

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 2019



DEW collected over 6500 measurements of groundwater level or salinity taken from about 2700 monitoring wells in prescribed areas



Nearly 120 gauging measurements of flow were collected from about 60 streamflow monitoring stations across the state. DEW collected two thirds of these.



Nearly 1800 salinity samples were submitted to DEW for analysis by licensees



1181 GL of water extracted (2018-19) from the state's prescribed areas (684 GL from surface water including the River Murray, 497 GL from groundwater)



Groundwater and surface water data viewed or downloaded from WaterConnect 25 000 times



Groundwater or surface water status reports downloaded 1615 times in a thirteen-month period from February 2019 to January 2020

Annual water resources reports describe:



the hydrogeology and hydrology of the area



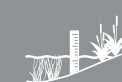
licensed water use and allocated volume



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://sarigbasir.plr.sa.gov.au/WebtopEW/ws/samref/sarig/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**

Eyre Peninsula
\$1.5 million

Northern and Yorke
\$24 million

Kangaroo Island
\$1.4 million

SA Murray-Darling Basin
\$1.2 billion

South East
\$300 million

Adelaide Mount Lofty Ranges
\$390 million

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

STATUS OF SOUTH AUSTRALIA'S PRESCRIBED WATER RESOURCES FOR 2010–19



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

¹ 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.

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

Groundwater status			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Prescribed area	Report / aquifer											
Central Adelaide PWA	T1 aquifer											
Kangaroo Flat region	T2 aquifer											
Northern Adelaide Plains PWA	T1 aquifer											
	T2 aquifer											
Baroota PWRA	All aquifers											
	Fractured rock aquifers											
Barossa PWRA	Lower Aquifer											
	Upper Aquifer											
Clare PWRA	Fractured rock aquifers											
Angas Bremer PWA	Murray Group Limestone											
	Fractured rock aquifers											
EMLR PWRA	Murray Group Limestone											
	Permian sand	Finniss										
		Tookayerta										
Musgrave PWA	Bramfield											
	Polda											
	Coffin Bay											
	Lincoln South											
Southern Basins PWA	Uley South											
	Uley Wanilla											
Far North PWA	GAB (J-K) aquifer		Insufficient data									
Mallee PWA	Murray Group Limestone											
Peake, Roby and Sherlock PWA	Confined aquifer											
	Fractured rock aquifers											
Marne Saunders PWRA	Murray Group Limestone											
	Fractured rock aquifers											
McLaren Vale PWA	Maslin Sands											
	Port Willunga Formation											
Lower Limestone Coast PWA	Confined aquifer											
Padthaway PWA	Confined aquifer											
Tatiara PWA	Confined aquifer											
Tintinara-Coonalpyn PWA	Confined aquifer											
	Unconfined aquifer											
Lower Limestone Coast PWA	Unconfined aquifer											
	Unconfined aquifer											
Padthaway PWA	Unconfined aquifer											
	Unconfined aquifer											
Tatiara PWA	Unconfined aquifer											
	Unconfined aquifer											
Tintinara-Coonalpyn PWA	Unconfined aquifer											
	Unconfined aquifer											
WMLR PWRA	Fractured rock aquifers											
	Permian sand											
	Tertiary limestone											

Surface water status												
Prescribed area			2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Barossa Valley PWRA			<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Clare Valley PWRA			<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
EMLR PWRA	Angas and Bremer		<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
	Finniss and Currency		<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Marne Saunders PWRA			<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Morambro Creek PA			<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
WMLR PWRA	Torrens and Onkaparinga		<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
	Fleurieu		<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Kangaroo Island			<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

The surface water status is based on streamflow data collected for each water reporting year (i.e. July - June). The groundwater status is based on water level data collected for the each calendar year (January - December).

