Critical Infrastructure Resilience

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Prelude: Objectives for and principles underpinning this work programme

Does more need to be done to improve the resilience of New Zealand's critical infrastructure system?

We believe more does need to be done to improve the resilience of New Zealand's critical infrastructure. In the context of climate change bringing more frequent and severe extreme weather events, it is evident from the experiences following the Auckland Anniversary Weekend floods and ex-Tropical Cyclone Gabrielle that there are significant shortcomings in infrastructural resilience. There have also been far less severe weather events where shortcomings have occurred.

We also note vulnerabilities to cyber attacks that have impacted the health system and even the Reserve Bank of New Zealand.

Have you had direct experience of critical infrastructure failures, and if so, how has this affected you?

Yes, we have had direct experience of critical infrastructure failures. After extreme weather events, it is common to experience loss of transport routes, clean water supplies, wastewater system collapse and even loss of power. These failures can variously lead to additional property losses (to insured and uninsured property owners) and delay recovery responses for those who are insured.

How would you expect a resilient critical infrastructure system to perform during adverse events?

We would expect a resilient system to be capable of maintaining functionality under significant stress. We accept that the cost-benefit of achieving this will be dependent on the degree of resilience sought. We acknowledge the system cannot be resilient to all risks. However, we would expect that there is an ability to recover functionality within tolerable timeframes after a major event. This will differ for different types of infrastructure.

Would you be willing to pay higher prices for a more resilient and reliable critical infrastructure system?

We do not see evidence in this document of any work to define the size of the problem that is being sought. So, while allocating costs is a reasonable question to raise, more fundamentally what is the scale of the cost that this question is addressing?

In principle, costs should be borne by those who benefit. Identifying those who benefit can be complicated. The question though is so high-level that it does not

address the extent to which all costs should be borne by all who benefit in all circumstances. For instance, if six homeowners live at the end of a road that has been washed out due to torrential rain, should they bear the entire cost of rebuilding, and if that is not an affordable option, then is the road to be rebuilt? At the other end of the scale, what is the reasonable cost that should be devoted to ensuring infrastructure is resilient to a megaquake and tsunami generated by a rupture of the Hikurangi Trench? Decisions around these kinds of issues strike at the heart of unpicking what terms like "sustainable and inclusive growth" mean as referenced ion the next question.

The work programme's objective is to enhance the resilience of New Zealand's critical infrastructure system to all hazards and threats, with the intent of protecting New Zealand's wellbeing, and supporting sustainable and inclusive growth. Do you agree with these objectives? If not, what changes would you propose?

We agree with these high-level objectives, but terms like sustainable and inclusive growth do require more definition as they are terms that lend themselves to a variety of interpretations. It is also likely that tensions may exist between some of these objectives under certain circumstances, such as, the remote communities example cited in the response to the previous question.

We also note the discussion document does not define critical infrastructure but gives examples like telecommunications, electricity grids and water supplies. These are what have traditionally been considered lifelines infrastructure and the CDEM Act has specific requirements for their upkeep. That Act is being replaced by the Emergency Management Bill. It is not clear to us how that new Bill, its treatment of certain infrastructure and this review by DPMC align.

The Bill defines critical infrastructure as "assets, systems, networks, and services that are necessary for the provision of public services and are essential to public safety, national security, economic security, or the functioning and stability of New Zealand." Critical infrastructure may be an entity that the Minister recognises, and the Minister may exempt such entities from duties prescribed in the Bill. In our view, several issues contemplated in this discussion document ought to be considered after there is certainty with respect to what the law states is critical infrastructure. This would then help inform what gaps may remain that need to be filled by regulation.

We would argue that greater clarity and breadth needs to be applied to consideration of critical infrastructure. For instance, we know from experience that failure of stormwater systems and flood banks have caused loss of life and contributed to the destruction or impairment of telecommunications, power, and water supplies. Thinking more broadly and considering the critical role insurance plays in a recovery following a catastrophic event, are there circumstances under which insurance might be considered a critical service?

Do you agree with the proposed criteria for assessing reform options? If not, what changes you would propose?

We agree with that the criteria that have been identified are appropriate. However, we question how much focus is placed on regulation. We ask what work has been

done to size the problem that regulation is seeking to respond to as that ought to then inform the type of regulatory response.

The document tends to convey the impression that regulation is the key solution to achieving a desired state of resilience. This leads to a narrative that talks of developing a government model to set minimum standards across all critical infrastructure without considering alternative approaches. Regulation seldom keeps changing risks – even less so around technological risk. Greater consideration should be given to working with the private sector collaboratively to manage risks.

It also seems surprising that criteria that relate to fairness and cost-effectiveness and educational approaches to reducing risk are not included more explicitly.

Section 1: Background and context

Why a new regulatory approach may be required

The paper discussed four mega trends: i) climate change, ii) a more complex geopolitical and national security environment, iii) economic fragmentation, and iv) the advent and rapid uptake of new technologies. Do you think these pose significant threats to infrastructure resilience?

Yes, they all pose significant threats to infrastructural resilience.

Climate change is having major, visible effects on human lives and livelihoods, and is expected to increasingly affect entire societies and economies.

Technology, especially digitisation and automation, is driving sweeping changes in how business is done and how humans are connected. There has been an exponential increase in, and usage of, data. The resulting interconnected and complex digital world comes with an increasing number of cyber-attacks and data breaches - an issue faced by most businesses worldwide and with whom New Zealand is connected. With respect to technological development, the discussion document focuses on cyber threats, but there is barely a mention of generative Artificial Intelligence (AI), its applications, benefits, and risks. We recommend deeper and broader consideration of the risks that generative AI and its applications may pose bothy with respect to protecting and creating risk to critical infrastructure.

Macroeconomic and political factors are accelerating the changes observed in today's world due to multiple, parallel, partly interconnected trends such as inflation, supply-chain disruptions and the evolution of the globalised world order which is leading to economic fragmentation.

Are there additional megatrends that are also important that we haven't mentioned? If so, please provide details.

Yes, we believe so. We recommend considering the following:

Increasing demographic concentrations in our metro centres (so aggregating risks for instance from climate change).

Societal change, such as our ageing population and associated vulnerabilities. These trends should be factored into enhancing resilience.

Do you think we have described the financial implications of enhancing resilience accurately? If not, what have we missed?

We think you have missed the critical nature of insurance. We note that in your identification of critical services there is no explicit mention of insurance though 'financial services' is referenced. We believe insurance should be explicitly identified. General insurers in New Zealand underwrite well over NZ$1 trillion of New Zealand's risks and liabilities.

It is noteworthy that most losses ($23 billion) from the Canterbury earthquakes was borne by the private (re) insurance sector, not Government nor Toka Tū Ake EQC. Well over $3 billion of insured losses have resulted from the extreme weather events this year. These funds are critical to the socio-economic recovery of communities after catastrophic events.

Critical to the Government/local government recovery response to this year's extreme weather events has been data provided by the private insurance sector to help inform recovery decisions and also long-term flood mitigation options.

There are insurance products that have not been considered that could help address post event recovery costs for infrastructure. One such example is parametric insurance cover that is used in other parts of the world.

The consequences of not having insurance are manifest for the financial sector including banks who rely on insurance to provide security for the loans that they make. General, Life and Health insurers are also holders of highly sensitive data which would likely cover the vast majority of New Zealanders and New Zealand businesses.

We also disagree with your characterisation of insurance in clause 28. If you are going to make sweeping claims about a sector, then please talk to the sector concerned than to suggest there is a widespread decline in insurance cover in New Zealand. For example, our data shows at least 95% of homes in New Zealand are insured for all hazards, an enviable level of protection by global standards.

Section 2: Potential barriers to infrastructure resilience
Building a shared understanding of issues fundamental to system resilience

How important do you think it is for the resilience of New Zealand's infrastructure system to have a greater shared understanding of hazards and threats?

It is essential to have a greater shared understanding. The inter-dependencies and interconnected nature of society mean the impact of failure of critical infrastructure has many and varied consequences. We cannot operate in an optimal way with siloed understanding of risk.

If you are a critical infrastructure owner or operator, what additional information do you think would best support you to improve your resilience?

Not applicable.

What do you think the government should do to enable greater information sharing with, and between, critical infrastructure owners and operators?

It should consider how the Commerce Act creates barriers to data sharing between competitors that operate critical infrastructure and those who are not competitors. This is an area that needs a thorough review. The Commerce Act's focus is on protecting consumer interests to prohibit collusive behaviour and while that is appropriate the Act has simply not kept up with the times and the requirements of building resilience in a highly interconnected world. Requiring exemption applications on an ad hoc basis is no way to address the complexities.

Setting proportionate resilience requirements

Would you support the government having the ability to set, and enforce, minimum resilience standards across the entire infrastructure system?

Yes, though it is important for the government not to underestimate the task. For instance, the need for a commonly understood lexicon of terms and understanding the comparability of different approaches needs to be well understood. Resilience recovery expectation times will also vary between different types of critical infrastructure.

It is also worth noting the need to identify critical vulnerabilities within critical infrastructure. These cannot always be anticipated by setting standards. The Fukushima nuclear plant was flooded by sea water that caused the nuclear melt down simply because a seawall was not high enough.

If so:

> *– what type of standard would you support (e.g., requirement to adhere to a specific process or satisfy a set of principles)?*
>
> We do not support adherence to a specific process. A process driven approach needs to support flexibility and innovation in a timely manner. There are existing standards such as those set by the ISO.
>
> *– do you have a view on how potential minimum resilience standards could best complement existing approaches to risk management?*
>
> You should consider referencing best practise guidance for managing enterprise risk and not simply focus on standards. Also, education can be far more instructive and impactful in the short-term than focusing solely on developing a standard.

Would you support the government investing in a model to assess the significance of a critical infrastructure asset, and using that as the basis for imposing more stringent resilience requirements? If so: – what options would you like the government to consider for delivering on this objective?

It is important to appreciate that all models are wrong to some extent as far as they never exactly foresee what will happen. All models also have different assumptions. Insurers often look at two or three different models and then apply their own judgements to the risks they manage to avoid a dependency on one view of the world. Testing can also be done through stress test scenarios, which banks and insurers undertake, that are as informative in providing insights on resilience requirements. So, we would support investment in a model only to the extent it assists the Government's understanding. We note the RBNZ does not invest in a model to test insurers' resilience but is able to satisfy itself of the resilience of our members to recover from shocks.

What criteria would you use to determine a critical infrastructure asset's importance?

Risk to life and injury should naturally be a primary criterion, but risks to life and safety should also be considered in the context of secondary hazards emanating from the primary hazard. Damage to property ought to be included among the criteria as well as business interruption timeframes.

Investing in a model to assess a critical infrastructure asset's criticality, and using that as the basis for imposing resilience requirements that are more stringent on particularly sensitive assets? If so: – what options would you like the government to consider for delivering on this objective?

No, we would disagree with this approach partly for the reasons given to the previous question. It would be preferable to require critical infrastructure owners to be required to show how they are managing the risks to their own assets than for government, a step removed from the understanding of each enterprise's risks, to be making those judgements on the basis of a model. A model can be used to help inform potential criticality, but it should only be an input alongside human assessment and judgement. That assessment and judgement should involve consultation with critical infrastructure entities.

What features do you think provide the best proxies for criticality in the New Zealand context?

We do not understand the question. Is this referring to features of a model? Which criticalities are you referring to? More detail here would be helpful. If though, the question is asking what impact would the failure of a critical infrastructure have as an indicator of criticality, then features like the following could be considered:

- impact on other critical infrastructures' ability to operate e.g. loss of electrical power for several days will impact water supplies, or loss of roads will impact rebuilding a hospital as well as other critical community services for weeks or months.

- impact on the banking system of a catastrophic cyber events could lead to overnight withdrawals from banks as seen with the sudden collapse of the Silicon Valley Bank.

Managing significant national security risks to the critical infrastructure system

Do you think there is a need for the government to have greater powers to provide direction or intervene in the management of significant national security threats against a critical infrastructure? If so: – what type of powers should the government consider?

We are reluctant to see Government have greater powers to direct and intervene. Reference to national security suggests the security of the nation is at risk and if that were the case it would be important to understand why the Government lacks powers today to act in the interests of national security.

What protections would you like to see around the use of such powers to ensure that they were only used as a last resort, where necessary?

If such powers were granted, then they should be subject to an urgent judicial review with a high threshold set for requiring the exercise of these powers. A warrant should be sought specifying precisely what directions/interventions are required and why they are needed and when they will end. One would expect that prior approaches would be made to the infrastructure owner to discuss the situation they face, what the best options are to mitigate the risk and for there to be voluntary compliance.

Creating clear accountabilities and accountability mechanisms for critical infrastructure resilience

Do you think there is a need for a government agency or agencies to have clear responsibility for the resilience of New Zealand's critical infrastructure system? If so:

We believe there is a broader need for New Zealand to have an agency that is responsible for building resilience to natural disasters and coordinating all-of-government recovery responses. After the Canterbury earthquakes CERA was established. After this year's extreme weather events, a different central/local government response was implemented. No entity is responsible for coordinating risk reduction from natural hazards. Your document references the Lloyds' study about how risky New Zealand is. This needs to be addressed as a priority.

The question then would be what sub-set of the work such an entity would carry out.

> *– do you consider that new regulatory functions should be the responsibility of separate agencies, or a single agency?*
>
> If new regulatory functions are to be considered, they should apply to those who are not currently regulated in this area. The financial sector including insurers is well regulated already.

– do you consider that an existing entity should assume these functions or that they should be vested in a new entity?

We see no reason to have an additional regulator with respect to insurers and banks.

– how do you see the role of a potential system regulator relative to sectoral regulators?

We see the scope for undesirable added duplication, cost, and complexity. The operational resilience of insurers and banks is constantly monitored by the RBNZ and to some extent the FMA. Both regulators are focused on the special features of the financial sector. We doubt whether a potential system regulator would add much to the current regime.

Do you think there is a need for compliance and enforcement mechanisms (e.g., mandatory reporting, penalties, offences) to ensure that critical infrastructure operators are meeting potential minimum standards? If so: – do you consider that these should be applied to the entity, to the entity's directors/executive leadership, or a mix of the two, and why?

Our comments to the previous question apply here. In short, only for critical infrastructure operators that are not currently regulated. As noted earlier, we question the ability to set standards that keep pace with some rapidly changing risks and suggest a different regulatory approach should be considered.