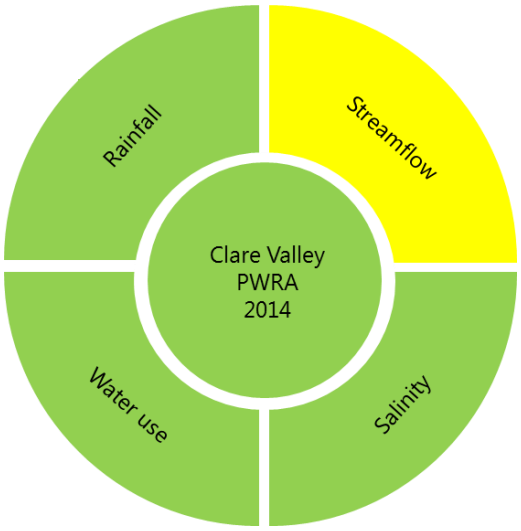
Clare Valley PWRA

Surface water status report

2014

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

2014 Summary



The Clare Valley Prescribed Water Resources Area (PWRA) has been assigned a green status for 2014:

No adverse trends, indicating a stable or improving situation

This hydrological status for 2014 is supported by:

- above average rainfall at 2 of 2 rainfall analysis sites
- average or above average streamflow at 2 of 3 streamflow analysis sites
- freshening salinity at 2 of 2 salinity analysis sites
- low water use compared to annual streamflow.

This status report provides a snapshot of the surface water resources in the Clare Valley PWRA for the financial year 2013–14. Surface water status reports are limited to reporting on the hydrological status of the PWRA. Available data on climate, streamflow, salinity and water use is summarised and compared with recent and long-term data to provide an indication of the hydrological status of its water resources. Each element is discussed with reference to recent or more long-term trends where, if at all, they are present in the data. These status reports seek to support informed policy-development and management decisions by resource managers and those responsible for, or reliant on, the water resources. Status of the prescribed resource for the previous years is shown below.

2010–11 Status (green)	2011–12 Status (yellow)	2012–13 Status (amber)	2014 Status (green)

This status report does not seek to evaluate the sustainable limits of the resource, nor does it make any recommendations on management or monitoring of the resource. These actions are important, but occur through separate processes.

The Clare Valley PWRA is located approximately 100 km north of Adelaide. Surface water (including within watercourses) and groundwater resources in the PWRA have been prescribed under South Australia's *Natural Resources Management Act 2004*. A Water Allocation Plan (WAP) was developed by the Northern and Yorke Natural Resources Management Board in 2009, which seeks to provide for sustainable management of water resources.

Status symbols

No adverse trends, indicating a stable or improving situation (green)

Trends are either stable (no significant change), or have improved over the reporting period, indicating that there is insignificant risk of impact to the beneficial use of the resource.

Adverse trends, indicating low risk to the resource in the short-term (1 to 3 years) (yellow)

Observed adverse trends are gradual and if continued, are unlikely to lead to a change in the current beneficial uses of the surface water resource in the short-term.

Adverse trends, indicating medium risk to the resource eventuating in the short-term (amber)

Observed adverse trends are significant and if continued, moderately likely to lead to a change in the current beneficial uses of the surface water resource in the short-term.

Adverse trends, indicating high risk to the resource within the short-term (red)

Trends indicate degradation of the resource is occurring. Degradation will very likely result in a change in the beneficial use (e.g. reduced ability to access surface water entitlements and/or decline in the condition of environmental assets).

Unclear (grey)

Trends are unable to be determined due to a lack of adequate information on which to base a sound judgement of status.

Data from the same stations summarised in previous reports are used in analysis, for comparison of annual trends. Two long-term meteorological stations were selected for analysis of rainfall trends: Clare (M021075) and Watervale (M021054) (Figure 1). Annual rainfall was above average at both sites in 2013–14. The spring month of September recorded below average rainfall for the third consecutive year across all stations analysed. This is the second consecutive year of below average rainfall in September, October and November.

Three long-term gauging stations were selected for analysis of streamflow trends: Hill River (A5070500), Hutt River (A5070501) and Wakefield River (A5060500) (Figure 1). Streamflow was average or above average at 2 of 3 analysis sites in 2013–14.

Two medium to long-term gauging stations were selected for analysis of salinity trends: Skillogalee Creek (A5061008) and Wakefield River (A5060500) (Figure 1). Freshening levels of salinity were observed during 2013–14 when compared to the range of salinity for the previous year.

Water use was low in 2013–14 when expressed as a percentage of the total available streamflow in 2013–14.

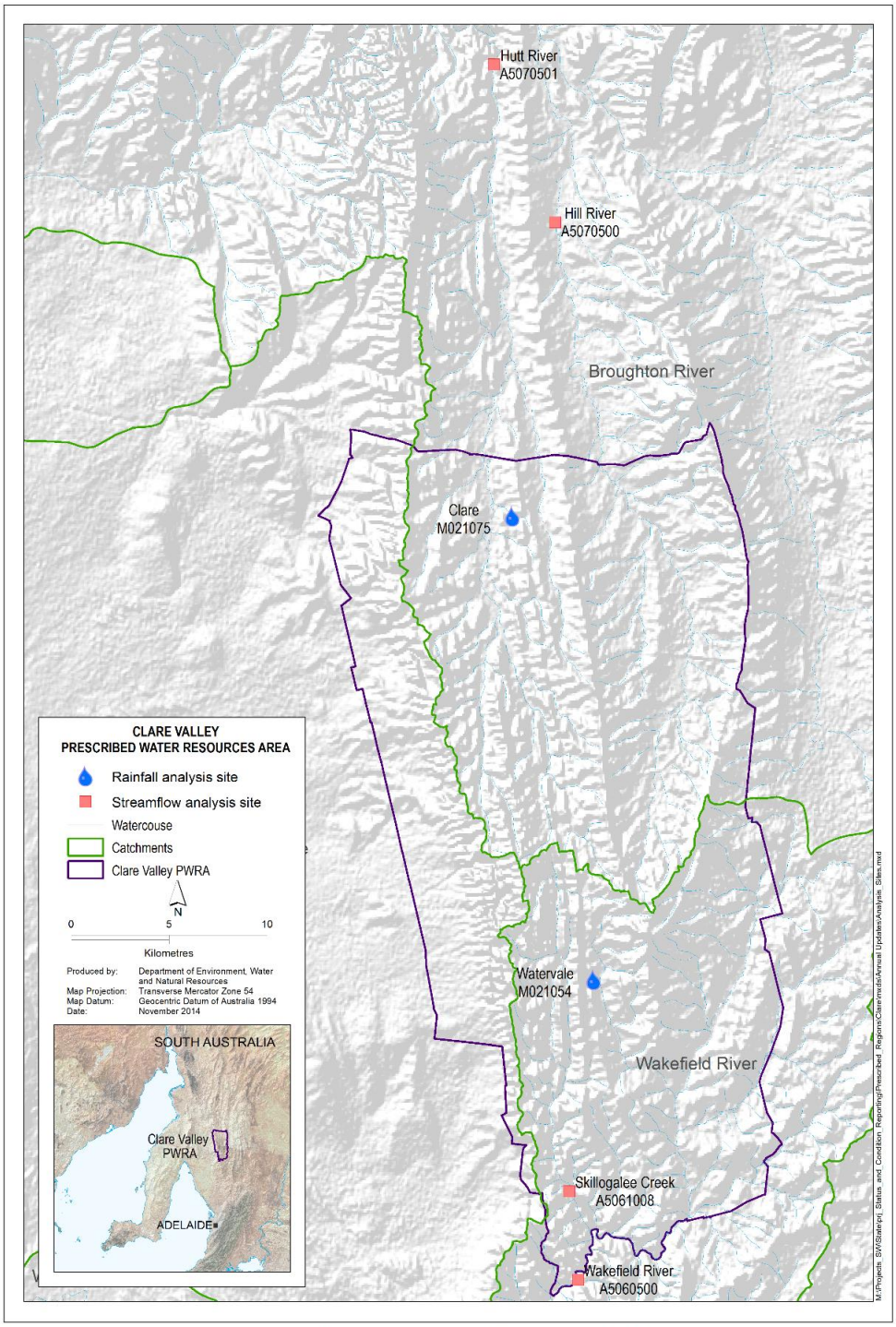
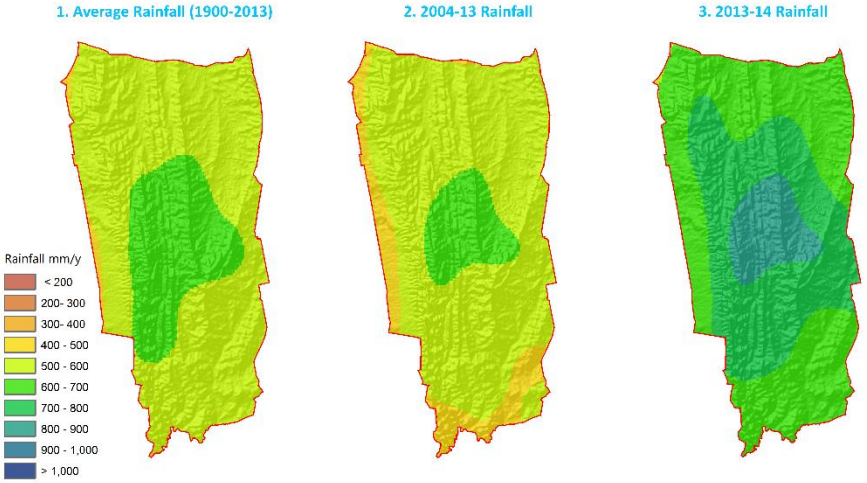


Figure 1. Monitoring analysis sites as used in the Clare Valley PWRA Surface Water Status Report

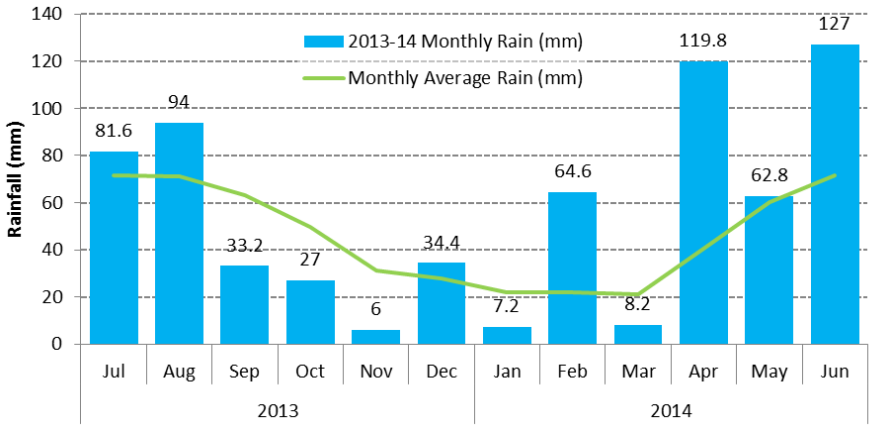
Rainfall

Status	Degree of confidence	Comments on recent historical context
Above average rainfall at all rainfall analysis sites	High: good coverage of rainfall stations representing the rainfall variation across the region	Above average rainfall at Clare and Watervale after one year of below average rainfall in 2012–13. Rainfall was above average at both stations between 2009–10 and 2011–12



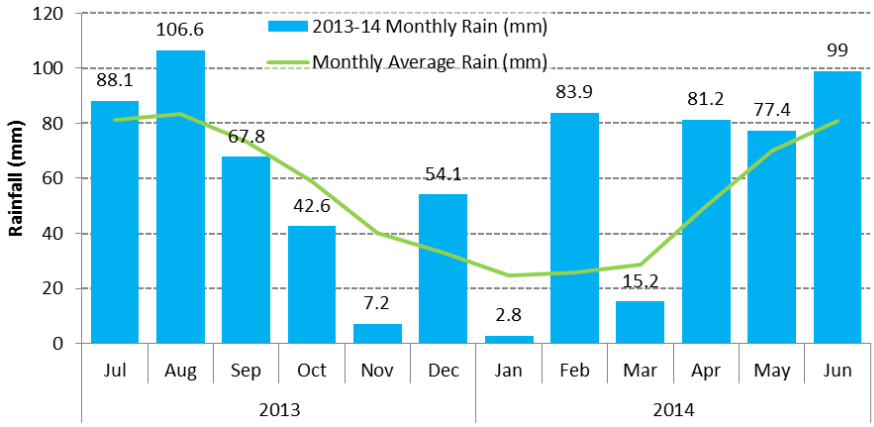
Rainfall in the Clare Valley PWRA typically varies from less than 500 millimetres (mm) around the prescribed boundary to over 600 mm in the central region around the township of Clare (Figure 2). The three panels of Figure 2 indicate that over the entire PWRA, rainfall for the year 2013–14 (Panel 3) was above the long-term and short-term averages (Panels 1 and 2).

Figure 2. Annual rainfall distributions for the Clare Valley PWRA



Clare Bureau of Meteorology (BoM) rainfall station received an above average rainfall of 666 mm in 2013–14 in comparison to its long-term average of 552 mm (Figure 3). Above average rainfall was experienced predominantly in the late summer, autumn and winter months across 2013–14. The months of September to November all received below average rainfall.

Figure 3. Monthly rainfalls at Clare (Calcannia) (M021075)



Watervale BoM rainfall station received an above average rainfall of 726 mm in 2013–14 in comparison to its long-term average of 651 mm (Figure 4). Above average rainfall was experienced in 7 months across 2013–14. Like Clare rainfall station, Watervale received below average rainfall in the months of September to November and also January and March.

Figure 4. Monthly rainfalls at Watervale (M021054)

Streamflow

Status	Degree of confidence	Comments on recent historical context
Average or above average streamflow at 2 of 3 streamflow analysis sites	High: data derived from long-term gauging stations	Average or above average streamflow at Hutt River and Hill River after 2 consecutive years of below average streamflow and third consecutive year of below average streamflow at Wakefield River after well above average streamflow recorded in 2010–11

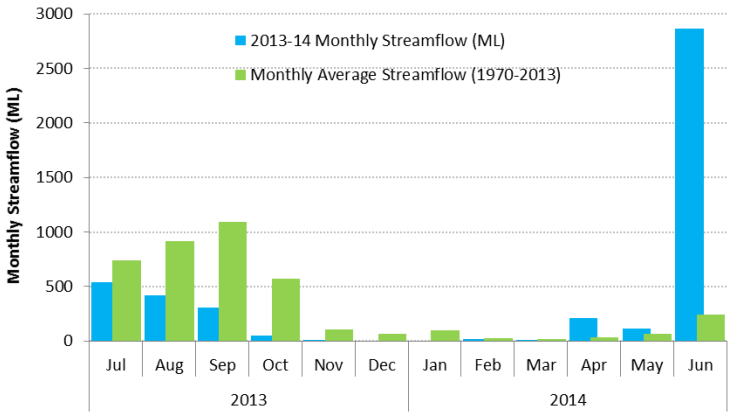


Figure 5. Monthly streamflow at Hill River (A5070500)

Hill River gauging station (A5070500) experienced an above average annual streamflow of 4524 megalitres (ML) for 2013–14 (14% higher than the 3970 ML long-term average). The monthly breakdown of streamflow for 2013–14 (Figure 5) highlights that the months of April to June received above average streamflow. June received 63% of the annual total. No streamflow was recorded in December or January.

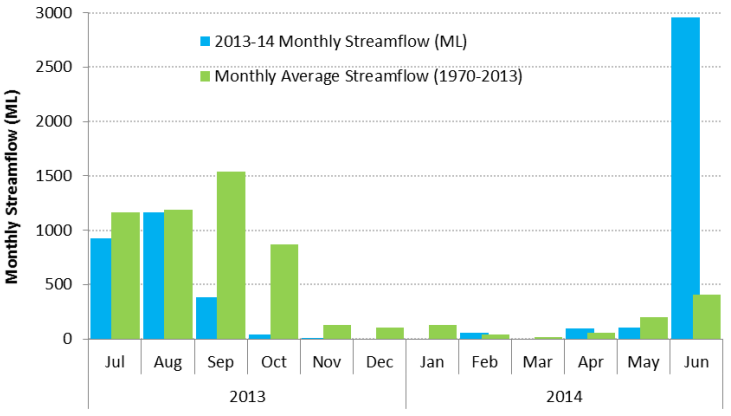


Figure 6. Monthly streamflow at Hutt River (A5070501)

Hutt River gauging station (A5070501) experienced an around average annual streamflow of 5715 ML for 2013–14 (2% lower than the 5825 ML long-term average). The monthly breakdown of streamflow for 2013–14 (Figure 6), like that for Hill River, highlights that the months of July to December received well below average streamflow. The months of February, April and June received above average streamflow with June receiving 52% of the annual total. No streamflow was recorded in December, January or March.

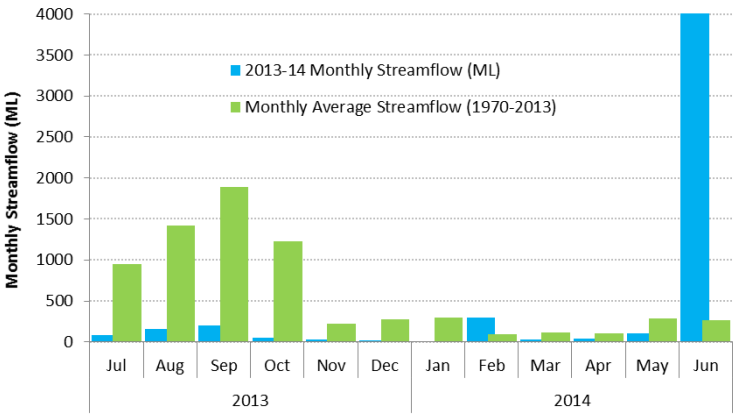


Figure 7. Monthly streamflow at Wakefield River (A5060500)

Wakefield River gauging station (A5060500) experienced a below average annual streamflow of 5054 ML for 2013–14 (29% lower than the 7130 ML long-term average). The monthly breakdown of streamflow for 2013–14 (Figure 7) highlights that the months of July to January and March to May all received well below average streamflow. Monthly streamflow reductions against the long-term monthly averages range from a 55% reduction during April to around 90% and over reductions from July to January. The month of June received almost 80% of the annual total streamflow.

Salinity

Status	Degree of confidence	Comments on recent historical context
Freshening	Fair: data are representative of the Wakefield River catchment only	The salinity trend at both stations shows the range of salinity in 2013–14 being lower than the previous year

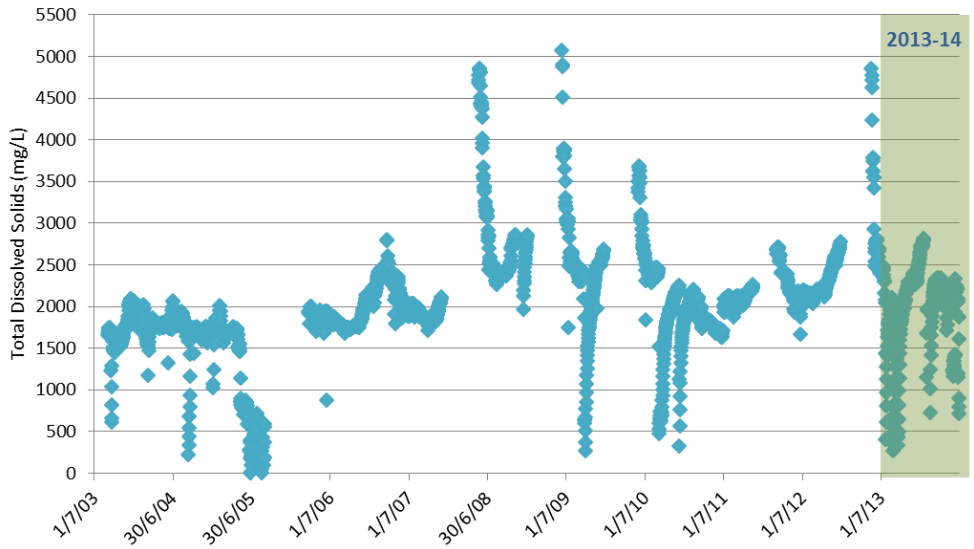


Figure 8. Salinity data at Skillogalee Creek from 2003–14

Of the total record for Skillogalee Creek, 6% was recorded as <1000 mg/L, 83% was between 1000–2500 mg/L, 10% of the record was between 2500-4000 mg/L and 1% was >4000 mg/L. The salinity range in 2013–14 is lower compared to the previous year and less than the high salinity levels recorded around 2008–09.

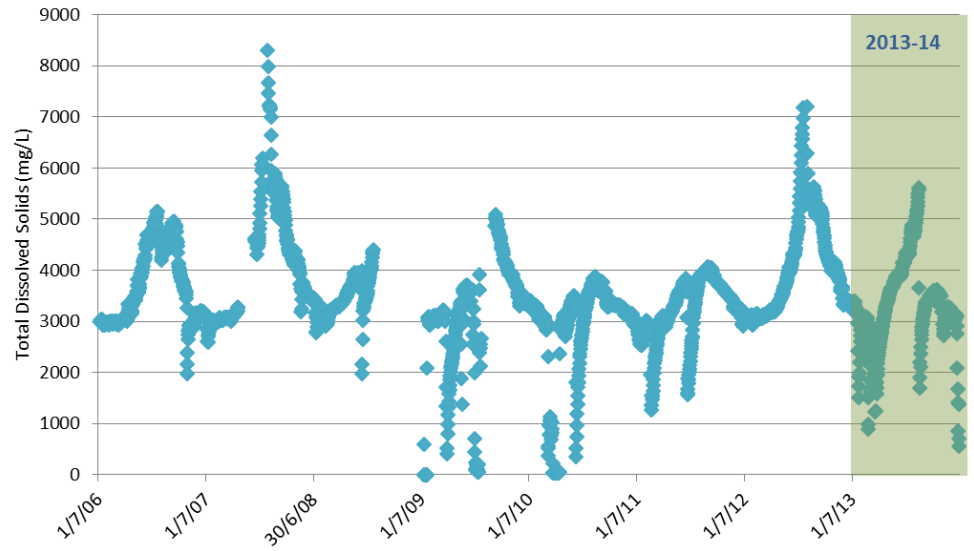


Figure 9. Salinity data at Wakefield River from 2005–14

For Wakefield River, 2% was recorded as <1000 mg/L, 5% was between 1000–2500 mg/L, 71% of the record was between 2500-4000 mg/L and 22% was >4000 mg/L. The salinity range in 2013–14 is lower compared to the previous year and less than the high salinity levels recorded around 2007.

Surface water use

Status	Degree of confidence	Comments on recent historical context
Low use compared to annual streamflow	High to medium: high confidence in metered data, medium confidence in estimated data	Water use as a % of annual streamflow has decreased during 2013–14

Surface water use is summarised by licensed extractions and estimated non-licensed demand, together with supply from outside of the PWRA (Table 1). The Clare Valley Water Supply Scheme (CVWSS) brings filtered water from the River Murray for the purpose of municipal water supply and irrigation of high value crops, including wine grapes.

Table 1. Summary of surface water use in the Clare Valley PWRA

Clare PWRA surface water use (ML)	Licensed surface water extractions (dams)	1484
	Licensed watercourse extractions	417
	Estimated non-licensed water demand	675
Clare Valley Water Supply Scheme (ML)	CVWSS	324
	Third party transportation	673
Total water extractions (ML)		**3573**

Water usage from licensed surface water sources in 2013–14 totalled approximately 1901 ML (1484 + 417), which is up from the previous year's total of 1228 ML. Water use from the CVWSS is down to 997 ML (324 + 673) from the previous year's total of 1195 ML.

Existing stock and domestic dams are not managed through the Clare Valley WAP (i.e. the volume taken from them is not limited to an allocated volume and they are not metered), therefore an estimate is used to report on non-licensed water demand. The estimated non-licensed water demand is 675 ML and this volume equates to approximately 30% of the existing stock and domestic dam capacity. As long as the estimated non-licensed dam capacity remains unchanged from one year to the next, so too will the estimated non-licensed surface water demand, irrespective of variations in annual rainfall and streamflow. As such, the limitations of this estimation method should be kept in mind when considering estimated non-licensed surface water demand.

The distribution of water use across the PWRA from 2006–14 is shown in Figure 10.

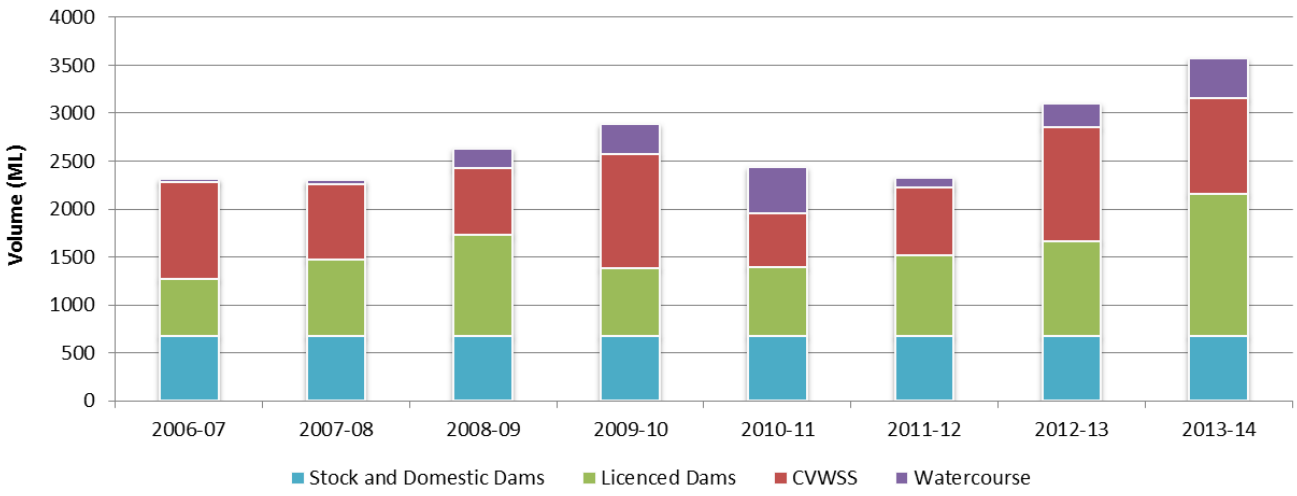


Figure 10. Surface water use in the Clare Valley PWRA from 2006–14

Recorded streamflow for the PWRA in 2013–14 was approximately 11 730 ML (scaled to the PWRA), with approximately 2576 ML (sum of licensed and non-licensed extraction) recorded or estimated as being extracted. As such, of the 14 306 ML (11 730 plus 2576 ML) total estimated PWRA streamflow volume for 2013–14 (not including evaporation from farm dams), it is estimated that 18% was extracted for use (51% in 2012–13).

The PWRA has been assigned a use rating of 2 (Low use) for 2013–14.

Table 2. Use rating system

Rating	% of resource capacity used in current year	Description
1	0 – 10 %	Negligible use
2	11 – 20 %	Low use
3	21 – 30 %	Moderate use
4	31 – 40 %	High use
5	41 – 50 %	Very high use
6	Greater than 50 %	Extremely high use

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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This Surface water status report is available online at http://www.waterconnect.sa.gov.au

To view the *Clare Valley PWRA Surface water status report 2010–11*, which includes background information on location, rainfall, streamflow, salinity, water use and relevant water dependent ecosystems, please visit the Water Resource Assessments page on WaterConnect.

For further details about the Clare Valley PWRA please see the *Water Allocation Plan for the Clare Valley PWRA* on the Natural Resources Northern and Yorke website.

Gridded rainfall data was sourced from the Bureau of Meteorology (BoM). Station rainfall data was sourced from SILO and is Patched Point Data. Further information on SILO climate data is available at: http://www.longpaddock.qld.gov.au/silo/index.html.

Streamflow and salinity data are available via WaterConnect: http://www.waterconnect.sa.gov.au.

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