

# UNDERSTANDING THE VULNERABILITY OF ORGANISATIONS

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## INTRODUCTION

The 1855 Wairarapa Earthquake was a significant event in the lives of the people affected. For many of them, it would have had a 360 degree impact; concern for the safety of family and friends; damage to homes and possessions; and disruption to shops and businesses affecting both livelihoods, and access to essential goods and services. It is the impact of major events, such as the 1855 Earthquake, on businesses that is the focus of this paper.

Businesses, or more generically organisations, play key roles within our society. They have the responsibility for managing, maintaining and operating our infrastructure, creating our economy, and providing employment and essential goods and services for our communities.

The ability of key organisations to continue to function in the face of sudden crises, such as that presented by earthquakes, will have a large influence on the length of time that essential services are unavailable, and on the suffering and duration of recovery for the community as a whole.

## HOW ARE ORGANISATIONS IMPACTED?

Total damages to buildings and contents (including merchandise and household effects) from the 1855 Wairarapa Earthquake was estimated at around £15,000 (Grapes 2000). Included in this estimate would be significant damage to business premises, stock and machinery.

One of the few accounts of business impacts from the 1855 Earthquake concerns the delayed reopening of the Union Bank. The bank was closed until the safe could be righted and the building made safe against future aftershocks. It is interesting to note that even 150 years ago, staff quickly recognised that the re-opening of the bank was important to the recovery of other businesses and the community:

“...(an) enquiry by a ‘cool customer’ of the Bank, whether it would be open at the usual hour; I told him it was impossible as we had not yet got at the safe: I saw at once, however, that it was my duty to open the Bank as soon as I possibly could.” Mr Raymond, manager of the Union Bank (Grapes 2000 p155).

By early March 1855 (two months after the earthquake) most businesses were reopened and operating much as before, although some repairs were not completed till months later (Grapes 2000).

In today's closely networked world, the impact of a magnitude eight earthquake in downtown Wellington is likely to cause far greater economic consequences than it did in 1855. After the 1989 San Francisco Bay Earthquake it is estimated that 50% of small businesses directly affected were permanently disabled, with the resulting job losses significantly impacting the economy of the area (EPICC, 2003).

The economic imperative to build businesses and organisations that are more resilient to hazards was again clearly illustrated by the September 11th attacks, where business interruption losses far exceeded the sum of all property losses (Munich Re 2001).

These types of events have the potential to impact on nearly all facets of an organisation. The breadth of potential impacts includes:

- **Direct physical impact:** Organisations may suffer partial or even total damage to their facilities, or the facility may become off-limits, even where it is not directly damaged, if contamination is suspected. Organisations should consider where and how they would relocate if needed, and have off-site back-ups of all critical information and equipment needed for initial response and recovery activities.
- **Human impact:** Loss of key staff including those in positions of leadership or who have specialist knowledge, or the absence of large numbers of staff has the potential to severely impact the ability of an organisation to respond and recover from a hazard event.
- Organisations need to factor into their planning that key staff may not be available: because of death, injury or illness; their need to care for family or friends at home; or if they are unable or unwilling to come to work, for example because of transport disruptions, fear of terrorist attack or contagious illness. Organisations need to recognise that the first priority of staff will be the safety of family and friends. Staff are unlikely to be available or productive until this need has been met. Where organisations require staff to be available and productive in times of crisis, provision should be made for their welfare, in terms of food and water, monitoring stress levels, rotation of staff etc.
- **Interruption to lifeline services:** Lifeline services are those critical services on which a community relies, including water, electricity, gas, sewage and transportation. Without these services, many organisations would be unable to function, even if the rest of their facility were unaffected. Buildings without water and hence sewage, quickly become unusable because of health concerns. IT, communication systems and a myriad of other equipment rely on electricity. A safe and efficient transportation system is necessary for the movement of goods, staff and customers. Particularly with the prevalence of just-in-time delivery systems, a functioning and reliable transportation system is critical for many businesses. Organisations need to recognise these vulnerabilities, and where appropriate put strategies in place for managing them.
- **Delays and increased costs for repairs:** Anyone trying to find builders or trades people at present will quickly recognise the potential shortages there are likely to be after a major event such as an earthquake. A majority of people will want to rebuild as quickly as possible. This is likely to cause labour and resource shortages, inflate prices for reconstruction, and place significant pressures on regulatory authorities for approving plans and checking the quality of work.
- There is also likely to be a shortage of basic resources. Particularly in the case of regional events, it will not just be your organisation that requires replacement desks, chairs, filing cabinets, computers etc ASAP! Many organisations underestimate the

time it takes to source and replace equipment, particularly where suppliers make-to-order and do not carry large amounts of stock other than what is on the shop-floor.

- **Reduced delivery performance from suppliers:** Organisations need to consider that although their organisations may be well prepared for times of crisis; other organisations on which they depend may not be so well prepared. Distress of a key supplier or even competitor can have major knock-on impacts throughout the business sector. Organisations need to identify these impacts quickly whilst there is still time to respond.
- Where critical business services are provided by contractors or suppliers, organisations should think carefully about how to manage the risks that this imposes on their operation. Performance expectations and required capabilities in times of crisis need to become a criterion for supplier selection, and capabilities should be tested to verify that expectations are both realistic and being met.
- **Potential changes in customer purchasing behaviour:** During and after a major crisis, it is quite possible that customers and clients may scale back their investment in non-essential goods and services, until market volatility and uncertainty is reduced. Business owners and operators need to quickly recognise these changes, and adapt their recovery strategies accordingly. This aspect is further discussed in a later section “What does ‘recovery’ mean for an organisation.”

As well as thinking about the broader scope of ways an event can impact, organisations also need to think beyond the typical ‘disaster’ scenarios. In New Zealand, quite understandably, focus tends to concentrate on natural hazards such as earthquakes or flooding. The next major disaster to strike New Zealand though may well be quite different, such as an influenza pandemic or computer virus.

The impact of major hazard events on organisations is the subject of a six-year research programme underway in New Zealand (Resilient Organisations 2005). To challenge organisations to start thinking more broadly about the hazards that might affect them, this programme uses four different consequence scenarios to explore resilience:

- **Regional Event:** Significant *physical damage to buildings, contents, and resources* coupled with severe disruptions to *lifeline services* such as transportation, electricity, water and telecommunications. An example of this type of event may be a major earthquake or flood.
- **Societal Event:** A nationwide event resulting in *extended staffing absences*. In this event all physical infrastructure is intact, but staff are either unable or unwilling to be at work. Examples may be an influenza or Sars pandemic.
- **Localised Event:** An *organisation specific incident* resulting in loss of life, severe disruption to normal operations and *reputation impacts*. The intense focus of media and regulatory agencies requires the organisation to focus on managing stakeholder perception as well as the physical response and recovery from the event. Examples may be a fire or explosion in a key building, or a hazardous spill affecting the immediate locality.
- **Distal Event:** Impacts *business flow* through key suppliers or customers. This consequence scenario is designed to explore the ways an organisation may be impacted through its networks of *inter-organisational relationships*. Examples may be failure of a key supplier, major disaster of another large urban centre, or an international shortage of key resources.

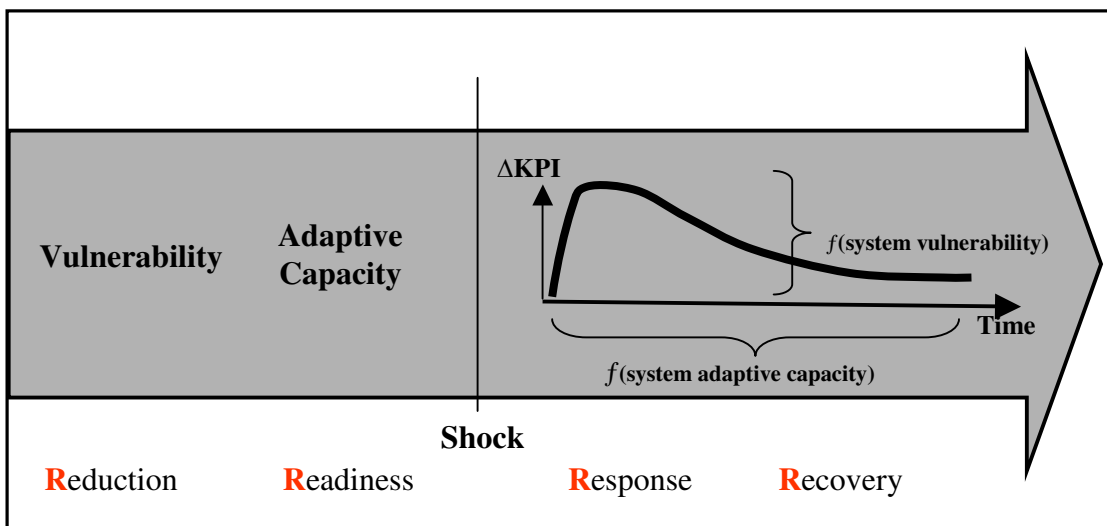
The above discussion highlights the challenges for organisations wishing to become more resilient. The variety of hazards and their potential impacts are multifaceted and complex. They are challenges, however, that need to be addressed now.

## CAN WE MAKE OUR ORGANISATIONS MORE RESILIENT?

The economic implications of organisations being unprepared for high impact events are significant. Consequences go beyond the zone of physical damage, affecting businesses right along the supply chain. Having more resilient organisations is a key component towards achieving more resilient communities because it is organisations that deliver essential services and provide employment for a large proportion of the community.

An organisation's ability to survive a major event depends on their organisational structure, the management and operational systems they have in place, and the resilience of these. So what is a Resilient Organisation? Resilience may be broken down into two key components: vulnerability and adaptive capacity. Vulnerability reflects the degree to which the organisation may be affected by an event, and adaptive capacity relates to the ability of the organisation to respond and recover from those effects.

Figure 1 illustrates this point. The ease with which the key performance indicators (KPIs) of an organisation can be moved away from their desired levels by a crisis event will be a function of the organisation's vulnerability. The time it takes for the organisation's performance to recover will be a function of the organisation's adaptive capacity. The overall resilience of the organisation will be a function of the area under the curve (Dalziell & McManus 2004), which is the total impact on performance over the response and recovery period.



**Figure 1:** Severity and duration of impact on performance as a measure of an organisation's resilience, where resilience is a function of the area under the curve.

Resilience Management brings together existing risk management and business continuity planning into a common framework; combining a strategy of managing identified risks with an ability to respond effectively when a crisis actually happens; irrespective of whether or not that event has been previously identified as a risk.

## WHAT DOES 'RECOVERY' MEAN FOR AN ORGANISATION?

A key concept within resilience is the ability of an organisation to respond and recover from an event. A question for business owners however, is '*recover to what?*' In highly dynamic environments, such as the business world, an organisation is never a static entity. Some sectors will be more stable than others, but nevertheless, an organisation that remains exactly the same over time will eventually erode its potential to achieve its purpose. In an ever-changing environment, a system must change in response to that environment in order to retain its advantage.

This has interesting implications for an organisation hit by disaster. It implies that the organisation should not aim to recover and rebuild itself to be the same as it was before disaster struck, but should recover to a new equilibrium, where it will regain synergy with its external environment. Its' post-disaster condition may lead to a very different organisational structure than before the disaster event.

This concept is also supported by disaster research, which indicates that that strongest indicator of a small to medium sized enterprise surviving a major hazard event is the extent to which the owner/operator recognises that the post disaster business environment is different, and adapts their strategies appropriately (Alesch et al 2001).

Disasters can wipe out literally years of economic progress in small economies. At this time however, relatively few organisations (public or private) in New Zealand are making appropriate levels of commitment and investment in the vital element of 'readiness' to respond to and recover from major emergency events (Brunsdon & Dalziell 2005).

Whilst risk management is being used more extensively in New Zealand today, there are few organisations that apply risk management at a strategic level across the organisation. Uptake of business continuity/emergency planning is increasing, but still only a small proportion of organisations have any planning in place (Ewing-Jarvie 2004), and those organisations that have plans in place, often lack the depth required to sustain a prolonged emergency response capability. This needs to change if we as a community are going to become more resilient.

## CONCLUSIONS

Organisations deal with uncertainties and unexpected events all the time. Some organisations, such as the emergency services are designed to manage them as part of normal operations. For a majority of others it is just part of normal business, where uncertainty presents both opportunities and risks.

There is an operating envelope, within which certain scale events are part of normal business. However, once an event moves beyond this scale, there is greater uncertainty about the organisations ability to respond, and the scale of potential impacts.

During and after a major disaster is a time when communities are least capable of absorbing service disruptions – hospitals, emergency services and response and recovery teams rely on water, power, communications and access to minimise risks to

life and property. In New Zealand, this criticality is reflected in Civil Defence and Emergency Management legislation (CDEM Act 2002), which places a statutory requirement on all lifeline service providers to be able to function to the fullest possible extent during and after an emergency, and to have plans for such continuity that can be reviewed by the Director of Civil Defence on request.

There is also a case for non-lifeline organisations to become more resilient to hazard events, as they also play a key role in the fabric of a community. After the initial response is over, communities will expect that normal services resume and require access to food, medicines, building materials, household goods, recreation and entertainment facilities etc. Organisations should not only consider what goods and services they need to continue operating after an event, but also to think about what goods and services they provide to a community, and how quickly the community will want and need these to be available again.

Encouraging organisations to become more resilient however is difficult in the private sector, where planning for greater resilience is not a concept that can be regulated. It requires individual business owner and operators to recognise the need for greater resilience, be aware of strategies available for increasing resilience, and be prepared to invest to achieve this resilience. In essence, there is a need to develop and promote in New Zealand a persuasive business case for investing in more resilient organisations.

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