A3: Understanding how toxicants impact waterway and wetland function

Objective(s)

To understand how toxicants impact waterway function to support monitoring, reporting and interpretation of measures of waterway function as an environmental value for the Healthy Waterways Strategy. Additional objectives relate to understanding how toxicants affect stormwater wetland performance.

Why this research is important

The Healthy Waterways Strategy 2018 defines a healthy waterway as one that maintains its ecological structure and function over time. However, Melbourne Water only assesses changes to ecosystem structure. This project will enable Melbourne Water to consider function alongside structure in monitoring programs and to assess the impacts of toxicants to ecosystem function. Functional indicators can also assist in understanding the impacts of toxicants on the performance and maintenance of Melbourne Water's stormwater wetland asset base.

Contribution to Melbourne Water research priorities

This project contributes to HWS Key Research Areas: Develop methods, metrics and strategic management frameworks for waterway function as a key environmental value; and Improving the stormwater treatment performance and determine the optimal maintenance of WSUD systems.

Approach

This research will be delivered through a collaboration between A3P and MWRPP. Initially a literature review of toxicant impacts on waterway functional indicators will be undertaken. Based on the literature review, a suite of candidate functional indicators will be selected for field trials in selected waterways, including stormwater wetlands.

Key outputs

- Literature review on the impacts of toxicants on waterway function
- Technical report on the removal of, and impacts of, toxicants on stormwater wetlands.
- Scientific paper outlining impacts of biotic and abiotic stressors on waterway function.

Expected benefits

- Guidance to Melbourne Water on the impacts of toxicants on waterway function to support the inclusion of waterway function as a value in the next HWS.
- Identify where actions to improve water quality are necessary to support healthy waterway function.
- Guidance to Melbourne Water on how toxicant data collection can complement assessments of waterway function as part of the HWS MERI.
- Recommendations for improving the design and maintenance of stormwater wetlands to reduce the risk of toxicants on reduced stormwater wetland performance.

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