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The forgotten impact

Kaikoura earthquake:
Wellington still paying the price

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The Kaikoura earthquake has had a devastating and on-going effect on Kaikoura. The earthquake also affected Wellington, but (thankfully) at greatly reduced force.

However, as we will highlight, even this smaller magnitude effect has had a lasting impact on many Wellingtonian's way of life. This reality prompts questions: how resilient is Wellington? What might have happened if the Kaikoura earthquake occurred even slightly closer to Wellington? And finally, what should be our response as a country to this event?

In the immediate aftermath of the Kaikoura earthquake, building owners and engineers had the run of Wellington's CBD - checking damage to buildings, inspecting road, rail, and port infrastructure. Employees were told to stay away from their places of work. Ferry sailings were cancelled, delaying freight movements. Schools were closed, and NCEA exams cancelled.

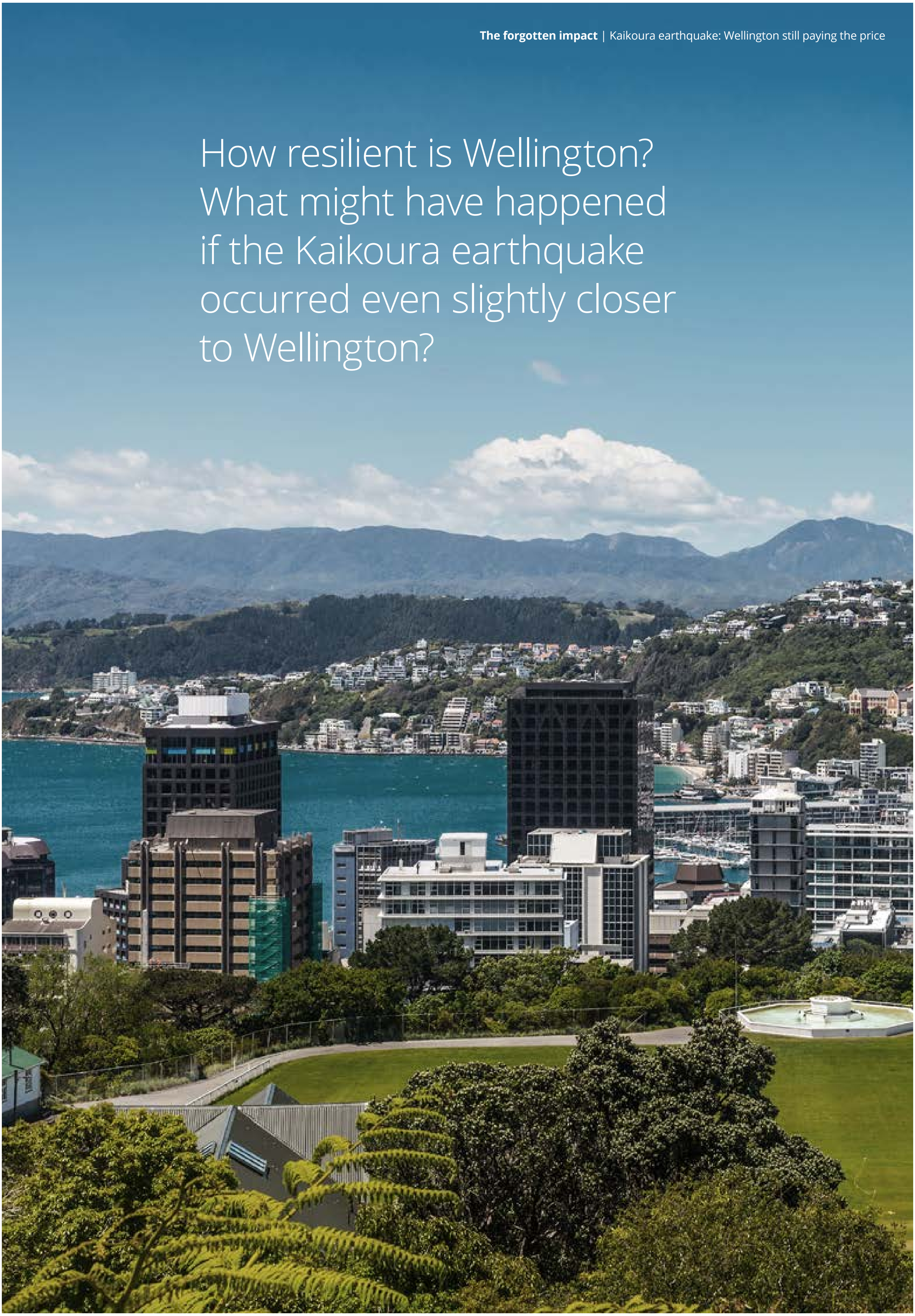
For many living and working in Wellington, life largely returned to normality within a matter of days. Schools re-opened, the CBD was declared safe to re-enter. However, there has been a significant over-hang from the events of November 2016.

We estimate that there is a **$1.25 million** hit on regional GDP for every week Wellingtonians are working away from their primary office space - re-housed somewhere across the city. For every week that passes, the economic impact grows. 25 weeks have now passed, so the total impact of this effect alone is at least **$20 - $30 million**. Even so, our estimate is likely to under-state the productivity impact on GDP, as there are many businesses who have understandably chosen not to publicise the disruption to their operations.

It also does not take into account the impact on retailers let alone the impact of a port that continues to operate at substantially reduced capacity. And while many building owners have insurance, there must also be a cost to those building owners who are still working through next steps as they face up to the reality of substantially lowered New Building Standard (NBS) assessments. In short, the impact of the earthquake on Wellington is not immaterial.

We will look more closely at the types of inefficiencies that contribute to this on-going impact in Wellington – in particular the inefficiencies for firms and the approach to building repairs. We will also illustrate the economic impact of a similar magnitude event to the Kaikoura earthquake occurring in Wellington, before concluding on the possible opportunities that the Kaikoura event affords us as a country.

How resilient is Wellington? What might have happened if the Kaikoura earthquake occurred even slightly closer to Wellington?



"Some people will find if they're working from home that it might be a bit more convenient but overall, I think our members would prefer to be working in a stable place. It's going to affect their productivity, there's no doubt about that."

Glenn Barclay
PSA national secretary

The impact on Wellington firms

Thousands of workers in Wellington have been displaced as a result of their buildings being either declared unsafe or requiring remedial work. The resulting drop in loss of firm efficiency has been felt on several levels.

01. In the immediate aftermath, businesses are unable to return to their offices and in some cases, unable to work at all. During the scramble by businesses to secure alternative accommodation for their workforce and establishing the necessary support infrastructure, such as desks, servers, etc., working hours are lost and output declines.

02. The alternative accommodation available for displaced businesses tends to be of a lower standard – not reflecting the modern collaborative layouts found in more modern buildings. As workers are adapting to a new working environment, which may not be equipped with the same equipment as in their previous location, worker productivity takes a hit and businesses are not performing at pre-quake levels.

03. Most significantly, the disparate working environment that many of these organisations find themselves in creates productivity challenges, where workers that used to be co-located are now spread across multiple locations. With increased communication and transport costs, in both time and money, inter-firm efficiency is reduced and less collaboration reduces the quantity, and potentially quality, of any output.

Another efficiency impact for Wellington firms has been the mismatch of labour in the months following November 14. A prime example of this is that while engineers were stretched beyond capacity, businesses had to wait for their buildings to be inspected. Due to a shortage of engineers, 18 buildings in Wellington were given extensions on their invasive testing deadline, leading to a lengthier re-entry period.[1] Delays to engineering assessments has prolonged the period of time that workers have been displaced, impacting the productive capacity of their firms. Many workers remain displaced some six months on.

A further more opaque drag on firm efficiency has been the deferment of projects and initiatives, which, prior to November's events, were part of an organisation's work programme. These were, in some cases indefinitely, deferred as focus was (understandably) diverted to core day-to-day operations. The Wellington Airport runway extension hearings saw delays until mid-year due to a shortage of court space caused by earthquake hearings.[2] Arguably, it is these non-core projects that deliver the greater productivity gains relative to day-to-day operations, as organisations explore new opportunities and ways of working.

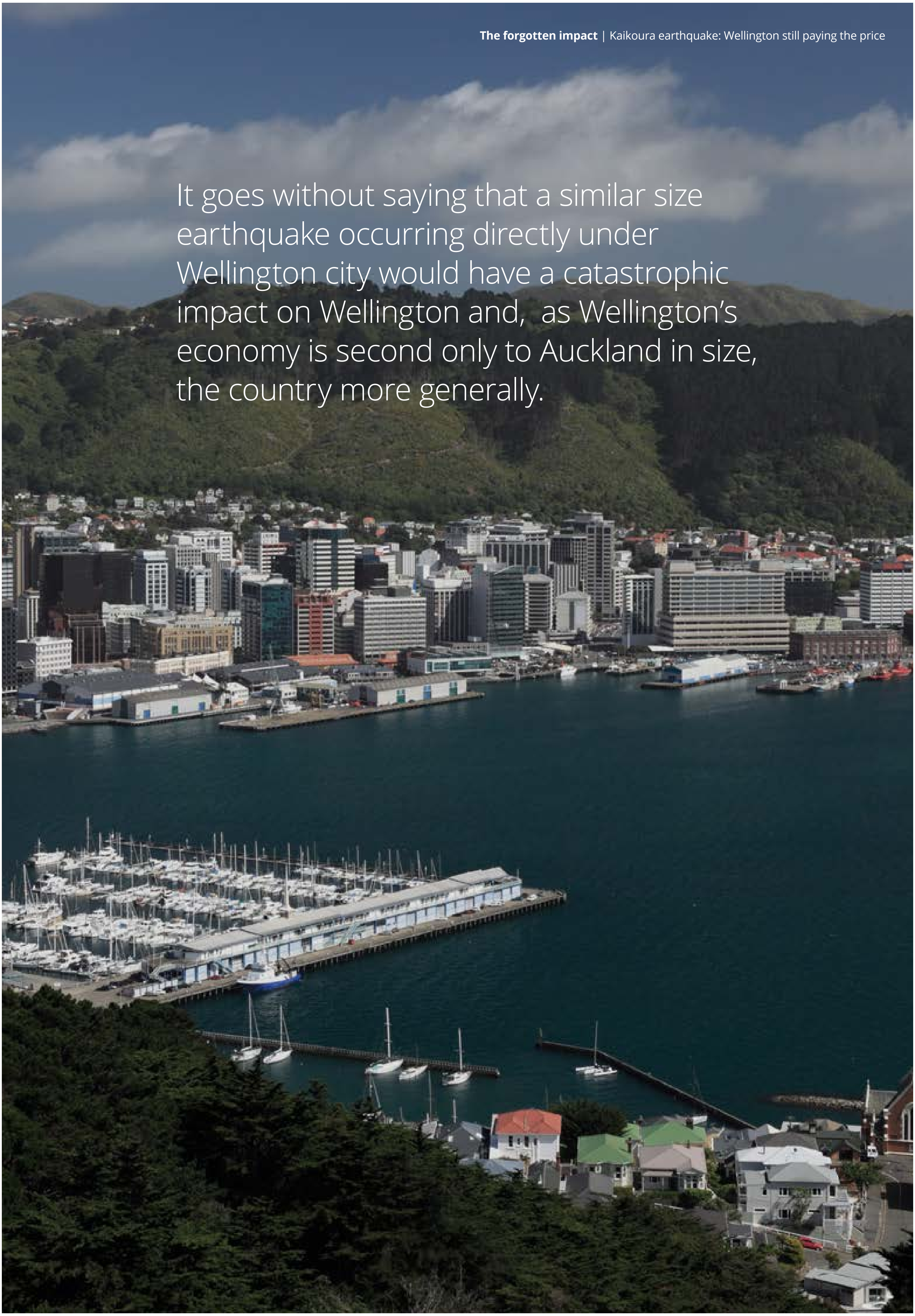
"We also need to learn the lesson of the earthquake and make sure we make the city as resilient for the future. This will mean changes to the council financials and a change of priorities."

Justin Lester

With Wellington being a government town, the deferment of ministry and departmental initiatives is likely to have had a significant ripple effect on government partners and suppliers. Wellingtons Mayor Justin Lester began his assignment "ready to roll up his sleeves and get stuck into issues like housing and transport."[3] With the unexpected quake taking priority over these issues, earthquake resilience became the immediate focus for local and central government.

[1] http://www.stuff.co.nz/national/nz-earthquake/89300037/owners-of-18-wellington-buildings-get-extensions-to-invasive-testing-deadline
[2] http://www.stuff.co.nz/business/89207176/earthquake-delays-wellington-airport-runway-extension-until-mid-year
[3] http://www.stuff.co.nz/dominion-post/news/88592332/earthquake-resilience-transport-and-housing-top-wellingtons-2017-agenda

It goes without saying that a similar size earthquake occurring directly under Wellington city would have a catastrophic impact on Wellington and, as Wellington's economy is second only to Auckland in size, the country more generally.



The response was funding reprioritisation and projects being pushed out. While one can only speculate where funding was lost, and what projects were pushed out, the transfer of money and time from new initiatives to repair and replacement is an inefficient outcome faced by Wellington city.

Inefficient approach to building repairs

As firms focused on restoring their pre-quake operations, insurance companies were inundated with claim requests. The Insurance Council of New Zealand stated that private insurers received business claims valued at more than $900 million from the Kaikoura earthquake. The Wellington region has taken the brunt of business losses with two thirds (65%) of the total losses.[4]

It's not clear what proportion of the approximately $600 million relates to building repairs in Wellington. However, we do know that to date, 61 Molesworth Street, Defence House, Reading Cinema carpark, and MSC Building have been demolished or are planned to be, and question marks still hang over the fates of a clutch of buildings including Statistics House and BNZ Harbour Quays.[5,6]

In our *Deadly Heritage* report, which was co-authored with NZ Initiative last year, we found that:

Respondents (owners of buildings) were unanimous in their opinion that engineering assessments were markedly wide-ranging with an artificially low number of so-called 'safe-bet' low-NBS assessments. We noted that this may be due to conservatism among engineers due to the unprecedented level of scrutiny on the profession after the experience in Christchurch.

Our report also found that:

The main barrier to the heritage remediation process is the tremendous cost of strengthening. This is exacerbated by limited access to capital from both public and private sources and the returns able to be achieved after the process has been completed.

These findings are likely to apply equally to non-heritage buildings. In which case, 'safe-bet' NBS assessments and the uncertain costs necessary to lift NBS ratings to acceptable levels may, in some cases, lead building owners to elect for demolition over repairs and strengthening.

If true, this is an inefficient outcome, as not only are buildings with remaining economic value being removed, but their demolition impacts the surrounding environment far more than remediation (e.g. closed roads and near-by businesses). The Cook Islands High Commission has continued to sit empty and in limbo for months while decisions about the Revera House are being made, despite being declared as unaffected itself.[7] Over the long run, this inefficiency is partially offset by the economic value of the build process and higher quality replacement.

The decision of whether to repair or replace a building can be especially difficult if the building has been given heritage status. The demolition process involves a much lengthier regulatory process, and regulation regarding like-for-like heritage replacement specifications often make repairs unnecessarily expensive. Our *Deadly Heritage* report found:

[4] http://www.scoop.co.nz/stories/BU1702/S00017/kaikoura-earthquake-business-claims-reach-900-million.htm
[5] http://www.radionz.co.nz/news/national/328094/revera-house-slated-for-destruction
[6] http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11797820
[7] http://www.stuff.co.nz/national/nz-earthquake/86810672/thursday-daily-update-on-wellingtons-quake-affected-and-damaged-buildings

Where demolition is an available option to building owners (i.e. repair strategies are uneconomical), that option is often unavailable for (heritage) listed buildings.

The regulatory process involved in the demolition of a heritage building is a particular concern for public safety. As we recommended in *Deadly Heritage*, central government clarification of the NBS, leading to a more uniform/standardised application, should make for quicker decision-making by building owners and more efficient outcomes. Switching to a liability-based regime, which would ensure that the most important strengthening works are completed the fastest, and the worst-off buildings are made safe first, would reduce safety concerns and prevent further disruption caused to surrounding buildings.

Economic Impact of a larger earthquake in Wellington

The lasting economic impact created by the Kaikoura earthquake in Wellington is a wake-up call.

It goes without saying that a similar size earthquake occurring directly under Wellington city would have a catastrophic impact on Wellington and, as Wellington's economy is second only to Auckland in size, the country more generally.

To give a sense of the economic impact of such an event, we have modelled a shock similar in size to the Christchurch earthquake occurring in Wellington.

The results of this modelling show that New Zealand's GDP could be almost **$29 billion** lower between 2017 and 2030 (a loss of 1.2 per cent over this period). The vast majority of this impact is concentrated in the Wellington region, with a **$26 billion** reduction in regional GDP over the same period (a loss of 10% over this period).[8]

We calculated this estimate using a computable general equilibrium (CGE) model. CGE models are a class of economic models that use actual economic data to estimate how an economy might react to changes in policy, technology or other external factors. We used data from the 22 February 2011 Christchurch earthquake to quantify the shock, which includes impacts such as:

- cost of damage estimates of around 2.5% of the nation's capital stock;
- a reduction in employment of 9% in the two years following the earthquake; and
- the doubling of the overall cost of dwelling insurance.

Running sensitivity analysis on this result allowed us to see the reduction in the economic costs if the shocks were minimised due to an intervention, such as proactive resiliency efforts. We found the relationship between the building damage, labour supply, and insurance premiums versus economic costs were linear. Therefore, Wellington's regional GDP is estimated to benefit **$260 million** for every 1% reduction in these factors.

This highlights the importance of improving resiliency in the highly earthquake-vulnerable capital city. Investments today will see a stronger and better-prepared city for the unfortunate occurrence of any larger-scale event in Wellington.

We consider the above modelling is a good starting point for further work that, among other things, can help authorities better understand the inter-relationships, dependencies, and trade-offs of extended disruptions across the regional and national economy.

Possible Opportunities

Remember our first questions: how resilient is Wellington? What does the Kaikoura event tell us we need to do to make it more resilient?

The first thing it tells us is that Wellington is an important part of the national economy and even modest levels of disruption have economic impacts that are nationally significant.

It also tells us that the consequences of such events are hard to predict, making it more important that we invest more systematically in resilience as a country. Our report, *State of the State 2017*, discusses this in detail.

Fundamentally, it also underlines the importance of central government working hand in glove with local government. Investment in resilience cannot be ad hoc and piecemeal. Too often central and local government appear to be pulling in opposite directions rather than jointly for the benefit of New Zealanders.

Nowhere is this more starkly demonstrated than in Wellington as the capital. If Wellington were to experience a major event, the impacts on central government would be much more far-reaching than the inability to access computers currently trapped inside Statistics House, or relocation of Defence staff from Thorndon to Trentham for a few weeks.

But with adversity comes opportunity. If Kaikoura really jolted us into action metaphorically as well as physically, then what form should those actions take? In our view, these actions must comprise a combination of regulatory reform, substantially closer working relationships between central and local government, and investment in a range of measures to boost future resilience.

Utilities, such as Wellington's port and water facilities are fragile, yet will be hugely important in delivering an emergency response. Now is the time to plan and invest in strengthening Wellington's vital lifelines – land, sea, and air.

[8] These results are in 2015 – 2016 NZD

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