BUILDING PERFORMANCE

TRANSPOWER

Consultation submission form

REVIEW OF THE BUILDING CONSENT SYSTEM: OPTIONS PAPER

21 August 2023

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government

Contents

Submitter information

Please provide some information about yourself. If you choose to provide information in the "About you" section below it will be used to help MBIE understand the impact of our proposals on different occupational groups. Any information you provide will be stored securely.

A. About you

Name:	Transpower New Zealand Limited (**Transpower**)
Organisation and role (if submitting on behalf of a company or organisation)	As above Contact: Keitaria Haira, Corporate Counsel, Tel 04 590 7390
Email address:	keitaria.haira@transpower.co.nz

B. Are you happy for MBIE to contact you if we have questions about your submission?

☒ Yes ☐ No

C. Please clearly indicate if you are making this submission as an individual, or on behalf of a company or organisation.

☐ Individual ☒ Company/Organisation

D. The best way to describe you or your organisation is:

☐ Designer/ Architect ☐ Builder

☐ Sub-contractor ☐ Engineer

☐ Building Consent Officer/Authority ☐ Developer

☐ Homeowner ☒ Business (please specify industry below)

☐ Industry organisation (please specify below)

☐ Other (please specify below)

State Owned Enterprise that owns and operates the National Grid

Submitter information

E. Privacy and official information:
The *Privacy Act 2020* and the *Official Information Act 1982* apply to all submissions received by MBIE. Please note that submissions from public sector organisations cannot be treated as private submissions.

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☐ MBIE may publish or release your submission on MBIE's website or through an Official Information Act request. If you do **not** want your submission or specific parts of your submission to be released, please tick the box and provide an explanation below of which parts of your submission should be withheld from release:

Insert reasoning here and indicate which parts of your submission should be withheld:

Introduction

1. Transpower New Zealand Limited (**Transpower**) is the State-Owned Enterprise that own, plans, builds, maintains, and operates New Zealand's critical high voltage transmission network (**the National Grid**).

2. The National Grid transports electricity from generators to distribution companies and industrial consumers, supplying electricity throughout New Zealand.

3. Transpower supports the intentions of the Review of the Building Consent system (**Review**), in particular the desire to '*modernise the building consent system to reflect how we build today*' and achieve *'a system that gets building work right first time to produce buildings that are well-made, healthy, durable and safe'*.

4. The key aim of Transpower's submission is to seek changes that will improve safety, and remove uncertainty and unnecessary cost for both Transpower and Councils in relation to the National Grid (operation and maintenance). The changes should also reduce the costs to building consent holders, as work is more likely to be safe, therefore removing the need to stop work while risks are addressed, plans changed, and further building consent processes worked through.

5. This submission focusses on three issues with the current building consent system that Transpower, both as a building owner and as operator of the National Grid, would like to see reviewed. These issues concern:

    5.1 Compliance with the New Zealand Electrical Code of Practice for Electrical Safe Distances NZECP34:2001 (**NZECP34**), which Transpower considers should be made a requirement in the Building Code and before a building consent can be granted.

    5.2 Changes to ensure that buildings constructed in close proximity to transmission structures use non-conductive materials (such as plastic pipes and downpipes) in order to mitigate the risks of earth potential rise.[1]

    5.3 Buildings in secure substation enclosures that are not occupied by workers on a full-time basis being exempted at a national level from the requirement for a building consent.

6. While our submission focusses on transmission assets, similar risks and issues arise with buildings being constructed in close proximity to electricity distribution assets.

7. The first issue identified above is not new. Transpower has been asking for similar amendments for over 20 years, to improve safety in relation to buildings and building work. Transpower considers that the Review should look to properly recognise NZECP34 and create a means of enforcing it through the Building Act 2004 (**Act**). We seek that the Review consider changes on this matter, to ensure that building work, and resulting buildings, do not breach NZECP34 and achieve enhanced safety for builders, building occupiers and the general public.

8. In this submission, Transpower has answered and made comments on the consultation questions that are relevant to these issues only. Answers to questions follow our more detailed submissions on these issues.

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[1] Which is a phenomenon that occurs when large amounts of electricity enter the earth, commonly through substation or other infrastructure faults.

General submissions

Compliance with NZECP34

9. NZECP34[2] provides for minimum safe distances for excavation and construction near overhead electric line supports (section 2), and safe distance requirements between conductors and buildings and other structures (section 3).

10. Clause 2.4.1 of NZECP34 provides that:

> "*Except with the prior written consent of the overhead electric line owner, no building or similar structure shall be erected closer to a high voltage overhead electric line support structure than the distances specified in Table 1...*".

11. Clause 3.2 sets out the process for establishing safe distances prior to any planned construction, which can be done with the assistance of the line owner, if necessary.

12. Compliance with NZECP34 is mandatory. Regulation 17 of the Electricity (Safety) Regulations 2010 provides that anyone who "*carries out any construction, building, excavation, or other work on or near an electric line must maintain safe distances… in accordance with ECP34*". It is an offence under regulation 17(3) if safe distances are not maintained.

13. The general public and many practitioners in the building sector are unaware of the requirements of NZECP34. This lack of awareness is despite the mandatory requirements and the educational tools available on NZECP34,[3] and information that may be on LIMs. A contributing reason for this situation is that there is nothing in relevant building legislation that provides a clear link to these safety obligations when performing or undertaking building functions.

14. Transpower is aware of instances where buildings comply with NZECP34, but the construction methodology adopted when constructing those buildings does not. There are many other examples where breach of NZECP34 occurs, including:

    14.1 Where mobile buildings are shifted to a site, and the first time anyone has considered the overhead lines is at the point of delivery / or when construction is expected to commence;

    14.2 Where mobile plant is operated near conductors and does not comply with minimum approach distances; and

    14.3 Where scaffolding is erected for a building project and it does not comply with safe distance requirements.

15. **Appendix 1** discusses examples of building sites and buildings that are located too close to overhead transmission lines, resulting in the safe distance requirements in NZECP34 being breached. We would be happy to talk through these examples if it would assist officials to better understand the circumstances in which these breaches occur, and the resulting safety risks.

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2 https://www.worksafe.govt.nz/laws-and-regulations/standards/electricity-standards-and-codes-of-practice/

3 Published by Worksafe, various lines companies and Transpower. For example see: General information | Transpower

16. While there are steps that can be taken when safety issues are identified by Transpower,[4] the best solution is to ensure that these situations do not occur in the first place. We also note that any steps Transpower can take are often limited by what a landowner will agree to. In this regard, Transpower cannot require unsafe works to cease (it can merely strongly suggest they do).

17. It is also relevant that people who are not familiar with electrical issues cannot be expected to understand the implications of their proposed actions.

18. Transpower considers that the Review presents the perfect opportunity to assist those undertaking building work – in the vicinity of overhead electricity lines (including their support structures) – to both understand and comply with NZECP34. This would, in turn, help those involved in the building sector to meet the aims of the Review, with building work being completed "right first time", and safe.

19. Although the Building Code contains certain clauses that, on their face, appear to cover NZECP34 compliance, they do not. For example:

    19.1 Clause B1.3.5 has a performance requirement that site work must be carried out to avoid the likelihood of damage to other property. However, the focus of that clause is about 'structures' and structural safety rather than electrical safety.

    19.2 Clause F5 concerns construction and demolition hazards, and while the functional requirement in that clause appears that it could apply to this situation,[5] ultimately the performance requirements only deal with falling objects and barriers to sites.

    19.3 Clause G9, concerning electricity, is arguably the most logical place where some form of restriction would be found, but it only concerns electrical safety 'in' buildings, not external to buildings.

20. There are a number of options that Transpower considers could make a positive change to the current system, to help ensure compliance with NZECP34. These are:

    20.1 To make compliance with NZECP34 a requirement of the Building Code. This would be the most robust, and effective option. We consider that either clause F5 or clause G9 could be amended to establish this requirement. Amending the Building Code will ensure that whether or not any building work requires consent, the requirement to comply with NZECP34 is made clear, given section 17 of the Act requires that all building work must comply with the Building Code.

    20.2 Changes to building consent application forms to trigger a requirement to identify if NZECP34 applies to the building work, or not. If NZECP34 applies, the form could then require the applicant to outline how they intend to comply, or include a requirement that they attach to their application a document from an approved body/person certifying compliance. This information could be provided as part of the proposal in the discussion document for a declaration of design compliance. Taking a risk-based approach, and to reduce the burden on the building consent authority (**BCA**), the

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4 Transpower must ensure that Transpower's lines are electrically safe, and has specific duties to notify WorkSafe and the landowner of any clearance violations that pose immediate danger to life. If there is a significant risk to people or property, then Transpower must cease using the line.

5 "*Construction* and demolition work on *buildings* shall be performed in a manner that avoids the likelihood of ….other hazards arising on the site affecting people off the site and *other property"*.

legislation can make it clear that the BCA is not responsible for ensuring building plans and construction methodology will comply with NZECP34.

20.3 An alternative to the certification/design compliance requirement could be a provision along the same lines as the certificate required to be issued (with a project information memorandum or consent) under section 37 of the Act. This certificate is issued when a resource consent is required and will or may materially affect the proposed building work. It can specify that no building work may proceed (or may only proceed to a certain point) until the consent is obtained. If an applicant has identified in their application that NZECP34 will be relevant to their building work, the BCA could be placed in a position of being able to issue a certificate stating that building work must not proceed until they are provided with proof of compliance with NZECP34.

20.4 A further alternative would be to include provisions similar to section 39 and/or section 46 of the Act, which require that Heritage NZ and Fire and Emergency NZ are advised when certain applications are made. However, this is not our preference as it would require the BCA to determine whether Transpower or another lines company might need to be notified, and would not specifically require any action by the building consent applicant (who should, in Transpower's view, bear the onus given the potential risk of enforcement).

20.5 Compliance would also be improved if applicants were required to show that their building does in fact comply with NZECP34 when they come to apply for their code compliance certificate.

21. Transpower would be happy to work further with officials on changes to the code, the application form, and for an appropriate certification or proof of compliance process that applicants could provide with or following a building consent application being made.

Mitigating the risks of earth potential rise

22. Changes to building materials and approaches should also be made due to Earth Potential Rise (**EPR**)**.** EPR can occur in the rare event of a lightning strike or fault on an electricity line. If this occurs, electricity line structures may transfer high voltage and dangerous currents into the ground for a very short instant. The voltages produced by this can potentially be hazardous if someone or something conductive is standing close to, or touching, the structure.

23. Allowing conductive materials to be placed in ground in proximity to electricity line structures creates a safety risk. Transpower would like the Review to consider restricting or regulating what building materials can be used in proximity to electricity line structures, so that the electrical risks involved are mitigated.

24. A range of practical measures can be taken, such as using non-conductive materials (such as plastic pipes and downpipes) or incorporate other appropriate mitigation measures where the proposed building is in a location where EPR is a potential risk (such as bonding foundations to an earthing system).

25. These practical measures could be addressed via an amendment to clause G9 (as discussed in relation to NZECP34), or clause F2 in relation to hazardous building materials.[6] Alternatively, the chief executive could take the required steps to consult on issuing a warning under section 26 of the Act, about the use of conductive materials and the risks from EPR.

26. We have developed a list of materials and measures that could be implemented to address EPR risks. We are also giving consideration to an appropriate setback for implementing these measures. We would be happy to discuss this issue and potential solutions with officials further.

A national approach to exempting unoccupied buildings

27. Most of the assets / infrastructure that make up the National Grid are exempt from some or all of the requirements of the Act. The policy underlying this is that drivers other than the Act ensure that these assets are built safely and to a high standard.

28. In particular, the electricity legislation provides sufficient statutory checks and balances to ensure that electrical assets are well built and safe – it is these requirements, not the Building Code, that ensure Transpower delivers the National Grid to high quality standards. Transpower has internal engineering design codes and standards to provide for new and upgraded transmission lines, substation structures and buildings. Our buildings generally fall into two categories: those required to provide our essential lifeline service (for example relay rooms, switch rooms, control centres, and warehouses) or ancillary buildings (for example garages and workshops).

29. As a matter of course, we design our infrastructure and buildings to survive various weather and seismic events,[7] to a building code standard greater than normal. These obligations flow from both the Civil Defence and Emergency Management Act 2002 and AS/NZ 1170 Structural Design Actions – which require our lifeline service buildings to have special post disaster functions.[8]

30. While many substation structures are either not classed as a building (under section 9 of the Act) or are automatically exempt from requiring consent under Schedule 1, the application of the Act to other buildings is uncertain and can lead to different treatment around the country.

31. The type of buildings causing issues are those located within the extremely secure enclosures of a substation, but which may be occupied occasionally by maintenance staff, or, for some projects, occupied consistently every workday over a certain period. What this means is that it is not clear whether a building can be treated as exempt as an unoccupied detached building,[9] if it might be entered more often than on 'intermittent occasions', or if it falls within section 9(ac) of the Act.

32. Transpower's specifications require substation control rooms to contain a sink, desk and toilet facilities, for use by maintenance staff when the buildings are occupied. As these substation buildings include sanitary facilities, they are unlikely to be exempt unless a discretionary

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6 The objective of clause F2 is "to safeguard people from injury and illness caused by exposure to hazardous building materials". This objective may need to be amended to add "or arising from potentially hazardous building materials". The functional requirement already provides that "Building materials which are potentially hazardous, shall be used in ways that avoid undue risk to people". Conductive materials are "potentially hazardous" when used in the wrong environment, but an additional performance requirement could be included to cover this.

7 Civil Defence and Emergency Management Act 2002, see 'emergency' definition.

8 Which mean they are designed to meet an IL4 design level. See Building Regulations 1992, Schedule 1, Clause A3, Importance Level 4 for further information.

9 Building Act 2004, Schedule 1(4).

exemption under Schedule 1(2) is sought and granted. However, that must be done through an application to every relevant territorial authority, and cannot be granted on a national basis.

33. When Transpower has applied for building consent for this type of building, there has been push back from some Councils/BCAs who suggest that a consent is not required. Other Councils take the view that the buildings require consent, even though Transpower has decided it qualifies for an exemption, or the works are not a building under section 9. The key issue here is that there is no consistency and adds potentially unnecessary cost and time for both Transpower and the Councils/BCAs. We note that a lack of consistency across BCAs is a theme that features in the Review document issued by MBIE.

34. Given the robust approach Transpower takes to the safety and resilience of its substation buildings, and to avoid the current uncertainty across the country, Transpower considers that all buildings located in a secure substation enclosure, and that are not already covered by section 9 of the Act, should be exempt under Schedule 1, as a new category.

35. Alternatively, Transpower supports the proposal in the Review document for certain professionals to be approved and able to certify their own work. Transpower submits this proposal should be extended to bodies such as Transpower, who, as noted above, operate in accordance with robust design standards for its substation buildings.

36. If Transpower is not able to self-certify, we consider that clause 4 of Schedule 1 of the Act should be clarified in relation to the scope of 'intermittent occasions' (to allow the extent of occupation required by Transpower), or that a new term is used to ensure the exemption covers buildings that may be regularly occupied for certain periods, but over the life of the building is generally an unoccupied building. Section 9 (ac) of the Act should also be clarified in terms of what 'intended to be occupied' means.

37. If a general exemption for substation buildings is not provided for, Transpower seeks the ability to apply to a national body for a discretionary exemption under Schedule 1(2) to cover buildings of the same type, and that are owned by the same entity (in our case, owned by Transpower).

Consultation questions

Chapter 3 – Removing impediments to product substitution and variations

6. What impacts will the options regarding product substitution and variations to consents have? What are the risks with these options and how should these be managed?

See our submission above relating to the risks of earth potential rise. Transpower considers that any proposals for a more efficient product substitution process should ensure that where a non-conductive material is required, it cannot be substituted for a conductive material.

Chapter 4 – Strengthening roles and responsibilities

9. Do you agree with MBIE's preferred approach to progress options 1 (guidance) and 2 (declaration of design compliance requirement) as a package?

☐ Yes ☒ Somewhat ☐ No ☐ Not sure

Please explain your views.

Whether or not our submissions above relating to NZECP34 and earth potential rise are accepted, we agree that guidance on roles and responsibilities should be provided, but it must include reference to obligations under NZECP34 and the risks from earth potential rise.

We agree with the proposal for a declaration of design compliance and consider this can also incorporate certification of compliance with NZECP34.

10. Should there be a requirement for a person to be responsible for managing the sequencing and coordination of building work on site (option 3)?

☒ Yes ☐ No ☐ Not sure

Please explain your views.

This proposal would also support our desire for the building sector to have increased knowledge and proactive compliance in relation to electrical safety risks. This will only be the case, however, if the requirements for the sequencing and coordination role includes NZECP34 checks. See our submissions above on NZECP34.

13. What information should be provided in a declaration of design compliance? Would the detail and type of information required in Form2A (Certificate of Design Work) be sufficient?

Certification of compliance with NZECP34.

Chapter 5 – New assurance pathways

23. To what extent would MBIE guidance assist building consent authorities to better take a risk-based approach under existing regulatory settings?

MBIE guidance that clarifies and explains how a risk-based approach can be applied to building exemptions may be useful in ensuring greater national consistency but is not sufficient on its own. Please see our above submissions on the need for a national approach to exemptions above.

24. To what extent would self-certification align assurance with risk levels and sector skills?

Transpower agrees with the proposals for self-certification, but submits that it (Transpower and its service providers) should be eligible to be approved to self-certify Transpower's buildings (only if a general exemption is not going to be provided for critical infrastructure buildings). This proposal aligns with Transpower's, and the electricity sector's current skills, and levels of risk already addressed within Transpower's own specifications.

Chapter 6 – Better delivery of building consent services

33. Which options would best support consistency and predictability given costs, risks and implementation timeframes? Please select one or more of the following:

☒ Ensure nationally consistent processes and requirements

☒ Review building consent application and processing systems

☐ Support uptake of remote inspection technology

☐ Centralise training for building control officers

Please explain your views

We have commented above on the need for a nationally consistent approach to exemptions for Transpower substation buildings, but equally our submissions in relation to NZECP34 and earth potential rise will also help ensure a nationally consistent approach to these matters.

Our submissions above also make recommendations for the processing of certain building consent applications.

Appendix 1 – Examples of non-compliance with NZECP34

Scaffolding at construction sites

A finished building may comply with NZECP34 requirements, but often construction methodologies and the use of scaffolding breach NZECP34 safety clearances, creating risks to workers and Transpower assets.

The image above shows the construction of a residential dwelling under the 110kV HEP-ROS A line in Auckland.

In this example, both resource and building consents were granted. Transpower was not involved in either consenting processes. We became aware of the development after a significant amount of construction had occurred. Given our safety concerns with the proximity of the roof and scaffolding to the line, Transpower notified WorkSafe.

WorkSafe issued a prohibition notice preventing construction until Transpower had given approval.

If NZECP34 had been included in the building consent process this would have saved much time and effort to ensure the dwelling and construction of it could occur safely.

The image above shows the construction of a residential dwelling under the 110kV HEN-HEP A line in Auckland.

Transpower became aware that the scaffolding at the building site encroached the minimum approach distances and did not comply with NZECP34 requirements. We advised the developer to stop work, and the affected area be barricaded off until appropriate safety measures could be put in place.

Instead, contractors returned to site and removed some of the scaffolding while the line was still live, further amplifying the risks. The Council and WorkSafe were notified and the building site shutdown until a construction management plan was submitted to Transpower for approval.

Note that an outage (i.e. turning off that transmission line) was required to remove the remaining scaffolding.

Mobile plant under line and a conductive fence attached to structure

The images above show a construction site for a residential dwelling under the 220 kV OTA-WKM-C line in Auckland.

In this example, the house did not require a resource consent and was granted building consent without Transpower having knowledge, which is the current process.

Consequently, construction commenced without any review of the design or construction methodology. Further, the conductive fencing has been attached to the tower, breaching NZECP34 and creating an EPR risk.

If NZECP34 was linked to the building consent process, Transpower could have reviewed the construction methodology to ensure the construction risks were appropriately managed.

Mobile plant operating near conductors and non-compliance with minimum approach distances

The image above shows the construction site of a warehouse building under the 110kV HEN-HEP A line in Auckland.

Prior to construction, Transpower confirmed that the final warehouse design complied with NZECP34. However, made recommendations on how the works should be undertaken given the proximity to the line. The safety risks were highlighted along with the need to maintain appropriate clearances and separation from conductors.

Unfortunately, proper procedure was not followed on the day. The crane boom made contact with the bottom conductor of the line. As a result, a worker was injured with burns to the lower legs from a severe electric shock. Damage was also caused to Transpower's assets, the crane and the delivery truck pictured.

These are not isolated events. Further examples can be provided to illustrate the risks associated with building activities near lines.