



Water in Australia

Australia's rainfall and streamflows are among the most variable in the world and long-term patterns are changing. *Water in Australia* provides an assessment of the water situation for the previous financial year, in the context of the historic record.

What is Water in Australia?

Water in Australia is a comprehensive overview of Australia's water situation for a financial year. The report describes the spatial and temporal patterns of the physical water resources, water availability and use across the country. It brings together and analyses information from a wide range of sources to paint a richer picture of changes in Australia's water resources than is possible from observational data alone.

This report describes:

- physical water resources—including rainfall, groundwater, streamflow and the drivers of specific conditions in the reporting year.
- water availability—including entitlements, storages, and water supply.
- use—including agricultural, urban and environmental water use.

The *Water in Australia* report series by the Bureau provides information on water availability and use across the whole country. It builds on the biennial Australian Water Resources Assessment (2010 and 2012) and the annual National Water Account.

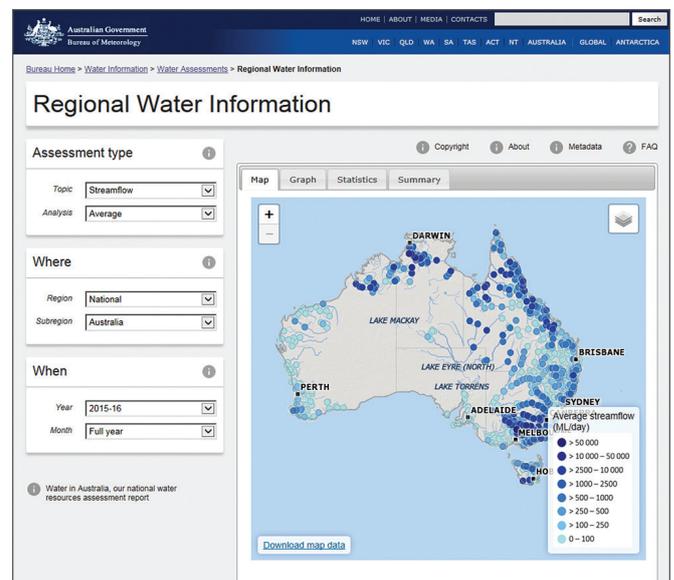
Who will find it useful?

It will be of value to government agencies, policymakers, researchers, industry, educators and students looking for insight into the key water issues across the country.

Supporting products

The national-level *Water in Australia* report is complemented by two online products:

- Regional Water Information, which provides annual information on the status of water resources and use at a national, State, or river region scale.
- Monthly Water Update, which provides a regular snapshot of rainfall and streamflow for the previous month relative to long-term conditions.



The Regional Water Information website

The Bureau of Meteorology is responsible for producing reports on water resources, availability and use in Australia.

Water in Australia 2015–16 draws on a range of Bureau information to describe the characteristics of the country’s water resources, availability and use from 1 July 2015 to 30 June 2016. The report and other supporting documentation are available from www.bom.gov.au/water

Average conditions with a wet winter onset

Mean rainfall for Australia for the year July 2015 to June 2016 was 464 mm, which is similar to the long-term mean, but 12 per cent higher than 2014–15. Higher-than-average rainfall (this encompasses ‘above average’, ‘very much above average’ and record highs) occurred across large parts of northern Australia during a very strong monsoonal event in December, and in southern Australia during strong rainfall events in January. Much of the country had a very wet onset of the 2016 winter.

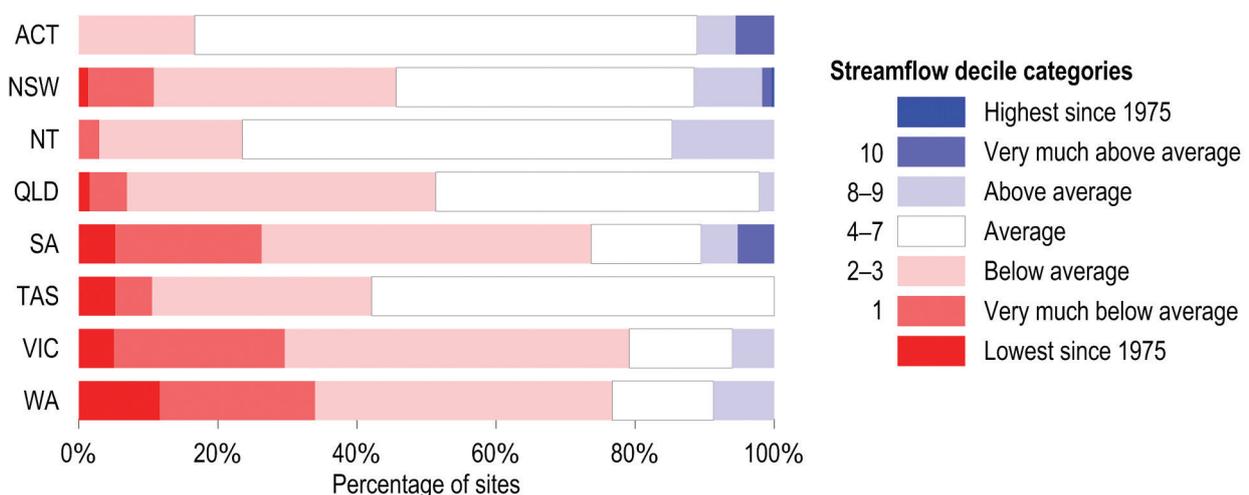
Annual rainfall was higher-than-average along the southern coast of Western Australia and in large parts of New South Wales and the interior. In contrast, many areas along the coast received lower-than-

average annual rainfall (this encompasses ‘below average’, ‘very much below average’ and record lows).

In addition to these annual conditions, lower-than-average rainfall was dominant throughout much of the country during spring 2015 and autumn 2016.

A lack of consistent rainfall throughout the year meant that lower-than-average streamflows were dominant in large parts of Australia. For each of the first 11 months of 2015–16, less than one-quarter of sites had streamflows that were higher than average. This changed in June 2016, with almost 50 per cent of sites having higher-than-average streamflows in that month.

As streamflows in the areas where most urban centres are located were generally below the long-term mean, the combined storage volume of urban systems declined from 81 per cent of capacity at 30 June 2015 to 75 per cent at 30 June 2016. Storage systems in the Pilbara and Townsville showed the largest proportional declines, from about 50 to 30 per cent of accessible capacity. The Perth storage system had the lowest accessible storage volume (20 per cent), resulting from persistent dry conditions over the past few years.



Continued decline in reserves

Lower-than-average rainfall in many of the agricultural centres during the growing season resulted in high water demands and use. With lower-than-average streamflows during the first ten months of 2015–16, many rural storage volumes experienced a strong decline.

Before the start of the 2016 winter rainfalls, most supply storages in the Murray–Darling Basin recorded their lowest volumes since the end of the Millennium Drought (1996–2010). Their combined volume at the end of April was 24 per cent of capacity.

With the arrival of the 2016 winter rainfalls, storages, particularly in the southeast of Australia, received a surge in inflows. At the end of the year, the combined storage volume of rural storages was at 52 per cent of capacity, 7 percentage points below the 59 per cent of capacity recorded at the start of the year.

Groundwater levels in upper, middle and lower aquifers were generally average to below average, with a predominantly declining trend since 2011.

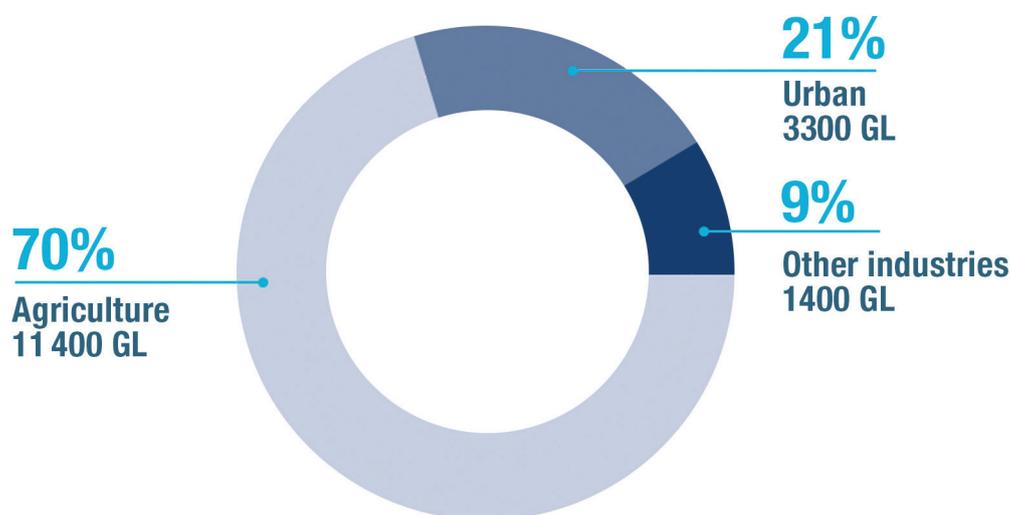
Continued trading but lower water extractions

Volumes for water entitlements traded nationally were similar to 2014–15, totalling around 1700 GL for 2015–16. The total volume of surface water allocations traded during 2015–16 was 5800 GL, a marginal increase from the total allocation trade volume in 2014–15. Both types of trading occur predominantly in the southern Murray–Darling Basin.

The estimated total volume of water extractions for consumptive use across Australia was 15 900 GL in 2015–16. This is 5 per cent lower than in 2014–15.

Water extracted for agricultural use accounted for 70 per cent of the total, or 11 200 GL, a decline from the 12 600 GL of agricultural water extractions in 2014–15.

Declining storage volumes resulted in low allocations against the general security entitlements in New South Wales, which in turn caused a decline in water use. Twenty-one per cent of the total extractions (3300 GL) was sourced for urban water supply.



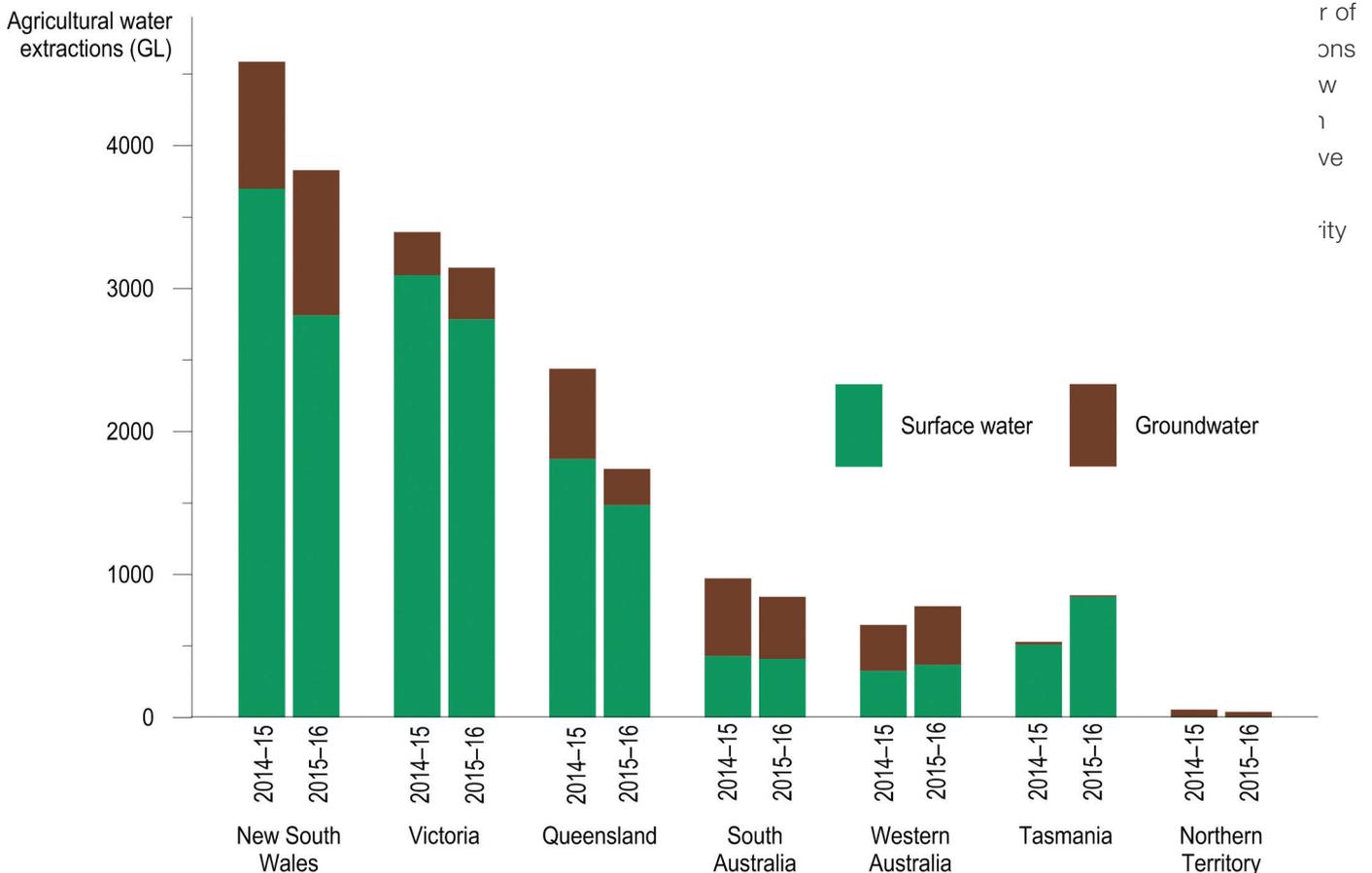
Total environmental water use, in the form of actual flow releases, in the southern Murray–Darling Basin (including the Lachlan basin) was just over 1000 GL, whereas the total for the northern basin was 66 GL. These volumes were significantly less than the 1600 GL and 145 GL of environmental water releases in the southern and northern basins, respectively, during 2014–15. Again, this decrease was due to lower allocations against the environmental water entitlements held by the environmental water holders.

Year ends with positive prospects for water availability in 2016–17

The strong onset of winter rainfall in Australia’s southeast generated high streamflows and wet catchments.

Most storage systems in the southern Murray–Darling Basin were rising quickly during June 2016. Total storage volumes in the Murrumbidgee and Lachlan basins were already substantially higher at the end of 2015–16 than at the start of the year.

With wet catchment conditions in June, the higher inflows into storages were likely to continue into July. No new allocations were announced against the



Volume of agricultural water extractions from surface water and groundwater

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