



CTENVIRONMENTAL

ECOSYSTEM MANAGEMENT AND MONITORING



October 2024 Monthly Aquatic Ecosystem Monitoring Report

Liverpool City Council

October 2024

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Aquatic Ecosystem Monitoring Monthly Progress Report - October 2024

Monthly aquatic ecosystem monitoring of the Georges River and South Creek catchments was undertaken on 18 October 2024.

This report provides a summary of recreation water quality indicators (Cyanobacteria, *Faecal coliforms* and *Enterococci*) 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 were cool and dry with 14.6 mm of rain recorded at Badgerys Creek AWS (Table 1) and 13 mm of rain recorded at Holsworthy Aerodrome (Table 2).

Table 1. Weather observations for Badgerys Creek AWS NSW (BOM 2024) in the week prior to sampling.

Date	Temperature min (°C)	Temperature max (°C)	Rainfall (mm)
12/10/2024	14.8	19.6	0
13/10/2024	7.6	22.4	0
14/10/2024	9.0	26.7	0
15/10/2024	12.4	17.5	13.0
16/10/2024	12.4	19.8	0.4
17/10/2024	7.5	25.9	0
18/10/2024	14.1	26.0	1.2

Table 2. Weather observations for Holsworthy Aerodrome NSW (BOM 2024) in the week prior to sampling.

Date	Temperature min (°C)	Temperature max (°C)	Rainfall (mm)
12/10/2024	14.4	18.8	5.0
13/10/2024	8.7	21.4	0
14/10/2024	9.0	25.6	0
15/10/2024	11.9	17.1	7.8
16/10/2024	12.0	20.6	0.2
17/10/2024	7.8	25.1	0
18/10/2024	15.3	26.5	0

Cyanobacteria (blue-green algae) monitoring at recreation sites in the Georges River was undertaken on 18 October 2024 during mid-tide.

Results show potentially toxic cyanobacteria was not detected at any of the Georges River sites during sampling and biovolume calculations indicate that the NHMRC Amber Level Alert, and Green Level Surveillance modes were triggered during the October sampling event (Table 3).

Table 3. Results summary for recreation monitoring sites, October 2024. Less than 5 cells/mL represent a 'not detected' result.

Site	Sampled	Potentially Toxic Cyanobacteria (cells/mL)	NHMRC (2008) Alert Level	Safety Issues
GR1	Yes	<5	-	None
GR1.5	Yes	<5	-	None
GR2	Yes	<5	-	None
GR3	Yes	<5	Amber	None
GR4	Yes	<5	Green	None
GR5	Yes	<5	-	None

One species of cyanophytes, *Cyanogranis libera*, was detected at GR1 (250 cells/mL) during the October sampling. Because of the low biovolume of this species no NHMRC alert was triggered at this site.

GR1.5 recorded two species of cyanophytes, *Aphanocapsa spp.* (250 cells/mL), and *Synechococcus spp.* (75 cells/mL). Because of the low biovolume of this species no NHMRC alert was triggered at this site.

No cyanobacteria species were recorded at GR2.

Results for GR3 showed that five species were detected. These species included *Aphanocapsa spp.* (425 cells/mL), *Chroococcus spp.* (1100 cells/mL), *Phormidium spp.* (50 cells/mL), *Pseudanabaena spp.* (375 cells/mL), and *Synechococcus spp.* (75 cells/mL). Due to the high biovolume of these species the NHMRC Amber Level Alert mode was triggered.

Cyanobacteria biovolume calculations for GR4 triggered the NHMRC (2008) Green Level Surveillance Mode. A total of five species detected. These included *Aphanocapsa spp.* (2920 cells/mL), *Phormidium spp.* (300 cells/mL), *Pseudanabaena spp.* (5400 cells/mL), *Romeria spp.* (20 cells/mL), and *Synechococcus spp.* (375 cells/mL).

GR5 results showed one species of cyanophyte, *Synechococcus spp.* (225 cells/mL), was detected. Due to the low biovolume of these species no NHMRC alert was triggered.

Due to the persistence of cyanobacteria at the recreation monitoring sites, there is potential for future blooms to occur and NHMRC (2008) recommends weekly or fortnightly monitoring when the 'Green Level Surveillance Mode' and 'Amber Level Alert Mode' is triggered (Table 4).

Table 4. Recommended monitoring actions and corresponding NHMRC (2008) Alert Levels.

Cyanobacterial Alert Level	Recommended Actions
Green Level Surveillance Mode	- Weekly sampling and cell counts 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 October 2024 show that the ANZECC Secondary Contact Guidelines for *Faecal coliforms* was exceeded at GR3, GR4, and GR5 (Table 5).

The ANZECC Primary Contact Guidelines for *Enterococci* was exceeded at GR2 and GR3, and the ANZECC Secondary Contact Guidelines for *Enterococci* was exceeded at GR4 and GR5 (Table 5).

Table 5. Summary of conditions observed/recorded at each site during October 2024 monitoring. Orange indicates exceedance of the primary contact guideline; red indicates exceedance of the secondary contact guideline.

Site	Sampled	Tide	<i>Faecal Coliforms</i> CFU/100 mL	<i>Enterococci</i> CFU/100 mL	Observations
GR1	Yes	N/A	46	20	Clear
GR1.5	Yes	N/A	26	28	Clear
GR2	Yes	N/A	55	37	Clear
GR3	Yes	High	4800	60	Clear
GR4	Yes	High	10000	7300	Clear
GR5	Yes	High	86000	5300	Clear
Primary Contact Guidelines			150	35	
Secondary Contact Guidelines			1000	230	

Surface water samples were collected at all freshwater monitoring sites in October 2024, except for KC11 (due to construction works). During the October monitoring period, most sites that were sampled were found to have high electrical conductivity.

Table 6. Summary of conditions observed/recorded at each site during October 2024.

Site	Water quality sampled	Aquatic Macroinvertebrates	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	Turbid	None
KC5	Yes	No	No	Normal	Clear	None
KC6	Yes	No	No	Normal	Turbid	None
KC8	Yes	No	No	Normal	Clear	None
KC10	Yes	No	No	Normal	Clear	None
KC11	No	No	No	-	-	No access
KC12	Yes	No	No	Normal	Clear	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

ANZECC & ARMCANZ (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.

BOM (2024) www.bom.gov.au (accessed October 23, 2024).

NHMRC (2008) Guidelines for Managing Risks in Recreational Water