# More information

To determine the status of Lincoln 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.



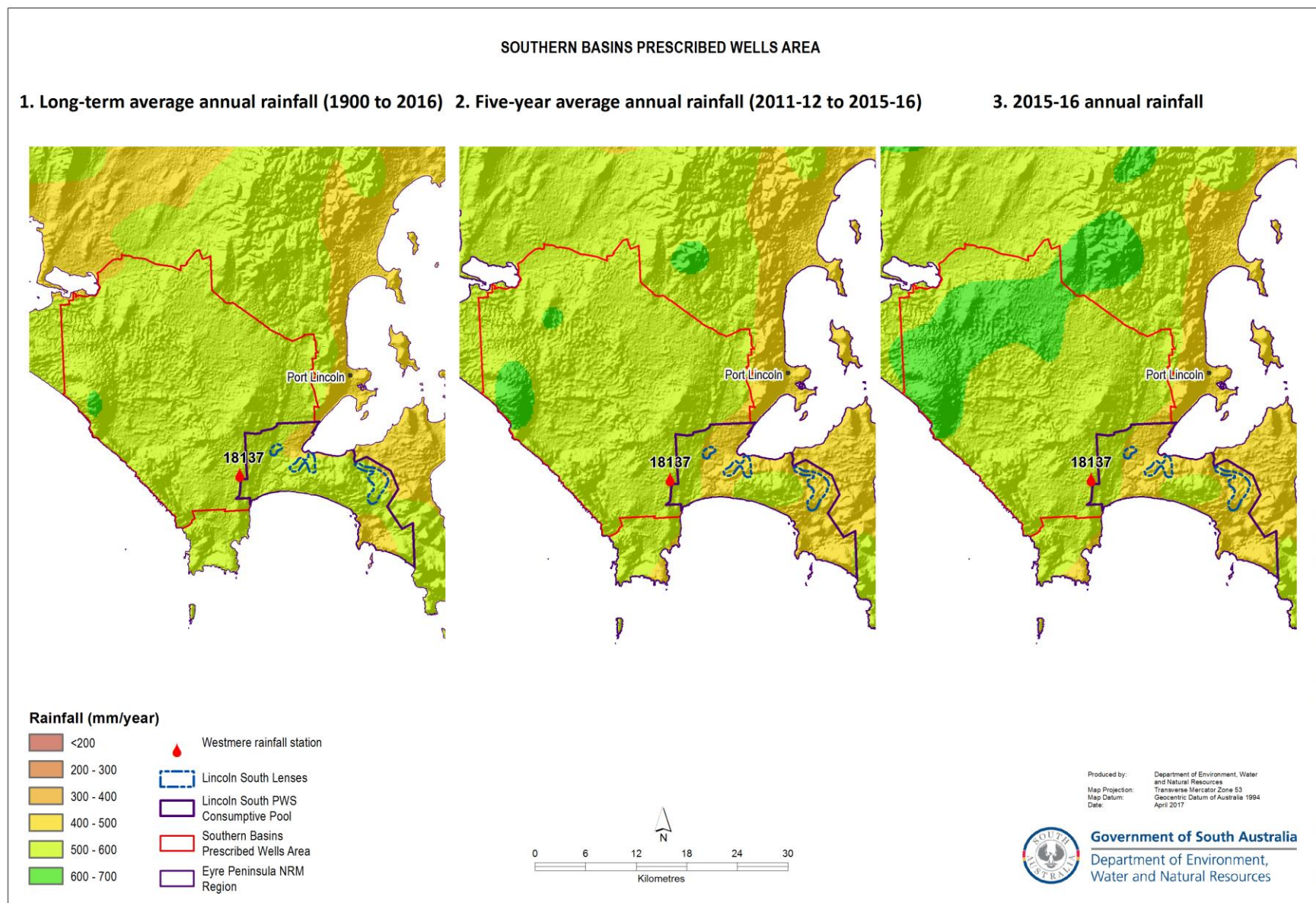


Figure 1. (1) Long-term and (2) five-year average annual rainfall, and (3) annual rainfall for the 2015–16 water-use year in the Southern Basins PWA<sup>1</sup>

<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)

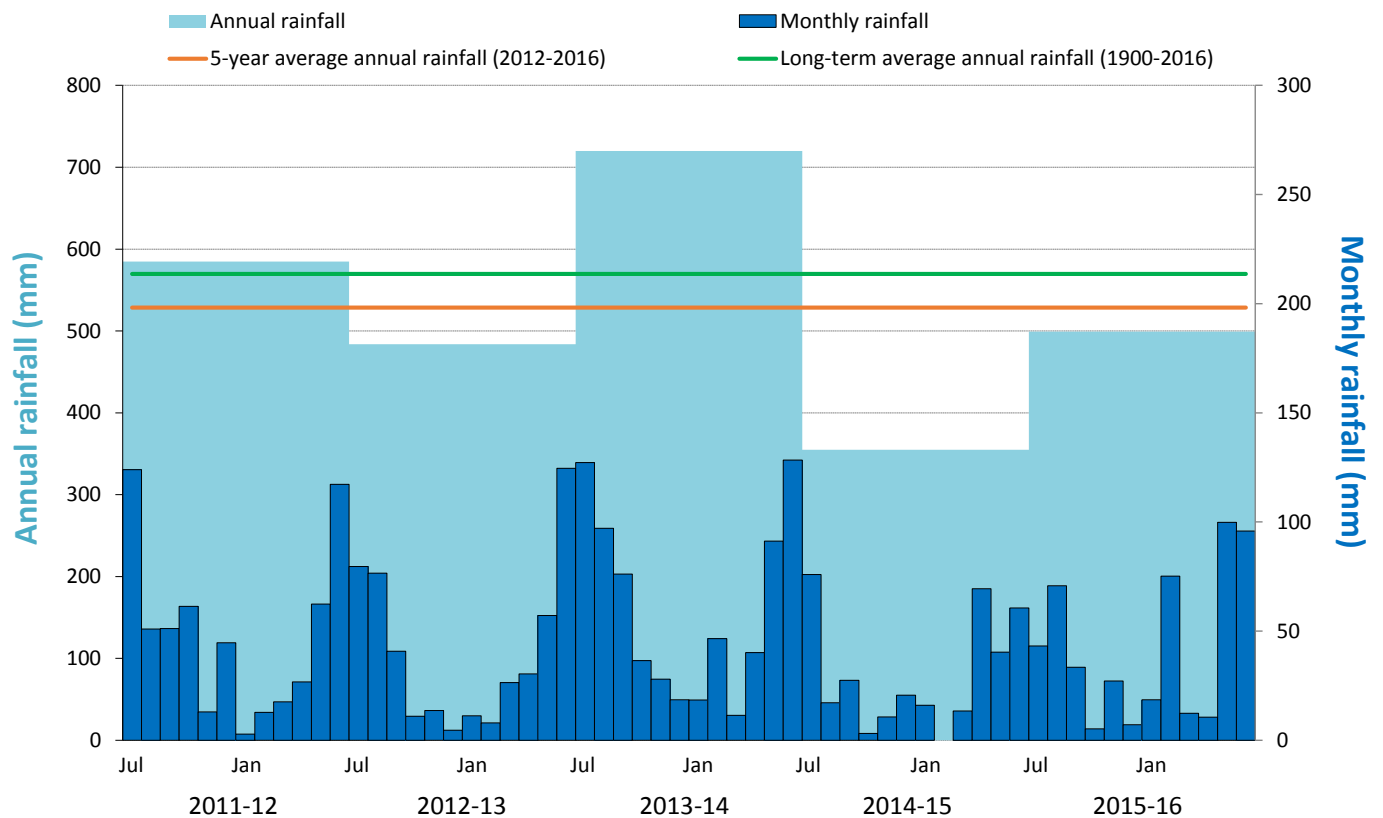


Figure 2. Annual (July–June) and monthly rainfall for the past five water-use years, and the five-year and long-term average annual rainfall recorded at the Westmere rainfall station (BoM Station 18137)<sup>2</sup>

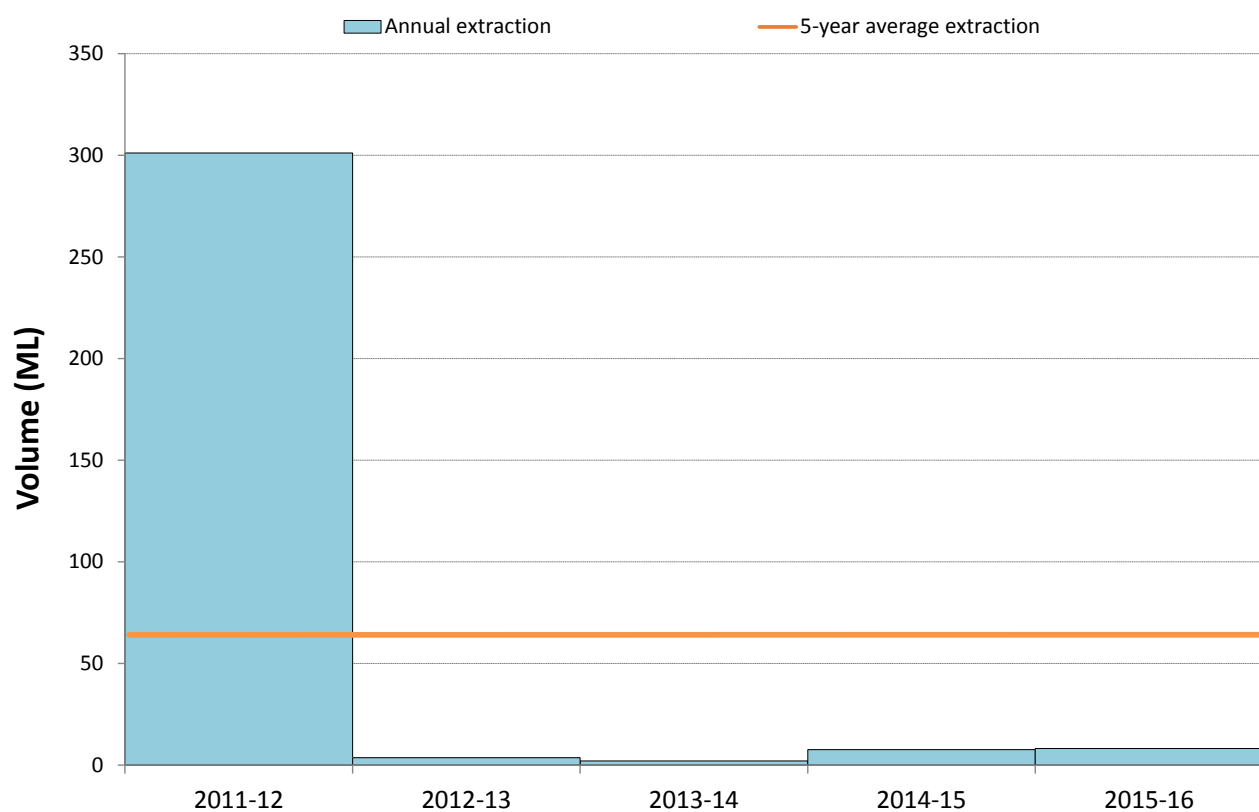


Figure 3. Licensed groundwater extraction volumes for the past five water-use years, for Lincoln South in the Southern Basins PWA

<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).

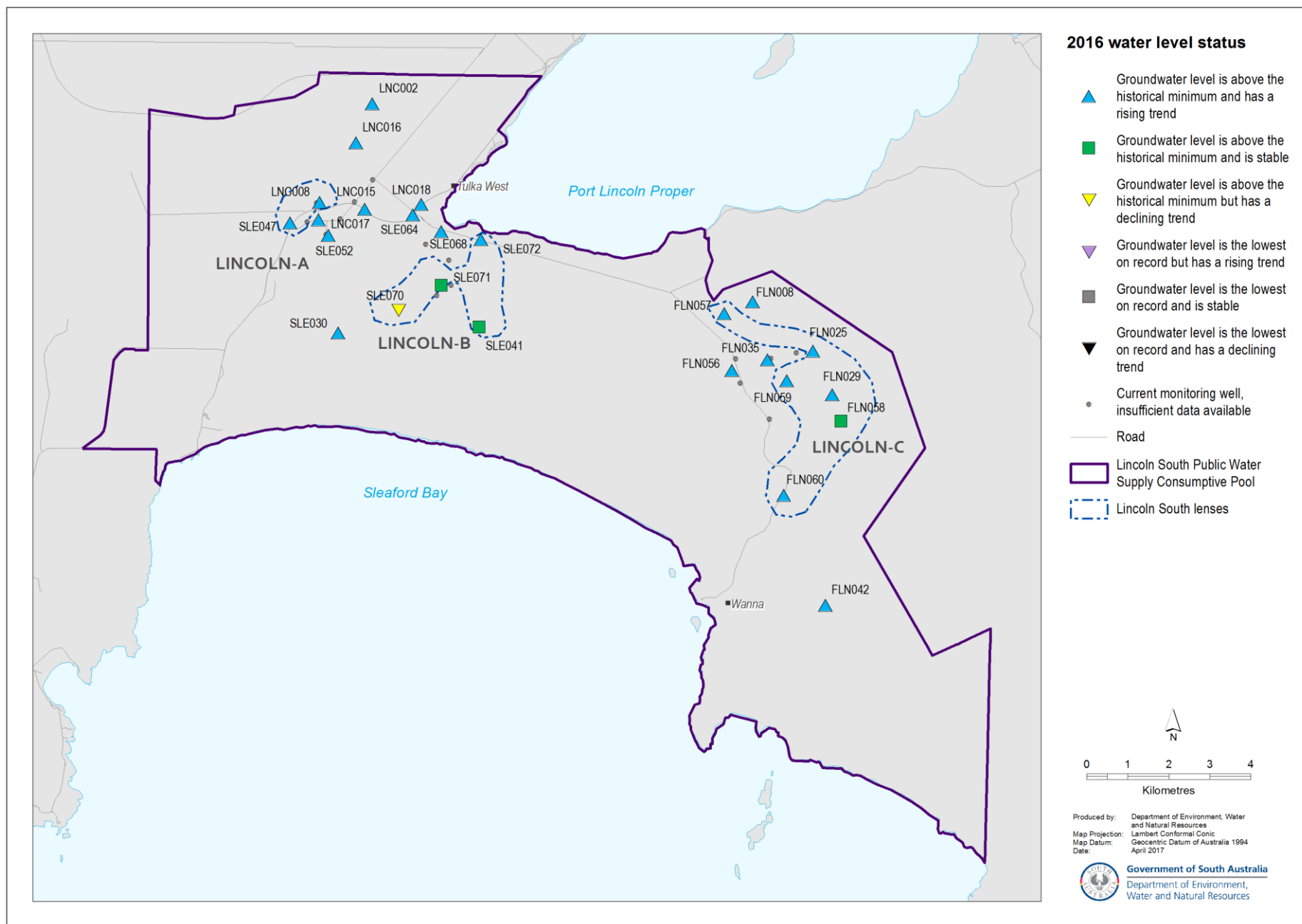


Figure 4. 2016 status of groundwater levels for Lincoln South (Southern Basins PWA), based on the five-year water level trend from 2012 to 2016



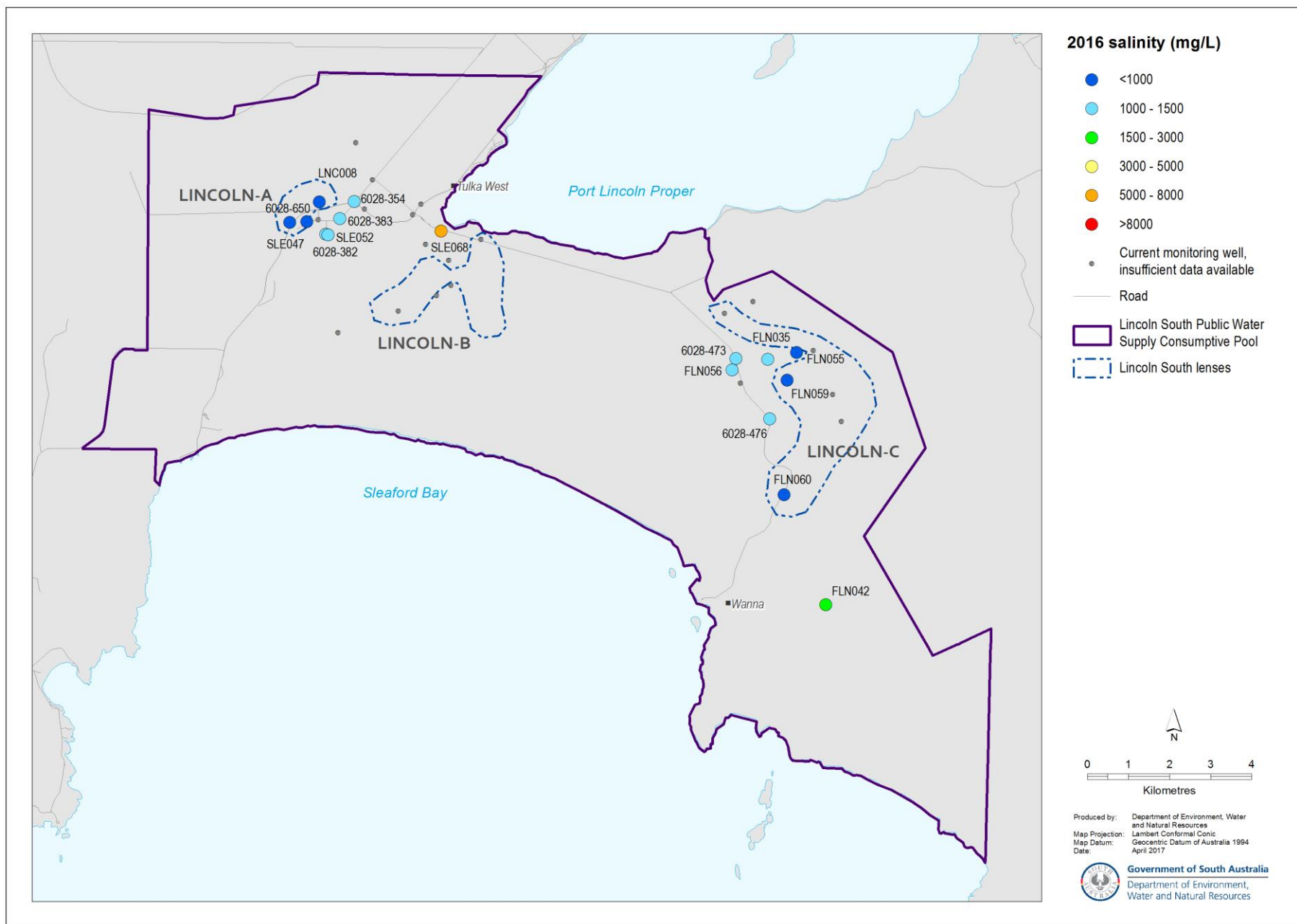


Figure 5. 2016 groundwater salinity of Lincoln South (Southern Basins PWA)

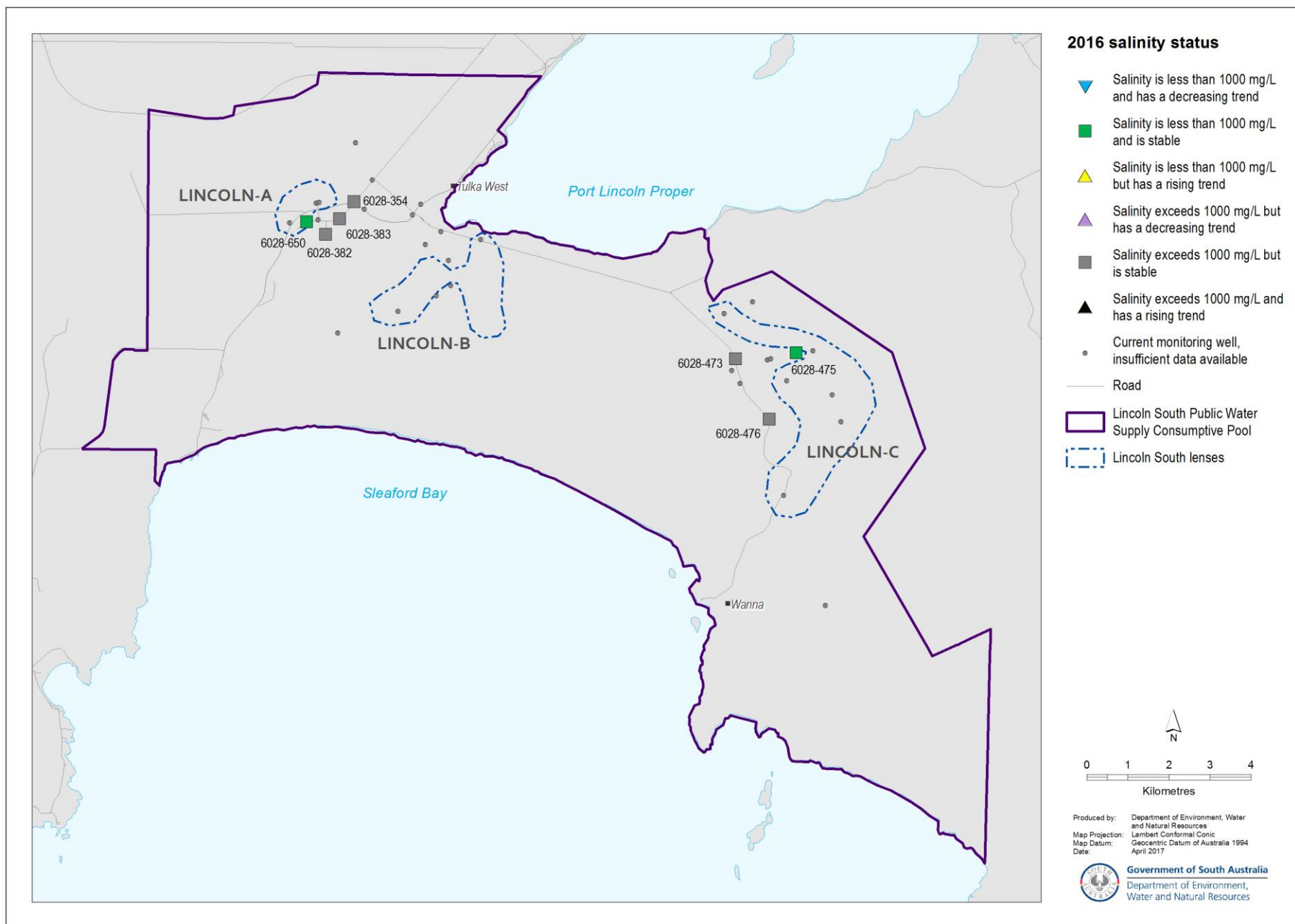


Figure 6. 2016 status of groundwater salinities for Lincoln South (Southern Basins PWA), based on the five-year water level trend from 2012 to 2016



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