



Algae Alerts for the Central West Region

17<sup>th</sup> January 2024

This blue-green algal alert report is based on routine algae monitoring at sites in the Central West Reporting Area and is supported by satellite imagery. These sites are monitored by WaterNSW and local councils. The report also includes information that comes from visual observations and satellite imagery.

**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.

Burrendong Dam is on Red Alert, recreational restrictions are advised while the Red Alert is in place.

Satellite imagery is on pages 2-3, cloud cover has impacted some of the latest satellite images.

**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. The far western areas of the central West the risk is high.

**Alert status:**

**Red Alerts**

**Burrendong Dam**

**Bogan River at Gongolgon**

**Bogan River at Nyngan Weir Pool and Pumping Station**

**Amber Alerts**

**Chifley Dam.**

**Green Alerts**

Burrendong Mookerawa

Burrendong Cudgegong

Windamere Station 4

Windamere Dam

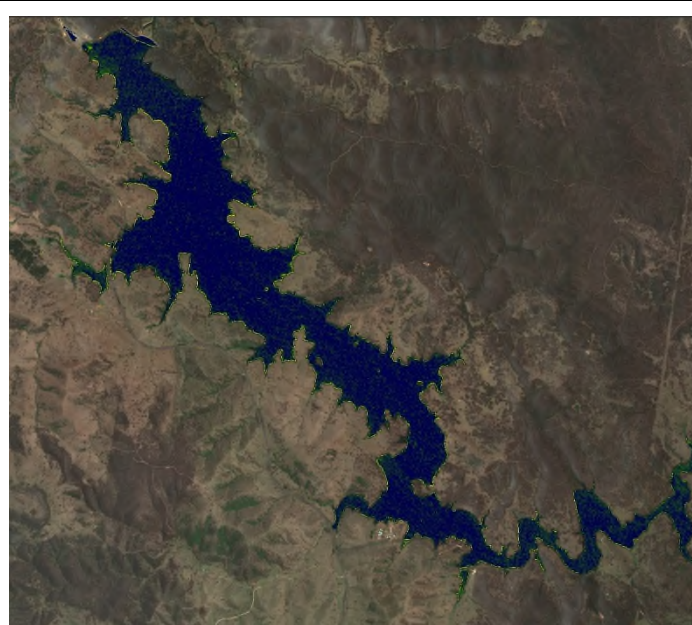
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## Satellite imagery

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 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



**Burrendong Dam 04-01-24** (latest image without cloud cover)

**Windamere Dam 04-01-24**

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**Bogan River at Gongolgon 31-12-23**



**Bogan River at Gongolgon 10-01-24**

SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW



**Bogan River at Nyngan Weir Pool 10-01-24**



**Bogan River at Nyngan Weir Pool 15-01-24**

SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, Waters

## 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)	03-Jan-24	0.48	0.027	0.044	GREEN	No Alert	<i>Microcystis Unknown</i>	Potentially toxic, taste & odour
Windamere Station 4	03-Jan-24	1.14	0.069	0.096	GREEN	GREEN	<i>Microcystis Unknown</i>	Potentially toxic, taste & odour
Windamere Downstream (Cudgegong River)	03-Jan-24	0.20	0.003	0.016	No Alert	No Alert	<i>Microcystis sp.</i>	Potentially toxic, taste & odour
Oberon Station	20-Dec-23	6.30	0	0.011	No Alert	No Alert		
Chifley Dam (composite sample)	08-Jan-24		0.415	0.420	AMBER	AMBER	<i>Microcystis aeruginosa</i>	Potentially toxic, taste & odour. High concentrations
Chifley Dam Raw Riparian	08-Jan-24		0.001	0.002	No Alert	GREEN	<i>Microcystis spp.</i>	Potentially toxic, taste & odour
Macquarie River at Bathurst	08-Jan-24		0.000	0.001	No Alert	No Alert		
Burrendong Dam Station 1 (Dam Wall)	09-Jan-24	12.87	6.187	6.202	RED	GREEN	<i>Microcystis Unknown</i>	Potentially toxic, taste & odour
Burrendong Mookerawa	09-Jan-24	2.89	0.071	0.090	GREEN	GREEN	<i>Microcystis Unknown</i>	Potentially toxic, taste & odour
Burrendong Cudgegong	09-Jan-24	5.08	0.046	0.053	GREEN	GREEN	<i>Microcystis Unknown</i>	Potentially toxic, taste & odour
Burrendong Downstream (Macquarie River)	09-Jan-24	0.11	0	0.024	No Alert	No Alert		
Gosling Creek Dam	07-Dec-23		0	0	No Alert	No Alert		
Lake Canobolas	07-Dec-23		0	0	No Alert	No Alert		
Macquarie River at U/S Wellington	27-Nov-23	0.15	0.000	0.001	No Alert	No Alert		
Macquarie River at Ponto Road Geurie	18-Dec-23	0.80	0.000	0.000	No Alert	No Alert		
Macquarie River at Dubbo	19-Dec-23	1.02	0.000	0.001	No Alert	No Alert		
Macquarie River at Narromine	19-Dec-23	2.84	0.000	0.010	No Alert	No Alert		

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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
Macquarie River at Warren Weir	19-Dec-23	8.41	0.000	0.002	No Alert	No Alert		
Bogan River at Nyngan Weir Pool	14-Dec-23	25.37	0.048	21.056	RED	RED	<i>Raphidiopsis raciborskii</i>	Potentially toxic, taste & odour
Nyngan Weir Pool (Pumping Stn)	14-Dec-23		28.048	268.851	RED	GREEN	<i>Aphanizomenonaceae</i> <i>Unknown</i>	Potentially toxic, taste & odour
Bogan River at Gongolgon	05-Dec-23	32.69	15.601	16.393	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><b>RED Alert</b>                  ≥ 50 000 cells/mL toxic <i>M. aeruginosa</i>                  OR                  biovolume equivalent of ≥4 mm<sup>3</sup>/L for the combined total of all cyanobacteria where a known toxin producer is dominant                  OR                  The total biovolume of all cyanobacteria exceeds 10 mm<sup>3</sup>/L                  OR                  Cyanobacterial blooms are consistently present</p>	<ul style="list-style-type: none"> <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> </ul> <p><b>Extreme care should be exercised, and contact with the water should be avoided</b></p> <p><b>Action</b></p> <ul style="list-style-type: none"> <li>• Issue Media Release</li> <li>• Water supply authorities to increase filtering with activated carbon as appropriate</li> </ul> <p>Local authority and health authorities to warn the public that the water body is considered to be unsuitable for primary contact recreation</p>
<p><b>AMBER Alert</b>                  ≥5000 to &lt;50 000 cells/mL <i>M. aeruginosa</i>                  OR                  biovolume equivalent of ≥ 0.4 to &lt; 4 mm<sup>3</sup>/L for the combined total of all cyanobacteria                  OR                  ≥ 0.4 to &lt; 10mm<sup>3</sup>/L combined total for all blue-green algae where known toxin producers are not dominant</p>	<ul style="list-style-type: none"> <li>• Indicates blue-green algae are multiplying</li> <li>• Water may have a green tinge and musty taste and odour</li> </ul> <p><b>Action</b></p> <ul style="list-style-type: none"> <li>• Water supply authorities to consider filtering with activated carbon</li> </ul> <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><b>GREEN Alert</b>                  &gt; 500 to &lt; 5000 cells/mL <i>M. aeruginosa</i>                  OR                  biovolume equivalent of &gt; 0.04 to &lt; 0.4 mm<sup>3</sup>/L for the combined total of all cyanobacteria</p>	<ul style="list-style-type: none"> <li>• Low levels of potentially toxic species detected – suggesting base crop of blue green algae may be on the increase</li> </ul> <p><b>Action</b></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**.

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- 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).

## Further Information and Contacts

### Go to the WaterNSW Algal Website

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

### Contacts

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