

GENERATOR EMERGENCY PREPAREDNESS

SECURITY AND RELIABILITY COUNCIL

This paper provides the SRC with information, as to the level of emergency preparedness of electricity generators, as part of the SRC's theme of the power system's resilience to sudden and unexpected shocks.

Note: This paper has been prepared for the purpose of the Security and Reliability Council (SRC). Content should not be interpreted as representing the views or policy of the Electricity Authority.

Generator Emergency Preparedness

- 1.1.1 As part of its theme of emergency preparedness, the SRC has asked the secretariat to provide information on generator emergency preparedness, including fuel supply availability in a post-emergency situation.
- 1.1.2 To achieve this in previous years, the secretariat has arranged for generators to attend SRC and present the information. This year, for efficiency and to avoid potential disclosure of competitive information, the Authority, on the SRC's behalf, has engaged MartinJenkins to conduct a series of interviews with key generator participants and present an anonymised report of their findings at this meeting.
- 1.1.3 Appendix A is the MartinJenkins report.

Key findings

- a) Overall, the generators prioritise their risk management and preparedness heavily, and they all have coverage across risks along with experience and expertise at every level of governance.
 - b) Some generators have a more structured approach of being risk prepared directly correlated to their size of operation, and some have an ad-hoc approach and learned expertise over time. There are none that raised any red flags for MartinJenkins during their consultation process.
 - c) The main issues MartinJenkins found were disproportionate levels of certainty about coordination and fuel availability in varying sizes of generators, a gap in the overarching regionally led frameworks to ensure that the lights stay on, and an underlying logical reasoning behind a lack of development in this area.
 - d) Some generators think the market mechanisms at play aren't incentivising the level of coordination and black start capabilities that are necessary in the case of a national or regional emergency. There needs to be further consultation, or communication of actual capabilities, with industry
 - e) There is also a fair assessment that informal agreements exist in the industry, and there is a lot of coordination and communication in the case of an emergency but there might be a lot of risks where it is worth coming together as an industry and some where it's worth having more formal individual agreements in place.
- 1.1.4 The MartinJenkins report makes a number of observations and recommendations (Page 13) for SRC members to consider.

Questions for the SRC to consider

The SRC is asked to consider the following general questions.

- | | |
|------------|---|
| Q1. | What further information, if any, does the SRC wish to have provided to it by the secretariat? |
| Q2. | What advice, if any, does the SRC wish to provide to the Authority? |

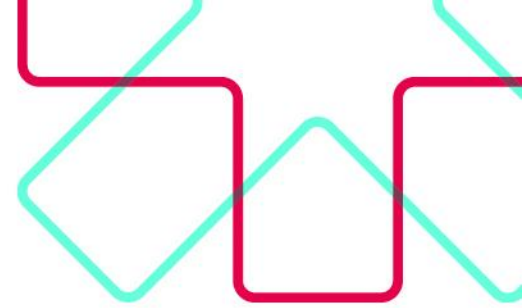
Appendix A: MartinJenkins Emergency Preparedness Assessment

EMERGENCY PREPAREDNESS ASSESSMENT

Report

23 February 2022





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PREFACE

This report has been prepared for the Electricity Authority's Security and Reliability Council by Sargam Shah and Daniel Miles from MartinJenkins (Martin, Jenkins & Associates Limited).

MartinJenkins advises clients in the public, private and not-for-profit sectors. Our work in the public sector spans a wide range of central and local government agencies. We provide advice and support to clients in the following areas:

- public policy
- evaluation and research
- strategy and investment
- performance improvement and monitoring
- business improvement
- organisational improvement
- employment relations
- economic development
- financial and economic analysis.

Our aim is to provide an integrated and comprehensive response to client needs – connecting our skill sets and applying fresh thinking to lift performance.

MartinJenkins is a privately owned New Zealand limited liability company. We have offices in Wellington and Auckland. The company was established in 1993 and is governed by a Board made up of executive directors Kevin Jenkins, Michael Mills, Nick Davis, Allana Coulon, Richard Tait and Sarah Baddeley, plus independent director Sophia Gunn and chair David Prentice.



EXECUTIVE SUMMARY

Generators were well prepared for managing their own emergencies

Anticipating major impacts on assets, health and safety, environmental, legal and compliance, and reputational risks, generators had developed comprehensive and detailed risk documents with wide coverage looking at impact and consequences on their risk frameworks:

- Most generators performed bow-tie risk assessments at the onset of every project, which carried forward into an overall look at impact and consequence on their risk matrix
- In one case, PEAR (People, Environment, Assets, Reputation) was also used to ensure comprehensive assessment of risks
- Smaller generators designed their own risk frameworks and looked at risk management similarly to asset management viewing all resources and liabilities as assets such as people, environment, physical assets, reputation and more.

High priority was placed on monitoring risks

Generators all followed good practice for maintaining live documents to monitor risks. These live risk registers listed risks across their assets, with mitigation guidelines and were monitored heavily, and acted on quickly by generation managers throughout the industry.

We noted a high-level of professionalism with respect to individual generators' approaches to emergency preparedness in all our interviews.

Roles vary by firm

In most cases, emergency response involves standing up a group representing various aspects of the organisation from People & Culture, Risk and Assurance, Media Liaisons, Trading, and Legal with clear roles and responsibilities to deal with the emergency response. There are back-up staff available in the case where they are needed.

Other generators, where the knowledge base is wider, and the corporate structure is flatter, require more flexibility in who plays particular roles in an emergency response. In these cases, the roles and responsibilities aren't as prescriptive and this provides a certain amount of flexibility and efficiency, which these companies find useful in their response.

Generators haven't noted gaps or shortfalls in either of these approaches.

In most cases, Board members are concerned with the existence of response plans, rather than the detail within them.



Training could be improved

There are minor differences in the induction schemes of new employees with their subsequent roles and responsibilities coming into the firms:

- All generators have an expectation that new and existing employees read the risk documents that are relevant to their roles and responsibilities
- Some generators have formalised training programmes on their response plans, with competency assurance frameworks and training packages prepared by their internal Risk and Assurance teams to make sure the employees understand accountabilities and responsibilities within their specific roles
- Specific qualifications such as CIMS (Coordinated Incident Management System) training are required by some generators.

Training for different emergencies happens on a specific schedule

For industry-wide training, every generator runs simulation exercises to train and test their emergency responses. Simulation training, according to generators, is “where most of the learning happens”. This is done on different cycles depending on the type of emergency and whether it is corporate-wide or site-level.

Testing of equipment happens at different frequencies depending on type of equipment. For specialised equipment, some generators also bring independent consultants from overseas for testing and run predictive analysis on the reliability of their equipment.

Financial and health and safety risks are prioritised above security of supply risks

Generators are incentivised through legal and market mechanisms to focus on financial, and health and safety risks, rather than security of supply risk. Accordingly, availability of fuels is primarily thought of as a financial risk. Fuel availability is looked at differently depending on different asset compositions of generators:

- Hydropower dominated generators can manage most security of supply risk through focussing on their financial risk
- Thermal generation does not appear to achieve the same result, with generators either:
 - managing fuel-stocks solely as a financial risk mitigation; or
 - frustrated that the market does not incentivise prioritising the mitigation of security of supply risks through financial returns.

Sharing of resources and knowledge is common amongst generators

The industry overall makes good use of its existing networks to disseminate information and to receive rapid support from other generators which may, for example, share a hydro scheme.

Stay Alive, a membership-based organisation of all generators, and the System Operator (Transpower) come together on a frequent basis to discuss health and safety risk protocols and learnings with each other for continuous improvement.



The pandemic has highlighted capacity for cooperation

Clear evidence of capacity to collaborate can be seen through NEMA (National Emergency Management Agency) having coordinated an industry response to manage pandemic risks, including coordinating access to RATs (Rapid Antigen Tests) for employees.

Collaboration should be in preparedness, not solely in response

Reacting after an emergency rather than proactively (and jointly) planning for emergency situations as an industry may not be the most efficient method of ensuring the lights stay on.

There is a missed opportunity in approaching regional or national emergencies from a generator-by-generator perspective, rather than a market perspective. We are unaware of any industry-wide formal or informal arrangements in place in the case of significant, supply-interrupting events which would impact beyond a single generator such as volcanic eruptions or earthquakes.

It is worth discussing what framework would benefit the industry, and improvements to be made within coordination and communication.

Stakeholders had varying views on black start capabilities

Some generators were unconvinced that existing black start capability (the ability for the generation and the grid to recover from a total outage) was sufficient to restore the grid in a timely way in the event of a significant emergency. This raises the potential of a mismatch in the risk appetite between the Authority and the System Operator in terms of security of supply, and correspondingly, whether the market mechanisms in place incentivise appropriate investment by generators for capability in this area.

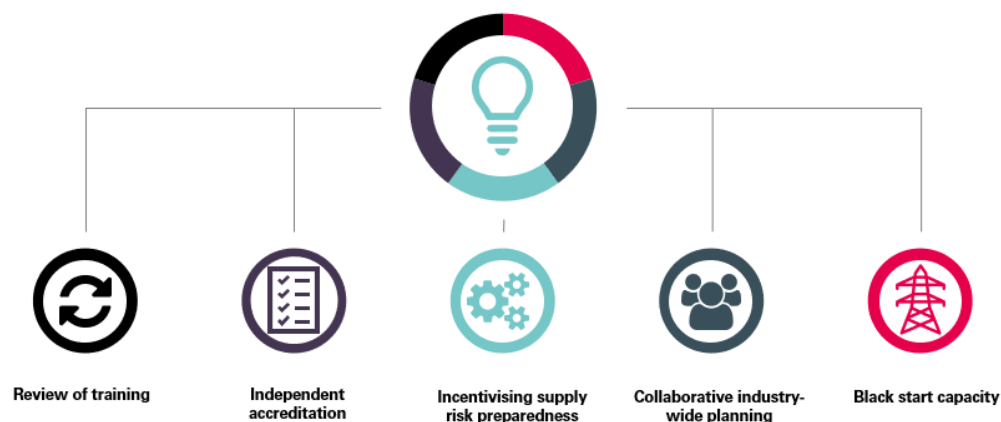


Recommendations

Table 1: List of recommendations

The SRC should consider recommending to the Authority:

- That the Authority note the generally consistent approaches and high level of professionalism among generators in their emergency preparedness
- That generators be encouraged to review training and induction processes and simulation schedules to ensure all staff are familiar with emergency response procedures relevant to them, with a particular focus on staff at sites
- That the Authority consider the development of, or endorsement of, an existing third-party accreditation scheme to provide confidence in emergency response systems at a detailed level
- That the Authority consider whether existing market and legal mechanisms are sufficient to promote consideration of security of supply risk (as compared to health and safety or financial risk), particularly in the case of thermal fuel supply chains
 - And if not, that the Authority consider new market mechanisms to incentivise preparedness for security of supply risk
- That the Authority develop a mechanism for pan-industry proactive emergency response planning, to ensure agreed industry collaboration in the event of significant emergencies which threaten security of supply
- That the Authority confirm with the System Operator that black start capability is sufficient to meet the Authority's desired service restoration timeframes in an array of potential emergency situations, both nationally and in the event of grid islands.



INTRODUCTION

Background

The Electricity Authority's Security and Reliability Council (SRC) is seeking to assess the emergency preparedness of New Zealand's electricity generation industry from a security of supply perspective. The Authority has commissioned MartinJenkins to conduct interviews with generators to provide an overview of the emergency preparedness plans currently in place and conduct a gaps analysis for potential improvements in emergency preparedness.

The aim for this work is to provide the SRC with a better understanding of the industry's emergency preparedness, so it can consider potential focus areas for improvement and make any necessary recommendations to the Electricity Authority.

While we have taken a broad view of "emergency preparedness" in discussions with generators, including health and safety, our focus has been on those elements of risk and emergency preparedness with a potential impact on security of supply.

This report gathers insights on whether industry participants are taking appropriate steps to prepare and have plans and processes in place, which are tested. We have not reviewed the emergency management plans themselves. Accordingly, this report does not pass judgment on the effectiveness of those plans and processes.

Scope

The scope for this report is to assess the coverage and the approach to emergency preparedness and response amongst generators, and whether the plans and processes are in place and tested.

Our areas of enquiry are listed below:

Emergency preparedness

- Governance processes: Clear understanding of emergency plans, along with individual accountability, roles, and responsibilities
- Risk reduction: Following best practises for risk identification, risk frameworks and constant monitoring of new and urgent risks and embedding industry learnings in risk reduction practices
- Readiness: Adaptability and flexibility in their approach to risk preparedness, and whether this was a proactive or reactive approach. Clear guidelines for employees to follow through, and access to support if needed
- Testing of process and procedures: Frequency of testing employees through drills at a site level and wider business and the coverage of knowledge tested depending on individual roles. Frequency of testing equipment to ensure smooth operation.

Emergency management

- Response: Efficiency in the response to emergencies
- Post-event analysis: Learnings and takeaways post-event and how changes are embedded in the risk documents organisation wide
- Communications: The level of communication within organisations during emergency situations, along with wider communications practises industry-wide for contingency planning. Communication plans in the presence of an emergency with the public in the case of emergencies.



Out of scope

- We did not delve into questions and analysis of general asset management
- We did not look at the details of risk preparedness plans.

The full list of evaluation questions is listed in Appendix 1.

Approach

We conducted interviews with stakeholders from the key generation organisations to draw our industry insights. These companies are listed below:

- Meridian
- Contact
- Genesis
- Mercury
- Todd Generation
- Pioneer Generation

The analysis of feedback from interviewees is anonymised and aggregated wherever possible, although we have acknowledged that this may be difficult in some areas, given the unique role some participants have and the assets in their portfolio.

Limitations

Our interviews took place at a time when generators were actively in the process of implementing their responses to the outbreak of the Omicron variant of COVID-19 in New Zealand, and interview requests coincided with the Christmas break. We initially planned to interview stakeholders at both higher governance levels within the industry (in most cases, a Chief Generation Officer or equivalent), as well as stakeholders at in more operational roles. While we were able to interview all the generators, we were not able to achieve comprehensive coverage at the operational level.

Accordingly, our perspective on emergency preparedness from an operational level might not be comprehensive within this report.



Analysis

Overall, generators had a high level of confidence around their own levels of risk preparedness and management.

Most generators took a similar approach towards risk management

Emergency preparedness is given high priority amongst all generators we spoke with, and all were very comfortable with their own approaches to managing risk. Risk management strategies tended to include several common elements across all the generators (though, not all generators adopted every element):

- Risk registers underlining the impact and consequence of risks, often separated by the nature of risk, such as People and Culture, Health and Safety, Legal and Compliance, Reputation, and Environment. Generally, these registers were live documents which included mitigation plans, resolution dates, financial risks, duration of risks and risk scores allocated to them
- Risks were generally categorised on a relatively standard likelihood/severity matrix which gave a view of the magnitude of the risk. In many cases, this corresponded to financial trigger-points
- Once categorised, risks were assessed, with most generators employing a standardised Bow-Tie risk assessment, which is used to analyse and demonstrate causal relationships in high-risk scenarios
 - One generator also discussed using a PEAR framework (People, Environment, Assets, Resources) to support risk assessment, ensuring comprehensive coverage of each of those aspects within their risk appraisal

- Business continuity plans which offer contingency planning in the event of risks being realised.

Risks were generally identified from the bottom up

Generators tend to follow a bottom-up approach while looking at risk preparedness and management plans, supplemented by a centralised risk review process on a regular cycle. All newer site-level risks are fed into the system through risk registers which are flagged if overdue, and they subsequently flow into the business continuity plans during their review.

All generators had bespoke aspects to their risk management approaches, but some were more bespoke than others

While all generators noted that there were aspects of risk identification and management which they had customised to their own unique circumstances, only one generator maintained a highly-bespoke approach without significant reference to standardised frameworks – an approach which stemmed from what they viewed as a unique market position and makeup of assets. However, in the case of that generator, the risk of using bespoke approaches was mitigated through detailed external verification of their asset management processes, including risk management, through ISO 55000 and ISO 45000 accreditation.

It was clear that this external verification provided a level of rigour which met or exceeded the confidence which comes from using standardised processes, as well as driving a healthy focus and culture around risk management embedded through all parts of their business.



There is an opportunity for more accreditation

We recognise that there is a place for bespoke planning, and that business circumstances can differ significantly between generators – therefore, it would seem inappropriate for the SRC to recommend the Authority to mandate or recommend any particular approach to emergency planning or management. That said, there is an opportunity for the Authority to take a greater role in considering the available independent accreditation schemes which cover emergency preparedness, and to potentially recommend one as an industry standard to ensure confidence on the standard of emergency planning at a greater level of detail than what can be offered by an all-of-industry review such as this.

Risks are identified through practical experience, sharing knowledge, and exercises

Every generator mentioned, unprompted, that they did not consider any competitive behaviour and share knowledge freely for learnings and risk management (especially around health and safety) transparently in a forum with other generators and the System Operator called “Stay Alive.” There are scenarios that are discussed in this forum that inform on the process for identifying new risks in a formal and informal setting at varying levels of governance.

Risk management documents are regularly reviewed at varying frequencies throughout the industry. Alternatively, when new risks emerged, this could trigger an ad-hoc review, taking the place of the scheduled review. There is a cascading process that starts from bottom-up through lessons on site, or from post-exercise analysis.

All generators have a live document where employees record new risks that arise. These are then logged into the system, including follow-up actions for mitigating the risk, and the response plans are updated. There is confidence

amongst the generators that they are constantly scanning for risk in the environment, whether it is public safety, operational, and/or pandemic risks.

Governance visibility varies

Generally, while Board members have a part to play in the sign-off of key documents (such as an overarching business continuity plan for the generator) their role tended to be constrained to ensuring the generator has plans in place for preparing for and managing risks, rather than offering a functional input in the details of the plans.

Once signed-off, the ongoing involvement of Boards in maintaining visibility of risks varied – and particularly, in how ongoing visibility was surfaced. In some cases, visibility of risks was provided through standard ongoing management reporting to the Board, through the normal reporting chain. However, in at least one case, a generator’s Risk & Assurance team was also responsible for independent reporting of risks to the Board, outside of the organisation’s hierarchy, to ensure the Board had unfiltered semi-independent reporting on risks.

There are several layers of governance where risks are controlled and signed-off, which is informed by the CIMS framework in most cases. Those layers of governance have incident controllers and duty managers for specific risks that are either assigned or assumed:

- Minor or site-level risks were owned by employees at site-level
- Generally higher risk-levels were owned by more senior members within the organisation.

In organisations with a flatter structure, senior managers mainly own high-impact risks and they have a clear understanding of accountabilities and responsibilities with the role.



Proximity between risk ownership and documentation differed

Generators differed in where responsibility for response planning lay. Most generators ran a relatively centralised process where after an ongoing operational risk is identified, a centralised team holds the responsibility for preparing and implementing response plans. However, one generator mentioned a greater onus on the operational staff who identified the risk, expecting that subsequent documentation is created or planned by those who would have direct involvement in the implementation of the plan.

We can see advantages and disadvantages to this more distributed method. As discussed further in this report around training, there was sometimes a disconnect between the views of corporate staff and those involved in the on-the-ground maintenance and operation of assets and taking this distributed approach to planning could help ensure plans were understood on the ground and fit for the specific situation of that site. However, it could also stand in the way of standardisation and quality control of these plans and complicate the provision of training as new staff join at a site.

Nonetheless, there would be value in all generators considering their current balance in responsibilities between front-line and corporate staff in response planning, and ensuring they are comfortable with the balance being struck.

Risk documents are reviewed on cycles

All generators are proactive in reviewing long-standing plans to refresh the knowledge learned and shared through years of experience, though we found evidence that these processes were not always tightly adhered to nor were they necessarily comprehensive.

- Operational risk registers and response plans are flagged regularly for review. Newly arising operational risks flow into these registers from bottom-up within the organisation. Most generators scheduled reviews on an annual basis.

- Larger comprehensive documents such as the business continuity plans were reviewed less-frequently, or on an ad-hoc basis where an event triggered a review. For example, investment in new assets prompting review, or external influences such as the need to respond to COVID-19.

All documents go through revisions and approvals on a frequent schedule that slightly varies from generator to generator, but no generators had a schedule which seemed too infrequent.

While our scope did not include detailed documentation review, more than one generator voluntarily stepped us through some of their documentation at a high-level to demonstrate things such as review cycles. In this process, there were several examples of documents which had not been reviewed according to their planned schedule. There is a possibility that this has been a consequence of COVID-19 disruption and subsequent limited capacity amongst risk management staff, so it is unclear to what degree this may be a systemic issue.

There are also some concerns associated with event-based review of plans. While it is appropriate to review plans as situations and assets evolve to ensure they remain up to date with the changing environment, this is not a substitute for a comprehensive review of a plan. We have not been made aware of comprehensive reviews taking place in a scheduled manner and believe that is a potential risk for some aspects of generators' plans if they fail to keep up with evolving best practice.

Equipment is tested on a monitored schedule

There is a solid underlying plan amongst the generators for testing various equipment with different frequencies throughout the industry. Assets are maintained and managed carefully. There is a high-level of confidence on the existing equipment testing procedures.



Some generators often have external expertise testing their specialised equipment, and they have noted that they rarely find any shortcomings. In addition, predictive analysis is carried out to test the reliability of the equipment.

The consensus among generators is that equipment testing is important, and the risks associated with equipment failure are mitigated rapidly.

Every generator performs reviews of their drills, procedures, and equipment of various aspects of risk at different frequencies.

There is flexibility in roles and responsibilities

Most generators adopted the CIMS framework in setting out roles and responsibilities in the event of emergencies. The framework lays out a method for best practise management of emergencies through standing up teams that have defined roles and responsibilities depending on their involvement in the firm and level of governance.

There are various layers within the organisation where risk is controlled and signed-off. The organisation's Board generally doesn't have functional input, but rather an overseeing role where risks are regularly reported. Response plans included a defined role for the Board in events of significant severity. In most cases, governance groups are set up and mandated to govern various aspects of emergency response, and generators were all strong on ensuring key duty roles were clearly communicated, alongside back-up personnel.

For larger generators, there tended to be a quasi-standard group consisting of personnel from each sector of the business (including communications, media liaison, legal and compliance, risk and audit) who would be called in to support the duty incident controller in the event of a serious incident.

Smaller generators had a flatter structure of governance, which drove a need for more generalised roles and responsibilities, though always with a clear person on duty in case of emergency.

There was awareness of the human side of emergency response

One generator raised concerns around whether the industry properly understood the human reality of emergency response – that while roles and responsibilities might be clearly defined, in the event of significant emergencies, people's first thought would likely be for their families and other duties beyond their professions.

Other generators prompted to consider this tended to disagree, citing the high level of responsibility their staff felt for the assets under their management, and steps they had taken to make response in the moment easier, such as flash-card versions of procedures, and grab-bags at site-level for emergencies that require immediate response.

No generator was fully taken aback by this topic, and accordingly we raise it only to ensure it remains present in mind and to prompt generators to ensure this remains a consideration in their emergency preparedness.

Training and induction processes differ between generators

There are different levels of preparedness when it comes to training and induction of new staff members coming into the firm with their roles and responsibilities.

While all generators harbour an expectation that new and existing employees are familiar with the documents that are relevant to their roles and responsibilities, not all support this with any formalised training programme.



This meant that training varied from essentially none, through to full competency assurance frameworks supported by training and induction programmes prepared by the Risk and Assurance team. This ensures that individuals understand their accountability and responsibility, both operationally in an emergency, and for corporate staff with responsible governance roles in an emergency.

However, it was stressed on many times that the real learning happens through exercises and simulations. All generators ran exercises, conducted at slightly varying frequencies within each organisation depending on whether it was a site-level exercise or an organisation-wide exercise.

The generators had a general level of confidence around their employees' familiarity with the best practise procedures in the case of an emergency, many noted that they had employees with a lot of experience and expertise especially at site-level.

Drills and simulations differed in their level of formality. Some generators have external trainers or observers to add another layer of confidence in the approach taken, often with independent reviewers with insights that helped with de-briefing post-event and fed into the review of the existing risk response protocols. Most generators do simulations in-house with external consultants coming in for specific aspects of training, such as the Dam Safety Protocol.

In general, generators all spoke to the significant benefits they gained from exercises, including prompting lessons which would then be fed back into updated plans. However, we do not think that exercises are a substitute for training. The realities of scale for most generators means that, while from a corporate perspective, exercises are regular, it may be quite some time in practice for any given site between exercises.

Furthermore, exercises tend to focus on specific emergencies and explore these in detail, as opposed to training which offers a more generalised and less detailed guide to procedure in emergency response.

Security of supply is not the primary consideration for generators

In general, generators did not consider security of supply as a risk category in itself. While several risks addressed by generators had security of supply ramifications, this tended not to be the perspective from which the generator approached the risk.

This is a natural consequence of incentives. Generators tended to think of risks as either financial risks or health and safety risks (or sometimes both), as these are for what management and governance are held accountable.

Security of supply; however, is ultimately the responsibility of Transpower as the System Operator.

In some cases, the distinction is essentially semantic – for example, generators considered the interruption in the availability of water supply for hydro generation primarily as a financial risk, but due to the financial incentives within the market mechanisms this meant their preparation for low supply was essentially the same as if it had been managed as a security of supply risk.

However, with other fuels which needed to be purchased and stored, financial considerations did not necessarily lead to the same result as if security of supply risk had been the focus. One generator talked about the potential for disruption in availability of a thermal fuel through noting that they had contracted for delivery to premises – and therefore the risk was borne by the supplier of the fuel rather than them as the generator. This was absolutely accurate from a financial risk perspective, but ultimately unhelpful in terms of security of supply risk.

The generators who were conscious of this distinction between financial and security of supply risk held the view that market mechanisms were insufficient to reward them for the financial risks they take in hedging against security of supply risk with physical availability of thermal fuels.



Black start capacity should be confirmed

There was a lack of agreement among generators as to whether the amount of black start capacity throughout the grid was commensurate with the relatively low risk appetite normally applied by the Authority to security of supply risk, particularly were a region to be islanded from the grid.

Further, not all generators were happy that their investment in black start capability carried with it an economic benefit, with at least one generator expressing that they intended to decommission rather than replace once their black start assets reached end-of-life.

There would be value in the Authority ensuring with Transpower that black start capabilities are sufficient to meet the Authority and SRC's risk appetites across a range of potential emergency scenarios, considering both whether sufficient capacity exists to black start potential grid islands, and whether the time which would be required to black start is in line with the Authority's tolerance and the expectations of critical assets such as hospitals (which maintain their own back-up generation).

As always, reducing risk comes at an economic cost, so any changes must be considered in the context of whether gains for consumer would justify the economic costs associated with incentivising greater black start capacity (or even maintaining the existing capacity).

There are examples of good coordination practices within the industry

There have been several notable experiences of strong cooperation amongst competing generators in reacting to emergencies, such as the pandemic where the National Emergency Management Authority (NEMA) brought generators together in collective efforts in mitigating health and safety risks caused by the pandemic. The Stay Alive website is also a useful

cross-industry mechanism for information sharing to support planning for health and safety risks.

That said, participation in these groups comes at a cost, and some smaller generators raised the costs of participating in industry-wide collaboration as a barrier (though in general they were happy to comply with the decisions of industry-wide groups).

Security of supply risk is bigger than any single generator

While there is significant goodwill between generators in the event collaboration is required in responding to an emergency, little is formalised. Most generators spoke of networks of individual relationships between key people through the industry, and confidence that in the event of an emergency these relationships would be able to drive a collaborative response.

We think there is significant scope for increased formalisation of collective plans, such as pre-planning a coordinated response where an emergency impacts a hydro scheme operated by multiple generators, or where an emergency would potentially be so large as to require a unified response, such as a very large earthquake. As of now there is seemingly only a reactive response and no collective and proactive approach to planning emergency procedures for emergencies region-wide or nation-wide.

The first problem which would need to be solved were this to be progressed is there being no clear mandate to drive this collaboration – so an entity would need to be identified to coordinate this process.

Secondly, before beginning to drive this work the Authority would need reassurance that the work involved would justify the imposition on the industry. Most generators we spoke with agreed that there would be value in this type of work, though were wary that it could be taken too far and drive collaborative planning for the wide array of emergencies which may not necessarily be justified.



This might best be met through considering the lens of security of supply risk. Where this risk is already being considered through existing mechanisms driving responses to financial or health and safety risk, then the individual incentives of a generator are likely sufficient to manage security of supply risks. Where a risk presents an overarching security of supply risk, there might be a need to collaboratively respond in order to avoid creating market mechanisms which force over-preparation on the part of every generator, when what may really be needed is a coordinated regional response across generators



APPENDIX 1: ASSESSMENT QUESTIONS

The table below lays out the assessment questions we used to gain insights from industry stakeholders in our interviews. It covers all aspects of the scope mentioned in the approach on page 7.

Table 2: List of assessment questions

Questions
1. Understanding the level of comfort with the generator's level of risk preparedness and management
2. Understanding whether generators have: <ul style="list-style-type: none">a Training and induction plans in placeb Drills and exercise schedules for different risk scenariosc Frequent equipment testing in place
3. Understand the risk management framework of generator (how they have accessed the risk according to different kinds of hazards and energy mix – natural, technological, human events)
4. Understand how often their plans are tested and subjected to a review process <ul style="list-style-type: none">a Frequent cycle or ad-hoc basis
5. Understand whether they have coordination plans with other generators, <ul style="list-style-type: none">a i.e., for emergency preparedness
6. Understanding the types of plan(s) they have <ul style="list-style-type: none">a Single overarching planb Split by type of emergency
7. Understanding the governance of the emergency response. <ul style="list-style-type: none">a Do all emergencies trigger the same type of response?b Are groups separated out based on the type of emergency?
8. Understanding how supply chain risks are viewed within the framework; i.e., is it mainly viewed as a financial risk?
9. Understanding their view on black start capacity across the industry
10. Are there any gaps or potential improvements to the entire risk management and response approach? <ul style="list-style-type: none">a Industry wide or internally?

