MONASH
ENGINEERING

MONASH University

Faculty of Engineering
Summer Research Program 2024-2025

Project Title: Is climate resilience the brilliance of blue-green infrastructure?

Supervisor(s): Dr. Fiona Tang, Dr. Anna Lintern, Dr. Brandon Winfrey, Dr. Arash Zamyadi

Department: Civil Engineering

Email: fiona.tang@monash.edu; anna.lintern@monash.edu; brandon.winfrey@monash.edu; arash.zamyadi@monash.edu

Website profile of project supervisor: https://www.monash.edu/engineering/fionatang

---

Objective

The project aims to determine whether the current design standards of blue-green infrastructure (e.g., green roofs, constructed wetlands, rain gardens) need to be updated to ensure climate resilience.

Project Details

Urbanisation is detrimental to the health of our streams and bays. Urbanisation causes flash floods and increased transport of urban pollutants into water bodies. Blue-green infrastructures, such as green roofs, biofilters, rain gardens, bioswales, and constructed wetlands, are sustainable urban design solutions used to address these urbanization impacts. These infrastructures offer a more sustainable approach than our traditional pipes and stormwater drains. In a changing climate, the adverse impacts of urbanisation are anticipated to exacerbate further and the demand for alternative sources of water will increase. At the same time, the anticipated increase of extreme events and rising of temperature can negatively affect the treatment efficiencies of these green infrastructures that local councils, state government and developers are spending so much money in installing. In this project, the successful applicant will explore if the current designs of various types of blue-green infrastructure are resilient to climate change, making recommendations into how we need to change the design of these systems to future-proof our cities to climate change.

Prerequisites

Students who have studied ENE1621, CIV2263 or CIV3285 (or an equivalent Environmental Engineering or Hydrology subject) is encouraged to apply.

Additional Information

Applicants are encouraged to reach out to the project supervisor if they have any questions about this project. Students will be given the opportunity to contribute to field and lab work conducted in the Green Infrastructure and Water Quality (GIWaQ) research group, conducted over the summer period.