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# WESTERN MOUNT LOFTY RANGES PWRA PERMIAN SAND AQUIFER

Groundwater Level and Salinity Status Report

2012

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Water and Natural Resources

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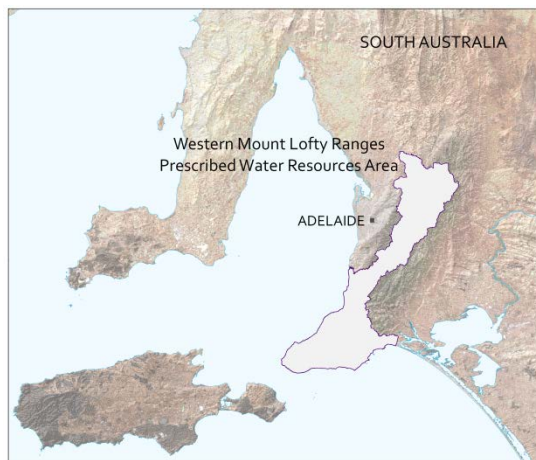
ISBN 978-1-922174-36-9

This document is available online at <http://www.waterconnect.sa.gov.au/Systems/GSR>

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# 2012 SUMMARY

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The Western Mount Lofty Ranges Prescribed Water Resources Area (PWRA) covers an area of approximately 2750 km<sup>2</sup> stretching from Cape Jervis on the south coast to Gawler in the north. It is a regional-scale prescribed 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 Permian sediments consist of unconsolidated sands, silts and clays with occasional gravel beds that are known as the Cape Jervis Formation. The Permian sand aquifer is generally not highly productive, except in the northern Myponga Basin where the Tertiary limestone is absent. Although yields are generally low, the quality is very good, mostly below 500 mg/L. Groundwater movement is from recharge areas in the southern and eastern parts of the catchment toward the Myponga Reservoir in the north-west.

Although extensive meter data is not yet available for groundwater extractions, an estimated 50 250 ML/y is extracted for licensed purposes across the whole Western Mount Lofty Ranges PWRA. This estimate is based on a land-use survey of irrigated properties and the theoretical irrigation requirements for various crops. This volume 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 Western Mount Lofty Ranges PWRA has a Mediterranean climate, with hot, dry summers and mild, wet winters. In 2012, the total annual rainfall recorded at Hindmarsh Valley rainfall station (23823) was 905 mm, slightly below the long-term (1889–2012) annual average of 948 mm. A notable feature is the June rainfall, which was more than double the long-term average (Fig. 1).

The Permian sand aquifers are found only in the Myponga and Hindmarsh Tiers Basins, in the south of the PWRA on the Fleurieu Peninsula. Groundwater levels of the Permian sand aquifer in the Myponga Basin were relatively stable between 1975 and 1995. Since 2001, groundwater levels have declined by up to two metres, which correlates well with a dominant below-average rainfall trend recorded over this period.

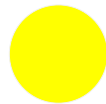
In the Hindmarsh Tiers Basin, groundwater levels of the Permian sand aquifer were relatively stable between 1999 and 2004, after which they declined by nearly one metre, with a small recovery from 2009 to 2011.

In 2012, the majority of observation wells (8 out of 10) recorded a slight decline (<0.5 m) in the maximum recovered groundwater level when compared to that recorded in 2011 (Fig. 2), reflecting the slightly below-average rainfall. This continues the general trend of declining water levels since 2001.

Because groundwater salinities in the Permian sand aquifer are generally quite low, salinity monitoring is not a high priority. Two salinity observation wells are located in the Permian sand aquifer, but neither were sampled in 2012.

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

## 2012 STATUS



“Gradual adverse trends, indicating a low risk to the resource in the medium term”

This means that gradual adverse trends in the resource status have been observed over the 12 month reporting period. Continuation of these trends is unlikely to negatively impact the beneficial use (i.e. drinking water, irrigation or stock watering) of the resource for at least 15 years. The 2012 status of the Permian sand aquifer is supported by:

- the decline in the maximum recovered groundwater level of up to 0.47 m recorded in 70% of observation wells when compared to the maximum groundwater level recorded in 2011.

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, [visit WaterConnect](#).

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

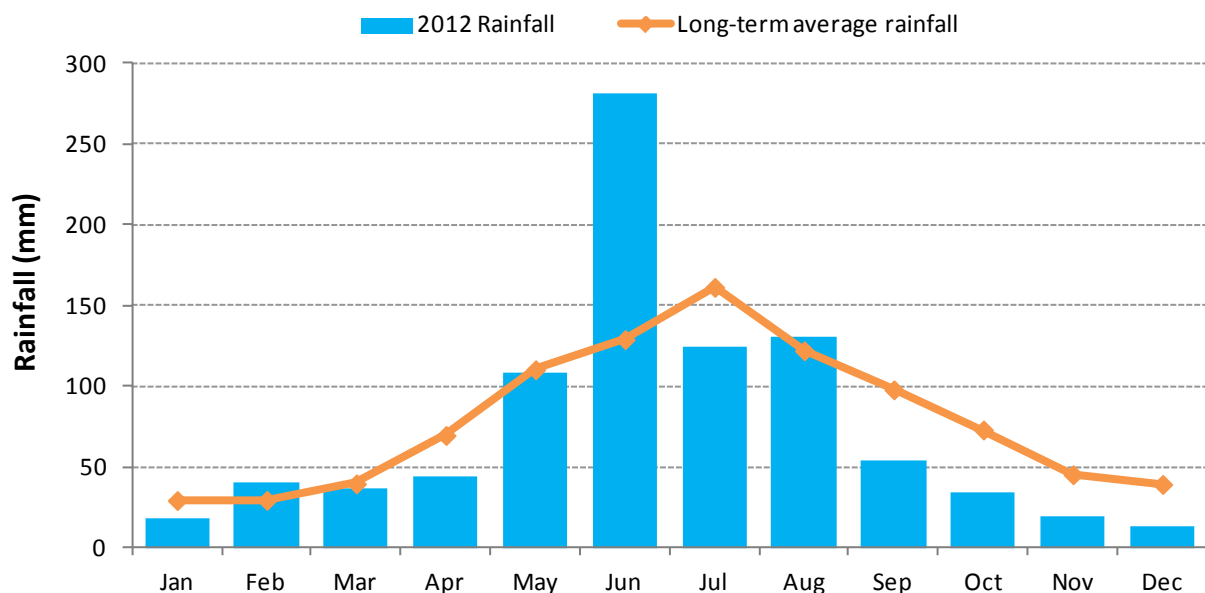


Figure 1. Monthly rainfall (mm) for 2012 and the long-term average monthly rainfall (mm) at the Hindmarsh Valley rainfall station (number 23823) in the Western Mount Lofty Ranges Prescribed Water Resource Area

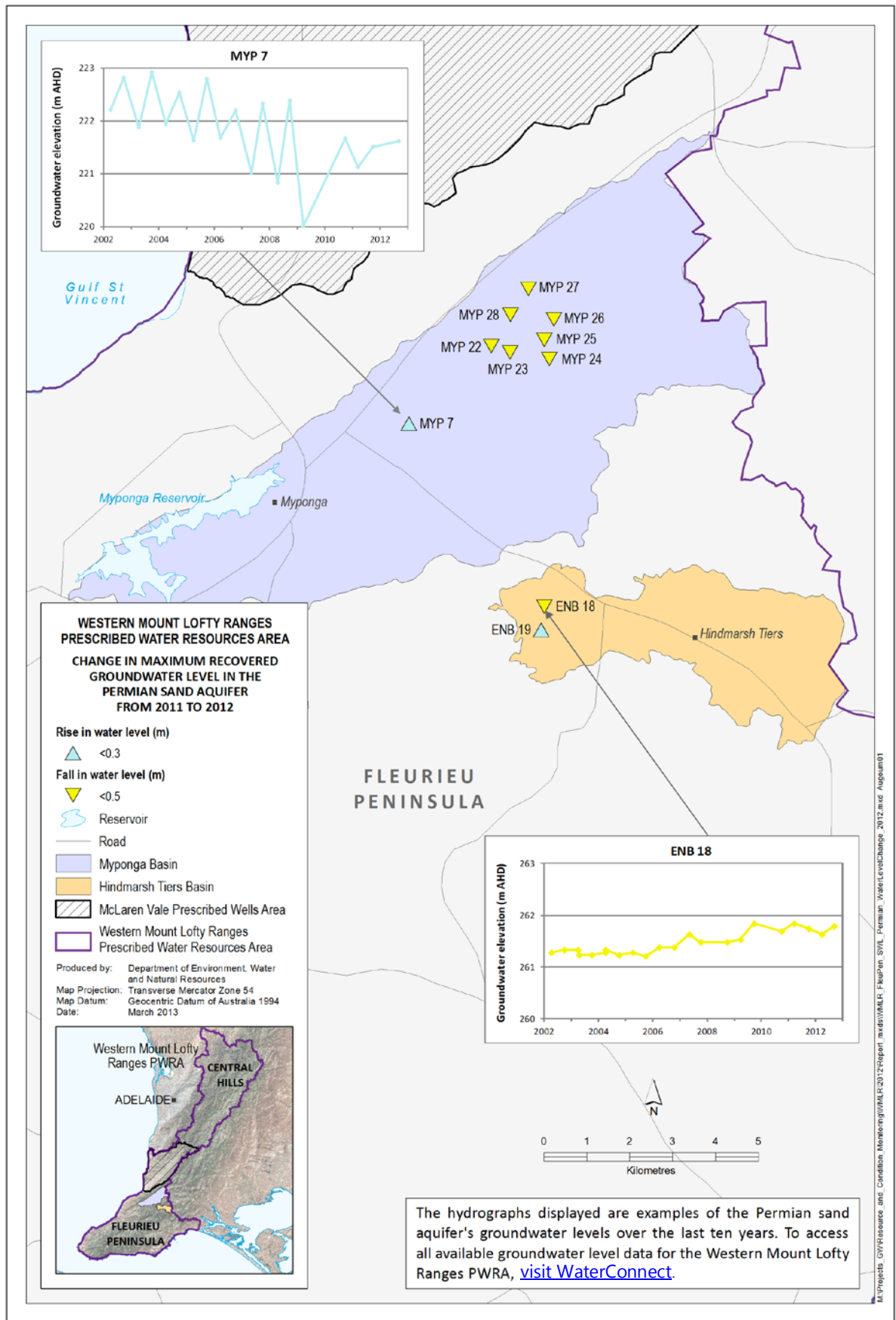


Figure 2. Overall changes in maximum groundwater levels in the Permian sand aquifer of the Western Mount Lofty Ranges Prescribed Water Resource Area from 2011 to 2012

Western Mount Lofty Ranges PWRA

Permian Sand Aquifer Groundwater Status Report 2012

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