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# MALLEE

# PWA

## GROUNDWATER LEVEL AND SALINITY STATUS REPORT

### 2011

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Water and Natural Resources

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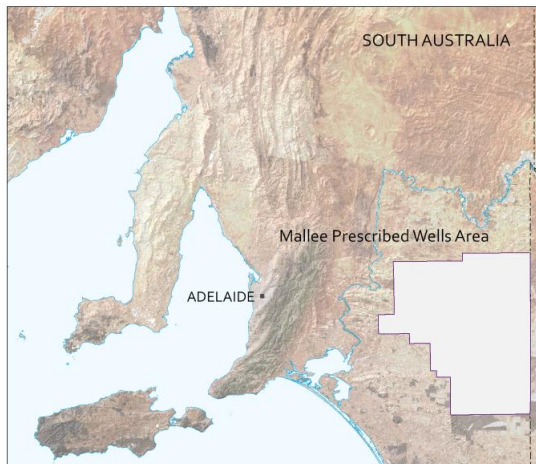
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# SUMMARY 2011



The Mallee Prescribed Wells Area (PWA) is located about 150 km east of Adelaide and is underlain by sediments of the Murray Basin. It is a regional-scale resource for which groundwater resources are prescribed under *South Australia's Natural Resources Management Act 2004*. A water allocation plan provides for the sustainable management of the groundwater resources.

There are three main aquifer systems, namely the Renmark Group confined aquifer, the Murray Group Limestone (MGL) aquifer and the Pliocene Sands aquifer. All licensed groundwater extractions in the Mallee PWA are from the MGL, primarily where the aquifer is confined in the northeast of the PWA. The MGL aquifer comprises a consolidated, highly fossiliferous fine to coarse bioclastic limestone which has an average thickness of 100 m. The MGL aquifer is

recharged in southwest Victoria, with groundwater movement from this area towards the north, northwest and west of the Mallee PWA. The large depth to the watertable (40–60 m) means that there is little direct correlation between groundwater levels and variations in rainfall. However, there can be an indirect correlation, with higher rainfall resulting in decreased groundwater pumping, which in turn may lead to a recovery in groundwater levels.

Metered extractions in the 2010–11 water user year totalled 24 365 ML, a 37% reduction in use from 2009–10 (Fig. 1). This may reflect the higher than average rainfall during typically drier months (Fig. 2) and the higher annual rainfall of 533 mm recorded at Pinnaroo (rainfall station 25015) where the average annual rainfall is 340 mm.

Long-term monitoring has recorded drawdowns as a result of irrigation withdrawals from the MGL aquifer. Drawdowns are greater in areas of concentrated pumping which primarily occurs in the Border Groundwater Agreement Zones 10A and 11A. Between 2000 and 2006 an equilibrium was reached, indicated by stable water level trends. However this was followed by an increase in seasonal drawdowns from 2007 to early 2009 in response to drought-induced increases in extraction. A comparison of the maximum recovered groundwater levels of the MGL aquifer recorded in 2010 and 2011 indicates that the majority of observation wells (41 out of 75) experienced a fall in groundwater level ranging from <0.05–0.8 m. The rise recorded for 33 of the wells ranged from <0.1–1.71 m and was located in the areas where most extraction occurs (Fig. 3).

The overall groundwater salinity of the confined MGL aquifer has not significantly changed in the past 20–30 years due to the slow movement of groundwater in this area. The latest salinity concentrations monitored in 2011 indicate that groundwater salinity is higher in the northwest of the Mallee PWA (Fig. 4). These salinity concentrations were compared to the latest salinity readings of 2010 and no significant increases were observed in the 24 monitoring wells.

The Mallee PWA has been assigned a green status for 2011:

## 2011 STATUS



“No adverse trends, indicating a stable or improving situation”

This means that trends are either stable (no significant change) or improving (i.e. decreasing salinity or rising water levels).

The 2011 status for the Mallee PWA MGL aquifer is supported by:

- A recovery of groundwater levels in areas that typically experience concentrated extraction, with the rise ranging from <0.1–1.71 m. The overall fall in groundwater levels was smaller in magnitude, with the greatest fall (0.8 m) forming part of a seasonal yet stable trend since 2008 (MCG 2, Fig. 3).
- No significant increases in salinity concentrations in the 24 monitoring wells, from 2010 to 2011.

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

To view the *Mallee PWA Groundwater Level and Salinity Status Report 2009–10*, which includes background information on hydrogeology, location of rainfall stations and relevant groundwater dependent ecosystems, visit [WaterConnect](#).

For further details about the Mallee PWA please see the [Water Allocation Plan for the Mallee Prescribed Wells Area](#).

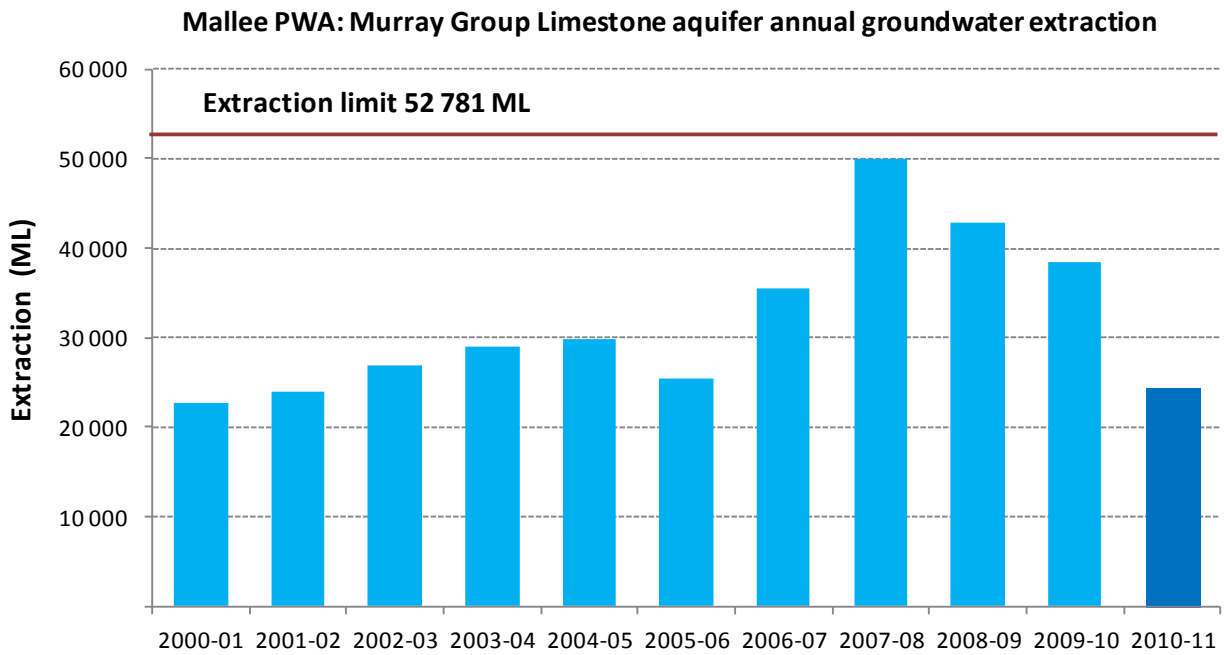


Figure 1. Historical licensed groundwater use and licensed allocation limit for the Murray Group Limestone aquifer in the Mallee PWA

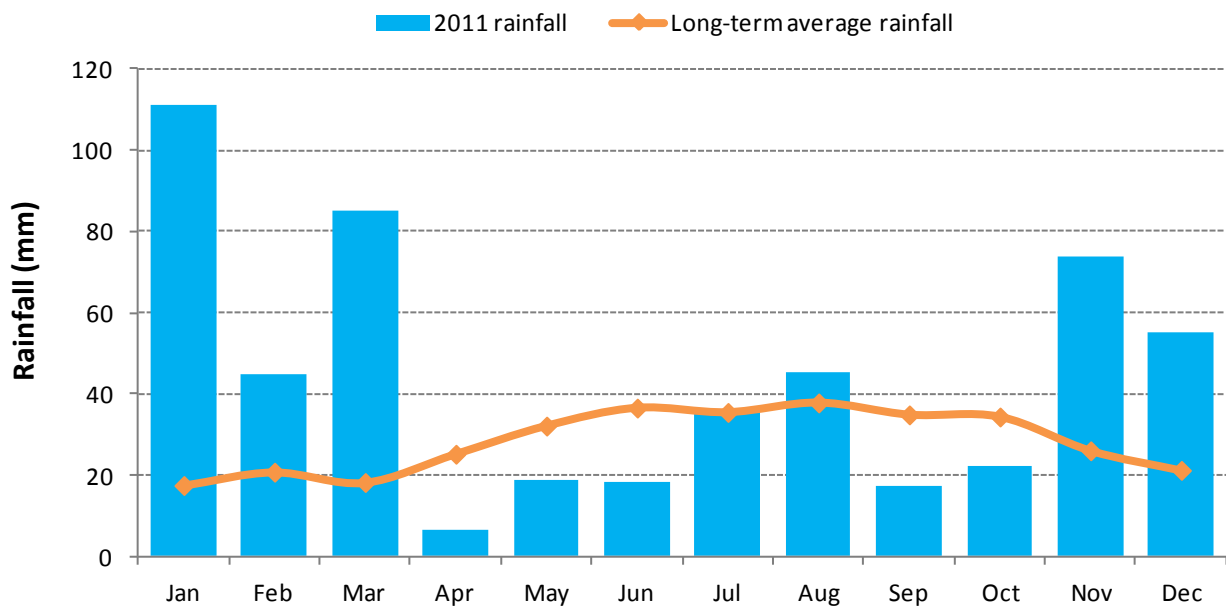


Figure 2. Monthly rainfall (mm) for 2011 and the long-term average monthly rainfall (mm) at Pinnaroo (Station 25015) in the Mallee PWA

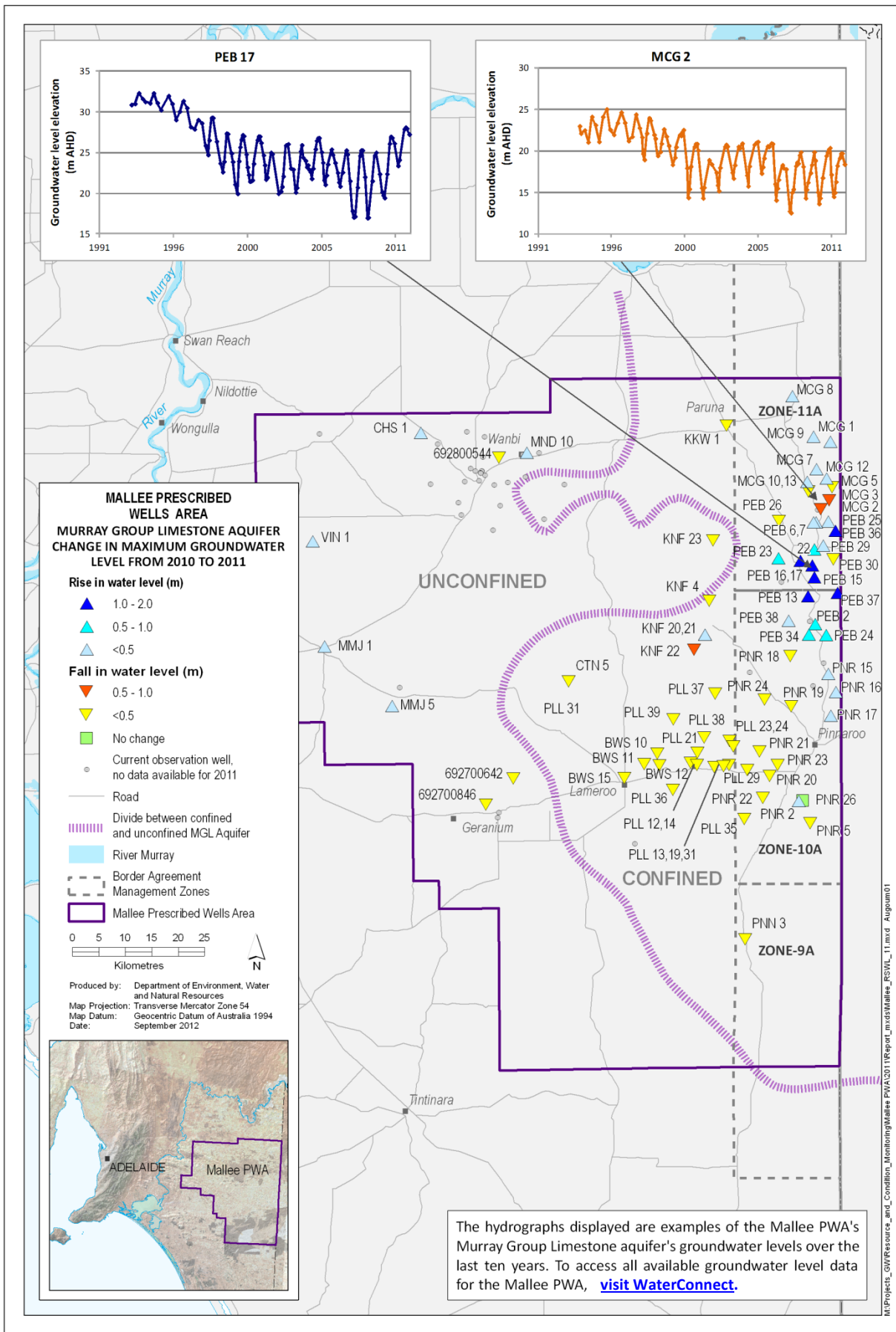


Figure 3. Changes in maximum groundwater levels in the Murray Group Limestone aquifer from 2010 to 2011

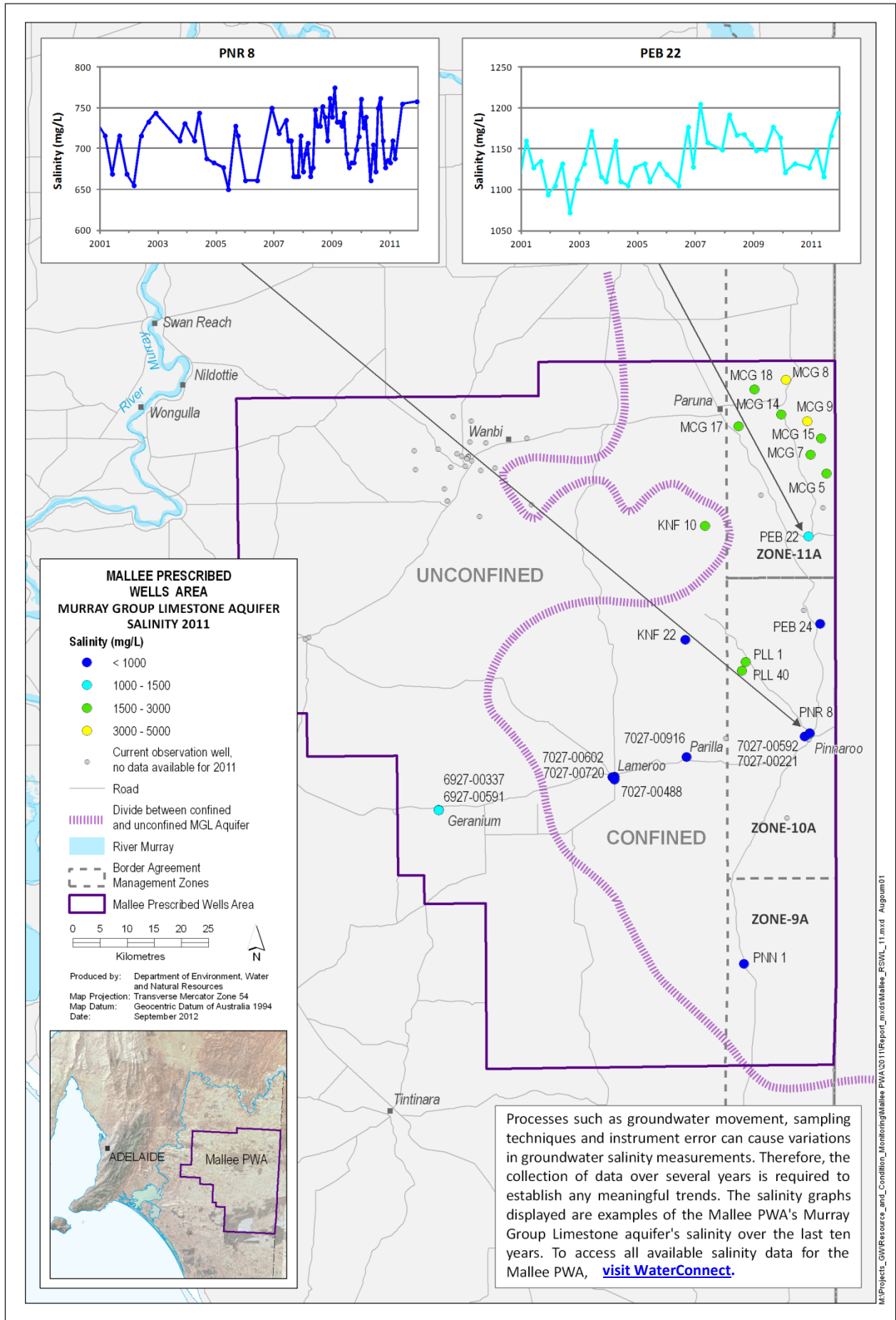


Figure 4. Groundwater salinity of the Murray Group Limestone aquifer for March 2011