Citizen science group reporting on the Condamine River water quality

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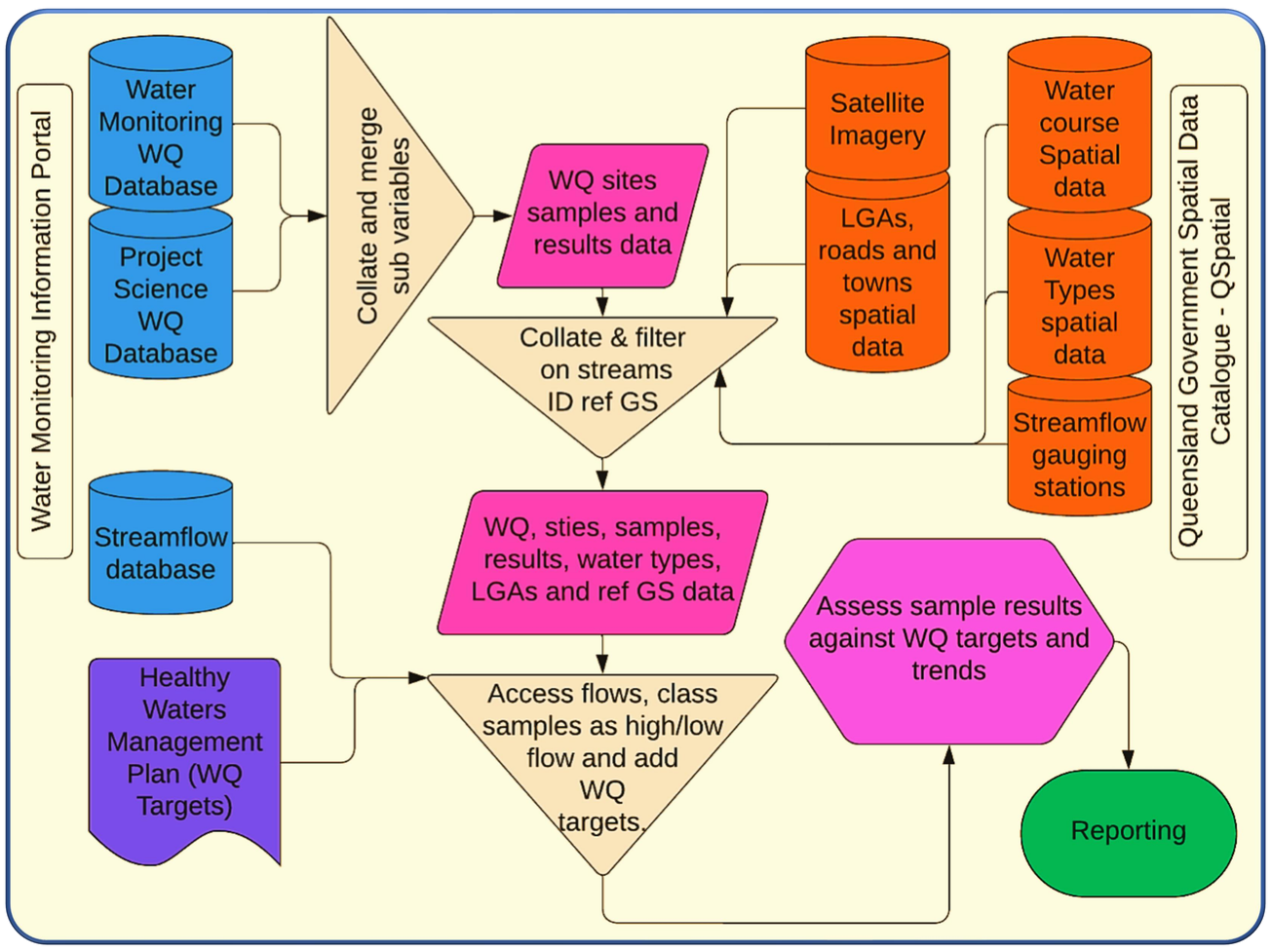
Background

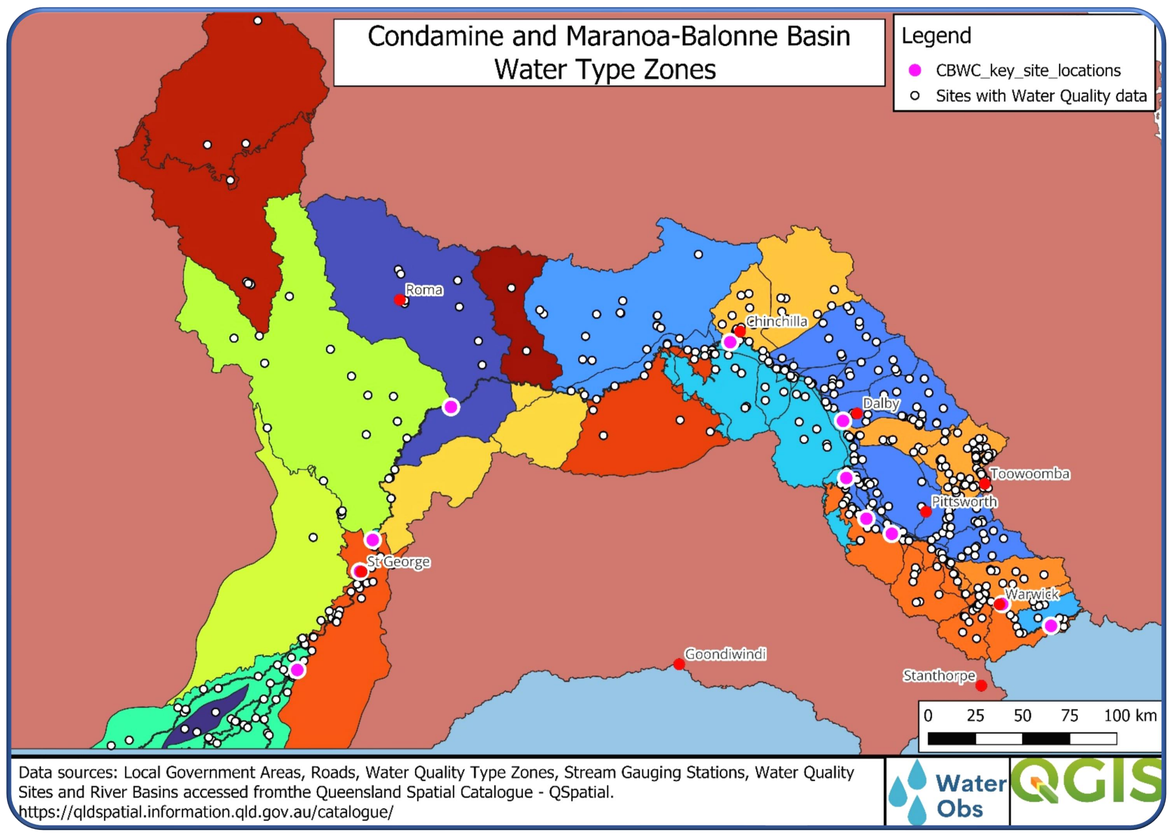
The CBWC, a volunteer citizen science group, has been collecting water quality data in the Condamine Balonne catchment since the 1990s with assistance from Local and Queensland Governments. Data is stored on the Queensland Government Project Science Database and available via their Water Monitoring Information Portal.

The Queensland Government has developed a Healthy Waters Management Plan (HWMP) for the Condamine River Basin. To 'kick start' the legislative required reporting on this plan, the CBWC commissioned a project to test a methodology that could be used as a blueprint for future reporting.

Methods

The Condamine and Maranoa-Balonne Basin's HWMPs include water quality targets for each of 16 Water Type Zones.





Water quality data for three of the 16 Water Type Zones in the Condamine Basin (4788 samples) were collated for each of 14 key indicators sediments (turbidity and suspended solids), salts (electrical conductivity, pH, alkalinity and sulphate), pesticides (Atrazine, Metolachlor and Diuron) and nutrients (total N, nitrate-N, ammonium-N, total and phosphate P). These data were categorized and analyzed (as in the flow chart opposite). The Water Type Zones are:

- Central Condamine [Tributaries] (tributaries including Kings Creek, Hodgson Creek, Myall Creek and Jimbour Creek – but not Oakey Creek);
- Middle Condamine River (Condamine River and Condamine North Branch from Pratten to Dalby); and
- Lower Condamine River (Condamine River from Dalby to Condamine).

For each of the indicator variables, annual median values were compared with HWMP water quality targets for Water Type Zones/high and low flow regimes and scored 1 (failed all indicators) to 5 (met all indicators).

These value*s* were also assessed to determine if any significant trends had occurred over a 30-year timeframe from 1995 to 2024 .

Results

- Results show that, for individual variables, 29% of annual median values met target values, 31% did not and there was insufficient data for comparison in 40% of cases.
- Trend analysis indicated improvements for 8%, decline for 20% and no statistically significant trend for 72% of variables.
- Overall **water quality scores were mostly 3/5 or "Fair".**
- **Overall score confidence was "Poor" to "Very Poor"** due to the limited number of samples.
- **Citizen Science data accounted for 69% of available samples** for the water type zones used in this pilot study.

Conclusions

- The merging of the two Queensland Government water quality data sets made it possible to calculate a water quality score for each of 3 water type zones in the Condamine Basin.
- In those water type zones water quality is fair in both high and low flows but water quality trends are mostly not significant.
- Even with the merged datasets, confidence in water quality scores was poor due to the limited numbers of samples.
- Trend analyses for pesticides were inconclusive and confounded possibly due to the evolution of analysis instrumentation with lower detection limits.
- **This pilot project provides a framework suitable for collating and analyzing data against HWMP targets and for creation of water quality report cards using water type zones.**

Full report: Water quality targets assessment, Condamine Basin - Pilot Project report for three Condamine Water Types. Prepared by Paul Webb (2024). Available at: https://www.qld.gov.au/environment/library