



Manaaki Whenua
Landcare Research

Landcare Research's new facilities at the University of Auckland's Tamaki Campus.

Water & wastewater management

The goal is to reduce both the amount of water purchased from Auckland Metro and the amount of water entering the stormwater system. By harvesting rainwater and using it on site, we are reducing the need for mains water and the infrastructure needed to supply it and remove stormwater.

Rainwater harvesting

Instead of rainwater running into the stormwater system, as much as possible is collected and stored on site for use in all urinals (manual flushing), ground floor toilets, and for irrigating gardens and glasshouses.

Auckland's rainfall is 1100mm/annum with typical rainfall events contributing about 25mm. Given the total roof area of 2200 m² and allowing for spillage and overflow, about 325 m³ could be collected in the average rainstorm. Enough water to meet about a month's demand for water is stored on site. A mains backup will be available during dry spells.

Water running off all the roofing areas is gravity fed to a 25,000 litre tank near the glasshouses. Water is pumped from the main storage tank back up to the roof header tank using electricity supplied by a small wind turbine.

Two additional 25,000 litre tanks detain stormwater overflow from the main tank. Overflow from the detention system (e.g. during a big storm when the tanks are already mostly full) will overflow into the rain garden (still to be constructed). A soak pit, which penetrates the basalt rock layer, allows approx 10 l/sec to drain way. Any excess over this will still enter the municipal stormwater system through the normal curbing channels and drains but the volumes will be drastically reduced compared to situations where collection and detention systems are lacking.

The cost of the tanks and wind turbine generator were offset by not needing to run downpipes to the ground and connecting them to underground stormwater systems, and by savings in Auckland's Metro water charges.

Mains water for basins and drinking

Hand basins use mains water but have low-volume water-saving taps to prevent unnecessary wastage of water, including the hot water heated by solar panels.



Purified water for laboratories

Reverse osmosis or hyperfiltration is the finest filtration known, and is used to provide pure water to the laboratories with specialist requirements for slide preparation and uncontaminated glassware. A reverse osmosis machine is a large consumer of water as only a small proportion of the water (maximum 30%) flowing through the machine actually passes through the filter. The system has been configured so that the reject water can be collected for re-use in urinals and for garden irrigation, i.e. the reject water is incorporated in our stormwater management system. We have the option of using either rainwater off the roof or mains water in the reverse osmosis machine. However, using recovered rainwater may extend the life of the reverse osmosis resin filter because the rainwater probably has less dissolved salts than tap water.

Runoff from the car park and roads

The carpark has been constructed with a pervious gravel surface allowing rainwater to infiltrate the surface. During storms, excess water beyond what the soil can normally retain, will flow through the soil down the gentle gradient to the rain garden area.

For more information, contact

Dr Maggie Lawton
Operations Manager
Landcare Research, Private Bag 92170, Auckland
261 Morrin Road, University of Auckland's Tamaki Campus
Ph (09) 574 4100
Email: lawtonm@landcareresearch.co.nz
www.landcareresearch.co.nz