Green Roof Research Project: Funded ME for 2010

Green roofs are a low impact design (LID) stormwater control technology that mitigates runoff effects by acting as a source control. An green roof is a carefully engineered system; each layer has a specific function (Fig 1). The system design is such that the effects of impervious surfaces in the urban environment are reduced. Stormwater retention reduces runoff volumes and extends flow paths to increase the time of concentration for peak flows. Green roofs are an emerging technology not often used in New Zealand for stormwater management. The University of Auckland, in conjunction with Landcare Research, is developing green roof design standards through funding from the Auckland Regional Council.

The UoA-Landcare research team, led by Dr. Elizabeth Fassman (Civil and Environmental Engineering), is monitoring three green roof systems in Auckland (see photos): the roof of the Engineering Tower, the Waitakere City Civic Centre, and four "mini-roofs" on garden sheds at the Landcare Research Tamaki campus. The research team designed and constructed the green roof atop the Engineering School and the mini-roofs, and contributed to the design of the Waitakere Civic Centre green roof.

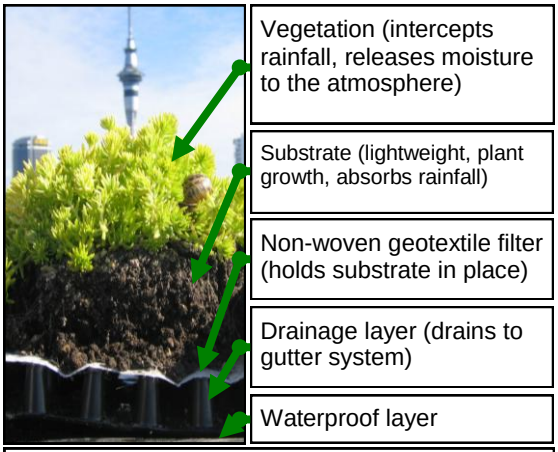

Fig 1. Components of a green roof system

Field monitoring currently includes:

- Rainfall
- Runoff
  - 6 stations on the UoA green roof
  - 5 stations on the mini-roofs
  - 2 stations on the Waitakere City Civic Centre green roof
- Climate parameters
- Substrate moisture
  - 20 sensors on the UoA green roof
  - 4 sensors on the mini-roofs
- Runoff water quality
  - 4 mini-roofs plus 1 "control" roof (non-greened garden shed)

ME Thesis Project: Water Quality Assessment

Funding is available for a qualified full-time ME thesis student investigating water quality of green roof runoff. Monitoring stations are already set-up with automated equipment from the mini-roofs. The Waitakere City Civic Centre green roof may be added for sampling. Water quality sampling requires field work before and after storms (but not during storms).

The student is expected to collect and process data from all monitoring stations, and collect water quality samples, which are sent to a contract lab for parameter analysis. In addition to the thesis, the student will be expected to contribute technical analysis and report writing for the funding agency.

Interested students should contact Dr. Elizabeth Fassman (e.fassman@auckland.ac.nz). Please include an academic transcript (an unofficial copy is OK). Ideally, the student would be expected to enrol in Semester 1, 2010.


Waitakere City Civic Centre


UoA Engineering School


Tamaki Mini-Roofs