

# Minimising public health risks from human waste after a large Wellington Fault earthquake:

## What shall we do with all the poo?

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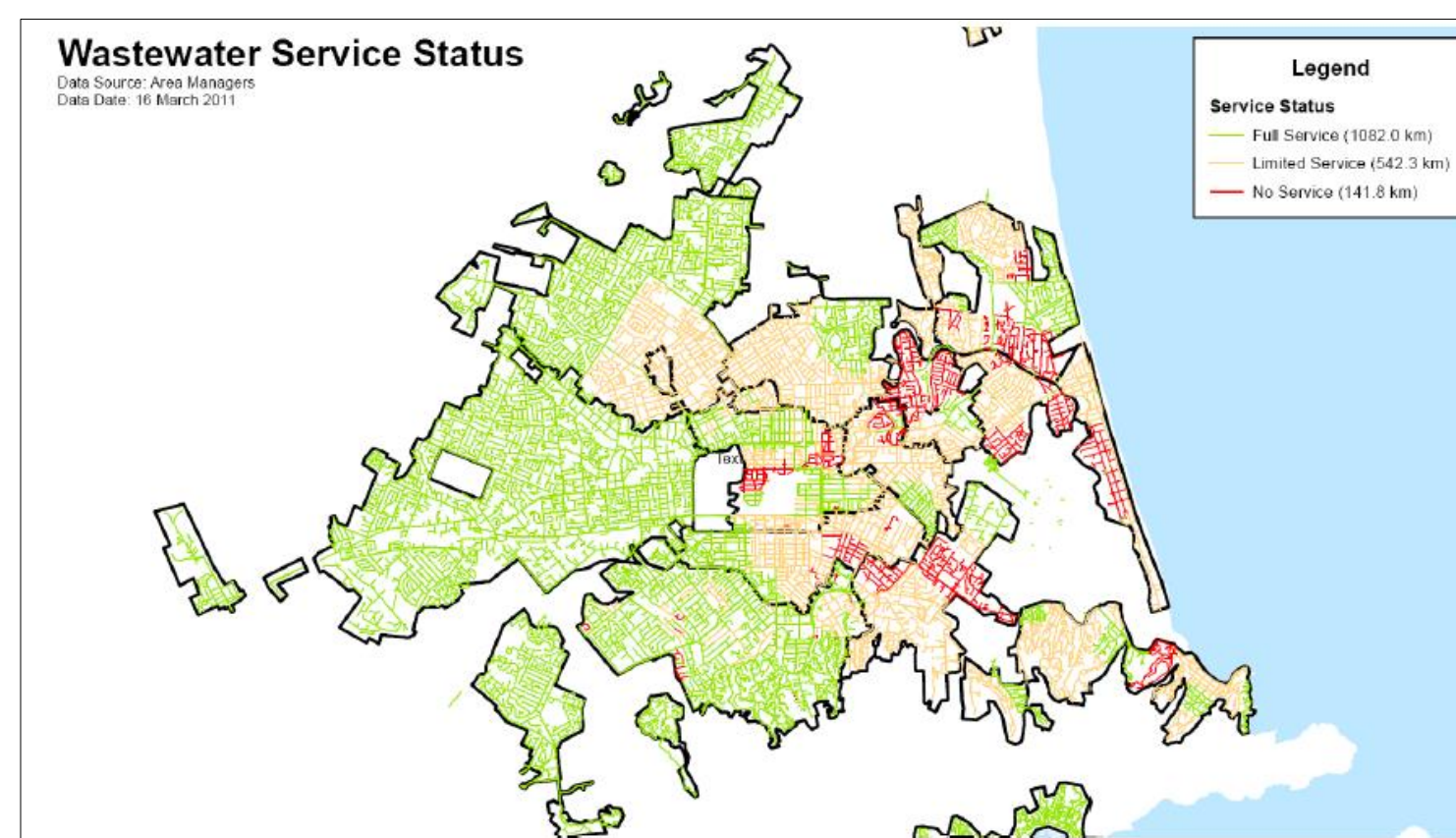
### THE PROBLEM:

The greater Wellington region, New Zealand, is highly vulnerable to large earthquakes. While attention has been paid to the consequences of earthquake damage to road, electricity and water supply networks, the consequences of wastewater network damage for public health, environmental health and habitability of homes remain largely unknown for Wellington City.

The Canterbury and Kaikōura earthquakes have highlighted the vulnerability of sewerage systems to disruption during a disaster. Management of human waste is one of the critical components of disaster planning to reduce faecal-oral transmission of disease and exposure to disease-bearing vectors. In Canterbury and Kaikōura, emergency sanitation involved a combination of Portaloos, chemical toilets and backyard long-drops.

While many lessons may be learned from experiences in Canterbury earthquakes, it is important to note that **isolation** is likely to be a much greater factor for Wellington households, compared to Christchurch, due to the potential for widespread landslides in hill suburbs affecting road access.

This in turn implies that human waste may have to be managed onsite, as options such as chemical toilets and Portaloos rely completely on road access for delivering chemicals and collecting waste. While some progress has been made on options such as emergency composting toilets, significant knowledge gaps remain on how to safely manage waste onsite.



Christchurch wastewater network status, 16 March 2011, showing distribution and severity of damage caused by 22 Feb 2011 M6.3 earthquake



The TURDIS: Emergency backyard long drop following the Christchurch earthquake, 2011

### BASICS OF COMPOSTING TOILET SYSTEM:



Dilute pee and pour on your garden



Treat the poo to reduce or eliminate pathogens



Empty the full poo bucket into your recycling wheelie bin

### PLANNED RESEARCH PROGRAMME:

The aim of our QuakeCoRE research programme is to address the question of how residents can manage human waste safely onsite, following a large earthquake, to minimise health risks to themselves and their wider community. The methodological approach will involve:

- An engagement workshop with strategic partners and industry affiliates together with local iwi and urban marae to co-design the project from the outset and acknowledge cultural concerns about the management of human waste.
- A literature review to determine lessons learned from other urban areas affected by large earthquakes as well as an investigation of the range of options and approaches for managing human waste on a local scale.
- Laboratory testing of options to reduce pathogens in human waste in a composting toilet system.

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