

Quarry Creek

The sample site is a section of Quarry Creek located South of Norman Griffiths Oval in Bicentennial Park, West Pymble, in remnant Sydney Turpentine Ironbark Forest, a critically endangered ecological community. Quarry Creek is restricted to West Pymble, and is part of the Lane Cove River Catchment. The Creek and tributaries drain to the South to join Lane Cove River in Lane Cove National Park.

The water quality Quarry Creek is generally good by the standards of urban creeks in Ku-ring-gai. Quarry Creek suffers from low Dissolved Oxygen levels due to the nature of the creek often having low water levels or isolated pools with little to no flow, particularly in the absence of recent rainfall, a correlation clearly shown by the data. Creeks in urban settings are impacted by elevated phosphate levels primarily due to stormwater runoff from residential areas with fertilizer use, detergents and household products, pet waste, erosion, organic matter being washed into creeks, and wastewater discharges from sewage overflows.

The Streamwatch Group at Quarry Creek picked up and reported a chlorine spill in January 2023, evidenced by a "noticeable chlorine/bleach smell". Council responded immediately before traces of the contamination could be washed away and investigation found a sewer leak upstream was responsible for the event. Priority works were undertaken to rectify the leak and protect the creek from further contamination. This is a fantastic example of how Streamwatch can be used as an early warning system for pollution events and result in meaningful action for our waterways.

Physical Condition

- Dissolved oxygen – whilst dissolved oxygen naturally fluctuates depending on time of day and flow conditions, unusually low levels of dissolved oxygen can be an indicator of a pollution event.
- pH – a measure of how acidic the water is. Our waterways naturally vary in acidity depending on the local geology, soils, amount of urban development and fluctuations in flow and rainfall. Sudden changes in acidity can indicate the potential for a contaminant in the water.
- Available Phosphate – a measurement of the phosphate compounds that are soluble in water. The concentrations of phosphorus in Australian soils and water are naturally low, and a high phosphate level can indicate potential pollution events or contaminants.
- Electrical Conductivity – provides an indication on the amount of salts in the water.
- Turbidity is a measure of how clear or cloudy a liquid is and can be an indicator of sediment being carried by the water. Turbidity can vary drastically in urban waterways, primarily in response to rainfall, but also in response to soil type and even biological factors.

Sample Date	Water Level	Time Since Last Rainfall	Rainfall Intensity	Rainfall Previous 72hrs (mm)	Comments	Air Temp (°C)	Cloud Cover (%)	Water Temp (°C)	D.O. (ppm)	Sulphuric Acid Drops	pH	Available Phosphate (ppm)	E.C. Probe Calibrated (Select)	E.C. (µS/cm)	Turbidity (NTU)	Turbidity - (FAU)	Sample Testing Comments
14 December 2022	Medium (Normal)	1-3 Days	Light	6.4		20.1	10	18.2	4.5	8*3	7	0.12	Yes	270	10	3	Lots of leaf litter in water, looks dark
11 January 2023	Medium (Normal)	4-7 Days	Medium	0	Detritus noticeable	26	100	19.5	8.4	8*2	6.5	0.07	Yes	250	10	15	Noticeable chlorine/bleach smell
8 February 2023	Low	Within 24hrs	Light	1.8	Build-up of debris downstream of testing point	26	100	20	6	8*3	7.5	0.04	Yes	980	10	7	Slight swampy smell. E.C. high - little-no water flow
8 March 2023	Low	4-7 Days	Light	0		29	0	20	4.2	8*4	7	0.06	Yes	1310	10	4	
12 April 2023	Medium (Normal)	4-7 Days	Light	0		19	100	15.5	6	8*8	7	0.02	Yes	710	10	1	Water still. Dissolved oxygen - some flecks remain after 64 drops.
10 May 2023	Medium (Normal)	1-3 Days	Medium	7.4	Stream slightly cloudy	16.5	0	12	7	8*2	6.5	0.04	Yes	650	10	11	
25 May 2023	Not Recorded	Not Recorded	None/Not Recorded	0		22	100	10.5	6.5	8*2	6.5	0	Yes	640	10	3	Clear
14 June 2023	Low	4-7 Days	None/Not Recorded	0	Water mucky, not clear (black)	17	0	11.5	4.6	8*4	6	0	Yes	360	20	28	Available Phosphate - results too low for colorimeter
12 July 2023	Not Recorded	Not Recorded	Not Recorded	0	Very clear	18	0	10.5	6.6	8*2	6.5	0.11	Yes	1250	10	0	E.C. could be leak from AC pool - Craig and Sophia notified
9 August 2023	Low	1-3 Days	Medium	3.2		19	20	12	7.9	8*3	7	0.09	Yes	310	10	2	None
13 September 2023	Low	Not Recorded	Medium	0		23	0	11.5	1.2	8*6	7	0.13	Yes	410	10	2	
18 October 2023	Medium (Normal)	Within 24hrs	Medium	Not Accessible		n	n	15	5.6	n	6.5	0	Yes	260	10	6	
8 November 2023	Medium (Normal)	4-7 Days	Heavy	19.8		n	n	16	2.4	8*1	6.5	0	Yes	400	10	15	

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13 December 2023	Low	1-3 Days	Light	0.4		29	60	21	1.3	8*1	8	0.1	Yes	710	10	4	Turbidity - clear but yellowish
10 January 2024	Low	1-3 Days	Medium	2.6		29	100	21	3.5	8*1	7	0.07	Yes	720	10	2	
12 March 2024	Not Recorded	>7 Days	None/Not Recorded	0		27.8	50	21	3.6	8	7	0.06	Yes	200	10	3	Yellowish in Turbidity tube
10 April 2024	High	Within 24hrs	Heavy	10	Turbid	18.8	50	17	9.6	8*3	7	0	Yes	480	30	31	Turbid from above creek
8 May 2024	High	Within 24hrs	Heavy	38.2	Fast flow, cloudy water	19	100	16	6.4	8*8	7	0	Yes	1080	20	13	Fine particles still noticeable in DO

Traffic Lights Key

Condition:

- **Green:** All Okay
- **Orange:** Watch and Observe
- **Red:** Investigate and Act

Dissolved oxygen (ppm)	<6	6 – 7.9	>8		
pH	<5.5	5.6 – 6.4	6.5 – 8.3	8.4 – 9	>9.1
Available Phosphate (ppm)	<0.05	0.051 – 0.09	>0.091		
Electrical Conductivity (µS/cm)	0 – 400	401 – 900	>901		
Turbidity (NTU)	0 – 25	25.1 – 40	>40.1		

Actions prompted by Streamwatch results may be either short-term or long-term. If there is evidence of a significant pollution or contamination event, Streamwatch volunteers report immediately to Council for investigation and resolution in a timely manner. Spikes in available phosphate and turbidity are often caused by high rainfall events, which wash debris and urban pollutants into creeks. Similarly, low dissolved oxygen levels can result from low water flow during dry periods. Creeks, especially in urban environments, will experience peaks and troughs in water quality which can resolve naturally. If unusually high levels are observed consistently and cannot be explained by rainfall events, further investigation to identify potential sources of pollution will be undertaken. Investigations may involve Streamwatch volunteers. If an isolated pollution source is not identified and an issue is ongoing, long-term management actions such as street sweeping, stormwater management controls and Water Sensitive Urban Design (WSUD) features can be considered.

