SOUTHERN BASINS PWA

ULEY SOUTH LENS

Groundwater Level and Salinity Status Report

2013

Government of South Australia
Department of Environment, Water and Natural Resources

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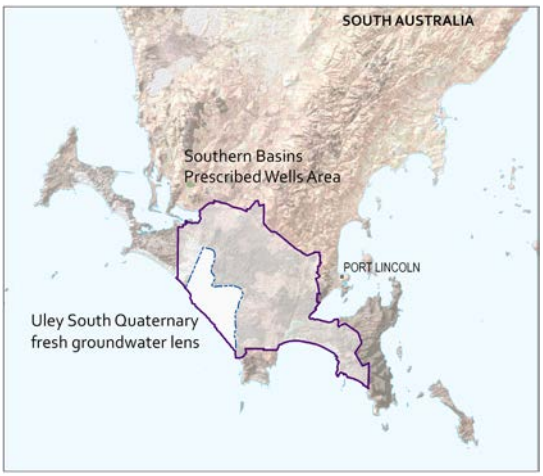
2013 SUMMARY



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 Uley South lens is located in the south-west 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. These sediments are known to be over 130 m thick in parts of the Uley South lens. Areas within the Quaternary limestone aquifer defined by salinity of less than 1000 mg/L, such as the Uley South lens, 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 fresh groundwater lenses within the Quaternary limestone aquifer. Metered extractions from the Uley South lens totalled 5406 ML in 2012–13, an 8 % increase from the previous water-use year (Fig. 1). This volume of extraction equates to 75 % of the total allocation limit of 7250 ML for the Uley South lens and is 97 % 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 historical data has indicated that trends of above or below-average rainfall can last for up to 25 years, and that greater recharge responses have been observed when rainfall occurs in high-intensity events. The Westmere rainfall station (number 18137) is located in the south of the Southern Basins PWA, about 10 km east of Uley South, and recorded 579 mm of rain in 2013. This is 5 mm more than the long-term average annual rainfall for that station. The month of June through to September received rainfall above its long-term monthly average, but February, April, and May recorded 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.

Monitoring records reveal a long-term decline of nearly two metres in groundwater levels of the Uley South lens after 1992, which coincides with a trend of below-average rainfall recorded at the Westmere rainfall station. Above-average rainfall since 2009 has led to a rise in groundwater levels throughout the lens, although current groundwater levels remain lower than those recorded before 1992. In 2013, twenty-seven out of thirty-four monitored wells recorded an increase in the maximum recovered groundwater level of up to 0.22 m (Fig. 3).

Within the Uley South lens, groundwater salinity has been reasonably stable over the last ten years. Fluctuations in salinity are typically between 20 and 70 mg/L, but these have stabilised in recent years. Salinity was monitored in 21 wells within the Uley South lens in 2013 and compared with 2012, salinity levels in these wells have not changed significantly. Average salinity values for the 17 wells that were monitored on at least four occasions in 2013 range between 436 and 657 mg/L (Fig. 4).

The Uley South lens 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 12 month reporting period. Continuation of these trends favours a very low likelihood of negative impacts on beneficial use (e.g. drinking water, irrigation or stock watering) of the resource. The 2013 status for the Uley South lens is supported by:

- an overall rise in the maximum recovered groundwater level when compared to 2012 water level data
- no significant change in groundwater 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 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.

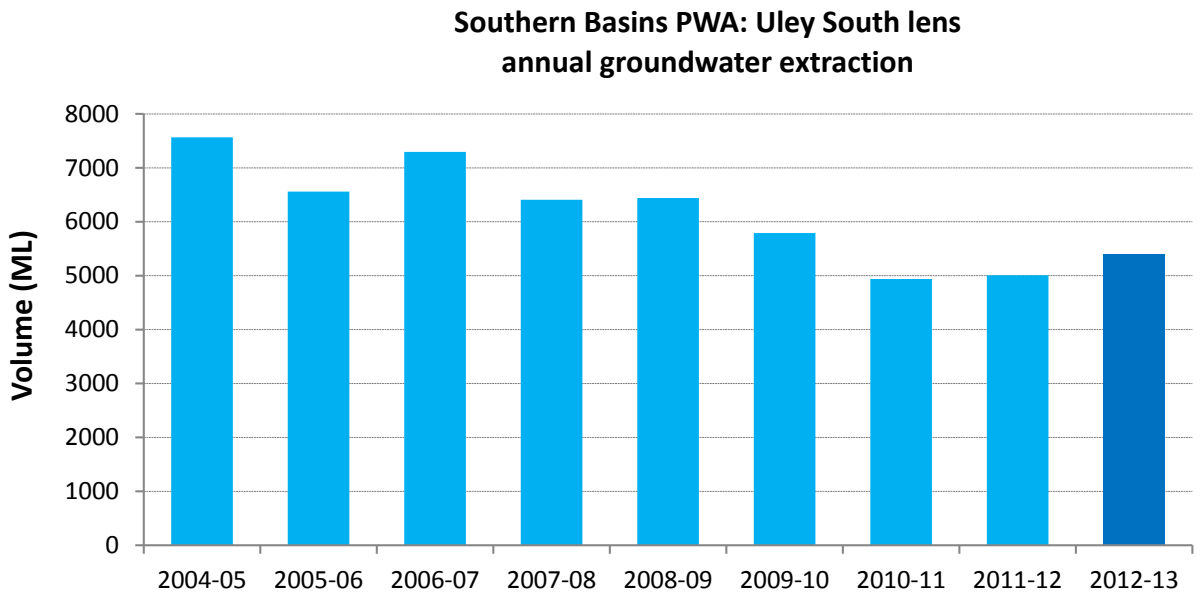


Figure 1. Historical licensed groundwater use for the Uley South lens of the Southern Basins Prescribed Wells Area

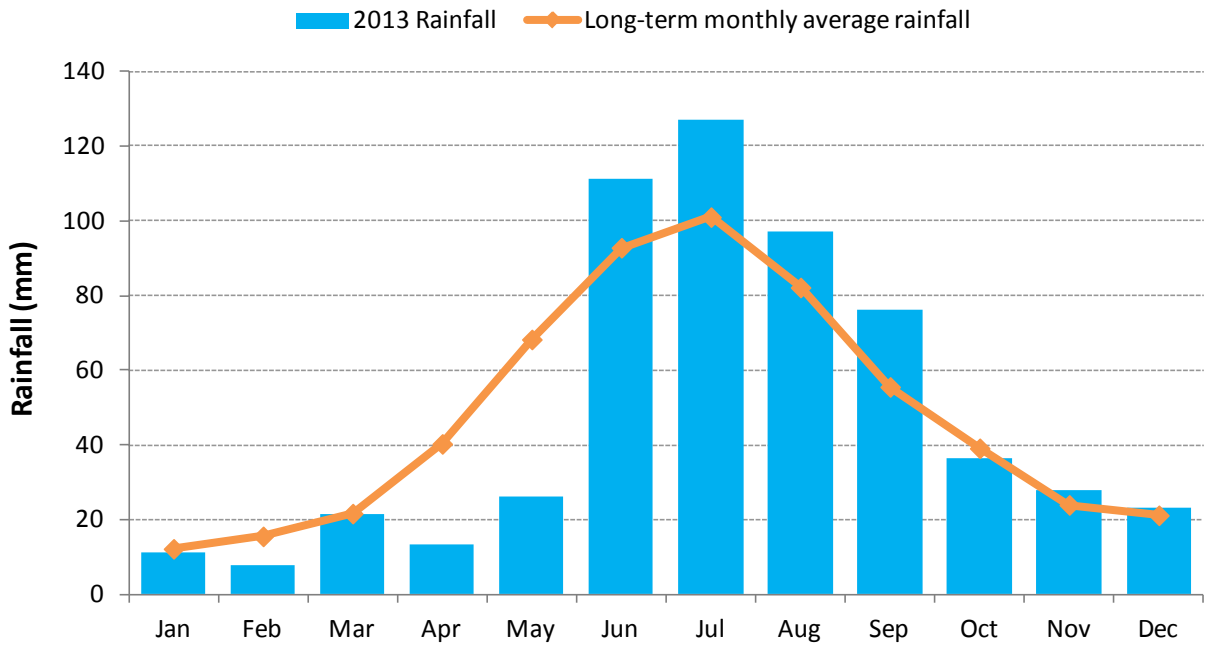


Figure 2. Monthly rainfall (mm) for 2013 and the long-term average monthly rainfall (mm) at the Westmere rainfall station (number 18137) in the Southern Basins Prescribed Wells Area

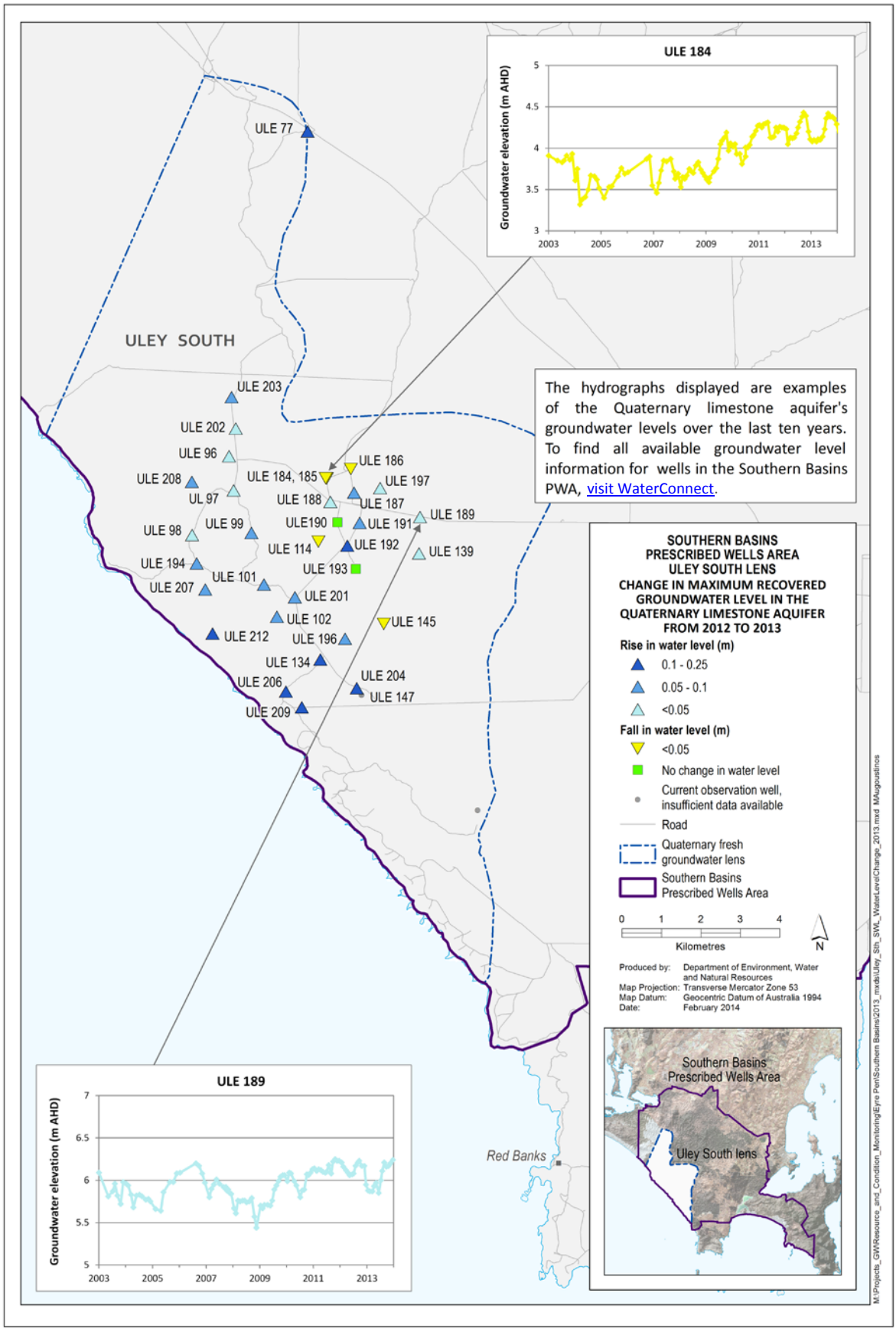


Figure 3. Overall changes in maximum recovered groundwater levels in the Uley South lens of the Southern Basins Prescribed Wells Area from 2012 to 2013

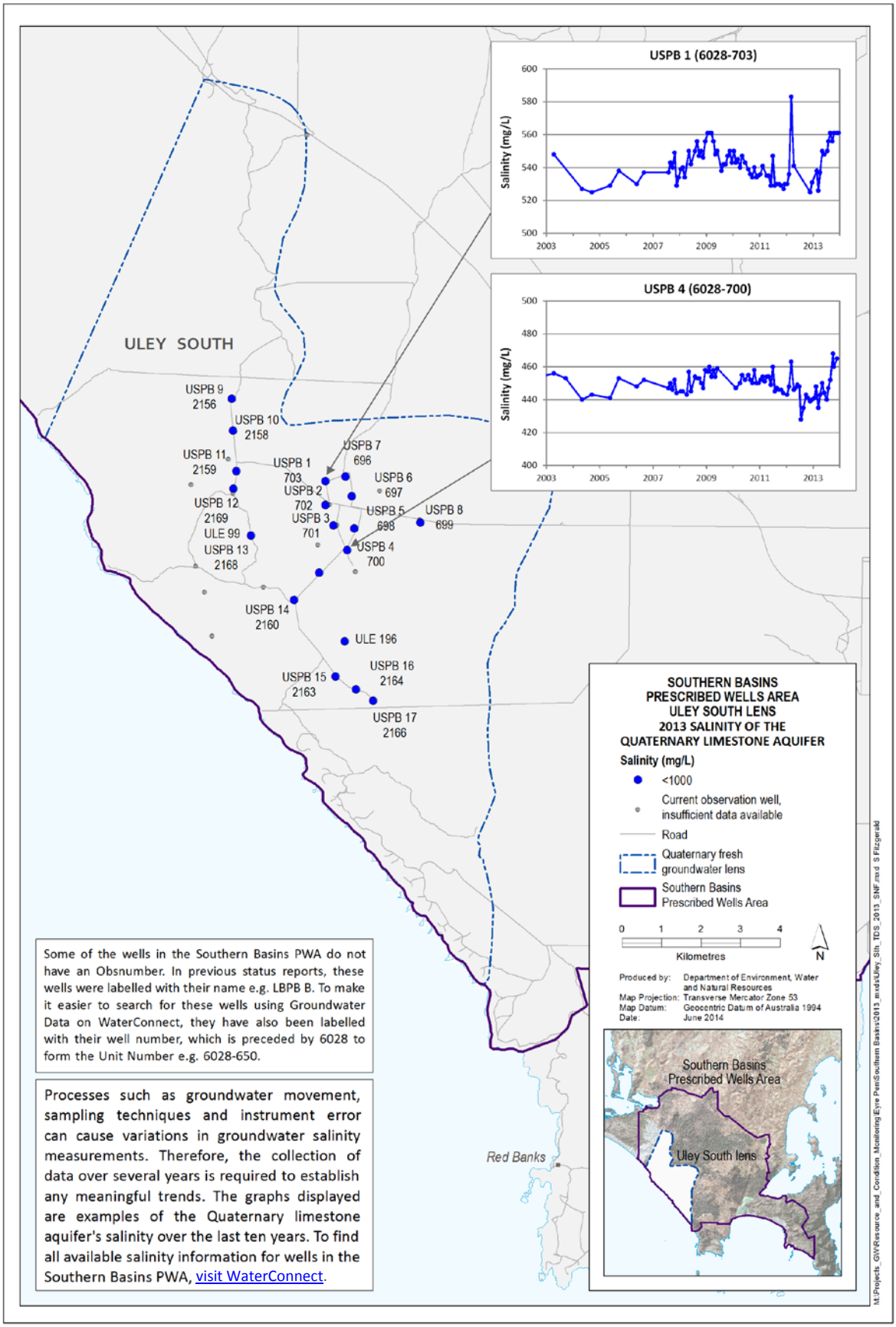


Figure 4. Groundwater salinity of the Uley South lens of the Southern Basins Prescribed Wells Area in 2013