

Irrigating food crops with stormwater: a review of potential risks

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Biography:

Vaughn is responsible for overseeing implementation of WSUD at Moreland City Council. He specialises in applying WSUD for urban waterway health, potable water reduction, habitat improvement and urban cooling. Vaughn is also a member of Melbourne University's Waterway Ecosystem Research Group, recently completing a Master of Philosophy in Science. His research focuses on achieving both stormwater and tree growth outcomes through small-scale biofiltration systems, through an on-ground experiment in Brunswick. In his spare time you'll find Vaughn out bushwalking in one of Australia's national parks.

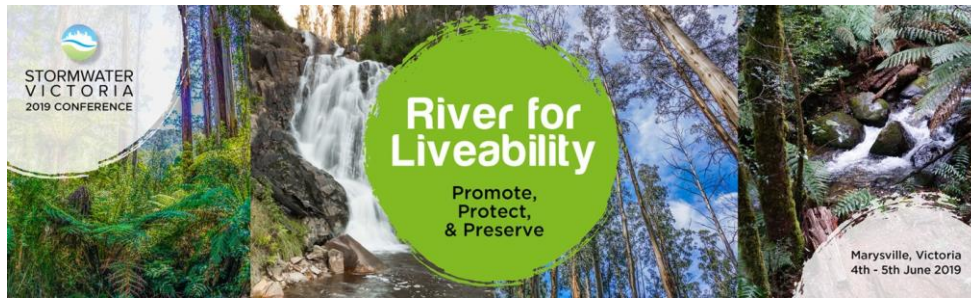
Belinda is an environmental scientist and engineer with over 16 years' experience in the field of integrated urban water management. She works on integrated water management, stormwater harvesting, waterway health, water servicing and strategic planning projects. Prior to joining Jacobs, Belinda was an academic at Monash University where she conducted research on vegetated water treatment technologies and the impacts of stormwater management on waterway health.

Stormwater harvesting is a key component of integrated water management and using stormwater in community gardens and orchards may provide a fantastic opportunity for community engagement with Water Sensitive Urban Design. However, is it safe to do so? While stormwater is generally of a higher quality than wastewater, it commonly contains a wide range of pollutants that can be detrimental to human and environmental health, including metals, pesticides, pharmaceuticals, industrial chemicals and pathogens. The main risk to public health associated with the use of harvested stormwater is the presence of pathogens and, to a lesser degree, metals.

Irrigating food crops with stormwater creates two potential human exposure pathways: i) via contact with harvested stormwater and ii) via consumption of produce that has been in contact with contaminants in harvested stormwater and / or receiving soils. The main risk to public health is from contact with harvested stormwater but the risk from consumption of produce increases for raw food crops.

The only known study to investigate the use of treated stormwater to irrigate food crops tested the effectiveness of two different filtration systems. It reported no differences in metal and microorganism quality in root and leafy vegetables irrigated with treated stormwater compared to those irrigated with mains water. Other studies have assessed the potential to use untreated stormwater to irrigate vegetable crops and found that, while problematic accumulation of metals is possible, risks can be mitigated by selecting appropriate crops and frequently turning over the growing substrate.

The potential health risks associated with two stormwater harvesting schemes where it is proposed to irrigate food crops with treated stormwater were assessed and it was found that these risks could



be sufficiently mitigated with the current or proposed treatment processes and on-site preventative measures. In addition to human exposure controls, other practical considerations include mechanisms for responding to hazardous events (e.g. a spill or large fire in the catchment), prevention of algal blooms in open storages, and building community trust.

This presentation will provide a summary of the key points to consider if proposing to use stormwater for irrigation of food crops.