
CLARE VALLEY PWRA

GROUNDWATER LEVEL AND SALINITY STATUS REPORT

2011



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Water and Natural Resources

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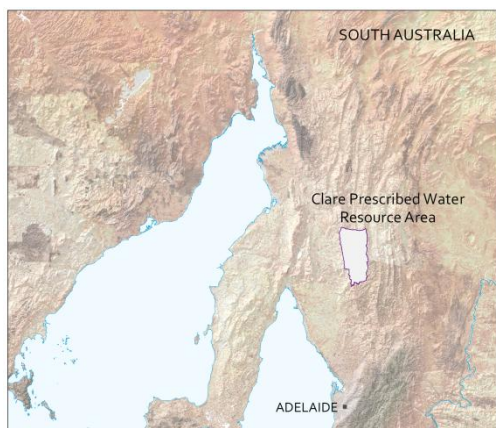
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2011 SUMMARY



The Clare Valley Prescribed Water Resources Area (PWRA) is located approximately 130 km north of Adelaide within the Mount Lofty Ranges. It is a regional-scale resource for which surface water and groundwater is prescribed under South Australia's *Natural Resources Management Act 2004*.

There are two aquifer systems within the Clare Valley region. A Quaternary alluvial aquifer occurring at shallow depths (<15 m) in valley floors which provides only a small portion of the groundwater resource (mainly in the vicinity of Stanley Flat). It is underlain by an extensive fractured rock aquifer which is the main aquifer system developed within the Clare Valley PWRA. Both aquifers are recharged by local rainfall.

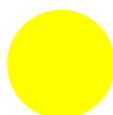
Metered extractions in 2010–11 totalled 497 ML, which represents a decrease of 46.5% from the previous water use year and is the lowest recorded use within the PWRA since metering commenced in the 2000–01 season (Fig.1). The decrease in extractions could be due to good rainfall in the growing season and therefore decreased yields from irrigation wells.

There are two rainfall stations, Calcannia (21075) and Watervale (21054) within the Clare PWRA. The long-term average annual rainfall recorded at Watervale and Calcannia rainfall stations for the period of 1889 to 2011 is 653.5 mm and 543.1 mm respectively. Rainfall for 2011 was above the long-term average with 673.8 mm recorded at Watervale and 640.1 mm at Calcannia (Fig. 2).

The majority of water level observations wells display declining long-term trends over the past 20 years up to 2009, followed by rising water levels up to and including 2011. In 2011 the majority (113 out of 152) of observation wells show a rise (up to 4.55 m) in the maximum water level attained in comparison to the maximum water level observed in 2010 (Figs. 3 & 4). Groundwater salinity throughout the PWRA is generally below 1500 mg/L which is within the salinity threshold for grape growing, the primary use for irrigation water in the PWRA, but can reach up to 2979 mg/L in some locations (Figs. 5 & 6). In 2011, 16 out of 32 salinity observation wells show a slight increase in salinity when compared with measurements from 2010.

The Clare PWRA has been assigned a yellow status for 2011:

2011 STATUS



“Adverse trends indicating low risk to the resource in the medium term”

This means that observed adverse trends are gradual and if continued, will not lead to a change in the current beneficial uses of the groundwater resource for at least 15 years. Beneficial uses may be drinking water, irrigation or stock watering. The 2011 status for the Clare PWRA is supported by:

- Of the 152 water level monitoring wells, 113 showed an increase in the maximum groundwater level observed, 38 showed a decrease and one remained unchanged when compared with the maximum groundwater level attained in 2010
- In 31 of the salinity observation wells, 16 show slightly increasing salinity and 15 display a decreasing salinity when compared with salinity measurements from 2010. Salinity in the region ranged between 206-2978 mg/L.

To view the *Clare Valley 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](#).

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

For further information on the Clare Valley PWRA please see the [Water Allocation Plan for the Clare Valley Prescribed Water Resources Area](#).

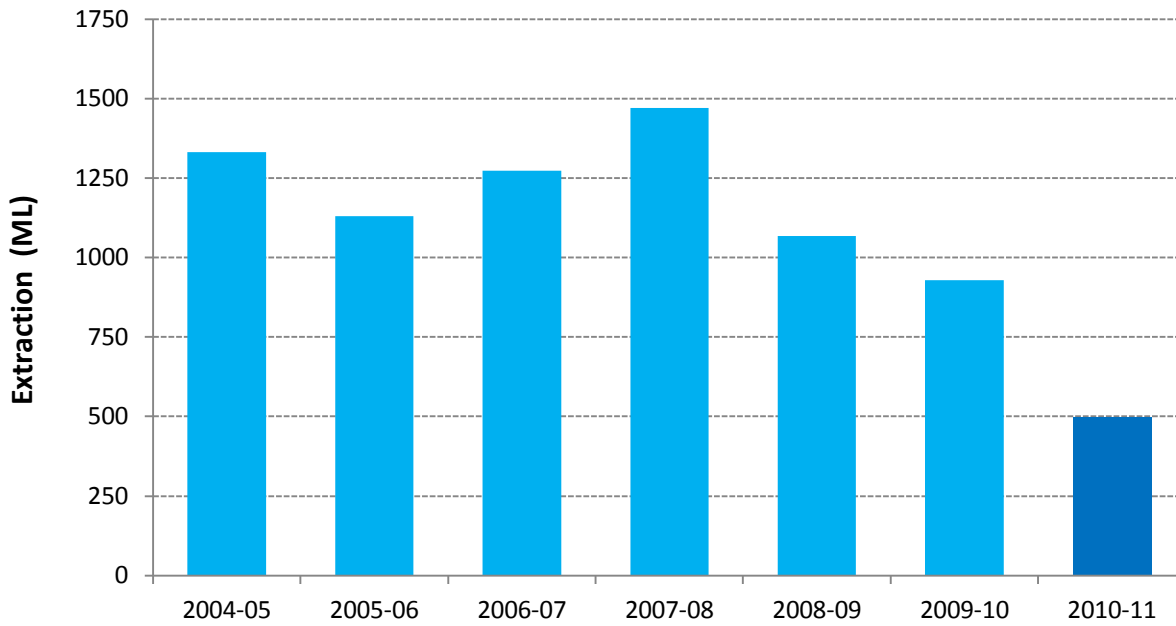


Figure 1. Historical licensed groundwater use for the Clare PWRA

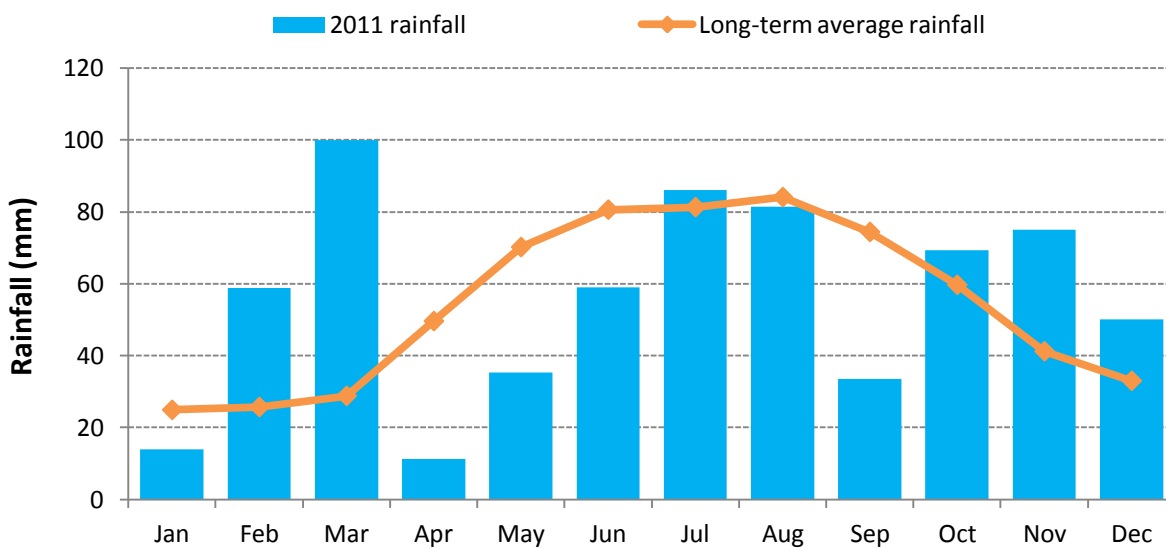


Figure 2. Monthly rainfall totals (mm) for 2011 and the long-term average monthly rainfall (mm) at the Watervale rainfall station (21054) in the Clare PWRA

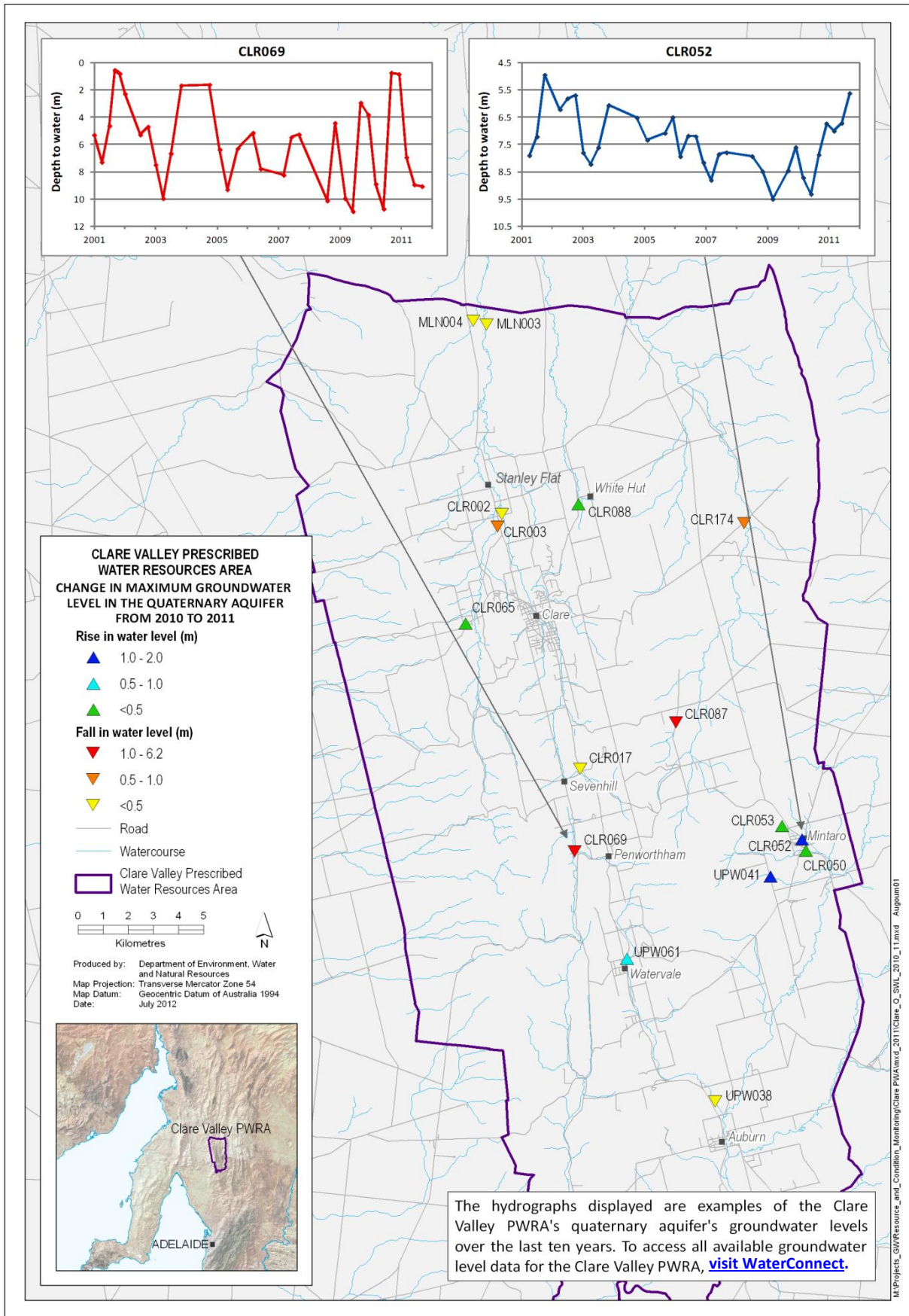


Figure 3. Overall changes in maximum groundwater level in the Quaternary aquifer of the Clare Valley PWRA from 2010 to 2011

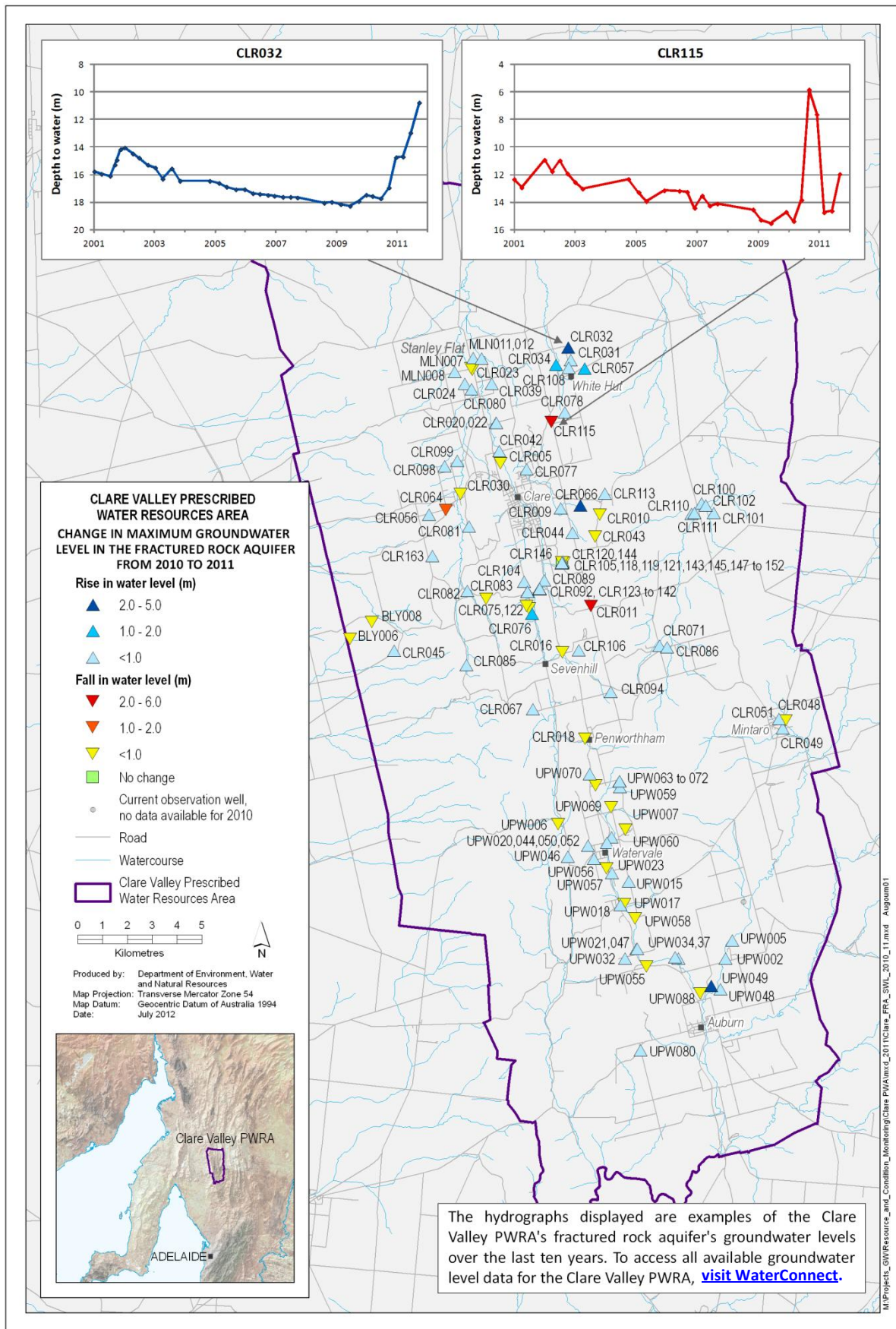


Figure 4. Overall changes in maximum groundwater level of the Fractured Rock aquifer of the Clare Valley PWRA from 2010 to 2011

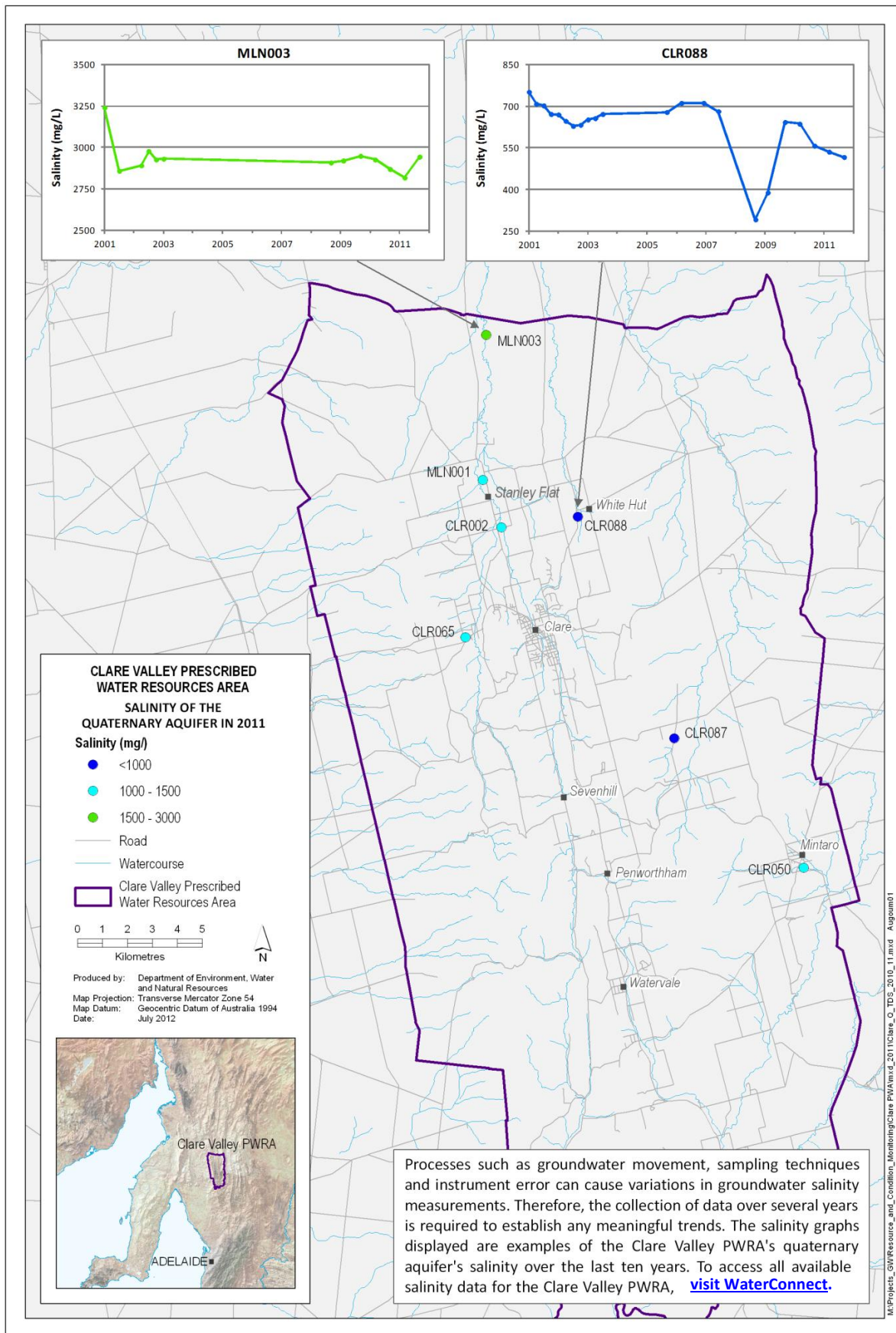


Figure 5. Groundwater salinity of the Quaternary aquifer of the Clare Valley PWRA for 2011

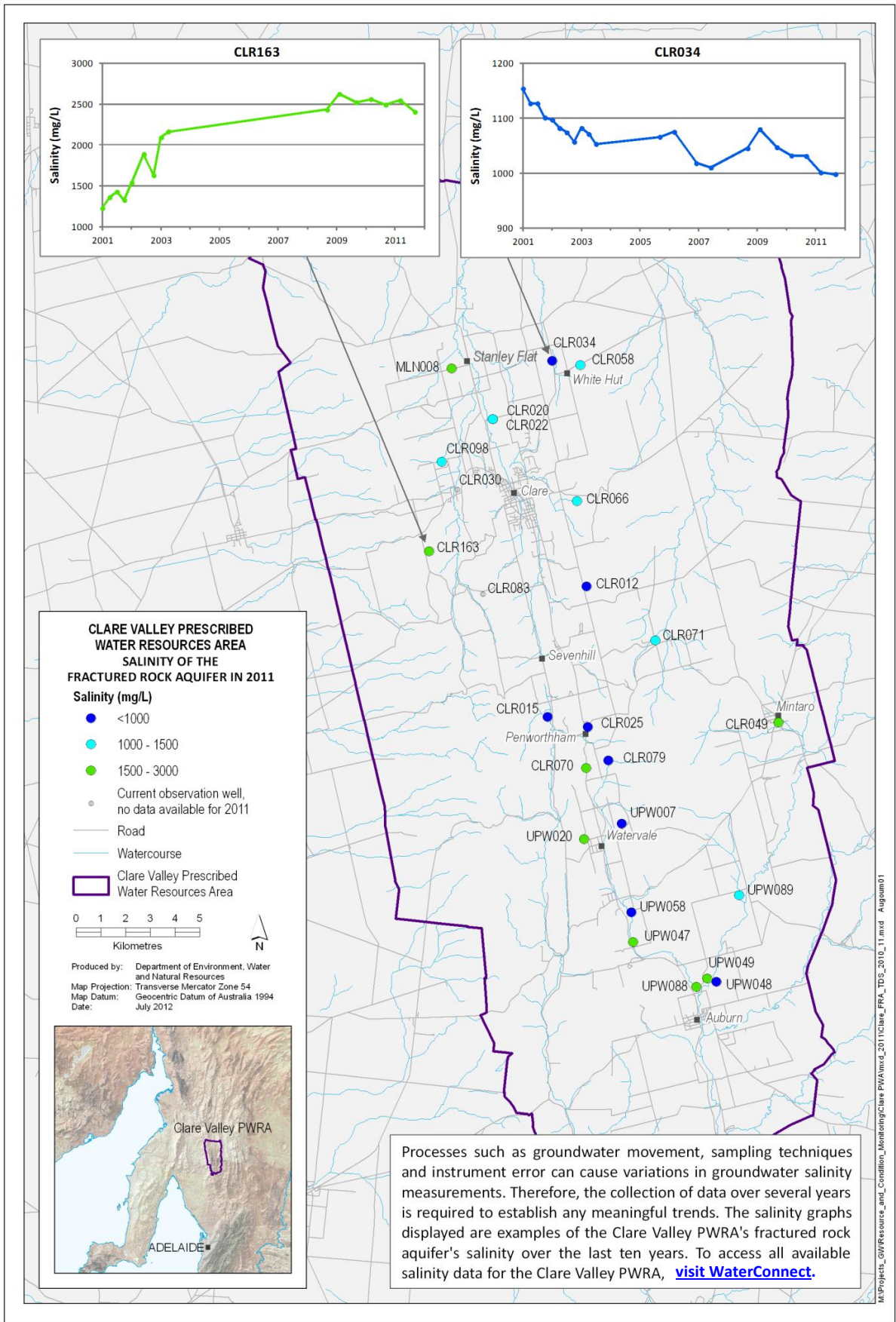


Figure 6. Groundwater salinity of the Fractured Rock aquifer of the Clare Valley PWRA for 2011