WESTERN MOUNT LOFTY RANGES PWRA

FRACTURED ROCK AQUIFERS

Groundwater Level and Salinity Status Report

2013

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

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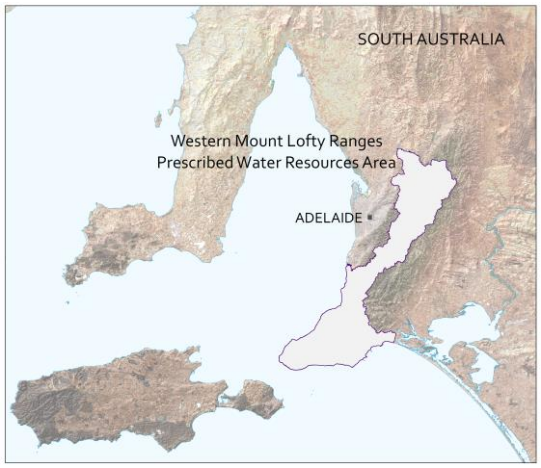
2013 SUMMARY



The Western Mount Lofty Ranges Prescribed Water Resources Area (PWRA) covers an area of approximately 2750 km^2 stretching from Cape Jervis on the south coast to Gawler in the north. It is a regional-scale prescribed resource for which groundwater is prescribed under South Australia's *Natural Resources Management Act 2004*. A water allocation plan provides for the sustainable use of the water resources.

The fractured rock aquifers of the Western Mount Lofty Ranges PWRA are comprised of three geological units: the Barossa Complex, Adelaidean sediments and the Kanmantoo Group. Generally, the Adelaidean sedimentary rocks are more favourable in terms of recharge, salinity and yields, while the Barossa Complex and Kanmantoo Group rocks provide groundwater of poorer quality at low yields. Recharge to the fractured rock aquifer occurs directly from infiltration of rainfall and groundwater flow generally follows the topography, moving from higher points towards the lowest areas where it eventually discharges into rivers and streams.

Although extensive meter data is not yet available for groundwater extractions, an estimated 50 250 ML/y is drawn from all aquifers 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 whole of the Western Mount Lofty Ranges PWRA. The majority of groundwater is used for the irrigation of pasture (35%) and various fruits (33%). The remainder is used for 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. In 2013, the total annual rainfall recorded at Uraidla rainfall station (number 23750) was 1171 mm, 105 mm above the long-term (1889–2012) annual average of 1066 mm. July and August recorded more than their long-term monthly average, while January, February, May, November and December received rainfall slightly below the long-term average (Fig. 1).

Fractured rock aquifers possess varied yield and salinity across the Western Mount Lofty Ranges PWRA. Following a widespread decline in groundwater levels in the Central Hills region due to the 2006 drought, most observation wells have shown either a stabilisation or rise in levels since 2009 in response to higher rainfall recharge. The condition of the fractured rock aquifers of the McLaren Vale prescribed wells area is reported on separately. There is insufficient data collected in the Fleurieu Peninsula area to allow an assessment of the condition of the resource in this area.

In 2013, groundwater levels in the Central Hills region continued to be relatively stable. Of the 78 observation wells with data for both 2013 and 2012, a slight majority (58%) recorded a rise in maximum recovered groundwater levels (Fig. 2), which may be a response to the above-average rainfall. Rises in groundwater levels range from 0.02 to 7.4 m with most wells (84%) recording a rise less than 2 m. Declines range from 0.01 to 4 m with most wells (76%) displaying a decrease of less than 1 m. The median change for the monitored wells was an increase of 0.12 m.

The groundwater salinity distribution in the fractured rock aquifers is shown in Figure 3. During the period 2003 to 2013, several wells showed either increasing or decreasing salinity trends, although most were stable. In 2013, the monitoring results indicate that the salinity continues to be stable in the fractured rock aquifers.

The fractured rock aquifers of the Western Mount Lofty Ranges PWRA have 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 use (e.g. drinking water, irrigation or stock watering). The 2013 status for the fractured rock aquifers is supported by:

- A slight overall increase in groundwater levels in 2013 when compared to 2012 groundwater level data
- No significant changes to salinity in 2013 when compared to 2012 water quality data.

To view the *Western Mount Lofty Ranges Prescribed Water Resources Area 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.

For further details about the Western Mount Lofty Ranges PWRA please see the Water Allocation Plan for the Western Mount Lofty Ranges

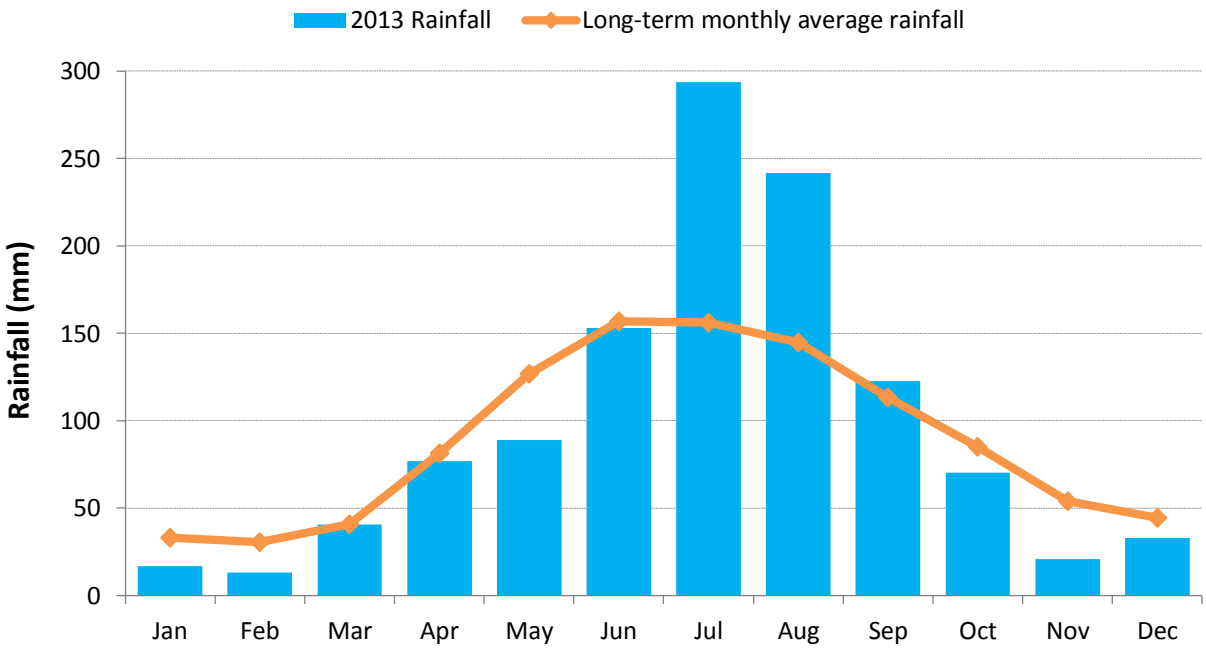


Figure 1. Monthly [1]rainfall (mm) for 2013 and the long-term average monthly rainfall (mm) at the Uraidla rainfall station (23750) in the Western Mount Lofty Ranges PWRA.

[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.

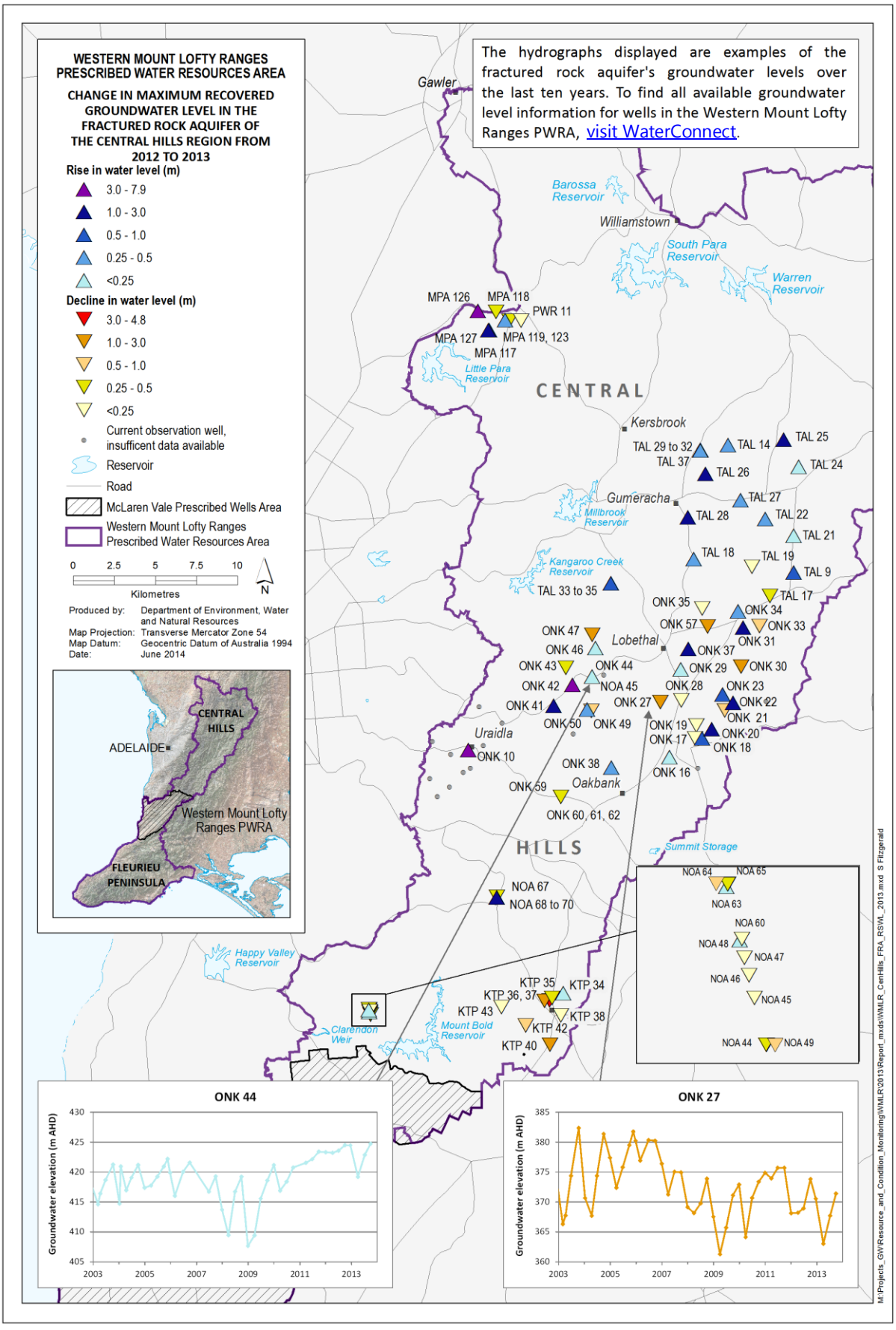


Figure 2. Overall changes in the maximum recovered groundwater levels in the fractured rock aquifers in the Central Hills region of the Western Mount Lofty Ranges PWRA from 2012 to 2013

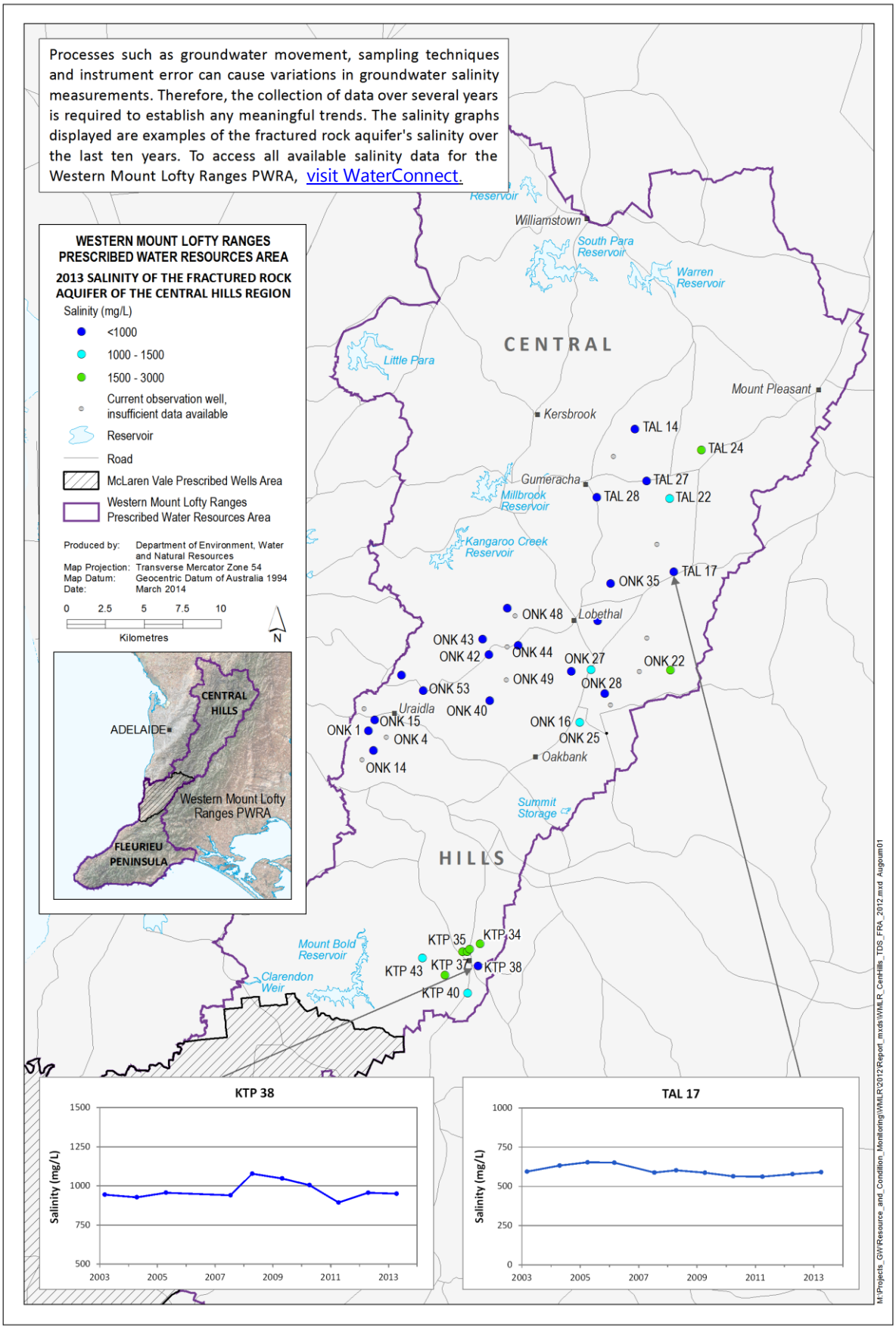


Figure 3. Groundwater salinity of the fractured rock aquifers in the Central Hills region of the Western Mount Lofty Ranges PWRA for 2013