Project Summary

W10 Waterway Functional Indicators: Developing methods, metrics and strategic management frameworks for waterway function as a key environmental value.

Objective(s)

How best to monitor, report, and manage waterway function as an environmental value for the next Healthy Waterways Strategy.

Why this research is important

A healthy waterway is one that maintains its ecological structure (what is in an ecosystem) and function (what happens in an ecosystem) over time. However, Melbourne Water only assesses changes to, and prioritises management actions for, ecosystem structure. Only a broader program that monitors and assesses ecosystem function alongside ecosystem structure will holistically characterise and evaluate changes to waterway health.

What remains a challenge is not the development of suitable methods but their application in waterway monitoring programs and strategic management frameworks. Of particular importance will be (a) selecting functional indicators that perform well at the required spatial and temporal scale, (b) identifying reference or benchmark values that should be used, and (c) understanding what constitutes a significant change in response to changing conditions including due to management actions.

An understanding of how the chosen functional indicator(s) respond to natural variation and environmental stressors may lead to guidance on how particular actions such as environmental flow delivery can impact ecosystem function and assist with future waterway planning to maximise ecosystem health.

Contribution to Melb. Water research priorities

- A3P/MWRPP 1 (B1, WQ9): Develop methods, metrics and strategic management frameworks for waterway function as a key environmental value.
- MWRPP 11 (H5, H6): Better understanding of relationship between hydrology and key environmental values to help set environmental flow objectives.
- MWRPP 20 (RV13): Relationship between physical form and ecological health of waterways.

Approach

In Year 2, the project will focus on the following: A) HWS integration. Desktop-based work that will support the integration of waterway function into the next HWS. B) Trial of functional indicators. Testing methods and collecting preliminary data to support benchmarking, target setting and our understanding of how the indicators respond to natural variation and environmental stressors . C) Continued synthesis of existing functional indicator data (especially cotton strips). D) Meeting with New Zealand practitioners. A meeting with the key practitioners involved in incorporating measures of waterway function into monitoring as part of the National Policy Statement for Freshwater Management.

Key Outputs

- Waterway functional indicators technical report: concept, methods, and framework for implementation.
- Toolbox of functional indicators relevant for MW assets (Rivers, Wetlands, Estuaries).
- Data management plan so that data produced is appropriately stored/available going forward.
- Conceptual model(s) linking functional indicator(s) with environmental conditions, other values, and management actions.
- Rating scales based on empirical data for the chosen functional indicator(s).
- Scientific paper(s): functional indicators for monitoring and assessment.

Expected benefits

- A greater understanding of the importance of understanding waterway function alongside waterway structure
- Methods describing functional indicator(s) for use in the next Healthy Waterways Strategy
- A conceptual understanding of how the chosen functional indicator(s) relates to environmental conditions, other values, and management actions

Project teams

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