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By email: building@mbie.govt.nz

Re: Building Code fire safety review 2024

1. Vector is New Zealand's largest electricity distributor, supplying more than 624,000 electricity connections between Warkworth and Papakura.
2. We support the objectives of the fire safety review to:
 - align fire safety requirements in the Building Code with the purposes and principles of the Building Act 2004;
 - enable flexibility and innovation;
 - improve efficiency and cost effectiveness; and
 - provide simple, clear, consistent, and concise requirements.
3. To achieve these objectives, it is essential that the review takes a comprehensive approach to identifying and controlling known fire risks, including external sources of fire, as a basic requirement of building design and certification.
4. We are concerned that regulatory changes to urban development and building design, including those made under the Resource Management Act 1991 and the Building Act 2004, have failed to adequately account for the safe operational needs of infrastructure. As a result, people and property have been, and continue to be, needlessly placed at risk.
5. The Building Code fire safety review discussion document and background paper acknowledge hazards from potential external sources of fire, such as electricity distribution transformers and other electricity distribution assets, but the hazards posed by electricity assets are not currently addressed by the Building Code.
6. It is essential that the proximity of buildings to external sources of fire is incorporated into the Building Code so that potentially dangerous incompatibilities between buildings and electricity infrastructure can be avoided by addressing incongruence in the design stage. This will not only mitigate the hazard but will also avoid significant remedial cost and associated inefficiency in both the building and electricity distribution systems.
7. We urge the Ministry to implement specific, common-sense controls to prevent buildings from being sited too close to electricity distribution transformers and other oil-filled assets.
8. We attach a short overview of the issue and supporting examples. We would welcome any opportunity to engage on regulatory options as they are developed.

Yours sincerely

Aimee Gulliver
Group Manager Public Policy and Government Relations

Urban intensification and safe operation of electricity distribution infrastructure

1. Electricity distribution infrastructure has unique operational and clearance requirements to ensure that the supply of electricity to end users is safe and efficient and presents the least risk to the public and built infrastructure. Where these requirements are not met, the risks include electrocution and/or fire. The principal requirement for safe operation of electricity distribution assets is to maintain sufficient clearance distances from buildings and associated structures.
2. Electricity distribution assets, by necessity, are present wherever there are built developments. As urban density increases in centres such as Auckland, two things happen simultaneously:
 - a. More electricity distribution assets (and upgrades to existing assets) are required to supply the electricity demand created by new developments. This includes transformers and high-voltage switchgear, which are commonly found in the road reserve; and,
 - b. The natural clearance buffer once provided by low-density development is progressively eroded. New urban development standards result in more building units being constructed closer to boundaries and therefore closer to electricity assets in the road and on sites.
3. This results in increasing discord and incongruence between urban development and essential infrastructure – a regulatory gap, that results in hazards. As the electricity distributor for the fastest growing urban centre in New Zealand,¹ Vector's Auckland network is experiencing the most acute effects of this regulatory gap. In the five years to September 2024, more than 88,000 dwellings have been consented in Auckland, approximately 95 per cent of which are located inside the rural Urban Boundary.²
4. Despite numerous attempts by the electricity distribution industry, this discord has never been identified in regulatory impact assessments for regulatory change that is directly consequential for the safe operation of infrastructure. This has resulted in two persistent risks from building and development:
 - a. The longstanding regulatory failure to address non-compliance with the minimum approach distances stipulated by the New Zealand Electrical Code of Practice for Electrical Safe Distances: 2001 ("ECP34") where construction takes place near overhead power lines; and,
 - b. The risk associated with buildings being increasingly constructed too close to potential external sources of fire – including oil filled assets such as transformers and legacy switch gear in electricity distribution networks.
5. Regulation via the Building Code is necessary to address these risks. The Vector network alone consists of approximately 8,200km of overhead circuit, 130,000 poles, and 28,500 oil-filled assets³ that cannot be actively or comprehensively monitored for inappropriate third-party activities. The only way to ensure safe outcomes around these assets is through appropriate regulation of third-party activities where they occur near the network.
6. Existing regulatory gateways, such as the building consent process, are the only way to ensure that basic compliance requirements can be managed.

¹ Note: while the risk is more acute in urban environments this issue is relevant to all building work whether located in urban or rural environments.

² <https://www.knowledgeauckland.org.nz/housing/>

³ <https://blob-static.vector.co.nz/blob/vector/media/vector-2024/vector-ry24-electricity-information-disclosure-schedules-1-10.pdf>

Electrical risk - NZ Electrical Code of Practice for Electrical Safe Distances: 2001 (ECP 34)

7. Vector, alongside Electricity Networks Aotearoa and other electricity distributors, has most recently submitted on ECP34 non-compliance with our response to the Government's "*Making it easier to build Granny Flats*" proposal in which we called for common sense controls for building and construction near overhead electricity lines.
8. This remains an extremely urgent matter. We continue to call for the Government to act with the necessary urgency to address both the risk of significant injury and death, and the significant economic inefficiency being baked into housing supply in New Zealand due to the substantial cost of remediating development that is non-compliant with ECP34.
9. While we understand this consultation relates to fire safety risk, we feel compelled to again raise our concern of the more immediate and acute risk of serious injury and death associated with people and structures making contact with overhead lines. While fire risk has a lower overall risk of occurring, contact with an overhead line has immediate and devastating consequences.
10. *We must stress that ECP34 requires a more urgent solution than provided for in this fire safety review.* The regulation already exists but it requires a compliance mechanism such as the building consent process. This urgent and overdue regulatory issue can be addressed by including ECP34 in the Building Code, which can be amended by Order in Council on the recommendation of Building and Construction Minister Chris Penk.⁴

External sources of fire – Oil-filled assets

11. We acknowledge the Building Code fire review literature identifies that "*The Building Code...does not address the hazards from electric transformers*". We agree, and we believe that the integration of common-sense safeguards that prevent buildings from being constructed dangerously close to oil-filled assets into the Building Code is the best way to address the risk.
12. While we understand that this consultation is intended to identify any gaps, it is important to expand on this risk, and the circumstances by which the risk is introduced to buildings. As noted, electricity distributors have many thousands of assets located in the public domain, and on private and public sites. Incompatible development adjacent to existing assets can only effectively be addressed in the design of the development.

Understanding the risk

13. While transformer and oil-filled switchgear fires are a rare event, and the flashpoint of mineral oil is relatively high, there is potential for a fire to occur in the event of an internal failure,⁵ or through third party damage such as a vehicle collision.⁶
14. Because the oil-filled assets commonly located in the road and near buildings development can often contain hundreds of litres of oil, the primary mitigation for the spread of fire is appropriate separation of the asset from nearby sensitive uses, such as residential dwellings, or otherwise implement fire resistance rated solutions integrated into the design of nearby development. Figure 1 shows the aftermath of a transformer fire incident in February 2024. Fortunately, in this case, the damage sustained by the adjacent development was limited to the fencing and composite materials of the attached veranda,

⁴ Section 400, Building Act 2004

⁵ <https://www.1news.co.nz/2024/02/13/transformer-fire-residents-told-stay-inside-hundreds-lost-power/>

⁶ <https://www.stuff.co.nz/nz-news/350502730/power-out-ute-engulfed-in-flames-after-smashing-into-transformer-on-auckland-s-north-shore>

due to the transformer installation meeting Vector's fire rating standard and the presence of a fire rated facade of the adjacent building.

Figure 1: Transformer fire, Flatbush, Auckland



15. Where Vector installs new assets, care is taken to ensure that the risk of fire spreading from an asset to a nearby building is adequately mitigated. Figures 2 and 3⁷ demonstrate:
- The standard 3m separation requirement between Vector's oil filled assets and the nearest building where no fire rated barrier is required; and,
 - A reduced distance where a two-hour fire resistance rated barrier is installed.

Figure 2: Standard 3m fire separation distance

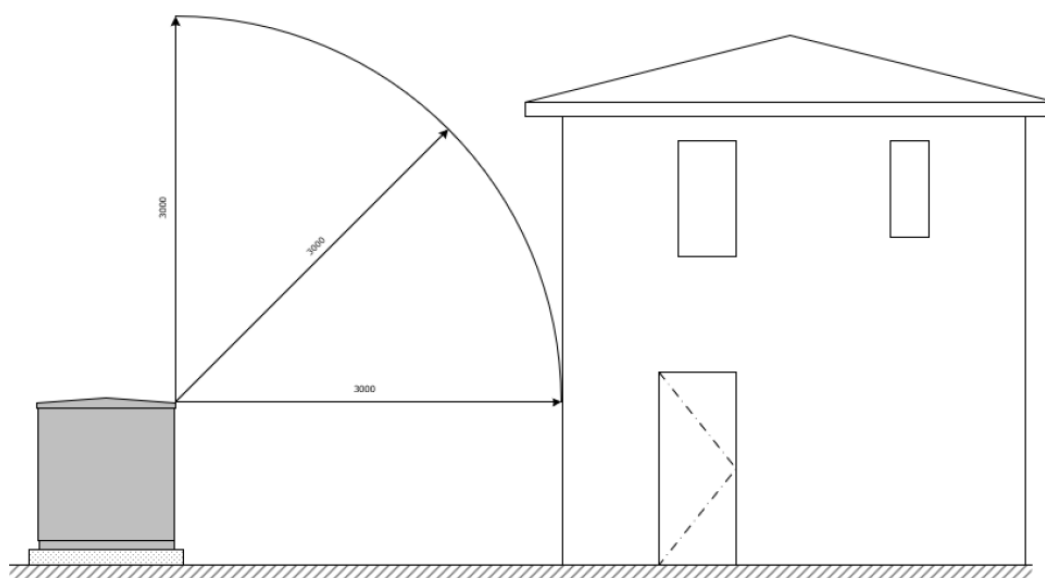
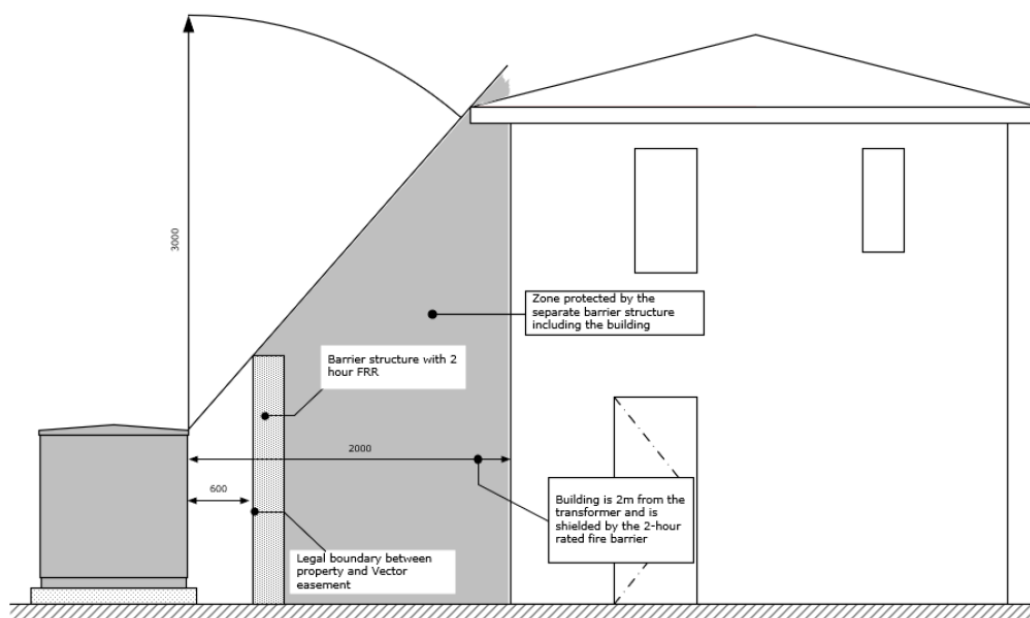


Figure 3: Reduced fire separation distance with fire resistance rating mitigation



⁷ Vector Standard ESE502 Outdoor Ground Mounted Distribution Equipment

16. This works well in practice where an asset is installed by the electricity distributor adjacent to existing development to the correct distance or with appropriate two-hour fire resistance rating mitigation.
17. However, there are currently no regulations that prevent new buildings and structures from being placed near to existing electricity assets. This lack of safeguards means that building work can take place at random near to these electricity assets (whether the asset is located on the same site, an adjacent site or in the road) without timely consideration of the implications, risks and any potential mitigation.
18. The risk is compounded by changes in urban density, which in many cases reduces front yard setbacks to 1.5m or less. This is significant because most of Vector's urban distribution transformers are in the road, in front of dwellings. While the Building Code considers fire rating between buildings on the same or adjacent sites, it is less common for front facades of buildings to be specifically fire rated. Combined with porches / verandas and decks, this means that a fire can much more readily spread from an oil filled asset to an adjacent building.
19. Where fire separation is not adequately achieved in the initial design phase, the cost of remedial work can be significant as the only options available are usually to relocate the electricity asset or to partially demolish or otherwise modify the building.
20. Figure 4 shows a building constructed with only the minimum setback distance from the boundary and no consideration of the fire risk of the oil-filled asset. The developer attempted to retrospectively construct a fire rated wall between the new development and the existing electricity assets, which rendered the two adjacent units uninhabitable.
21. Figure 5 shows the extent to which the retrospective works enclose the front facades of the two lower levels of the built units. The fire wall, while providing the required two-hour fire resistance rating, breached several planning and building standards and was required to be removed. The transformer and switch were subsequently relocated at significant additional cost to the developer.

Figure 4: Non-compliant fire rated wall between new development and existing assets



Figure 5: Units enclosed by fire wall



Public expectations on the regulatory scope of the New Zealand Building Code

22. As outlined in Vector's submission on the "*Making it easier to build Granny Flats*" proposal, there is a public expectation that critical safety matters such as safe distances from electricity distribution assets are addressed by regulation. If not addressed via building standards, and the regulatory gateways managed by local Building Consent Authorities, it is unlikely that these critical considerations will be addressed at the design stage of a development.
23. It is orders of magnitude more affordable to either design for compliance at the outset, or to alter plans at the building consent stage, than to remediate dangerous or non-compliant building work mid- or post-construction. Vector routinely receives feedback from impacted customers expressing surprise and disappointment that a matter as fundamental as safe distances from electricity distribution assets was not addressed as part of the consenting process.
24. While regulations will not eliminate all risk, the absence of regulation where it is clearly needed (and expected) means that people and property are being needlessly placed at risk.

A common-sense regulatory solution

25. We recommend that regulatory options resulting from the fire safety review include specific controls in the New Zealand Building Code to prevent new development from being sited dangerously close to oil-filled electricity distribution assets. For the avoidance of doubt, this should include:
 - a. Adequate separation from all non-fire resistance rated building components, including (but not limited to) decks, verandas, claddings, and similar features.
 - b. Acceptable solutions and verification methods for fire resistance rating solutions, such as fire rated walls and claddings, that allow for closer proximity to assets where these are integrated into the design of nearby development.

- c. Requirements for appropriate design and construction producer statements from suitably qualified professionals certifying that adequate protections have been integrated into development proposals where relevant.
- 26. We also reiterate our concern that the acute electrical risk associated with continued ECP34 non-compliance remains unaddressed in the Building Code. We urge the Ministry to address this regulatory gap as a matter of urgency to ensure that buildings can be safely and efficiently be constructed, occupied and maintained.
- 27. We welcome further engagement with the Ministry on the development of options to ensure that building work occurring in proximity to electricity distribution assets is safe, efficient, and cost effective and complies with minimum safety and fire risk clearances.