

Kaiate Falls water quality

2007 – current

- Kaiate Falls is a popular swimming area in the Waitao catchment, near Welcome Bay.
- A permanent health warning has been issued by Toi te Ora Public Health because of persistently high levels of *E. coli* faecal bacteria in Kaiate Stream.
- Swimming in water with high levels of *E.coli* bacteria can cause diarrhoea, vomiting, skin, eye and ear infections.
- 48% of Kaiate Stream *E. coli* samples fall in the 'Safe' category, 24% in 'Caution' and 29% in the 'Unsafe' category.
- Sources of *E. coli* identified as sheep, cow and birds.
- High *E. coli* happens both after rain and during dry periods. Elevated *E. coli* found in all tributaries sampled.

Regional Council has been working with local landowners and technical experts to identify and address sources of water contamination in the Kaiate Falls catchment for the past decade.

The first riparian fencing to exclude stock was started in 2010 with more fencing, planting and pest plant control being completed in the following years.

Throughout much of this catchment, the Waitao Landcare Group, supported by the Regional Council,

has been actively working to protect waterway margins so that water quality and wildlife habitat is improved. They have held field days to help educate the local community, provided plants, held planting days, and helped landowners with fencing. Approximately 60 percent of the main stem rivers in the catchment are now fenced.

Summer swimming water monitoring has shown improving trends in *E.coli* bacteria levels from 2007 until the 2014-15 summer (Figure 1). However unsafe levels of *E.coli* bacteria have been regularly recorded each summer since then.

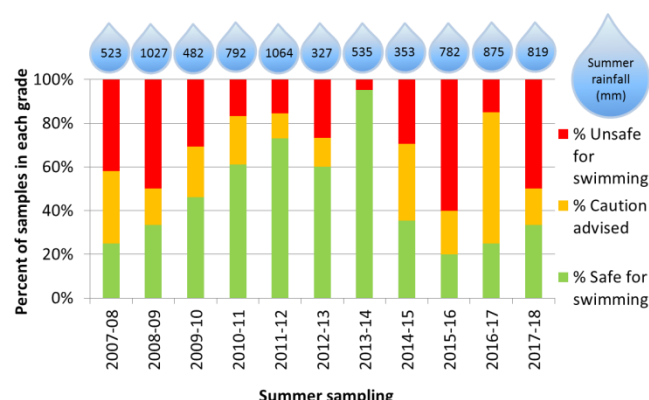
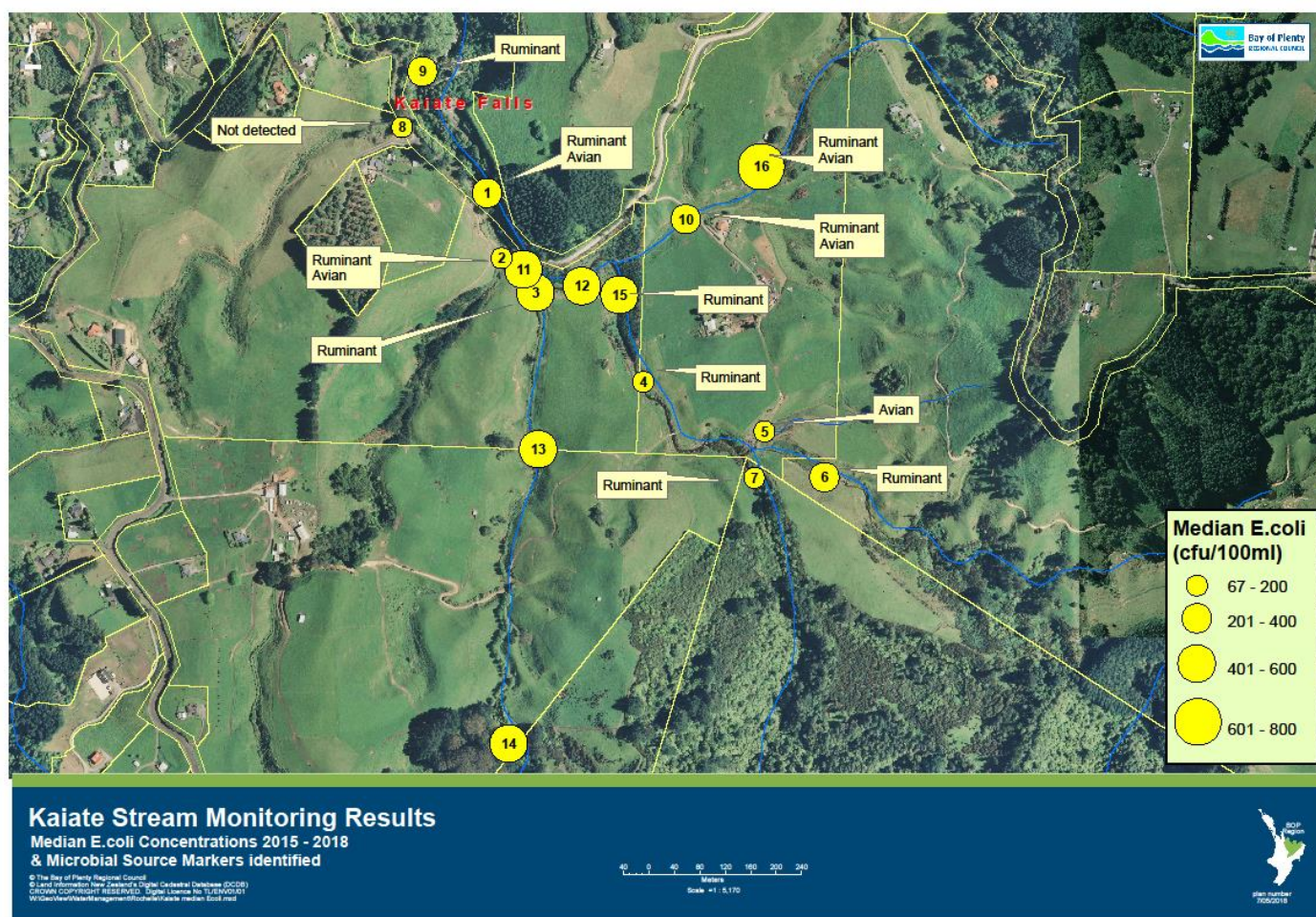


Figure 1: Percent of samples within each category of the microbial water quality guidelines. *E. coli* samples are in cfu/100mL


Other water quality indicators such as temperature, nitrate and ammonia levels in Kaiate Stream are good compared to recommended guidelines and indicate a healthy ecosystem. But the Kaiate Stream is *not swimmable* by national guidelines because of high *E. coli* bacteria levels.

Ecosystem Health		Human Health	
A	Nitrate	D	<i>E. coli</i>
A	Ammonia	Grades A-C are swimmable, D and E are not swimmable.	
B	Temperature		



Monitoring at 16 sites in the catchment upstream of the Kaiate Falls shows elevated bacteria in many locations. The main sources of *E. coli* are ruminant (from cows and sheep) and avian (from birds). Bay of Plenty Regional Council declared this area a Special Management Area in 2017 and is continuing work with landowners to find solutions to the ongoing bacteria contamination

Monitoring results for all water quality indicators measured at the Kaiate Falls Road bridge (site 1 in map above) from 2007 to 2008 are shown in the table following.



Variable	Number of samples	Average	Median	Minimum	Maximum	Standard error
<i>E. coli</i> (cfu/100ml)	351	721	370	1	38000	117
Sediment <i>E. coli</i> (cfu/100ml)	1	130	130	130	130	
Dissolved Oxygen (mg/L)	29	9.99	9.93	8.86	12.16	8.94
Dissolved Oxygen Sat (%)	29	101	100	87	113	94
pH (pH Units)	11	7.06	7.07	6.69	7.44	0.07
Water Temperature (°C)	67	14.88	16.00	8.50	21.06	0.43
Ammoniacal N (g/m ³)	10	0.01	0.01	0.01	0.03	0.00
Nitrite Nitrate Nitrogen (g/m ³)	9	0.36	0.42	0.09	0.56	0.06
Total Nitrogen (g/m ³)	10	0.40	0.43	0.14	0.60	0.05
DRP (g/m ³)	10	0.01	0.01	0.01	0.02	0.00
Total Phosphorus (g/m ³)	10	0.02	0.02	0.02	0.03	0.00
Total Suspended Solids (g/m ³)	10	2.30	2.10	1.22	5.30	0.39
Turbidity (NTU)	40	1.01	0.95	0.66	2.06	0.05