

# The Role of LP Gas in Natural Disasters



## The New Zealand Earthquakes of 2010 and 2011 - A WLPGA Case Study

Natural disasters are a tragic reality. Earthquakes, tsunamis, hurricanes, floods strike frequently and often with very little warning causing disruption to power and energy networks. This can directly affect hundreds of thousands of people who are often forced to seek temporary accommodation. These survivors need fuel for warmth and for cooking. The unique benefits of LP Gas mean that it can be transported, stored and used virtually anywhere and this exceptional energy offers swift solutions in times of emergency.

This case study looks at the critical role of LP Gas in one particular and very recent natural disaster – the two earthquakes that hit New Zealand in September 2010 and February 2011.

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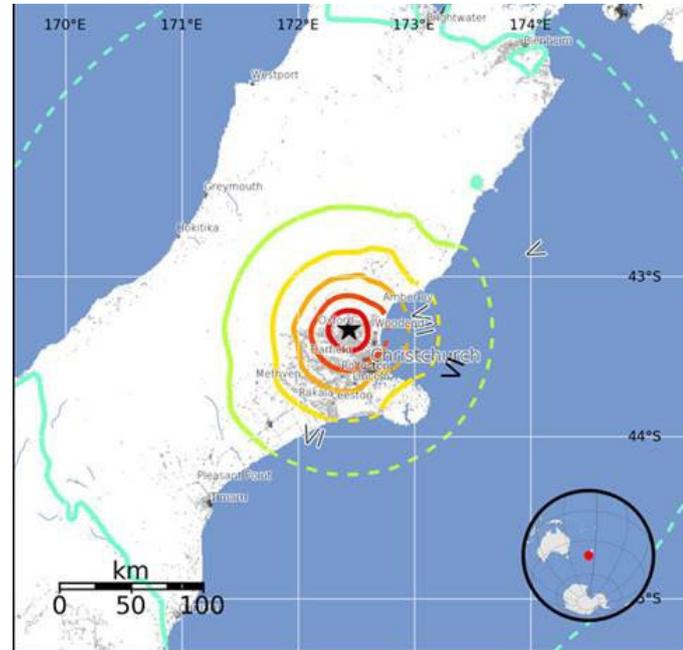
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# 1. The Events of September 2010 and February 2011

Christchurch is the largest city on the South Island of New Zealand and the second largest city in New Zealand. Until 4 September 2010, Christchurch was a beautiful city with stunning architecture in its city centre.

On that day in September, a huge 7.1 magnitude earthquake hit the city at 4:35am local time. The epicentre was some 40km west of Christchurch, near the town of Darfield at a depth of 10km. The initial quake lasted about 40 seconds and was felt not only widely across the South Island but also in parts of the North Island.

Whilst the earthquake caused significant damage to infrastructure and buildings there were no direct fatalities, aided by the quake occurring during the night.



There then followed a series of aftershocks, the most severe being of a 6.3 magnitude aftershock a few months later on 22 February of 2011. This second quake struck at a depth of 5km, just 10km south of central Christchurch.

This quake was shallower than the one the previous year and closer to Christchurch city centre. These two factors meant that the effects were devastating causing loss of life, 185 fatalities were recorded, and massive damage to property and infrastructure that had already been weakened by the initial earthquake.



Cover photograph shows a car buried by rubble by the collapsed Christchurch Cathedral.



## 2. Immediate Consequences

With no previous recent history of earthquakes and with beautiful but non-earthquake friendly brick construction, the result was devastating and 70% of Christchurch central business district was either destroyed or so badly damaged that it required demolition.

In the immediate aftermath of the first earthquake, the Civil Defense declared a state of emergency for Christchurch and surrounding areas which stayed in force until April of that year. The Civil Defense also activated their emergency operation centres.

At 5pm local time on the day of the earthquake, Radio New Zealand reported that 80% of the city had no power. Fires began breaking out in the city centre. Initially it was difficult to get information, as many telecom services were also seriously damaged with very limited mobile phone connectivity. Reports emerged about people who remain trapped in damaged buildings. The iconic Christchurch Cathedral, which survived the original September 4 quake, partly collapsed after the second quake.

Following the aftershock, with more injuries than the initial quake, hospitals throughout the South Island were cleared to take in the flood of patients from Christchurch. Falling debris and moving buildings created most of the damage.

The Civil Defense requested that the gas be isolated from the Central Business District (CBD), the back-up feeder plant that does not usually feed out was in fact feeding out at a high rate and the decision was taken to shut down the entire reticulated network leaving cylinders and bulk tanks as the main supply method.

Suppliers set up emergency offices, creating 'critical customer lists' to arrange immediate temporary cylinder supply and customers were called to arrange deliveries.

The overall impacts to the LP Gas industry were minor compared to other utilities and the network was fully operating within ten days.



The Elgas team in the Christchurch emergency office

**Waiting Patiently:** People drove from all over Christchurch to fill their barbecues gas bottles after hearing on the radio a service station was still selling it, even though it had run out of petrol.



### 3. How did the LP Gas Industry Respond?

All of the suppliers took immediate action to restore deliveries as quickly as possible. Elgas, with prior natural disaster experience in Australia, knew that demand for 9kg BBQ cylinders would skyrocket. As soon as the news of the scale of the disaster became clear, Elgas staff in both countries started mobilising to deliver extra supplies of 9kg cylinders to the stricken area.

Their expectation became a reality as people were relying on 9kg cylinders to keep warm, cook food and heat water on their barbecues. Suppliers were overwhelmed with demand and ensuring supply for the first 5-10 days was very challenging. In many situations people could not access cash, so much of the gas was supplied at no charge.

One lesson learned was that normal communications methods cannot be relied on. In times of disaster traditional communications often fail. One supplier was coordinating neighbourhood deliveries by announcing it on the local radio stations. Crowds of residents were awaiting the trucks when they arrived in the devastated areas.

Access to LP Gas became critical, as most other infrastructure had been destroyed, severely hampering delivery and some of the LP Gas infrastructure was also damaged, including the wharf used for ship unloading. However, one of the benefits that make LP Gas such an exceptional energy is the fact that it can be stored. It was the industry's storage capacity that saved the day. In addition, infrastructure can be moved on short notice. For example, extra cylinders, trucks and staff were swiftly brought in from other areas.

Safety also needed to remain paramount at all times. It was important to ensure the integrity of the LP Gas equipment at both the supplier depots and the customer installations. It was also important that LP Gas staff and drivers were kept out of undue risky situations, including entry into unsafe areas.

Suppliers made a special effort to ensure that emergency services in the devastated parts were kept supplied with LP Gas, to make sure they could feed their teams who were operating around the clock. It was also important to keep in touch with the authorities to assess needs from their perspective.



Rescuers listen for survivors

### Why LP Gas is an Exceptional Energy in Emergency Situations

The continuity of LP Gas supply to Christchurch and surrounding area made a bad situation a little easier to survive.

The ability to store LP Gas, combined with the flexible and relocatable nature of LP Gas infrastructure, really does make LP Gas an Exceptional Energy during emergencies.

### 4. Acknowledgements

Mr Eric Hahn, Elgas, Australia



Elgas Delivery Truck