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To: Department of the Prime Minister and Cabinet (DPMC)
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From: Electricity Engineers' Association of NZ (EEA)

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Subject: EEA Submission – Discussion Paper – "Strengthening the resilience of Aotearoa New Zealand's critical infrastructure system"

OVERVIEW

The Electricity Engineers' Association (EEA) of NZ welcomes the opportunity to provide feedback on the Department of the Prime Minister and Cabinet (DPMC) discussion paper on *Strengthening the resilience of Aotearoa New Zealand's critical infrastructure system.*

The EEA provides the power industry's largest collaborative forum in New Zealand, focused on delivering clarity on complex engineering/technical issues, practical support and solutions, and market intelligence to support our members and other industry stakeholders to deliver safe, secure, and reliable electricity supply within a low carbon policy framework. The EEA represents over 70 Corporate Members (companies) and 600 Individual Members across New Zealand from all engineering disciplines and sectors of the electricity supply industry (see Appendix A).

Noting our members' interests, EEAs submission focuses on electricity infrastructure and services. We respond to areas and questions raised in DPMC's discussion document, as well as provision of general comments and feedback to details that we think require consideration by DPMC. EEA also notes that this discussion paper is intended to provide the first step towards informing further policy development as part of the Government's Infrastructure Resilience programme.

EEA supports efforts to increase the capacity of Aotearoa's critical infrastructure to absorb a significant event, recover from disruptions, adapt to changing conditions, and retain essentially the same level of function as before. We are also supportive of the 'whole of system approach' taken by the discussion paper, the recognition of interdependencies, and we welcome the Government's work to build on the New Zealand Infrastructure Commission's 30-year strategy.

It should be noted by DPMC that EEA has already published a "*Resilience Guide*" (July 2022) that was developed for its members to provide a detailed framework for businesses to assess the vulnerabilities of their assets to extreme events including natural disasters or major asset failures, prepare risk mitigation plans, and develop operational contingency and response plans for immediate, post-event action.

A copy of the guide can be found at:

https://www.eea.co.nz/tools/products/details.aspx?SECT=publications&ITEM=3049

EEA also recognises that the current regulatory regime is not needs urgent review and requires amendment. We note that if regulatory compliance increases, then regulators will need to allow asset owners and operators to increase resourcing to be able to meet any enhanced resilience standard. We therefore believe that any new legislation should be supported by good industry practice guidelines that have been specifically developed to manage and constantly review resilience on an ongoing basis into the future. In the case of the EEA "*Resilience Guide*" it includes a 'Resilience Management Maturity Assessment Tool' (RMMAT) to enable organisations across the electricity supply industry to self-assess their current level of maturity.

As such, EEA consider that it is a priority for the government to continue to work with the electricity sector, in collaboration with all other key stakeholders, to design a fit-for purpose regulatory framework that ensures Aotearoa's critical infrastructure system is best positioned to manage the range of risks we face now and into the future. Industry collaboration will be crucial to ensure that any suggested reforms are consistent and align with other reform programmes facing the electricity industry, especially regarding decarbonisation and electrification of New Zealand's energy system. For example, ensuring cohesion and alignment between any future critical infrastructure resilience policy and regulation, including the National Resilience Strategy with (but not limited to) the Government's Energy Strategy as well as any other proposed reforms regarding energy, resource management, emergency management, and climate change adaptation will be crucial.

EEA is therefore keen to continue our collaboration with the Government to refine and contribute to critical infrastructure resilience policy, regulation, and delivery.

Questions: Principles

Q1 (page 10): Does more need to be done to improve the resilience of New Zealand's critical infrastructure system?

As identified from the outcomes of Cyclone Gabrielle, EEA agrees that more is needed to be done to improve the resilience of New Zealand's critical infrastructure system. We agree that consideration of the assets in a holistic manner should be undertaken, but that clarity should be sought for stakeholder needs, and that interdependencies between critical infrastructure assets for reduction, readiness, response and recovery should be defined and agreed between infrastructure managers.

EEA generally support the discussion document's objectives, and principles for reform assessment, including effectiveness, cost, and complexity (impact on regulatory system's complexity), and that this could be accelerated for the electricity industry by recognising the use of practice guides like the EEA "*Resilience Guide*".

However, we would also like to highlight that any potential changes could result in increased compliance costs and regulatory burdens that will need to be factored into the process to ensure that the sector and community can meet enhanced standards.

Q2 (page 10): Have you had direct experience of critical infrastructure failures, and if so, how has this affected you?

EEA is a peak body, however in that capacity we are aware issues that have hindered our members in relation to responding to critical infrastructure failures in the electricity sector. These have included issues such as:

- Failure of transport corridors which has hindered access to electrical infrastructure for assessment and repair.
- Failure of communications infrastructure has decreased the safety for workers and hindered response and repair. Also, there were issues with communications between electricity infrastructure response teams and other types of asset owners and emergency services.
- Failure of flood protection structures has led to damaged electrical infrastructure assets.
- Health care infrastructure being a limiting factor in the national response to the COVID-19 pandemic, consequently workforce disruption and supply chain issues impacted on intended works in turn effecting the quality and cost of service to end consumers.

Q3 (page 10): How would you expect a resilient critical infrastructure system to perform during adverse events?

Electrical infrastructure is design rated, and it should perform to that design rating during adverse events. EEA recommends that consideration should be given to the appropriateness of current design standards relative to resilience and future climate trends.

It should also be noted, that the design rating of electricity infrastructure should be commensurate with stakeholder requirements and interdependencies between different infrastructure to deliver on those stakeholder needs.

Q4 (page 10): Would you be willing to pay higher prices for a more resilient and reliable critical infrastructure system?

EEA agrees that establishing better resilience for New Zealand's infrastructure is urgent, especially in the context of recent weather events, however, consideration of resourcing will be critical to making sure that establishing that resilience is possible.

We believe that current funding models, fail to adequately provide sustained resourcing for adequate maintenance and renewal programmes, let alone additional investment to meet increased resilience as well as decarbonisation requirements (either for upgrades of existing assets, or in building new assets).

Higher prices are tolerable to a point when there is a conscious trade-off between meeting the customer needs and the reduction vs response/recovery action. The appropriate level of resilience to meet New Zealand's future requirements will be the point of debate that this review should consider.

Q5 (page 10): 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 economic growth. Do you agree with these objectives? If not, what changes would you propose? If not, what changes would you propose?

Whilst we agree in principle with the objectives outlined in the discussion paper, we think more clarity is required regarding some of the definitions, to remove any ambiguity. For example:

- Resilience is a broad term and can mean different things to different people and or industry sectors.
- 'All hazards and threats' this will be challenging as there are likely to be threats in the future that have not yet manifested today. For example, in the case of long asset life infrastructure – it is unlikely that there was an understanding of the threat of cyber terrorism was considered by the electricity industry in the design and build of infrastructure 80 years ago.

Possible alternatives that DPMC may want to consider is: …the objective is to ensure that New Zealand's critical infrastructure systems are fit to service their communities and stakeholders' resilience needs for all hazards from the natural environment [and those man-made?].

Q6 (page 10): Do you agree with the proposed criteria for assessing reform options? If not, what changes you would propose?

EEA considers that that proposed criteria for assessing reform options look appropriate. However, we would suggest that once work commences in earnest, a quick review of the criteria is undertaken to

ensure if they need to be adjusted or if other metrics currently not considered may be added as they are more appropriate.

Questions: Background and Context

Q7 (page 22): The paper discussed four megatrends: 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?

EEA agrees that the four megatrends discussed in this paper pose a risk to critical infrastructure across New Zealand.

Q8 (page 22): Are there additional megatrends that are also important that we haven't mentioned? If so, please provide details.

EEA has identified that a significant risk trend we think DPMC should consider adding is workforce capacity and capability. The renewal of infrastructure, combined with the increased demand for new infrastructure along with isolated resilience improvements all require people. However, it is recognised on a global scale that the electricity sector needs to increase in the size of its workforce over the next 30 years across multiple disciplines just to meet decabonisation goals, let alone resilience. New Zealand will need to compete to attract, develop and retain those workforce resources against other industry sectors as well as from international competition for those resources.

Q9 (page 26): Do you think we have described the financial implications of enhancing resilience accurately? If not, what have we missed?

EEA was pleased to see that the financial implications of enhancing resilience have at least been considered in this discussion document. However, we unfortunately think that this reflection is inadequate given the level of investment that will be required. This includes a lack of reflection regarding the existing electricity infrastructure deficit that will continue to hinder asset owners and operators' ability to meet any increased standards resultant from this review. Current funding models for electricity assets are currently deficient in adequately providing sustained resourcing for adequate maintenance and renewal programmes, let alone additional investment that will be required to meet increased decarbonisation and resilience requirements – by either upgrading existing assets, as well as funding new builds.

Questions: Potential Barriers

Q10 (page 32): If you are a critical infrastructure owner or operator, what additional information do you think would best support you to improve your resilience?

As a nation straddling two tectonic plates in the midst of a changing climate, New Zealand is beset with natural hazards. Our electricity networks span the breadth of the country covering all land types. Any additional information that is able to improve electricity asset owners and operators with situational awareness of real-time risk by combining what we know about the electricity network's exposure to natural hazards with currently available real-time data describing the hazards would be of benefit.

In addition, any potential for better real-time understanding of network condition by leveraging technological advances would be beneficial in improving future resilience of the electricity sector.

Q11 (page 32): What do you think the government should do to enable greater information sharing with and between critical infrastructure owners and operators?

EEA has identified a few potential opportunities to improve information sharing with and between critical infrastructure owners and operators, including:

- The disclosure of stakeholder requirements and the way in which respective infrastructure owners/operators intend on delivering on those requirements through reduction, readiness, response and recovery plans.
- Lifelines facilitated by coordination of the above plans.
- Formal review of events with acknowledged improvements being implemented by infrastructure owner/operators in their processes and lifeline oversight.

Q12 (page 39): Would you support the government being able to set, and enforce, minimum resilience standards across the entire infrastructure system?

EEA supports a principles-based approach to minimum standards, rather than any prescriptive approach to setting minimum resilience standards.

Whilst we agree that all options should be considered when investigating the best option to adopt, this discussion document (example Paragraph 75.d) seems to have already 'jumped to the solution' of setting minimum standards. The setting of minimum standard levels may be relatively easy/straightforward and/or appropriate for other sectors such as the water sector (using standards such as the World Health Organisation's 'basic access to water standard'). However, this would be difficult for other sectors like electricity, where it would be extremely hard to determine how long is it acceptable for a power outage to last for any given event?

As stated previously, we think that principles/risk based approach that mandates the use of an easily updatable resource such as the EEA "*Resilience Guide*" for electricity transmission, distribution and generation asset owning businesses is the optimal outcome. The main objectives of this guide are to assist electricity asset owners to:

- better understand the obligations imposed on Lifeline Utilities by the CDEM Act.
- undertake self-assessment of resilience maturity, capabilities, and preparedness.
- identify gaps in resilience planning systems and processes and establish priorities to address these gaps.
- undertake a systematic risk reduction assessment and based on this, develop business cases for investment in network assets or systems to mitigate vulnerabilities.
- define and manage critical emergency spares.
- consider the probable resources, expertise and mutual aid arrangements that will be needed to respond and eventually recover from a major event, and
- provide a source of reference material to improve resilience planning.

If so:

a) what type of standard would you support (e.g. requirement to adhere to a specific process or satisfy a set of principles)?

As stated, EEA believe that an industry specific "Resilience Guide" style approach where the regulations would mandate use of this guide that comprises of a set of 'shall' statements defining the requirements and organisations demonstrate how the comply with those requirements is the most practicable approach.

b) do you have a view on how potential minimum resilience standards could best complement existing approaches to risk management?

Resilience requirements set out in the Resilience Strategy and any subordinate legislation or guidelines such as the Civil Defence Emergency Management ACT (CDEM) or EEA "Resilience Guide" could just be incorporated to an organisations risk management system.

For resilience risks (to specific assets or systems of assets) which exceed the organisations and/or Governments/stakeholders/communities/standards tolerance, reduction actions should be planned. For those that are of lesser risk readiness and response plans should be established. This could be seen as being analogous to an organisation's renewal planning process. Assets which carry a higher risk (i.e., have a higher consequence of failure) are typically replaced pre-failure in a 'reduction' effort. Other assets may be operated in a run-to-failure approach, but with supporting readiness and response plans

such as having available stock for the asset's reactive replacement and a resource and funding allocation set aside in anticipation.

Q13 (page 39): Would you support the government investing in a model to assess the significance of a critical infrastructure asset is, and using that as the basis for imposing more stringent resilience requirements?

EEA supports in principle the government investing in a model to assess the significance of a critical infrastructure asset.

If so:

a) what options would you like the government to consider for delivering on this objective?

EEA would expect that this would be led by Te Waihanga (the New Zealand Infrastructure Commission) and build on the criteria included in the proposed Emergency Management Bill for ministerial decision making on inclusion of critical infrastructures.

b) . what criteria would you use to determine a critical infrastructure asset's importance?

The assets' relative role and criticality in delivering on community/stakeholder needs.

Questions: Managing significant national security risks

Q14 (page 43): 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:

a) what type of powers should the government consider?

As suggested previously, EEA believes that a principles/risk based approach that mandates the use of an easily updatable resource such as the EEA "Resilience Guide" for electricity transmission, distribution and generation asset owning businesses is the optimal outcome.

It would then be the role of the National Emergency Management Agency in conjunction with industry regulators (i.e. Commerce Commission and/or Electricity Authority) to ensure that electricity asset owners were meeting their obligations in using this risk based approach and enforce it if and when required.

b) 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? Which further actions under Focus areas 4a and 4b would you prioritise? Please explain your answer.

Whilst we believe protections will be needed to be prescribed, we consider that it is to early in the process to determine what those protections should be as they would need to be tailored to whatever structures are finally agreed as the best pathway forward.

Questions: Creating clear accountabilities and accountability mechanisms

Q15 (pg. 46): Do you think that 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:

a) do you consider that new regulatory functions should be the responsibility of separate agencies, or a single agency?

One could argue that separate agencies are already responsible for resilience of critical infrastructure purely through the act of prudent and capable asset management. For example, the electricity sector (transmission and distribution) is regulated by the Commerce Commission. However, experience would suggest that sectors are currently being looked at in isolation using this approach rather than an aligned resolution to the issues and risks.

Therefore, in considering the most appropriate settings for any new proposed regulation, EEA encourages DPMC to consider how existing regulatory bodies and agencies may be repurposed, rather than setting up a new agency to coordinate critical infrastructure resilience standards management and regulation functions.

While we agree that the National Emergency Management Agency is currently not well placed to act as a regulator, we encourage DPMC to consider Te Waihanga be empowered to take a wider system stewardship role and coordinate with industry specific regulators, asset owners and operators to facilitate resilience management.

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

EEA believes that existing entities (infrastructure owners/managers) should own these functions for optimal consideration and execution alongside other requirements beyond resilience from the assets. But these entities should be held to account by regulators and the NEMA.

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

It is not clear what benefit a regulator of a sector in this frame would provide. The individual sector needs would likely not be common as the entities within a sector have quite different operating contexts serving different communities and stakeholder needs.

Q16 (page 46): Do you think that there is a need for compliance and enforcement mechanisms (eg. mandatory reporting, penalties or offences) to ensure that critical infrastructure operators are meeting potential minimum standards?

As suggested previously, EEA fervently suggests that a principles/risk based approach that mandates the use of an easily updatable resource such as the EEA "Resilience Guide" for electricity transmission, distribution and generation asset owning businesses is the optimal outcome. If regulators deem that an organisation has not complied, then enforcement mechanisms would be required.

If so:

a) do you consider that legal obligations should be applied to the entity, to the entity's directors/executive leadership, or a mix of the two?

A legal obligation on directors would make sense and would ensure organisations apply the right amount of focus.

Contact

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Appendix A

Introducing EEA

Founded in 1927 the EEA is the national organisation for engineering, technical and health and safety matters within the New Zealand Electricity Supply Industry (ESI).

Our members include over 70 Corporate Members (companies) and 600 Individual Members from all engineering disciplines and sectors of the electricity supply industry including generation, electricity networks (transmission and distribution), contractors (operation/maintenance), engineering consultancies and equipment suppliers.

The EEA works collaboratively with industry, government, and other stakeholders to provide expertise, advice, and holds or contributes to significant bodies of knowledge on engineering/ technical and safety issues relating to the electricity supply industry in New Zealand. All EEA guides and publications are publicly available.

A key focus of our work is enabling engineering and technology understanding and solutions to support decarbonisation and ensure the safe, reliable, and secure delivery of electricity to our communities.

Our functions include:

- Production and ongoing stewardship of 'bodies of knowledge' including engineering, technical, asset management and safety publications (e.g., guides, Standards, industry reports, and links to relevant legislation and international information).
- Representing the New Zealand electricity supply industry in national and international Standard development and facilitation of benchmarking in safety, technology, and asset management (e.g., IEC, AS/NZS, NZS Standards).
- Providing and supporting engineering and technical professional development and competency for our engineers/technical staff.
- Providing a web-based knowledge hub on safety, engineering, asset management, emerging technology and professional development including information services, notifications, newsletters, guidelines and support documents, events, and infrastructure engineering careers information.