
SOUTHERN BASINS PWA

LINCOLN BASIN

Groundwater Level and Salinity Status Report

2013



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Department of Environment,
Water and Natural Resources

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2013 SUMMARY



The Southern Basins Prescribed Wells Area (PWA) is located at the southern most part of the Eyre Peninsula, approximately 270 km west of Adelaide. 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 Lincoln Basin is located in the south-east of the Southern Basins PWA.

Within the Southern Basins PWA there are two main sedimentary sequences containing groundwater that overlie basement rocks: the Quaternary limestone aquifer and the underlying Tertiary sands aquifer. The Quaternary limestone aquifer comprises a generally thin veneer of aeolianite sediments of the Bridgewater Formation and is continuous across the PWA. Areas within the Quaternary limestone aquifer defined by salinity of less than

1000 mg/L, such as lenses A, B and C of the Lincoln Basin, are described as a fresh groundwater lens in the current Water Allocation Plan. The main source of recharge to the Quaternary limestone aquifer is the direct infiltration of rainfall and groundwater flow is predominantly toward the nearest coastline in the Southern Basins PWA.

Licensed groundwater extractions occur predominantly from the Quaternary limestone aquifer. Metered extractions from the Lincoln Basin (lenses A, B and C) totalled 3.5 ML in 2012-13, a 99% decrease from the previous water-use year (Fig. 1). This volume of extraction equates to 0.6% of the total allocation limit of 625 ML for lenses A, B and C of the Lincoln Basin and is 0.06% of the total licensed extractions from the Southern Basins PWA.

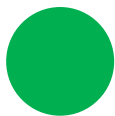
The sustainability of the groundwater resources in the Southern Basins PWA is highly dependent on recharge from rainfall. The Westmere rainfall station (number 18137) is located in the south of the Southern Basins PWA, about 5 km west of Lincoln-B lens, and recorded 579 mm of rain in 2013. This is just above the long-term average annual rainfall for that station. The month of June through to September received rainfall exceeding the long-term monthly average, but February, April and May recorded significantly below-average rainfall (Fig. 2). 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.

Long-term groundwater level trends in the Lincoln Basin show a positive correlation to rainfall recorded at the Westmere rainfall station. After 1984, groundwater levels trended downwards and rainfall was predominantly below-average. A substantial decrease in groundwater extractions in 2008 and above-average rainfall since 2009 resulted in a recovery of groundwater levels. In 2013, this trend has continued; all 27 wells forming part of the monitoring network recorded a rise in the maximum recovered groundwater level when compared to 2012 water level data (Fig. 3).

In and around lens A of the Lincoln Basin, groundwater salinity rose steadily by up to 570 mg/L between 1959 and 2008. Since 2008, salinities have been relatively stable. The salinity of the Quaternary limestone aquifer in and around lens B has also risen over time, with some observation wells recording occasional up-coning of saline groundwater due to low groundwater elevations and higher extraction rates. Long-term increases in salinity in and around lens C are less than 800 mg/L and salinities have been quite stable since 2008. Salinities of between 810 and 1300 mg/L were recorded in 2013, with those above 1000 mg/L outside the known extent of the Lincoln lenses though not all observation wells were sampled (Fig. 4). The majority of observation wells with sufficient data for comparison recorded a decrease in salinity in 2013 when compared to 2012 salinity data.

The Lincoln Basin of the Southern Basins PWA has been assigned a green status for 2013:

2013 STATUS



“No adverse trends, indicating negligible risk to the resource”

This means that the groundwater status was observed to be stable (i.e. no significant change) or improving over the reporting period. Continuation of these trends favours a very low likelihood of negative impacts on beneficial uses such as drinking water, irrigation or stock watering. The 2013 status for the Lincoln Basin is supported by:

- an overall increase in the maximum recovered groundwater level when compared to 2012 water level data
- an overall decrease in salinity when compared to 2012 salinity data.

To view the *Southern Basins PWA groundwater level and salinity status report 2011*, which includes background information on hydrogeology, rainfall stations and relevant groundwater-dependent ecosystems, and to view descriptions for all status symbols, please see the Water Resources page on [WaterConnect](#).

For further information about the Southern Basins PWRA, please see the Eyre Peninsula *Water Allocation Plan* on the Eyre Peninsula Natural Resources Management [website](#).

**Southern Basins PWA: Lenses A, B and C of the Lincoln Basin
annual groundwater extraction**

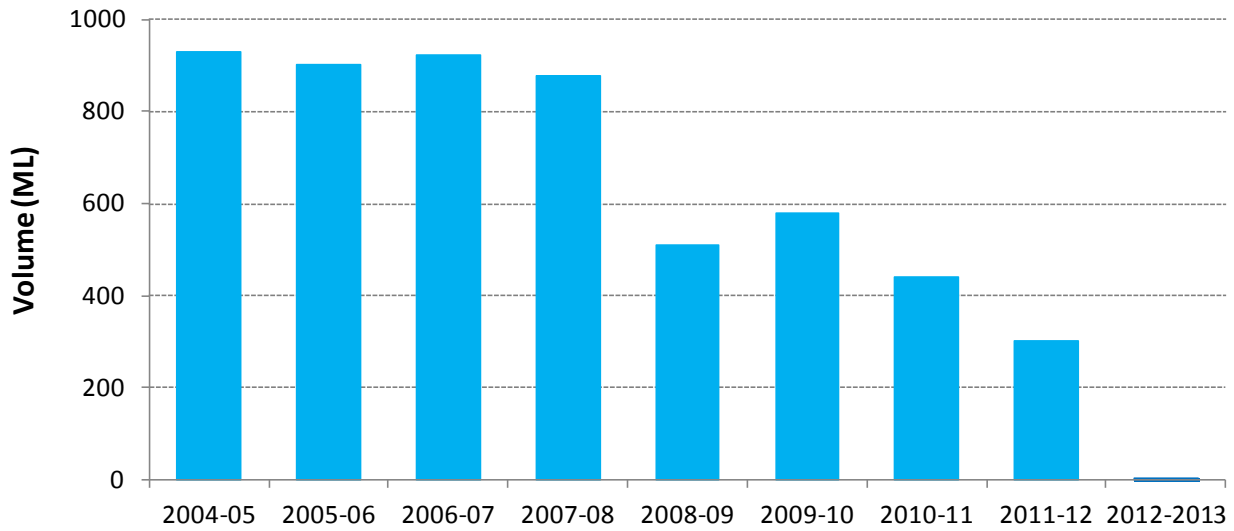


Figure 1. Historical licensed groundwater use for lenses A, B and C of the Lincoln Basin in the Southern Basins Prescribed Wells Area

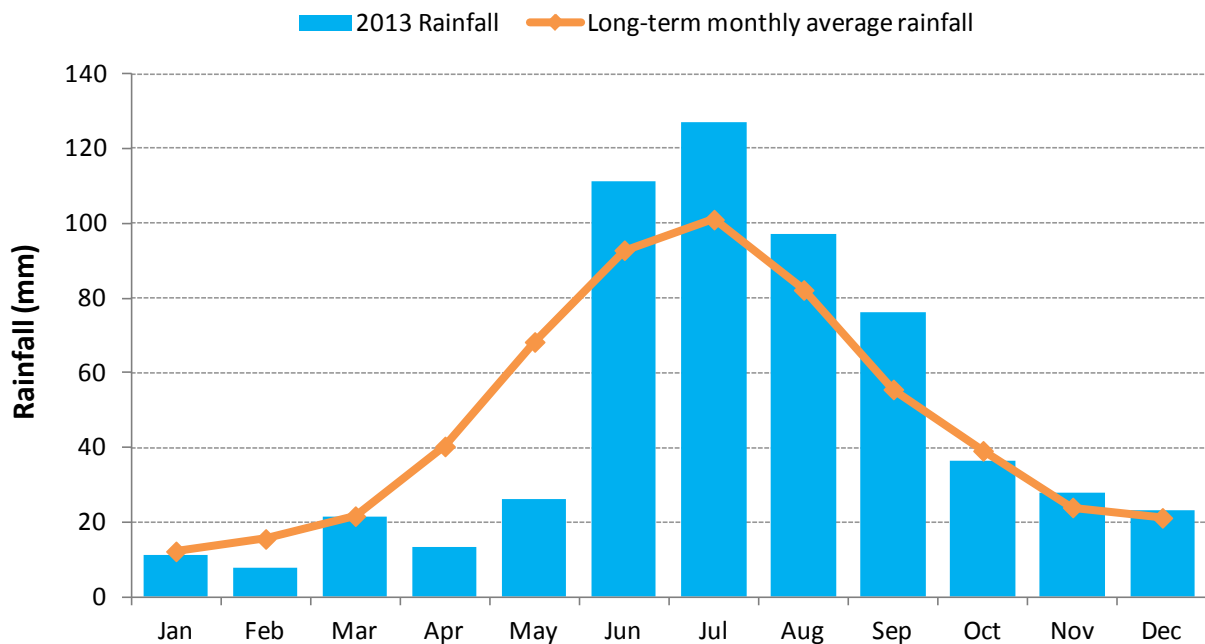


Figure 2. Monthly rainfall (mm) for 2013 and the long-term average monthly rainfall (mm) at the Westmere rainfall station (number 18137) in the Southern Basins Prescribed Wells Area

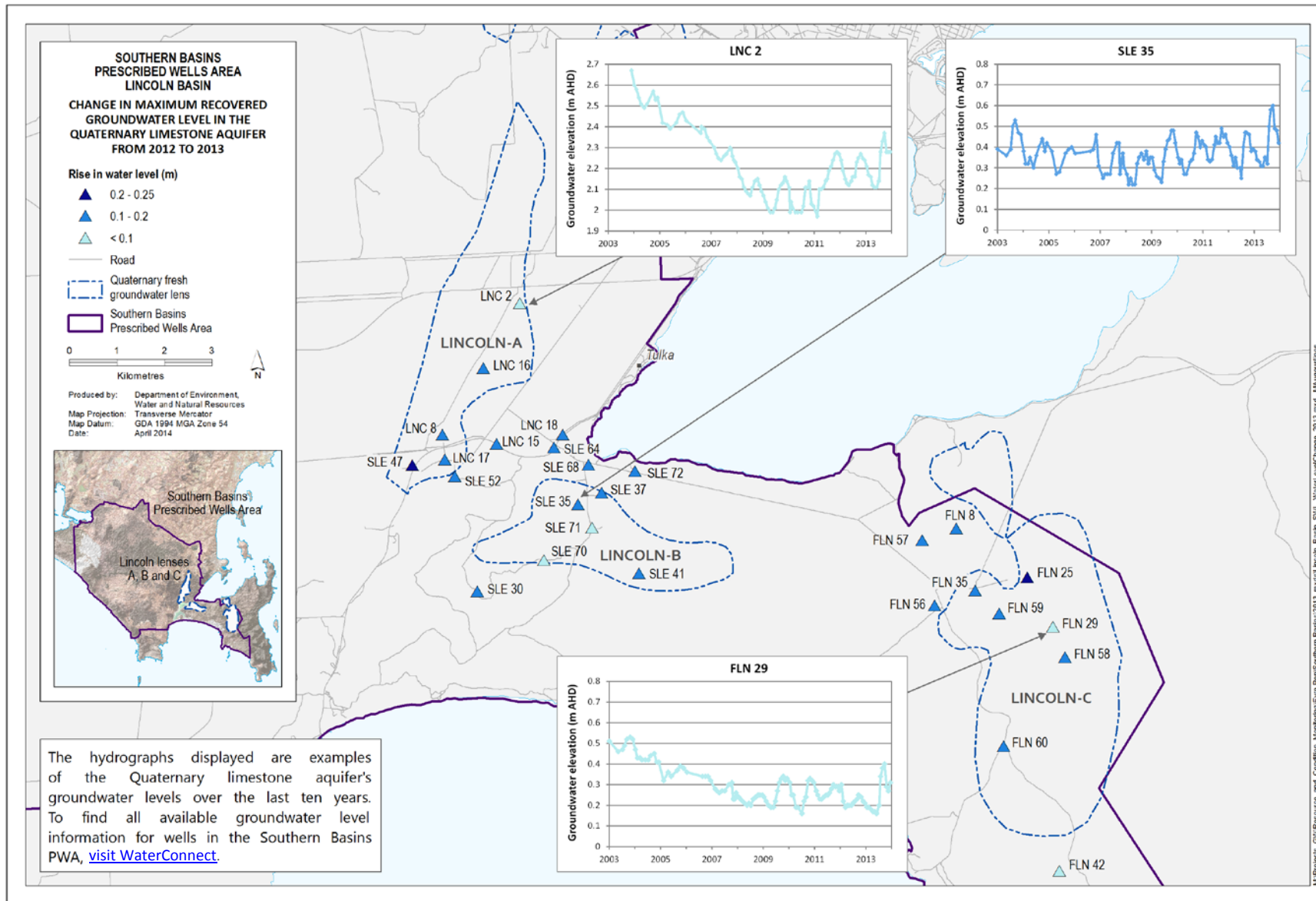


Figure 3. Overall changes in maximum recovered groundwater levels in the Lincoln Basin of the Southern Basins Prescribed Wells Area from 2012 to 2013

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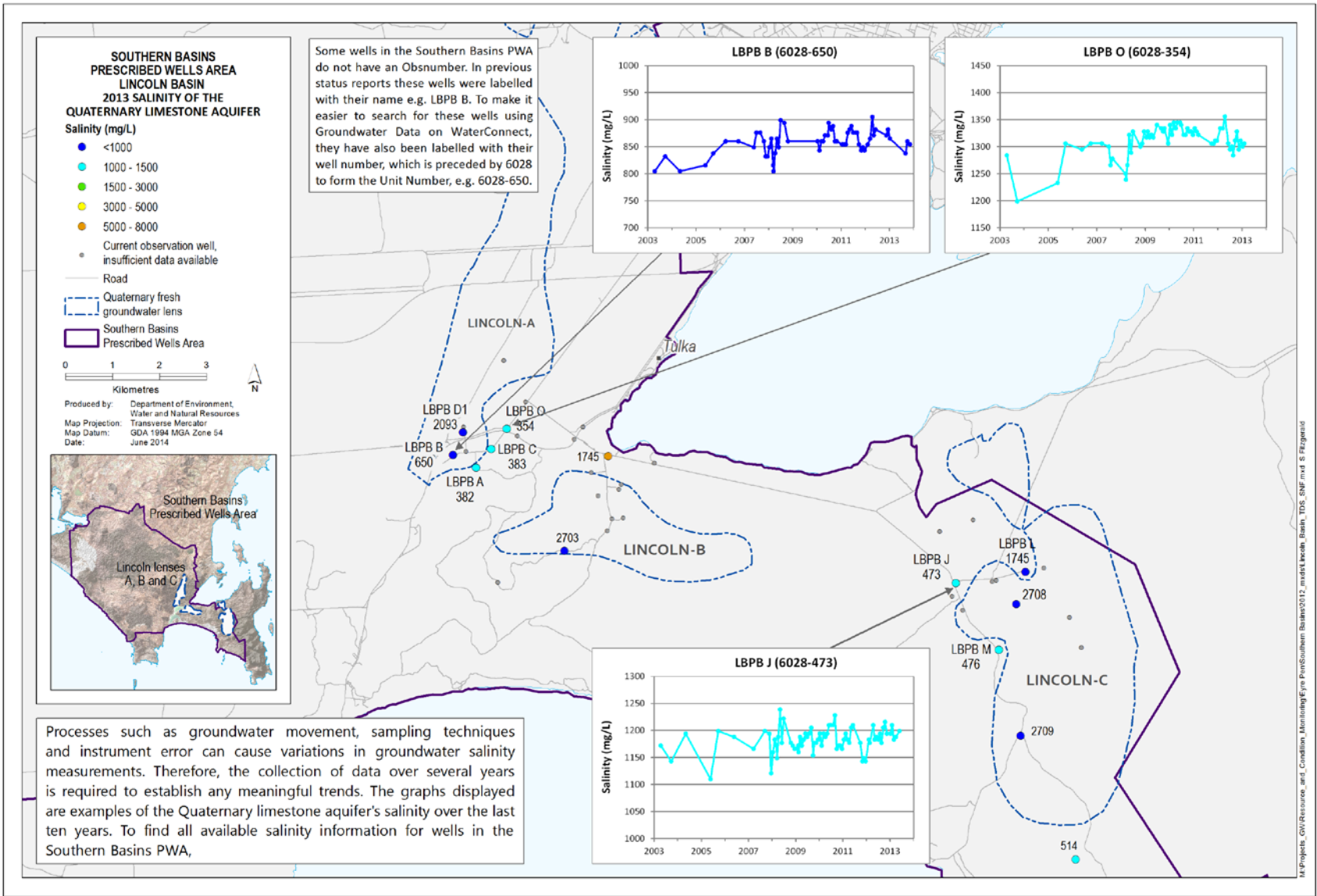


Figure 4. Groundwater salinity of the Lincoln Basin in the Southern Basins Prescribed Wells Area for 2013

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