Becoming resilient

There is more to resilience than just ensuring buildings are better able to cope with floods or earthquakes. It can also be applied to communities and individual businesses. Understanding resilience in all its forms can save time, money and stress for building firms, building owners and the country as a whole.

BY DAVID HINDLEY, FREELANCE TECHNICAL WRITER

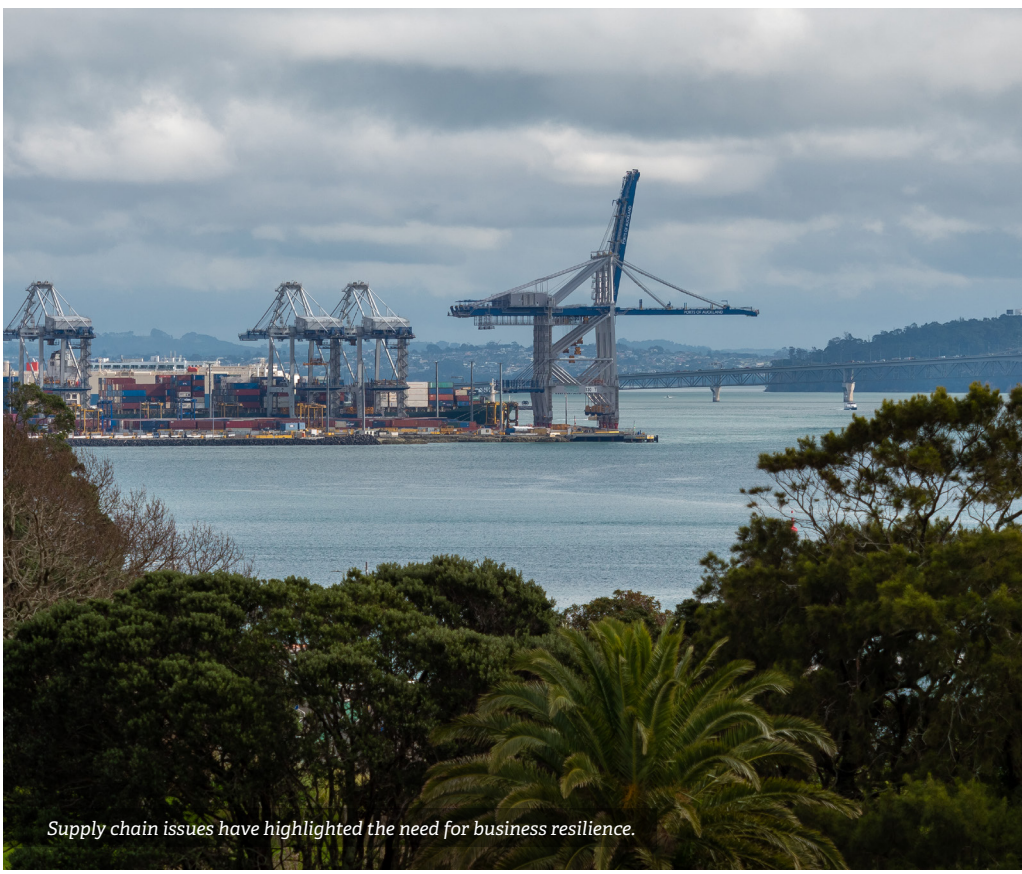
Plagues of locusts of biblical proportions may not be a hazard for New Zealand, but we seem to get just about everything else. For a long time, we've faced strong winds, floods and droughts, earthquakes and tsunamis. Now we can add rising sea levels and the increasing regularity of severe weather events.

There are plenty of challenges

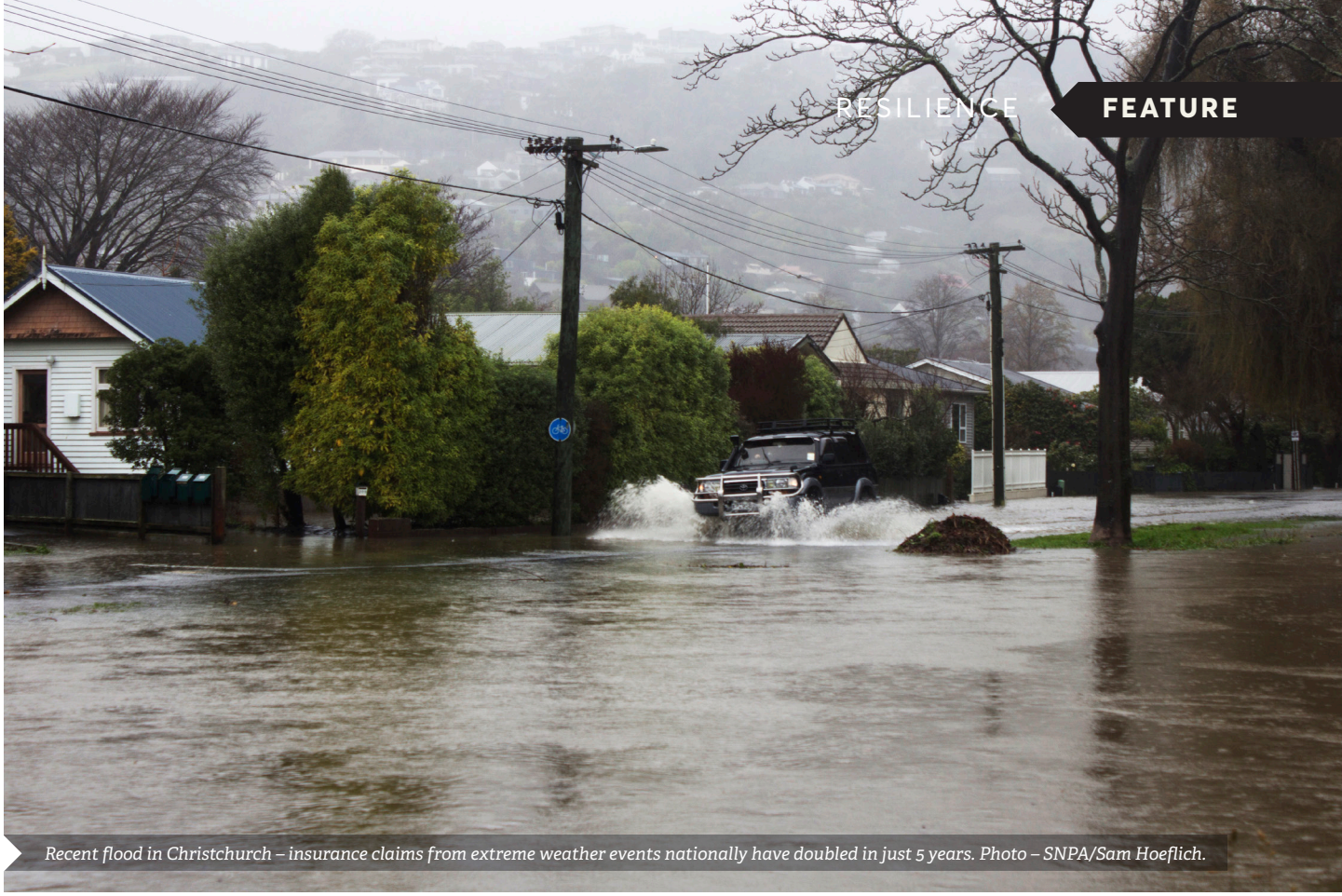
Those are just the natural hazards. Most days, they are fighting for space among the headlines with business concerns such as supply chain delays, rising prices and a possible building industry bust on the horizon.

New Zealanders long ago learned to roll with the punches and recover from whatever strikes.

In 1945, we launched the Earthquake and War Damage Commission – now Toka Tū Ake EQC. Although mistakes were made after the 2011 Canterbury earthquakes, the red zone process removed a lot of risk and uncertainty and enabled recovery faster than some countries have achieved following large-scale disasters.



Supply chain issues have highlighted the need for business resilience.



Recent flood in Christchurch – insurance claims from extreme weather events nationally have doubled in just 5 years. Photo – SNPA/Sam Hoeflich.

Extreme weather is changing the picture

We are heading into a very different world, however. Insurance claims following extreme weather events have doubled in just 5 years. Climate change means that, in time, events that were once deemed to occur once in 100 years may return every year or two. Sea-level rise will be on a scale we have never encountered before.

Just focusing on recovery is no longer enough – the costs of that approach will be unaffordable, and in some cases, insurance will no longer be available. We need to plan ahead so we can better handle whatever happens. We need to be better prepared for all possibilities and be more adaptable. In a word, we need to be resilient.

For our buildings, we can ensure resilience through work on the Building Code and standards. For our communities, it is not so easy.

Robust design to build resilience

'At the moment, we rely too much on insurance and recovery payments,' says Dr Richard Smith, Director of the Resilience to Nature's Challenges National Science Challenge. 'There is an expectation that, if something bad happens, the government will intervene, and that's a challenge because it means that communities are incentivised not to act because they think the government will pay.'

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'Resilience is how we put communities together, rather than how we respond after an event,' Richard says. A lot of it comes down to the infrastructure space.

'How do we design things to make them more robust? That's a key part of resilience, but we haven't really grappled with it yet. We tend to see things as a cost rather than an investment. In many cases, we are struggling just with asset management and replacement, without layering over this the potential for major events.'

Integrated planning needed

He makes the point that, in many cases, local authorities don't have the capability or capacity to do everything required of them. 'We have to build a case for integrated planning. True resilience at a systemic level requires all the different parts to work together. It's not up to individuals or the government, but a combination.'

Richard says that, whatever we choose to do, we need to make sure we don't wait for the science to be perfect and end up ▸▸

stuck in a cycle of response and recovery. 'Implementation is one of the problems. There are lots of good ideas on academic shelves not finding their way into influencing decisions.

'We need to use the science we've got to build more-robust business cases for investment, showing that it absolutely makes sense to build stronger or to build in different locations.'

Flexibility at community level

Resilience won't look the same everywhere around the country. There needs to be flexibility. 'You can't impose things on communities – solutions need to be based in the community,' says Charlotte Brown, Principal Research Consultant at Resilient Organisations.

Understanding the risk of staying

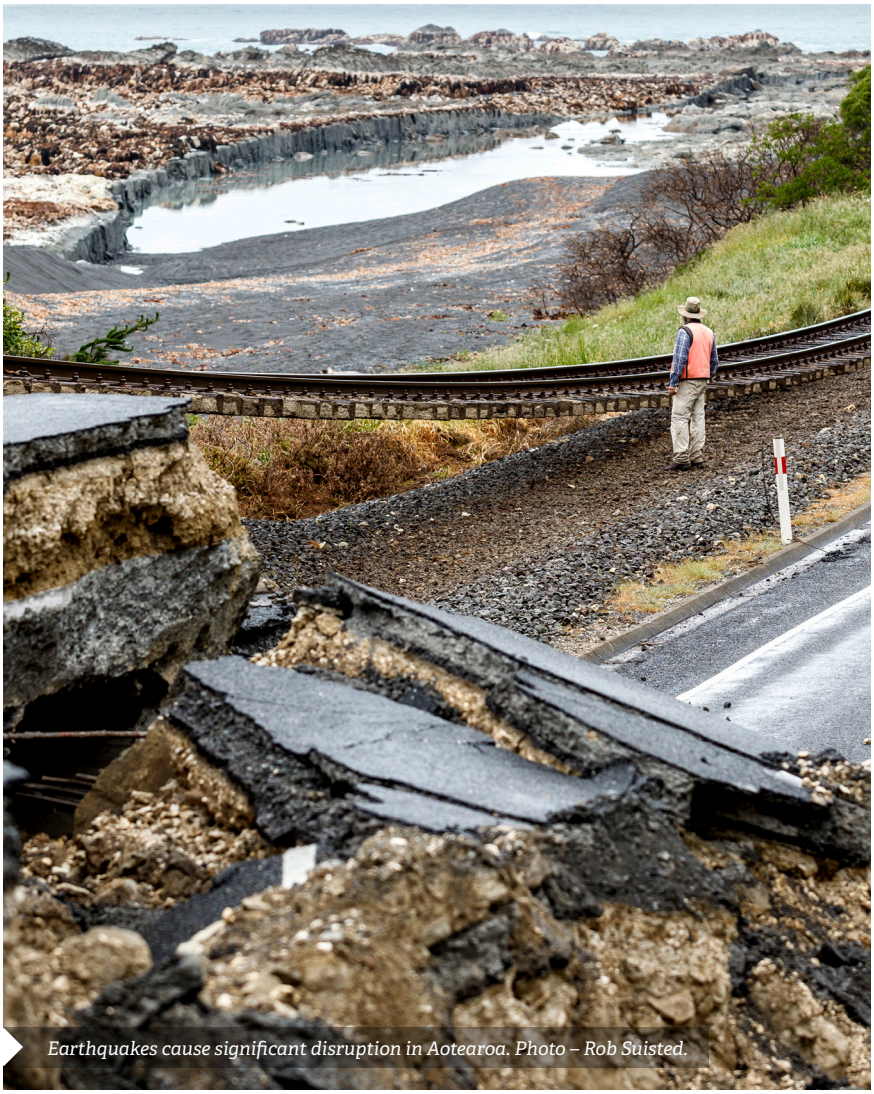
She raises the possibility that, if some individuals or communities wish to remain living in an area at risk from a natural disaster, the risk to the individuals as well as to the wider community should be weighed up in consultation with the community. Those affected need to understand the risks they are taking and that the responsibility for the decision and any future costs attached will likely be borne by them.

If they wanted to stay in a potentially dangerous area – at risk of rock falls, for example – it may be too dangerous to send rescuers in after an event or too expensive to maintain council services (roads, water etc.) to that area. 'While you may shoulder some risk yourself, there are often costs and risks to others that need to be considered and managed.'

Challenge for mana whenua

The need for flexibility will be especially important for mana whenua. While everyone can have a strong attachment to a place, for mana whenua, the connection may go back many generations, include burial sites of ancestors and exist on many levels, including spiritual and historical.

While some mana whenua communities may be particularly at risk on coastal sites subject to erosion and sea-level rise, they may also have knowledge or experiences in their own communities that they can draw on to help develop their own response.



Earthquakes cause significant disruption in Aotearoa. Photo – Rob Suisted.

Deciding what is most valued

In a wider sense, working out what a particular community values is a key part of resilience. This includes things like the services they think should still be running after a major event.

'Under the current system, facilities such as hospitals are seen as obviously high priority and should be kept operational after a major event,' Charlotte says.

'But many people think that other facilities, from supermarkets to aged care homes, should also be able to keep operating.' The law in this area as it stands does not currently reflect that.

Tool for increasing resilience

So how can communities become more resilient? One tool that has been picked up in this country is dynamic adaptive pathway planning (DAPP). 'It is about looking at multiple different possible futures and designing adaptable pathways, being flexible,' Charlotte says.

The idea is to be able to quickly make decisions as things change, as existing approaches are found to be no longer fit for purpose as the best solutions are the ones

that are robust across all future possibilities. DAPP is already being used in some of our national and regional government policies.

At a business level

Tim Warren of Construction Clients' Group has a particular interest around resilience and the supply chain. He says the larger-scale, horizontal sector of the industry faces fewer problems, partly because it is more integrated, with companies more likely to have closer links with manufacturers and suppliers overseas.

More problems for the vertical sector

It is very different with the more fragmented vertical building sector – cost conscious, risk averse, often working on relatively short contracts and much more vulnerable to supply chain problems. 'If there is a hugely dominant supplier in the industry, that can be a weakness too.'

'There is an attitude sometimes that people and products must have a New Zealand stamp on them – some closed-shop thinking. An example is the fact that some very good overseas qualifications are not recognised in New Zealand.'

There are fewer long-term relationships being built with manufacturers or suppliers than is found in the horizontal construction sector, and this hampers resilience. 'Instead of manufacturers or suppliers being involved in providing design solutions – as often happens in the car industry – people just choose items from a catalogue.'

Shipping has become a major issue

During the pandemic, some of the issues have intensified. 'Looking at shipping, New Zealand is further out on a limb now. Nobody really knows what will happen next. Given the lack of predictability, resilience becomes crucial,' Tim says.

He sees no easy solutions but says that bringing greater flexibility into the system – for example, in changing products on a build – is important. Where longer-term relationships or longer-term contracts can be made, they should be.

Lessons from manufacturing

'I suspect that the building industry could learn a lot from the manufacturing industry and from the primary products industry here. Their focus is on exporting, but they've built a lot of expertise working internationally, getting around problems with scale, bringing in specialist equipment and so on. There is knowledge there that could be picked up.'