

# WATER RESOURCES ASSESSMENTS FOR GROUNDWATER AND SURFACE WATER

Water resources monitoring and reporting in South Australia



## Why are water resources assessments important for our state?

Our water resources provide critical human drinking water and deliver economic prosperity through agriculture, mining, industry and tourism. They also support social, cultural and recreational purposes including the irrigation of parks, gardens, school ovals and golf courses. Surface water and groundwater sustains creeks, streams, springs, lakes and wetlands that support critical plant and animal ecosystems. To manage our limited water resources sustainably for current and future water needs, we need to understand the quantity and quality of our surface water and groundwater systems. This will become even more critical given the projected impacts of climate change on South Australia.

The annual water resources reports use the information gathered by DEW's Water Resources Monitoring Unit and other data sources to deliver on DEW's Corporate Plan goals 'to help South Australians conserve, sustain and prosper':

**CONSERVE:** We work to conserve South Australia's natural resources, native species and natural places for their intrinsic value, and for people's benefit now and into the future.

**SUSTAIN:** We are an authority on environment, heritage and natural resources, helping community, industry, and government make good long-term decisions.

**PROSPER:** We guide the sustainable use of South Australia's natural resources and heritage, to deliver economic prosperity, health and wellbeing.

## Who uses water resources data and annual water resources reports

- water licence holders and other rural and peri-urban landholders, industries including commercial irrigators, the mining industry and water suppliers such as SA Water to inform investment and planning decisions
- the South Australian public to better understand the state's water resources
- DEW and Landscape Boards including water resources managers, planners and scientists to inform technical investigations, management and planning decisions including the Water Security Statement, water allocation plans and their periodic reviews
- regional Landscapes staff to build a better understanding of groundwater and surface water systems and to assist in the prioritisation of Landscape Regions programs
- federal, state and local governments, particularly environmental agencies for State of the Environment reporting and water accounting
- researchers and water resources management consultants to inform research and investigations.



## Water resources monitoring and reporting in 2020



DEW collected over 4800 measurements of groundwater level or salinity taken from about 1800 wells in prescribed areas



2053 GL of water extracted (2019-20) from the state's prescribed areas (1584 GL from surface water including the River Murray, 469 GL from groundwater)



114 gauging measurements of flow were collected from about 60 streamflow monitoring stations across the state. DEW collected two thirds of these



Groundwater and surface water data viewed from WaterConnect 60 000 times



Nearly 1100 salinity samples were submitted to DEW for analysis by licensees



Groundwater and surface water status reports viewed 1775 times

## Annual water resources reports describe:



the hydrogeology and hydrology of the area



licensed water use and allocated volume



rainfall trends



groundwater level



streamflow volumes



surface water and groundwater salinity

## Economic value of groundwater and surface water to South Australia

The estimated gross value of mining production to the state is

**\$6.4 billion** STATEWIDE\*

(\*) Department for Energy and Mining 2019, South Australian mineral resource production statistics for the six month ended 30 June 2019, Report Book:2019/00021, Energy Resources Division, Department for Energy and Mining, South Australia, Adelaide) Link is: <https://sarigbasis.plr.sa.gov.au/WebtopEw/ws/samref/sarigf/image/DDD/RB201900021.pdf>

The estimate gross value of livestock production is

**\$2.36 billion** STATEWIDE\*\*



The estimated gross value of irrigated production to the state is

**\$1.9 billion** STATEWIDE\*\*



(\*\*) Australian Bureau of Statistics, 2019, Gross Value of Irrigated Agricultural Production, 2017-18

# STATUS OF SOUTH AUSTRALIA'S PRESCRIBED WATER RESOURCES FOR 2011-2020

## Status of South Australia's prescribed water resources

Prescribed surface water resources are assigned a status by expressing the annual flow of the prescribed area as a percentile of the total annual streamflow for the period of record. The overall status of the groundwater resource is assigned by ranking all the wells in the area from lowest to highest decile and selecting the median well as a description.

Note that evaluation of the sustainable limits of the resource, their management and monitoring occur separately through reviews of Water Allocation Plans (WAPs) and monitoring networks.



Decile	Percentile <sup>1</sup>	Streamflow/groundwater level <sup>2</sup>	Colour
N/A	100	Highest on record	Dark Blue
10	90 to 100	Very much above average	Light Blue
8 and 9	70 to 90	Above average	White
4, 5, 6, and 7	30 to 70	Average	Light Orange
2 and 3	10 to 30	Below average	Orange
1	0 to 10	Very much below average	Dark Orange
N/A	0	Lowest on record	Red

<sup>1</sup> The nth percentile of a set of data is the value at which n% of the data is below it. For example, if the 75th percentile annual flow is 100 ML, 75% of the years on record had annual flow of less than 100 ML. Median streamflow: 50% of the records were above this value and 50% below. Decile: a division of a ranked set of data into ten groups with an equal number of values. In this case e.g. the first decile contains those values below the 10th percentile.

<sup>2</sup> A description of the deciles and their descriptions can be found in Bureau of Meteorology Annual Climate Statement 2019

## Groundwater status

Prescribed area	Report / aquifer	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Central Adelaide PWA	T1 aquifer	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
Kangaroo Flat region	T2 aquifer	White	White	White	White	White	White	White	White	White	White
Northern Adelaide Plains PWA	T1 aquifer	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
Baroota PWRA	T2 aquifer	White	White	White	White	White	White	White	White	White	White
	All aquifers	Red	Red	Orange	Light Orange	White	White	White	White	White	White
Barossa PWRA	Fractured rock aquifers	White	White	White	White	White	White	White	White	White	White
	Lower Aquifer	Light Blue	Light Blue	White	White	White	White	White	White	White	White
Clare PWRA	Upper Aquifer	Light Blue	Light Blue	White	White	White	White	White	White	White	White
	Fractured rock aquifers	White	White	White	White	White	White	White	White	White	White
Angas Bremer PWA	Murray Group Limestone	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
EMLR PWRA	Fractured rock aquifers	White	White	White	White	White	White	White	White	White	White
	Murray Group Limestone	White	White	White	White	White	White	White	White	White	White
EMLR PWRA	Permian sand	Finniss	White	White	White	White	White	White	White	White	White
		Tookayerta	White	White	White	White	White	White	White	White	White
Musgrave PWA	Bramfield	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
	Polda	White	White	White	White	White	White	White	White	White	White
	Coffin Bay	White	White	White	White	White	White	White	White	White	White
Southern Basins PWA	Lincoln South	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
	Uley South	White	White	White	White	White	White	White	White	White	White
	Uley Wanilla	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Far North PWA	GAB (J-K) aquifer	Insufficient data									White
Mallee PWA	Murray Group Limestone	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Peake, Roby and Sherlock PWA	Confined aquifer	White	White	White	White	White	White	White	White	White	White
	Fractured rock aquifers	White	White	White	White	White	White	White	White	White	White
Marne Saunders PWRA	Murray Group Limestone	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
	Fractured rock aquifers	White	White	White	White	White	White	White	White	White	White
McLaren Vale PWA	Fractured rock aquifers	White	White	White	White	White	White	White	White	White	White
	Maslin Sands	White	White	White	White	White	White	White	White	White	White
	Port Willunga Formation	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Lower Limestone Coast PWA	Confined aquifer	White	White	White	White	White	White	White	White	White	White
Padthaway PWA	Confined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Tatiara PWA	Confined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Tintinara-Coonalpyn PWA	Confined aquifer	White	White	White	White	White	White	White	White	White	White
	Confined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Lower Limestone Coast PWA	Unconfined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
	Unconfined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Padthaway PWA	Unconfined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
	Unconfined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Tatiara PWA	Unconfined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
	Unconfined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Tintinara-Coonalpyn PWA	Unconfined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
	Unconfined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
WMLR PWRA	Unconfined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
	Unconfined aquifer	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
	Fractured rock aquifers	White	White	White	White	White	White	White	White	White	White
WMLR PWRA	Permian sand	White	White	White	White	White	White	White	White	White	White
	Tertiary limestone	White	White	White	White	White	White	White	White	White	White

## Surface water status

Prescribed area	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Barossa Valley PWRA	White	White	White	White	White	White	White	White	White	White
Clare Valley PWRA	Light Blue	Red	Red	White	White	White	White	White	White	White
EMLR PWRA	Angas and Bremer	Light Blue	White	White	White	White	White	White	White	White
	Finniss and Currency	White	White	White	White	White	White	White	White	White
Marne Saunders PWRA	White	White	White	White	White	White	White	White	White	White
Morambro Creek PA	Light Blue	White	White	White	White	White	White	White	White	White
WMLR PWRA	Torrens and Onkaparinga	Light Blue	White	White	White	White	White	White	White	White
	Fleurieu	White	White	White	White	White	White	White	White	White
Kangaroo Island	White	White	White	White	White	White	White	White	White	-

The surface water status is based on streamflow data collected for each water reporting year (i.e. July – June). This assessment excludes the River Murray as this is reported separately. The groundwater status is based on water level data collected for each calendar year (January – December).

## Prescribed water areas of South Australia

