# Environmental Evaluation of RCC Pavement Leachate

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| Samantha Markley, Final year BE(Civil) Student, The University of Auckland, [smar626@aucklanduni.ac.nz](mailto:smar626@aucklanduni.ac.nz)  Hannah Marielle Pangan, Final year BE(Civil) Student, The University of Auckland, [hpan653@aucklanduni.ac.nz](mailto:hpan653@aucklanduni.ac.nz)  Nazanin Ardalan, PhD Candidate, The University of Auckland, [nard561@aucklanduni.ac.nz](mailto:nard561@aucklanduni.ac.nz)  Douglas Wilson, Senior Lecturer, The University of Auckland, [dj.wilson@auckland.ac.nz](mailto:dj.wilson@auckland.ac.nz) |

In 2014, it was estimated that the world manufactured 25 billion tonnes of concrete, the majority used in the building and construction industry. Due to the pressures on making the construction industry more sustainable, multiple countries such as Belgium, Germany, Japan and the UK have implemented recycling schemes for construction and demolition waste (C&DW) with much of the product being used in road pavements. Relative to overseas standards, New Zealand is lagging behind in initiatives to recycle concrete from C&DW with most of it currently ending up in landfills.

The rapid expansion of the Auckland region has put pressure on existing quarries to supply virgin aggregate. Additionally, transporting aggregates over large distances increases costs making this option less economically feasible. In recent years, some businesses have begun developing recycled concrete products. These businesses promote their recycled aggregate products as high-performance foundation / pavement materials which are of equal or better quality compared to natural aggregates.

However, in New Zealand, recycled materials are still perceived to be inferior to natural materials. In a bid to break the stigma on the use of recycled crushed concrete (RCC) as roading material, Christchurch City Council used RCC on 300 metres of road as a feasibility test. This pavement performed well even after 9 years of traffic use and only needed resurfacing treatments as a typical road requires.

This paper explores the environmental impact of using RCC for pavement construction, specifically the base course. As road pavements typically become saturated during or after rainfall events, concern has been raised that RCC may leach contaminants to groundwater or adjacent streams. The paper will report upon results of experiments undertaken that evaluate RCC’s potential contamination of groundwater using leachate testing methods. Additionally, it compares the differences whether the RCC is obtained from horizontal or vertical infrastructure.