
WESTERN MOUNT LOFTY RANGES PWRA TERTIARY LIMESTONE AQUIFER

Groundwater Level and Salinity Status Report

2012



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Water and Natural Resources

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2012 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 by throughflow from adjacent aquifers.

The Tertiary limestone aquifer is an important aquifer as it provides good quality groundwater at high yields, with the salinity generally below 1000 mg/L. This aquifer is confined by overlying Quaternary clays, which may cause seasonal artesian conditions. It is widely developed for irrigation, primarily for dairy pasture in the Myponga and Hindmarsh Tiers Basins.

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 for 2012 of 905 mm, slightly below the long-term annual average of 948 mm. A notable feature is the above-average June rainfall which was more than double the long-term average (Fig. 1) . As the Tertiary limestone aquifer is confined by overlying Quaternary sediments, there is an indirect correlation with rainfall as high summer rainfall may lead to significantly reduced demand from groundwater users and thus lower drawdown of the aquifer.

The Tertiary limestone aquifer occurs only in the Myponga and Hindmarsh Tiers Basins, in the south of the PWRA on the Fleurieu Peninsula. In the Hindmarsh Tiers Basin, the maximum recovered groundwater level of the Tertiary limestone aquifer has declined steadily in all nine observation wells since 2001, 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.

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 2012, nearly all groundwater level observation wells (17 of 19) recorded an increase in the maximum recovered groundwater level of up to 2.7 m when compared to the maximum groundwater level observed in 2011 (Fig. 2). The average increase was 0.3 m, despite below-average rainfall.

Salinities within the Tertiary limestone aquifer are generally below 1000 mg/L (Fig. 3) and have been quite stable since 2007 when regular monitoring began. In 2012, three wells showed a notable increase in salinity but are still within historical ranges previously recorded for these wells.

The Tertiary limestone aquifer of the Hindmarsh Tiers and Myponga Basins in the Western Mount Lofty Ranges Prescribed Water Resources Area has been assigned a green status for the 2012 reporting period:

2012 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 the beneficial use (e.g. drinking water, irrigation or stock watering) of the resource. The 2012 status for the Tertiary limestone aquifer is supported by:

- an increase in the maximum recovered groundwater level recorded in 90% of observation wells when compared to 2011 groundwater level data
- a decrease in salinity in 23% of observation wells and stability in 38% of wells when compared to the salinity previously recorded.

While the status assigned reflects the positive trends observed in 2012, 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 extraction will present a threat to the sustainability of the Tertiary limestone aquifers.

To view the *Western Mount Lofty Ranges Prescribed Water Resources Area Groundwater Level and Salinity Status Report 2011*, which includes background information on hydrogeology, location of rainfall stations and relevant groundwater dependent ecosystems, [visit WaterConnect](#).

To view descriptions of all status symbols, [click here](#).

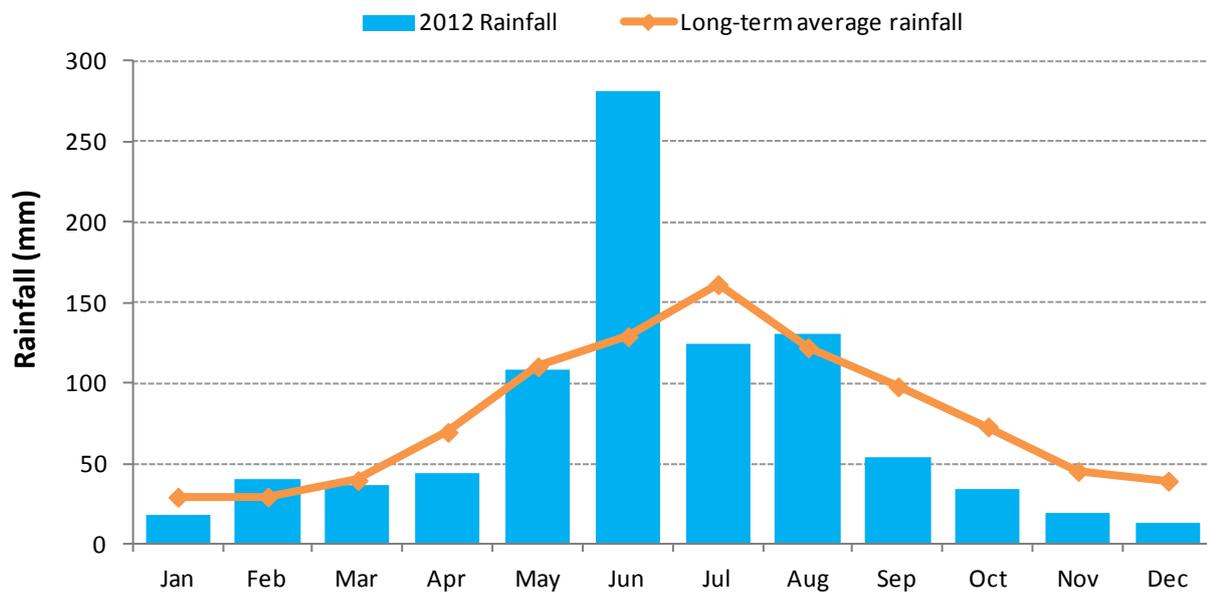


Figure 1. Monthly rainfall (mm) for 2012 and the long-term average monthly rainfall (mm) at the Hindmarsh Valley rainfall station (23823) in the Western Mount Lofty Ranges Prescribed Water Resource Area

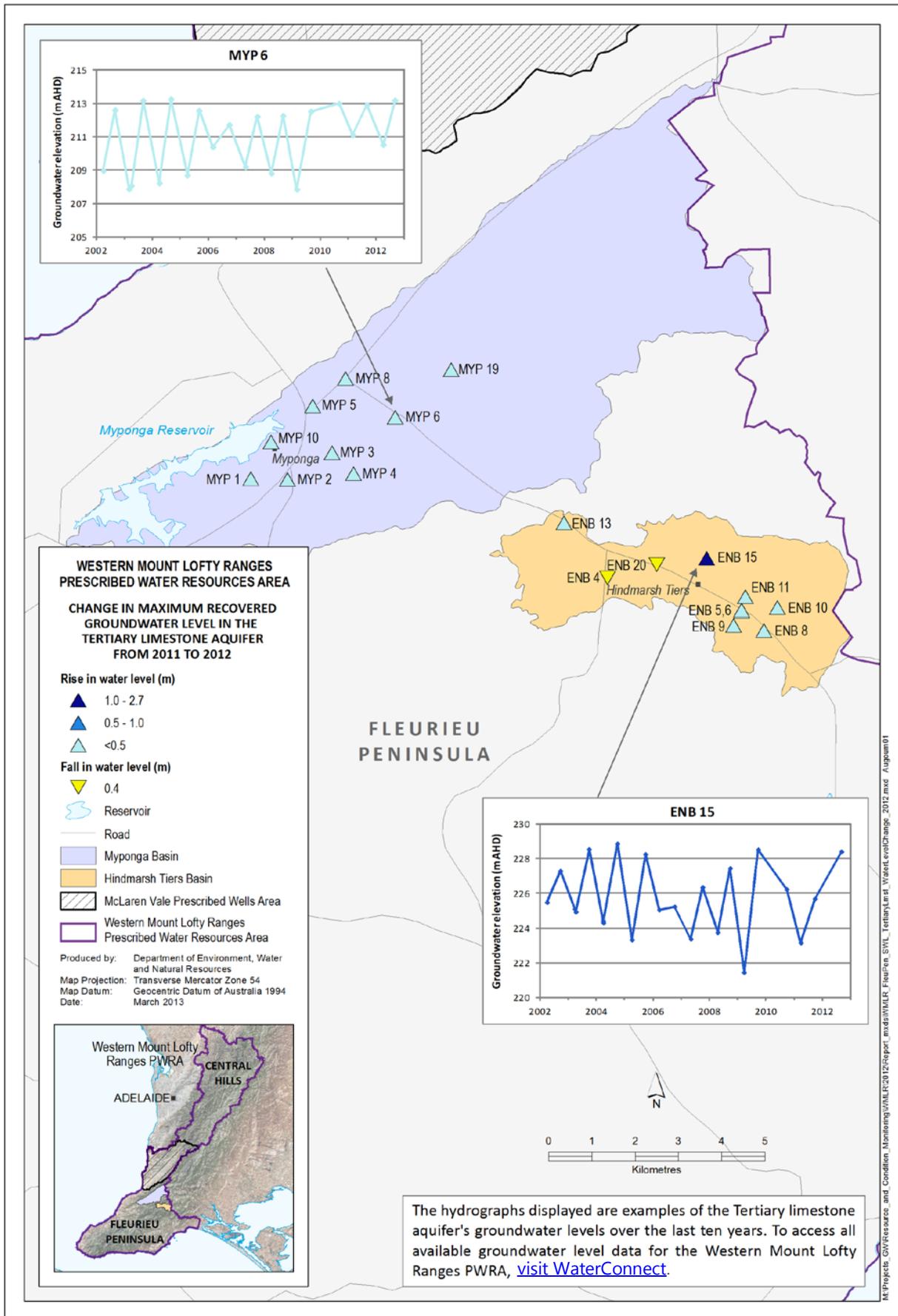


Figure 2. Overall changes in maximum recovered groundwater levels in Tertiary limestone aquifer in the Western Mount Lofty Ranges Prescribed Water Resources Area from 2011 to 2012

Western Mount Lofty Ranges PWRA

Tertiary Limestone Aquifer Groundwater Status Report 2012

Department of Environment, Water and Natural Resources

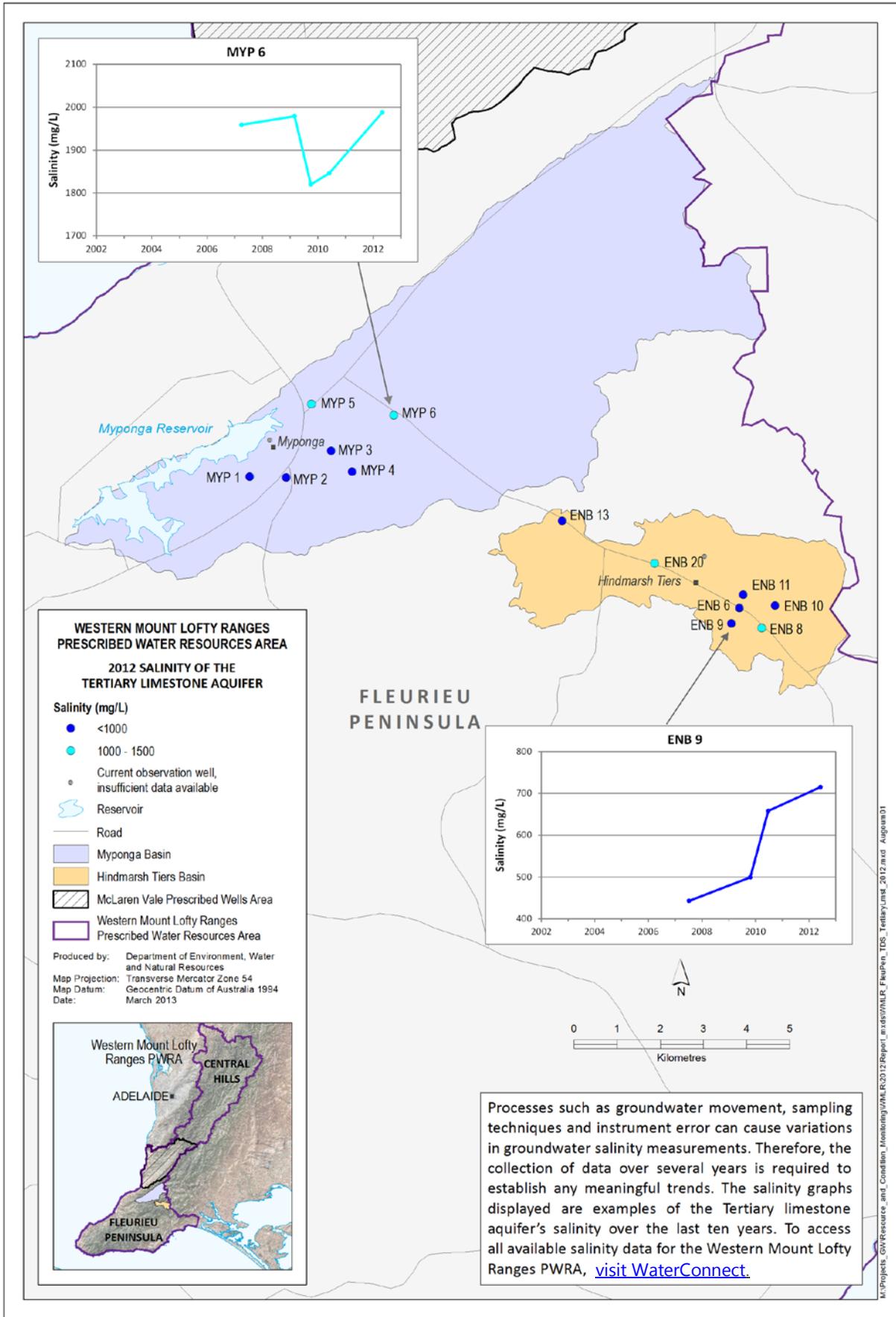


Figure 3. Maximum groundwater salinity of the Tertiary limestone aquifer in the Western Mount Lofty Ranges Prescribed Water Resources Area for 2012

Western Mount Lofty Ranges PWRA

Tertiary Limestone Aquifer Groundwater Status Report 2012

Department of Environment, Water and Natural Resources