

Algae Alerts for the Central West Region
21st December 2023



This algal report is based on routine algae monitoring at sites in the Central West Region. These sites are monitored by WaterNSW and local councils. The report also includes information that comes from visual observations and satellite imagery mapping.

Summary

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

General comments:

Bogan River at Nyngan Weir Pool and Gongolgon remain on Red Alert. Stock and recreation users should apply a high level of caution when using water from the Bogan River and seek alternate water supplies if they believe that their water is contaminated with harmful algae.

Algae results are indicating very high algae (harmless green algae) concentrations at Narromine that may make the water appear green appear to have been dispersed as shown in the satellite map on page 4.

Satellite imagery is on page 2 to 4.

Algae risk:

The algae situation appears to be mixed in the region. However, with the hot sunny days of summer, the algae risk is likely to be increasing in the storages and the rivers.

Alert status:

Red Alerts

Chifley Dam

Bogan River at Gongolgon

Bogan River at Nyngan Weir Pool and Pumping station pool

Amber Alerts

Green Alerts

Burrendong Dam

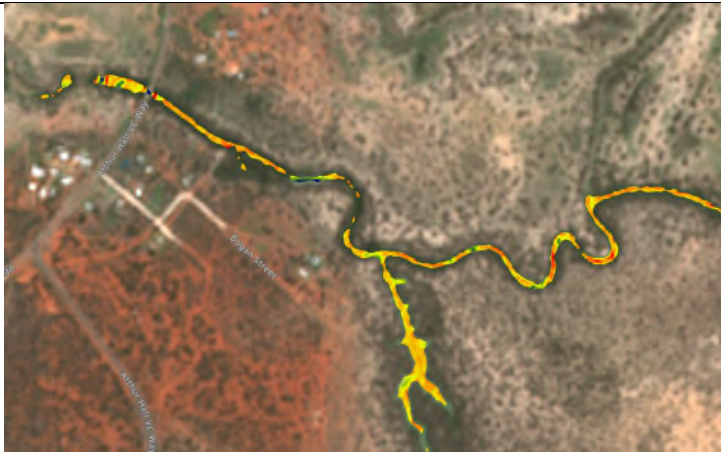
Macquarie River at Bathurst

Satellite imagery

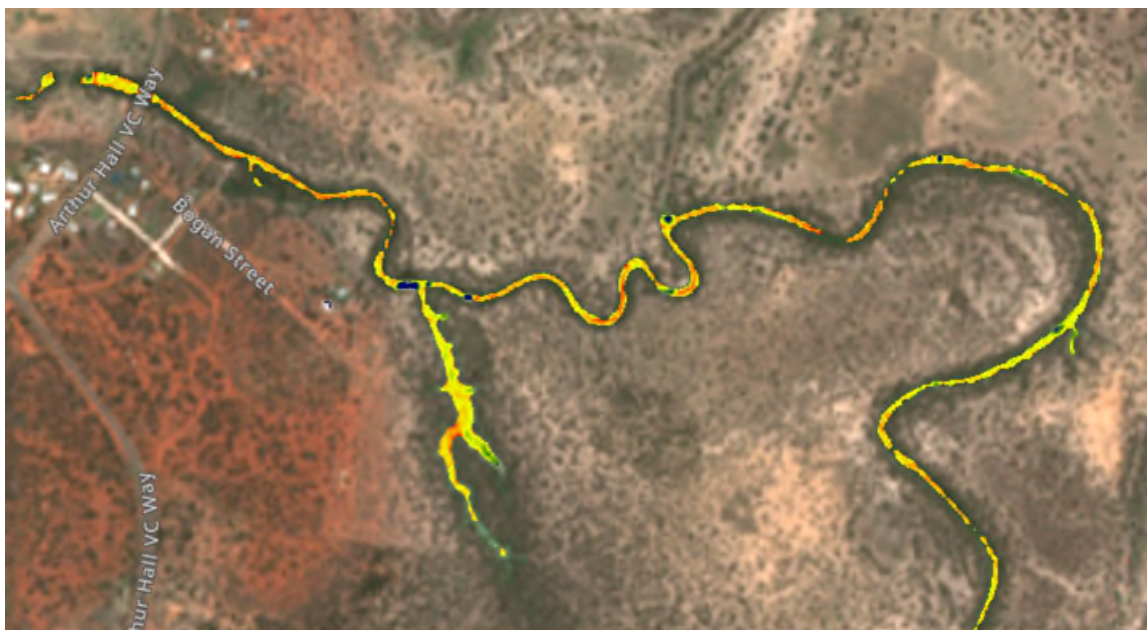
The key to the approximate total algae (blue green and non-blue green) concentrations using the Custom Algae Script can be found Table 1. The actual values can potentially vary by a significant margin due to the geology of the waterbody, species of algae, turbidity, aquatic plants, time of day of the 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 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 from algae**.

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

Map Colour	Risk Level – Photosynthetic activity based on Chlorophyll-a	Starting concentration guide range	RACC recreational alert values approx. equivalence
Blue	Very low	<0.05 mm ³ /L	No Alert
Green	Low	0.05 to 0.5 mm ³ /L	Green
Yellow	Medium	0.5 to 5.0 mm ³ /L	Amber
Red	High	5.0 to 20.0 mm ³ /L	Red
Dark red	Extreme	> 20 mm ³ /L	Red

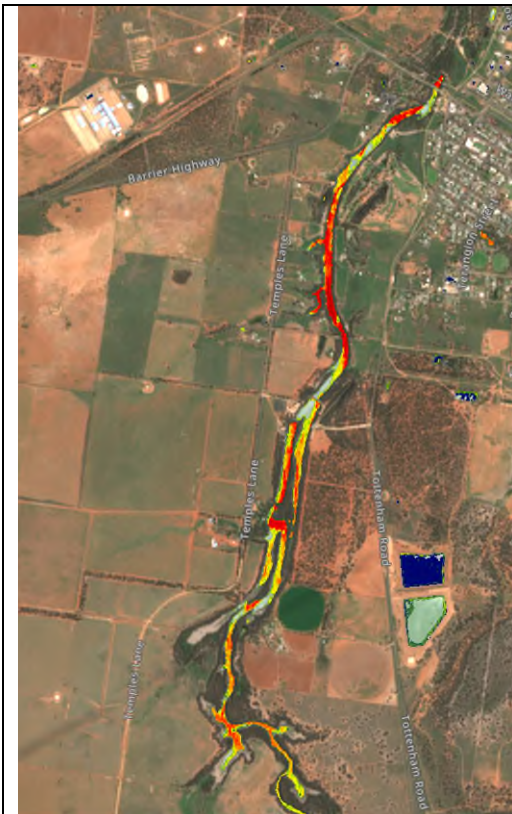


Bogon River at Gongolgon 11-12-23



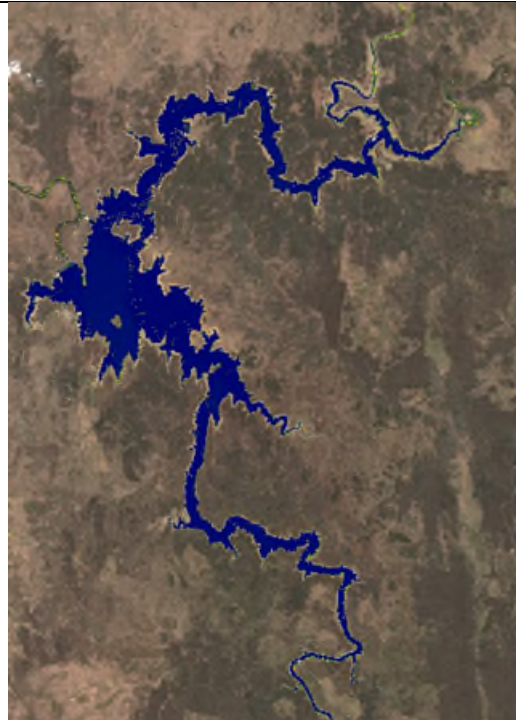
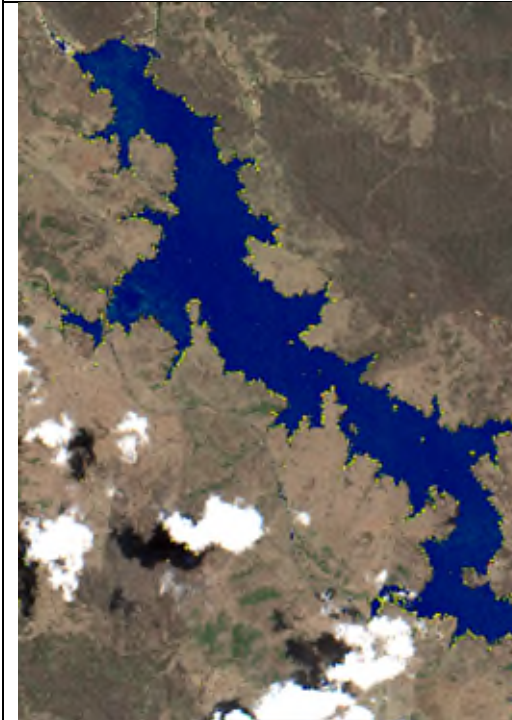
Bogon River at Gongolgon 21-12-23. Red alert

**Central West - Regional Algal Coordinating Committee (CW-RACC)
Blue-green Algae Report**



Bogan River at Nyngan Weir Pool 11-12-23

Bogan River at Nyngan Weir Pool 21-12-23 red alert



Windamere Dam 15/12/23
SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TFulford, WaterNSW

Burrendong Dam 18/12/23
SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TFulford, WaterNSW



Macquarie River at Narromine 03-12-23.



Macquarie River at Narromine 18-12-23.

Results Table

Site Description	Latest Sample Date	Total Algal biovolume (mm3/L) [not used for alert]	Toxic BGA Biovolume (mm3/L)	BGA Biovolume (mm3/L)	Current Status (based on Latest Sample)	Previous Status	BGA Dominant Toxic Taxa	Comments
Windamere Dam Station 1 (Dam Wall)	06-Dec-23	0.42	0.00	0.00	No Alert	Green		
Windamere Station 4	06-Dec-23	0.20	0.00	0.00	No Alert	No Alert		
Windamere Downstream (Cudgegong River)	06-Nov-23	5.92	0.02	0.02	No Alert	No Alert		
Oberon Station	23-Nov-23		0.00	0.00	No Alert	No Alert		
Chifley Dam (composite sample)	13-Dec-23		0.30	0.30	Red	Green		Requires another low results after 5 days from last sample

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Chifley Dam Raw Riparian	13-Dec-23		0.14	0.14	Green	No Alert		
Macquarie River at Bathurst	13-Dec-23		0.00	0.01	No Alert	Green		
Burrendong Dam Station 1 (Dam Wall)	05-Dec-23	1.04	0.28	0.31	Green	Green		
Burrendong Mookerawa	05-Dec-23	1.76	0.07	0.15	Green	No Alert		
Burrendong Cudgegong	06-Nov-23	5.03	0.00	0.00	No Alert	No Alert		
Burrendong Downstream (Macquarie River)	05-Dec-23	0.05	0.00	0.00	No Alert	No Alert		
Gosling Creek Dam	07-Dec-23		0.00	0.00	No Alert	No Alert		
Lake Canobolas	07-Dec-23		0.00	0.00	No Alert	No Alert		
Macquarie River at U/S Wellington	27-Nov-23	0.15	0.00	0.00	No Alert	No Alert		
Macquarie River at Ponto Road Geurie	27-Nov-23	0.21	0.00	0.00	No Alert	No Alert		
Macquarie River at Dubbo	28-Nov-23	4.58	0.00	0.03	No Alert	No Alert		
Macquarie River at Narromine	28-Nov-23	183.10	0.00	0.00	No Alert	No Alert		
Macquarie River at Warren Weir	28-Nov-23	6.74	0.00	0.01	No Alert	No Alert		
Bogan River at Nyngan Weir Pool	14-Dec-23	25.37	0.05	21.12	Red	Red	<i>Raphidiopsis raciborskii</i>	
Nyngan Weir Pool (Pumping Stn)	14-Dec-23	--	28.05	268.8	Red		<i>Aphanizomenonaceae Unknown</i>	
Bogan River at Gongolgon	05-Dec-23	32.69	15.60	18.23	Red	Red	<i>Dolichospermum circinale</i>	Potentially toxic, taste & odour

Note: * sampling results indicate that algal numbers have reduced however another low sampling result is required to reduce the alert to a lower level

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.

Table 2: Key to Alerts For Recreational Waters

<p>RED Alert $\geq 50\,000$ cells/mL toxic <i>M. aeruginosa</i> 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</p>	<ul style="list-style-type: none"> • High levels of Blue Green Algae detected • Indicates "bloom" conditions • Toxicity should be presumed • Water will appear green or brownish and may have a strong musty taste and odour • Surface scums could occur <p>Extreme care should be exercised, and contact with the water should be avoided</p> <p>Action</p> <ul style="list-style-type: none"> • Issue Media Release • Water supply authorities to increase filtering with activated carbon as appropriate <p>Local authority and health authorities to warn the public that the water body is considered to be unsuitable for primary contact recreation</p>
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Blue-green Algae Report**

<p>AMBER Alert ≥ 5000 to $< 50\ 000$ cells/mL <i>M. aeruginosa</i> 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</p>	<ul style="list-style-type: none"> • Indicates blue-green algae are multiplying • Water may have a green tinge and musty taste and odour <p>Action</p> <ul style="list-style-type: none"> • Water supply authorities to consider filtering with activated carbon <p>Investigations into the causes of the elevated levels and increased sampling to enable the risks to recreational users to be more accurately assessed.</p>
<p>GREEN Alert > 500 to < 5000 cells/mL <i>M. aeruginosa</i> OR biovolume equivalent of > 0.04 to < 0.4 mm³/L for the combined total of all cyanobacteria</p>	<ul style="list-style-type: none"> • Low levels of potentially toxic species detected – suggesting base crop of blue green algae may be on the increase <p>Action</p> <p>Continue/increase routine sampling to measure cyanobacterial levels</p>

Livestock Drinking Water Guidelines Based on ARMCANZ (2000), Orr and Schneider (2006) and WQRA (2010)

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 mm³/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).

Further Information and Contacts

Go to the WaterNSW Algal Website

<http://www.waternsw.com.au/water-quality/algae>

Contacts

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