Adaptive Environmental Consulting

Kawhia Harbour – Annual River Monitoring Summary - 2025

Catchment monitoring by the Kawhia Harbour Care commenced in May 2022. It covers eight sites sampled on a quarterly basis. There are five monitoring sites in North Kawhia and four sites in South Kawhia. Waikato Regional Council (WRC) has one monitoring site in the lower Oparau River (North Kawhia), which is monitored monthly. A water quality baseline was calculated from the time the catchment group was formed using five years of monitoring data (Jan 2016 – Dec 2020). The data was collected monthly at the WRC site. The location of the five monitoring sites in North Kawhia are shown on Map 1 (page 2) and the four sites in South Kawhia are shown on Map 2 (page 4).

2025 represents the fourth consecutive year of catchment monitoring. Water samples were collected on 3 March, 15 May, 7 August and 15 December 2025. Samples were collected during stable weather conditions to avoid any significant rainfall events. River flow strongly influences water quality, the river flow graph for Oparau River is provided on page 7.

North Kawhia Catchment – Key Resources Being Lost from the Land

Monitoring Results show that the key resources being lost from the North Kawhia catchment are Sediment and *E. coli*. *E. coli* represents a loss of organic matter and nutrients, and it is largely associated with animal manure in rural catchments. Sediment loss represents the loss of soil and nutrients.

The below water quality dials summarise the results collected from the five sites in the North Kawhia catchment. The dial on the left shows the baseline for the catchment, calculated from five years of regional council monitoring at Oparau River, representing 58 individual samples. The dial on the right combines all data collected in the North Kawhia catchment in 2025, representing 27 samples. Arrows indicate either an increase or decrease in values compared to the sub-catchment baseline levels. An increase in water clarity is positive for river health while an increase in all other indicators may impair river health.

In 2025, All categories met national water quality limits. Compared to the baseline – Water clarity and Nitrogen are worse while Dissolved Reactive Phosphorus (DRP) and *E. coli* measurements are better (see Figure 1).

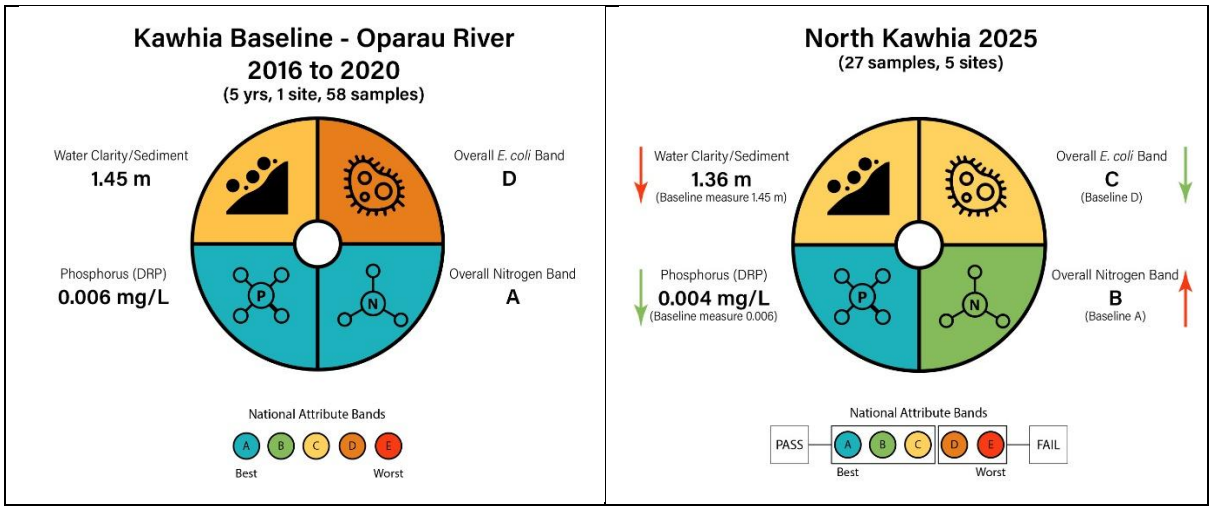
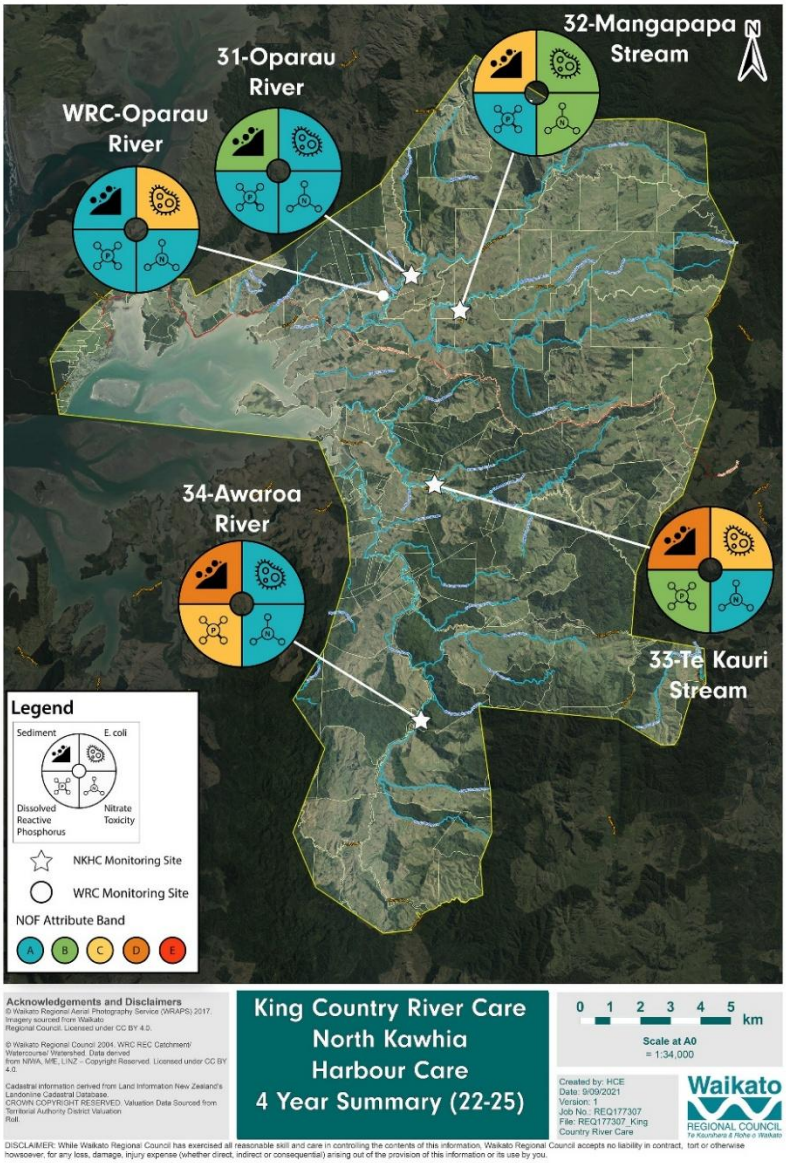


Figure 1. Water quality dials for the five sites in the North Kawhia catchment. The dial on the left shows the sub-catchment baseline (2016-2020) and the dial on the right combines results collected in the 2025 monitoring period.

The above 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 95th percentile (or upper 5% of *E. coli* concentrations). The overall nitrogen band is based on the following six measures, Nitrate Toxicity (median and 95th percentile), Ammonia Toxicity (median and maximum annual value) and Dissolved Inorganic Nitrogen (median and 95th percentile).

The map below covers four years of monitoring in the North Kawhia sub-catchment. Each dial shows the combined water quality results from five sites monitored since the Kawhia Harbour Care monitoring programme commenced in 2022. The four catchment group sites (31 to 34) represent 15 samples and the WRC site on Oparau River represents 44 samples, collected over four years, see Map 1 below.

Detailed results for 2025 at each site are presented in Table 1 on page 6.



Map 1. Water quality monitoring results for four years of data at the four catchment group monitoring sites and the one WRC Site at Oparau River in North Kawhia.

South Kawhia– Key Resources Being Lost from the Land

Monitoring results show the key resource being lost from the South Kawhia catchment is *E. coli*. *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 from the 4 sites in the South Kawhia catchment. The dial on the left shows the baseline for the catchment, covering 5 years of regional council monitoring at Oparau River, representing 58 samples. Note the national bottom line for water clarity/suspended sediment has been adjusted on the baseline dial to match the river environment classification for south Kawhia (Hard Sedimentary). The dial on the right combines all data collected at the four sites in 2025, representing 16 samples. Arrows indicate either an increase or decrease in values compared to the sub-catchment baseline levels. An increase in water clarity is positive for river health while an increase in all other indicators may impair river health.

In 2025, nutrient and water clarity/suspended sediment indicators met national water quality limits while *E. coli* did not. Compared to the (Oparau River) baseline – Water clarity was slightly better, nutrient levels were higher and there was no difference in the overall rating for *E. coli* (see Figure 2).

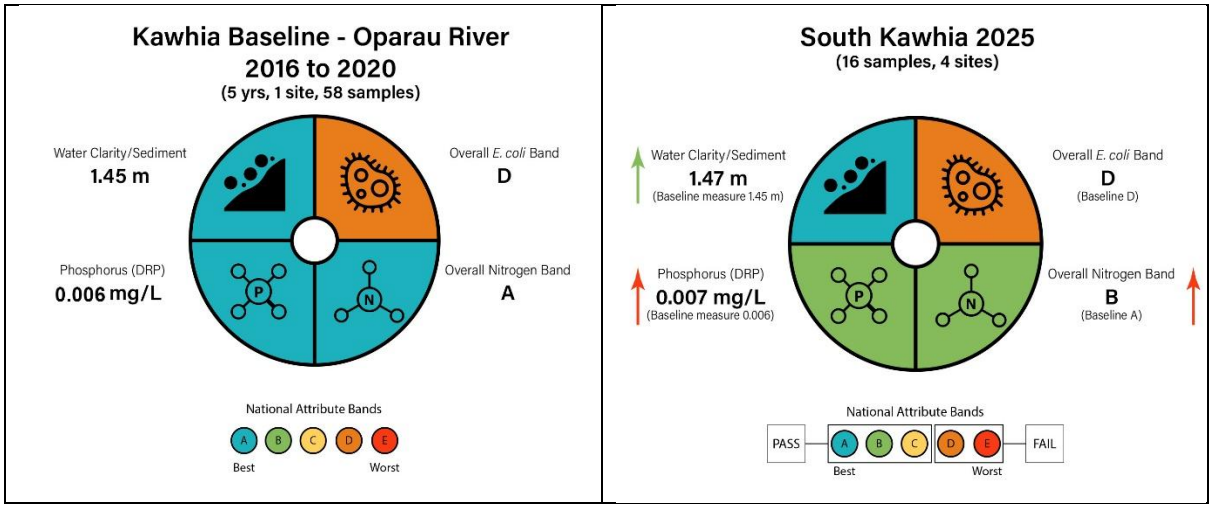
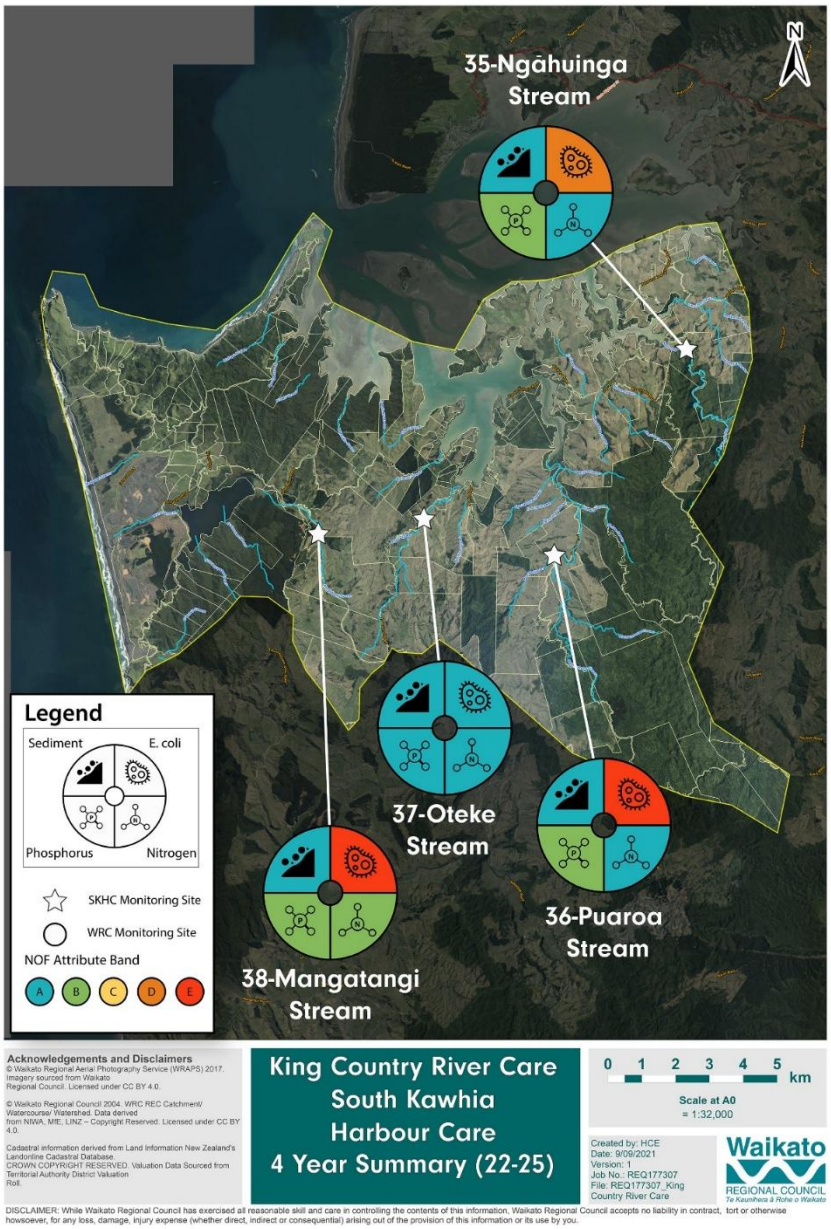


Figure 2. Water quality dials for the four sites in the South Kawhia catchment. The dial on the left shows the sub-catchment baseline (2016-2020) and the dial on the right combines results collected in the 2024 monitoring period.

The above 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 95th percentile (or upper 5% of *E. coli* concentrations). The overall nitrogen band is based on the following six measures, Nitrate Toxicity (median and 95th percentile), Ammonia Toxicity (median and maximum annual value) and Dissolved Inorganic Nitrogen (median and 95th percentile).

The map below covers four years of monitoring in the South Kawhia sub-catchment. Each dial shows the combined water quality results from four sites monitored since the Kawhia Harbour Care monitoring programme commenced in 2022. The four catchment group sites (31 to 34) represent 15 samples collected over four years, see Map 2 below.

Detailed results for 2025 at each site are presented in Table 2 on page 6.



Map 2. Water quality monitoring results for four years of data at the four monitoring sites in South Kawhia catchment.

Water Quality Tables

Tables 1 and 2 on the following pages present detailed results for each site covering five water quality indicators – *E. coli,* nitrogen, dissolved reactive phosphorus, temperature and sediment (reflected by water clarity).

Results for the five sites in North Kawhia, including the Waikato Regional Council monitoring site are presented in Table 1. The results of the five-year water quality baseline (2016 – 2020) are also presented here. The baseline was calculated from five years of monthly regional council monitoring data, collected at the Oparau River site.

The results for the four sites across South Kawhia are presented in Table 2.

Which Resources are Being Lost and Where are the Hotspots

The key resources being lost from the **North Kawhia** catchment in 2025, listed in order of significance, were:

1. **Sediment:** Suspended sediment – as reflected by a reduction in water clarity - was elevated in Te Kauri Stream and slightly elevated at all other sites. The highest concentrations of suspended sediment were recorded for Te Kauri stream and the lowest concentrations were recorded in Mangapapa Stream.
2. ***E. coli*:** Slightly elevated in three sites, Mangapapa Stream and both Oparau River sites. The highest concentration was recorded at the WRC Oparau River site and the lowest concentration was recorded in Awaroa River.

The key resource being lost from the **South Kawhia** catchment in 2025 was *E. coli.*

1. ***E. coli*:** Two sites had elevated *E. coli* concentrations, Ngāhuinga Stream and Puaroa Stream in Whiro valley and Mangatangi Stream had slightly elevated concentrations. The highest *E. coli* measurements were recorded at Puaroa Stream and the lowest were recorded in the Oteke stream.

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 95th percentile (or upper 5% of *E. coli* concentrations).

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

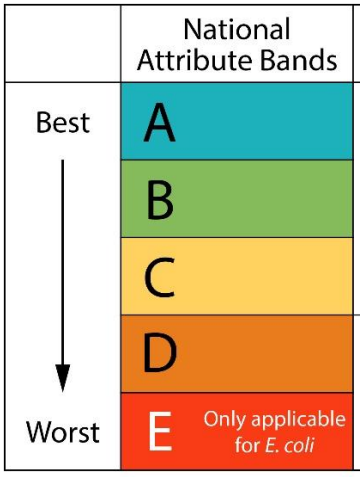


Figure 3 Key for grading shown in Tables 1 to 2

Table 1) Water quality indicators for individual sites in the North Kawhia catchment recorded over the 2025 monitoring period. Measured values have been assessed against the National Attribute Bands (NPS-FM, 2020).

North Kawhia 2025 Summary	Number of Samples	*E. coli* /100 ml					Ecosystem Health										
							Water Quality										
							Nitrate Toxicity (TON mg		Ammonia Toxicity (mg N/L)		Dissolved Inorganic		Overall Nitrogen Band	Dissolved Reactive		Sediment	
KCRC SITES Lab: Analytica		% Exc. > 540	% Exc. > 260	Median	95th Percentile	Overall Band	Median	95th Percentile	Median	Maximum	Median	95th Percentile		Median	95th Percentile	Median	
31-Oparau R.	4	25%	25%	150	547	C	0.16	0.31	<0.005	0.005	0.16	0.31	A	0.005	0.009	1.45	
32-Mangapapa Str	4	25%	25%	185	502	C	0.58	0.77	<0.005	0.010	0.59	0.78	B	0.002	0.004	1.54	1.34
33-Te Kauri Str	4	0%	25%	145	308	B	0.43	0.59	<0.005	0.005	0.44	0.59	B	0.008	0.009	0.95	
34-Awaroa R.	4	0%	0%	97	178	A	0.18	0.36	<0.005	0.005	0.18	0.36	A	0.014	0.021	1.50	
WRC SITES Lab: Hills																	
Oparau River (658_1)	11	9%	36%	230	810	C	0.20	0.39	<0.005	0.005	0.20	0.39	A	0.002	0.009	1.36	1.34
Oparau River Baseline (Jan-2016 to Dec-2020)	58	16%	34%	205	**2,545**	**D**	**0.10**	**0.38**	**<0.01**	**0.023**	**0.11**	**0.37**	**A**	**0.006**	**0.010**	**1.45**	**1.34**

Table 2) Water quality indicators for individual sites in the South Kawhia catchment, recorded over the 2025 monitoring period. Measured values have been assessed against the National Attribute Bands (NPS-FM, 2020).

South Kawhia - 2025 Summary	Number of Samples	*E. coli* /100 ml					Ecosystem Health										
							Water Quality										
							Nitrate Toxicity (TON mg		Ammonia Toxicity (mg N/L)		Dissolved Inorganic		Overall Nitrogen Band	Dissolved Reactive		Sediment	
KCRC SITES Lab: Analytica		% Exc. > 540	% Exc. > 260	Median	95th Percentile	Overall Band	Median	95th Percentile	Median	Maximum	Median	95th Percentile		Median	95th Percentile	Median	
35-Ngāhuinga Stream	4	25%	75%	325	1,161	E	0.31	0.39	<0.005	0.005	0.32	0.39	A	0.008	0.013	1.32	
36-Puaroa Stream (Owhiro valley)	4	50%	75%	500	1,373	E	0.20	0.33	<0.005	0.017	0.21	0.33	A	0.007	0.015	1.10	0.61
37-Oteke Stream	4	18%	32%	86	137	B	0.18	0.46	<0.005	0.008	0.18	0.46	A	0.007	0.012	2.13	
38-Mangatangi Stream	4	25%	25%	250	573	C	0.30	0.78	<0.005	0.010	0.31	0.78	B	0.011	0.072	1.77	
WRC SITES Lab: Hills																	
Oparau River Baseline (Jan-2016 to Dec-2020)	58	16%	34%	205	**2,545**	**D**	**0.10**	**0.38**	**<0.01**	**0.023**	**0.11**	**0.37**	**A**	**0.006**	**0.010**	**1.45**	**1.34**

River Flow Graph

The graph below shows river flow recorded by Waikato Regional Council at Oparau River between 01 January and 31 December 2025. The black arrows indicate quarterly sampling days (Figure 3).

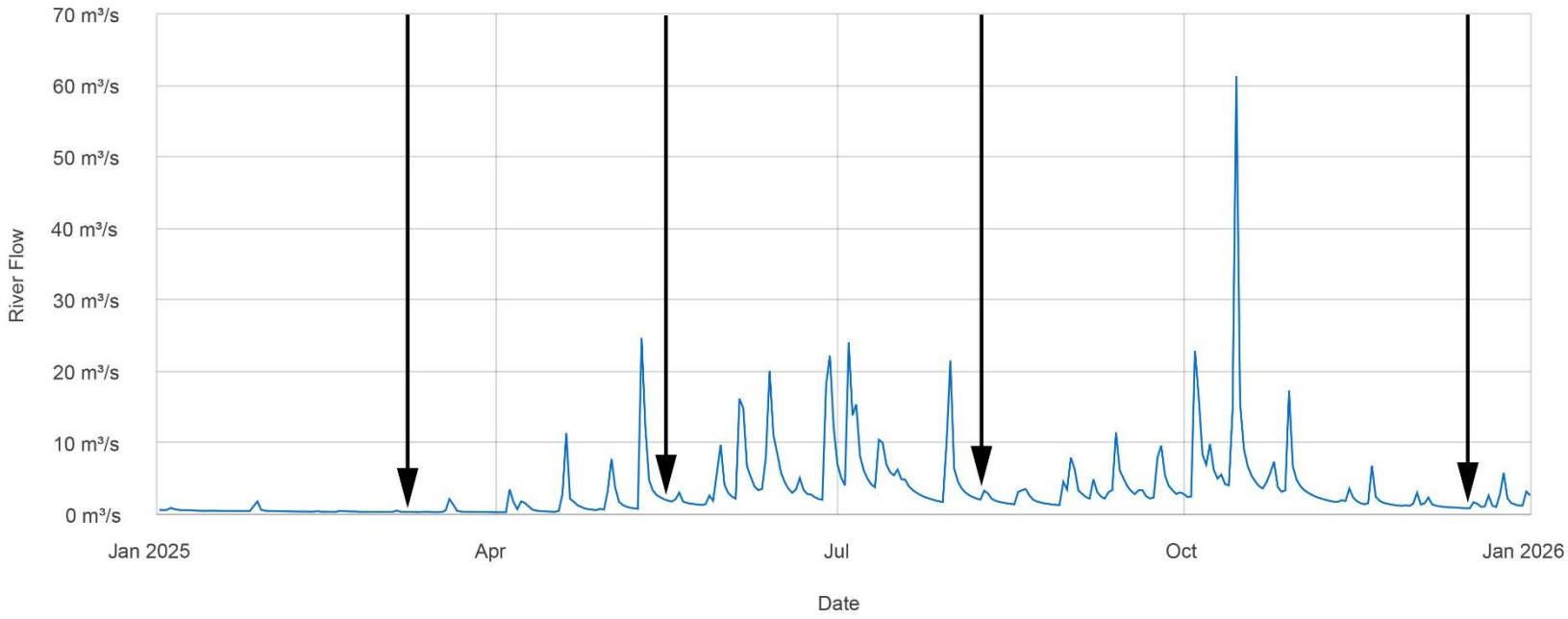


Figure 3. River flow recorded by Waikato Regional Council at Oparau River. The black arrows indicate catchment monitoring days.