
MCLAREN VALE PWA

PORT WILLUNGA FORMATION AQUIFER

Groundwater Level and Salinity Status Report

2012



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

Department of Environment, Water and Natural Resources
25 Grenfell Street, Adelaide
GPO Box 1047, Adelaide SA 5001

Telephone	National	(08) 8463 6946
	International	+61 8 8463 6946
Fax	National	(08) 8463 6999
	International	+61 8 8463 6999
Website	www.environment.sa.gov.au	

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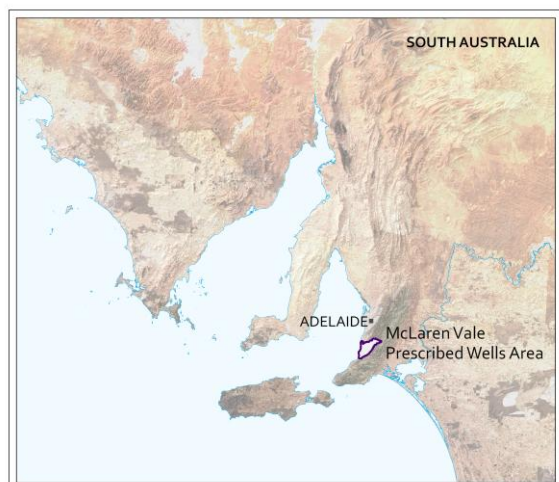
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2012 SUMMARY



The McLaren Vale Prescribed Wells Area is located approximately 35 km south of Adelaide. It is a regional-scale resource for which groundwater has been prescribed under South Australia's Natural Resources Management Act 2004. A Water Allocation Plan provides for sustainable management of the water resources.

The Willunga Basin, within the McLaren Vale Prescribed Wells Area, is a structurally controlled trough, bounded in the south-east by the Willunga Fault and to the north by basement outcrop. The basin contains sedimentary aquifers of Quaternary and Tertiary age and a fractured rock aquifer which forms the hills to the east of the Willunga Fault and outcrops to the north. There are four aquifer systems recognised within the Willunga Embayment; the Quaternary aquifer, Port Willunga Formation aquifer, Maslin Sands aquifer and the Fractured

Rock aquifer. The confined Port Willunga Formation aquifer is a coarse-grained limestone overlain by younger Quaternary aquifers and underlain by the Maslin Sands and Fractured Rock aquifers. Groundwater movement within the Port Willunga Formation typically flows from the higher north-eastern part of the basin towards the coast in a south-westerly direction.

Groundwater extractions (excluding stock and domestic use) for the Port Willunga Formation aquifer in the McLaren Vale Prescribed Wells Area for 2011-12 totalled 2511 ML which represents an increase of 825 ML from the previous year (Fig. 1). Groundwater extraction from the Port Willunga Formation aquifer accounts for 67% of the total groundwater used within the McLaren Vale Prescribed Wells Area. Groundwater in the region is primarily used for viticulture.

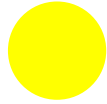
The climate of the McLaren Vale Prescribed Wells Area is characterised as Mediterranean with hot, dry summers and mild, wet winters. Rainfall is the primary source of recharge as the aquifer is replenished by infiltration through the soil or by percolation as a result of streamflow in drainage lines at or near the Willunga Fault. Data from the Willunga rainfall station (23753) was chosen for the analysis of rainfall trends. In Figure 2 the long-term monthly average rainfall is graphed in orange with the total monthly rainfall graphed in blue. In 2012, the total annual rainfall was 688 mm, slightly above the long-term (1889-2012) annual average of 643 mm. The notable feature of the graph is the exceptionally wet June when total rainfall was double the monthly average.

Groundwater level in the Port Willunga Formation has shown widespread declines of up to 5 m since 1993. However, since 2010, most observation wells show stabilisation or reduced rate of decline most likely in response to reduced extraction in 2010-11. Comparing groundwater levels across 2011-12, out of 24 observation wells in the Port Willunga Formation, groundwater levels declined in 17 and rose in 7 (Fig. 3). The largest water level declines in 2012 were observed in the irrigation districts east of Aldinga Beach.

The groundwater salinity observation network for McLaren Vale Prescribed Wells Area Port Willunga Formation aquifer is shown in Figure 4. During the past 10 years from 2002 to 2012, several wells showed an increasing trend. In 2012 only 5 wells were sampled for salinity, all of which recorded slightly lower salinity than that recorded in 2011. The lower salinity is possibly due to increased rainfall recharge.

The Port Willunga Formation aquifer in the McLaren Vale Prescribed Wells Area has been assigned a yellow status for 2012:

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 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 for the Port Willunga Formation aquifer is supported by:

- A decline in the maximum recovered water level for 2012 in 70% of wells monitored when compared to 2011 data
- Of the 5 salinity monitoring wells monitored, all displayed a slight decrease when compared to their last recorded data, however, many wells were not sampled and therefore it is not possible to make broad conclusions regarding changes in aquifer salinity

To view the *McLaren Vale Prescribed Wells 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](#).

For further details about the relevant prescribed resource please see the Water Allocation Plan for the [McLaren Vale Prescribed Wells Area](#).

**McLaren Vale PWA: Port Willunga Formation aquifer
annual groundwater extraction**

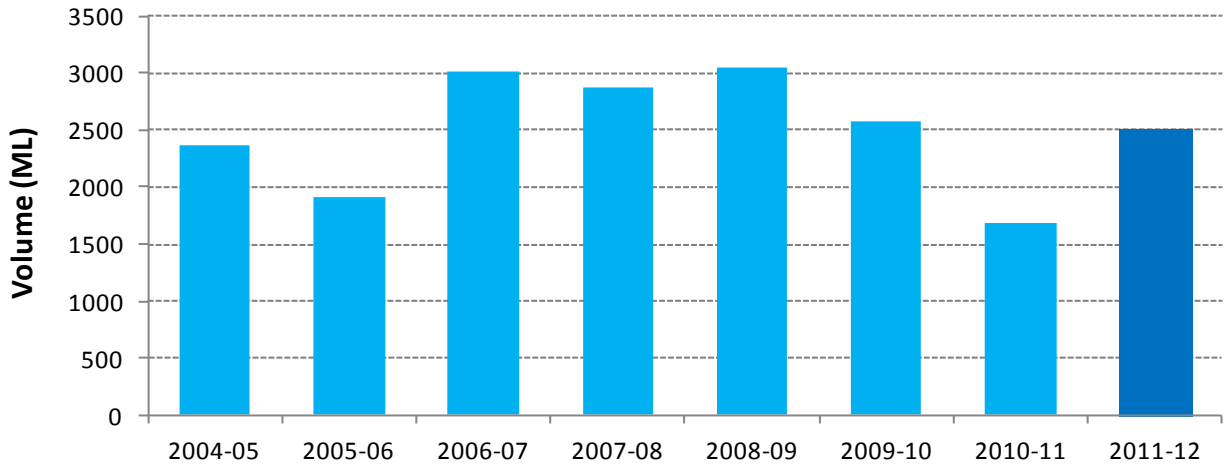


Figure 1. Historical licensed groundwater use for the Port Willunga Formation in the McLaren Vale Prescribed Wells Area

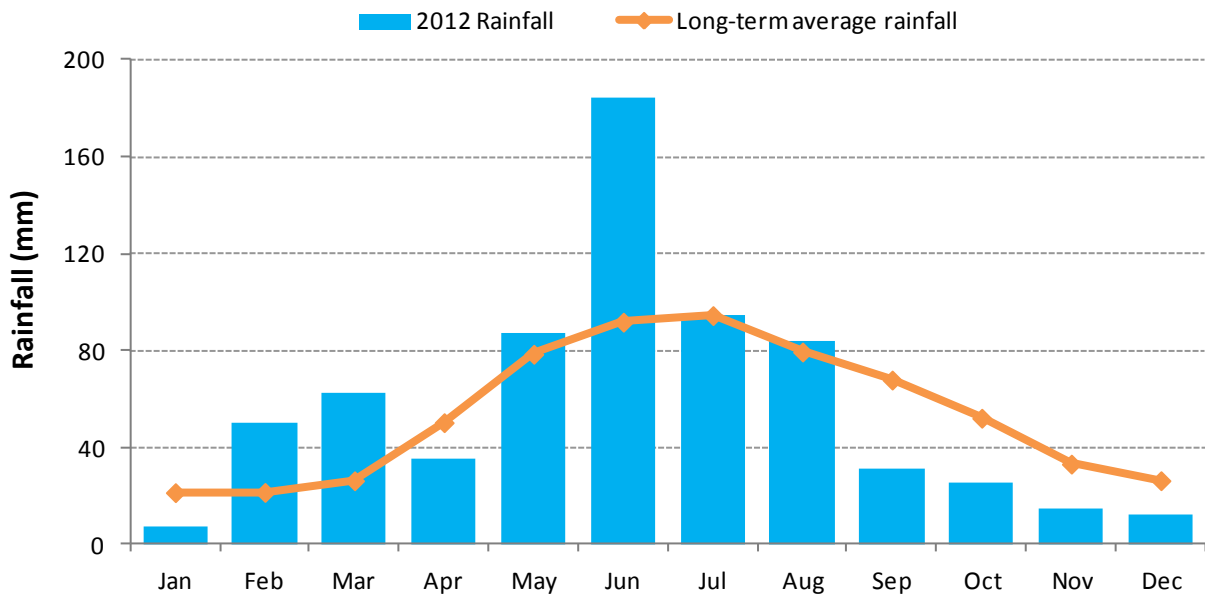


Figure 2. Monthly rainfall (mm) for 2012 and the long-term average monthly rainfall (mm) at the Willunga rainfall station (23753) in the McLaren Vale Prescribed Wells Area

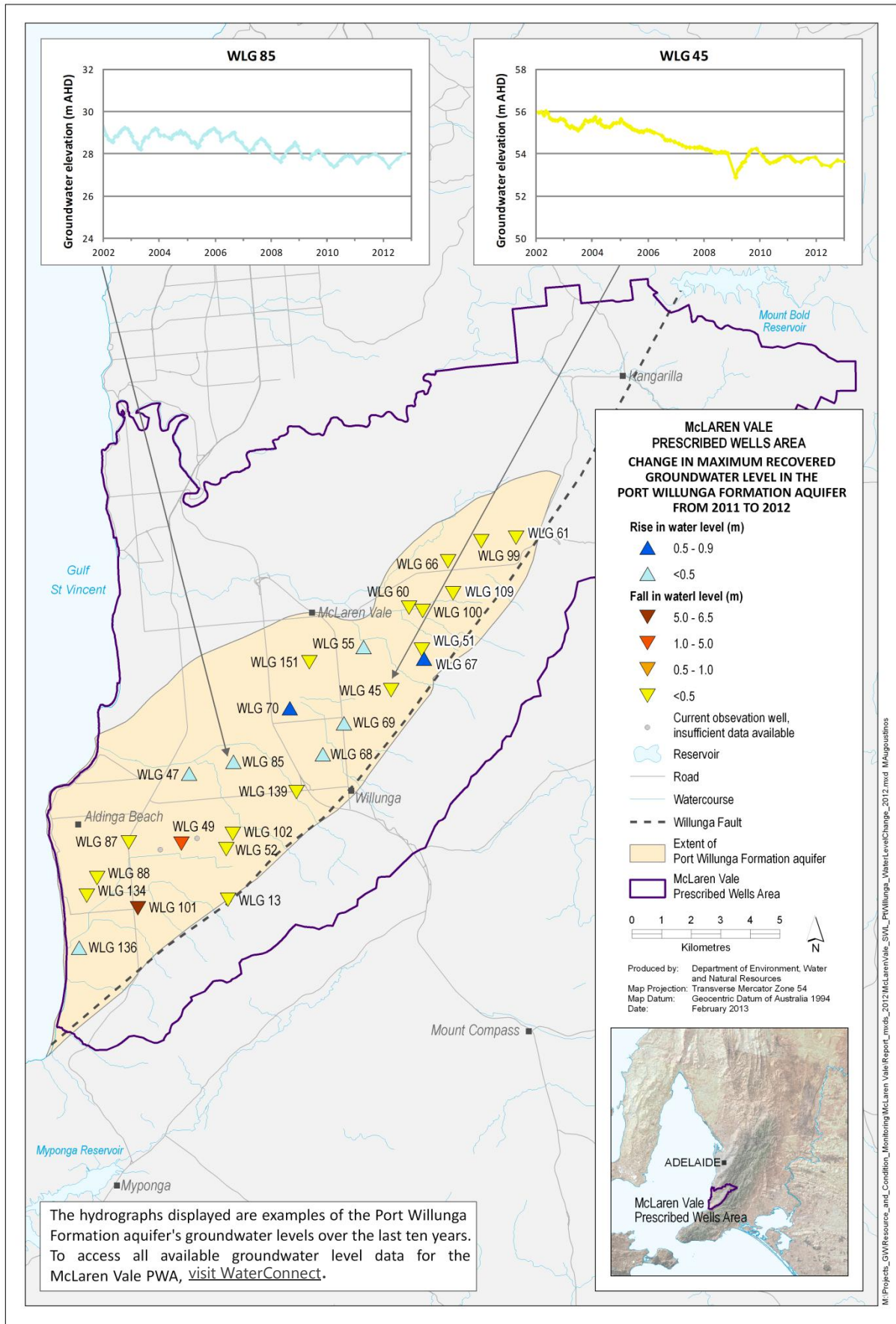


Figure 3. Overall changes in maximum groundwater levels in Port Willunga Formation Aquifer in the McLaren Vale Prescribed Wells Area from 2011 to 2012

McLaren Vale Prescribed Wells Area

Port Willunga Formation aquifer Groundwater Status Report 2012

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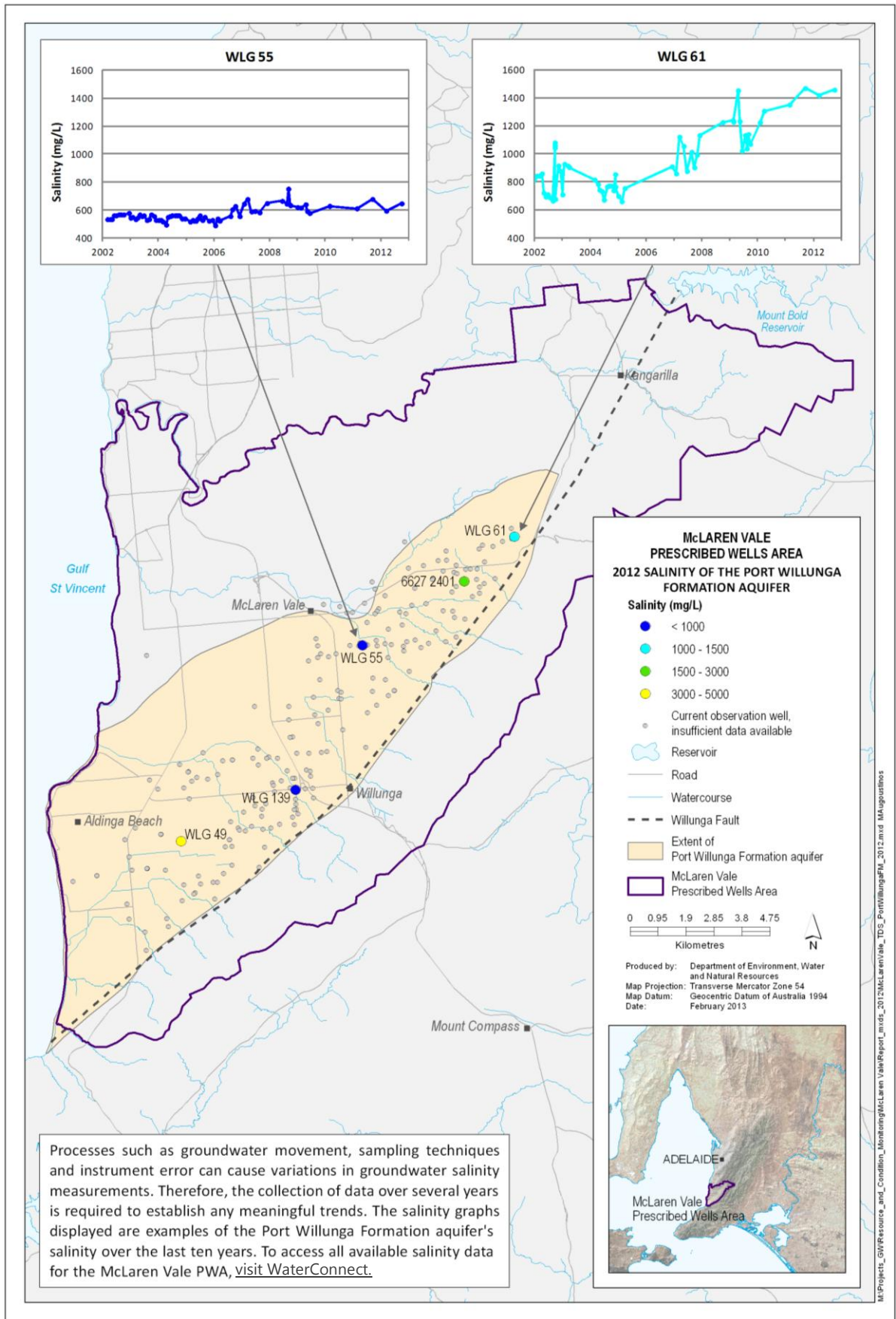


Figure 4. Groundwater salinity of the Port Willunga Formation aquifer in the McLaren Vale Prescribed Wells Area for 2012.