

Re-designing streetscapes for managing stormwater & increasing tree canopy cover

Project C5:
Street
Trees

This project will support the development of streetscape designs which substantially reduce runoff from roads in both new and existing urban areas and also support canopy cover targets set by local government authorities to mitigate the urban heat island effect.

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Competition for space in urban streetscapes is fierce. In addition to utilities, streetscapes represent one of the limited opportunities to integrate vegetation into public landscapes. Additionally, streetscapes are increasingly used to mitigate the impact of stormwater runoff on urban streams.

An outcome of this competition is that the stormwater control measures used to address urban runoff are typically small and lack design features required to meaningfully reduce runoff volumes.

Pairing stormwater control measures with street trees could have multiple benefits. Trees take time to grow, especially in harsh roadside environments. Additional water resources during establishment can therefore be beneficial. Moreover, established trees may not grow faster when passively irrigated with runoff, but they can transpire significant volumes of water and can therefore boost the hydrological performance of roadside stormwater control measures.

Streetscapes therefore provide the opportunity to make use of runoff to rapidly increase tree canopy cover, as well as benefit urban streams by substantially reducing runoff volumes.

Doing so will require a significant change in current practice, which needs to be supported by rigorous empirical evidence and demonstration. Solutions can be found by combining design elements proven to work in stormwater control measures and large storage coupled with technologies used to support vegetation.

Aim

This project aims to develop alternative streetscapes which specifically target

volumetric reduction in stormwater runoff and support rapid canopy development.

Methodology

We are currently working with local government partners to design and install pilot-scale installations, including some monitoring of performance. We have co-designed and installed one experiment (Melton), developed two further functional designs (Maribyrnong and Cardinia) and are currently developing three more designs (Moreland, Hume and Port Phillip).

Each streetscape design focuses on different ways of capturing and storing large volumes of runoff, to facilitate evapotranspiration and infiltration of stormwater. Each design manipulates two aspects: the inlet and subsurface storage.

Expected Outcomes

- Awareness of the performance and ecological and liveability contributions of different types streetscape systems.
- Capacity building in industry regarding the design and construction of streetscape systems.
- New designs and standard drawings.
- Integration of guidelines with local government procedures/guidelines.

A key **impact** of the project will be a fundamental change in growth-area development practice, focussed on runoff retention to protect waterways and promote tree canopy cover to cool residential streets.