RESILIENCE – WHERE TO FROM HERE?

AUTHOR: Stuart Woods, BE, MET, MEngNZ
Programme Lead - Resilience
New Zealand Transport Agency
T: 03 964 2825
E: stuart.woods@nzta.govt.nz

ABSTRACT

Improving the ways we deal with resilience has become of increasing importance and focus for New Zealand Transport Agency ("the Transport Agency as the challenge of responding to risks of transport system disruption rises. Concurrently, the GPS has raised the profile and expectations around transport system resilience, flagging increased government interest and recognition of the need for an integrated all-of-government approach to address emerging climate change issues.

Added to that, our customers' expectations of levels of service from a resilient transport system are growing.

A resilient transport system (which proactively addresses current and emergent risks) that is available for customers to use is fundamental to economic and social resilience of communities. Disruptions undermine economic growth and social well-being of communities and businesses. Resilience is critical for the national and regional transport system that carries freight and supports tourism, and that links regions to the wider transport system and markets. Poor resilience can also impede critical and emergency services providing response and recovery support after significant events.

Late last year in response to the thinking occurring at the Transport Agency to address this challenge, we decided that our first step in a strategic response was to review and develop a new Strategic Framework and recently a Resilience Position Statement.

To deliver the Framework we have been developing a Strategic Work Programme which aims to

- Be cross-Agency for optimal progress (all groups + directorates)
- Be the primary mechanism to deliver the Framework step change
- Show leadership to the sector
- Activate a boost in co-ordination, priority and the new approach
- Integrate with other Agency and partner programmes, projects and engagement activities,

This paper will discuss our new framework and Position Statement including the aspirations, new approach and response dimensions articulated as well as the ideas and directions we are exploring in the Strategic Work Programme.

Presenter: Stuart Woods

INTRODUCTION

A resilient transport system is critical to the social and economic wellbeing of communities. This paper describes how the NZ Transport Agency will proactively address current and emergent risks and potential impacts on communities from disruptive events.

Recent disruptive events have shown the risks to community wellbeing due to the exposure, vulnerability and importance of the transport system.

Improving the ways we deal with resilience has become increasingly challenging and important for the Transport Agency as the risks of transport system disruption change and rise.

The 2018 Government Policy Statement on Land Transport (GPS) raised the profile and expectations around transport system resilience, including supporting an integrated and comprehensive all-of-government approach to address emerging climate change issues.

Additionally, the context in which the land transport system exists and operates is quickly evolving in many ways: our customers' expectations of levels of service, digital technology, climate change.

These challenges require a new approach and priority to enhance the resilience of the transport system.

This paper outlines "where to from here" for the Transport Agency's initial steps towards an improved approach in addressing these resilience challenges. It initially summarises the changing context in which the transport system is operating, then presents two key policy documents: the Resilience Framework and the Resilience Position Statement. The initial work on an action plan to implement the new direction is summarised and the paper finishes by summarising the key elements of the Transport Agency's current aspirations and new approach to improve New Zealand's transport system resilience.

CONTEXT

Transport system disruptions undermine economic growth and social well-being of communities and businesses. Resilience is critical for the national and regional transport systems that carries freight and supports tourism, and that links regions to the wider transport system and markets. Poor resilience can impede critical and emergency services providing response and recovery support after significant disruptive events.

As transport system owners, managers, planners, funders and suppliers, we are under increasing resilience pressures from a number of sources:

- More frequent and recurring natural events, such as the Kaikoura earthquake, storms at SH25 Coromandel, and ex-cyclone Gita at the top of the South Island
- Aging, degrading assets, such as cut batter slopes on Ngauranga Gorge and many bridges across the country
- More assets are in exposed or challenging terrain, such as coastal roads susceptible to sea level rise and SH94 Milford Road
- Increasingly complex systems with more dependencies, such as guidance systems and tunnel control systems.
- Increasing expectations for the transport system to always be available, to serve the community through "just in time delivery" or the centralisation of services (schools, hospitals, etc.) requiring increased travel by users

Over recent times, the government has flagged its increasing interest and expectations related to resilience through a number of documents and policy positions, particularly around climate change

and societal equity. The GPS is one vehicle that the government is using to raise the profile and expectations around transport system resilience, whilst others flag increased government interest and recognition of the need for an integrated all-of-government approach to address emerging climate change issues.

When considering resilience, the GPS 2018 presents a number of expectations and guidance statements, including that the NLTP "*prioritises investment to improve resilience on routes where disruptions pose the highest economic and social costs."*

The GPS expresses the government's concern regarding the potential impacts of poor resilience on both the economy and society with *"It is important for sustainable economic development and social well-being that the network is resilient, particularly for the most critical connections."*

It also identifies that increased recognition should be given to longer term issues with *"Climate change and low frequency-high impact events (such as earthquakes) are the key long-term issues that have significant implications for the resilience of the land transport system."* These have long been under-recognised in our responses due to uncertainty and low probability of realising early benefits.

The Transport Agency has been active both in planning, managing and responding to State Highway resilience issues for many years as well as encouraging other road controlling authorities through funding opportunities. However much of this activity was not coordinated nor consistent in its approach. In an initial step, the Transport Agency established a Resilience business improvement project in 2013 to strengthen resilience of the Transport Agency as an organisation and the State Highway network through more consistent and robust approaches, information and tools. The project's overarching outcome was to:

"Preserve and quickly restore access to the network in the face of unplanned events, enabling customers to complete their journeys."

The project produced improvements in three areas: business continuity plans (internal critical functions focus), network emergency response and business case support/infrastructure planning, most of which can be found on the Transport Agency's website.

A NEW RESILIENCE FRAMEWORK

In October 2017, the Transport Agency identified the need to intensify and broaden its approach to resilience, including moving to a system impacts based approach. This acknowledged the needs to focus more on customer impacts (rather than asset disruption), to consider a wider range of risks and solutions, to partner with other agencies and communities in more effective collaborative solutions and to be more proactive in dealing with resilience issues.

A key initial response was a Resilience Strategic Policy Framework which outlines the Transport Agency's reasons for action, aspirations, priority and intentions to address its resilience challenges. The resultant two A3 page framework (attachment one) was adopted in April 2018.

The front page of the framework is about "the why". It sets out the concepts and strategic drivers that inform the Transport Agency's approach, including:

- why resilience is important to the Transport Agency
- the purpose of the framework
- a definition of resilience for use in the framework
- emerging policy and operational drivers
- key challenges requiring response
- a summary of the strategic context
- the Transport Agency's statutory responsibilities in relation to resilience

The second page of the framework is about "the how". This is essentially a strategy on a page and maps how the Transport Agency will address resilience going forward, including:

- outcomes and objectives (based on the '4Rs': reduction, readiness, response and recovery)
- draft measures and KPIs
- the broader approach expected
- the range of strategic responses available to the Transport Agency (see Figure 1)
- an initial outline of a possible action plan

The proposed framework was shared across the Transport Agency and key government transport sector partners: Ministry of Transport (MoT), Ministry of Civil Defence and Emergency Management, Ministry of Business, Innovation and Employment, Ministry for the Environment, Treasury and Local Government NZ. Sharing with these partners aimed to:

- seek feedback on the draft framework structure, purpose, objectives and strategic approach
- build buy-in for it, and
- clarify the Transport Agency's role and contribution

The feedback was supportive of the framework, its structure and content. It concluded that the framework is well aligned with the GPS, MoT's draft transport sector outcomes framework and wider government thinking (e.g. on climate change adaptation), and was a sound basis for the Transport Agency's next steps.

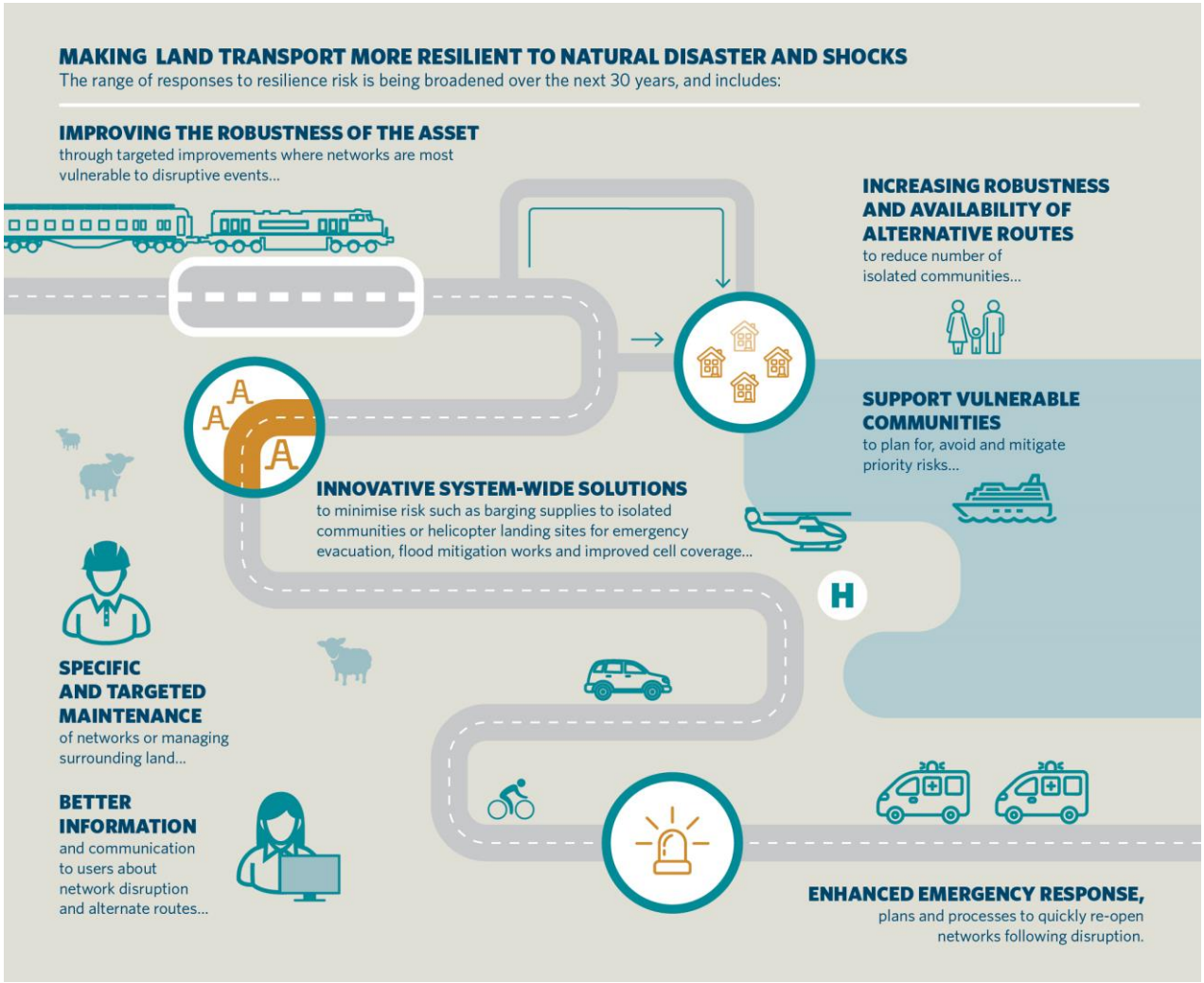

Figure 1: Strategic Responses to Resilience Challenges

Framework Principles

The framework has been developed to ensure that the Transport Agency is well positioned to engage effectively in cross-government work on resilience.

The framework outlines a new approach that highlights resilience as a key objective across the Transport Agency's strategies, activities and plans. It will move the Transport Agency from taking a risk-based approach targeted to specific assets to a system-based approach, and from a network availability perspective to a community impacts perspective. The new approach can be summarised under four principles or dimensions:

Community focused
Improvements and investment in resilience must be based on a robust understanding of different communities' tolerances and acceptance of risk, and of how their access to economic and social activities and needs can be sustained. That is, prioritising and minimising the impacts of disruptions to activities which matter most to the communities. Communities should be enabled to make resilience decisions in partnership with the Transport Agency and to help themselves where possible, before and after disruptive events.

Collaborative
The best way to achieve the outcomes the Transport Agency desires of the Framework is through working with partners across central and local government to deliver a comprehensive, consistent sectoral response to resilience. It is clear that we can't do it by ourselves. We don't have all the answers or knowledge (of locale or locals) and optimising responses to resilience challenges involves much more than just the State Highway network.

Comprehensive
Work on system resilience should be across a range of hazards (types and severity), risks (likelihood/return periods and consequences) and responses (with a much broader range that simply asset robustness – see Figure 1). It should also be targeted to address priority and changing risk profiles such as climate change-related challenges and opportunities. Analysis should be "system" focussed (including cascade effects and interdependencies), and moving beyond a simple "road network" approach

Proactive
Often the analytical and decision-making approaches used for resilience issues result in reactive responses and solutions being preferred, and as such much investment in resilience has been in reactive works, repairs and responses. The Transport Agency will do more to get ahead of the game where this is warranted including implementing broader evaluation approaches. We will be active and pre-emptive across all 4R's, engaging in a wider range of approaches to resilience risks, rather than reactive.

A RESILIENCE POSITION STATEMENT

In September 2018, the Transport Agency adopted 8 new Position Statements, which outline our position and intentions on 8 key themes. They articulate our values, how we want to operate and what big shifts we want to make as an organisation to achieve wider transport system outcomes and 3- year target states.

One of the eight Position Statements has a theme of Resilience (see attachment two).

Each Position Statement has a narrative which is structured around:

- a statement of the challenges confronting the theme

- the Transport Agency's position on the theme
- what needs to happen to deliver on the Transport Agency's position
- why the Transport Agency is involved with the theme

Associated with the narrative, the Transport Agency is presently developing 1-year and 3- year targets as milestone markers for delivery of the Position statement.

The Position

The Transport Agency's position is that *resilience of the land transport system is increased by managing risks and long-term challenges, and helping communities quickly recover from disruptions*.

The position has three key components: managing risk, long-term challenges, and community recovery. In the context of this highly summarised statement, successfully addressing these 3 components will improve the transport system resilience overall and are aligned to the GPS and Transport Agency's Framework. Working with the Position perhaps needs a broad interpretation to be aligned to the underlying approach being promoted elsewhere in the narrative and the framework and should look beyond the obvious aspects to also capture progressive risk change as well as low frequency events; consideration of the full suite of hazards, severities and strategic responses; and various aspects of preparedness, self-sufficiency and pre-event decision-making by communities and public decision-makers.

What Needs To Happen

The Position Statement presents an approach to make its aspirations happen, which is aligned to the Framework Principles noted above. The cross-government partnership (collaboration), increasing understanding (comprehensive), establishing community tolerance (community focussed) and valuing wider benefits (proactive) are all consistent with the new approach promoted and expected by the Board and government.

There are Outcome targets being developed for Year 1 and Year 3 reporting, informed by the "What Needs To Happen" section, which relate to building capability, capacity and programmes with our partners, development of a national business case, and developing more mature evaluation processes to deliver increased resilience.

The activities and initiatives summarised in the "What needs to happen" section are reflected in the Strategic Work Programme being developed to deliver the Framework and Position Statement over coming years and meet Year One and Year Three targets.

Delivering this position statement is expected to result in more informed, engaged and increasingly self-sufficient communities; a system that is recognised as appropriately adapting to climate change; and for the Transport Agency to have the reputation as highly responsive to significant disruption events.

STRATEGIC WORK PROGRAMME

Structure And Content

Following on from the Framework and more recently informed by the Resilience Position Statement, we have been developing a Strategic Work Programme which aims to:

- Be cross-Agency for optimal progress and outcomes
- Be the primary mechanism to deliver the Framework step change
- Show leadership to the sector
- Activate a boost in co-ordination, priority and the new approach

- Integrate with other Agency and partner programmes, projects and engagement activities, such as GPS development and NLTP/RLTP's

A draft work programme has been developed through a series of internal whole-of-Agency workshops and follow-up interviews, which identified over 50 activities and initiatives. No doubt there are more. The findings were then reviewed and grouped to similar and related activities under a series of work-streams which were deliberately scoped to be cross-cutting of the Transport Agency's structure to encourage diverse inputs and awareness of activities, and minimise siloes.

The five work streams are:

- Understanding risk and vulnerabilities
- Planning and decision-making
- Transport system resilience
- Organisational resilience
- Sector and community engagement

As can be seen in the titles of the work-streams, the programme seeks to address more than the traditional resilience improvement response of physical network improvement, but in line with the framework principles, looks across the transport system impacts: assets, digital systems, information, education and training, readiness activities, internal processes and culture, leadership and community and partner collaboration.

Analysis Components

A significant portion of the activities in the first three work-streams above relate to the Analysis Components map (Figure 2 below). Traditionally, project development addressing a resilience hazard would include the components in the blue boxes, which have also been the focus of much research and efforts to improve information and analyses over recent years. However, in line with the Board's expectations and the framework's principles, there is a challenge to improve further in these components as well as expand and explore into the red boxes in the bottom right corner – focussed on assessment and evaluation of community impacts. The potential areas for these improvements include:

Hazard suite = consider **all** hazards: slow/fast, high/low freq, high/low impact, changes over time, range of return periods, in potential combinations
Exposure = severity at key network/system component locations to safely sieve out lower priority locations to increase efficiency of analysis.
System Vulnerability = increased understanding is needed of the weakest links, the interlinkages between elements and potential consequential failure modes across the system
Cascading disruptions and interdependencies = generally a weak point of most analyses in New Zealand despite being recognised, which needs processes to capture effectively
System damage and criticality = usually where we stop in terms of physical damage assessments to assets and often assess only impacts on vehicles - needs to consider all modes and how important the disruption is to those key activities that the community particularly values; consequences of maximum credible events
Intervention = our understanding of the effectiveness of the full range of potential interventions (collaborative, digital, process, asset redundancy and robustness, information) is not well explored nor of the trade-offs between consequences vs likelihood in risk assessments, co-benefits, changes in effectiveness over time and build-back better considerations.

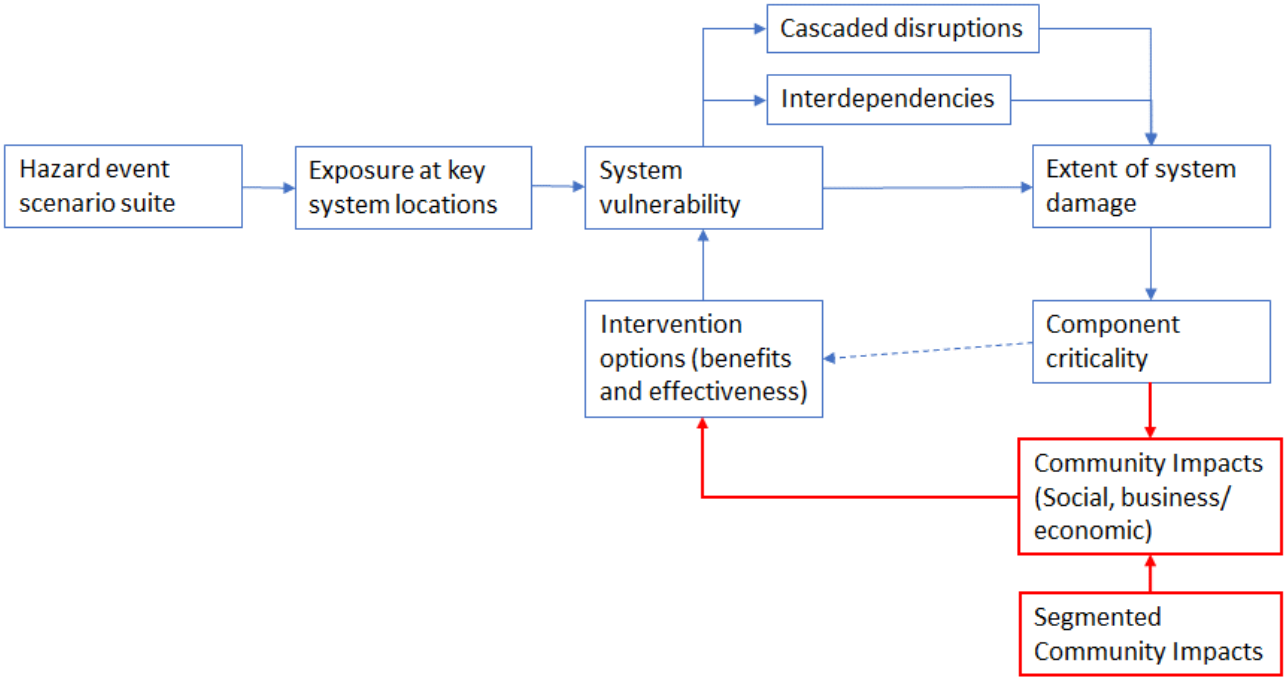

Figure 2 Resilience Analysis Map

The red boxes in Figure 2 indicate a required change in focus from network availability to community impacts.

This consideration of community impacts rather than system functioning is being flagged in numerous government policy statements such as the GPS and Treasury's new Living Standards Framework (covering the 4 capitals and various well-beings, including Resilience perspectives). The assessments must also look into concerns about intergenerational equity, a range of key community segments and distributional effects. The Transport Agency's recent documents are well aligned to them.

This challenge of dealing with community impacts is a significant additional aspect of resilience assessments, for which much development in project team capability, evaluation processes and base line information will be needed.

SUMMARY

The NZ Transport Agency has significant aspirations in improving the resilience of the land transport system. This will require a significant change in the perspective, priority and approach.

Where we go from here in pursuing these aspirations has been outlined in presenting the Transport Agency's new Position Statement and Framework. In line with the Position Statement and Resilience Framework, the Transport Agency is increasing its priority and broadening its approach to resilience.

Keys to where we go from here, and how, are in the four Framework Principles: Community (Impacts) Focussed, Collaborative, Comprehensive and Proactive

What will success look like? It will be us, our partners and our communities having confidence that we are investing in and doing the right things in the right place at the right time to minimise disruptive impacts on the communities' activities that matter.

We have taken some initial steps, and are inviting our partners and communities to join us on this new customer focussed journey.

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ACKNOWLEDGEMENTS

I would like to thank the NZ Transport Agency Resilience Project team as well as a number of external collaborators who challenged us and contributed to the development of the Resilience Framework and Resilience Position Statement. Additionally I thank the NZ Transport Agency leaders who supported and guided the Resilience project in exploring these new initiatives.

Attachment 1: NZ Transport Agency Resilience Framework

NZ TRANSPORT AGENCY WAKA KOTAHI

NZ TRANSPORT AGENCY 2018 RESILIENCE FRAMEWORK

Transport Resilience for our Communities

Resilience is the transport system's ability to enable communities to withstand and absorb impacts of unplanned disruptive events, perform effectively during disruptions, and respond and recover functionality quickly. It requires minimising and managing the likelihood and consequences of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disruptive events, caused by natural or manmade hazards.[1]

Resilience is about being prepared, and preserving and quickly restoring access to the transport network for our customers, including Lifelines Utilities, in the face of unplanned events.[2]

PURPOSE OF THE FRAMEWORK:

The purpose of the framework is:

- to provide a clear expression of the Transport Agency's strategic approach to resilience, and
- to prioritise, guide and coordinate the Transport Agency's ongoing activity and strategic work programme to improve resilience

WHY IT MATTERS

A resilient transport system (which proactively addresses current and emergent risks) that is available for customers to use is fundamental to economic and social resilience of communities. Disruptions undermine economic growth and social well-being of communities and businesses. Resilience is critical for the availability of the national and regional transport system that carries freight and supports tourism, and that links regions to the wider transport system and markets. Poor resilience can impede critical and emergency services providing response and recovery support after significant events.

[1] Derived from and aligned with resilience definitions from the Sendai Framework for Disaster Risk Reduction, draft National Disaster Resilience Strategy (CDEM, Nov 2017) and NZTA's Four Year Excellence Horizon

[2] Simplified definition from NZTA's Resilience Business Improvement Project 2016.

EMERGING DRIVERS

Policy drivers

- Increased recognition of the need for an integrated all-of-government approach to address emerging climate change issues
- Enhancing the government's responsiveness to emergencies (the CDEM TAG review)
- Increased investment in regional economic development - $1B annual investment likely to include transport resilience projects
- Developing focus on modal-neutral transport system strategy - widening policy and investment to cover rail and ports/shipping

Operational drivers

- More frequent significant and recurring natural hazard events is increasing risk of disruptions
- A larger and more complex network exposes more assets to hazards, with more in increasingly difficult terrain
- Increasing dependence on electronic systems
- Ageing, degrading assets become less robust with time and have been built to older design requirements
- Public expectations of levels of service provided are rising, as is the risk exposure they will tolerate

KEY CHALLENGES

The following challenges impact on the Transport Agency's and sector's efforts to improve system resilience:

- Limited understanding, evidence and metrics of how disruption in different locations impacts on customers and communities well-beings and their tolerance and acceptance of risk
- Poor understanding of interdependencies within and between systems, networks and sectors.
- Poor understanding of the (changing) risk, interdependencies and efficacy of interventions to medium and low frequency large sized events on the transport system
- Assessment frameworks and discount rates serve to undermine investment in low frequency events and effective trade-offs across programme outcomes (e.g. safety vs resilience vs reliability)
- Inconsistent and non-comprehensive approaches used across the sector to assessing and responding to risk.
- Poorly co-ordinated approach across government for adapting to emergent issues, especially climate change (e.g. sea level rise).

STRATEGIC CONTEXT

Changing environment – natural hazard events and manmade disruptions are increasing in frequency and intensity reflecting climate change impacts and low frequency events patterns

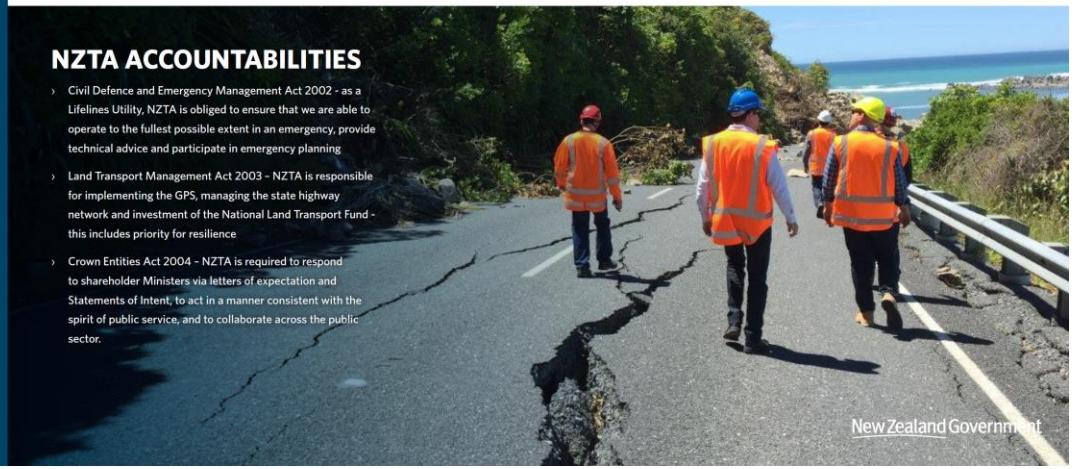
Policy environment – resilience profile and importance is growing in many strategic policy documents e.g. GPS, Agency SoI, and LTV, including expanding recognition of social and economic impact focus

Partner activity - Other Government agencies, Lifelines and local authorities are increasingly addressing resilience issues and have initiatives underway, e.g. MoT "Transport Sector Resilience Strategy" and Lifelines "National Vulnerability Assessment"

Agency role - Recognised as well-resourced leader with many levers for proactively enhancing system and community resilience, e.g. NLTP investment, GPS implementation, advocacy/ advice, engagement in RMA processes. Other activities include asset management and improvements, organisational and emergency response planning, business case tools, and engagement with partner initiatives.

NZTA ACCOUNTABILITIES

- Civil Defence and Emergency Management Act 2002 - as a Lifelines Utility, NZTA is obliged to ensure that we are able to operate to the fullest possible extent in an emergency, provide technical advice and participate in emergency planning
- Land Transport Management Act 2003 – NZTA is responsible for implementing the GPS, managing the state highway network and investment of the National Land Transport Fund - this includes priority for resilience
- Crown Entities Act 2004 – NZTA is required to respond to shareholder Ministers via letters of expectation and Statements of Intent, to act in a manner consistent with the spirit of public service, and to collaborate across the public sector.



OUTCOMES

What the Agency aims to achieve, in collaboration with the sector; what does success look like?

- Through collaboration with key partners, we have a shared understanding of communities' acceptance of risk and tolerance of system disruptions
- Communities are less exposed to, and better prepared to deal with, the economic, physical, social, cultural and environmental impacts of risks and shocks from natural hazards and other disruptive events

Objectives

Reduction of risk

- Users and stakeholders have timely information about risks and disruptions
- Collaborate with partner organisations to assist vulnerable communities to plan, avoid and mitigate priority risks, including climate change risks
- Through proactive system development and planning, minimise or avoid high risk locations, or if unavoidable, design to avoid catastrophic failures.
- Provide information and technology in timely way to reduce risk and disruptions to communities and manage expectations
- Improve robustness and appropriate redundancy of the multi-modal system, including alternate routes, especially at the most critical points

Readiness

- Planning, investment and management of multi-modal transport system is informed by latest hazard risk and response effectiveness information
- Investment frameworks support a wider view of both "value" in considering Value for Money (social, cultural, environmental and economic impacts) and strategic responses to the full range of disruptive events within the context of regional development.
- Support communities to understand the interdependency of transport and other systems that underpin their resilience, to be better prepared for and to recover quickly from disruptive events
- Collaborate across government, Lifeline Utilities and transport sector to identify, integrate and focus effort on priority issues and opportunities.
- Prepare for unplanned events (the right systems, processes and accountabilities) including emergency response plans, drills and business continuity plans

Response

- Respond safely and quickly to disruptions, minimising social and economic impacts, and providing regular and effective communications to the community
- Fully participate and meet obligations in declared Civil Emergencies

Recovery

- Help communities reconnect and then 'build back better' after significant disruptive events
- With key partners, manage community recovery expectations
- Provide regular and educational communications to affected communities post-event

Indicative Targets

- Substantially reduce the number of people affected from significant social impacts through network disruptions by 2024
- Reduce direct economic losses of unplanned disruptions in relation to gross domestic product (GDP) by 2024
- Network availability increasingly meets Customer Levels of Service for frequency and duration of outage
- Organisational preparedness demonstrated through current Business Continuity Plans (BCP's), Incident Management Plans, Emergency Response Plans, sufficient resource capacity and active Drills programme (Readiness and response)
- Substantially enhance engagement and cooperation to partners and key stakeholders to improve risk understanding and preparation (Risk reduction and readiness)
- Substantially increase the availability of and access to multi- hazard references, tools, systems and disaster risk information and assessments to partners and community by 2021 (Risk reduction)

Approach

- Adopt a multi-modal/one network system's approach, recognising the interdependence within the transport sector, across Lifelines utility networks and other national supply agencies
- Look at "beyond-design" events (consider consequences of and responses to events bigger than design level)
- Design and manage infrastructure and systems according to 'remain functioning' principle, and by sharing innovations and knowledge, support partners to replicate approach
- Increase overall recovery capacity of communities (and thus their speed of recovery) by improving social, institutional and financial capital to reduce long-term impact of events
- Retain and promote flexibility, adaptability and continuous improvement options in decisions, activities and asset design to cope with uncertainty and changes over time
- Align with and collaborate on Government policy and commitments (e.g. Sendai)
- Proactively promote and enable shared and integrated responses and collaboration between central Government agencies, sectors and stakeholders as appropriate
- Decision-making and engagement to be inclusive and informed regarding the nature, tolerance and acceptance of risk, wider "value" and value for money, and the consequences and benefits
- Address underlying risk factors pro-actively and cost-effectively through appropriate strategic responses (hierarchy of interventions), balancing investment versus relying primarily on post-event response and recovery
- Transparency through regular reporting and monitoring

Response Dimensions

Knowledge

Improve risk information/ knowledge; quantify impacts of social and economic impacts; understand impact on customers and communities; 'vulnerability maps' of hazards and stressors; understanding critical journeys (from a customer perspective); increase understanding and effectiveness of preventative maintenance

Investment

Improve information to prioritise and influence investment; develop investment frameworks to support a wider view of "value" (social, cultural, environmental and economic impacts) as part of Value for Money which provides for strategic responses to a full range of disruptive events and local contexts

Asset/Infrastructural

Critical assets located and/or designed to increase robustness, and provide appropriate system redundancy

Operational

Preparedness via emergency response plans; provision of real time customer information; adaptive and responsive real time network management; maintain back-up plans (BCP's) to function through disruptions

Organisational

Improved organisational continuity and adaptation to disruptive events, including building resilience into culture and increased staff capability and capacity

Leadership

Cross government collaboration and cross sector leadership through identifying inter-dependencies and opportunities, knowledge/tool sharing, incentives and partner engagement/ participation, advocacy, open data and engaging with land-use planning to avoid poor resilience outcomes

Collaborative and integrated

Working with policy and delivery partners to identify the best responses for different issues and areas to improve overall system resilience; known 'plan Bs' for identified high impact risks.

Communication and engagement

Effective alliances and community engagement strategies; work with communities to convey a vision of effective resilience preparedness, to improve preparedness, responses and understanding of risk

Key Workstreams

Planning and Risk Prioritisation

- map network/system interdependencies and community vulnerabilities
- enhance data gathering and system monitoring, and exchange data and information with partners
- explore what customers value in resilience, to inform valuing of impacts and benefits
- align with transport sector and emergency management sector priorities
- overlay future risk e.g. climate change
- agree top risks that need managing

Investment decision-making

- develop resilience benefits and social/ cultural/ environmental impacts methodology in IAF/EEM, especially for low frequency major hazards and "too-important to fail" situations
- enable funding of inter-modal activities (e.g. shipping and rail) and technological innovations that enhance resilience
- enable community resilience programmes through a range of funding mechanisms, such as NLTP and PGF

Delivery of activities

- update national resilience business cases, to deliver LTSV, GPS and PGF goals
- prioritise resilience as part of regional economic development in GPS/IAF/NLTP and PGF
- promote and enable larger resilience works investment programmes

Governance and role

- establish governance structure, key roles and teams to oversee framework delivery
- develop KPIs/measure and integrate into reporting to board
- Maintain and promote BCP approach

External engagement and leadership

- advocate resilience objectives through planning system
- engage in community resilience and lifeline programmes; support economic, social and environmental goals, not just transport
- prioritise 2-3 other regions to apply Wellington Lifeline regional plan approach
- engage with communities to establish their tolerance and expectations of risk and promote resilience preparedness
- engage with key resilience work of partners

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Attachment 2: NZ Transport Agency Resilience Position Statement

RESILIENCE

Today's Challenge: The transport system is experiencing increasingly frequent and severe unplanned disruptions due to a combination of climate change, increasing traffic volumes and incidents such as crashes. Some ageing infrastructure was not designed to manage current demand, and is becoming less robust. Reducing risk, preparing, responding to and recovering from disruption requires a co-ordinated response, but we need a better understanding of and policies for different types of risks, disruption impacts and community tolerances.

Our current decision making processes do not effectively support investment to manage key vulnerabilities including high impact/low frequency or slow onset events such as earthquakes and sea-level rise.

Our position is the resilience of the land transport system is increased by managing risks and long-term resilience challenges and helping communities quickly recover from disruptions

What needs to happen? To make this happen will require a cross government partnership approach with an increasing understanding of hazard risk, system vulnerability, best-practice response and community tolerance, working to reduce the impact of disruptive events; supported by a decision making framework that appropriately values the wider benefits of a resilient system.

Why us? We are a national lifeline utility and the principal co-planner, investor and asset manager for the land transport system. We have proven capability and capacity throughout New Zealand, to manage small scale, frequent events and a recognised ability to respond effectively to major events. Through our extensive network of government and supplier relationships, we are well placed to support and build resilient communities.