

W2: Scaled stormwater management for stream protection.

Objective(s)

To investigate optimum combinations of centralised and decentralised approaches to stormwater management to achieve stormwater performance objectives, including stormwater harvesting and infiltration, as well as the protection of headwater streams.

Why this research is important

In recognition of the negative impact that conventional stormwater management has on waterway health, stormwater harvesting and infiltration targets have been developed by Melbourne Water to manage the excess volumes of stormwater generated by urbanization.

This research will provide a clearer understanding of what combinations of stormwater interventions could be implemented at a range of scales and for a given set of development density, rainfall, and soil conditions, as well as the trade-offs in terms of cost, land-take and management responsibilities. This will help Melbourne Water and its stakeholders improve stormwater management by supporting planning and decision making to achieve the HWS stormwater harvesting and infiltration objectives. Specifically, the project aims to:

- Understand what type of stormwater interventions are required to achieve the HWS harvesting and infiltration targets;
- Understand what stormwater interventions are required to protect headwater streams in urbanizing areas; and
- Support evidence-based decision making around what stormwater interventions could and should be applied, and where.

Contribution to Melbourne Water research priorities

- SW13: Identification of effective measures for the protection of streams in newly urbanised areas, including the relative benefits of catchment-scale harvesting and the protection of small headwater streams.
- SW11: Understand the social and ecological costs and benefits of distributed versus centralised stormwater treatment assets in urban landscapes.

Approach

Three research components are proposed for Year 2 of the project:

- Optimizing the selection and location of SCMs to achieve stormwater harvesting and infiltration targets. This includes a review of Round 1 MWRPP projects, to consider how findings relate to the HWS stormwater harvesting and infiltration targets and identify any advancements in modelling techniques.
- Restoring the health of urban streams through stormwater management. This involves the translation of research findings from the Little Stringybark Creek and Dobsons Creek projects.
- Enhancing the functionality of stormwater control measures. This will see additional knowledge translation by developing additional outputs from previous MWRPP stormwater projects.

Key Outputs

- Synthesis report on scaled stormwater management.
- Scoping report and, if deemed necessary, proposal for development of interactive tool
- Series of fact sheets summarising the findings of the Little Stringybark Creek and Dobsons Creek projects.
- Journal paper: Factors influencing the water level regime and vegetation cover in constructed wetlands

Expected benefits

- Knowledge and resources relating to the possible combinations of SCMs that can achieve stream protection under a range of rainfall, soil and development densities.
- Resources that inform decision-making on when and where to implement actions to protect headwater streams in urbanizing areas.
- Clearly articulated outcomes of dispersed, whole-of-catchment intervention projects, detailing the successes and shortcomings, and practical recommendations to inform the design of future stormwater interventions.

Project teams

University Of Melbourne: Moss Imberger, Matt Burns, Tim Fletcher, Yung En Chee & Darren Bos. Melbourne Water: Belinda Hatt, Rhys Coleman, Slobodanka Stojkovic, Liv Blair-Holt, Amin Talei, Amy Grayson, Sharyn RossRakesh.