

Making Organisations Resilient: Understanding the Reality of the Challenge

Dave Brunsdon (Kestrel Group), Erica Dalziell (University of Canterbury)

Abstract

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. An organisation's ability to respond effectively to adverse events depends on their structure, the management and operational systems they have in place, and the collective resilience of these.

New Zealand organisations have been through considerable structural change over the past two decades. This has occurred at all levels from central through to local government and the private sector. Some organisations have in fact been through several cycles of restructuring in the pursuit of different philosophies. This process has seen the evolution into smaller and more independent organisations and business units. Their focus on short-term economic efficiency has however had a detrimental effect in terms of planning to be resilient in the face of major emergency events.

This paper provides a past/ present/ future perspective of New Zealand by presenting reflections on the impacts of corporatisation during the '80s and '90s, a view of the current situation and suggestions on where future emphasis should be placed. The view is expressed that relatively few organisations (public or private) in New Zealand are currently making appropriate levels of commitment and investment in the vital element of 'readiness' or preparedness to respond to and recover from major emergency events. In addition to highlighting the challenge that this situation represents, some practical strategies for increasing organisational resilience are suggested, along with key areas where greater resource commitment should be made.

Introduction

Organisations play key roles within our society. They have the responsibility for managing, maintaining and operating our infrastructure, running our economy, and providing employment and essential goods and services for our communities. The ability of an organisation to respond effectively to adverse events depends on their structure, the management and operational systems they have in place, and the collective resilience of these.

The ability of key organisations to continue to function in the face of unexpected events will have a large influence on the length of time that essential services are unavailable, and on the duration of recovery for the community as a whole. There is a need therefore to be able to critically evaluate the consequences that hazard events may have on organisations.

New Zealand organisations have been through considerable structural change over the past two decades. This has occurred at all levels from central through to local government and the private sector. Some organisations have in fact been through several cycles of restructuring in the pursuit of different philosophies. This process has seen the evolution into smaller and more independent organisations and business units. Their focus on short-term economic efficiency has however had a detrimental effect in terms of planning to be resilient in the face of major emergency events.

Recent flood events and multi-agency simulation exercises have highlighted specific organisational challenges to be addressed in order to maintain a sustainable response to major emergencies.

The Concept of Organisational Resilience

To understand the impact of hazard events, we need to evaluate how key organisations are

going to perform during and after these events. This requires not only understanding the degree to which they might be impacted, but also their capability for responding and recovering from these impacts. This requires understanding the ‘resilience’ of organisations.

What does it mean to be a resilient organisation? Resilience definitions refer to the ability of a material or system to absorb change gracefully whilst retaining core properties or functions:

Resilience:

- the ability to rebound to original shape/form after deformation that does not exceed its elastic limit;
- the ability of a system to recover easily and quickly from adversity.

Resilience may be broken down into two key components: vulnerability and adaptive capacity. These components are illustrated in Figure 1. In the centre of the diagram the shock represents an event that pushes an individual, community or an organisation from one state of relative stability or equilibrium into another. The ease with which an organisation is pushed into this new state is a measure of their vulnerability, while the degree to which they are able to cope with that change is a measure of their adaptive capacity (Dalziell and McManus, 2004). The resilience of the organisation is a function of the area under the curve, relating to both the magnitude of impacts experienced by the organisation and the time it takes for that organisation to recover.

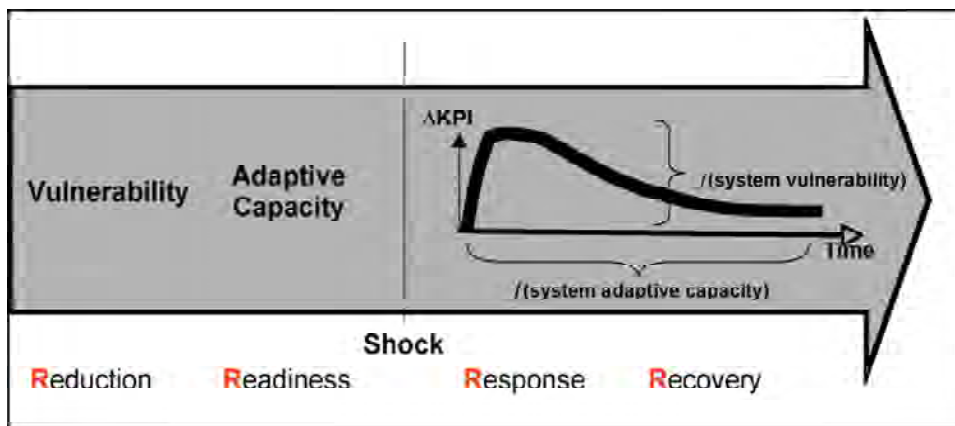


Figure 1: Severity and duration of impact on KPIs as a measure of system resilience, where resilience is a function of the area under the curve.

This generic framework highlights several opportunities for improving an organisation’s resilience:

- 1 Reducing the likelihood that recoverable limits will be exceeded (risk management).
- 2 Moving the boundaries which define the recoverable limits for the organisation (business continuity planning).
- 3 Reducing the response time to recognise that change or action is needed (situational awareness).
- 4 Improving the speed and capability of the organisation for responding to change (creativity and responsiveness).

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.

How to Evaluate Resilience?

A significant challenge to evaluating the resilience of organisations is the complexity of organisations, and the ever-changing context within which they operate. This is the subject of a six year research project underway in New Zealand (Resilient Organisations, 2005). The research explores:

- The decision-making context of risk management and business continuity planning within organisations;
- Their ethos towards preparing for extreme events;
- An organisation's potential to be adaptive and even prosperous in crisis situations;
- Perceptions within organisations around their levels of manageability and control over unexpected events;
- The criticality and resilience of inter-organisational relationships and how these are managed by organisations;
- The role of an organisation in the wider community, and how expectations of performance after a major event align with those of the wider community.

The research includes ten in-depth case studies of different organisations to evaluate their resilience to unexpected events. An early challenge identified was the need to get organisations thinking beyond the typical 'disaster' scenarios. In New Zealand, quite understandably, focus tends to concentrate on natural hazards such as flooding or earthquakes. The research uses four consequence scenarios to encourage organisations to explore different aspects of their resilience. These consequence scenarios are:

- **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.

Knowing that organisations are an important component towards creating more resilient communities is one thing; effecting change to encourage organisations to increase their resilience is another. Creating a compelling business case for investing in greater resilience is inherently difficult when the return period of the event is significantly longer than the planning horizon of the organisation. Key requirements towards achieving more resilient organisations are:

- The development of simple yet effective frameworks that organisations can use to evaluate their resilience.
- A common language and terminology to enable dialogue and debate within organisations about their resilience priorities, and to facilitate communication between organisations about common issues and interdependencies in their resilience strategies.
- Metrics for evaluating and benchmarking resilience. Metrics are needed so that organisations can demonstrate and value their resilience strategies, and create a business case for

improving resilience. These metrics must be both meaningful to decision makers within organisations, and directly relevant to the overall goals and objectives of the organisation.

- The sharing of case studies and lessons learnt to raise awareness of the need for, and demonstrate best practice in, Resilience Management.

The Current Nature of Organisations in New Zealand

Organisations across most sectors in New Zealand today can best be characterised as being more independent than in previous decades, with a greater number of organisations in any given sector. This broad characterisation typically encompasses business units within local authorities and central government agencies as well as private companies. This profile is also considered to reasonably well represent most western countries.

This context derives from two decades of restructuring in the quest for economic accountability and independence. The focus across both the public and private sectors has been to produce smaller business units with an emphasis on autonomy and self-reliance in order to produce economically efficient organisations and competitive sectors.

Issues and Implications for Resilience

This modern organisational environment has potentially significant implications for organisational resilience, particularly in terms of preparing for and responding to adverse situations. These could be rapidly occurring events such as earthquake, sabotage or biosecurity breach, or unfolding events such as a pandemic.

The emphasis on larger numbers of functionally independent organisations has essentially produced a large number of 'silos' – units that whilst they may be economically efficient in the day-to-day operating context, typically lack sufficient connectivity and critical mass to enable a co-ordinated and collective response to adverse events.

This inherent vulnerability can be offset by a conscious effort to actively link across the individual elements – but there are few signs of this in evidence in many sectors. Conversely, some organisations within critical infrastructure sectors such as energy and telecommunications have been reluctant to plan collectively for emergency events lest this be seen as colluding in terms of their governing legislation. This misplaced anxiety has hindered a much-needed collaborative approach.

Some of the key issues and the corresponding implications are discussed below.

- (1) Loss of strategic level operational experience, system knowledge, and central technical expertise and resources

There has been a progressive loss of strategic and operational experience through the restructuring process, including significant amounts of system knowledge. In the infrastructure sectors, this further reduces the institutional ability to recognise the onset of multi-system failure situations, particularly when compounded with ageing physical infrastructure in some utility sectors.

The disestablishment of the Ministry of Works and Development (MWD) in the late-1980s brought to an end the central capability for high-level independent strategic technical advice on infrastructure and built environment issues to Government. In addition to strategic planning advice on energy issues in conjunction with the then NZ Electricity Department, MWD provided significant input into the development of design standards across the range of infrastructure and built environment categories. As the Government's technical arm, MWD also placed emphasis on key public facilities being designed to meet functional and operating requirements which in many cases went beyond minimum regulatory requirements.

The physical works arm of MWD also provided a central plant and workforce resource capacity, which although less economically efficient on a day-to-day basis, would prove invaluable in times of major disaster. No equivalent central capability or arrangements currently exist.

At local government level, there has been a significant movement of utility asset managers into the consulting arena. While this has added to the loss of in-house technical knowledge, some of the positives include the ability to apply that knowledge to a range of other organisations.

General staff turnover also contributes to a loss of operational knowledge. One of the observations made in the lead up to the recent Foot and Mouth Disease simulation organised by the Ministry of Agriculture and Forestry was that of the more than a dozen government agencies involved in an exotic disease response, less than 20% of the relevant people had been involved in the last such exercise held only two and a half years previously.

(2) Contractors as the critical delivery arm for response and recovery

The associated trend to reduce the direct staff base of organisations has seen the outsourcing of many functions that are not deemed to be 'core' functions. This has resulted in a heavy (and in some cases, total) dependency upon external contractors to deliver key functions. Examples range from facility security, communications services database management and inspections (eg. AgriQuality for MAF) through to the full service delivery functions for some lifeline utility asset managers (including professional technical services as a separately contracted element).

Despite the criticality of many of these functions to the principal, asset manager or community, it is observed that inadequate attention is typically given to the likely effectiveness of the response to major emergencies by contracting agencies. This requires consideration of how the functional relationships would operate in adverse circumstances, rather than just focusing on the actual contract requirements themselves. In turn, this requires a time investment by both the principal and the contractor.

Documents defining these relationships need to spell out both the expectations and specific performance/ delivery requirements for contractors in such situations. As well as considering major natural hazard events which directly and physically affect wide sections of the community, these expectations and requirements need to cover the aspects of a response which involves the principal as lead agent (eg. Ministry of Agriculture and Forestry for biosecurity and Ministry of Health and District Health Boards for pandemic).

(3) Leadership and accountability across the public/ private interface

Two utility failures of quite different scales highlight the lingering expectations by the general public of technical leadership and co-ordination from 'City Hall'.

In the 1998 Auckland CBD power crisis, there was disappointment in some circles regarding the lack of technical leadership that Auckland City Council could provide to the response process (Newlove et al, 2003). With the ownership of the assets (and hence the technical problem) sitting with the then Mercury Energy, Auckland City Council personnel had difficulties in identifying and locating the basic data they needed in order to make informed decisions about the management of the Auckland City CBD. This in turn meant that the Mayor of Auckland City was widely perceived as being powerless in this situation – wholly understandable in terms of the devolved ownership arrangements, but of little consolation to the business community and the many others affected.

A subsequent major gas leak in Wellington City in 2000 also highlighted the lack of specific responsibility for utility co-ordination in local incidents. It took four hours after a significant gas leak was first noticed to establish which of the two distribution companies actually owned the ruptured main. Amongst other things, this highlighted that no single agency has responsibility for co-ordinating utility response for this level of incident. If the same incident had occurred ten years previously, co-ordination would have been provided by the City Council from 'City Hall' – as at that point in time, Council was the owner and operator of energy supply assets as well as water and wastewater services.

The key point from both of these examples is that while the public understands at a conceptual level the modern forms of asset ownership and the associated day-to-day operating implications, the ultimate accountability for managing the response will philosophically remain with elected members of local and central government.

The Civil Defence Emergency Management Act (CDEM Act, 2002) provides an appropriate balance in this regard – while the Act frames the duties and expectations of lifeline utilities, local government (via CDEM Groups) and central government (via the Ministry of Civil Defence & Emergency Management) have a responsibility to encourage and monitor the engagement of lifeline utilities in terms of risk reduction and response readiness.

Moving Forward – Focusing on Readiness

The Resilient Organisations research programme represents a longer term strategy for improving the resilience of New Zealand organisations. But what can be done right now to address the resilience issues of our key organisations with specific response roles?

Recent flood events, along with recent multi-agency exercises and the early case studies that are the subject of the Resilient Organisations research programme, have highlighted that greater levels of effort need to be put into Readiness (or preparedness) measures by agencies with designated response roles.

Priority areas that could form the basis of organisational action plans to enhance the readiness aspect of the resilience of organisations are outlined below.

Comprehensive Resource Planning

Specific planning is required for adequate levels of appropriately skilled and trained response personnel (comprising technical and support; in-house, contract, other agencies) to enable a sustained ('campaign') response.

Agency emergency response planning has commonly tended to focus on only those parts of organisations with 'front line' response obligations. The reality is that the full depth of most organisations will be called upon in the event of a major emergency event, requiring the mobilisation of general support staff to enable a 24/7 operation to be sustained in the crucial early stages of a response. 'Support staff' in this context includes a range of knowledgeable and experienced people who don't necessarily appreciate the valuable contribution that they would make in an adverse situation, and are not specifically trained to operate in that mode. This is particularly the case in some government agencies.

Sharing Resourcing, Knowledge & Experience Across Silos

Organisations and sectors need to drive their own risk-based response arrangements and capability development. But as the preceding points have illustrated, the key aspect that is missing relates to linking the efforts across individual organisations and sectors, particularly with regard to the sharing of resourcing, knowledge and experience. Much greater emphasis should be given to the inputs that could/ should be provided by other supporting agencies (both for specific roles and general resource assistance).

Within the public sector, Government needs to consider fostering the transportability of readiness and response planning skills amongst key departments and agencies. There also needs to be a more comprehensive process by which to apply response lessons from one organisation or sector to another. This should include more active encouragement for sharing of response resources, both actively during planning and preparation and in response situations.

Understanding the Processes for the Delivery of Contracted Services in an Emergency

In many situations involving the delivery of critical functions by contractors, there is a need for specific dialogue and definition around expectations and responsibilities by both parties to extreme events.

Readiness in this context should see contractors demonstrate their ability to perform their core contracted function on which the principal depends, as opposed to dependence upon broad 'motherhood' or 'best endeavours' contract clauses. It is important that this ability to perform be demonstrated via a constructive and dynamic engagement rather than simply as a static audit process. Whilst the contractual 'stick' will no doubt need to be wielded in some cases in order to obtain the time commitment of the involvement of a contracting organisation, the

spirit of a 'carrot' should be used in order for both sides to constructively understand how they will deliver their respective functions in an adverse event.

How Much Effort is Required?

Disasters can wipe out literally years of economic progress in small economies (whether viewed organisationally, regionally or nationally). Enhancing resilience for organisations and from a national perspective therefore has the aspect of minimising the extent of unforeseen losses, and needs to be justified in this context.

Two key questions for New Zealand around the 'level of effort' topic and readiness include:

- What form and extent of training and skills maintenance is appropriate for 'low probability but high impact' events across the range of organisations?
- What is an appropriate level of investment? Should there be more of a direct link between the level of investment from year to year and the overall estimated cost for extreme events (to an individual organisation and to the country)? Could this be expressed as a percentage of the possible (foreseeable) economic impact where it is possible to cost the impacts of representative or maximum credible events?

It is the view of the authors that a national level discussion should be held around these questions, which apply across a range of agencies and sectors.

Concluding Observations

In this paper we have covered the past, the present and outlined some thoughts for making progress in the future. The point that we have tried to make is that the key to generating more resilient organisations is to put in more focused efforts in the future than we have in the past.

Today's organisational environment features larger numbers of functionally independent organisations than in the past. The resulting focus of the business unit 'silos' on short-term economic efficiency has had a detrimental effect in terms of planning to be resilient in the face of major emergency events. Efficient and effective response and recovery processes require integration across organisational units and between agencies. This integration is achievable, but requires an increase in the level of organisational effort in terms of specific planning and resource commitment commensurate with the increasing numbers of organisational units involved.

Conceptually, the solutions for capability building to overcome this inherent vulnerability are relatively straightforward. However the first step, that of commitment, is proving elusive. It could be said that we are suffering from 'one silo too many'. In many sectors, the levels of awareness, planning and investment for events outside of the 'normal envelope' do not appear to have increased to offset these fundamental structural changes. There is now a need to play 'catchup' given all of the structural changes that have occurred over the past two decades.

The real issue for many organisations seems to be a lack of understanding of the full scope of response, including the expectations of other agencies, and extending right out to community level. Once the scope and scale of a potential response is mapped out, the necessary extent of readiness activities and hence the level of commitment required becomes reasonably apparent.

Work in these areas will require some quite fundamental shifts in organisational commitment, both within and across organisational (and in many cases, contract) boundaries – and in both the public and private sectors.

References

Civil Defence Emergency Management Act, 2002.

Dalziell, E. P., McManus, S. T., 2004. Resilience, Vulnerability and Adaptive Capacity:

Implications for Systems Performance. International Forum for Engineering Decision Making (IFED); Switzerland. December 2004

Newlove, L., Stern, E., Svedin, L., 2003. Auckland Unplugged: Coping with Critical Infrastructure Failure. Lexington Books, Lanham, Md.

Resilient Organisations, 2005. Research Programme website: www.resorgs.org.nz