

Mid Mokau-Pio Pio – Quarterly River Monitoring

Sample Collection Day: 13th & 14th November 2023

Overall, water quality was good across most sites except for water clarity and slightly elevated *E. coli* concentrations at one site.

E. coli concentrations were low at 3 out of 4 sites (≤ 230) and slightly elevated at 13-Mokau River HWY 4 (310). **Nitrate** concentrations were well below toxicity levels at all sites, being lowest at 13-Mokau R. HWY 4 (0.16 mg/L) and highest at 7-Mokau R, above Wairere Dam (0.37 mg/L). **Ammonia** concentrations were low at all sites (< 0.02 mg/L). **Dissolved inorganic nitrogen** concentrations were low at all sites (≤ 0.39 mg/L). **Dissolved reactive phosphorus** concentrations were low at all sites (≤ 0.006 mg/L). **Water clarity** was poor at all sites (≤ 1.19 m), relative to the national bottom line (1.34 m).

Mid Mokau-Pio Pio	Human Contact	Ecosystem Health					
		Water Quality				Sediment	
		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
Sample Dates: 13 & 14-Nov-23 Lab: Analytica	<i>E. coli</i> /100 ml						
7-Mokau R, above Wairere Dam	190	0.37	0.02	0.39	0.006	1.03	1.34
13-Mokau R. HWY 4	310	0.16	0.006	0.16	0.004	1.19	1.34
14-Mangapehi R. HWY 4	230	0.32	0.009	0.33	0.006	0.70	1.34
15-Mapara Stm	230	0.26	0.005	0.26	0.006	1.10	1.34

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

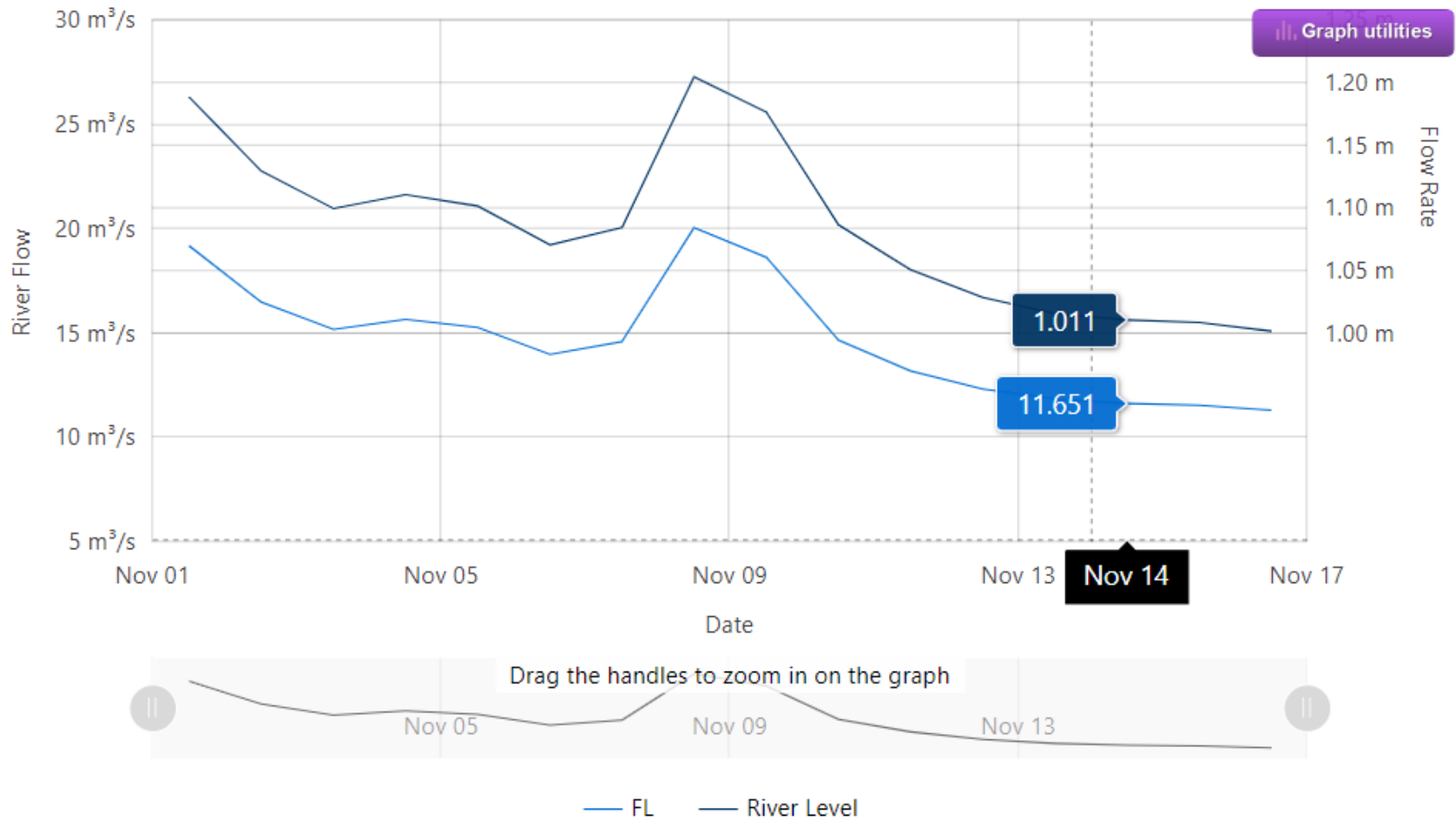
¹Water clarity has been converted from measured turbidity using the formula $\ln(\text{CLAR}) = 1.21 - 0.72 \ln(\text{TURB})$ (Franklin, Booker & Stoffels, 2020).

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

Mokau River – Summary of water quality collected at 16 sites across the Mokau River catchment November 2023

Nutrient concentrations (nitrate, ammonia and dissolved reactive phosphorus) were low at most sites. Key contaminants were *E. coli* and water clarity.

E. coli: 56% of all sites had low concentrations (≤ 230), 25% had slightly elevated concentrations (between 280 - 530) and 19% had elevated concentrations (> 730). **Nitrate and Ammonia**: concentrations at 100% of sites were below toxicity levels (Nitrate ≤ 0.62 mg/L; Ammonia ≤ 0.02). Only one site had Dissolved Inorganic Nitrogen (DIN) concentrations above 0.5 mg/L. Ecological impacts, including problematic growth of algae and/or aquatic plants and loss of sensitive aquatic species are likely to occur when DIN regularly exceeds 0.5 mg/L. **Dissolved reactive phosphorus**: 94% of sites had low concentrations (≤ 0.009 mg/L) and one site (16%) had slightly elevated concentrations (0.011 mg/L). **Water clarity**: 44% of sites had good water clarity (A or B band), two sites (13%) had reduced water clarity (C band) and 44% of sites had poor water clarity (D band). Bands for each site relate to the national bottom line (NBL) for water clarity and are dependent on landscape characteristics including geology, climate and elevation. The NBL for Mokau River's monitoring sites are either 1.34 m or 0.61 m, dependant the local landscape characteristics.



Data source: Waikato Regional Council [envirohub website](#) for environmental data.

Prepared by Freshwater Ecologist Merrin Whatley (PhD)