



Disaster response: lessons from Christchurch

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Lying in New Zealand's Canterbury Region, Christchurch is a city of about 400 000 people. It is the nation's second-largest city and the South Island's largest. Although it is mainly on flat land, there are hilly suburbs between the port of Lyttelton and the city itself.

At 4.35 am on 4 September 2010 Canterbury suffered an earthquake measuring 7.1 on the Richter Scale, on the previously unknown Greendale fault line. A local state of emergency was declared that morning, and Christchurch's central business district was closed to the general public. The New Zealand Army was deployed to help in the worst-affected areas of the city.

Despite this being a very serious earthquake, no lives were lost. About 5 per cent of the city had been damaged, mostly infrastructure. But this turned out to be only the beginning: on 26 December a 4.9 magnitude aftershock caused further damage, mainly in the CBD. No state of emergency was declared for this event, and nor were any lives lost.

Then, at 12.51 pm on 22 February 2011, Christchurch suffered a shallow 6.3 magnitude quake 10 kilometres east of the city centre. Again, this was on a previously unknown fault line, and the quake was, by world standards, very serious: 182 people died (just under half of them being foreign nationals), thousands suffered serious injuries, and there was massive damage throughout the city. A state of emergency was declared on 23 February.

On 13 June 2011 the city was again hit, this time by two big quakes coming within about an hour of each other. The first was a magnitude 5.5 and the second a magnitude 6.3. These aftershocks caused further damage to buildings, and there were a number of serious rock-fall incidents. The emergency operations centre was activated for three days, but no state of emergency was declared. No lives were lost.

Since September 2010 there have been more than 8000 aftershocks. This article concentrates on the 22 February event.

Roles and responsibilities

The Civil Defence and Emergency Management Controller was in charge of activity until the state of emergency was declared on 23 February 2011. Control then formally passed to the Director of the Ministry of Civil Defence and Emergency Management, who also assumed the role of National Controller. The regional civil defence and

emergency management framework was then subsumed into the National Controller's framework. The state of emergency lasted for 10 weeks.

Review steps

Christchurch City Council commissioned a project designed to capture the lessons learnt from the earthquake response. An appreciative, strengths-based method was used to collect and analyse the data. The focus was on identifying the accomplishments of the emergency response phase and those areas that might benefit from improvement.

The project involved an electronic survey, semi-structured interviews, and consideration of debrief documentation from a number of organisations. The data gathered were analysed for consistent themes.

Lessons learnt

Infrastructure

The earthquake caused over \$2 billion of damage to Christchurch's roads and underground water and waste pipes. Over half of the city's roads were damaged: there are 50 000 potholes to fix, plus 30 bridges and 600 retaining walls. About 424 kilometres of water and sewer pipes need to be fixed or replaced.

The Stronger Christchurch rebuilding team—with representation from the council, government and five construction companies—will have 2000 contractors working for five years to repair and rebuild all the infrastructure.

- Repairs to pump stations and large sewer mains mean that wastewater overflows being released into rivers are greatly reduced.
- In all, \$14 million has been spent on building nearly 15 kilometres of temporary stop banks. Without these, eastern areas of the city would have been flooded.
- There are 1600 council facilities that need to be rebuilt or repaired, and the rebuilding team is working on a framework for council decision making about what takes priority.
- One of the first priorities was to restore water supply to all homes. This was achieved within a week of the September 2010 earthquake and just over a month after following 22 February 2011. There were no disease outbreaks.

- It was also important to open major roads so as to keep the city moving. Thirty-six measures were introduced to ease traffic jams; this included extra traffic lanes and changes to the timing of traffic lights at every signalised intersection in the city.
- After the 13 June 2011 quakes the city also set itself a goal of returning sewerage services to all households by the end of August 2011. This was achieved.

Managing infrastructure is a central role for Christchurch City Council, and it was able to call on resources from around the country. Scaling-up was rapid, and critical infrastructure was restored promptly. The fact that there were no disease outbreaks is particularly noteworthy: credit is due to all those involved in repairing infrastructure, providing alternative services and communicating with the public.

The military

The New Zealand Defence Force made an enormous contribution to the earthquake response. There were 1400 personnel involved in what was the Defence Force's largest operation on New Zealand soil. They provided logistics, equipment, transport, airbridges, and supply and equipment shipments; surveyed the port and harbour; provided support (including meals) to other government agencies; helped with desalination plants in the city's eastern suburbs; assisted the police with security; and provided humanitarian aid, particularly to the port of Lyttelton, which was isolated from the city in the first days. Importantly, they also managed the CBD cordons. There was a stroke of good fortune in that the frigate HMNZS Canterbury was in Lyttelton port on 22 February 2011 and was able to provide assistance to Christchurch immediately. Further, a large military exercise had been taking place on the South Island at the time.

One challenge for the earthquake response was how to make two different types of organisations—the council and the military—mesh as they learnt how to cooperate at high speed and in an unfamiliar environment. The two different management styles had to come together. The military brought a very strong command-and-control approach to their work, whereas the council's style was more collaborative and consultative. The latter approach tends to elicit different information and make use of spontaneous offers of assistance.

In the emergency setting the command-and-control style offers real advantages. For example, for people making decisions at the top of the chain it provides confidence that what they have asked for will happen. But the council's approach also worked well. This was demonstrated by the speed at which essential services were restored and the

fact that there were no disease outbreaks. The council had practised coping with local and regional emergencies, but a disaster on this scale was unprecedented.

The two different approaches—command and control and consultation and collaboration—are both required during an emergency response, to take advantage of the different benefits they offer. A new leadership paradigm was needed to bring them together. From the council's perspective, the process worked well, and the international protocols allowed teams from all over the world to slot in and provide assistance.

Christchurch people have nothing but respect, not only for what the military did for them but also for how the military approached their various tasks. As the cordon managers, they were the face of the emergency for many.

For those concerned with the council's response, one of the biggest success factors was knowing key people, both council staff and personnel from the agencies the council works with. It had been thought that police, fire and health personnel were the most crucial, but it became clear that military personnel were too, since all must work together in a complementary way.

The aim was for coordination, not duplication. Thus was invented a new paradigm for coming together and managing the chaos an event of this scale creates.

Disaster victim identification

Disaster victim identification teams from Australia, the United Kingdom, Thailand, Israel and Taiwan, as well as from throughout New Zealand, were deployed. The work is extremely complex and painstaking, and the public pressure on the teams is intense. In such a volatile environment the teams did an exceptional, comprehensive job.

The concentrated public gaze following an earthquake gives rise to an expectation that all information will become available very quickly. In a number of instances that was simply not possible in Christchurch, and the public demanded that information be released more rapidly.

The public has little reason to consider disaster victim identification until an emergency occurs, and as a result many people might not expect the difficulties or delays that inevitably occur with a large-scale disaster. In the white-hot pressure of a disaster response, explaining the victim identification process is challenging.

It is important to consider beforehand how to communicate with victims' families and the general public about the investigation process. Setting expectations early about how long it might take and how long it has taken in the case of

other disasters is important. Particularly in a large disaster, the process is going to take longer than many people expect. Of course, the priority is that investigation and identification be carefully carried out, but the constant media and public pressure also needs careful management.

Dignitaries

Christchurch received enormous support from people all over New Zealand and around the world. Part of this outpouring arose from a desire on the part of dignitaries, from New Zealand and internationally, to visit Christchurch to convey their concern and gauge the extent of the damage. These visits were very encouraging for people throughout the region and continued for 10 weeks after the February 2011 earthquake. The city was host to the New Zealand Prime Minister, government ministers, heads of government departments, foreign ambassadors, HRH Prince William, and others.

The logistics associated with dignitaries coming to the city necessitated the deployment of a range of resources—planes, helicopters, ground transport, and so on. It was always important to remember, however, that critical response and recovery work needed to take precedence.

There are benefits for disaster response in facilitating such visits: they focus national and international attention on the situation and allow dignitaries to develop a sense of the scale of destruction, so that they can tailor their offers of assistance. It is important, however, that rescue workers not be unduly occupied by coordinating visits if they might be more usefully involved in disaster relief work. Having a protocol for the visits of dignitaries and activating it early would ensure that staff time is used effectively and the expectations of the dignitaries are managed.

Conclusion

A disaster of the scale of the one that befell Christchurch in February 2011 brings with it challenges that can never be predicted. Organisations with different operating styles, mandates and cultures are thrown together to work for a common purpose. Focusing on shared purposes and delivering meaningful improvements help to forge a cohesive response. Preparation and practice provide the grounding for an effective response. Decision makers need to adopt a flexible approach so that they can respond effectively to changing circumstances and new information.