

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 urban land use.

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 Key Research Areas:

- Stormwater management and flooding:
Improving stormwater treatment performance and determining the optimal maintenance of WSUD systems.

Achievements to date

- A number of communications (papers, reports and presentations) on tools and principles for protecting headwater streams.
- Synthesis report on the Little Stringybark Creek & Dobsons Creek projects.
- Technical report on managing WSUD assets on private land.

Approach for year 3

Three research components are proposed for Year 3 of the project:

- Tools and principles for protecting headwater streams in urbanizing areas. This involves working towards applying the headwater streams framework to the Melbourne Water region.
- 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 for year 3

- Communications plan for the results of the Little Stringybark Creek and Dobsons Creek projects.
- 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 .
- Journal paper: Nitrogen in stormwater sediment ponds.

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.

For more information

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