## Upper Mokau & Mangapehi – Quarterly River Monitoring

### Sample Collection Days: 19th November 2024

*Water quality was Fair. E. coli and suspended sediment were elevated at all sites, while nutrient indicators were low at most sites.*

***E. coli*** concentrations were elevated at all sites (between 370 and 670) and fell above the recommend health limits for swimming (540) at one site, 18-Mangapehi river. *E. coli* concentrations were lowest at 13-Mokau river and highest at 18-Mangapehi river. **Nitrate** concentrations were low at all sites, falling well below ecological toxicity levels (2.4 mg/L). Nitrates were lowest at 13-Mokau R. HWY 4 (0.33 mg/L) and highest at 18-Mangapehi River (0.64 mg/L). **Ammonia** concentrations were low at all sites (≤ 0.03 mg/L). **Dissolved inorganic nitrogen (DIN)** concentrations were low at two sites (≤ 0.43 mg/L) but were slightly elevated at 18-Mangapehi river (0.67 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 low at all sites (between 0.60 and 1.10 m), relative to the national bottom line (1.34 m).

| Upper Mokau-Mangapehi | Human Contact | Ecosystem Health | | | | | |
|---|---|---|---|---|---|---|---|
| | | Water Quality | | | | Sediment | |
| Sample Dates: 19-Nov-24<br>Lab: Analytica | 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 |
| 13-Mokau R. HWY 4 | 370 | 0.33 | 0.01 | 0.34 | 0.004 | 1.04 | 1.34 |
| 14-Mangapehi R. HWY 4 | 460 | 0.42 | 0.009 | 0.43 | 0.006 | 0.60 | 1.34 |
| 18-Mangapehi R. | 670 | 0.64 | 0.03 | 0.67 | 0.01 | 1.10 | 1.34 |

[1]Water clarity has been converted from measured turbidity using the formular ln(CLAR) = 1.21 – 0.72 ln(TURB) (Franklin, Booker & Stoffels, 2020).
[2]Guideline 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 | |

## Mokau River – *Summary of water quality collected at 15 sites across the Mokau River catchment on 19th November 2024*

*E. coli and suspended sediment were elevated across most sites and a third of all sites had elevated concentrations of dissolved inorganic nitrogen. While dissolved reactive phosphorus (DRP) was generally low, very high DRP concentrations were recorded at several locations.*

***E. coli*:** 73% of sites had elevated concentrations (between 610 and 1,500), 20% (3 sites) had slightly elevated concentrations (between 370 and 470), while only 7% (1 site) had a low concentration (≤ 110). **Nitrate and Ammonia:** 100% of sites were well below toxicity levels. Nitrate range (0.13 – 0.80 mg/L); Ammonia range (<0.005 - 0.05). **Dissolved inorganic nitrogen (DIN):** 67% of sites had low concentrations (≤ 0.46 mg/L) and 33% were slightly elevating, falling above the ecological impact threshold of 0.5 mg/L (between 0.54 and 0.81 mg/L). The highest DIN concentration recorded across the Mokau River catchment was 0.81 mg/L. **Dissolved reactive phosphorus**: 73% of sites had low concentrations (between <0.002 to 0.010 mg/L), 7% (1 site) was slightly elevated (0.017

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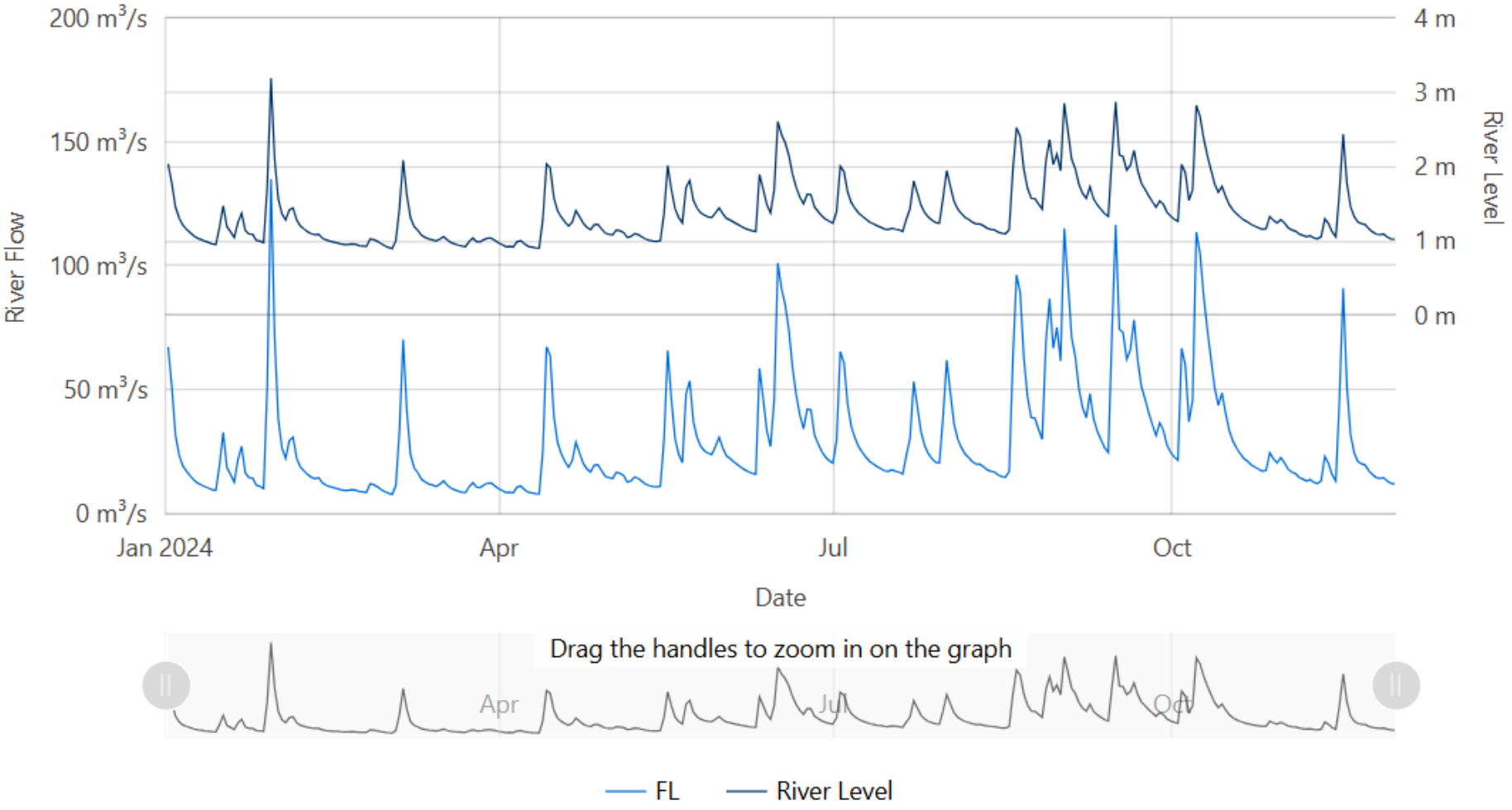
mg/L) and 20% (3 sites) had very high concentrations (between 0.019 and 0.065 mg/L). **Water clarity:** 13% (2 sites) had good water clarity (A or B band), 13% (2 sites) had reduced water clarity (C band) and the remaining 73% had poor water clarity (D band). Bands for each site relate to the national 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 on the local landscape characteristics.

## River Level and Flow Rate – Mokau River, Totoro Road

The below charts present continuous data collected by the Waikato Regional Council for Mokau River between 1st January and 30th November 2024. River Level and Flow Rate on the day of sampling (19-November) are highlighted on the second chart.

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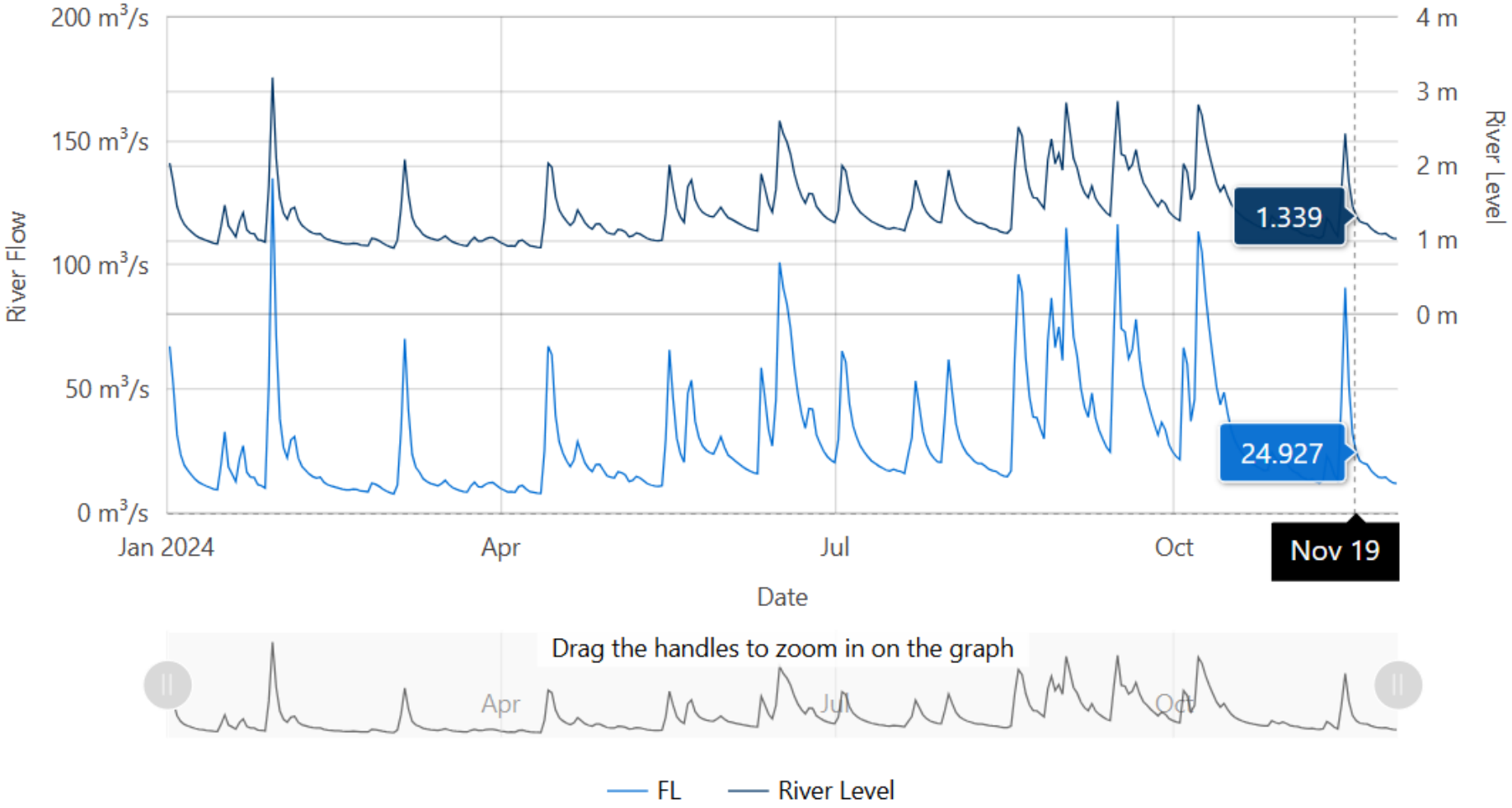


Data source: Waikato Regional Council [envirohub website] for environmental data.

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