

Kawhia – Quarterly River Monitoring

Sample Collection Day: 18th November 2024

North Kawhia

Water quality was Good at 32-Mangapapa stream and Fair at the other three sites. *E. coli* and suspended sediment were elevated at most sites. Nitrogen indicators were low, while dissolved reactive phosphorus was low at all but one site.

E. coli concentrations were slightly elevated at all sites (between 340 and 530), with concentrations only just falling within recommended health limits for swimming (540). *E. coli* concentrations were lowest at 34-Awaroa river and highest at 33-Te Kauri stream. **Nitrate** concentrations were low, falling well below ecological toxicity levels (2.4 mg/L) at all sites. Nitrates were lowest at 31-Oparau river (0.16 mg/L) and highest at 32-Mangapapa stream (0.48 mg/L). **Ammonia** concentrations were very low at all sites (≤ 0.007 mg/L). **Dissolved inorganic nitrogen (DIN)** was low at all sites (≤ 0.49 mg/L). DIN concentrations greater than 0.5 mg/L can cause ecological impacts like excessive growth of algae and aquatic plants, and loss of sensitive species. **Dissolved reactive phosphorus** concentrations were low at three sites (≤ 0.008 mg/L) but was elevated at 34-Awaroa river (0.015 mg/L). **Water clarity** was excellent at 32-Mangapapa stream (2.04 m) but poor at the three other sites (≤ 1.19 m), relative to the national bottom line (1.34 m). Te Kauri stream had the lowest water clarity (0.53 m).

North Kawhia Date: 18-Nov-24 Lab: Analytica	Human Contact		Ecosystem Health				
	E. coli/100 ml	Nitrates Toxicity (mg N/L)	Ammonia Toxicity (mg N/L)	Dissolved Inorganic Nitrogen (mg N/L) ²	Dissolved Reactive Phosphorus (mg/L)	Sediment	
						Water Clarity (m) ¹	National Bottom Line
31-Oparau R.	510	0.16	<0.005	0.16	0.003	1.19	1.34
32-Mangapapa Str	350	0.48	0.007	0.49	<0.002	2.04	1.34
33-Te Kauri Str	530	0.34	0.006	0.35	0.008	0.53	1.34
34-Awaroa R.	340	0.34	0.006	0.35	0.015	0.71	1.34

¹Water clarity has been converted from measured turbidity using the formular $\ln(\text{CLAR}) = 1.21 - 0.72 \ln(\text{TURB})$ (Franklin, Booker & Stoffels, 2020).

²Guideline values to assess ecological impacts of nitrogen on freshwater life. Attribute band limits are from the NPS-FM consultation draft (2019)

Attribute Band		
A	Ecosystem Health	Human Contact
B		
C		
D		
E	Human Contact only	

South Kawhia

Water quality was Good at 37-Oteke stream and Fair at the other three sites. *E. coli* was elevated at all sites and water clarity was poor at 50% of sites. Dissolved inorganic nitrogen was slightly elevated at one site

E. coli concentrations were elevated across all sites (between 360 and 830). Fifty percent of sites fell outside of the recommended health limits for swimming (540). *E. coli* was lowest at 37-Oteke stream and highest at 38-Mangatangi stream. **Nitrate** concentrations were low at all sites, falling well below ecological toxicity impacts (2.4 mg/L). Nitrates were lowest at 36-Puaroa stream (0.29 mg/L) and highest at 38-Mangatangi stream (0.64 mg/L). **Ammonia** concentrations were exceptionally low at all sites (≤ 0.006 mg/L). **Dissolved inorganic nitrogen (DIN)** concentrations were low at three sites (≤ 0.39 mg/L) but were elevated at 38-Mangatangi stream (0.64 mg/L). DIN concentrations greater than 0.5 mg/L can cause ecological impacts like excessive growth of algae and aquatic plants, and loss of sensitive species. **Dissolved reactive phosphorus** concentrations were low at all sites (≤ 0.010 mg/L). **Water clarity** was good at two sites, 36-Puaroa stream and 37-Oteke stream and poor at 35-Ngāhuinga stream and 38-Mangatangi stream, relative to the national bottom line (0.61 cm). The highest water clarity was recorded at 37-Oteke stream (1.26 m) and the lowest water clarity was recorded at 38-Mangatangi stream (0.56 m).

South Kawhia Date: 18-Nov-24 Lab: Analytica	Human Contact	Ecosystem Health					
		Water Quality				Sediment	
	E. coli/100 ml	Nitrates Toxicity (mg N/L)	Ammonia Toxicity (mg N/L)	Dissolved Inorganic Nitrogen (mg N/L) ²	Dissolved Reactive Phosphorus (mg/L)	Water Clarity (m) ¹	National Bottom Line
35-Ngāhuinga Str	520	0.35	<0.005	0.35	0.006	0.64	0.61
36-Puaroa Str (Owhiro valley)	580	0.29	0.006	0.29	0.008	0.92	0.61
37-Oteke Str	360	0.39	<0.005	0.39	0.006	1.26	0.61
38-Mangatangi Str	830	0.64	0.006	0.64	0.01	0.56	0.61

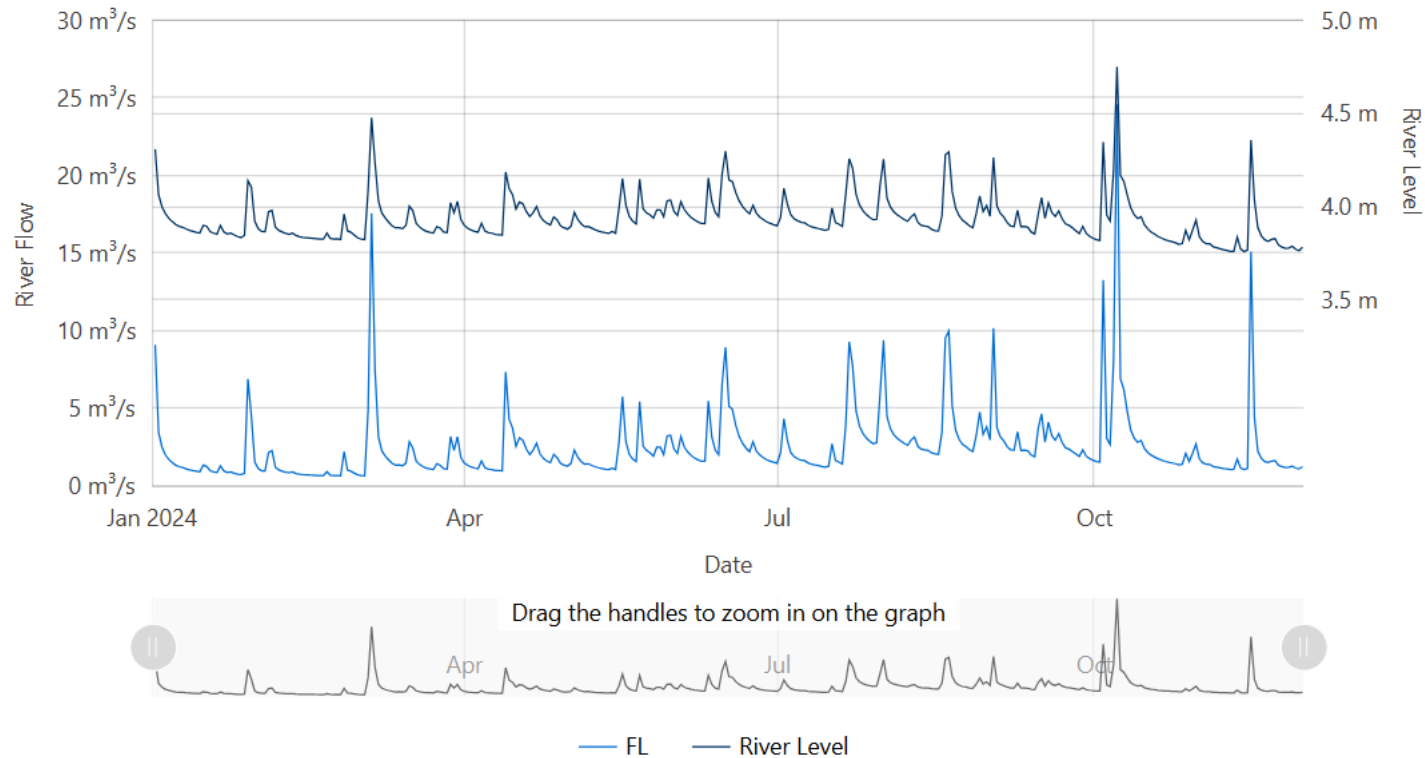
¹Water clarity has been converted from measured turbidity using the formula $\ln(\text{CLAR}) = 1.21 - 0.72 \ln(\text{TURB})$ (Franklin, Booker & Stoffels, 2020).

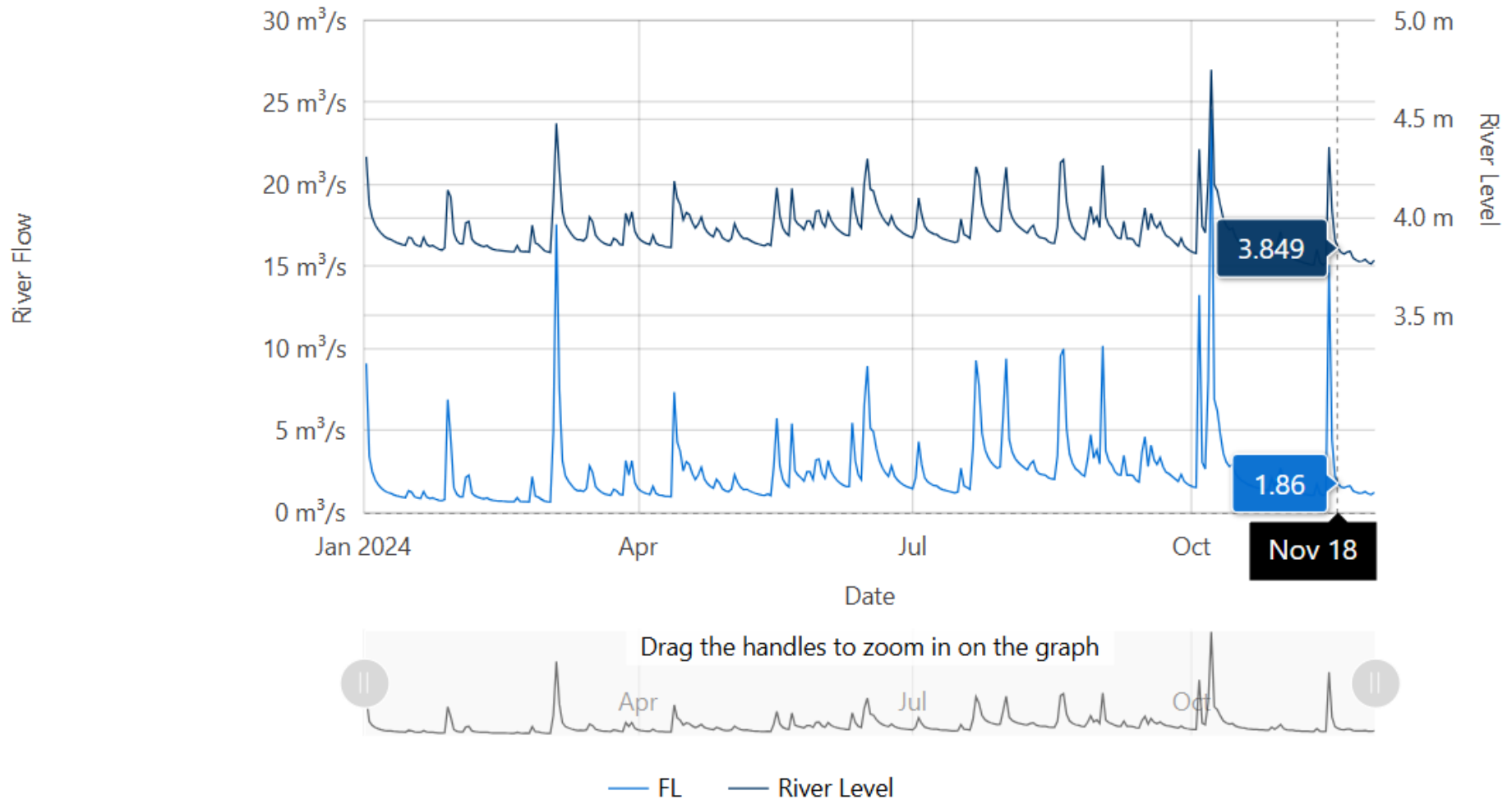
²Guideline values to assess ecological impacts of nitrogen on freshwater life. Attribute band limits are from the NPS-FM consultation draft (2019)

Attribute Band		
A	Ecosystem Health	Human Contact
B		
C		
D		
E	Human Contact only	

River Level and Flow Rate – Oparau River Langdon Rd (Off Okupata Rd)

The below charts present continuous data collected by the Waikato Regional Council for Oparau river between 1st January and 30th November 2024. River Level and Flow Rate on the day of sampling (18-November) are highlighted on the second chart.





Data source: Waikato Regional Council [envirohub website](https://www.waikatoregion.govt.nz/envirohub) for environmental data.

Prepared by Freshwater Ecologist Merrin Whatley (PhD)