## Awakino & Tasman – Annual River Monitoring Summary - 2024

Catchment monitoring by King Country River Care commenced in 2021. Initially, monitoring by KCRC covered three monitoring sites, sampled on a quarterly basis. In 2023 the number of KCRC sites was decreased to one site at Mangaorongo Stream. In addition, the Waikato Regional Council (WRC) has three monitoring sites in the Awakino & Tasman, which are monitored monthly. A water quality baseline was calculated from the time the catchment group was formed using five years (Jan 2015 – Dec 2019) of monthly monitoring data, collected at the three WRC sites. The location of the 6 monitoring sites in Awakino & Tasman are shown on Map 1 (see page 2).

2024 represents the fourth consecutive year of catchment monitoring. Water samples were collected on 14 Feb, 13 May, 22 August and 18 November, during stable weather to avoid any significant rainfall events. River flow strongly influences water quality and the river flow hydrograph for Awakino River is provided on page 5.

### Key Resources Being Lost from the Land

Monitoring results show the key resources being lost from the Awakino and Tasman catchments in 2024 were *E. coli* and dissolved reactive phosphorus (DRP). *E. coli* was elevated in 50% of sites and DRP was slightly elevated at all sites. Loss of DRP represents a loss of nutrients while elevated *E. coli* represents a loss of organic matter and nutrients as it is largely associated with animal manure in rural catchments.

The below water quality dials summarise the results collected in the Awakino & Tasman catchment. The dial on the left shows the baseline for the catchment, covering 5 years of regional council monitoring at three sites in the Awakino Catchment (off Manganui Road, Awakau Road junction and Gribbon Road). The dial on the right combines all data collected in 2024 and four sites, 37 samples in total. Arrows indicate either an increase or decrease in values compared to the sub-catchment baseline. An increase in water clarity is positive for river health while an increase in all other indicators may impair river health.

In 2024, nutrient indicators and water clarity/suspended sediment met national water quality limits while *E. coli* did not. Compared to the baseline – Water clarity was lower in 2024 and the concentration of dissolved reactive phosphorus was slightly higher (see Figure 1).

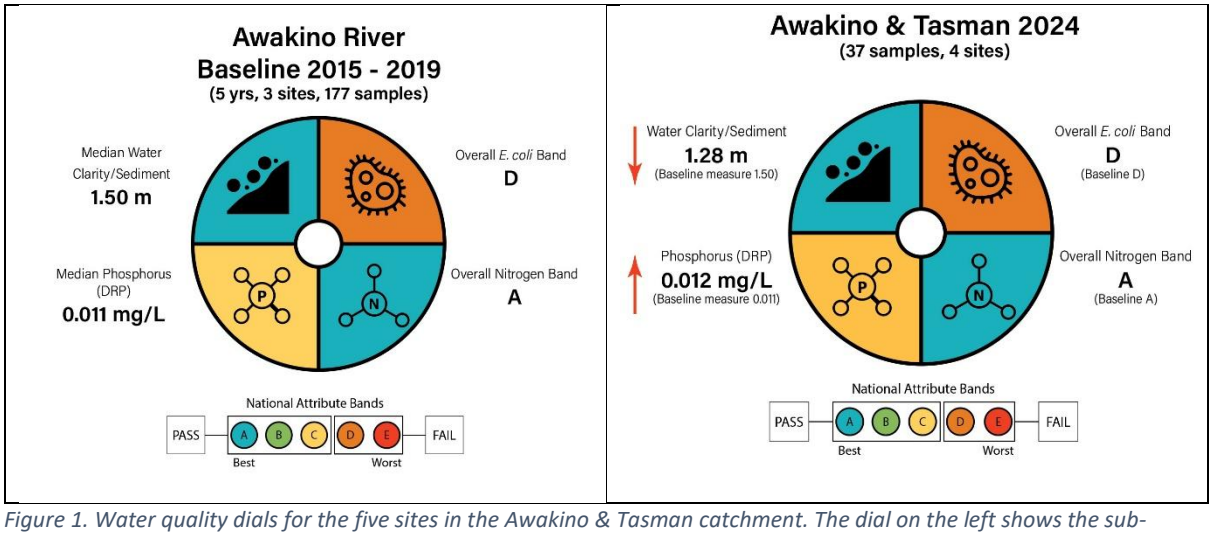


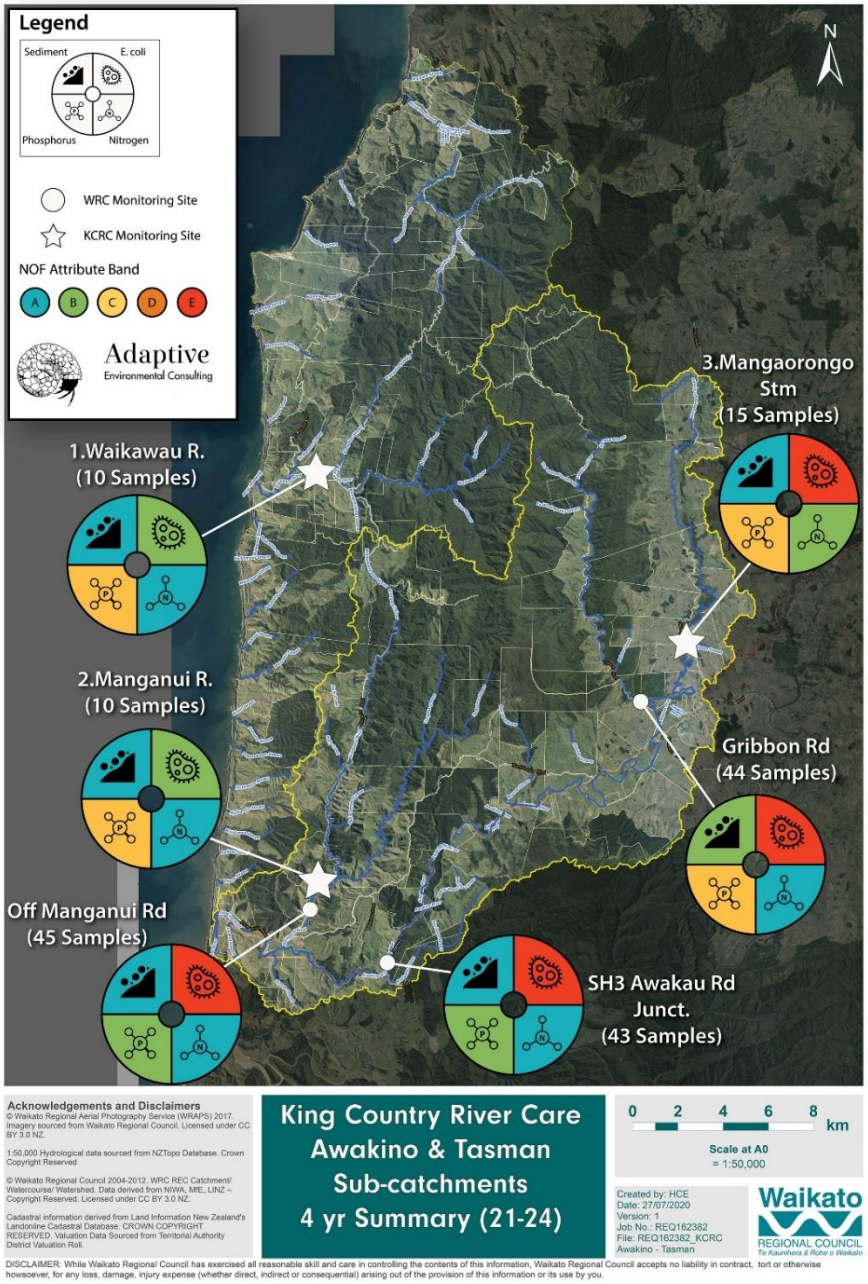

*Figure 1. Water quality dials for the five sites in the Awakino & Tasman catchment. The dial on the left shows the sub-catchment baseline (2015-2019) and the dial on the right combines results collected in the 2024 monitoring period.*

Water quality results have been assessed against the national freshwater attribute bands under the national policy statement for freshwater (NPS-FM 2020).

The overall *E. coli* band is based on the following four measures, the percentage of samples exceeding 540 (CFU/100ml), the percentage of samples exceeding 260 (CFU/100ml), the median value and the 95$^{th}$ percentile (or upper 5% of *E. coli* concentrations).

The overall nitrogen band is based on the following six measures, Nitrate Toxicity (median and 95$^{th}$ percentile), Ammonia Toxicity (median and maximum annual value) and Dissolved Inorganic Nitrogen (median and 95$^{th}$ percentile).

The dials on the map below show water quality data from six monitoring sites in the Awakino and Tasman catchments. Each dial reflects all data collected at the site since the KCRC monitoring programme in 2021, see Map 1 below.



*Map 1. Water quality monitoring results for 4 years of data at the three KCRC monitoring sites and the three WRC Sites in Awakino & Tasman.*

**Water Quality Tables**

Table 1 on the following page presents detailed results for the three monitoring sites over the 2024 period (1 KCRC site and 3 WRC sites). The results of the five-year water quality baseline (2015 – 2019) are shown on the bottom row.

## Which resources are being lost, and where is this occurring?

The key resources being lost from the catchment listed in order of significance were:

1. *E. coli*: Elevated at Mangaorongo Stream and SH3 Awakau Road Junction. Neither site meets national health limits for swimming.
2. Phosphorus: DRP concentrations are slightly elevated at all sites, Gribbon Road returned the highest concentrations. Elevated DRP has been consistent in the catchment throughout the four-year monitoring period, indicating that the geology and soils in the catchment are naturally predisposed to phosphorus loss.

Water quality results have been assessed under national (NPS-FM) water quality targets and have been colour coded as shown the adjacent key, Figure 4.

The overall *E. coli* band is based on the following four measures, the percentage of samples exceeding 540 and 260 (CFU/100ml), the median value and the 95$^{th}$ percentile (or upper 5% of *E. coli* concentrations).

The overall nitrogen band is based on the following six measures, Nitrate Toxicity (median and 95$^{th}$ percentile), Ammonia Toxicity (median and maximum annual value) and Dissolved Inorganic Nitrogen (median and 95$^{th}$ percentile).

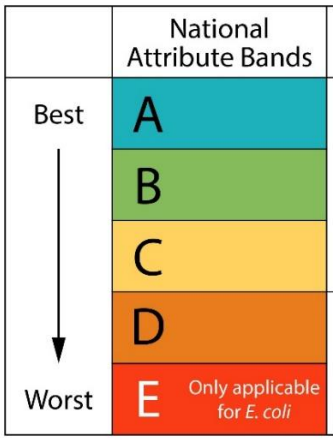



*Figure 2 Key for grading shown in Tables 1 to 3*

*Table 1) Water quality indicators for individual sites in the Awakino & Tasman catchment recorded over the 2024 monitoring period. Measured values have been assessed against the National Attribute Bands (NPS-FM, 2020).*

| AWAKINO RIVER AND TASMAN Annual Summary 2024 | Number of Samples | Human Health | | | | | Ecosystem Health | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Water Quality | | | | | | | | | Sediment | |
| | | *E. coli* /100 ml | | | | | Nitrate Toxicity (mg N/L) | | Ammonia Toxicity (mg N/L) | | Dissolved Inorganic Nitrogen-DIN (mg N/L) | | Overall Nitrogen Band | Dissolved Reactive Phosphorus (mg/L) | | Water Clarity Value[1] | National Bottom Line |
| KCRC SITES Lab: Analytica | | % Exc. > 540 | % Exc. > 260 | Median | 95th Percentile | Overall Band | Median | 95th Percentile | Median | Annual Maximum | Median | 95th Percentile | | Median | 95th Percentile | Median | |
| 3-Mangaorongo Stm | 3 | 67% | 67% | 700 | 4,660 | E | 0.43 | 0.58 | 0.005 | 0.010 | 0.43 | 0.58 | A | 0.011 | 0.011 | 0.95 | 0.61 |
| WRC SITES Lab: Hills | | | | | | | | | | | | | | | | | |
| Gribbon Road | 11 | 9% | 18% | 90 | 460 | B | 0.10 | 0.15 | 0.002 | 0.003 | 0.10 | 0.16 | A | 0.014 | 0.016 | 2.69 | 2.22 |
| SH3 Awakau Road Junction | 11 | 18% | 18% | 200 | 2,850 | D | 0.26 | 0.36 | 0.003 | 0.012 | 0.27 | 0.37 | A | 0.011 | 0.013 | 1.28 | 0.61 |
| Off Manganui Road | 12 | 8% | 25% | 75 | 592 | B | 0.13 | 0.20 | 0.002 | 0.00 | 0.13 | 0.21 | A | 0.012 | 0.015 | 1.12 | 0.61 |
| **Awakino R. Baseline (Jan-2015 to Dec-2019)** | **177** | **14%** | **31%** | **140** | **2,050** | **D** | **0.13** | **0.40** | **0.009** | **0.057** | **0.14** | **0.42** | **A** | **0.011** | **0.018** | **1.50** | **0.61** |

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

**River Flow Graph**

The graph below shows river flow recorded by Waikato Regional Council at Awakino River between 1 Jan 2023 and 31 Dec 2024. The black arrows indicate quarterly sampling days (Figure 2).

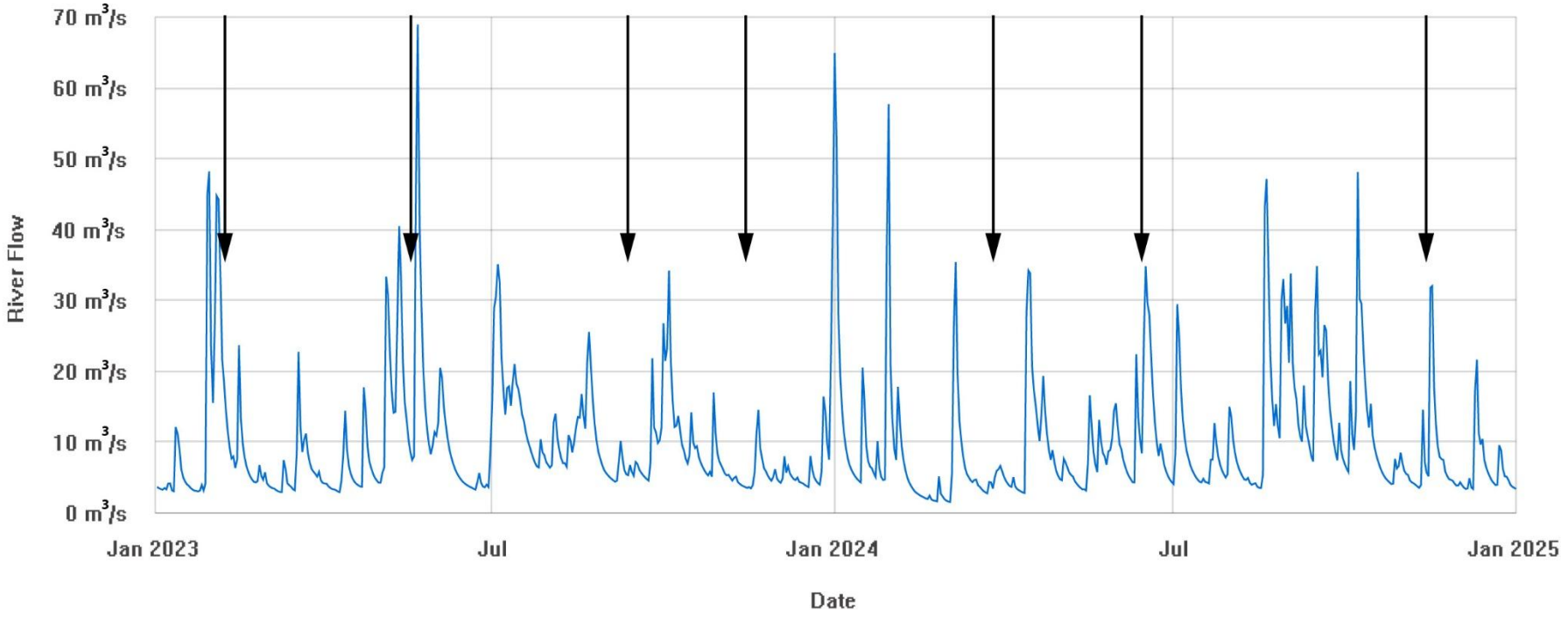



*Figure 2. River flow recorded by Waikato Regional Council at Awakino Rover. The black arrows indicate catchment monitoring days.*