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Innovation & Management

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February 2025

Darug Country

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Aquatic Ecosystem Monitoring Monthly Progress Report – February 2025

February 2025 aquatic ecosystem monitoring of the Georges River and South Creek catchments was undertaken on 6 February 2025.

This report provides a summary of recreational water quality indicators (cyanobacteria, *Enterococci* and thermotolerant coliforms) at Georges River recreation monitoring sites and observations from freshwater monitoring sites.

Badgerys Creek AWS NSW weather monitoring station is expected to be representative of weather conditions in the Kemps Creek catchment and Holsworthy Aerodrome NSW station is expected to be representative of conditions in the locale of the Georges River monitoring sites.

Weather conditions for the week prior to sampling was hot. No rainfall was recorded at either Badgerys Creek AWS (Table 1) or Holsworthy Aerodrome (Table 2) in the week prior to sampling.

Table 1. Weather observations for Badgerys Creek AWS NSW (BOM 2025) in the week prior to sampling

DATE	TEMPERATURE MIN (°C)	TEMPERATURE MAX (°C)	RAINFALL (MM)
31/01/2025	19.6	25.4	0
01/02/2025	19.3	29.2	0
02/02/2025	16.7	31.2	0
03/02/2025	16.8	33.0	0
04/02/2025	17.5	36.0	0
05/02/2025	19.2	35.0	0
06/02/2025	19.8	32.5	0

Table 2. Weather observations for Holsworthy Aerodrome NSW (BOM 2025) in the week prior to sampling

DATE	TEMPERATURE MIN (°C)	TEMPERATURE MAX (°C)	RAINFALL (MM)
31/01/2025	19.8	25.7	0
01/02/2025	19.0	27.2	0
02/02/2025	18.2	28.1	0
03/02/2025	17.3	30.6	0
04/02/2025	19.6	32.8	0
05/02/2025	20.5	31.9	0
06/02/2025	19.8	28.7	0

Cyanobacteria (blue-green algae) monitoring at recreation sites in the Georges River was undertaken on 6 February 2025, during low to mid tide.

Results show that potentially toxic cyanobacteria were detected at GR1.5 during the February sampling event (Table 3).

Results show that GR1 recorded five species of cyanophytes—*Aphanocapsa* spp. (9000 cells/mL), *Cyanonephron* spp. (37800 cells/mL), *Dolichospermum* spp. (straight) (120 cells/mL), *Merismopedia* spp. (1420 cells/mL), and *cf. Synechococcus* spp. (100 cells/mL). Due to the high biovolume of these species an 'Green Level Surveillance Mode' was triggered.

GR1.5 recorded nine species of cyanophytes—*Anathece* spp. (850 cells/mL), *Aphanocapsa* spp. (21600 cells/mL), *Cyanogranis libera* (175 cells/mL), *Cyanonephron* spp. (111000 cells/mL), *Geitlerinema splendidum* (1000 cells/mL), *Merismopedia* spp. (1100 cells/mL), *Microcystis cf. aeruginosa* (PTP) (5 cells/mL), *Romeria* spp. (150 cells/mL) and *cf. Synechococcus* spp. (300 cells/mL), resulting in an 'Amber Level Alert Mode'.

At GR2, five species were recorded, including *Aphanocapsa* spp. (11800 cells/mL), *Cyanogranis libera* (975 cells/mL), *Cyanonephron* spp. (85600 cells/mL), *Merismopedia* spp. (500 cells/mL), and *cf. Synechococcus* spp. (125 cells/mL). Due to the high biovolume of these species, an 'Amber Level Alert Mode' was triggered.

Results for GR3 recorded six species of cyanophytes. These species include *Aphanocapsa* spp. (15800 cells/mL), *Cyanogranis libera* (9900 cells/mL), *Cyanonephron* spp. (17300 cells/mL), *Merismopedia* spp. (1700 cells/mL), *Pseudanabaena* spp. (550 cells/mL), and *Rhabdoderma* spp. (225 cells/mL), resulting is 'Amber Level Alert Mode' trigger.

GR4 had four species recorded—*Cyanonephron* spp. (1400 cells/mL), *Merismopedia* spp. (550 cells/mL), *Pseudanabaena* spp. (450 cells/mL), and *cf. Synechococcus* spp. (125 cells/mL). Due to the low biovolume of these species, 'Green Level Surveillance Mode' was triggered.

At GR4.5, seven species were recorded, triggering a 'Green Level Surveillance Mode' response. Species include *Aphanocapsa* spp. (6380 cells/mL), *Cyanonephron* spp. (1800 cells/mL), *Merismopedia* spp. (675 cells/mL), *Planktothrix* spp. (390 cells/mL), *Pseudanabaena* spp. (4120 cells/mL), and *Rhabdoderma* spp. (50 cells/mL), *cf. Synechococcus* spp. (75 cells/mL).

Table 3. Results summary for recreation monitoring sites, February 2025. Less than 5 cells/mL represents a 'not detected' result

SITE	SAMPLED	POTENTIALLY TOXIC CYANOBACTERIA (CELLS/ML)	NHMRC (2008) ALERT LEVEL	SAFETY ISSUES
GR1	Yes	<5	Green (surveillance)	None
GR1.5	Yes	5	Amber (Alert)	None
GR2	Yes	<5	Amber (Alert)	None
GR3	Yes	<5	Amber (Alert)	None
GR4	Yes	<5	Green (surveillance)	None
GR4.5	Yes	<5	Green (surveillance)	None
GR5	No longer being sampled	-	-	-

Due to the persistence of cyanobacteria, there is potential for future blooms to occur. NHMRC (2008) recommends weekly or fortnightly monitoring when 'Green' mode is triggered (Table 4).

Table 4. Recommended monitoring actions and corresponding NHMRC Alert Levels for cyanobacteria

NHMRC ALERT LEVEL	RECOMMENDED ACTIONS
GREEN LEVEL SURVEILLANCE MODE	- Weekly sampling and cell count at representative locations in the water body where known toxigenic species are present. - Fortnightly for other types including regular visual inspection of water surface for scums.
AMBER LEVEL ALERT MODE	- Increase sampling frequency to twice weekly at representative locations in the water body where toxigenic species are dominant within the alert level definition (i.e. total biovolume) to establish population growth and spatial variability in the water body. - Monitor weekly or fortnightly where other types are dominant. - Make regular visual inspections of water surface for scums. - Decide on requirement for toxicity assessment or toxin monitoring.
RED LEVEL ACTION MODE	- Continue monitoring as for alert mode. - Immediately notify health authorities for advice on health risk. - Make toxicity assessment or toxin measurement of water if this has not already been done. - Health authorities warn of risk to public health (ie the authorities make a health risk assessment considering toxin monitoring data, sample type and variability).

Results of bacteria monitoring at recreation sites in February 2025 show that the ANZECC primary contact guideline for thermotolerant coliforms was exceeded at all sites, while the ANZECC secondary contact guideline for was exceeded at GR1.5 only.

The ANZECC primary contact guideline for *Enterococci* was exceeded at GR1, GR1.5 and GR3, while the secondary contact guideline was not exceeded at GR1.5 only (Table 5).

Table 5. Summary of conditions observed/recorded at each site during February 2025 monitoring. Orange indicates exceedance of the primary contact guideline; red indicates exceedance of the secondary contact guideline

SITE	SAMPLED	TIDE	THERMOTOLERANT COLIFORMS CFU/100 ML	ENTEROCOCCI CFU/100 ML	OBSERVATIONS
GR1	Yes	-	380	130	Clear
GR1.5	Yes	-	1100	650	Clear
GR2	Yes	-	150	26	Clear
GR3	Yes	Mid	930	56	Turbid
GR4	Yes	Mid	720	28	Clear
GR4.5	Yes	Mid	230	17	Clear
PRIMARY CONTACT GUIDELINES			150	35	
SECONDARY CONTACT GUIDELINES			1000	230	

Surface water samples were collected at all freshwater monitoring sites in February 2025 except for KC11, due to restricted access from construction works. Aquatic macroinvertebrates and benthic diatoms were not sampled in February.

Table 6. Summary of conditions observed/recorded at each site during February 2025

SITE	WATER QUALITY SAMPLED	AQUATIC MACRO- INVERTEBRATES	BENTHIC DIATOMS	FLOW	OBSERVATIONS	SAFETY ISSUES
MC1	Yes	No	No	Normal	Clear	None
AC1	Yes	No	No	Normal	Clear	None
KC1	Yes	No	No	Normal	Clear	None
KC2	Yes	No	No	Normal	Clear	None
KC3	Yes	No	No	Normal	Clear	None
KC5	Yes	No	No	Normal	Clear	None
KC6	Yes	No	No	Normal	Clear	None
KC8	Yes	No	No	Normal	Turbid	None

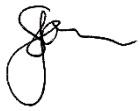
KC10	Yes	No	No	Normal	Turbid	None
KC11	No	No	No	-	-	No access due to construction
KC12	Yes	No	No	Normal	Turbid	None
SC1	Yes	No	No	Normal	Turbid	None
SC2	Yes	No	No	Normal	Turbid	None
BC1	Yes	No	No	Normal	Turbid	None
WG	Yes	No	No	Normal	Clear	None
HC	Yes	No	No	Normal	Clear	None

All data has been supplied in an Excel spreadsheet separate to this report and no safety issues were recorded/observed during monitoring.

Statistical analysis of data collected by the monitoring program will be undertaken and presented in the annual report and program recommendations will be made.

If you have any questions, please get in touch.

Kind regards,



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References

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