

Te Hiranga Rū QuakeCoRE

IP1 Functional Recovery for Multi-storey Buildings

Monthly Zoom Meeting

1:30-3:00 pm Wednesday 28 July 2021

Sustainability and low carbon

Zoom Meeting

<https://auckland.zoom.us/j/99883201569?pwd=TUhTVlgrcjMvMDF1bXBXaVBHdkQ3dz09>

Agenda

1:30 -1:35	Introduction and opening remarks (Ken)
1:35 - 1:50	After an earthquake: the impacts of disaster waste (Charlotte B)
1:50-2:05	Building the carbon case for resilient design (Rosa, Charlotte T, Max)
2:05-2:10	Life cycle analysis (LCA) of building carbon emissions and construction waste quantification (Alice)
2:10-2:20	Transition to a Zero Carbon Built Environment: research, challenges and opportunities (Casimir)
2:20-2:55	Discussion
2:55-3:00	Wrap up

Presentations

After an earthquake: the impacts of disaster waste

Dr Charlotte Brown, Resilient Organisations

When making the case for functional recovery of buildings following a seismic event, the full impacts of the counterfactual scenario need to be clearly understood. Damage of buildings following a major earthquake has the potential to create overwhelming volumes of waste. Depending on how it is managed, this waste can create significant, social, economic and environmental impacts. Based on international and local experience with disaster waste, this presentation outlines the process, challenges, and risks of managing disaster waste and impacts on community recovery. Last, implications for functional recovery are discussed.

Building the carbon case for resilient design

Rosa Gonzalez, Dr Charlotte Toma and Dr Max Stephens, University of Auckland

Structural engineers around the world have historically designed buildings for collapse prevention during and following earthquakes. Recently, major earthquakes have shown that the philosophy of designing buildings for life safety protection results in structural and non-structural damage having wide-ranging social, economic and environmental impacts. A case study of building demolitions from the 2010/2011 Canterbury earthquake will be presented. This study will evaluate the environmental assessment of buildings designed for “above code”.

Life cycle analysis (LCA) of building carbon emissions and construction waste quantification

Dr Alice Chang-Richards, University of Auckland

This presentation will provide an overview of construction decarbonisation research, particularly related to carbon emission case studies of timber framed and steel framed houses. The growing advocacy of green building site, social needs and legal requirements will warrant the development of detailed procedures for construction waste quantification. Developing a real-time waste quantification methodology/prototype at construction sites will also be introduced as a new PhD topic undertaken at the University of Auckland.

Transition to a Zero Carbon Built Environment: research, challenges and opportunities

Dr Casimir MacGregor, Building Research Association of New Zealand (BRANZ)

Climate change presents one of the greatest challenges facing the world today. The built environment, especially buildings have a core part to play in how, as a society, we adapt and seek to mitigate the impacts of climate change. The built environment contributes ~16% of New Zealand’s greenhouse gas emissions, the majority being the long-lived gas Carbon Dioxide (CO₂). Buildings have a long service life of 60-90 years meaning their environmental impact has a lasting influence on our economy. The decisions made during the design of buildings today will have an impact post-2050. It is therefore critical that we start addressing the issue of climate change within the building and construction industry.

This talk examines some of the challenges for a transition to a net-zero carbon built environment. It also provides an overview of the BRANZ Transition to a Zero Carbon Built Environment research programme, which seeks to: 1) Help to understand complex issues facing the building and construction industry in relation to zero-carbon; 2) Seek to bring about system wide improvement in the transition to a net-zero carbon economy; 3) Inform solutions that facilitate research impact and behaviour change for the benefit of New Zealand.
