Tasman Valley Stream Faecal Pollution Investigation
Short Report
December, 2019

Introduction:

Sampling of the faecal indicator bacteria *E.coli* across nine sites in Tasman Valley Stream was initiated in response to continued high concentrations found at the 'State of the Environment' Monitoring site upstream of Jester House. The objectives and study design were similar to an investigation carried out in 2010-11.

Microbial source tracking shows ruminant animals to be a consistent source over all four samples collected over the period from May 2010 to May 2019. In addition, a human source was reported on two occasions and wildfowl on only one occasion. No other sources were tested for.

Tasman Valley Stream is not used for contact recreation and impacts on the estuary are likely to be minimal due to dilution. Sampling of the water in the estuary at the boat ramp at Baigents Reserve around high tide, in general do not show concern (95th percentile over last 17 years is 99 Enterococci/100ml (out of 131 samples); of the three samples that exceeded 130 Enterococci/100ml in last 5 years, two of these were related to ex-cyclone Gita which caused extensive coastal erosion and widespread flooding).

Methods:

Sampling occurred from 14/11/2019 to 9/12/2019 at a range of flows at nine sites within the Tasman Valley Catchment (see Figure 2 for a location map). Four of those sites were the same as a similar investigation in 2010-11.

Samples were collected in a range of weather conditions (see Figure 1 below) and according to standard protocols and analysed for *E.coli* and faecal coliforms at Hills Lab (only *E.coli* data is presented in this report).

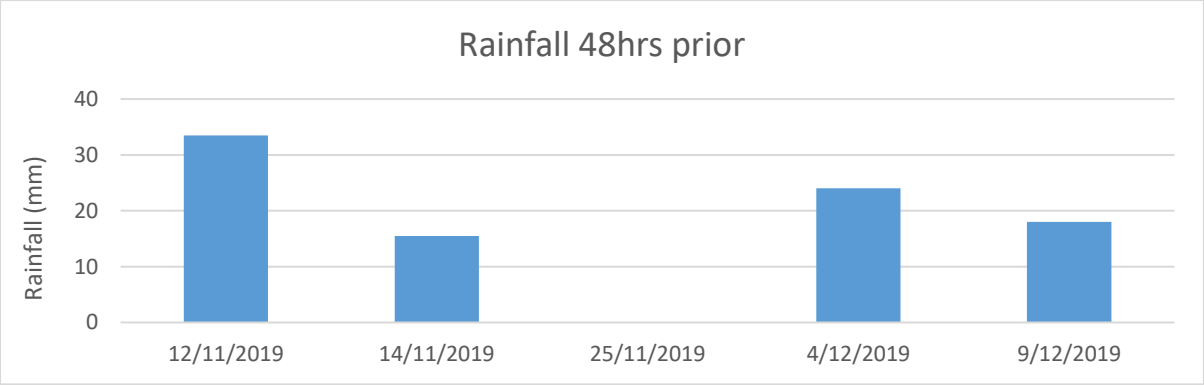


Figure 1. Rainfall recorded at Moutere at Kelling's Rd 48 hours prior to E.coli sampling.

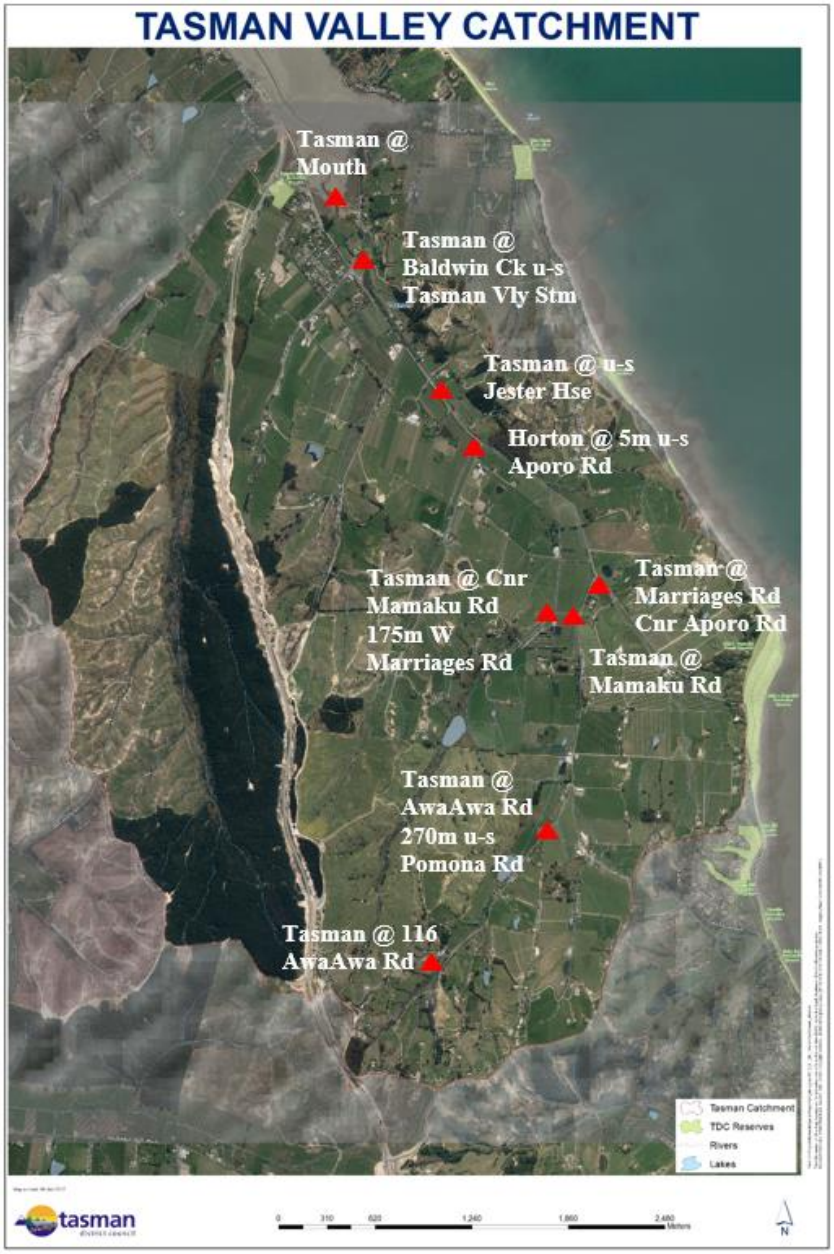


Figure 2. Location of faecal water quality monitoring sites in Tasman Valley Catchment

Results and Discussion:

The results are shown in the graph on Figure 3. Figure 4 shows median results for each site plotted on a map in categories coloured from green to red representing good to poor water quality.

The highest levels were towards the upper catchment near AwaAwa Rd and were lowest in Tasman Valley Stream toward the mouth where levels have likely become diluted.

The greatest source of faecal pollution was found in the upper catchment from Mamaku Valley Stream. At the site on Mamaku Road near the intersection of Marriages Road, all results exceeded the threshold for stock drinking water and secondary contact. This was the only site to exceed the threshold after a dry period (sampled on 25/11/2019). 2011 sampling of the Tasman Valley Catchment also showed this to be a problem area. The site had the second highest median at 1500/100ml from 2011 and 2400/100ml median for this investigation. Upstream of Mamaku road at AwaAwa Road 270m u-s of Pomona Rd, results exceeded the threshold 50% of the surveying period. This is likely contributing to the higher levels at Mamaku Road, but it would appear that there are additional sources downstream of this point.

Results from the Jester House site showed similar high levels in this study as for the long-term record.

Tributaries of the Tasman Valley Stream have also shown high *E.coli* levels. Horton Valley stream exceeded the threshold 50% of the surveying period. Sampling in 2011 of Tasman Valley Catchment also showed Horton Valley Stream to have high concentrations with a median of 850/100ml. Baldwin Creek which flows near Tasman Store to confluence near Kina Beach Road also showed high levels, exceeding the threshold. This likely reflects the higher density of residential dwellings and therefore more risk of septic tank failures.

The tributary up Mamaku Valley (Tasman at Cnr Mamaku Rd 175m W Marriages Rd) recorded the highest results of all sites from the 2010/11 investigation, with a median of 1800/100ml. 2019 results showed improvement in this site with a median of 510/100ml. This was the third lowest site recorded in 2019. This could be a result of reduction in cattle access to streams in the area.

Higher rainfall within 48 hours prior to sampling correlated with high *E.coli* results. Sampling on the 14/11/2019 and 04/12/2019 had the highest E.coli results for most sites and experienced 15.5mm and 24mm of rainfall within 48 hours prior to sampling respectively.

Due to cost, microbial source tracking analysis was not undertaken at all sites. Therefore it cannot be determined if the sources of faecal bacteria in this catchment are from human or animal effluent. It is assumed that the likely source of faecal bacteria is human from faulty septic tank systems.

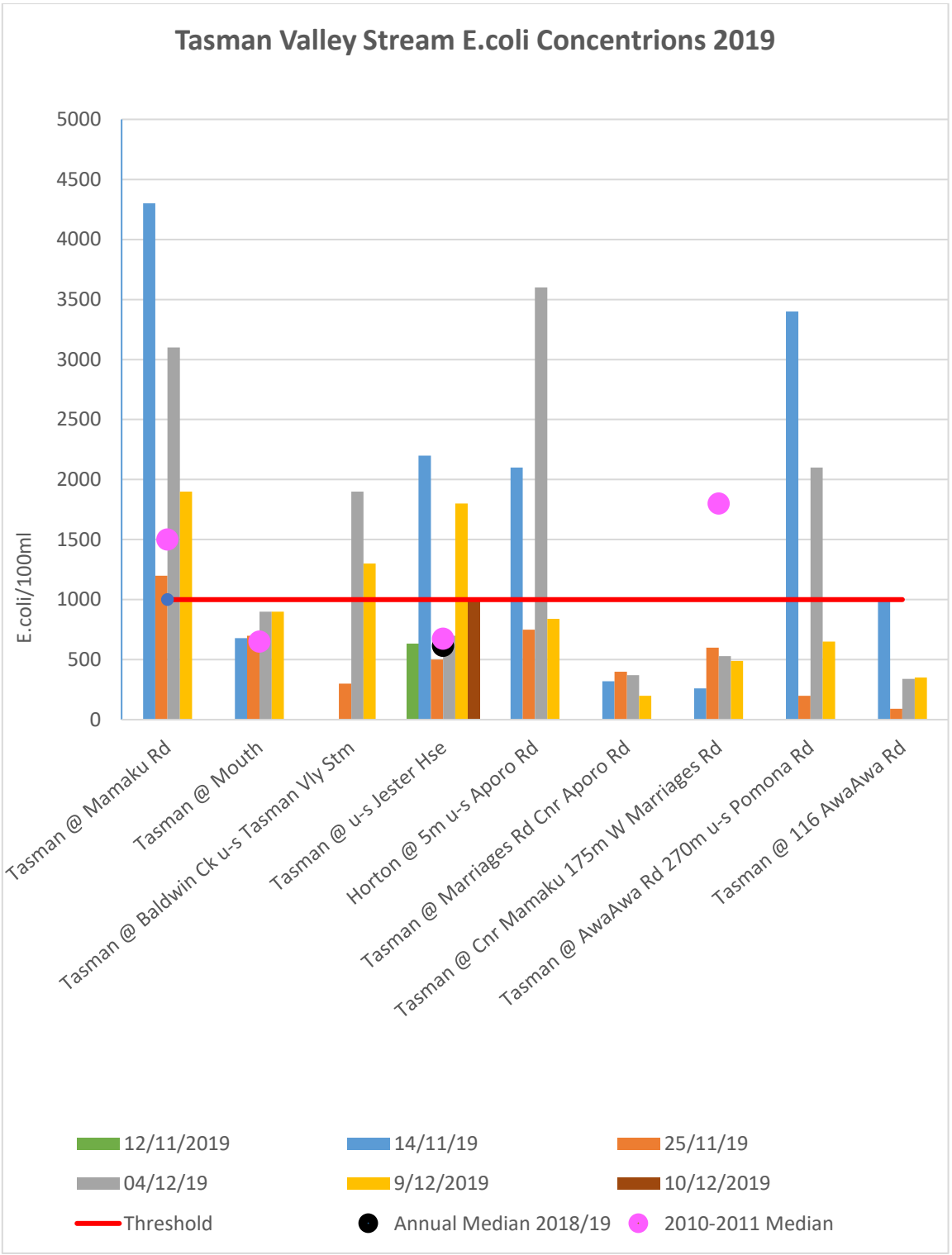
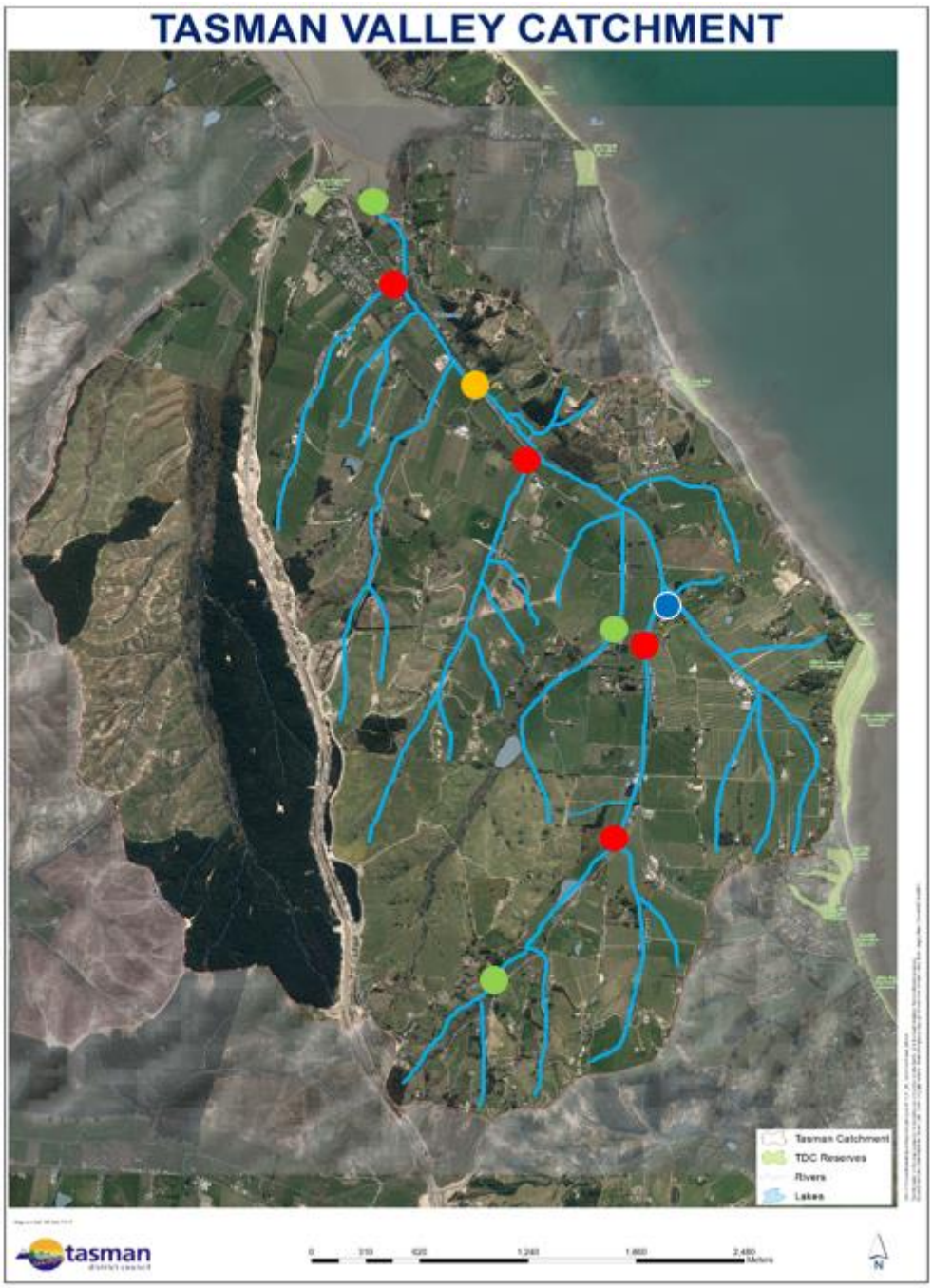


Figure 3. E.coli results from Tasman Valley Stream (E.coli/100ml). Threshold for stock drinking water is set at 1000/100ml. The Medians from the 2010/11 study are shown and the annual median for the SOE site at u-s Jesters Hse is also shown.



	Median E.coli/100ml	Risk of campylobacter infection
Blue	≤540	1%
Green	≤1000	2%
Orange	≤1200	>3%
Red	>1200	>5%

Figure 4. Median E.coli results for all survey sites on Tasman Valley Stream and tributaries. Table with key for colours and corresponding risk of campylobacter infection.

Recommendations:

1. The information provided in this report should be presented to the community (eg in the form of a mailed flyer) and advising that a septic tank survey will be undertaken in parts of the catchment.

2. An investigation of residential septic tanks should be undertaken in the upper catchment in the AwaAwa Road area (particularly upstream of the Mamaku Rd site) and in the Baldwin Creek catchment.