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Attention Ministry for the Environment

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National Policy Statement for Indigenous Biodiversity - Eastland Generation Limited

1. Eastland Generation Limited (**Eastland**) welcomes the opportunity to provide a submission on the draft National Policy Statement for Indigenous Biodiversity (**NPSIB**).

EASTLAND GENERATION LIMITED

2. Eastland is a renewable electricity generator. Geothermal Developments Limited, Eastland's wholly owned subsidiary company, holds resource consent to take and use geothermal fluid from the Kawerau Geothermal System for the operation of a 9MWe geothermal power plant.
3. Eastland is a partner in Te Ahi O Māui Limited Partnership, which also holds resource consent to take and use geothermal fluid from the Kawerau Geothermal System, by way of a 25MWe geothermal power plant. Both of these geothermal plants re-inject geothermal fluid into the Kawerau Geothermal System.
4. Eastland is owned by Eastland Group, which holds resource consent for the 5MWe Waihi Hydro Scheme located in the Hawke's Bay Region, which comprises a 15m high concrete buttress dam that channels water through its intakes and penstocks to a powerhouse below the dam. Eastland Group also owns Eastland Network Limited, which owns and operates the electricity distribution network located in the East Coast of the North Island.

BACKGROUND

5. The Government aims to reach 100% renewable electricity in New Zealand by 2035. In addition, the Climate Change Response (Zero Carbon) Amendment Act 2019 sets a target to reduce all greenhouse gas emissions (except biogenic methane) to net zero by 2050. The intent of this Act is to ensure that New Zealand's contribution to climate change mitigation is consistent with limiting global warming to 1.5°C above pre-industrial levels in accordance with the Paris Agreement.
6. Addressing climate change is a key priority. However, despite the Resource Management Act 1991 (**RMA**) being New Zealand's key piece of legislation for governing the sustainable management of natural and physical resources, the RMA deals with climate change and renewable electricity generation in a limited way.
7. The RMA requires decision makers to have particular regard to the benefits to be derived from the use and development of renewable energy.¹ To that end, the National Policy Statement for Renewable Electricity Generation (**NPSREG**) recognises the national significance of renewable electricity generation and includes a series of provisions which generally seek to provide for the development, operation, maintenance and upgrading of new and existing renewable electricity generation activities.

¹ RMA, s 7.

8. However it can be difficult for local authorities to give appropriate weight to the importance of renewable electricity generation, particularly when other national policy statements use more directive language than the NPSREG, such as the NZCPS and now the NPSIB. It is therefore essential that the national significance of renewable electricity generation is taken into account in drafting the NPSIB.

HYDRO-ELECTRICITY GENERATION

9. As set out above, Eastland has interests in the 5MWe Waihi Hydro Scheme located in the Hawke's Bay Region. This part of Eastland's submission relates primarily to the provisions which will apply to hydro-electricity generation. Eastland considers that a specific framework is required for geothermal ecosystems, and while this is referenced where necessary in this section, geothermal electricity generation is discussed in detail later in the submission.

Application to freshwater environments

10. At this stage, the NPSIB does not extend to freshwater environments,² which Eastland supports.
11. The RMA requires decision makers to recognise and provide for the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.³ Local authorities also have responsibilities to maintain indigenous biological diversity.⁴ Biological diversity means *the variability among living organisms, and the ecological complexes of which they are a part, including diversity within species, between species, and of ecosystems.*⁵ Whilst these provisions do not distinguish between freshwater and other types of indigenous biodiversity, it does not follow that the NPSIB should extend to freshwater environments.
12. The current National Policy Statement for Freshwater Management (**NPSFM**) includes direction for managing ecosystem health in freshwater environments. For example, Objectives A1 and B1 require the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of freshwater, to be safeguarded. Ecosystem health is also a compulsory national value.
13. The draft NPSFM also introduces direction around freshwater indigenous biodiversity. For example, Policy 11 requires the habitats of indigenous freshwater species to be safeguarded and there is policy direction around maintaining the health and wellbeing of freshwater ecosystems. There are also new requirements for fish passage, and threatened species has been added as a compulsory value alongside ecosystem health.
14. The management of freshwater indigenous biodiversity is already covered by the NPSFM and it is not necessary or appropriate to introduce potentially conflicting direction through the NPSIB. Extending the NPSIB to freshwater environments would also be unworkable, including for the following reasons:
- (a) As proposed, the NPSIB requires territorial authorities to identify and map areas of significant indigenous biodiversity in accordance with specified criteria. This criteria broadly follows existing practice, encompassing representativeness, diversity and pattern, rarity and distinctiveness, and ecological context.

Eastland is concerned that applying this criteria to freshwater environments would be unworkable given the mobility of freshwater species and their distinct ecological environments. If mapping significant freshwater indigenous biodiversity is contemplated then a tailored approach would need to be developed through meaningful consultation with ecologists, local authorities, and key stakeholders, including hydro-electricity generators.

² NPSIB, cl 1.5.

³ RMA, s 6(c).

⁴ RMA, ss 30 and 31.

⁵ RMA, s 2.



- (b) Extending the NPSIB to freshwater environments could be particularly unworkable for hydro-electricity generation. Hydro-electric power schemes must be located on suitable water bodies and in many cases it is impossible to avoid all adverse effects on fish species. Rather, operators might implement alternative fish passage to mitigate adverse effects. The stringent requirements to avoid adverse effects would be unworkable for hydro-electricity generation.

15. For these reasons, Eastland supports excluding freshwater indigenous biodiversity from the NPSIB. It would be extremely concerning if its application was broadened to freshwater environments at this late stage in the consultation process. If such an approach is contemplated, then the Ministry needs to undertake meaningful consultation with key stakeholders, including hydro-electricity generators, then release any proposed drafting for further public consultation.

Avoiding four adverse effects in Significant Natural Areas

16. Local authorities must ensure that any new subdivision, use or development which takes place in or affects a Significant Natural Area (**SNA**) avoids the following adverse effects:⁶
- i. Loss of ecosystem representation and extent.
 - ii. Disruption to sequences, mosaics or ecosystem function.
 - iii. Fragmentation or loss of buffering or connectivity within the SNA and between other indigenous habitats and ecosystems.
 - iv. A reduction in population size or occupancy of threatened species using the SNA for any part of their life cycle.
17. These four adverse effects are effectively “bottom lines”, meaning an activity causing any of these adverse effects could be declined resource consent. Eastland is concerned that these adverse effects are too broadly framed to be treated as bottom lines, and could preclude activities with very minimal adverse effects.
18. For example, activities are required to avoid fragmentation or loss of buffering or connectivity within the SNA and between other indigenous habitats and ecosystems. A buffer could comprise many individuals and the loss of one individual (e.g. one plant) may have no impact on the overall buffering function. Eastland is concerned that resource consent could be declined in that situation (or the activity could be prohibited), which would be overly restrictive particularly when (for example) ten more plants could be placed as part of the proposal, and the overall buffering function could be enhanced.
19. Similarly, activities are required to avoid a reduction in population size or occupancy of any threatened species. Eastland agrees that for some species, the loss of one individual should be avoided. However in some circumstances precluding an activity based on the loss of one individual could be a perverse outcome, particularly when there could be a net gain in biodiversity values and the proposal would have important social, cultural and economic benefits.
20. In that situation, the proposal should be tested through the resource consent process which may be unavailable if these avoid policies are given effect to through prohibited activity rules. Eastland also notes that the four adverse effects listed in the NPSIB are different to the adverse effects reproduced in the Discussion Document, which encompass *at risk* species. If the fourth adverse effect encompasses at risk species, then its application will be even more broad.
21. The draft s 32 analysis states that there is uncertainty around what avoiding these adverse effects will mean for new activities, and “ecological advice suggests only very small-scale activities will be able to occur within the ‘environmental bottom lines’ provided for in Part 3.9(1) and most new subdivision, use and development managed under this provision will be heavily restricted (or effectively precluded).”⁷

⁶ NPSIB cl 3.9(1).

⁷ Draft s 32 analysis, p 4.



22. Eastland is very concerned by this, and urges the Ministry to carefully work through the detail of these clauses with ecologists and industry before finalising drafting. The Ministry needs to consider that these bottom lines could be given effect to by prohibited activity rules, which could stop many positive proposals with minor adverse effects being tested through resource consent processes.

Nationally significant infrastructure

23. *Nationally significant infrastructure* located in medium-value SNAs is not required to meet the above bottom lines.⁸ Eastland supports this approach but considers that it does not go far enough, as *nationally significant infrastructure* is still required to meet the bottom lines in high-value SNAs.
24. Eastland notes here that due to the rarity of geothermal ecosystems, it is understood that they would all be classified as high-value SNAs. Geothermal fluid abstractions can change geothermal surface activity (such as changes in soil temperature) which can impact geothermal ecosystems. Whilst geothermal fluid abstractions can be designed to minimise changes to surface activity, it is essentially impossible to avoid all adverse effects on geothermal ecosystems.
25. If the bottom lines apply to geothermal ecosystems, this could preclude geothermal electricity generation. As geothermal electricity generation is essential to addressing climate change and meeting the Government's renewable electricity aspirations (and is supported by the NPSREG) it is essential that a specific policy framework is implemented for geothermal ecosystems. Eastland discusses this in detail later in the submission.
26. With respect to hydro-electricity generation, there is a real risk that the bottom line approach for high-value SNAs will impact the generation of hydro-electricity. Hydro-electric power schemes convert the kinetic energy of falling water into electricity. These schemes must be located at suitable sites, which is determined by many factors including head, flow and grid connection; the electricity output of hydro-electric power schemes is proportional to head, there must be sufficient flow, and must be able to connect to the transmission network.
27. These locational constraints mean that hydro-electricity generators are restricted in where they can locate hydro-electric power schemes. In Eastland's view, it is therefore inappropriate to require hydro-electric power schemes to meet the bottom lines in high-value SNAs in all circumstances; proposals should be tested through the resource consent process. Eastland therefore seeks that Policy 3.9(2) be amended so that the specific approach for *nationally significant infrastructure* applies in all SNAs. This would still be subject to there being:⁹
- (a) A functional or operational need to be in that particular location; and
 - (b) No practicable alternative locations.
28. *Nationally significant infrastructure* is defined to include *national renewable electricity generation facilities that connect with the national grid*. It is unclear what is meant by *national renewable electricity generation facilities*. Eastland assumes it means renewable electricity generation facilities which are connected to the national grid and if this approach is intended, the definition should be amended to: ~~national~~ *renewable electricity generation facilities that connect with the national grid*.
29. However, in Eastland's view it is inappropriate to restrict this policy to renewable electricity generation activities which connect to the national grid. This approach does not recognise the benefits that all renewable electricity generation activities have in contributing to electricity supply and addressing climate change, and is inconsistent with the NPSREG and the Government's target of reaching 100% renewable electricity in New Zealand by 2035.

⁸ NPSIB, cl 3.9(2).

⁹ NPSIB, cl 3.9(2)(b) and (c).



30. In Eastland's view, the definition for *nationally significant infrastructure* should also be amended to include the distribution network. The distribution network plays an important role in the development of renewable electricity generation activities and is also a key piece of infrastructure for delivering the electricity generated by those activities to homes, businesses and industry. Further, the distribution network is critical to the charging infrastructure required for electric vehicles, an alternative to fossil fuel reliant transportation.
31. Eastland notes here that activities are not required to meet the bottom lines where they take place in indigenous biodiversity that was established and managed for a purpose other than maintenance, restoration, or enhancement and the activity is necessary to meet that purpose.¹⁰ Eastland supports this.

Effects management hierarchy in Significant Natural Areas

32. All other adverse effects of new *nationally significant infrastructure* in SNAs must be managed using the *effects management hierarchy*,¹¹ which requires:
- (a) Adverse effects are avoided where possible;
 - (b) Adverse effects that cannot be demonstrably avoided are remedied where possible;
 - (c) Adverse effects that cannot be demonstrably remedied are mitigated;
 - (d) In relation to adverse effects that cannot be avoided, remedied, or mitigated, biodiversity offsetting is considered; and
 - (e) If biodiversity offsetting is not demonstrably achievable for any indigenous biodiversity attribute on which there are residual adverse effects, biodiversity compensation is considered.
33. Eastland is concerned that adopting such a rigid approach to managing adverse effects may be unworkable for renewable electricity generation.
34. While the *effects management hierarchy* provides for decision makers to consider offset and compensation measures, extensive criteria restricts when they can be considered. The RMA includes a mandatory direction to decision makers to have regard to offset and compensation measures proposed by resource consent applicants.¹² The NPSREG also requires decision makers to have regard to offsetting measures or environmental compensation when considering any residual environmental effects of renewable electricity generation activities.¹³
35. Eastland is concerned that the Ministry has departed from the offset and compensation criteria proposed by the Biodiversity Collaborative Group, and that the draft s 32 analysis does not discuss the impact of the proposed criteria in any detail. Eastland urges the Ministry to obtain advice from ecological experts to understand all possible implications of including such an extensive criteria in the NPSIB. If the criteria is too stringent, it could preclude developers from carrying out proposals which would otherwise have overall positive effects on the environment.
36. Eastland notes here that the offset and compensation criteria is particularly unworkable for geothermal electricity generation. For example, the criteria states that where the affected indigenous biodiversity is irreplaceable or vulnerable, an offset would be inappropriate.¹⁴ Eastland expects that all geothermal ecosystems could be considered irreplaceable, which in practice could preclude geothermal electricity generators from carrying out any offsetting measures.
37. In terms of hydro-electricity, the Ministry is also seeking feedback on whether the trigger for biodiversity offsets and compensation should be *more than minor or residual* adverse effects. The Ministry's reason for proposing *residual* adverse effects is that it was the approach taken in *Oceana Gold*¹⁵. In Eastland's

¹⁰ NPSIB, cl 3.9(4).

¹¹ NPSIB, cl 3.9(2).

¹² RMA, s 104(1)(ab).

¹³ NPSREG, Policy C2.

¹⁴ NPSIB, Appendix 3(2).

¹⁵ *Oceana Gold (New Zealand) Limited v Otago Regional Council* [2019] NZEnvC 41.



view, this Environment Court decision should not dictate how the NPSIB is drafted, for the following reasons:

- (a) The decision was not decided under the Resource Management Legislation Amendment Act 2017, which introduced the mandatory legislative requirement to have regard to proposed offset and compensation measures;¹⁶ and
 - (b) A decision on a regional policy statement should not dictate the drafting of a national policy statement.
38. Nevertheless, Eastland considers that the word *residual* does not qualify the level of adverse effects and the Ministry's reasoning on this may be misguided. Rather, in Eastland's view *residual* emphasises the place of offset and compensation measures in the mitigation hierarchy.
39. Regarding the level of residual adverse effects, Eastland strongly opposes requiring all adverse effects to be addressed. If a proposal could be declined resource consent for having minimal adverse effects or where adverse effects are just a remote possibility, then there is a real risk that it could preclude renewable electricity generation. Eastland therefore considers that the qualifier should be either *more than minor* or *significant*, which are the qualifiers discussed by the Biodiversity Collaborative Group – Eastland would prefer *significant*.

Existing activities

40. Existing activities are not required to meet the bottom lines or manage adverse effects through the *effects management hierarchy*. Instead, local authorities have more flexibility for determining how existing activities should be managed. However, they must:¹⁷
- (a) Ensure the continuation of an existing activity will not lead to the loss, including through cumulative loss, of extent or degradation of the ecological integrity of any SNA; and
 - (b) Ensure the adverse effects of an existing activity are of no greater character, intensity or scale than they were before the National Policy Statement commencement date.
41. *Existing activities* are defined as *a subdivision, use or development that is: lawfully established at the commencement date; but not a land use covered by section 10 of the RMA*. Whilst this wording appears to encompass activities such as water takes and discharges, the Discussion Document frames this policy as applying to land uses only. This needs to be clarified in the drafting of the NPSIB and if it is restricted to land uses, then the NPSIB should be amended to provide for other existing activities.
42. The directions to local authorities are broadly framed and it is unclear how they would be implemented in planning instruments. Eastland is particularly concerned about the direction to *ensure the adverse effects of an existing activity are of no greater character, intensity or scale than they were before the National Policy Statement commencement date*. It is unclear from the drafting whether this refers to all adverse effects of an activity, or whether it is restricted to adverse effects on indigenous biodiversity.
43. In Eastland's view, this should be amended to read: *ensure the adverse effects of an existing activity are of no greater character, intensity or scale than they were before the National Policy Statement commencement date. This requirement relates to adverse effects on the indigenous biodiversity covered by this National Policy Statement, as set out in clause 1.5.*
44. This is an important amendment as, for example, hydro-electric power schemes carry out a range of activities with a broad range of potential adverse effects. It would be inappropriate for this requirement to relate to all of these adverse effects, when they are otherwise not managed by the NPSIB.

¹⁶ *Oceana Gold*, at [56] – [57].

¹⁷ NPSIB, cl 3.12(3).



Managing adverse effects outside Significant Natural Areas

45. Local authorities have more flexibility to manage adverse effects on indigenous biodiversity outside SNAs. There is no requirement to avoid the bottom lines, which Eastland supports. However the *effects management hierarchy* still applies – albeit with flexibility to consider biodiversity compensation without first working through the biodiversity offset requirements. Eastland discusses its concerns with the *effects management hierarchy* above, and these concerns are also relevant to managing adverse effects on indigenous biodiversity outside SNAs.

GEOTHERMAL ELECTRICITY GENERATION

46. As set out above, Eastland has interests in the Geothermal Developments Limited 9MWe geothermal power plant, and the Te Ahi O Māui Limited Partnership 25MWe geothermal power plant. Both of these power plants abstract and re-inject geothermal fluid from and to the Kawerau Geothermal System, which is located in the Taupo Volcanic Zone.
47. Geothermal abstractions can impact surface manifestations of geothermal processes. Changes in surface activity, such as changes in soil temperature or toxicity, can impact the geothermal ecosystems which are reliant on such conditions. Whilst geothermal fluid abstractions can be designed to minimise reservoir changes (such as through re-injection), it is virtually impossible to avoid all adverse effects on geothermal ecosystems.
48. Within high-value SNAs the NPSIB requires *nationally significant infrastructure* to meet the four (broadly framed) bottom lines, and in all SNAs requires adverse effects to be avoided *where possible*. Where the proposed *effects management hierarchy* can be worked through, utilising offsets and compensation is subject to meeting extensive criteria. This framework is unworkable for geothermal electricity generation, for the following reasons:
- (a) It is understood that geothermal ecosystems would all be classified as high-value SNAs. This means that the bottom lines would need to be met, and geothermal electricity generation could be precluded because it cannot avoid all adverse effects on geothermal ecosystems.
 - (b) Even if the bottom lines did not apply and the *effects management hierarchy* could be worked through, the stringent criteria for offsets and compensation could not be met for geothermal ecosystems. For example, one of the principles is that an offset would be inappropriate where the indigenous biodiversity affected is irreplaceable or vulnerable. This could encompass all geothermal ecosystems.
49. Geothermal electricity generation has advantages over wind and solar electricity generation, including that it is not weather-dependent and can provide a base-load source of electricity. It is therefore essential that the Ministry does not undermine geothermal electricity generation, as it will play a key role in reaching 100% renewable electricity in New Zealand by 2035.
50. The NPSREG recognises the national significance of renewable electricity generation activities, and requires local authorities to provide for the development, operation, maintenance, and upgrading of new and existing electricity generation activities using geothermal resources.¹⁸ If the directive provisions of the NPSIB are introduced, Eastland is very concerned that this direction will be undermined and geothermal electricity generation could be at risk. This would be a very unfortunate outcome.
51. The Ministry recognises that if the proposed framework applied to geothermal ecosystems, little or no new development could occur. To address this issue, it includes placeholders for geothermal ecosystems and discusses three options for managing adverse effects on geothermal ecosystems:
- (a) Option 1: The NPSIB would not apply to geothermal ecosystems.

¹⁸ NPSIB, Policy E4.



- (b) Option 2: The NPSIB would apply to geothermal ecosystems, except for geothermal ecosystems located within the Taupo Volcanic Zone.
- (c) Option 3: The NPSIB includes a specific framework for all geothermal ecosystems.

52. It is essential that a specific approach is undertaken for managing adverse effects on geothermal ecosystems.

Taupo Volcanic Zone

53. The Taupo Volcanic Zone includes most of New Zealand's geothermal surface features and geothermal ecosystems. The Taupo Volcanic Zone is located in the Waikato and Bay of Plenty regions, which have well-developed geothermal management approaches in place. Both policy frameworks have been tested by extensive Council hearings and Environment Court processes.

54. The regional policy statements for these regions classify geothermal systems depending on their characteristics and taking into account existing use. The following system classifications are used in the Bay of Plenty:

- (a) Development Systems.
- (b) Conditional Development Systems.
- (c) Rotorua System.
- (d) Low-temperature Systems.
- (e) Research Systems.
- (f) Protected Systems.

55. The following system classifications are used in Waikato:

- (a) Development Systems.
- (b) Limited Development Systems.
- (c) Small Systems.
- (d) Research Systems.
- (e) Protected Systems.

56. This approach provides for sustainable management of geothermal resources through the use of multiple management purposes. Amongst other management techniques, adverse effects on Significant Geothermal Features are then managed as appropriate for the system classification.

Eastland's preferred approach

57. In Eastland's view, the NPSIB should not undermine the existing (well-developed) approaches taken in the Bay of Plenty and Waikato. To that end, option 1 or 2 would be the easiest to implement, and could be achieved by way of the following amendments to the NPSIB:

Option 1:

1.5 Application



- (1) This National Policy Statement applies to indigenous biodiversity throughout New Zealand, other than –
 - a) indigenous biodiversity in the coastal marine area; and
 - b) indigenous biodiversity in waterbodies and freshwater ecosystems (as those terms are defined in the National Policy Statement for Freshwater Management 2019); and
 - c) indigenous biodiversity in geothermal ecosystems.

Option 2:

1.5 Application

- (2) This National Policy Statement applies to indigenous biodiversity throughout New Zealand, other than –
 - a) indigenous biodiversity in the coastal marine area; and
 - b) indigenous biodiversity in waterbodies and freshwater ecosystems (as those terms are defined in the National Policy Statement for Freshwater Management 2019); and
 - c) indigenous biodiversity in geothermal ecosystems located in Bay of Plenty or Waikato.

58. The reference to *Bay of Plenty or Waikato* could alternatively be to the *Taupo Volcanic Zone* however in Eastland's view it is better to keep the policy frameworks consistent within each region.
59. Eastland recognises that option 3 would have the positive effect of future-proofing the existing policy frameworks from future plan change processes. However it is more difficult to implement, as it requires a careful review of the Bay of Plenty and Waikato policy frameworks to ensure that they will not be undermined, and a full review of the NPSIB to ensure that the drafting is workable. Eastland discusses its proposed drafting for option 3 below, and reproduces this drafting in Schedule 1 in full.
60. If the Ministry elects option 3 (which the Discussion Document tends towards) then Eastland urges the Ministry to undertake further consultation on its proposed drafting with local authorities, geothermal industry representatives and other key stakeholders before finalising the NPSIB.
61. It is concerning that there is no formal consultation process taking place on proposed drafting for geothermal ecosystems. Without such a consultation process, the Ministry's drafting cannot be tested with the community and the consultation process is not transparent.

Definitions

62. The Ministry is seeking feedback on how geothermal ecosystems should be defined – this would be required for all of the options. In Eastland's view, the defining feature of geothermal ecosystems is that the plants, animals and micro-organisms can survive and are reliant on extreme geothermal conditions, such as soil temperature and toxicity. This should be reflected in the definition.

Application

63. If option 3 is elected, then cl 1.5 would need to encompass geothermal ecosystems, as shown in the tracked changes below:
 - (1) This National Policy Statement applies to indigenous biodiversity throughout New Zealand, other than –
 - a. indigenous biodiversity in the coastal marine area; and
 - b. indigenous biodiversity in waterbodies and freshwater ecosystems (as those terms are defined in the National Policy Statement for Freshwater Management 2019).
 - (2) Except –
 - a. provisions relating to restoration and enhancement (clauses 3.16 and 3.17) do apply to wetlands; and



- b. the requirements relating to regional biodiversity strategies (clause 3.18) do apply to indigenous biodiversity in the coastal marine area and in waterbodies and freshwater ecosystems; ~~and~~.
- c. ~~[geothermal ecosystems — see discussion document *He Kura Koiora i hokia for options relating to geothermal ecosystems*]~~

Policies

64. The Ministry has included a placeholder for a policy on geothermal ecosystems. In Eastland's view, this policy should be *to manage indigenous biodiversity in geothermal ecosystems as appropriate to the geothermal system classification*. This reflects the existing approach in Waikato and Bay of Plenty, and allows for the sustainable management of geothermal resources through the use of multiple management purposes.

Clause 3.11

65. The Ministry has included cl 3.11 as a placeholder for managing adverse effects on geothermal ecosystems. As there could be some inconsistency between the provisions contained in cl 3.11 and the remaining provisions of the NPSIB, to address any conflict Eastland proposes that the following provision be included in cl 3.11: *if there is a conflict between this clause and other provisions of this National Policy Statement, this clause prevails*.
66. In Eastland's view, the specialised approach for managing adverse effects on geothermal ecosystems should apply to *activities associated with the use and development of geothermal resources, including the take, use and discharge of geothermal energy or geothermal water*. This will encompass activities associated with geothermal electricity generation.
67. As set out above, geothermal abstractions can change surface activity and impact geothermal ecosystems; it is essentially impossible to avoid all adverse effects on geothermal ecosystems. It is therefore essential that a specific management approach is adopted for these activities. This goes beyond geothermal electricity generation; hot springs and heating are important activities in the Taupo Volcanic Zone and also depend on geothermal abstractions.
68. It will exclude activities which are not associated with the use and development of geothermal resources, such as farming activities and urban encroachment, and the adverse effects of these activities on geothermal ecosystems will be managed by the other provisions of the NPSIB.
69. However the proposed wording will encompass land use activities associated with the use and development of geothermal resources, which with respect to geothermal electricity generation could include power stations and pipelines. In the case of tourism ventures based around geothermal features (which are important activities in the Taupo Volcanic Zone), structures such as board walks and signage may be required.
70. It is unlikely that all adverse effects on geothermal ecosystems from these activities can be avoided, particularly when geothermal ecosystems may encompass microorganisms present on bare hot ground. In Eastland's view, these activities should be subject to the same management framework as abstractions; it would be unfortunate if they could not occur due to a minor encroachment into a geothermal ecosystem.

Classification

71. As set out above, in Waikato and Bay of Plenty geothermal systems are classified depending on their characteristics and taking into account existing use. At both ends of the spectrum, both regions have *development* and *protected* geothermal system classifications, and then include a range of other system classifications between these. If option 3 is elected, then this concept could be required across New Zealand by way of the following direction:



Where not already undertaken, regional councils must make or change their regional plan(s) and/or regional policy statement to classify geothermal systems based on the primary management purpose of each system.

72. Eastland has considered whether the NPSIB should prescribe how regional councils are to classify geothermal systems. In Eastland’s view, this exercise should be undertaken at regional council discretion, as whether a classification is appropriate will vary between regions and geothermal systems.

Effects management hierarchy

73. In Eastland’s view, the NPSIB should not undermine the existing regimes, including the effects management approaches adopted by each region. If option 3 is elected, the Ministry has proposed the following approach to effects management within SNAs:

Development Systems:	Remedy adverse effects where possible; mitigate adverse effects where they cannot be demonstrably remedied; where mitigation is not demonstrably possible, biodiversity offsetting might be considered; if biodiversity offsetting is not demonstrably possible, then biodiversity compensation might be considered.
Limited/Conditional Development Systems:	The <i>effects management hierarchy</i> applies, including that adverse effects must be avoided where possible.
All other systems:	Avoid the four specified adverse effects; and for other adverse effects the <i>effects management hierarchy</i> applies, including that adverse effects are avoided where possible.

74. This is a much more stringent approach to that taken in the Bay of Plenty and Waikato. In Eastland’s view, the NPSIB should allow regional councils to establish their own effects management approaches according to each geothermal system classification. Each region has its own unique characteristics, and there is no “one size fits all” approach to effects management.

75. This is demonstrated by comparing the approaches taken in the Bay of Plenty and Waikato in *development, conditional/limited development* and *protected* systems for managing adverse effects of the take, use and discharge of geothermal energy and water:

System	BOPRPS	WRPS
Development	Remedy or mitigate significant adverse effects on Significant Geothermal Features	Remedy or mitigate significant adverse effects on Significant Geothermal Features
Conditional/Limited Development	Avoid, remedy or mitigate significant adverse effects on Significant Geothermal Features	Avoid significant adverse effects on Significant Geothermal Features
Protected	Avoid significant adverse effects on Significant Geothermal Features	Avoid adverse effects on Significant Geothermal Features

76. As demonstrated above, there is some variation between approaches, which reflects the expected variations between regions and geothermal systems. In Eastland’s view, it is inappropriate to prescribe detailed requirements in the interest of having a “nationally consistent” approach. Rather, regional



councils should be able to determine their own effects management regime specific to their own regional and geothermal context.

77. The effects management approaches set out above are also a broad simplification of the policy frameworks adopted in the Bay of Plenty and Waikato, as there are a series of provisions which all work together to appropriately manage geothermal ecosystems and it would be an infeasible (and unreasonable) task to replicate these at a national level.
78. That said, it could be appropriate to include “bottom line” direction for *development* and *protected* systems, which represent both ends of the management spectrum and would future-proof future plan change processes for the Bay of Plenty and Waikato. This could be achieved by way of the following directions:
- (a) *Local authorities must ensure that significant adverse effects are remedied or mitigated within any geothermal system that has been classified as a development system.*
 - (b) *Local authorities must ensure that significant adverse effects are avoided within any geothermal system that has been classified as a protected system.*
79. Of course, these regimes would work in conjunction with other provisions for managing geothermal activities, such as requiring system management plans.

Significant Geothermal Features

80. The effects management hierarchy used in Waikato and the Bay of Plenty relates to Significant Geothermal Features and both regional policy statements set out mechanisms for identifying which geothermal features are significant. These mechanisms cover a wide range of factors, including geothermal biodiversity values.
81. In Eastland’s view, any effects management hierarchy included in cl 3.11 should relate to *indigenous biodiversity within geothermal ecosystems that have been identified as Significant Geothermal Features*. This would be consistent with the approach adopted in the Bay of Plenty and Waikato and would ensure that those approaches are not undermined. It also confines the direction to indigenous biodiversity, which is necessary because Significant Geothermal Features also encompass geomorphological values.
82. In terms of including a definition for Significant Geothermal Features in the NPSIB, Eastland considers that this could be: *geothermal features that have been identified as significant in accordance with regional policy statements or plans*. To ensure that this is done, regional councils could be required to identify significant geothermal features, by way of the following direction: *where not already undertaken, regional councils must identify (and map where appropriate) any Significant Geothermal Features in a regionally consistent manner*.

Offsets and compensation

83. The Ministry proposes that biodiversity offsets and biodiversity compensation might be considered for *development* and *limited/conditional development* systems. However, any offset or compensation measures would need to meet the extensive criteria contained in the appendices.
84. In Eastland’s view, geothermal electricity generators should be able to utilise the full range of effects management approaches, including offsets and compensation. The RMA includes a mandatory direction to decision makers to have regard to offset and compensation measures proposed by resource consent applicants. The NPSREG also requires decision makers to have regard to offsetting measures or environmental compensation when considering any residual environmental effects of renewable electricity generation activities.
85. Eastland is concerned that the proposed criteria for offsets and compensation is too stringent, particularly for geothermal electricity generation. For example, the criteria states that where the



affected indigenous biodiversity is irreplaceable or vulnerable, an offset would be inappropriate. Eastland expects that all geothermal ecosystems could be considered irreplaceable or vulnerable, which is concerning because it could preclude geothermal electricity generators from carrying out proposals which would otherwise have overall positive effects on the environment.

86. A specific approach to offsets and compensation should be taken for geothermal ecosystems. Either the criteria should not apply to geothermal ecosystems, or it needs to be substantially re-worked with ecologists and industry to ensure that it is workable. To achieve the former, cl 3.11 could direct local authorities to consider any offset and compensation measures proposed by an applicant, and that the criteria in the appendices does not apply. Eastland includes wording to that effect in Schedule 1.

Existing activities

87. Existing activities are not required to meet the bottom lines or manage adverse effects through the *effects management hierarchy*. Instead, local authorities have more flexibility for determining how existing activities should be managed. However, they must ensure the requirements set out in cl 3.12 are met.
88. In Eastland's view, cl 3.11 should include a direction for managing existing activities associated with the use and development of geothermal resources, including the take, use and discharge of geothermal energy or geothermal water. This should direct local authorities to *provide for existing activities, and manage adverse effects as appropriate to the geothermal system classification*.

Activities which do not impact geothermal ecosystems

89. Activities associated with geothermal electricity generation (such as power stations and pipelines) can also impact non-geothermal ecosystems. These activities are not dealt with by cl 3.11, which means that the concerns raised for hydro-electricity generation are also applicable to these geothermal-electricity generation activities. To summarise key issues, in Eastland's view:
- (a) The bottom lines are broadly framed, and could preclude activities with very minimal adverse effects.
 - (b) It is inappropriate to require renewable electricity generation activities to meet the bottom lines in high-value SNAs in all circumstances; proposals should be tested through the resource consent process. Clause 3.9(2) should therefore be amended so that the specific approach for *nationally significant infrastructure* applies in medium and high-value SNAs.
 - (c) Eastland is concerned that including such a rigid *effects management hierarchy* may be unworkable for renewable electricity generation. Particularly, if the criteria for offsets and compensation is too stringent, this could preclude renewable electricity generators from carrying out proposals which would otherwise have overall positive effects on the environment.
 - (d) In terms of existing land use activities, in Eastland's view, cl 3.12(3)(b) should be amended to read: *the adverse effects of an existing activity are of no greater character, intensity or scale than they were before the National Policy Statement commencement date. This requirement relates to adverse effects on the indigenous biodiversity covered by this National Policy Statement, as set out in clause 1.5(1)*. This is an important amendment as it would be inappropriate for this requirement to relate to all adverse effects.



Schedule 1

ALL OPTIONS

Definitions

Geothermal ecosystems: *the defining feature of geothermal ecosystems is that plants, animals and micro-organisms can survive and are reliant on extreme geothermal conditions, such as soil temperature and toxicity. This needs to be reflected in the definition.*

OPTION 1

1.5 Application

- (1) This National Policy Statement applies to indigenous biodiversity throughout New Zealand, other than –
- a. indigenous biodiversity in the coastal marine area; and
 - b. indigenous biodiversity in waterbodies and freshwater ecosystems (as those terms are defined in the National Policy Statement for Freshwater Management 2019); and
 - c. indigenous biodiversity in geothermal ecosystems.

OPTION 2

1.5 Application

- (1) This National Policy Statement applies to indigenous biodiversity throughout New Zealand, other than –
- a. indigenous biodiversity in the coastal marine area; and
 - b. indigenous biodiversity in waterbodies and freshwater ecosystems (as those terms are defined in the National Policy Statement for Freshwater Management 2019); and
 - c. indigenous biodiversity in geothermal ecosystems located in Bay of Plenty or Waikato.

OPTION 3

Definitions

Significant Geothermal Features: geothermal features that have been identified as significant in accordance with regional policy statements or plans.

1.5 Application

- (1) This National Policy Statement applies to indigenous biodiversity throughout New Zealand, other than –
- a. indigenous biodiversity in the coastal marine area; and
 - b. indigenous biodiversity in waterbodies and freshwater ecosystems (as those terms are defined in the National Policy Statement for Freshwater Management 2019).
- (2) Except –
- a. provisions relating to restoration and enhancement (clauses 3.16 and 3.17) do apply to wetlands; and
 - b. the requirements relating to regional biodiversity strategies (clause 3.18) do apply to indigenous biodiversity in the coastal marine area and in waterbodies and freshwater ecosystems; and.



- c. ~~[geothermal ecosystems—see discussion document *He Kura Koiora i hokia* for options relating to geothermal ecosystems]~~

Policies

To manage indigenous biodiversity in geothermal ecosystems as appropriate to the geothermal system classification.

3.11 Managing adverse effects on indigenous biodiversity in geothermal ecosystems

- 1) This clause applies to adverse effects on indigenous biodiversity in geothermal ecosystems.
- 2) If there is a conflict between this clause and other provisions of this National Policy Statement, this clause prevails.
- 3) Where not already undertaken, regional councils must:
 - a. Make or change their regional plan(s) and/or regional policy statement to classify geothermal systems based on the primary management purpose of each system; and
 - b. Identify (and map where appropriate) any Significant Geothermal Features in a regionally consistent manner.
- 4) For activities associated with the use and development of geothermal resources, including the take, use and discharge of geothermal energy or geothermal water:
 - a. Clause 3.9 does not apply.
 - b. Local authorities must ensure that adverse effects are managed as appropriate to the geothermal system classification.
 - c. For indigenous biodiversity within geothermal ecosystems that have been identified as Significant Geothermal Features, local authorities must ensure:
 - i. Significant adverse effects are remedied or mitigated within any geothermal system that has been classified as a development system.
 - ii. Significant adverse effects are avoided within any geothermal system that has been classified as a protected system.
 - d. Local authorities must consider any biodiversity offset or biodiversity compensation measures proposed by a resource consent applicant, including for adverse effects within development or protected systems, and:
 - i. For biodiversity offset measures, the principles in Appendix 3 do not apply; and
 - ii. For biodiversity compensation measures, the principles in Appendix 4 do not apply.
 - e. Local authorities must provide for existing activities, and manage adverse effects as appropriate to the geothermal system classification.
- 5) For activities not covered by sub-clause (4), adverse effects will be managed in accordance with the other provisions of this National Policy Statement.

