CTENVIRONMENTAL
ECOSYSTEM MANAGEMENT AND MONITORING

November 2024 Monthly Aquatic Ecosystem Monitoring Report

Liverpool City Council

November 2024

Project	**Liverpool City Council Aquatic Ecosystem Monitoring 2024**
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Aquatic Ecosystem Monitoring Monthly Progress Report - November 2024

Monthly aquatic ecosystem monitoring of the Georges River and South Creek catchments was undertaken on 4 November 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 6.2 mm of rain recorded at Badgerys Creek AWS (Table 1) and 5.4 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)
28/10/2024	8.7	22.7	0.8
29/10/2024	6.5	29.3	0
30/10/2024	9.3	35.6	0
31/10/2024	18.3	28.7	0
01/11/2024	14.5	24.5	4.4
02/11/2024	14.1	19.8	0
03/11/2024	13.0	31.4	1.0

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)
28/10/2024	7.8	20.9	0.8
29/10/2024	8.4	28.4	0
30/10/2024	9.1	34.6	0
31/10/2024	18.3	27.8	0
01/11/2024	13.4	23.2	1.4
02/11/2024	14.6	19.1	0.2
03/11/2024	13.5	31.3	3.0

Cyanobacteria (blue-green algae) monitoring at recreation sites in the Georges River was undertaken on 4 November 2024 during high-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 Green Level Surveillance Mode was triggered during the November sampling event (Table 3).

Table 3. Results summary for recreation monitoring sites, November 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	Green	None
GR2	Yes	<5	Green	None
GR3	Yes	<5	Green	None
GR4	Yes	<5	Green	None
GR5	Yes	299	-	None

Two species of cyanophytes, *Aphanocapsa spp.* (6580 cells/mL) *and Pseudanabaena spp.* (165 cells/mL), were detected at GR1 during the November sampling. Because of the low biovolume of this species no NHMRC alert was triggered at this site.

GR1.5 recorded four species of cyanophytes, *Aphanocapsa spp*. (17400 cells/mL), *Cyanogranis libera* (350 cells/mL), *Pseudanabaena spp.* (870 cells/mL) and *Romeria spp.* (844 cells/mL). Collectively these four species triggered an NHMRC Green Level Surveillance Mode.

Three cyanobacteria species were recorded at GR2. *Aphanocapsa spp.* (4830 cells/mL), *Cyanogranis libera* (275 cells/mL), and *Romeria spp.* (1700 cells/mL). This also triggered a NHMRC Green Level Surveillance Mode.

Results for GR3 showed that six species were detected. These species included *Aphanocapsa spp*. (2200 cells/mL), *Glaucospira spp.* (50 cells/mL), *Merismopedia spp.* (700 cells/mL), *Pseudanabaena spp.* (575 cells/mL), *Romeria spp.* (300 cells/mL) and *Synechococcus spp.* (525 cells/mL). The NHMRC Green Level Surveillance Mode was triggered.

Cyanobacteria biovolume calculations for GR4 triggered the NHMRC (2008) Green Level Surveillance Mode. A total of four species were detected. These included *Aphanocapsa spp*. (525 cells/mL), *Merismopedia spp.* (1100 cells/mL), *Pseudanabaena spp*. (125 cells/mL), and *Synechococcus spp.* (375 cells/mL).

GR5 results showed four species of cyanophyte. *Aphanocapsa spp.* (475 cells/mL), *Cyanogranis libera* (250 cells/mL), *Microcystis aeruginosa* (299 cells/mL) and *Synechococcus spp.* (75 cells/mL) were detected. Despite *Microcystis aeruginosa* being a known toxic species, the biovolume was too low to trigger a NHMRC alert. Due to the low biovolume of the other 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' 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 November 2024 show that the ANZECC Primary Contact Guidelines for *Faecal coliforms* was exceeded at GR1.5, GR3 and GR4, and the ANZECC Secondary Contact Guidelines for *Faecal coliforms* was exceeded at GR3 only (Table 5).

The ANZECC Primary Contact Guidelines for *Enterococci* was exceeded at GR1, GR1.5, GR3, GR4 and GR5, and the ANZECC Secondary Contact Guidelines for *Enterococci* was exceeded at GR1.5 and GR3 (Table 5).

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

Site	Sampled	Tide	*Faecal Coliforms* CFU/100 mL	*Enterococci* CFU/100 mL	Observations
GR1	Yes	N/A	33	54	Clear
GR1.5	Yes	N/A	260	360	Clear
GR2	Yes	N/A	21	16	Clear
GR3	Yes	High	67000	870	Clear
GR4	Yes	High	270	210	Clear
GR5	Yes	High	54	79	Clear
Primary Contact Guidelines			150	35	
Secondary Contact Guidelines			1000	230	

Surface water samples were collected at all freshwater monitoring sites in November 2024, except for KC11 due to construction works. During the November monitoring period, most sites that were sampled were found to have high electrical conductivity (EC) far greater than the ANZECC guideline of 85 % for Georges

River sites, and the Wianamatta-South Creek Stormwater Management Target of 43 % for all other freshwater sites. However, the values detected in November were similar to that seen in October 2024.

Table 6. Summary of conditions observed/recorded at each site during November 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	Clear	None
KC5	Yes	No	No	Normal	Clear	None
KC6	Yes	No	No	Normal	Turbid	None
KC8	Yes	No	No	Normal	Turbid	None
KC10	Yes	No	No	Normal	Clear	None
KC11	No	No	No	-	-	No access
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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