A4: Understanding the ecological risks of treated and untreated wastewater discharges to waterways

Objective(s)

To understand risks to waterway health from treated and untreated wastewater and validate indicators of wastewater pollution in waterways, to inform the prioritisation of wastewater management interventions across the region.

Why this research is important

This project will improve our understanding of impacts to waterway health from treated and untreated wastewater and facilitate the prioritisation, investigation and management of different types of wastewater inputs e.g. wastewater treatment plant discharges, Emergency Relief Structure spills, septic tanks. The project will also consider potential impacts from a range of anticipated discharge scenarios (e.g., spill type, quality, volume, frequency and duration) to enhance planning capabilities and support adaptive management strategies.

Contribution to Melbourne Water research priorities

Key Research Area: Water Quality: Understanding and managing the impacts of treated and untreated wastewater discharges on waterway health.

Achievements to date

Literature review complete on the risks and impacts from contaminants in treated and untreated wastewater discharges on key environmental values.

Year 2 focused on field-based investigations of ecological indicators, starting with a pilot study in Dandenong Creek, using multiple lines of evidence to indicate the impact of wastewater on receiving environments. A suite of ecological indicators was applied upstream and downstream of various wastewater inputs testing impacts to water, sediment, biota and ecosystem function.

Expanded field studies in Dandenong, Jacksons and Brushy Creeks using these indicators ensued. With the aim of evaluating the selected indicators and to determine the effects of wastewaters on these receiving waterways (first round Autumn 2025).

Summary report/ research note (due end Year 2)

Approach for Year 3

- Second round of sampling in Spring 2025 in Dandenong, Jacksons and Brushy Creeks, providing seasonal response to trialled indicators; complimenting sampling for A3P Functional Indicators project
- If time permits, scope desktop systematic screening of waterways receiving treated discharge to help inform prioritisation.
- Seek co-investment and collaboration opportunities with other water utilities

Key outputs for Year 3

- Data from field studies
- Update of Year 2 summary report/ research note sharing Year 3 results.
- Initial stakeholder engagement with other water utilities.

Expected benefits

- Improved understanding of risks and impacts to environmental values from wastewater including key contaminants.
- Decision support for emergency releases of wastewater to waterways.
- Inform risk assessment of pollutants in wastewater discharges to waterways as outlined by EPA Victoria (Publication 1287, 2023).
- Inform HWS performance objectives and metrics for the next strategy.

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A collaborative research partnership delivering practical management solutions to reduce pollution in our waterways