New Zealand Fire Service

Christchurch earthquakes - how we are better prepared - lessons we learnt

On 4 September 2010 Christchurch experienced a major earthquake which caused widespread structural damage to building, roads and other infrastructure, but fortunately there were no fatalities. Over the next few months the region continued to experience many major aftershocks and hundreds of minor aftershocks.

Then on 22 February 2011 at 12:51pm another major earthquake struck Christchurch. This earthquake caused extensive building collapse both in the Christchurch CBD and the surrounding areas, with initial reports suggesting hundreds, perhaps thousands, of people may be trapped. The damage to fire stations in Christchurch was also extensive. The eventual loss of life was recorded at 185, there were no fatalities of fire service personnel, paid or volunteer, but three volunteer fire fighters lost family members.

This disaster triggered the biggest ever emergency response by the New Zealand Fire Service (NZFS) in its history. The fire service immediately mobilised personnel and equipment from across the country including the 2 USAR teams based in the North Island in Palmerston North and Auckland respectively. Our third USAR team is based in Christchurch and responded locally along with the majority of Christchurch fire fighters, paid and volunteer.

The direct and indirect impacts of the earthquake on New Zealand fire service personnel living in Christchurch and surrounding towns were to prove immense. This ranged from obvious physical damage to their houses and communities, where in some cases they were unable to stay in their homes, through to children and partners, parents, friends and other relatives who were wanting to leave Christchurch; *"our homes are broken, our stations are broken, our city is broken, our families are stressed and we are just waiting for the next big one"*. And all knew someone who had died or was seriously injured.

But our fire fighters felt the traditional fire fighters urge to stand up and help, so they wanted to stay and help their city through this disaster. And for the following several weeks they were supported by the full operational capacity of the NZFS which proved the worth of being a national fire service. We were also supported by an international contingent of USAR teams. Two teams from Australia, as well as teams from the UK, USA, Japan, Singapore, Taiwan and China.

This paper describes the key lessons the New Zealand Fire Service has learned. These lessons come from internal inquiries into both earthquakes, an independent inquiry into the February response commissioned to be the present NZFS Chief Executive and National Commander and conducted by a UK fire chief, and the outcomes of a Coronial inquiry into the rescue efforts of people from the CTV Building. This building totally collapsed and was the single most destructive site in Christchurch, causing the death of 115 people.

The New Zealand context

Let me tell you about NZ as the context is important - it is two geographically fairly small main islands (yes, we call them the North and South Islands) and a couple of smaller islands situated deep in the

southern ocean. Our nearest neighbour is Australia around 3,000km to our west separated by the Tasman Sea. Our two countries history and bonds are very close, we are extremely competitive on the sports field in particular, but when adversity strikes we are always there for each other. February 22nd was no different and within hours the Australian government had authorised two USAR team from NSW and Queensland to respond to Christchurch with a mandate to stay as long as the NZ government required.

There are approximately 3.4 million people living in the North Island and one million people living in the South Island. The Canterbury region (which includes Christchurch) is populated by nearly 500,000 people. Our country is prone to all sorts of weather related storms with no barrier between ourselves and the South Pole. We are also a very active volcanic region and have several major earthquake faults dissecting us that are part of the pacific Rim. Earthquakes are frequent and a part of every day life in NZ. Our capital city, Wellington, is one of the most high earthquake prone major population centres in NZ and is the home of our government and the national headquarters of fire service and police. It is also the home of our national crisis management centre that coordinates NZ's large scale natural disasters on behalf of the Government. Much of Wellingtons present geography has been defined by large earthquakes over the last several hundred years.

Prior to this earthquake the last major event in NZ was the Hawkes Bay earthquake in 1931 that killed at least 256 people and is still the biggest natural disaster in our modern history in terms of lives lost.

So, it is not as if an earthquake was a surprise event for NZ, but such a destructive earthquake in Christchurch was.

Background

During the 1990's New Zealand went through major public sector reforms and the subsequent industrial action that followed had a huge negative impact on the New Zealand Fire Service. For several years we were embroiled in intense industrial action, received a reduction in funding, and a failure to properly resource one of New Zealand's key emergency services. Fire fighters were often not training and our fleet was in danger of not being able to stay fully operational.

In 2001 the New Zealand Fire Service Commission appointed a new Chief Executive and National Commander, bringing back together 2 distinct roles (chief executive and national commander) to be held by one person. His mandate was to rebuild the capacity, reputation, morale and operational capability of the service. Through the next few years a strong programme of infrastructure and training commenced and the fire service rightly felt it was heading in the right direction to becoming a 'world class fire and rescue service', part of the chief executives vision.

By the time the earthquake struck Christchurch on 4 September 2010 the NZFS felt it was in pretty good shape. We had a new national training centre that was world class for the size of our country, we had restored strong training programmes, had developed a national fleet strategy, and were again driving in state of the art appliances and wearing the best possible protective clothing. This programme of reform included fully establishing three Urban Search and Rescue (USAR) teams, based in Auckland, Palmerston North, and Christchurch. This was done to expand the previous national team

that was established in Palmerston North in the mid the 1990's but never fully resourced as it was seen as expendable at the time, and a nice to have.

The strategy at the time to establish three USAR teams did not include seeking INSARAG international accreditation as this was seen as too costly, and they had been established essentially as a domestic resource.

On the 4 September when the first big earthquake struck Christchurch the fire service responded its national USAR teams, and then deployed a national Incident Management Team (IMT) to support the local fire region and the overall emergency management efforts. Subsequently the chief executive implemented a review of the response which identified many areas for improvement. But before most of these improvements could be implemented the devastating earthquake of 22 February 2011 occurred.

The Response

It was immediately obvious through news feeds that this incident was extremely serious and the New Zealand Fire Service quickly arranged to immediately deploy both North Island based USAR teams with their caches, as well as senior commanders to establish an Incident Management Team. The first North Island contingent was to be deployed to Christchurch through a New Zealand Airforce 767 jet from the Whenuapai air force base. It had the load capacity to collect the Palmerston North based USAR team and several senior commanders.

The acting national commander, realising the gravity of the situation, commenced planning at NHQ to ensure adequate resources, fire fighters, appliances and equipment could be mobilised to support the deployment. The advantage of being a national fire service was quickly realised as he had over 10,000 well trained fire fighters, paid and volunteer. He also had at his disposal a fleet of over 800 appliances, special appliances, and associated equipment inventories, IT expertise etc to call on.

Over the following few weeks a huge proportion of these national resources were utilised to support our rescue efforts in Christchurch. We were able to maintain our response for over a month, incredibly well supported by the international rescue community with the USA, UK, Singapore, Japan, Korea, Queensland and New South Wales USAR teams deploying to Christchurch to support the New Zealand Fire Service efforts. When the devastating earthquake followed by the tsunami struck Japan while the Christchurch earthquake response was still active, New Zealand were able to respond a USAR contingent to provide assistance and support to Japan who had come to our aid.

How could we learn from this event?

There have been many lessons learned by the New Zealand Fire Service from this tragedy. Our previous chief executive and national commander instigated a major review of the deployment that identified 42 'opportunities for improvement' and many of them had either commenced and some small ones completed when I took up my appointment as Chief Executive and National Commander in 2012. But due to a range of issues creating disharmony in Christchurch itself and my wish to move in a new strategic direction I decided to instigate my own independent external review. This review is now known as the 'Pilling Review'. It was conducted by a very experienced UK chief fire officer, Simon Pilling, who also had USAR knowledge and experience, and was a UK 'GOLD' commander.

We were also subsequently subject to a Coronial inquiry into the deaths of six members of the public who were known to be alive immediately after the CTV building collapsed. It was this building that housed an international language school and unfortunately a number of overseas visitors enrolled at the school were amongst the 115 people who lost their lives when this building collapsed.

Our main lessons learned

I feel the biggest lesson we, the NZFS, has learned is that there is never a time to be complacent - no matter how much you do, or think you have done, there will always be more required and if you wish to be a truly learning organisation you must be willing to honestly analyse your performance and seek improvement, and constantly test your capability.

We now have a national response plan that is reviewed annually, requires teams at all levels to train to and practice skills, and we have recognised in this plan that we need to keep up to date information on our peoples skills, how to contact them and which people are readily able to be responded to major events. This plan considers resources, people and equipment, contact details and access at any time to a complex range of resources to ensure we can maintain our deployment for several weeks.

We have set up a national standard for 'operations centres' that are geographically spread around the country so we can manage a major incident from any of these centres. These centres are independently audited and are required to regularly practice using large scale emergency scenarios, and have IT connectivity to our national headquarters where we have based a national coordination centre operated by the 5 NHQ based assistant national commanders on a 24/7 roster. This was something we learnt from the February response and was set up during the deployment to ensure national coordination of our response.

Our people, their welfare, and that of their families is critical. If you don't give this priority you will lose your teams. Especially for our Christchurch based people who were directly impacted by this disaster there was a lot to consider. We needed them but many had homes that were destroyed and those who could still live in their houses did not have power or gas, so no hot water, heating and cooking facilities, and no toilets and sanitation. Partners, children, parents, friends and neighbours were all facing major trauma so it was important to quickly establish a strong and proactive welfare team.

Our welfare support formally commenced on the morning of the 23rd February when a formalised incident management team structure was established by the fire service. Welfare was placed under the safety officer role within the incident management structure lead by an Assistant National Commander. Within 18 hours there was a team on site to support locals.

The initial focus was on making contact with all personnel, getting an initial assessment, and endeavouring to support urgent needs. There was a desire to ensure we were able to provide constant communication updates, and both health monitoring and psychological support were initiated. A three phase plan was developed and proved very effective:

- Phase 1 - emergency response anticipating up to 4 weeks
- Phase 2 - resettlement monitoring post deployment for 4 to 12 weeks
- Phase 3 - ongoing support and review anticipated from 3 to 24 months (this continues today)

Strong pre formed partnerships at a national and local level with partner emergency services such as Police, Ambulance and Civil Defence is critical. These partnerships need to be practiced and trained together on a regular basis. It is far too late to try to learn to dance together once you are already on the dance floor. But those day to day partnerships that are formed locally are crucial to your success. No matter how well trained individual emergency service people are they will *form, storm, norm and perform* much quicker if they already have strong bonds and respect for each others role and agency expertise. And directly linked with this is ensuring all agencies are using the same documentation and systems. Communication and sharing of information is essential or you will find yourself feeding information to the news agencies that is not consistent and will embarrass yourself, your leaders and politicians. But during the deployment you will also be needing to share often scare resources.

This leads on to the communication team, how you share information and publish information for the news agencies. They will be desperate for stories and if you don't manage this well they will find their own stories or make them up - both can be very destructive to your response effort and distract you at a time when you need to be fully focussed. An event of this scale means you quickly become inundated with international news agencies with 24/7 deadlines they wish to meet. And these international agencies don't really care about upsetting the locals as they know in a couple of weeks they will be gone, so long term relationships just aren't important.

But just as important is how you keep your own organsiation informed and up to date so they are not over whelmed by rumour and speculation read on the internet etc. This is an important time to recognise the local efforts on the ground as well as those crucial efforts behind the scenes that keep the response working. So you need to have identified in advance the people you have who are skilled in this area and will come across well on the international media, and as much as possible it is important to have uniformed people delivering your messages. This gives it operational credibility but is also good for local morale.

Internally our key lessons learned were captured by the Pilling review referred to earlier. I had given the person leading the review unfettered access to all NZFS people and resources as we were still in recovery mode when I took up my role and I needed to ensure I knew all the facts before implementing my own vision as chief executive.

The Review found the limitation of preplanning and preparedness following the September event did contribute to the overall inefficiency and ineffectiveness of management at times. Incident support arrangements during the first 12 hours were provided in an ad hoc fashion and with a piecemeal approach; carried out in the main by frontline operational staff during the initial throes of the event. This is why comprehensive pre plans are so important. And not only that they exist but that they are well understood and practiced, and can be activated at a moments notice so everyone understands their role and what is and will be required of them. each time they are practiced they need to be debriefed to ensure the learning is applied.

The review was comprehensive but essentially covered five key themes and I am proud to say we have made significant progress on all of them:

1. *Incident Command and Control*

Incident command and control issues mostly relate to the vertical ‘command’ structure operated by and within a single service as opposed to the horizontal ‘control’ arrangements across a range of agencies that need to operate jointly within the principles of CIMS. The aim is to develop expertise and experience of personnel at all levels in the Service to apply effective management structures at any operational incident, regardless of size or complexity.

We have now developed a comprehensive programme to train, and maintain currency, for all frontline officers and our senior fire commanders. But we have ensured that the majority of our support staff are training in the New Zealand 'coordinated incident management system' (CIMS) so we can bring all of the expertise of the organisation to bear.

We learned early in the incident that the best people to organise travel and accommodation, for example, are the people who do it every day. This principle applies to most of the other disciplines that a large scale logistical and 'planning and intelligence' team would require. And it can avoid tying up essential operational skills.

2. Emergency Services Interoperability

The theme of emergency services interoperability in the main relates to providing an improved appreciation of common response objectives; a better understanding of command, capabilities and responsibilities of each agency; achievement of a common situational awareness at incidents; and effective interaction between services to bring incidents to a successful conclusion.

We now ensure we are having regular 'exercises' with our partner emergency services, not only to practice skills but to help each agency get to know how the other agencies work.

3. Leadership and Management

A programme of Executive Officer leadership and management development and improvement to benefit both those who form part of the current cohort of middle and senior managers in the Service together with those who demonstrate ambition and potential to progress further in their careers as part of a structured and organised succession planning exercise and programme.

This is now very well developed and the senior managers form a group called the 'Careers Board' who look to manage and steer our personnel into development opportunities. This has already shown significant payback and we are again getting a range of talented people applying for both vacancies and other development opportunities. We have also committed significant funding to improving the tertiary qualifications of our people, and now have strong mentoring and coaching programmes managed centrally through our HR department.

4. Integrated Risk Management

This is a critical component of organisational business planning in each of the five fire regions as well as at NHQ.

5. Industrial/Employee Relations

The essential issue of industrial and employee relations should be studied. This recognises that in a country like NZ industrial relationships are critical as in an emergency that is outside the scope of normal day to day activity you need every part of the organisation working together to ensure co-operation and collaboration between the key stakeholder groups.

Conclusion

This incident tested the full resources and capability of the New Zealand Fire Service to the limit. As Simon Pilling stated in his formal report to me - this incident would have tested any fire service in the world.

So although we have learned many things we have to do to improve our operational capability I stand before you incredibly proud of the work my organisation did tirelessly for several weeks. Our frontline firefighters in particular stepped up to the challenge and saved many lives, often at risk to their own lives. They crawled into holes and spaces at a time when USAR had not even deployed, and during very large after shocks, to try to save people.

We still have a lot to do to continue on our journey, accreditation with INSARAG next year being one of the challenges we are facing, but I believe we are now better prepared than we were three and a half years ago. This is mainly because we were willing to be, and have been, open and honest about what we did well, but more importantly on what we need to improve on.

I believe the public of New Zealand can be justifiably proud of their fire service and the efforts it makes to ensure it remains a world class, contemporary fire and rescue service.

Thank you