Waikato Regional Council - Web form submission

Critical Infrastructure Resilience

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Are you responding as an individual or on behalf of an organisation?

Waikato Regional Council

Do you consent for your submission (including identifying information) to be published and shared in lines with terms for this public consultation?

Yes

Do you consent for your submission (including identifying information) to be published and shared in lines with terms for this public consultation? - Please note what should be withheld and for what reasons.

[Nil]

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

Waikato Regional Council (WRC) staff agree with the discussion document and consider that the regulatory approach to infrastructure resilience should be improved. We consider that it is essential to have a common definition of critical infrastructure and a framework for identifying which infrastructure is most critical. It is also appropriate having an understanding among critical infrastructure entities and the government of hazards and threats affecting infrastructure systems. We also consider important having a coordinated approach to managing risks across the infrastructure system.

We consider that having a more comprehensive regulatory framework for critical infrastructure and investing in resilient infrastructure will increase resilience for our communities. However, we consider it essential to also make our communities more sustainable and less vulnerable to risks so they would need less protection from threats and hazards. More focused national direction addressing development in areas of risk and more investments and incentives for placing people and infrastructure away from areas of risk could help achieve more sustainable communities. We also consider that incentives and investments in green infrastructure could help mitigate moderate adverse events.

We consider that strengthening infrastructure resilience to hazards is essential, with a priority on protecting and improving critical infrastructure serving vulnerable communities. Strengthening the resilient critical infrastructure in vulnerable communities ensures that these communities can withstand shock events and recover more quickly, safeguarding their wellbeing and prosperity while reducing social inequities and disparities. With better systems in place, our communities can

become increasingly resilient and better prepared to face potential challenges.

We consider there should be specific research to address threats affecting Māori communities' infrastructure. We acknowledge the risks faced by Māori communities. Resilience measures should be tailored to suit their specific needs. Providing tools to manage national security threats to critical infrastructure and ensuring enforceable standards across sectors will protect Māori communities' interests.

WRC manages and operates assets that are critical for managing resilience. These include river protection and flood management assets such as stop banks, floodgates, pump stations, spillways, and channels (currently not defined as lifeline utility under the CDEM Act 2002). These assets are needed to protect people and property as well as other critical infrastructure, such as state highways, water plants and power lines that are vulnerable to risk. Therefore, we consider that the river management and flood protection infrastructure should be considered as critical infrastructure and should meet minimum standards and management requirements as critical infrastructure.

We understand that resilient critical infrastructure is there to support the communities that are vulnerable to risk. However, if in the first-place communities were not placed in areas of risk, some critical infrastructure assets to manage resilience, such as flood management assets may not be needed. In addition, development in areas of risk creates a range of issues, including risks for people and property. It also imposes a significant burden for regional councils and emergency services when managing risks. Therefore, we consider it important to rethink where we place our people and infrastructure moving forward. We must have a more appropriate approach for development, avoiding in most instances development connected to natural hazard areas and only allowing development in areas of risk if the risks can be managed in a sustainable way and if there are no other possible options. To this effect, we consider that a more far-reaching review should be investigated, ensuring that our current and future resource management systems are able to provide focused national direction for managing development in areas of risk. This would help making our communities more sustainable and safer and therefore, more resilient.

Lastly, we consider that natural features and nature-based solutions can support resilience in our communities. For example, wetlands and forested areas can absorb and store water in a catchment, helping to prevent run offs and flooding. We do understand that isolated nature-based solutions are not able to mitigate large flood events, but these can be effective when mitigating small annual flood events. Therefore, we suggest considering how we can better manage and protect our green infrastructure and how can we promote and incentivise more green infrastructure.

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

During the Auckland Anniversary event and Cyclone Gabrielle, a significant portion (around 200m) of state highway (SH) 25A in Coromandel peninsula in the Waikato region was severely damaged. The SH is still closed, with the reconstruction of the section scheduled to be completed by the end of 2023. The same event also caused several blockages on SH25, which resulted in significant disruption of transport, and the connection of the area with the rest of the region for a long period of time. There were also other localised blockages on SH2 and SH3. For WRC assets directly, there was also a loss of power and communication with some river and catchment hydrological monitoring stations, which provide key data to forecast the scale of effects on the communities.

During the 1998 event, in the Waikato Region, Otorohanga District Council Water Treatment Plant was affected and was shut down. Thousands of residents didn’t have clean water at home.

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

We consider that critical infrastructure should be able to perform continuously during an adverse event. The disruption should not exceed a specified time period (which may vary for different infrastructure assets). There should also be secondary emergency routes to maintain connectivity and availability of service if a feature in the main system fails.

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

We consider that community resilience is measured by its ability to cope with a disruptive event and recover in a short period of time, with minimal losses. Affordability and tolerance go hand in hand in determining resilience, and communities' willingness to pay will be different in different community settings. In many cases, the social, cultural, and environmental cost of an event on a community can exceed the economic cost. Therefore, these factors should also be considered.

We consider that central government plays a key role in supporting communities and ensuring resilience and therefore, a national resilience programme should be investigated to ensure we have a fit for purpose and affordable critical infrastructure system.

We consider that funding could also be shared at different levels; capital funding should be provided by central government and regional and local contributions should be determined considering the regional and local economies and population at risk. We note that in the past most river and flood control schemes were funded substantially by central government and small local shares were loaned over a long-term period (30 years) at low fixed Interest rate. This scheme could be investigated and used as a template for future funding.

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 in part. We consider that the objective should also address safety when concerning land management and therefore, we recommend the inclusion of the word safe. In addition, we recommend that the word 'growth' should be replaced with the term 'land management'. We consider that growth should not be promoted in the context of hazards, threats, and resilience.

We recommend that the objective reads: 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 safe, sustainable, and inclusive land management.

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

We consider that the criteria are appropriate in terms of assessing the enhancement of resilience and regulatory aspects (burdens, certainty, and complexity). However, as mentioned before we consider that the review should also identify avenues for directing development away from areas of risk and make our vulnerable communities safer. Therefore, we suggest that the criteria should also

capture the overall safety of our communities prior to any event (before resilience comes into play). Eg. How does the option make our communities safer? Does the option help preventing placing people and infrastructure in areas of risk?

Do you think the megatrends outlined pose significant threats to infrastructure resilience?

Yes, we agree that the trends pose significant threats to infrastructure resilience. However, we consider that the list is incomplete.

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

Yes, we have identified various trends that should be considered. Below is a summary of these trends shaping resilience in critical infrastructure. The list goes beyond the four identified megatrends and provides recommendations, including for the four megatrends:

• Climate Change and Extreme Weather Events: The increasing frequency and severity of extreme weather events, such as cyclones and floods, underscore the need for critical infrastructure to be designed and adapted to withstand and recover from these impacts.
We recommend implementing climate resilience strategies, such as building flood management devices, investing in green infrastructure, and promoting sustainable land use planning to mitigate the effects of extreme weather events.

• Urbanisation: The concentration of people and assets in cities highlights the importance of resilient infrastructure to handle potential emergencies that can affect large populations simultaneously.
We recommend developing comprehensive urban resilience plans that focus on smart infrastructure, efficient transportation networks, and disaster preparedness measures to ensure cities can withstand and recover from emergencies. We also recommend more stringent planning framework for development in areas of risk.

• Technological Advancements and Dependency: Greater interconnectivity and dependency on digital infrastructure call for robust cybersecurity measures to protect critical systems from cyber threats, ensuring continuity of essential services during emergencies.
We recommend collaborating with cybersecurity experts to conduct regular audits of critical infrastructure systems, implementing advanced cybersecurity protocols, and educating the public about cyber risks and safety measures.

• Resource Scarcity and Sustainability: Growing global demand for resources necessitates resilient infrastructure planning that incorporates sustainable practices and alternative resource management to ensure stability and adaptability during crises.
We recommend encouraging resource efficiency and circular economy initiatives, investing in renewable energy sources, and promoting responsible water management practices to reduce the vulnerability of critical infrastructure to resource scarcity.

• Aging Infrastructure: The need for infrastructure renewal and modernisation efforts is crucial to integrate newer technologies and design principles, enhancing the resilience of critical systems.
We recommend prioritising infrastructure upgrades and maintenance projects, allocating sufficient funding for asset management, and leveraging innovative construction methods to extend the lifespan and resilience of existing infrastructure.

• Global Pandemics and Health Risks: The COVID-19 pandemic highlights the importance of resilient healthcare systems and supply chains to handle surges in demand for medical services and equipment during health crises.
We recommend strengthening healthcare infrastructure and facilities, stockpiling essential medical supplies, improving healthcare accessibility, and establishing contingency plans to manage potential

pandemic scenarios effectively.
• Social and Political Instabilities: Geopolitical tensions and social unrest can disrupt critical infrastructure, emphasising the need for resilience to maintain services and restore stability swiftly.
We recommend fostering community engagement and collaboration, developing crisis communication protocols, and working closely with law enforcement to ensure a coordinated response during times of social and political instability.
• Regulatory and Policy Changes: Government regulations and policies play a key role in driving investment in resilient infrastructure development to meet evolving standards.
We recommend advocating for more stringent policies and regulations, establishing clear guidelines for resilience planning, and enforcing compliance with resilience standards.
• Public-Private Partnerships: Collaboration between governments and private sectors in infrastructure projects can promote resilience investments by leveraging expertise and resources.
We recommend fostering public-private partnerships to pool resources and expertise, jointly funding and executing infrastructure projects, and developing long-term plans that align with the interests of both public and private stakeholders.
• Data and Analytics: Advancements in data analytics, AI, and machine learning enable better risk assessment and predictive maintenance, enhancing the identification of vulnerabilities in infrastructure and informing proactive resilience strategies.
We recommend investing in data analytics capabilities to assess infrastructure vulnerabilities, monitoring real-time data for early warning signs, and using predictive models to anticipate potential disruptions and optimise maintenance schedules.
• Socioeconomic Inequality: Resilience efforts should address the disproportionate impact of emergencies on vulnerable communities and ensure equitable access to essential services during and after crises.
We recommend integrating social equity considerations into resilience planning, providing targeted support to vulnerable communities during emergencies, and improving access to critical services in underserved areas.
• Global Interconnectivity and Supply Chain Risks: The interconnected nature of the global economy exposes critical infrastructure to supply chain disruptions, requiring diversification of supply chains and contingency planning.

Further, we recommend fostering regional self-sufficiency, diversifying supply chains to reduce reliance on single sources, and establishing emergency response plans to manage supply chain disruptions and maintain essential services.

We also note that the four megatrends identified in the discussion document are global megatrends, and we consider that national and regional trends should also be considered, such as the recent flood events, seismic events, aging infrastructure, and aging population. In addition, the megatrends tend to address more populated areas than stranded communities. We need to ensure risks are addressed in parallel. Lastly, we must also consider the food supply chain as a key issue.

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

We consider that in terms of resilience, we must have a system that is responsive and works well during an event and during the recovery stage. A necessary (but not sufficient) condition for this is that the appropriate funding is available for response and recovery when it is needed; it is important to ensure that funding should not be a barrier to the operation and recovery of critical infrastructure operators after an event.

As a result of historical decisions, deferred maintenance and renewals have left many infrastructure operators in permanent catch-up mode. More recently, asset price inflation, and the consequent increased requirement for funding depreciation has added to these funding issues for operators of critical infrastructure. These issues will require further work to be thoroughly understood, but in the meantime a funding mechanism directed at helping alleviate the funding issues for critical infrastructure operators in order to help them prepare for the risk of future events is needed.

We understand that the forthcoming Climate Adaptation Bill will partially address the issue of people and infrastructure currently at risk and how to fund adaptive responses. We consider that there needs to be transparency around the funding arrangements for these at-risk people and infrastructure, including the extent to which they may require assistance and how this will be funded.

In respect of transparency, we also note that, amongst other things, there are beneficiaries of some public infrastructure that are not required to contribute to the costs of providing that infrastructure. For example, taxpayers generally benefit from the flood schemes in the Waikato region that protect other critical public infrastructure (such as the state highway network or the rail corridor), but they are not required to contribute to its funding.

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?

We consider this to be of high importance. Better understanding hazards and threats is key for better planning. There must be more investment in research and education. We also need to understand and manage our internal threats, such as gaps in regulations allowing for development to happen in areas 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?

WRC is not considered a critical infrastructure owner or operator under the current legislation. However, substantial sections of WRC's infrastructure are designed to protect critical infrastructure from river and coastal flooding. We consider that the government should co-invest in upgrading the existing river and flood management systems to ensure these systems are fit to withstand future flood events.

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

We consider that information sharing is vital for informed decision-making, and secure platforms should facilitate this process. Implementing enforceable resilience standards ensures that critical infrastructure serving our communities will meet the appropriate criteria. Clear accountabilities for critical infrastructure providers need to be established to strengthen resilience efforts within communities.

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

Yes. We support the government having the ability to set, and enforce, resilience standards across the entire infrastructure system.

- what type of standard would you support (eg. requirement to adhere to a specific process or satisfy a set of principles)? (part of the question in the discussion document but not in the online form)

We consider that both options are appropriate, and we recommend both; having overarching principles that would flow to a process-based framework with objectives, policies, and rules. Further, noting our comments in other answers highlighting the need to better regulate development to prevent placing people and property in areas of risk, we recommend having national direction directing resource management plans to have stricter provisions avoiding development in areas of risk.

- do you have a view on how potential minimum resilience standards could best complement existing approaches to risk management? (part of the question in the discussion document but not in the online form)

We consider that compliance, monitoring, and enforcement are key and should be regulated. We also consider it important to plan for failures in the system and for recovery after significant events. Therefore, it is important that critical infrastructure entities hold additional capital to manage risks and recovery of the resilience system.

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?

Yes. We 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.

We consider it appropriate to map dependencies and interdependencies with other parts of the infrastructure system (physical, digital, and geographic). Mapping would help estimate the full impact that any disruption to that asset might have on the overall functioning of the system. This should also consider stormwater and flood management infrastructure operated by regional councils.

Currently we consider that the dependencies and interdependencies between infrastructure providers and critical assets are not aligned. This includes service disruptions across the infrastructure system and vulnerabilities that may be shifted for other sectors. Therefore, we consider that mechanisms should be developed to require alignment is achieved between infrastructure providers and critical assets.

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

At this stage we are not prepared to advise on any specific criteria. However, we consider that the criteria should assess risk in a holistic way, considering the dependencies and interdependencies between infrastructure features. As an example, if the flooding prevention assets fail, the road network will be impacted, and people and communities will become more vulnerable.

As mentioned above, we support the government having the ability to set resilience standards across the entire infrastructure system. We consider it important to have a holistic model that critically assesses critical infrastructure, and agree that some critical infrastructure assets are more sensitive than others and these should have more stringent requirements. By holistic, we mean as described in the discussion document where the infrastructure's importance is assessed against a broader range of societal domains (including economic, environmental, social and cultural factors).

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? - Is there a need for greater powers? If so, what type of powers should the government consider? 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?

We consider that the government is ultimately responsible to protect New Zealanders against any threat, and where intervention is necessary central government should be enabled to act. Therefore, the government should have powers to act when needed.

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?

WRC would prefer to have further information before having a position around the responsibility for the management of resilience of New Zealand's critical infrastructure system.

Do you think there is a need for compliance and enforcement mechanisms (eg. mandatory reporting, penalties, offences) to ensure that critical infrastructure operators are meeting potential minimum standards?

Yes, we consider that having compliance and enforcement mechanisms to ensure that critical infrastructure operators are meeting standards will help achieve better accountability.

We consider that these should apply to the entity; we consider that liability should be an entity responsibility.

What additional comments do you have?

Please refer to our answer for the initial question in the prelude for additional comments.