
EASTERN MOUNT LOFTY RANGES PWRA MURRAY GROUP LIMESTONE AQUIFER

Groundwater Level and Salinity Status Report
2013



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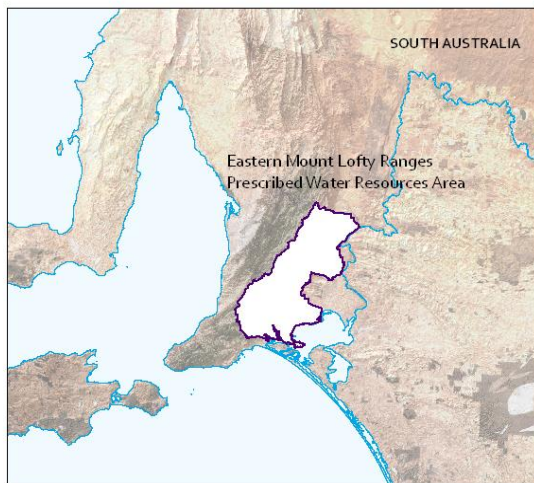
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2013 SUMMARY



The Eastern Mount Lofty Ranges (EMLR) Prescribed Water Resources Area (PWRA) is located 50 km east of Adelaide and covers an area of approximately 2845 km² incorporating the eastern slopes of the Mount Lofty Ranges and the Murray Plains. The EMLR PWRA forms part of the Murray–Darling Basin. 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* and a Water Allocation Plan provides for the sustainable use of the groundwater resources.

The EMLR PWRA is characterised by fractured rock and sedimentary aquifers of varying water quality and yields. Recharge occurs directly from the rainfall that percolates down to the watertable.

There are three types of sedimentary aquifers in the EMLR PWRA, namely the Permian Sand, Murray Group Limestone (MGL) and Quaternary aquifers. This report focuses on the MGL aquifer, in particular within the Currency Limestone management zone, which has been defined through the water allocation planning process. The MGL aquifer predominantly consists of a shallow marine fossiliferous limestone that was deposited approximately 50 million years ago. It is up to 100 m thick and overlies the Kanmantoo Group Fractured Rock Aquifer and the Permian Sand aquifer in some areas. It is confined by the overlying Quaternary clay sediments to the southwest of Murray Bridge; however it is unconfined in the northern area of the EMLR PWRA.

Extensive metered groundwater extraction data is not yet available, however it is estimated that approximately 32,100 ML is required each year from the aquifers of the EMLR PWRA (excluding the Angus Bremer Prescribed Wells Area). This estimation is based on land and water use surveys of agricultural properties and the theoretical irrigation requirements for various crops. It should be noted that this is an estimation and that actual current groundwater extraction may be different. The estimated demand is below the calculated sustainable yield of 38,757 ML/y for the EMLR PWRA, excluding the Angus Bremer PWA. However, at a local scale within the EMLR PWRA the estimated demand may exceed the calculated sustainable yield, such as from the MGL aquifer within the Currency Limestone management zone.

The climate of the EMLR PWRA is characterised as Mediterranean with hot, dry summers and cool to cold, wet winters. Data from the Finnis rainfall station (number 23714) was chosen for the analysis of rainfall in 2013 (Fig. 1). In 2013, the annual rainfall received at this station was 626 mm which is 132 mm above the long-term average, which follows above-average rainfall of 661 mm recorded in 2012. The 2013 monthly rainfall data indicates below average rainfall in March and October, however well above average rainfall was evident in Jun, July and August.

Groundwater levels in the confined MGL aquifer are monitored in a network of observation wells including 15 located within the Currency Limestone management zone. Declining groundwater levels were observed in the period from 2004 to 2009 which may have been the result of increased extraction activities during years of below-average rainfall. Since 2009 the groundwater levels have gradually recovered possibly in response to reduced extraction in periods of higher rainfall. A comparison of the maximum recovered water levels determined for 2012 and 2013 was possible for 13 of the observation wells (Fig. 2). The results indicate that the majority of wells (77%) recorded a rise in water level of up to 1.15 m, whilst three wells had a reduction in groundwater levels of up to 0.44 m.

There are currently 11 observation wells monitoring the salinity of the MGL aquifer in the Currency Limestone management zone (Fig. 3). In the centre of the management zone, there is an area within the MGL aquifer where groundwater salinity is typically less than 1500 mg/L. In 2013, only one well was sampled for salinity, and therefore it is not possible to evaluate trends in salinity levels during the course of the reporting period.

Currency Limestone management zone

The Murray Group Limestone aquifer in the Currency Limestone management zone of the Eastern Mount Lofty Ranges Prescribed Water Resources Area has been assigned a green status for 2013:

2013 STATUS



“No adverse trends, indicating negligible risk to the resource.”

This means 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 (drinking water, irrigation or stock watering). The 2013 status for the Murray Group Limestone aquifer is supported by:

- an overall increase in maximum recovered water levels in 2013 when compared to 2012.

To view the *Eastern 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 the descriptions of all status symbols, please visit the Water Resources page on [WaterConnect](#).

For further details about the Eastern Mount Lofty Ranges PWRA, please see the Water Allocation Plan on the SA Murray-Darling Basin Natural Resources Management [website](#).

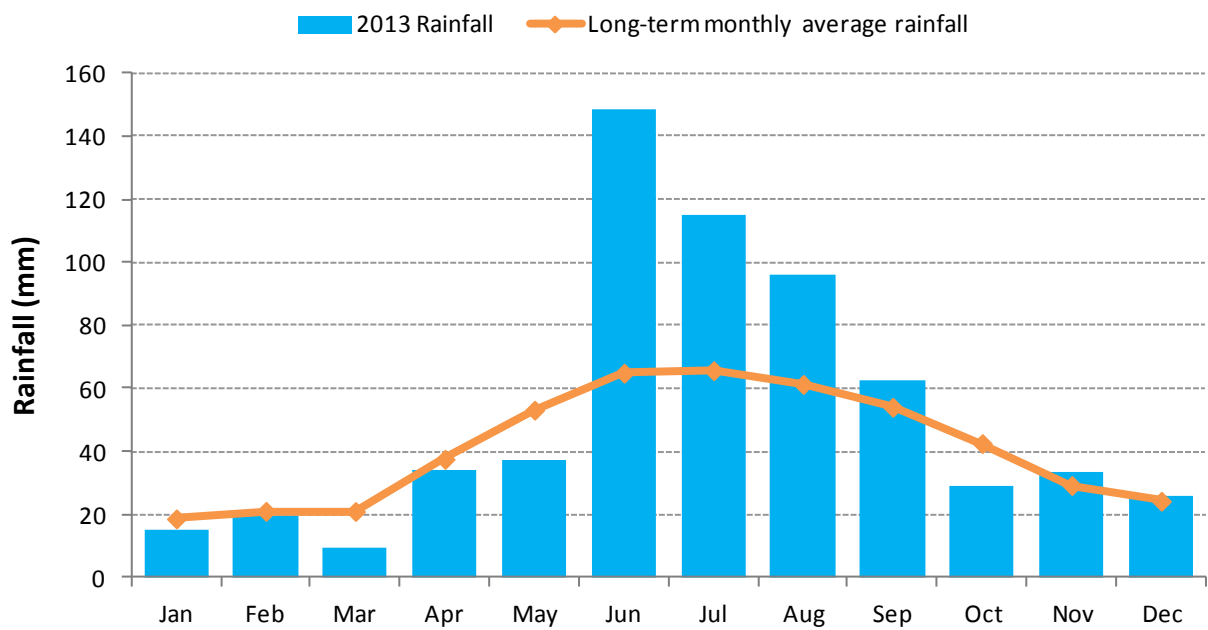


Figure 1. Monthly rainfall (mm) for 2013 and the long-term average monthly rainfall (mm) at the Finniss rainfall station (23714) in the Eastern Mount Lofty Ranges Prescribed Water Resources Area

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.

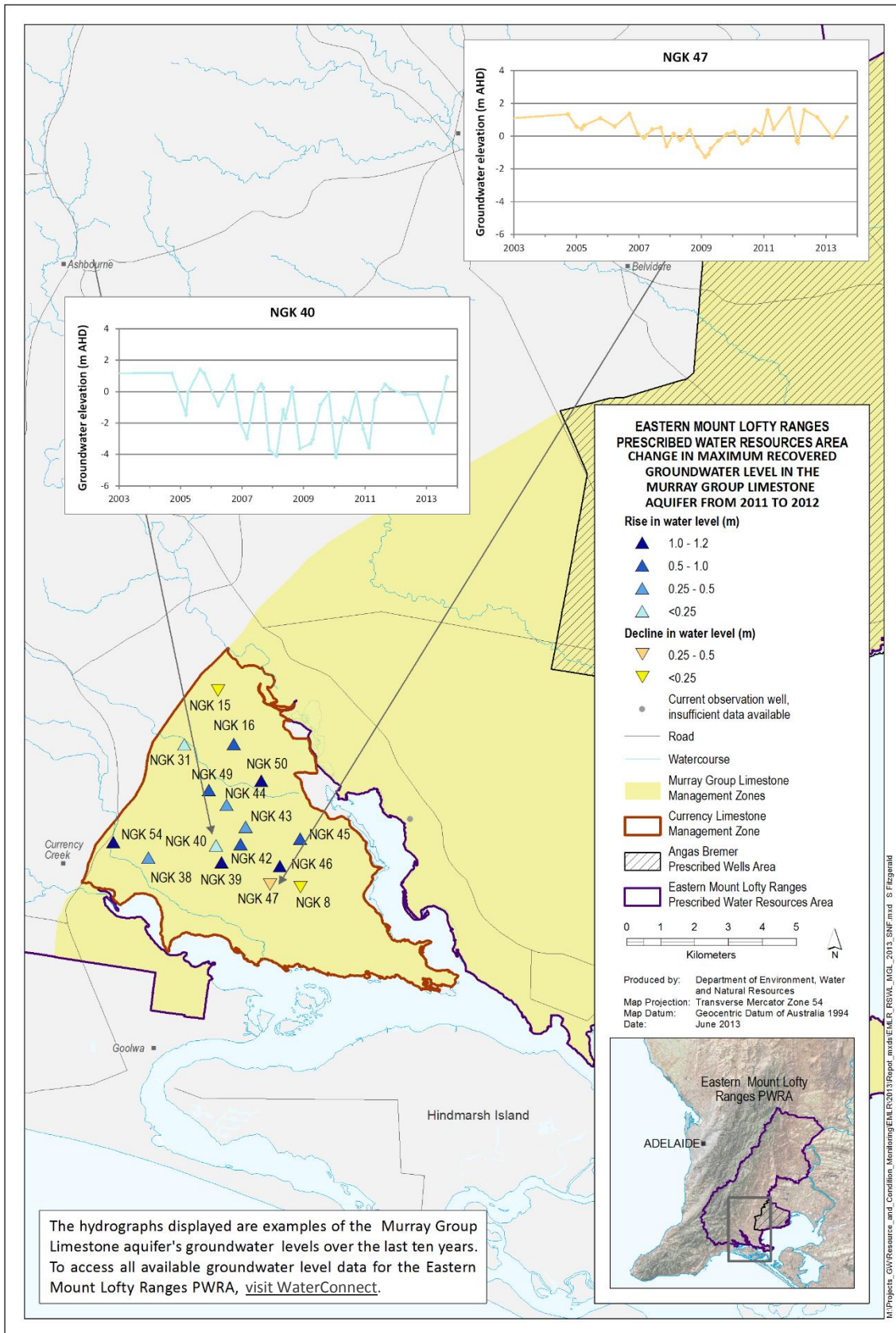


Figure 2. Overall changes in maximum groundwater levels in Murray Group Limestone aquifer of the Eastern Mount Lofty Ranges Prescribed Water Resources Area from 2012 to 2013

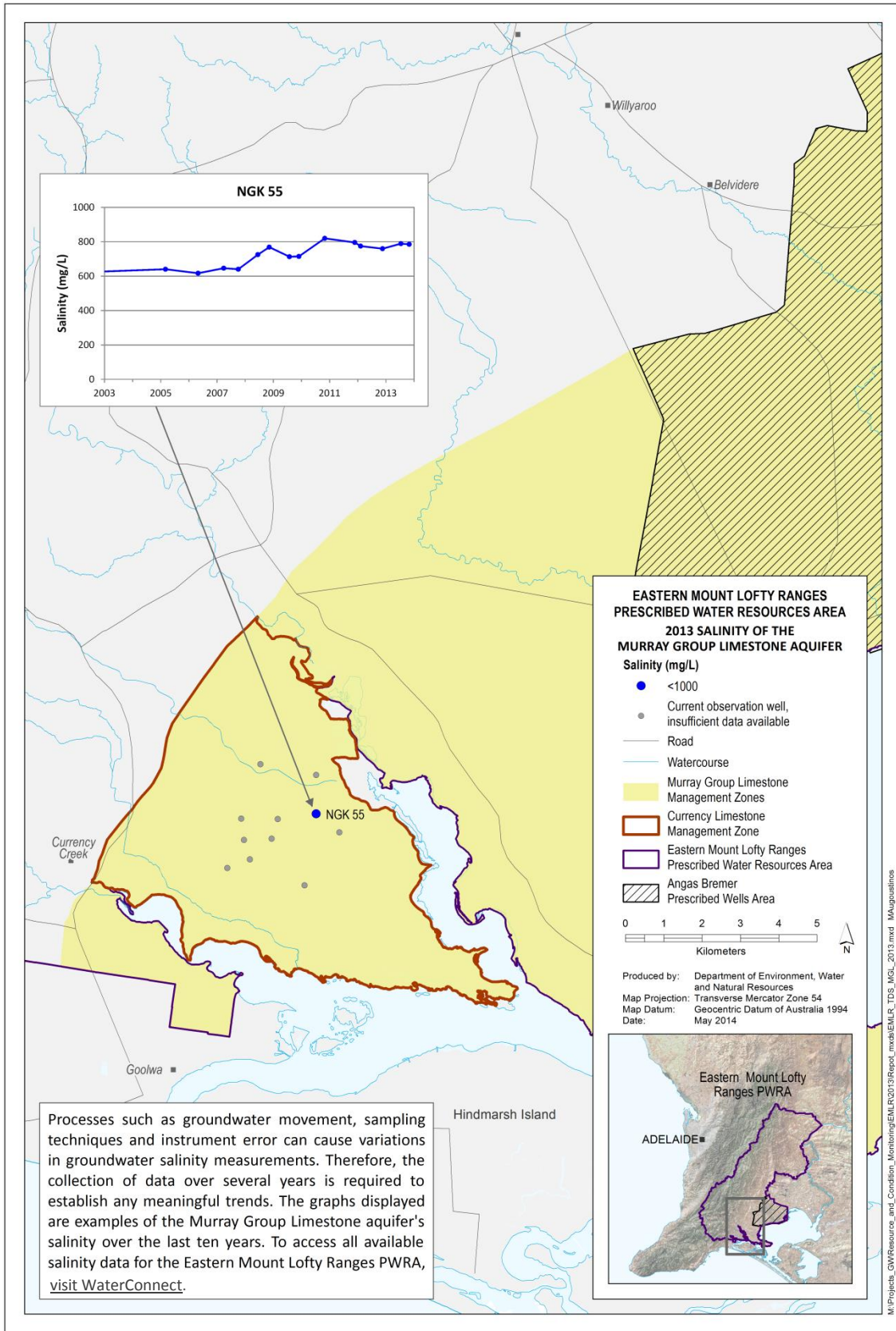


Figure 3. Groundwater salinity of the Murray Group Limestone aquifer of the Eastern Mount Lofty Ranges Prescribed Water Resources Area for 2013

Eastern Mount Lofty Ranges PWRA

Murray Group Limestone aquifer Groundwater Status Report 2013

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