

**T R A N S P O W E R**

**Submission by Transpower New Zealand Limited on  
National direction for plantation and exotic carbon afforestation**

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1. Transpower New Zealand Limited (**Transpower**) welcomes the opportunity to comment on the discussion document on *National direction for plantation and exotic carbon afforestation (Discussion Document)*.
2. Transpower supports the review of the National Environmental Standards for Plantation Forestry (**NES-PF**) to ensure “*the right forest is planted in the right place, and managed in the right way.*”<sup>1</sup> Transpower agrees that broadened national direction is required. We also support improved wildfire management. We need a regime that prevents new forests being planted in the wrong places. Importantly, any national direction (and the broader suite of regulatory changes) should prevent poor outcomes of forests being planted in the wrong places, and the costs and risks to the National Grid (and other infrastructure) when this occurs. Further, we consider that forestry owners should not be able to benefit under the Emissions Trading Scheme (**ETS**) from poorly located plantation forestry which places infrastructure at risk, and must ultimately be removed.
3. Transpower’s submission addresses:
  - a. Part A: Managing the environmental (biophysical) effects of exotic carbon forestry;
  - b. Part B: Controlling the location of plantation and exotic carbon afforestation to manage social, cultural, and economic effects.
4. This submission primarily focuses on issues and risks associated with plantation forestry near overhead lines. However, poorly located forestry can also impact on underground cables and substations.

### **Transpower and the National Grid**

5. Transpower is the State-Owned Enterprise that plans, builds, maintains, owns, and operates New Zealand’s high voltage transmission network (**the National Grid**). The network transports electricity from generators to distribution companies and industrial consumers, supplying electricity 24/7 throughout New Zealand.
6. The National Grid extends from Kaikohe in the North Island to Tiwai Point in the South Island. There are significant areas of vegetation and forestry under and around the Grid – ranging from specimen trees, to national parks, to commercial plantation forestry.
7. Currently, ~950km (out of a total of ~11000km) of transmission lines have plantation forestry within 40m <sup>2</sup>. We expect that the amount of forestry around our lines to increase with the growth in afforestation. We also expect that some of the forestry around our lines will change to shorter rotation exotic plantation forests to provide feedstock for the growing bioeconomy.

### **Climate change – carbon afforestation cannot be at the expense of the Grid**

The *Discussion Document* states the importance of forestry to our climate change response (Message from the Ministers, page 4). While forestry has this role, it cannot be at the expense of the Grid, which has a fundamental role to play in electrifying the economy.

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<sup>1</sup> Message from the Ministers, in relation to the *Discussion Document*.

<sup>2</sup> 40m is generally the “fall distance” – ie. the distance where a tree could fall into a line and cause damage.

## Electricity (Hazards from Trees) Regulations 2003

8. Tree management is, to a certain extent, governed by the Electricity (Hazards from Trees) Regulations 2003 (**Tree Regulations**). The Trees Regulations are created under the Electricity Act 1992. The *Discussion Document* is silent about both the Electricity Act and the Trees Regulations.
9. The Tree Regulations apply when trees create risks of electrical contact by growing into the 4m zone shown on **Figure 1**.<sup>3</sup> Transpower is able to give notice to trim when vegetation is 5m from the conductors (wires).

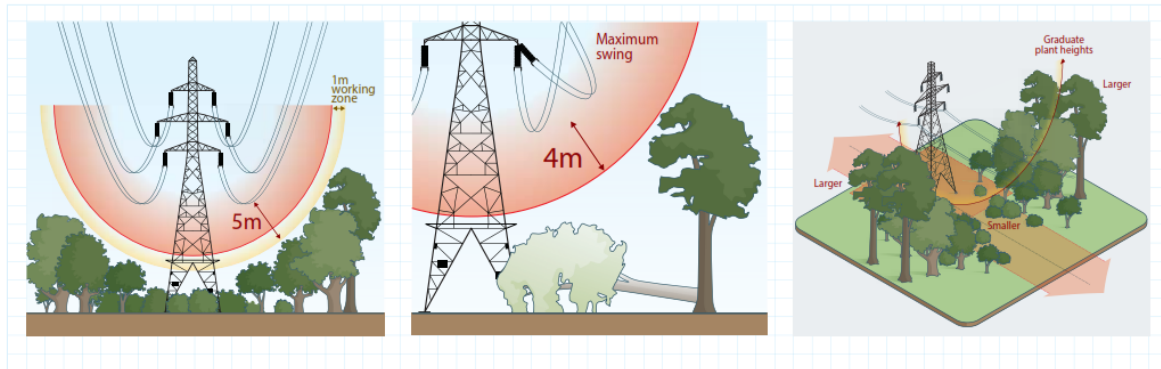


Figure 1: Trees Regulations tree trimming requirements

10. The Trees Regulations contain some restrictions on tree growth. However, they do not address fall distance trees, nor do they ensure that the right tree is planted in the right place from the outset. They are reactive, and require a resource-intensive inspection and management regime.

## Risks of tree planting around the Grid

11. Planting and growing trees near transmission (and distribution) lines creates risks to the assets and significant costs are incurred managing these risks. The main risks are:
  - a. Vegetation causing loss of supply. Vegetation blown into overhead lines can cause a fault when vegetation comes too close to the conductors or into the line envelope, as a flashover<sup>4</sup> can occur;
  - b. Vegetation causing asset damage. Trees and branches can fall into transmission lines, and can damage conductors (wires), poles and towers;
  - c. Vegetation causing a flashover resulting in wildfire. Vegetation related flashovers have the potential to ignite a fire. Under the right conditions, the fire can be sustained and widespread property loss could result;
  - d. Access being restricted and/or made more difficult, due to location of the planting or the slash.
12. These risks will increase with increased carbon forests near transmission lines. Permanent forests will likely grow to increased heights compared to plantations for harvest. The

<sup>3</sup> Apart from Trees, which can include trees in the Fall Distance Zone. Electrical contact includes trees touching conductors (wires) and flashovers, where there is no physical contact.

<sup>4</sup> A flashover can occur where a tree touches or comes close to the conductor (wire) and electricity “jumps” to a tree or a major electrical discharge can occur to the tree.

additional height, and age of the trees, will increase the tree fall risk. Further, permanent forests are unlikely to be subject to the same maintenance regimes as plantation forests (eg. pruning, removal of dead stock etc).

### Increased Fire Risk

13. As recognised in the *Discussion Document*, climate change is resulting in more frequent and stronger wind events. Wildfire risk is also increasing. The risk of fire around National Grid assets will increase with increased afforestation.
14. The historical average return period is 2 years for a vegetation or grass fire arising from a fault caused by vegetation or asset failure on Transpower's transmission lines. To date, none of the fires have led to a sustained<sup>5</sup> fire event. However, the likelihood of ignition leading to a sustained fire is between 0-18%, so it is credible that a large-scale event could occur.
15. On average, 6 fires per year (0.2% of all fires) in New Zealand relate to distribution and transmission lines. The size of an average rural fire related to these lines is between 2000-2007 was 35ha<sup>6</sup>.
16. The risk of fires becoming more sustained events causing wider threats to property and life will increase with climate change. Many parts of the country are experiencing hotter, windier and drier weather. They are also experiencing an increased risk of wildfire events, as occurred recently in the Nelson region. Research into estimating climate change effects indicates that fire climate severity is likely to rise significantly in many parts of the country, with a doubling or trebling of fire danger possible in some areas<sup>7</sup>. The changing climate, with its increased risk of fire, is another reason for the right tree to be planted in the right place.

### Costs of managing risk

17. Transpower manages these risks by trimming in accordance with the Trees Regulations and otherwise negotiating with forestry owners to trim or fell trees beyond those regulations. A significant amount of time is involved in informal negotiations. We note there have been increased requests over recent years for Transpower to provide observers during forestry harvesting, to minimise safety risks when trees are harvested near transmission lines. We also face increased pressure to de-energise lines during harvesting activities.
18. A significant work programme is required to address the risks from vegetation. For the 2021/2022 Financial Year, Transpower had 13,564 work orders to address vegetation that was creating risks to the Grid. This work is summarized in **table 2** below:

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<sup>5</sup> A sustained fire event is where an ignition leads to continuous flaming combustion and requires management by emergency services.

<sup>6</sup> Analysis of statistics on page 43

<sup>7</sup> [http://www.ruralfireresearch.co.nz/\\_data/assets/pdf\\_file/0006/63933/42390-WildfireRecords.pdf](http://www.ruralfireresearch.co.nz/_data/assets/pdf_file/0006/63933/42390-WildfireRecords.pdf)

<sup>7</sup> [https://www.scionresearch.com/\\_data/assets/pdf\\_file/0019/63901/48389-FutureFireDanger.pdf](https://www.scionresearch.com/_data/assets/pdf_file/0019/63901/48389-FutureFireDanger.pdf)

Vegetation issue	No. of work orders	% of vegetation work
Vegetation affecting conductor at maximum sag (ie. growing into the conductor)	7,389	54.5%
Vegetation affecting conductor at maximum swing (ie. growing into the area where the conductor swings at high wind)	2,561	18.9%
Fall distance	3,614	26.6%
<b>Total</b>	<b>13, 564</b>	<b>100%</b>

Table 2: Work orders 2021/2022 Financial Year

19. The costs for completed work orders exceeded \$5.6M for the 2021/2022 Financial Year. Trimming was in excess of \$3M, and felling in excess of \$2.6M, as shown in table 3 below.

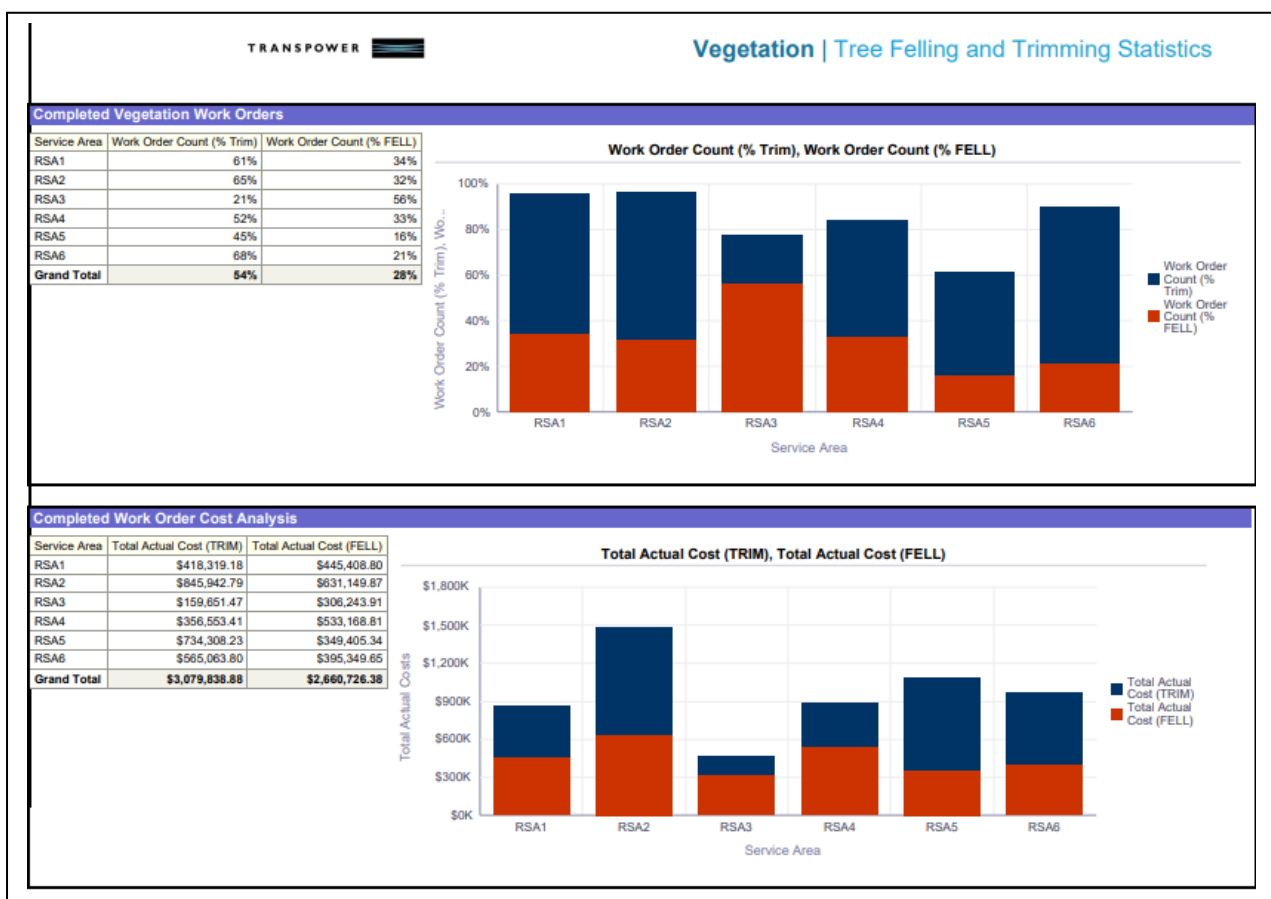


Table 3: Costs for Financial Year 2021/2022

20. Table 3 also indicates the split between trimming and felling – with a reasonable number of trees needing to be felled.

21. The cost of poorly located forestry (and other vegetation) is not merely financial. Significant time and effort is also required – including to negotiate with forest owners to keep the lines safe, and to compensate the forest owners (for keeping the lines safe). Line outages have also been required for high-risk harvests. Arranging line outages is not a simple task, as consultation is required with the electricity industry to ensure there are sufficient alternative supply options to keep electricity supplied to communities.
22. The examples below address both the risks resulting from poorly located forests, and costs of informal vegetation management.
23. **Photo 1** below shows damage to the Bunnythorpe-Wairakei A transmission line caused by plantation forestry near Rangipo in 2012<sup>8</sup>. New foundations and tower repairs were in the order of \$500,000.

*Photo 1: damage to National Grid line*



*Photo 2: fire caused by damage to distribution line from tree-fall*

24. **Photo 2** above shows a fire resulting from a tree coming into contact with a distribution line. Similar issues have arisen as a result of trees contacting National Grid lines in Te Horo and Clevedon, and in the South Island where a hedge grew into transmission lines. The machinery used for forestry operations also creates risks.
25. In another incident, forestry workers who were moving hauling machinery through a forest close to National Grid lines, created a 'flashover' (where electricity arcs from conductors onto an object, in this case the machinery) causing damage to the lines and the machinery and creating significant fire and safety risks.
26. Any forestry activity near transmission lines is problematic and needs to be carried out with extreme care. Consistent with the 'safety by design' approach that Transpower takes in other situations, Transpower considers that the best way to manage this risk is to ensure plantation forestry is located in the right place, and setback a safe distance from transmission lines.

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<sup>8</sup> The forest was compliant with the Trees Regulations.

27. **Appendix A** contains further examples of issues associated with:
- a. High risk harvests;
  - b. Delayed harvests;
  - c. Abandoned forests.

#### **ETS costs**

28. Transpower is also concerned that there is nothing preventing poorly located forests being registered under the ETS. Felling trees in forests that are registered under the ETS will increase Transpower's costs, as landowners expect to be compensated for surrendered ETS units.
29. Transpower is in the process of relocating the Bunnythorpe-Ongarue A line, as a result of the road edge slipping away and two tower legs being exposed. A new structure needs to be erected approximately 40m to the side of the existing alignment, in a registered carbon sequestration forest. The forest owner has claimed over \$300,000 in compensation for loss of 2.74ha of forest and the resulting loss of ETS units.
30. This compensation is illustrative of the amounts that could be claimed for removal of fall distance trees.

#### **Discussion Document questions – Part A and B of the Discussion Document**

##### **Q A1 Do you agree with the problem statement?**

31. At a general level, Transpower agrees with the problem statement. However, permanent forests (whether exotic or indigenous) create increased risks, compared to plantation forests, due to more limited management regimes.

##### **Q A2 Have we accurately described the effects of exotic carbon forests (Table 2)?**

32. Table 2 does not accurately describe the effects of exotic carbon forests. Except for "shading of roads and dwellings" (page 21), the table is silent in relation to effects on infrastructure. As set out in this submission, there are significant adverse effects arising due to poorly located forestry.

##### **Q A3 Do you agree that the environmental effects of exotic carbon forests should be managed through the NES-PF?**

33. Yes. Transpower agrees that the NES-PF should manage the environmental effects of exotic carbon forests. The NES-PF can set rules which require standards to be met. A consent regime does not necessarily need to follow – as permitted activity standards could be developed.
34. We have not set out standards for setbacks from National Grid assets. However, we are happy to work with officials on their development.

##### **Q A5-A8 Various questions in relation to Option 2**

35. Transpower supports Option 2 for managing the effects of exotic carbon forestry (ie. Amend the NES-PF). For the reasons discussed in this submission, we consider the setbacks are required from Grid infrastructure, in order to address tree fall and wind effects in particular.

- These setbacks would also reduce the risks of wildfire, and risks associated with machinery operating in close proximity to transmission lines. The need for outages would also reduce.
36. We do not support Option 1 (status quo – councils retain the power to amend their district plans) or Option 3 (require Forest Management Plans). Neither of these options provide any certainty that forests will be planted in the right location.

**Q B1 Do you agree with the problem statement?**

37. No. Transpower does not agree with the problem statement. While adverse effects on communities, the primary sector, environmental non-government organisations and councils are recognised, the adverse effects on infrastructure have not been.

**Q B3 Do you agree that the social, cultural and economic effects of plantation and exotic forests should be managed through the resource management system?**

38. Yes. Transpower considers it appropriate that these effects are managed through the resource management system. This system commonly governs the location of activities – and the location of forestry (and the associated effects) can be easily managed. The National Planning Framework and Regional Spatial Strategies that will result from the resource management reform are also well suited to address the location and effects of forestry.

**Q B5 How effective would Option 1 (local control) be in managing the social, cultural and economic effects of plantation and exotic afforestation?**

39. Transpower considers that controls via local planning documents would be “not effective.” Each council would have to decide to include such controls. There is likely to be variability about whether any controls were included, and the extent of any that were.

**Q B13 and B15 How effective would Option 2 (consent requirement through national direction) be in managing the social, cultural and economic effects of plantation and exotic afforestation? What are the benefits of Option 2?**

40. Transpower considers that option 2, national direction would be “highly effective.” It would provide both national consistency and certainty that a rule regime would be imposed.
41. However, we query whether the default position should be a consent requirement, as opposed to a permitted activity with appropriate standards. A cascade to a consent requirement could result where standards are not met. Notification to affected parties could also be imposed – such as infrastructure operators, where infrastructure is at risk due to the proposed location of the forest.

**Q B17 and B18 What are the most important and urgent social, cultural and economic effects of plantation and exotic afforestation that you would like to see managed under the resource management system? Should this be done now under the RMA, or later under the proposed National Planning Framework and NBA Plans?**

42. Transpower considers that locational constraints should be addressed as a matter of urgency. Clarity about the appropriate location for planting permanent forests would avoid unnecessary costs being incurred due to poorly located forests.



43. We consider that changes to the NES-PF could be made under the RMA, or in the First Version of the NPF.

**Q B19 Would standards in an amended NES-PF need the support of national policies and objectives?**

44. In our view, an amended NES-PF would not need to be supported by national policies and objectives beyond those that Transpower would expect to be contained in the local plans or NPF. By way of example, we would expect these other documents to contain objectives and policies in relation to climate change mitigation activities and protection of nationally and regionally significant infrastructure.

**Conclusion**

45. Transpower agrees with the Discussion Document that a fulsome policy response is required to address the effects of plantation and exotic carbon afforestation, including:
- a. The expanded national direction providing:
    - i. setbacks from National Grid (and other infrastructure) commensurate with a tree falling at maximum growth;
    - ii. a further setback, due to increased risks resulting from stronger and/or more frequent wind events;
  - b. There being no ability to benefit from the emissions trading scheme for inappropriately planted trees (and therefore no resulting costs placed on infrastructure operators);
  - c. Amendments to the Trees Regulations to provide a more enabling framework for entry onto land to trim or remove vegetation that is creating risks to electricity infrastructure.

**Appendix A: Further examples of risks created by forestry around National Grid lines**

*Example 1: Forestry in steep hill country / high risk harvest*

46. Four spans of the Wairakei to Whakamaru A line is surrounded by forest on steep to rolling land. The forest is compliant with the Tree Regulations (just), but due to the steep terrain the forestry contractors were not confident they could undertake the operation in close proximity to the transmission lines safely.
47. The forest managers requested that Transpower indemnify them for any claims resulting from damage or loss of supply that could occur due to a line strike during harvest. Transpower was not prepared to provide the indemnity sought. Transpower and the forest managers have not been able to reach agreement on a safe harvesting methodology.
48. Transpower has recently proposed to drop the conductors (ie. Take them out of service, remove the conductors from the structures and place them on the ground) through the forest to allow the trees to be felled safely. This step will require a long outage to be secured and could cost up to \$600,000.
49. We note that obtaining an electricity outage is not an easy step – Transpower is required to consult with the electricity industry before this can occur to ensure communities can be

supplied electricity via other means. Despite these difficulties, forest owners are making an increased number of requests for outages to enable forestry activities to occur.

*Example 2: Tree strike in mature forest / harvest delayed*

50. Six spans of the Tuai-Bunnythorpe A line are located in mature forest. Again, this forest is compliant with the Trees Regulations. However, harvest has been delayed and the trees are now over mature and some have recently suffered root failure in high winds. Two conductors (wires) were struck, and one was broken. The forest manager has subsequently complied with Transpower's request to widen the corridor.
51. We understand that as forests age the edge trees become more susceptible to wind throw as the shoot to root ratio increases, exceeding the capacity of the root ball to hold the tree in high wind situations especially when the ground is saturated or unstable.



*Photo 3: Tuai-Bunnythorpe A windthrow*

*Example 3: Abandoned / unprofitable forest*

52. Transpower is now experiencing issues with abandoned forests. One span of the Bunnythorpe to Wilton A line is surrounded by forest that has been planted on the flood plain of the Waikanae river. The forest is owned by two landowners.

53. The landowner on the western side of the line has abandoned the forest and will not harvest. The forest is compliant with the Trees Regulations. However, due to the age of the trees, we have been advised that they are susceptible to windthrow. Further, over height trees (45m+) were starting to fall. Ultimately, Transpower has felled these trees at its cost.
54. The second landowner will not permit Transpower to fell their trees. However, to date, they have been unable to find anyone to harvest their block. Transpower's forest advisor considers the forest to be uneconomic, and unlikely to be harvested. Significant tree fall risks will exist once the trees age and grow to greater than 40m in height. As a result, Transpower continues to negotiate with the landowner. We will likely issue a cut or trim notice to fell the leading edge of part of this forest under the Trees Regulations. However, the Trees Regulations are inadequate to address the full risk.