

Resilient Organisations

Report 1

Asia Pacific Economic Cooperation

The Canterbury Earthquake Series
Business Impacts Overview

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Business Impacts Overview

Between September 2010 and February 2012 (a period of 18 months) the Canterbury region of New Zealand has experienced over 10,000 earthquakes (Nicholls, 2012). This report is the first in a series that will describe the impact of the Canterbury earthquake on businesses. This initial report gives a high level overview of the earthquake events and the impacts on the Canterbury economy and businesses. This report is intended to provide background and context for more in-depth analyses to come in future reports.

1. Earthquake Sequence

1.1 September 4th 2010 earthquake

The September (Darfield) earthquake struck at 4:35am on the 4th of September 2010. It was an M_w 7.1 earthquake, and its epicentre was located approximately 40km west of the Christchurch central business district (CBD). Areas near the fault rupture experienced ground accelerations that were 1.26 times the acceleration due to gravity (GNS Science, 2010). This earthquake caused significant damage to heritage and unreinforced masonry buildings throughout Canterbury, but luckily, due to the timing of the earthquake, no one was killed and there were very few injuries.

The Christchurch (CBD) was cordoned off from the public for approximately one week while structural assessments were completed, effectively ceasing all economic activity in the CBD of New Zealand's second largest city. In Kaiapoi, a small town 20km north of Christchurch, approximately 75% of businesses received either red-tags (unsafe for use) or yellow-tags (restricted access) following structural assessments (Warwick, 2011).

1.2 December 26th 2010 earthquake

The seismic activity continued in the months following the the September earthquake, with shocks migrating east of the city. On December 26th (Boxing Day) 2010 a swarm of aftershocks almost directly below the Christchurch CBD, including a M_w 4.9 earthquake, caused power outages across the city. Several areas within Christchurch, including the retail heart of the city - the Cashel Street Mall, were evacuated causing major disruptions for retailers on one of the busiest shopping days of the year (GeoNet, 2010; Muir-Woods, 2012).

1.3 February 22nd, 2011 earthquake

Approximately six months after the September earthquake, at 12:51pm on 22 February, 2011 an unmapped fault ruptured approximately 13km south-east of the Christchurch CBD causing an M_w 6.3 earthquake. The Christchurch CBD experienced ground accelerations that were among the highest ever recorded in an urban environment, more than twice the acceleration due to gravity (GNS Science, 2011b). The February earthquake killed 185 people. The great majority of these deaths occurred in two reinforced concrete buildings in the Christchurch CBD, the Canterbury Television (CTV) building (115 fatalities) and the Pyne Gould

Corporation (PGC) building (18 fatalities) (New Zealand Police, 2011). The other 52 fatalities were mostly attributed to falling masonry and rock falls.

Throughout Christchurch almost all unreinforced masonry buildings suffered significant damage or collapse. The central city was cordoned off and access guarded by the police and the New Zealand army. This cordon has, at the time of writing, been in place for 14 months. The cordon originally covered almost 4 square kilometres of the Christchurch CBD, and has been reduced in stages, currently enclosing approximately 0.7 square kilometres of the city (CERA, 2012a).

Residential areas were significantly affected by liquefaction, with water and sediment emerging through fissures in the ground. Pervasive infrastructure damage is an on-going challenge for the city.



Figures 1 & 2: Bus crushed by masonry facade & part of the Christchurch CBD cordon as of August 2011

1.4 June 13th 2011 earthquakes

Though seismic activity continued following the February 22nd earthquakes, there were very few aftershocks over M_w 5.0 until June 2011. Just as progress toward recovery had commenced two moderately large earthquakes (M_w 5.6 and 6.0) on June 13th, 2011 caused widespread business closure throughout the Christchurch area (GNS Science, 2011c). The June 13th earthquakes caused more structural damage to vulnerable buildings and highlighted the ongoing rock fall hazards in the Port Hills and Redcliffs areas.

1.5 December 23rd 2011 earthquakes

In the afternoon of December 23rd, 2011 an M_w 5.8 earthquake struck approximately 20km east of the Christchurch CBD. This was followed by a cluster of aftershocks, the strongest of which was M_w 6.0 (GNS Science, 2011a).

At the time of writing the earthquakes are ongoing in Christchurch, and scientists warn that the region may have entered into a period of heightened seismic activity that could continue for a decade or more. In addition to building damage, the 2010 and 2011 earthquakes caused significant land damage such as subsidence, lateral spread, cliff collapse and soil liquefaction; all of which present serious technical, insurance and economic problems for the rebuild.

2. Economic impacts summary

Estimates based on property damage place the combined cost of the Canterbury earthquakes at around \$20 billion New Zealand dollars. This amount is the equivalent to approximately 10 per cent of New Zealand's GDP. As a comparison, the estimated cost of the 2011 Great East Japan earthquake and tsunami is around 3 to 4 percent of Japan's annual GDP (Bollard & Hannah, 2012).

While private insurers will bear a significant portion of the costs, the earthquakes have caused a notable deterioration of the Government's operating deficit over the 2010/2011 year. This effect on the national debt position is partially responsible for the downgrade of New Zealand's long-term Standard and Poor sovereign rating to 'AA' (Bollard & Hannah, 2012). However, the rebuild is expected to get firmly underway in 2012 and will drive national investment and growth in the New Zealand economy through 2015 (Treasury, 2011).

3. The Christchurch CBD

Prior to the September earthquake, the Christchurch CBD was the business and entertainment hub of the South Island. The area within the "four avenues" (which effectively border the central city) contained 6000 businesses and over 51,000 workers. The closure of the CBD caused a 100% stoppage of economic activity within the cordon. In the months following the February earthquake, some people with businesses inside the cordon gradually gained limited, supervised admission to their buildings to retrieve possessions after an engineering inspection.

Several multi-storey buildings in the CBD, such as the 26-storey Grand Chancellor Hotel, experienced substantial vertical displacement (the Grand Chancellor was on a 1m tilt following the February earthquake), creating a major hazard for people and property in their potential fall zone (DBH, 2011).

As a combined result of the earthquakes, approximately 1300 buildings (over 60% of the commercial buildings in the Christchurch CBD) have been marked for demolition (CERA, 2012b). A large number of these demolitions are occurring not because the buildings pose a significant danger, but because the buildings have been deemed *uneconomic* to repair (Muir-Woods, 2012).

Efforts have been made to continue to attract people to the Christchurch CBD and maintain social investment in the city centre. One such initiative is the Christchurch Re:Start, a hub of 20 retail stores housed in repurposed shipping containers. While Re:Start has been strongly supported by Canterbury residents, there is an ongoing risk of capital flight from the CBD as uncertainties persist about the timing and cost of the rebuild, insurance, and emerging issues of regulatory and demographic changes following the earthquakes.

4. Business impacts in the CBD and beyond

4.1 Relocation

Due to the extensive damage and demolition in Christchurch, businesses have relocated throughout the Canterbury region and New Zealand. With heightened demand on available buildings, the cost of leases and rentals for commercial accommodation greatly increased. Many organisations found they needed to sign long-term leases (terms of six or more years) in order to secure any temporary accommodation.

The Canterbury Employer's Chamber of Commerce (CECC) appointed a coordinator to identify spare commercial accommodation, and help place organisations attempting to relocate (Radio NZ, 2011). In September 2011, the Westpac Business Hub opened and served as a temporary meeting office space for displaced businesses. The hub includes free office space (which can be reserved by the hour and up to one week) and a range of services (Westpac, 2011).



Figure 1: Offices in the temporary Westpac business hub & stores in refurbished shipping containers in the Christchurch CBD Re:Start Mall

4.2 Revenue, spending, and tourism trends

Business surveys have found that approximately 40-45% of businesses following the February earthquake experienced a decrease in revenue, while about 20% of the businesses reported an increase in revenue (DOL, 2011; Resilient Organisations, 2011).

The New Zealand Institute of Economic Research Inc. (NZIER) reported acute drops in consumer confidence following the February earthquakes. However, trading activity rebounded in the June 2011 quarter from -5% to +4% (seasonally adjusted) (de Raad, 2011). Similarly, as of the final quarter of 2011, retail sales were improving in Canterbury. The seasonally adjusted retail sales for the September 2011 quarter increased nearly 4% from the June 2011 quarter (CDC, 2012).

A large portion of Canterbury's guest accommodation was located within the Christchurch CBD and became either inaccessible or was damaged. International guest nights in January 2012 were down 40% when compared with January 2011. Domestic guest nights decreased 15% for the same period (Statistics NZ, 2012). Even areas of Canterbury that were not

damaged in the earthquakes are experiencing declines due to the perception that Canterbury is 'closed', that major tourism attractions are gone, or fear of the on-going seismic activity.

Another major issue for Canterbury tourism was the loss of Christchurch's AMI Stadium and the ability to host any games for the 2011 Rugby World Cup. The expected boost to tourism and regional spending of this major international event was substantially reduced for the Canterbury economy. Canterbury sales rose only 0.1 per cent (\$2m) on the same quarter of 2010, compared to the rest of the South Island recording a 1.1 per cent (\$22m) increase and the North Island recording a 3 per cent increase (\$390 million) (Stewart, 2012).

4.3 Staffing levels and staff wellbeing

While the majority of operational businesses in Canterbury did not experience changes in staff numbers, staff decreases were more likely than staff increases (DOL, 2011; Stevenson et al., 2011). The exception was in the Construction industry and Primary, Transport and Utilities sectors, where staff increases were much more likely. Though the rebuild has been slower to emerge than originally projected, companies in the Construction industry have made efforts to maintain or increase staff levels for the eventual reconstruction demand (CBRG, 2011).

Due to the on-going aftershocks and long-term environmental uncertainty, the Canterbury earthquake series is an exceptional example of prolonged workplace stress. Organisations in several industry sectors across Canterbury identified staff welfare as the biggest challenge facing their organisation following the disaster (Stevenson et al., 2011). After the February earthquake a large number of organisations noted they had lost staff due to voluntary relocations out of the disaster affected area (Stevenson et al., 2011).

4.4 Emergent challenges

The collapse of the CTV and PGC buildings following the February 2011 earthquake led to the establishment of the Canterbury Earthquakes Royal Commission to investigate the built environment in the Christchurch CBD. The Commission is also evaluating the adequacy of the relevant building codes and standards for the future (Royal Commission, 2012).

In the second half of 2011 through 2012, the Canterbury Earthquake Recovery Authority (CERA) has asked commercial building owners to engage engineers to complete detailed engineering evaluations of their buildings so that the Authority can assess which buildings in the city are earthquake prone. This has led to a new wave of sudden business closures in early 2012. Some suspect that engineers are proceeding especially conservatively after members of their profession came under scrutiny by the Commission for liability in the cases of major building failure in the Christchurch CBD (Cairns, 2012).

The insurance landscape has been altered by the recent earthquakes in Canterbury. Several issues were identified regarding commercial insurance in Christchurch, and can be summarised as follows: (1) sums insured were inadequate; (2) the cost of demolitions and debris removal were not factored into costs; (3) professional fees for engineers were escalated

following the disaster and not adequately covered; and (4) there is ongoing uncertainty about how retrofitting and new building code costs will be applied and what the implications will be for future insurability (Muir-Woods, 2012). Most insurers imposed a temporary moratorium on issuing new policies following both the September and February earthquakes. Every aftershock of M_w 5.0 or greater (of which there have been 40) generally leads to a further 21 days suspension on issuing new policies (Cavell, 2011). Insurance premiums for some pre-1935 buildings (built before a building code was introduced) could more than double and some insurers are altogether refusing to accept the risk on older properties. For all types of buildings both premiums and insured's excesses are expected to rise (Lauchlan, 2011).

Currently, almost 14 months after the February earthquake, businesses are beginning to run out of business interruption insurance coverage. Delays, caused by insurance issues, planning and seismic uncertainties, are likely to exacerbate inflationary pressures on prices for construction materials and labour once the rebuild begins in earnest (BNZ, 2012).

4.5 Support Available

The demand for business and employee support has been larger than anything New Zealand has dealt with in the past; approximately 40,000 employees and 9,000 sole traders have sought assistance (Bollard & Hannah, 2012). Following the 2011 February earthquake Recover Canterbury was formed to manage money donated to a trust fund to support businesses and to channel information and resources to distressed companies. As of June 2011 Recovery Canterbury had provided assistance to over 3,000 Canterbury businesses (CECC, 2011).

The national government implemented a financial support package for businesses following the February earthquakes. This support included an Earthquake Wage Subsidy to help employers continue payment of wages while the future of the business is considered, and Earthquake Job Loss Cover to support employees whose employer believed their business was no longer viable. Additionally, the Inland Revenue Department waived fees for late filing of taxes.

5. Summary

The Christchurch and Canterbury economies are currently experiencing two recoveries: from the economic recession and from the earthquake events. Financial projections show that the rebuild of Canterbury following the earthquakes will drive New Zealand's economic growth for the next several years (de Raad, 2011). Businesses however continue to contend with uncertainty regarding insurance, future seismicity, demographics changes, and when and where they will rebuild.

This overview of the Canterbury earthquakes and their economic and business outcomes represents the first part of a series of reports on the earthquakes and their impacts. The reports to follow will offer more detailed analyses of the impacts and outcomes of the Canterbury earthquake sequence for businesses in the region.

6. References

- BNZ. (2012). Tightening Cycle Delayed Further. In B. o. N. Zealand (Ed.), *Markets Outlook* (5 March 2012 ed., pp. 1-8): National Australia Bank.
- Bollard, A., & Hannah, M. (2012). A tale of two crises: Speech to Canterbury Employers' Chamber of Commerce Christchurch 27 January 2012: CECC.
- Cairns, L. (2012). We'll close more buildings, say quake engineers, *The Press*. Retrieved from <http://www.stuff.co.nz/the-press/news/christchurch-earthquake-2011/6481553/We-ll-close-more-buildings-say-quake-engineers>
- Cavell. (2011). Your Questions Answered *Earthquake Zone Questions and Answers July 2011* (2nd ed., pp. 1-4): Cavell Leitch Pringle and Boyle.
- CBRG. (2011). Canterbury Business Recovery Trust Fund Retrieved 28 March, 2011, 2011
- CDC. (2012). Economic Snapshot: Christchurch and Canterbury Key Economic Indicators January 2012 (pp. 1-3): Canterbury Development Corporation.
- CECC. (2011). Canterbury Employers' Chamber of Commerce Retrieved 15 March, 2011, 2011, from <http://www.cecc.org.nz/>
- CERA. (2012a). CBD Cordon Reduction Retrieved March 2012, 2012, from <http://cera.govt.nz/maps/cordon-reduction>
- CERA. (2012b). Earthquake recovery update. *CERA Earthquake Recovery Update*, 1-4.
- DBH. (2011). Structural performance of Christchurch CBD buildings in the 22 February 2011 earthquake (pp. 1-8): Department of Buildings and Housing.
- de Raad, J.-P. (2011). Steady recovery after earthquake - Quarterly Survey of Business Opinion, July 2011 | NZIER| Economic Analysis | Forecasting | Consulting. *NZIER Quarterly Survey of Business Opinion* Retrieved March 2012, 2012, from <http://nzier.org.nz/media/steady-recovery-after-earthquake-quarterly-survey-of-business-opinion-july-2011>
- DOL. (2011). A Changing Landscape: The Impact of the Earthquakes on Christchurch Workplaces Retrieved March, 2012, from <http://www.dol.govt.nz/publications/research/earthquakes-impact-in-christchurch-workplaces/earthquake-impact-in-christchurch.pdf>
- GNS Science. (2010). M 7.1, Darfield (Canterbury), September 4 2010. *Historic Quakes* Retrieved 21 June, 2011, 2011
- GNS Science. (2011a). GeoNet – Dec 23 2011 - Christchurch hit again at Christmas. *GeoNet* Retrieved March 2012, 2012, from <http://www.geonet.org.nz/news/archives/2011/dec-23-2011-christchurch-hit-again-at-christmas.html>
- GNS Science. (2011b). M 6.3, Christchurch, February 22 2011. *Historic Quakes* Retrieved June 21, 2011, 2011
- GNS Science. (2011c). New Zealand Earthquake Report - Jun 13 2011 at 2:20 pm (NZST). *Canterbury Quakes* Retrieved 5 August, 2011, 2011, from <http://www.geonet.org.nz/earthquake/quakes/3528839g.html>
- GNS Science. (2012a). Earthquake Hazards. *Our Science* Retrieved March 2012, 2012, from <http://www.gns.cri.nz/Home/Learning/Science-Topics/Earthquakes/Earthquake-Hazards>

- GNS Science. (2012b). GeoNet – Canterbury Quakes. *GeoNet* Retrieved March 2012, 2012, from <http://www.geonet.org.nz/canterbury-quakes/>
- Lauchlan, M. (2011). Christchurch Earthquake - Property Impacts. *Duke & Cook Property Report, 2011(2)*, 1-6.
- Muir-Woods, R. (2012). 7. The Christchurch earthquakes of 2010 and 2011. In C. Courbage & W. R. Stahel (Eds.), *Extreme events and insurance: 2011 annus horribilis* (pp. 93). www.genevaassociation.org: The Geneva Association.
- New Zealand Police. (2011). Christchurch Earthquake: List of Deceased Retrieved March 2012, 2012, from <http://www.police.govt.nz/list-deceased>
- Nicholls, P. (2012). Christchurch Quake Map Retrieved March 2012, 2012, from <http://www.christchurchquakemap.co.nz/faq>
- Radio NZ. (2011). Businesses call for immediate cash injection Retrieved 3 March, 2011, 2011, from <http://www.radionz.co.nz/news/canterbury-earthquake/69538/businesses-call-for-immediate-cash-injection>
- Royal Commission. (2012). Royal Commission of Inquiry into Building Failure Caused by the Canterbury Earthquakes - Royal Commission of Inquiry into Building Failure Caused by the Canterbury Earthquakes Retrieved March 2012, 2012, from <http://canterbury.royalcommission.govt.nz/>
- Statistics NZ. (2012). Commercial Accommodation Monitor: January 2012. Wellington: Statistics New Zealand.
- Stevenson, J. R., Vargo, J., Seville, E., Kachali, H., McNaughton, A., & Powell, F. (2011). The Recovery of Canterbury's Organisations: A comparative analysis of the 4 September 2010, 22 February and 13 June 2011 Earthquakes *Resilient Organisations Research Report* (pp. 1-54). Christchurch, New Zealand: Resilient Organisations.
- Stewart, T. (2012). Rugby World Cup spending boost bypasses Christchurch... | Stuff.co.nz, *The Press*. Retrieved from <http://www.stuff.co.nz/the-press/business/6426583/Cup-spending-bypasses-city>
- Treasury (NZ). (2011). Economic and fiscal outlook. *Treasury Budget* Retrieved March 2012, 2012, from <http://www.google.co.nz/search?q=B.2+%26+B.3+%7C+67+1+Economic+and+Fiscal+Outlook&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a>
- Warwick, H. (2011). Report 1 - A summary of ENC's involvement from September 4th to 31st December 2010 *Economic Recovery Strategy for Kaiapoi and Surrounds*: Enterprise North Canterbury.
- Westpac. (2011). Westpac Business and Community Hub open for all. *Westpac New Zealand Media Release* Retrieved March 2012, 2012, from <http://www.westpac.co.nz/olcontent/olcontent.nsf/Content/22+September+2011>