
WESTERN MOUNT LOFTY RANGES PWRA TERTIARY LIMESTONE AQUIFER

Groundwater Level and Salinity Status Report

2013



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

Department of Environment, Water and Natural Resources
25 Grenfell Street, Adelaide
GPO Box 1047, Adelaide SA 5001

Telephone National (08) 8463 6946
 International +61 8 8463 6946
Fax National(08) 8463 6999
 International +61 8 8463 6999
Website www.environment.sa.gov.au

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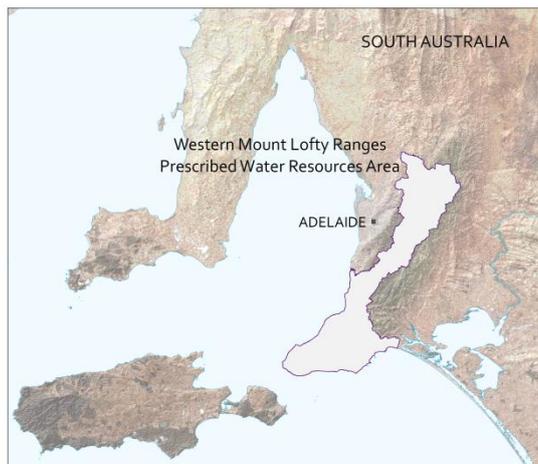
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2013 SUMMARY



The Western Mount Lofty Ranges Prescribed Water Resources Area (PWRA) covers an area of approximately 2750 km² stretching from Cape Jervis on the south coast, to Gawler in the north. It is a regional-scale resource for which groundwater, surface water and watercourse water are prescribed under South Australia's *Natural Resources Management Act 2004*. A water allocation plan provides for the sustainable use of the water resources.

There are three types of sedimentary aquifers in the Western Mount Lofty Ranges PWRA: Permian sand, Tertiary limestone and Quaternary sediments. Recharge to these aquifers occurs directly from the portion of rainfall that percolates down to the watertable through the soil profile or indirectly from throughflow from adjacent aquifers.

The Tertiary limestone aquifer is an important aquifer which occurs only in the Myponga and Hindmarsh Tiers Basins, in the south of the PWRA on the Fleurieu Peninsula. It contains good quality groundwater, produces high yields and the salinity is generally below 1000 mg/L. This aquifer is confined by overlying Quaternary clays, which can cause seasonal artesian conditions. It is widely developed for irrigation, primarily for dairy pasture and viticulture.

Although extensive meter data is not yet available for groundwater extractions, an estimate of 50 250 ML/y has been made for the whole Western Mount Lofty Ranges PWRA for licensed purposes based on a land-use survey of irrigated properties and the theoretical irrigation requirements for various crops. This estimate is below the sustainable yield of 70 324 ML/y calculated for the Western Mount Lofty Ranges PWRA. The majority of groundwater is used for the irrigation of pasture (35%) and various fruits (33%). The remaining is used in the irrigation of wine grapes (14%), vegetables (6%), lucerne (3%) and other uses (9%).

The climate of the Western Mount Lofty Ranges PWRA is characterised as Mediterranean, with hot, dry summers and mild, wet winters. The Hindmarsh Valley rainfall station (number 23823) recorded a total annual rainfall of 925 mm for 2013, slightly below the long-term annual average of 948 mm. In 2013, while June, July and August recorded rainfall above their long-term monthly average, all other months, with the exception of December, recorded rainfall below their average (Fig. 1). 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.

In the Hindmarsh Tiers Basin, the maximum recovered groundwater level of the Tertiary limestone aquifer declined steadily in all nine observation wells between 2001 and 2009, showing a good correlation with below-average trends in rainfall. Since 2009, seven wells have recorded a strong recovery in the maximum recovered groundwater level in response to higher rainfall.

Groundwater levels in the Tertiary limestone aquifer in the Myponga Basin have remained stable since monitoring began in 1975, with a period of lower-than-average levels between 2005 and 2009. There has been some recovery in groundwater levels since 2009.

In 2013, all observation wells recorded a rise in the maximum groundwater level ranging from 0.02 to 0.93 m, when compared to the maximum recorded in 2012.

Salinities within the Tertiary limestone aquifer are generally below 1000 mg/L and have been quite stable since 2007 when regular monitoring began.

In 2013, salinity ranged between 370 and 1180 mg/L, with 91% of monitored wells recording a salinity of less than 1000 mg/L (Fig. 3). There was no significant change in salinity, with the eight observation wells that have salinity data for both 2012 and 2013 recording changes of less than 5%.

The Tertiary limestone aquifer of the Hindmarsh Tiers and Myponga Basins in the Western Mount Lofty Ranges PWRA has been assigned a green status for the 2013 reporting period:

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 low likelihood of negative impacts on the beneficial use (e.g. drinking water, irrigation or stock watering) of the resource. The 2013 status for the Tertiary limestone aquifer is supported by:

- An overall rise in the maximum recovered groundwater level when compared to 2012 groundwater level data
- Stable salinity trends when compared to 2012 salinity data.

While the status assigned reflects the positive trends observed in 2013, it must be remembered that in the past there was a prolonged period of declining water levels in the Hindmarsh Tiers Basin. The recovery in groundwater levels since 2009 is consistent with an incidence of wetter conditions in South Australia during this period, which included the unusually wet summer of 2010–11. Ongoing monitoring is essential to determine if the groundwater levels will persist, or if a return to declining levels in response to below-average rainfall or increases in extraction will present a threat to the sustainability of the Tertiary limestone aquifers.

To view the *Western Mount Lofty Ranges PWRA Groundwater Level and Salinity Status Report 2011*, which includes background information on hydrogeology, rainfall 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 Western Mount Lofty Ranges PWRA, please see the *Western Mount Lofty Ranges Water Allocation Plan* on the Adelaide & Mt Lofty Ranges Natural Resources Management [website](#).

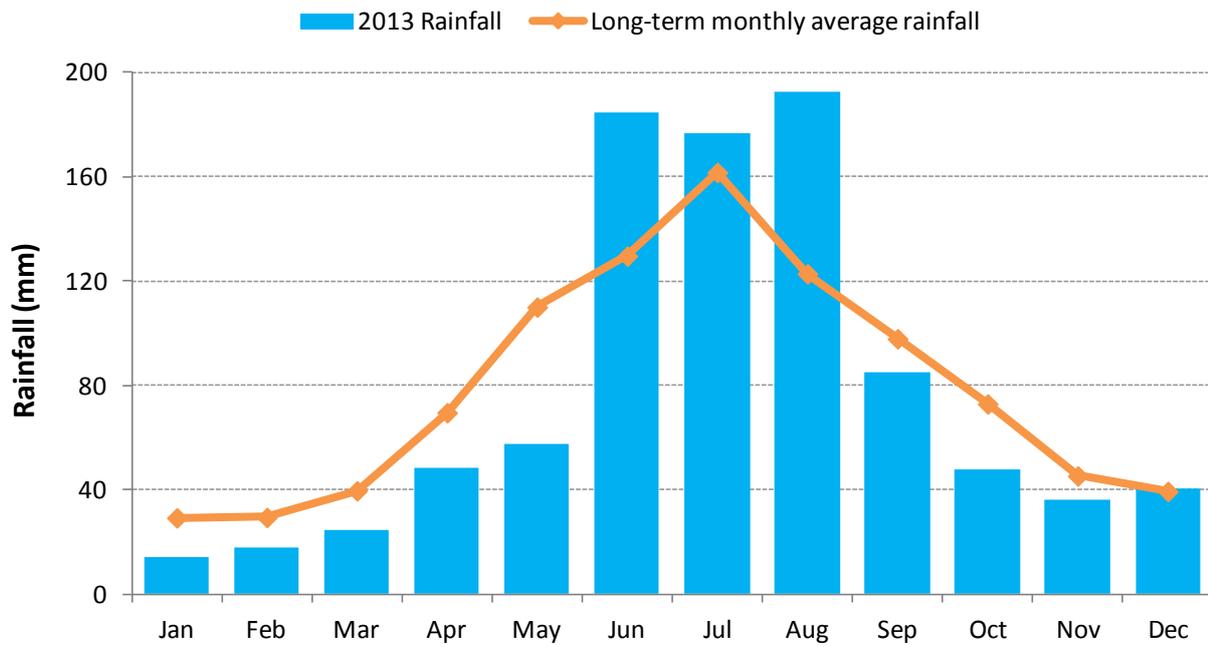


Figure 1. Monthly rainfall (mm) for 2013 and the long-term average monthly rainfall (mm) at the Hindmarsh Valley rainfall station (23823) in the Western Mount Lofty Ranges Prescribed Water Resource Area

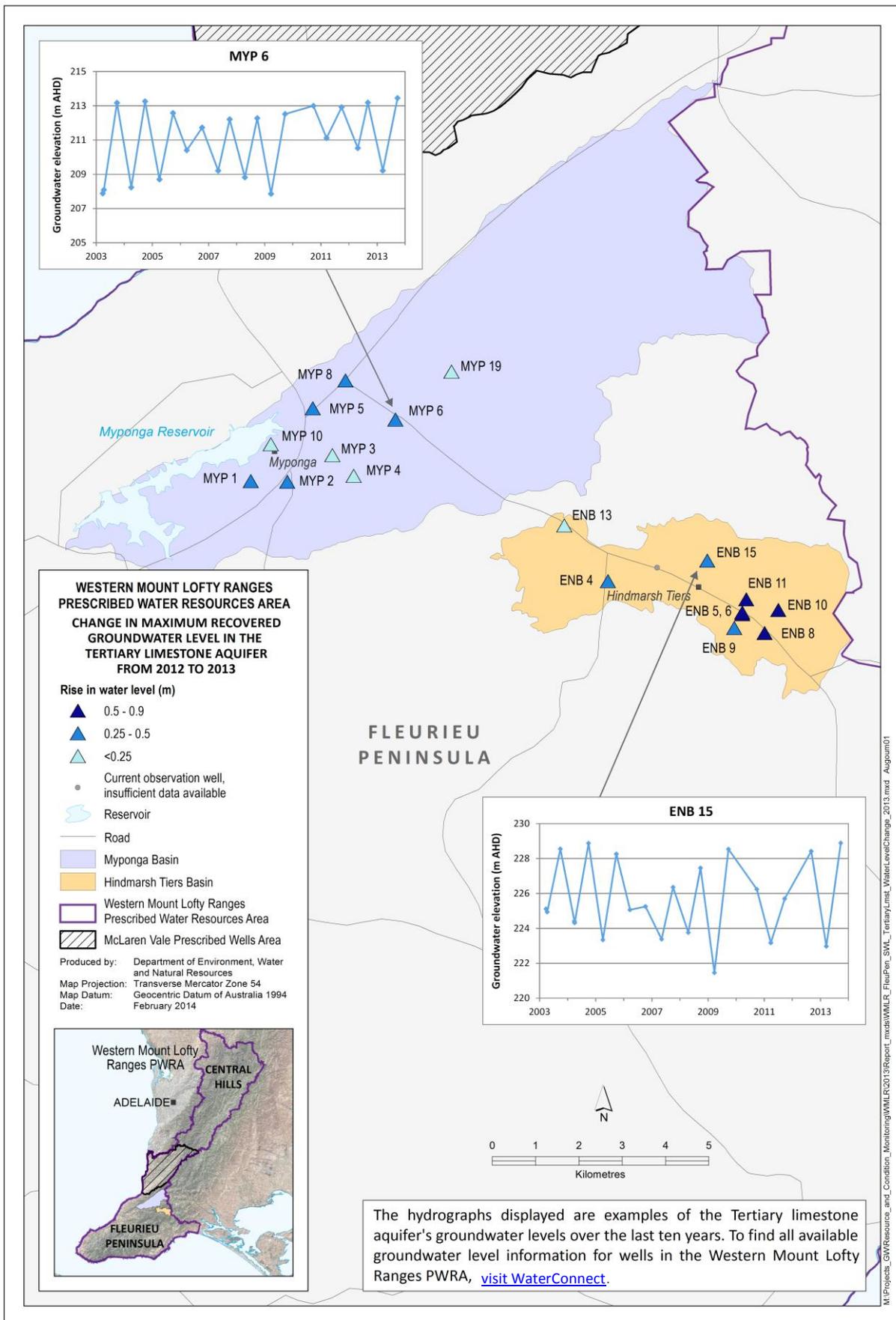


Figure 2. Overall changes in maximum recovered groundwater levels in Tertiary limestone aquifer in the Western Mount Lofty Ranges Prescribed Water Resources Area from 2012 to 2013

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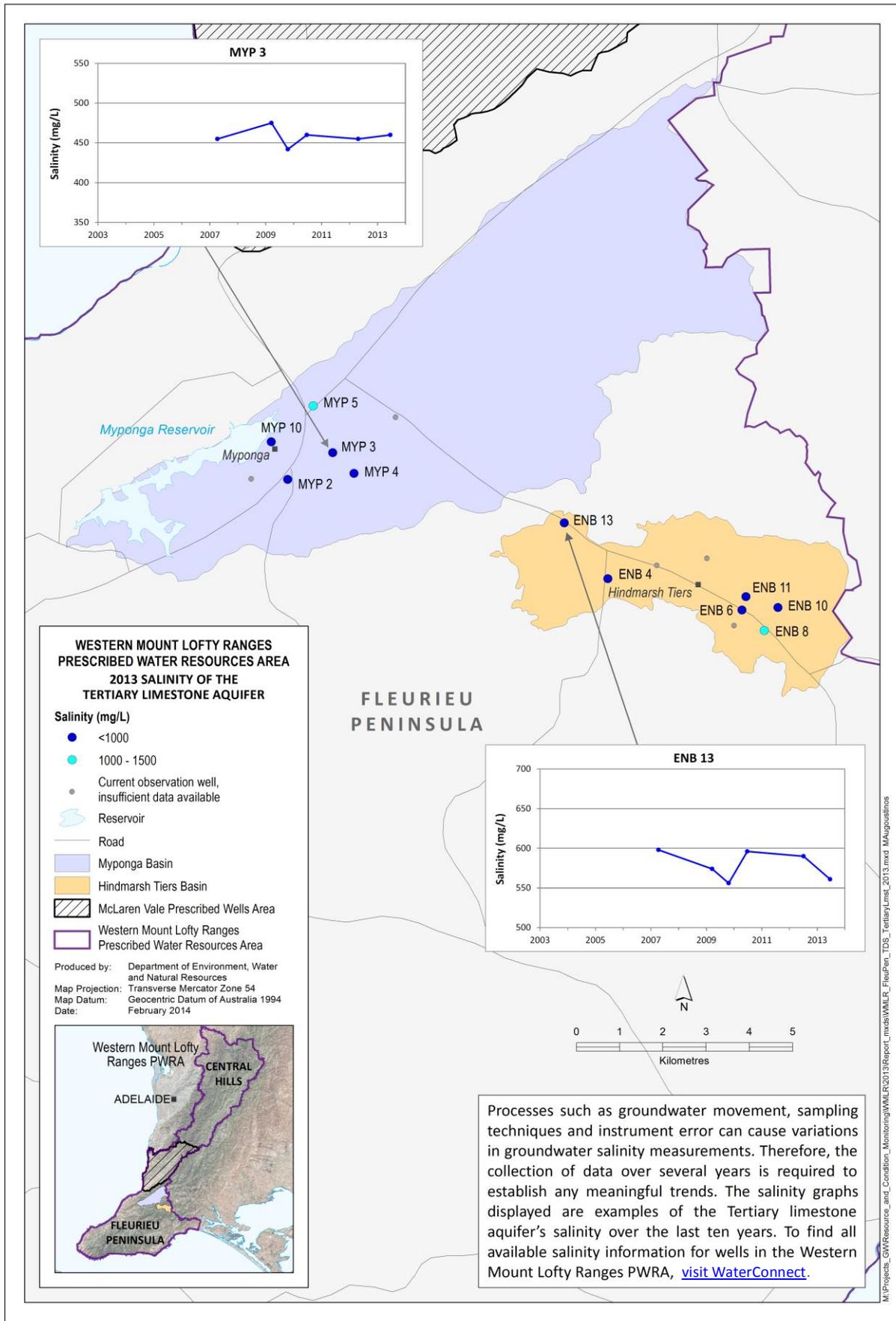


Figure 3. Maximum groundwater salinity of the Tertiary limestone aquifer in the Western Mount Lofty Ranges Prescribed Water Resources Area for 2013

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