

2025 Mary River

# Catchment Crawl

Summary of Results



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## The Catchment Crawl is designed to provide a snapshot of water quality along the Mary River at the same time each year

19 sites along the Mary River were sampled across Jinibara, Kabi Kabi and Butchulla Country during the 23<sup>rd</sup> annual Catchment Crawl held on the 8<sup>th</sup> and 9<sup>th</sup> of October, 2025. Testing included general physical chemistry (dissolved oxygen, electrical conductivity, pH, turbidity and temperature), Escherichia coli (E. coli), nutrients (nitrogen and phosphorus) and total suspended solids. Riparian zone condition and aquatic plants were also recorded at each site.

All results were compared to Queensland Water Quality Guidelines\*. Results indicate that water quality was in reasonable condition along the Mary River.

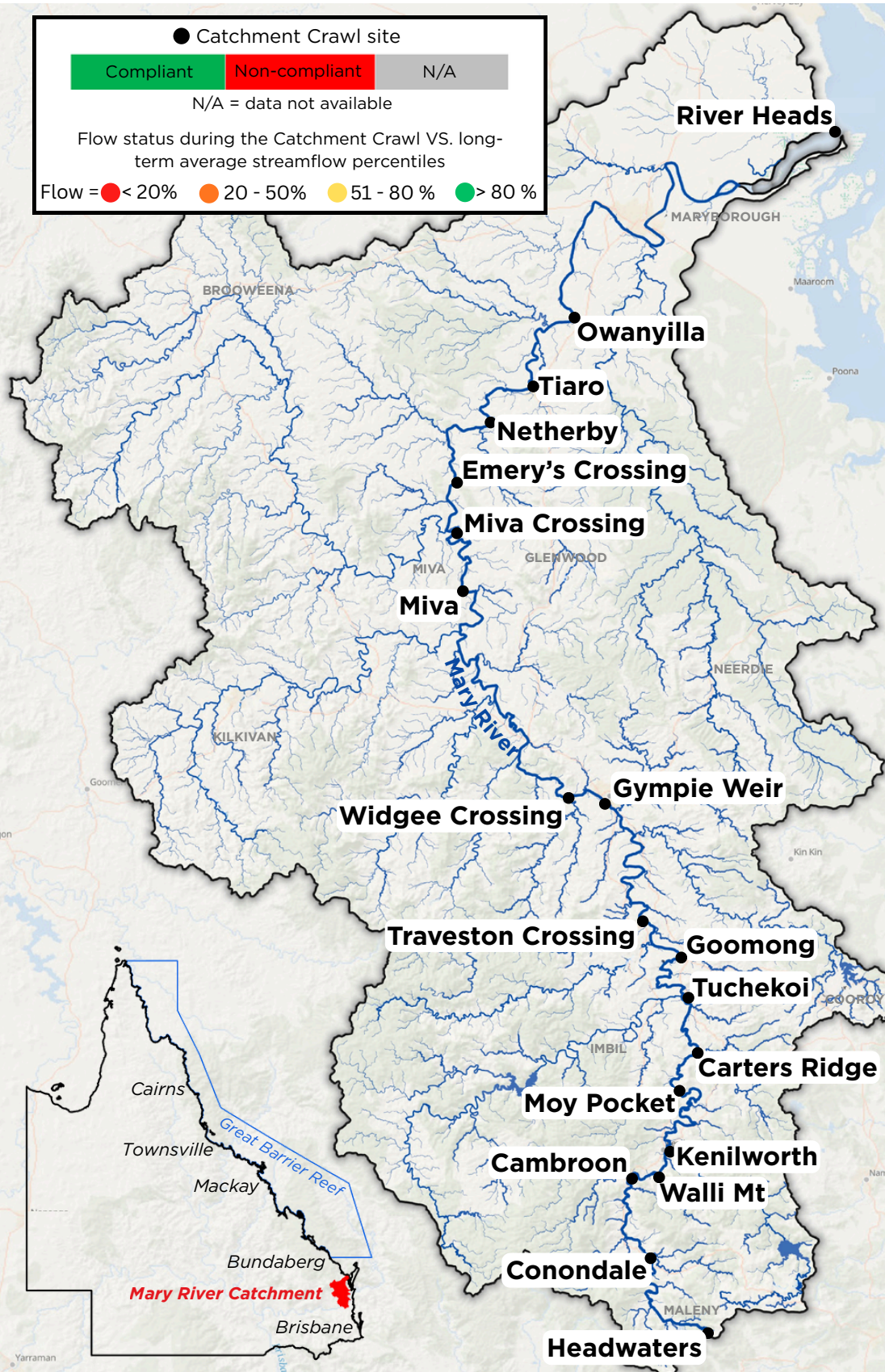
● Catchment Crawl site

Compliant	Non-compliant	N/A
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N/A = data not available

Flow status during the Catchment Crawl VS. long-term average streamflow percentiles

Flow = ● < 20%   ● 20 - 50%   ● 51 - 80%   ● > 80%



Site	Flow	DO	EC	pH	Turb	E.coli
River Heads	●	●	●	●	●	●
Owanyilla	●	●	●	●	●	●
Tiaro	●	●	●	●	●	●
Netherby	●	●	●	●	●	●
Emery's Crossing	●	●	●	●	●	●
Miva Crossing	●	●	●	●	●	●
Miva	●	●	●	●	●	●
Widgee Crossing	●	●	●	●	●	●
Gympie Weir	●	●	●	●	●	●
Traveston Crossing	●	●	●	●	●	●
Goomong	●	●	●	●	●	●
Tuchekoi	●	●	●	●	●	●
Carters Ridge	●	●	●	●	●	●
Moy Pocket	●	●	●	●	●	●
Kenilworth	●	●	●	●	●	●
Carters Ridge	●	●	●	●	●	●
Walli Mt	●	●	●	●	●	●
Cambroon	●	●	●	●	●	●
Walli Mt	●	●	●	●	●	●
Conondale	●	●	●	●	●	●
Headwaters	●	●	●	●	●	●

# Weather & Streamflow

## ***Weather and streamflow can greatly influence water chemistry***

Warm air temperatures and continued dry conditions resulted in low streamflow across the Mary River Catchment in the lead-up to the 2025 Catchment Crawl. Only light rainfall was recorded through September and early October, producing little runoff and leaving many sites with very low flow. The extended dry period allowed water temperatures to rise, ranging from 19°C in the upper catchment to nearly 29°C downstream. This was the second hottest Crawl on record, just below 2017 levels and similar to 2008. These warm, settled conditions reflected the persistence of low-flow regimes across much of the catchment.

## Results

### **Dissolved Oxygen (DO)**

Sites from Tuckekoi to Gympie were not compliant with DO guidelines, forming a distinct stretch of supersaturated readings (> 110%sat) along the mid-catchment. This pattern is likely the result of very low streamflow and warm water temperatures promoting algal growth and photosynthesis, which elevated DO levels in the afternoon. A few other sites recorded slightly low DO, consistent with stagnant or slow-moving conditions observed during the Crawl.

### **Electrical Conductivity (EC)**

Several downstream sites were not compliant with EC guidelines, showing elevated conductivity compared to upstream sites. Increased EC levels at Miva through to Owanyilla are likely due to low streamflow and evaporation concentrating salts in the water column. Upstream sites remained well within guideline values, reflecting baseflow conditions.

### **pH**

A number of afternoon sites exceeded pH guidelines due to warm water temperatures that can result in alkaline pH.



Above: Upper Mary Catchment pile field helping stabilise eroding banks, improve channel stability and support riparian vegetation recovery.

### **Turbidity (Turb)**

All freshwater sites from the headwaters to Owanyilla were compliant with turbidity guidelines, reflecting clear water and minimal runoff during the dry conditions leading up to the Crawl. Turbidity levels were generally low across the catchment, ranging from 0.5 NTU at the headwaters to 15.5 NTU at Owanyilla. The only site exceeding its guideline was River Heads (56.1 NTU), which is expected given its estuarine setting and natural tidal influence causing higher suspended sediment levels.

### **Escherichia coli (E.coli)**

E.coli results were very low across the freshwater sites, with all locations from Headwaters to Owanyilla meeting the 150 MPN/150mL guideline\*\* (range 1-80 MPN/100mL). The only exceedance was at the estuarine River Heads site, which may reflect tidal influence and local input sources.

## Endangered Mary River cod

October is a key time for Mary River cod spawning. Water temperatures ranged from 19 °C at the Headwaters to 28.9 °C at Netherby, with most sites recording between 25–28 °C. The Mary River cod can tolerate temperatures up to around 28 °C, and four sites exceeded this threshold, indicating conditions at the warmer downstream reaches were likely too hot for optimal spawning success. Cooler upstream temperatures, however, remained within the preferred range for successful egg development and juvenile survival.

# Water Testing Parameters Explained

## Dissolved Oxygen (DO)

DO is the amount of oxygen that is dissolved in the water and is essential for all aquatic life. Fish are adapted to natural fluctuating oxygen availability; however, when DO falls below 80% saturation, fish survival is compromised.

DO is influenced by:

- temperature (warmer water holds less DO)
- streamflow and agitation through riffles (less agitation leads to lower DO)
- salinity (more saline water holds less DO)
- turbidity (more turbid water holds less DO)
- plant photosynthesis (day time = increased DO)
- plant respiration (night time = decreased DO)

## Electrical Conductivity (EC)

EC is a measure of water's ability to conduct electricity. The EC value is derived from the amount of dissolved salt content in the water. As dissolved salt increases, so does the EC. Influences include geology, river flow, inflow of ground water into the stream and rising salt in the water table. During higher flow, the concentration of dissolved salts in the water reduces, resulting in decreased salinity, and lower EC.

## pH Acidity/Alkalinity

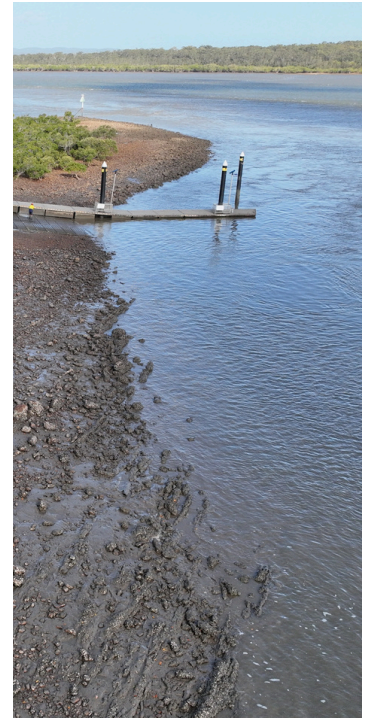
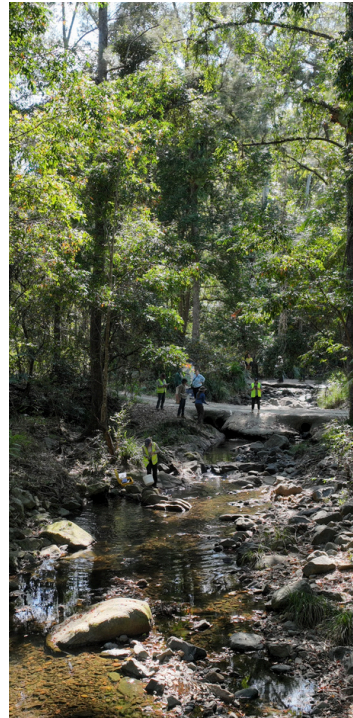
pH is a measure of acidity or alkalinity and is measured on a scale of 1 to 14. A pH of 7 is considered neutral, above 7 is alkaline and below 7 is acidic. During the night plants respire, releasing carbon dioxide into the water which increases acidity (lowers pH) compared to day time when photosynthesising plants take carbon dioxide from the water, which increases alkalinity. Sites with high levels of aquatic plant growth would be expected to fluctuate from more acidic pH in the morning to more alkaline in the later afternoon. pH is also influenced by catchment geology.

## Turbidity (Turb)

Turbidity is the measure of suspended sediments within the water. It is measured using the penetration of light through a liquid to approximate the level of suspended sediments. Turbidity is effectively a rapid approximation of Total Suspended Solids.

## Escherichia coli (E.coli)

E.coli is a bacterium that is commonly found in the gut of humans and warm-blooded animals. E.coli levels are used to indicate the presence of faecal material in water and the possible presence of disease-causing bacteria and viruses. Sources of bacteria include improperly functioning wastewater treatment plants, storm water runoff, animal manure and carcasses.



Above: The Mary River flows north from Conondale Ranges (left image) to its mouth at River Heads (right image), where it meets the Great Sandy Strait and the southern Great Barrier Reef.

Proudly supported by

We thank the Traditional Owners and Rangers from Jinibara, Kabi Kabi and Butchulla Country for their involvement and ongoing care for Country



For more information



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Cover photo: Mary River, Kenilworth

\*Department of Environment and Resource Management (2010). Environmental Protection (Water) Policy, Mary River environmental values and water quality objectives Basin No. 138, including all tributaries of the Mary River. Department of Environment and Resource Management Water Quality.

\*\*Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000). Australian and New Zealand guidelines for fresh and marine water quality. Volume 1, The guidelines. Canberra.