Big savings are possible in commercial buildings by recycling water and collecting the rain. However, lots of work is needed to check the feasibility in New Zealand, and that’s where BRANZ has stepped in.

**BY LEE BINT, BRANZ SUSTAINABLE BUILDING SCIENTIST**

**EXISTING RESEARCH** on water use in commercial office buildings reveals an opportunity to save an estimated 30% of ingoing potable water and subsequent wastewater through greywater recycling.

Rainwater harvesting has the potential for even higher savings, although it is dependent on the local climate and collection ability.

**BRANZ to develop framework**
A 2-year BRANZ research project studying rainwater harvesting and greywater recycling systems in commercial buildings aims to increase industry knowledge and investigate the operational and financial feasibility for new buildings and retrofits.

The study will develop a New Zealand framework for these systems informed by international standards, guidance and best practice.

**Three streams to research**
A multi-disciplinary case study approach will use engineering, environmental, social and economic expertise to provide a holistic overview of rainwater harvesting and greywater recycling system feasibilities.

**Social and policy stream**
The social and policy research aims to understand the drivers and barriers in New Zealand. Identifying these, and learning from international research, will help inform the necessary approaches.

The building and construction industry’s experience, perception and opinion on rainwater and greywater are being collected through an online survey. This can be completed at www.surveymonkey.com/s/ZBWCK2R.

To date, the biggest barrier identified is perception about water quality and associated health risks. No substantive New Zealand research in available to respond to this, although there has been some work on residential dwellings by Massey University (into rainwater) and by Environmental Science and Research (into greywater).

**Studying real buildings**
Case study buildings are being recruited as part of the building research stream. The buildings and systems will be monitored for energy and water use.

An analysis of water uses within the buildings, water quality and health impact will be undertaken, as well as how the decision to implement the system was reached.

The sample will include commercial buildings with:
- a rainwater harvesting system
- a greywater recycling system
- a desire to install a rainwater harvesting or greywater recycling system.

Using industry discussions and database analyses, approximately 370 non-residential buildings have been identified to date as having a rainwater or greywater system, either for potable or secondary non-potable uses. However, most of these buildings are rural schools and marae (see Figure 1).

The case study buildings will be used to develop decision-support tools, feasibility methods, baselines and information to help respond to the drivers and barriers identified in the social and policy research.
**Water networks**

Local network operators have a key role to play in the research programme to improve understanding and address specific regional impacts.

Both water use and water saving will have an impact on the water networks. However, the extent of the impact from rainwater harvesting and greywater recycling on networks is largely unknown.

Implementation and climatic scenarios will be modelled with local network operators to explore likely network consequences.

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**Strategic framework**

An advisory panel met in August 2014 to discuss the direction of each research stream and work through an initial skeleton of the strategic framework (see Figure 2). The need for multiple stakeholder engagement across three research streams and well integrated collaboration is already apparent. International research demonstrated the need for a similar multi-disciplinary approach.

To get involved in this study, visit www.branz.co.nz/rwhgwr.