# Upper Mangaokewa - Water Quality Summary 2022

Sampling occurred between January and December 2022

Water quality over 2022 was degraded at many sites. The highest water quality appears to be at 46-Waiteti Stream (Upper); however, this is a new monitoring site with only two samples available for 2022, more data will provide more certainty. Results indicate that *E. coli*, nitrate and sediment are the main contaminates to be aware of. Dissolved reactive phosphorus (DRP) was also elevated at two sites. Analysis of all samples collected over 2021 and 2022 indicate that the concentration of *E. coli* and DRP concentrations were generally higher in spring and summer and lower over winter. Conversely, concentrations of nitrate and suspended sediment (as indicated by water clarity) were generally higher during winter and lower during summer.

* ***E. coli*** was low at 46-Waiteti stream-Upper (≤ 260) and elevated at all other sites. Lawrence Street Br had extremely high concentrations (33,600) and more than double the sub-catchment (SC) baseline (5yr baseline = 15,200). Concentrations peaked in spring and summer and were at their lowest in winter.
* **Nitrate** concentrations were below toxicity levels at all sites but exceeded regional PC1 targets at 6 out of 7 sites (PC1 targets = median 0.525 mg/L; 95th percentile ≤ 1.060 mg/L). Nitrate concentrations were lowest at 46-Waiteti Stream-Upper (median 0.41 mg/L; 95th percentile ≤ 0.51 mg/L) and were highest at 45-Mangaokewa stream (median 0.91 mg/L; 95th percentile ≤ 1.06 mg/L). Five sites had annual nitrate concentrations above SC baselines (5yr baseline = median 0.63 mg/L; 95th percentile ≤ 1.03 mg/L). Concentrations peaked in winter and were lowest in summer.
* **Ammonia** concentrations were exceptionally low at 4 out of 7 sites (median < 0.005 mg/L; 95th percentile ≤ 0.007 mg/L) and exceeded PC1 targets three sites (5-Mangawhauwhi Stm, 6-Waiteti Stm and Lawrence Street Br) (PC1 targets = median 0.005 mg/L; 95th percentile ≤ 1.014 mg/L).
* **The combined concentration of Nitrate and Ammonia** exceeded 0.5 mg/L at six out of seven sites. Ecological impacts, including problematic growth of algae and/or aquatic plants and loss of sensitive aquatic species are likely when the combined concentration of nitrate and ammonia regularly exceed 0.5 mg/L.
* **Dissolved reactive phosphorus (DRP)** concentrations were low at 5 out of 7 sites (median ≤ 0.009 mg/L; 95th percentile ≤ 0.017 mg/L) and elevated at two sites, 5-Mangawhauwhi Stm (median 0.011 mg/L; 95th percentile ≤ 0.011 mg/L) and Lawrence Street Br (median 0.013 mg/L; 95th percentile ≤ 0.023 mg/L). No sites had annual DRP concentrations which exceeded SC baselines (5yr SC baseline = median 0.13 mg/L; 95th percentile ≤ 0.028 mg/L). Concentrations were slightly higher in Spring and Summer and were at their lowest in Winter.
* **Water clarity** was good at Lawrence Street Br (0.88 m), relative to the national bottom line for Lawrence Street Bridge (0.61 m). Water clarity was poor at all other sites (between 0.45 m – 1.33 m), relative to the national bottom line for all other sites in the SC (1.34 m). Three sites (6-Waiteti Stm, 46-Waiteti stream and 47-Waiteti stream) had water clarity below the SC baseline (5yr SC baseline 0.87 m). Water clarity was lowest in winter and highest in summer, indicating a higher suspended sediment load during winter and a lower suspended sediment load in summer.





