# MCLAREN VALE PWA FRACTURED ROCK AQUIFER

Groundwater Level and Salinity Status Report 2012



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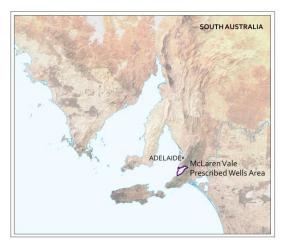
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### 2012 SUMMARY



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.

Groundwater in McLaren Vale Prescribed Wells Area moves in four major aquifers: Quaternary aquifer, Port Willunga Formation aquifer, Maslin Sands aquifer and Fractured Rock aquifer. The Fractured Rock aquifer outcrops to the east of the Willunga fault and along the northern extent of the Prescribed Wells Area along the Onkaparinga Gorge. Groundwater flows through fractures and fissures in the formation. The flow is variable and strongly influenced by the size, density and orientation of the

fractures. This aquifer is recharged by rainfall in outcropping areas and the watertable is likely to reflect the surface topography. The Fractured Rock aquifer is comprised of basement rock consisting of slates, quartzites, shales and limestones which are overlain by the Quaternary, Port Willunga Formation and Maslin Sands aquifers. Groundwater movement within this aquifer system follows topography flowing from high points along the basin margins towards low points within the basin where discharge to sedimentary aquifers occur. Beneath the sediments, flow direction within the Fractured Rock aquifer turns south-west towards the coast.

Groundwater extraction (excluding stock and domestic use) from the Fractured Rock aquifer in the McLaren Vale Prescribed Wells Area for 2011-12 totalled 653 ML which represents an increase of 266 ML from the previous year (Fig. 1). Groundwater extraction from the Fractured Rock aquifer accounts for 18% of the total water used within the McLaren Vale Prescribed Wells Area. Groundwater in the region is primarily used for viticulture which is also supplemented with treated effluent as an additional water resource. This water is sourced from the Christies Beach Wastewater Treatment Plant via the Willunga Basin Water Company reticulation scheme.

The climate of the McLaren Vale Prescribed Wells Area is characterised as Mediterranean with warm to hot, dry summers and mild, wet winters. In general, the primary source of recharge to the Fractured Rock aquifer is through rainfall infiltration in the Ranges east of the Willunga Fault and along the Onkaparinga Gorge. Data from the Mount Bold Reservoir rainfall station (23734) was chosen for analysis of rainfall trends (Fig. 2). 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 829 mm, above the long-term (1889-2012) annual average of 711 mm.

Groundwater levels show a decreasing trend for majority of the wells during the past 40 years (1972–2012). However, in recent years monitored water levels have generally stabilised or increased due to above average rainfall and therefore recharge. In 2012, 17 out of 31 observation wells involved in monitoring showed rising trend while 14 of them display a decline in groundwater level (Fig. 3).

The groundwater salinity observation network for McLaren Vale Prescribed Wells Area Fractured Rock aquifer is shown in Figure 4. During the past 10 years from 2002 to 2012, several wells have shown an increasing trend. In 2012 only four wells were sampled for salinity, three of which recorded their highest salinity on record. The salinity is still within the range acceptable for most irrigation purposes.

The Fractured Rock aquifer in the McLaren Vale Prescribed Wells Area has been assigned a yellow status for 2012:

#### **2012 STATUS**



"Gradual adverse trends, indicating low risk to the resource in the medium term"

This means that gradual adverse trends in resource status have been observed during 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 Fractured Rock aquifer is supported by:

- A decline in the maximum recovered water level in 45% of wells of up to 1.98 m when compared to the maximum recovered water level recorded in 2011
- Continuing long-term increases in salinity changes were observed in 2012. If this trend continues it may affect the beneficial use of the groundwater resource in localised areas during the next 15 years.

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 <u>McLaren Vale prescribed</u> <u>wells area</u>.

## McLaren Vale PWA: Fractured Rock aquifer annual groundwater extraction

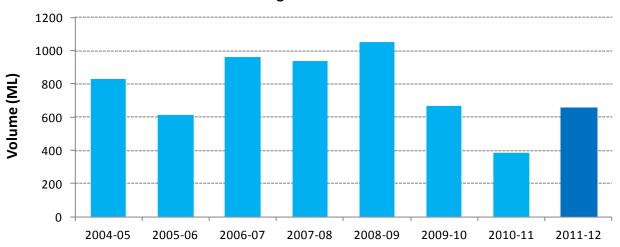


Figure 1. Historical licensed groundwater use for the Fractured Rock Aquifer in the McLaren Vale Prescribed Wells Area

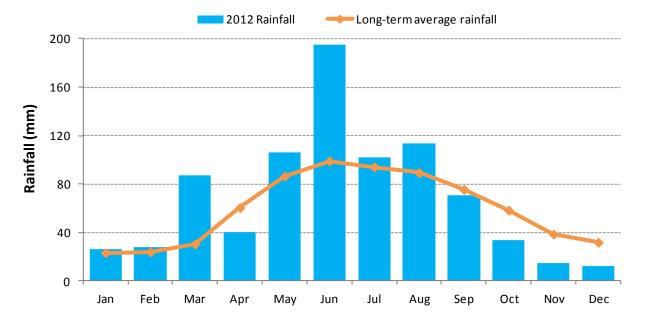


Figure 2. Monthly rainfall (mm) for 2012 and the long-term average monthly rainfall (mm) at the Mount Bold Reservoir rainfall station (23734) in the McLaren Vale Prescribed Wells Area

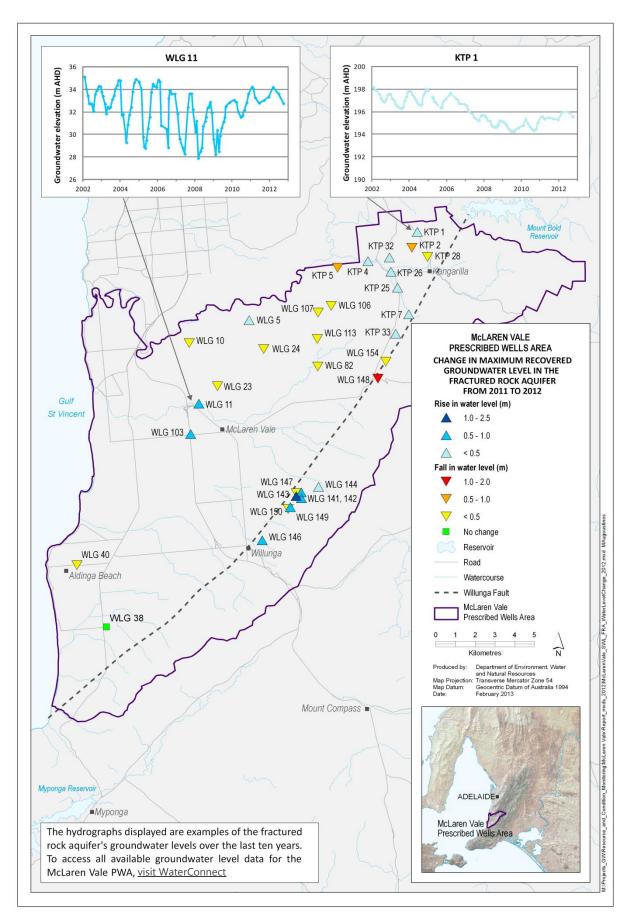


Figure 3. Overall changes in maximum groundwater levels in the Fractured Rock aquifer in the McLaren Vale Prescribed Wells Area from 2011 to 2012

McLaren Vale Prescribed Wells Area

Fractured Rock Groundwater Status Report 2012

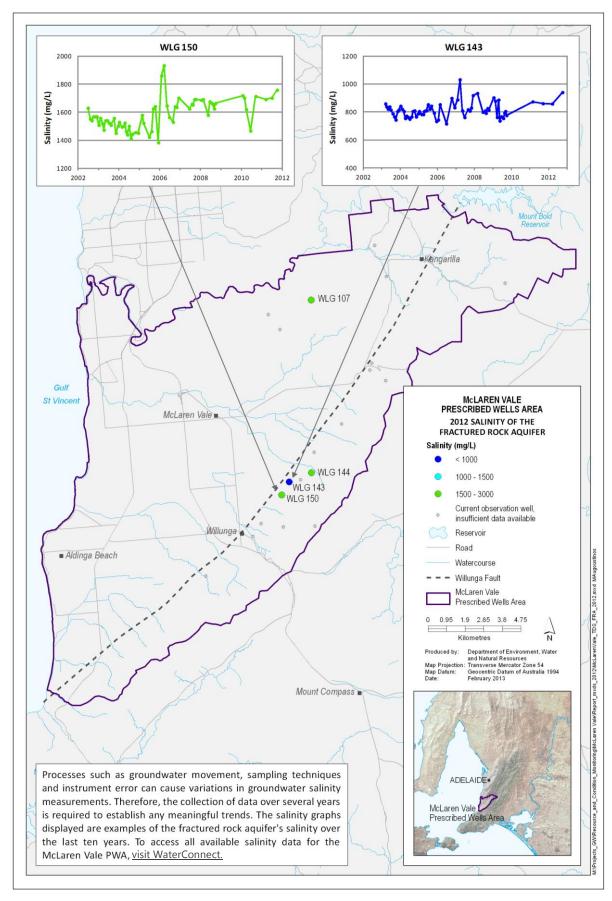


Figure 4. Groundwater salinity of the Fractured Rock aquifer in the McLaren Vale Prescribed Wells Area for 2012