

#### 18 April 2024

This algal report is based on routine algae monitoring at sites in the Murray and Sunraysia Algae Reporting Area. Satellite imagery may be used to supplement the monitoring data.

# Summary

**General comments:** The recent lab results indicate a reduction in algae levels at Copi Hollow lake in the Menindee lakes and another low result is needed to lift the red alert. However, the red alert remains in place for Lake Tandure and Centre Pamamaroo lakes. The high number of algae biovolume is related to non-toxic cyanobacteria (mostly related to *Synechococcus cf sp.*). Notably, this species has been detected at most sites of Lower Darling River up to Tapio in the 2<sup>nd</sup> and 3<sup>rd</sup> April sampling results. The red alert still remains in place at all Lower Darling River sites due to the river's flow and the risk to the community. Satellite imagery also continues to show a medium to high risk for the Menindee lakes and a high risk for the Lower Darling River, specifically from the Ellerslie to Pomona (Figure 4). This is likely related to the same species that flow brings to these sites, but the following sampling results would clarify the species.

Please note that direct comparisons with sampling results should be made with caution as the satellite data is of a later date.

Please note that there is a dual reticulated water system, where garden taps have untreated water drawn from the river, for Menindee and Lower Darling River at Pooncarie. Therefore livestock, pets and children should not be exposed to this water and that caution should be practiced if using the water for watering food crops and lawns.

#### Alert status:

#### **Murray River**

Manus Lake at the pontoon is currently on Amber alert for blue-green algae. For more information visit the Snowy valleys Council website at the following link: Link to Snowy Valleys Council

In Hume Dam, Frist Bay Creek is on Red alert for blue-green algae.

The Murray River at Moama, Merbein, Curlwaa, Fort Courage and Lock 8 are on Amber alert.

Lake Benanee Rec Area as well as Lake Victoria Outlet Regulator are on Amber alert.

#### **BILLBONG CREEK, EDWARD & WAKOOL RIVERS**

The Gulpa Creek at Mathoura as well as the Edward River at Old Morago and the Wakool River at Wakool-Barham Road are on Amber alert for blue-green algae.

#### Darling River, Menindee Lakes, and Darling Anabranch

The Menindee Lakes at Lake Menindee Site 19 is currently on Red alert. This alert has been applied by satellite imagery.

The Menindee Lakes at Lake Wetherell, Lake Tandure, Lake Pamamaroo at center, Copi Hollow, Lake Wetherell adjacent to Lake Pamamaroo Inlet, are currently on Red alert for blue-green algae.

The Great Darling Anabranch at the Silver City Highway crossing is on Red alert for blue-green algae. the Lower Darling River from Lake Wetherell to the Darling River confluence with the Murray at Wentworth NSW is on Red alert for blue-green algae.

# Murray and Sunraysia Regional Algal Coordinating Committees Combined Blue-Green Algae Report

Amber alerts for blue-green algae are current for the Menindee Lakes at Pamamaroo inlet, outlet, Lake Cawndilla outlet. Please refer to Table 1 on pages 2 and 3 for the combined results.

**Satellite Imagery:** The satellite imagery of Hume Dam (Figure 1) shows low algal activity in the Murray arm and Mitta Mitta arm upstream of the Narrows. The satellite imagery from 17/04/2024 indicates that medium algal activity continues across the Menindee system (Figure 2). Furthermore, the satellite image in Figure 3 and 4 suggests high algae activity in the Darling River u/s Weir 32,in Lower Darling River at Ellerslie to Pomona, but low algae activity in the Murray River (figure 5). Figure 6 indicates low phytoplankton activity in the Murray River at Yarrawonga Weir, except for increased algal growth around Kyffins reservoir and the Leeward site. The most recent images are displayed on pages 5-9 of this report.

**Weather Outlook (7 days):** In the upper reaches of the catchment near Albury, moderate temperatures are expected during most of the days, along with a mix of mostly sunny and partly cloudy conditions. Similar weather patterns are predicted for Menindee Lakes downstream in the catchment, with daily air temperatures expected to be slightly higher and more sunny days. You can find a detailed seven-day weather forecast on page 10.

**Algal Outlook:** Partly cloudy days, along with moderate temperatures, are expected to be favorable for bluegreen algal growth in the upper reaches of the catchment and at Menindee next week.

#### **Results Table**

These alert levels apply to **non-consumptive or recreational contact**. Drinking water safety thresholds are much more stringent.

indicates that a red alert has been issued based on satellite imagery, which indicate a high risk of algae.

Table 1 Combined Murray and Sunraysia Cyanobacteria Alert Level Update 18 April 2024

Site	Description	Latest Sample Date	Cyanobacteria Total Count (cells/mL)	Cyanobacteria Biovolume (mm3/L)	Potentially Toxic Cyanobacterial Count	Potentially Toxic Cyanobacterial Biovolume	Current Status (based on Latest Sample)	Previous Status	Cyanobacteria dominant potentially toxic taxa	Cyanobacteria Comments
MURRA	AY RIVER SYSTEM									
	Corryong Supply - Raw Water Inlet to Corryong TP (NE Water)		1,393,603	7.298	0	0.000	AMBER	AMBER		
	Mannus Lake (SVC) Lake pontoon		0	0.000	0	0.000	AMBER	AMBER		
DLH003	Lake Hume, Ebden	8/04/2024	3946.000	0.010	408	0.010	No Alert	No Alert	Microcystis sp.	Potentially toxic, taste & odour
DLH001	Lake Hume, Heywoods Bay nr Bethanga	8/04/2024	10860.000	0.327	6,369	0.325	GREEN	No Alert	Microcystis species 2	Potentially toxic, taste & odour
DLH002	Lake Hume, Hume Dam Resort	8/04/2024	3028.000	0.029	1,123	0.028	No Alert	No Alert	Microcystis sp.	Potentially toxic, taste & odour
DLH004	Lake Hume, Dam Wall	8/04/2024	4627.000	0.000	0	0.000	No Alert	No Alert		
DLH010	Lake Hume, Bowna	8/04/2024	3878.000	0.041	1,565	0.040	GREEN	GREEN	Microcystis sp.	Potentially toxic, taste & odour
DLH011	Hume Dam at Frist Bay Creek	25/03/2024	637493.000	1.188	10,580	0.270	RED	RED	Microcystis sp.  Apnanizomenonaceae jamily -	Potentially toxic, taste & odour
		19/02/2024	2,253	0.082	235	0.016	GREEN	No Alert	straight	Potentially toxic
N1000	Murray R. Union Bridge Albury	2/04/2024	20046.000	0.022	204	0.004	No Alert	No Alert	Microcystis sp.	Potentially toxic, taste & odour
N1001	Murray R. Corowa	2/04/2024	29397.000	0.039	0	0.000	No Alert	No Alert	Dolicnospermum - coilea	
	Yarrawonga Weir (outlet) GMW	8/04/2024	19,666	0.103	62	0.017	GREEN	GREEN	/>6uml	Potentially toxic
N1008	Mulwala Canal Offtake	2/04/2024	18726.000	0.023	0	0.000	No Alert	AMBER		
N1007	Murray R. @ below Yarrawonga	2/04/2024	29804.000	0.031	0	0.000	No Alert	GREEN		
N1051	Murray R. Cobram (Barooga)	2/04/2024	31878.000	0.030	0	0.000	No Alert	GREEN	Apnanizomenonaceae family -	
	, , , , , ,	12/03/2024	20,696	0.177	638	0.043	GREEN	AMBER	etrajaht -	Potentially toxic
N1013	Murray R. Tocumwal	2/04/2024	17583.000	0.016	0	0.000	No Alert	AMBER		
N1052	Murray R. Picnic Point	8/04/2024	57511.000	0.075	340	0.007	GREEN	AMBER	Microcystis sp.	Potentially toxic, taste & odour
		12/03/2024	37,025	0.495	580	0.049	AMBER	AMBER	Oscillatoriales (iauv 1-100)	Potentially toxic
N1050	Murray R. Moama (Echuca)	8/04/2024	71626.000	0.159	0	0.000	GREEN	AMBER		
	Torrumbarry Weir GMW	8/04/2024	37,461	0.475	55.000	0.003	AMBER	GREEN	Raphidiopsis raciborskii	Potentially toxic
N1003	Murray R. Barham (Koondrook)	9/04/2024	14241.000	0.132	0	0.000	GREEN	GREEN		
N1054	Murray R. Murray Downs (Swan Hill)	9/04/2024	22243.000	0.079	850	0.035	GREEN	GREEN	Microcystis sp.	Potentially toxic, taste & odour
	Murray River U/S Woorinen pumps GMW		290	0.126	0	0.000	GREEN	GREEN		
N1055	Murray R. Tooleybuc (Piangil)	9/04/2024	46333.000	0.305	374	0.044	GREEN	AMBER	Aphanizomenonaceae sp.	Potentially toxic, taste & odour
N1064	Lake Benanee Rec Area	3/04/2024	29940.000	0.043	0	0.000	AMBER	AMBER		
N1028	Murray R. Euston (Robinvale)	3/04/2024	58397.000	0.074	0	0.000	GREEN	GREEN		
N1065	Murray R. Mount Dispersion	3/04/2024	119475.000	0.210	0	0.000	GREEN	AMBER		
N1062	Murray R. Buronga	2/04/2024	117171.000	0.383	306	0.007	GREEN	AMBER	Phormidium sp.	Potentially toxic, taste & odour
	Merbein (LMW)	24/04/2023	0	0.397	0	0.013	GREEN	AMBER	Microcystis sp	Potentially toxic
N1027	414206 - Murray River at Merbein	2/04/2024	135340.000	1.347	1,310	0.154	AMBER	AMBER	Aphanizomenonaceae sp.	Potentially toxic, taste & odour
N1063	Murray R. Curlwaa	2/04/2024	382456.000	1.368	476	0.036	AMBER	AMBER	Aphanizomenonaceae sp.	Potentially toxic, taste & odour
N1066	Murray R. Fort Courage	3/04/2024	389633.000	1.519	5,882	0.152	AMBER	AMBER	Microcystis sp.	Potentially toxic, taste & odour
	Lock 9 (LMW)	15/05/2023	60,991	1.789	6115	0.416	AMBER	AMBER	Microcystis sp	Potentially toxic
N1077	Murray R. Lock 8	4/04/2024	447735.000	1.687	9,307	0.333	AMBER	AMBER	Microcystis sp.	Potentially toxic, taste & odour
N1078	Lake Victoria Outlet Regulator	4/04/2024	184832.000	0.269	0	0.000	AMBER	AMBER		



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BILLBONG CREEK, EDWARD & WAKOOL RIVERS									
N1020 Billabong Ck. Walbundrie	2/04/2024	11106.000	0.052	817	0.018	GREEN	GREEN	Microcystis sp.	Potentially toxic, taste & odour
N1015 Billabong Ck. Jerilderie	8/04/2024	59199.000	0.118	272	0.039	GREEN	GREEN	Anabaenopsis sp.	Potentially toxic
N1006 Gulpa Ck. Mathoura	8/04/2024	68366.000	0.088	68	0.001	GREEN	AMBER	Microcystis sp.	Potentially toxic, taste & odour
N1002 Edward R Deniliquin	8/04/2024	55036.000	0.389	0	0.000	GREEN	AMBER		
N1053 Edward R. Old Morago	9/04/2024	63466.000	0.603	1,019	0.120	AMBER	GREEN	Aphanizomenonaceae sp.	Potentially toxic, taste & odour
N1005 Edward R. Moulamein	9/04/2024	47796.000	0.631	646	0.018	AMBER	GREEN	Radiocystis sp.	Potentially toxic
N1010 Wakool R. Wakool-Barham Road	9/04/2024	89562.000	0.435	653	0.014	AMBER	GREEN	Microcystis sp.	Potentially toxic, taste & odour
N1004 Wakool R. @ Stoney Crossing	9/04/2024	117236.000	0.196	2,382	0.053	GREEN	GREEN	Microcystis sp.	Potentially toxic, taste & odour
N1009 Wakool R. Kyalite	9/04/2024	84212.000	0.165	0	0.000	GREEN	GREEN		
MENINDEE LAKE SYSTEM & LOWER DARLING RIVER									
N1042 Darling River at Wilcannia	6/03/2024	57033.000	0.062	527	0.012	AMBER	AMBER	Phormidium sp.	Potentially toxic, taste & odour
N1087 Lake Wetherell Site 1	9/04/2024	0.000	0.000	0	0.000	No Alert	No Alert		
N1088 Lake Wetherell Site 2	9/04/2024	5444.000	0.007	0	0.000	RED	No Alert		
N1089 Lake Wetherell Site 3	9/04/2024	185931.000	1.391	4,248	0.539	RED	AMBER	Anabaenopsis sp.	Potentially toxic
N1090 Lake Wetherell Site 4	9/04/2024	961383.000	6.917	7,523	0.391	RED	RED	Raphidiopsis raciborskii	Potentially toxic, taste & odour
N1091 Lake Tandure Site 8	9/04/2024	1517857.000	10.367	17,297	0.754	RED	RED	Raphidiopsis raciborskii	Potentially toxic, taste & odour
N1092 Lake Pamamaroo Inlet (Site 9)	9/04/2024	920818.000	5.179	2,719	0.102	AMBER	AMBER	Raphidiopsis raciborskii	Potentially toxic, taste & odour
N1129 42510013 Centre Pamamaroo (Site 13)	9/04/2024	1818755.000	33.373	8,325	0.752	RED	AMBER	Anabaenopsis sp.	Potentially toxic
N1093 Lake Pamamaroo Outlet (Site 10)	9/04/2024	1193734.000	8.073	6,116	0.685	AMBER	RED	Anabaenopsis sp.	Potentially toxic
N1094 Menindee Lakes, Copi Hollow	9/04/2024	1157222.000	7.001	4,248	0.539	RED	RED	Anabaenopsis sp.	Potentially toxic
N1130 Lake Menindee Site 19	26/03/2024	1068090.000	4.657	1,118	0.141	RED	AMBER	Anabaenopsis sp.	Potentially toxic
N1128 Lake Cawndilla Site 34 Outlet	9/04/2024	970430.000	1.512	0	0.000	AMBER	AMBER		
N1095 Darling R. Menindee bhwb pump	9/04/2024	2576416.000	22.259	9,177	0.541	RED	RED	Raphidiopsis raciborskii	Potentially toxic, taste & odour
N1086 Darling R u/s Weir 32	9/04/2024	1226017.000	30.142	5,220	0.674	RED	RED	Anabaenopsis sp.	Potentially toxic
N1043 Darling R. Tolarno	3/04/2024	1239504.000	42.647	5,091	0.743	RED	RED	Anabaenopsis sp.	Potentially toxic
N1040 Darling R. Pooncarie	3/04/2024	4554752.000	183.003	12,573	1.735	RED	RED	Anabaenopsis sp.	Potentially toxic
N1041 Darling R. Burtundy	2/04/2024	4913279.000	207.495	56,614	7.569	RED	AMBER	Anabaenopsis sp.	Potentially toxic
N1074 Darling R. Ellerslie	2/04/2024	2036957.000	77.148	11,758	1.273	RED	RED	Anabaenopsis sp.	Potentially toxic
N1075 Darling R. Tapio	2/04/2024	227306.000	2.213	2,753	0.344	RED	RED	Anabaenopsis sp.	Potentially toxic
Non routine monitoring Wentworth Weir Pool									
N1365 US Pomona (13KM)	3/04/2024	670952.000	2.803	10,071	0.686	RED	AMBER	Radiocystis sp.	Potentially toxic
N1366 Pomona (@ Boat Ramp)	3/04/2024	307402.000	3.365	0	0.000	RED	AMBER		
GREAT DARLING ANABRANCH	<b>.</b>								
N1350 Silver City Hwy	3/04/2024	1463183.000	8.931	32,390	3.955	RED	RED	Dolichospermum sp.	Potentially toxic, taste & odour

## **Alert Definitions for Recreational Waters**

Alert Definitions as specified in The National Health and Medical Research Council (NHMRC) *Guidelines for Managing Risks in Recreational Water* 2008. The use of these guidelines is endorsed by the Scientific Subcommittee of the NSW Algal Advisory Group.

#### **RED ALERT**

These alert levels represent 'bloom' conditions. Water will appear green or discoloured and clumps or scums could be visible. It can also give off a strong musty or organic odour. Algae may be toxic to humans and animals. Contact with or use of water from red alert areas should be avoided due to the risk of eye and skin irritation. Drinking untreated or boiled water from these supplies can cause stomach upsets. Alternative water supplies should be sought or activated carbon treatment employed to remove toxins. People should not fish when an algal scum is present. Owners should keep dogs away from high alert areas and provide alternative watering points for stock.

#### **AMBER ALERT**

Blue-green algae may be multiplying, and the water may have a green tinge and musty or organic taste and odour. The water should be considered as unsuitable for potable use and alternative supplies or prior treatment of raw water for domestic purposes should be considered. The water may also be unsuitable for stock watering. Generally suitable for water sports, however people are advised to exercise caution in these areas, as blue-green algal concentrations can rise to red alert levels quickly under warm, calm weather conditions.

#### **GREEN ALERT**

Blue-green algae occur naturally at low numbers. At these concentrations, algae would not normally be visible, however some species may affect taste and odour of water even at low numbers and does not pose any problems for recreational, stock or household use.





## **Key to Alerts for Recreational Waters**

RED Alert  ≥ 50 000 cells/mL toxic M. aeruginosa OR biovolume equivalent of ≥4 mm³/L for the combined total of all cyanobacteria where a known toxin producer is dominant OR The total biovolume of all cyanobacteria exceeds 10 mm³/L OR Cyanobacterial blooms are consistently present  AMBER Alert	<ul> <li>High levels of Blue Green Algae detected</li> <li>Indicates "bloom" conditions</li> <li>Toxicity should be presumed</li> <li>Water will appear green or brownish and may have a strong musty taste and odour</li> <li>Surface scums could occur</li> <li>Extreme care should be exercised, and contact with the water should be avoided</li> <li>Action</li> <li>Issue Media Release</li> <li>Water supply authorities to increase filtering with activated carbon as appropriate</li> <li>Local authority and health authorities to warn the public that the water body is unsuitable for primary contact recreation</li> </ul>
≥5000 to <50 000 cells/mL M. aeruginosa OR biovolume equivalent of ≥ 0.4 to < 4 mm3/L for the combined total of all cyanobacteria OR ≥ 0.4 to < 10mm3/L combined total for all blue-green algae where known toxin producers are not dominant	<ul> <li>Indicates blue-green algae are multiplying</li> <li>Water may have a green tinge and musty taste and odour         Action         Water supply authorities to consider filtering with activated carbon         Investigations into the causes of the elevated levels and increased sampling to enable the risks to recreational users to be more accurately assessed.     </li> </ul>
GREEN Alert > 500 to < 5000 cells/mL M. aeruginosa OR biovolume equivalent of > 0.04 to < 0.4 mm³/L for the combined total of all cyanobacteria	Low levels of potentially toxic species detected – suggesting base crop of blue green algae may be on the increase     Action     Continue/increase routine sampling to measure cyanobacterial levels  OS Based on APMCANZ (2000) Orr and Schneider (2006) and

# <u>Livestock Drinking Water Guidelines Based on ARMCANZ (2000), Orr and Schneider (2006) and WQRA (2010)</u>

This guideline should be used when water is used for livestock drinking water purposes.

- If visual scums are present, then a High alert should be declared. This would be applicable for both farm dams and publicly managed water bodies (streams, rivers, etc). Such advice should also be given to farmers who phone the department seeking information on managing blooms in their dams.
- Where blooms dominated by *Microcystis aeruginosa* are present, then the ANZECC/ARMCANZ (2000) guideline of 11,500 cells/mL should be used. Excess of this cell count will constitute a High alert.
- Where blooms dominated by **Dolichospermum circinale** are present, then the Orr and Schneider (2006) guideline of 25,000 cells/mL should be used. Excess of this cell count will constitute a High alert.
- Blooms of blue-green algae other than *M. aeruginosa* and *D. circinale* are also common in NSW. These can be of either known potentially toxic species, or of species not considered to be toxin producers. When these blooms are present, a total blue-green algal biovolume in excess of 6 mm<sup>3</sup>/L will constitute a High alert. (These are based on Very High alert recommendations for raw water sourced for potable human supply published by WQRA (2010), in lieu of there being nothing else available).

# Satellite imagery

The key to the approximate total algae (blue green and non-blue green) concentrations using the Custom Algae Script can be found Table 1. The actual values can potentially vary by a significant margin due to the geology of the waterbody, species of algae, turbidity, aquatic plants, time of day of the image capture, aerosols in the atmosphere, etc. This variability is a result of the nature of satellite imagery being a large-scale remote sensing format and is not

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function of the technology or the script itself. For this reason, these colours and descriptors are not the official "Algae Alert Level" but rather provides information on the potential risk on algae formation.

Table 1: Observed risk levels based on the estimated photosynthetic activity for Custom Algae Script

Map Colour	Risk Level	Starting concentration guide	RACC recreational alert values
		range	approx. equivalence
Blue	Very low	<0.05 mm3/L	No Alert
Green	Low	0.05 to 0.5 mm3/L	Green
Yellow	Medium	0.5 to 5.0 mm3/L	Amber
Red	High	5.0 to 20.0 mm3/L	Red
Dark red	Extreme	> 20 mm3/L	Red



Figure 1: Hume Dam 16/04/2024 SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW



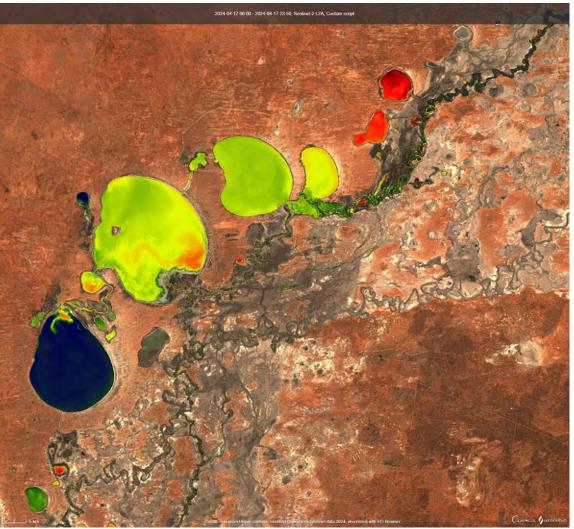


Figure 2: Menindee Lakes 17/04/2024 SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW



Figure 3: Darling River up stream Weir 32. 17/04/2024 SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW

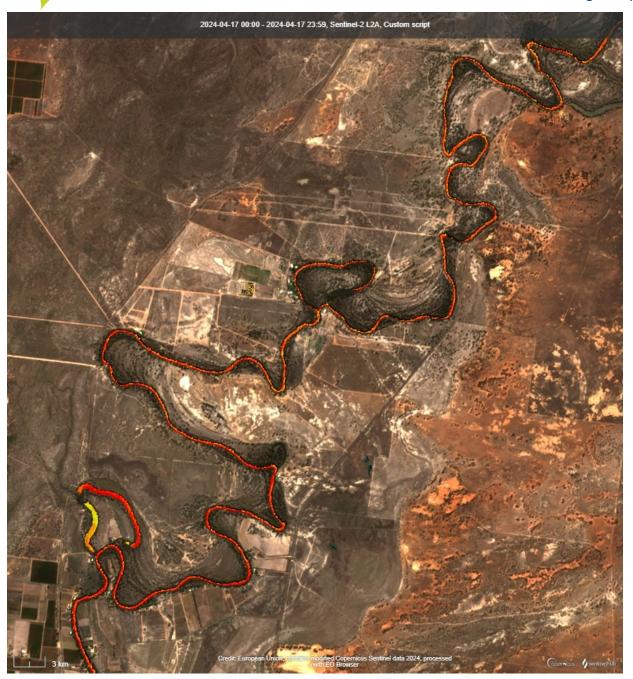


Figure 4: Darling River at Tapio, US Pomona, and Pomona. **17/04/2024**. SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW





Figure 5: Murray and Darling Rivers as well as the great Darling anabranch near Wentworth **17/04/2024** SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW



Figure 6: Murray River at Yarrawonga Weir 16/04/2024 SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW



# Weather forecast

#### Albury and Menindee lake, BOM 7-day weather forecast

Albury Forecast updated at 9:30 am	EST on Thursda	av 18 April 20	24.			Detailed All	oury Forecas
•	Thu. 18 Apr	Fri. 19 Apr	Sat. 20 Apr	Sun. 21 Apr	Mon. 22 Apr	Tue. 23 Apr	Wed. 24 Apr
			***	***	<b>**</b>		2
	Mostly sunny.	Mostly sunny.	Sunny.	Sunny.	Sunny.	Mostly sunny.	Partly cloudy.
Max. Temperature	22 °C	22 °C	24 °C	24 °C	25 °C	25 °C	23 °C
	-			200			0.00
Min. Temperature		8 °C	8 °C	6 °C	6 °C	7 °C	9 °C
Menindee	n EST on Thurs			6 °C		7 °C Detailed Menir	
Menindee	n EST on Thurs Thu. 18 Apr			6 °C Sun. 21 Apr			
Menindee	Thu.	day 18 April 2	024. Sat.	Sun.	Mon.	Detailed Menir	ndee Foreca
Menindee	Thu.	day 18 April 2	024. Sat.	Sun.	Mon.	Detailed Menir	ndee Foreca
Min. Temperature  Menindee  Forecast updated at 10:16 an  Max. Temperature	Thu. 18 Apr	day 18 April 2 Fri. 19 Apr	024. <b>Sat.</b> 20 Apr	Sun. 21 Apr	Mon. 22 Apr	Tue. 23 Apr	Wed. 24 Apr

#### **Further Information and Contacts**

#### Links to websites of VIC and other agencies

**Link to Snowy Valleys Council** 

**Link to North East Water** 

Link to Goulburn-Murray Water blue-green algal alerts

Link to Goulburn Valley Water blue-green algal information

**Link to Lower Murray Water blue-green algal alerts** 

**Link to Central Darling Shire Council** 

**Link to Wentworth Shire Council** 

#### Go to the Water NSW Algal Website

www.waternsw.com.au/algae or at WaterInsights:

Murray regulated river - <a href="https://waterinsights.waternsw.com.au/11904-new-south-wales-murray-regulated-river/updates">https://waterinsights.waternsw.com.au/11904-new-south-wales-murray-regulated-river/updates</a>

Lower-Darling regulated river - <a href="https://waterinsights.waternsw.com.au/12104-lower-darling-regulated-river/updates">https://waterinsights.waternsw.com.au/12104-lower-darling-regulated-river/updates</a>

#### **Contacts**

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