Appendix 3: Statement of Evidence of Kelvin Lloyd

BEFORE THE HEARINGS PANEL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of the Proposed Selwyn District Plan

STATEMENT OF EVIDENCE OF KELVIN MICHAEL LLOYD ON BEHALF OF SELWYN DISTRICT COUNCIL

Ecosystems and Indigenous Biodiversity – Terrestrial Ecology

27 June 2022

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1. INTRODUCTION

1.1 My full name is Kelvin Michael Lloyd. I hold the position of Principal Ecologist at Wildland Consultants, based in Dunedin.

1.2 This evidence is given on behalf of Selwyn District Council.

Qualifications and experience

1.3 I hold the degrees of Bachelor of Science with First Class Honours, and Doctorate of Philosophy, both obtained from the University of Otago, where my studies were undertaken at the Department of Botany.

1.4 I am an author of 22 scientific papers published in peer-reviewed national and international scientific journals, as well as several popular articles. These papers have included research on forest ecology, rare species, disturbance, and weed invasion. I have also presented aspects of my research at national and international scientific conferences. I have lectured in plant ecology at 3rd year level at the University of Otago, and I remain an honorary research associate of Landcare Research Ltd. I am a member of the New Zealand Ecological Society, The New Zealand Biosecurity Institute, the Ornithological Society of New Zealand, the New Zealand Native Forest Restoration Trust, and the New Zealand Plant Conservation Network.

1.5 My work as an ecological consultant has covered a wide range of vegetation types, including wetlands, grasslands, shrublands, forests, and alpine habitats. This work has included ecological investigations of areas of vegetation throughout New Zealand, including sites in Canterbury, Otago, Southland, Westland, Nelson, Tasman, Marlborough, Northland, Auckland, Bay of Plenty, Hawkes Bay, Wairarapa, Horowhenua, Wellington, and the Chatham Islands. I have provided assessments for numerous development effects in natural areas, including provision of expert evidence in the Environment Court and Council hearings. I have also undertaken numerous ecological significance assessments for landholders and councils. I am an author of over 315 contract reports and have presented expert evidence in 29 Council hearings and 34 Environment Court hearings.

1.6 I have also provided councils with technical advice on vegetation clearance rules, ecological significance criteria, and biodiversity offsetting and compensation policies. This includes ecological advice I gave for the Selwyn District Plan review process for the operative Selwyn District Plan, and advice on ecological significance criteria in the operative Canterbury Regional Policy Statement. I also wrote non-statutory guidance on these criteria for Environment Canterbury. I have provided technical advice on ecological significance criteria in the Auckland Unitary Plan, and in the Otago Regional Policy Statement. I assisted

Mackenzie District Council with Plan Change 13 relating to wilding trees, and I am currently assisting the Council with Plan Change 18 relating to indigenous vegetation clearance rules. I am currently providing technical advice to a client in Marlborough regarding an indigenous vegetation clearance framework for the proposed Marlborough Environment Plan.

1.7 I have frequently provided technical advice to clients in relation to vegetation clearance, relating to clearance in Canterbury, Tasman, Otago, and Southland. In some of these cases I have assisted Councils with enforcement action, and in others I have assisted clients experiencing enforcement action.

Code of Conduct

1.8 I have read the Environment Court's Code of Conduct for Expert Witnesses 2014, and I agree to comply with it. I confirm that the issues addressed in this brief of evidence are within my area of expertise, except where I state I am relying on what I have been told by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

Purpose and scope of evidence

1.9 I have been asked by Selwyn District Council to provide technical advice on the merits of submissions on the proposed Selwyn District Plan, that relate to terrestrial indigenous biodiversity.

1.10 In preparing this evidence I have read the following documents:

a. The Ecosystems and Indigenous Biodiversity chapter of the proposed Selwyn District Plan, notified 5 October 2020.

b. Definitions for the proposed Selwyn District Plan, notified 5 October 2020.

c. Submissions by some 20 submitters on the Ecosystems and Indigenous Biodiversity chapter.

1.11 The key areas of the proposed EIB chapter that submissions focussed on were:

a. Policies (EIB-Policies), in particular EIB-P5.

b. The overview (EIB-Overview), where greater acknowledgement of the indigenous biodiversity values that characterise Selwyn District is requested.

c. Indigenous vegetation definition

d. Indigenous biodiversity definition

e. Improved pasture definition

f. Indigenous fauna definition

g. Indigenous vegetation clearance definitions

h. Other definitions

i. Vegetation clearance rules (EIB R1-25)

j. Lists of important vegetation/habitats/species (EIB-SCHED3)

k. The utility of a threatened species list

l. Significant natural areas and EIB-SCHED4

1.12 These parts of the proposed EIB chapter and the submissions on them are detailed in the sections below.

2. SUMMARY OF EVIDENCE

2.1 Policy EIB-P5 should refer to specified indigenous vegetation, habitats and species above the area thresholds identified in EIB-SCHED3, and to a list of Threatened and At Risk plant species if required.

2.2 Two naturally uncommon ecosystems, braided rivers and limestone outcrops, warrant specific consideration in the EIB-Overview. The overview description of the district's braided rivers warrants amendment with less focus on its degree of modification, and more focus on its habitat value, and the activities that have modified braided rivers. The role of indigenous vegetation in providing natural solutions to climate change can also be added. The list of protected areas in the high country can be expanded, and this section of the EIB-Overview can be amended to note intact natural sequences and an almost unbroken sequence of public conservation land from the Main Divide to the eastern foothills.

2.3 Numerous submissions focussed on the definition of 'indigenous vegetation', and the proposed definition warrants amendment. A concise and suitable definition of indigenous vegetation for Selwyn District could be:

A naturally occurring plant community containing plant species that are native to the area.

The proposed plan has a relatively narrow definition of 'indigenous biodiversity', and an definition based on an amended definition of the NPS-IB is warranted:

Indigenous biodiversity is biodiversity that is naturally occurring anywhere in New Zealand. It includes all New Zealand's ecosystems, indigenous vegetation, indigenous fauna, and the habitats of indigenous flora and fauna.

2.4 The proposed definition of 'improved pasture' should be retained.

2.5 The proposed definition of 'indigenous fauna' should be retained.

2.6 The definition of 'indigenous vegetation clearance' attracted many submissions. The proposed definition of indigenous vegetation clearance should be amended by including the term 'modification':

The clearing, modification, or removal of indigenous vegetation by any means, including over-grazing, cutting, crushing, cultivation, spraying, irrigation, chemical application, drainage, stop banking, overplanting, over sowing, or burning.

2.7 Over-grazing, over-planting, and over-sowing warrant further definition and being listed among the existing definitions. Suggested definitions of these terms are:

Over-planting means the planting of exotic plants into an area of indigenous vegetation.

Over-grazing/trampling means the practice of confining farm stock to an area of land resulting in the depletion or destruction of indigenous vegetation by intensive grazing and/or trampling.

Over-sowing means the over-sowing of exotic seeds on land that cannot be proven to have been over-sown in the past as part of a farming operation.

2.8 Other definitions are proposed by submitters, including definitions of 'regular cycle', 'ancillary rural earthworks', 'native grasslands', and 'oversowing and topdressing of native grasslands' These definitions have no current plan links, and variable utility.

2.9 Numerous submissions related to indigenous vegetation clearance rules. In general, the proposed framework is permissive and does pose a risk of adverse effects on significant indigenous vegetation and significant habitats of indigenous fauna, which is heightened because of the absence of scheduled SNAs in EIB-SCHED4. A number of suggestions are made to improve the permitted clearance framework, including reference to an amended EIB-SCHED3, inclusion of an exemption for clearance of regenerating indigenous vegetation such as matagouri, and more restrictive provisions relating to permitted clearance within SNAs.

2.10 EIB-SCHED3 has utility in the permitted standards framework, as its descriptions of vegetation, habitats, and species will be more easily understood by landholders, which should result in better compliance with the standards. Adjustment to the area thresholds for some habitats are warranted, and inclusion of new descriptions for the 'Canterbury plains' and for cushion and mat communities is warranted. A list of Threatened and At Risk plant species could also be scheduled, and would have some utility through incentivising ecological assessments and assessing compliance.

2.11 An amended definition of 'significant natural area' is suggested by a submitter and is warranted, despite EIB-SCHED4 being currently empty.

An area identified as meeting the criteria set out in EIB-SCHED1 for determining significant indigenous vegetation and significant habitat of indigenous fauna, or an area listed in EIB-SCHED4 - Significant Natural Areas

2.12 As part of this district plan review process, two new SNAs suggested by Environment Canterbury should be the first SNAs to be scheduled within EIB-SCHED4.

3. POLICY EIB-P5

Upper Waimakariri/Rakaia Group submission

3.1 The submitter notes that Policy EIB-P5 refers to specified species, but there is no link to a schedule of these species. In general, when species are referred to, then a link is made to a list of threatened species in a plan schedule. This approach doesn't always provide good protection, as landholders are rarely able to identify threatened plant species. If the link was meant to be made to EIB-SCHED3, then Policy EIB-P5 should refer to '…specified indigenous vegetation, habitats and species above the area thresholds identified in EIB-SCHED3. The Director General of Conservation has submitted that a list of Threatened and At Risk species be included in the permitted status framework, and Policy EIB-P5 could also link to this list.

4. EIB-OVERVIEW

Canterbury Botanical Society submission

4.1 A submission from the Canterbury Botanical Society points out that numerous naturally uncommon ecosystems are present in Selwyn District, that they provide habitat for a disproportionate number of Threatened and At Risk species, and are easily overlooked.

4.2 I agree with these points made by the submitter. I note that naturally uncommon ecosystems are the same as those initially defined as 'historically rare ecosystems'[1] and which have also been referred to as 'originally rare ecosystems'.

4.3 Two naturally uncommon ecosystems, braided rivers and limestone outcrops, are characteristic features of Selwyn District. Limestone outcrops support numerous threatened plant species, while braided rivers are important habitats for indigenous fauna. These two naturally rare ecosystems warrant specific consideration in the overview. Other naturally rare ecosystems could be listed.

Hamish Rennie submission

4.4 Hamish Rennie firstly takes issue with the EIB-Overview statement that:

'The ecosystems within the braided rivers are also unique although they have been highly modified'

4.5 The submitter considers that braided rivers are not unique, and that their degree of modification is overstated. Revised wording is suggested by the submitter:

'The ecosystems within New Zealand's braided rivers are unique and those within Selwyn District continue to provide a significant contribution to the values associated with such ecosystems even though they have been highly modified'

4.6 It is suggested that this statement could be revised to make it more factual and less subjective while incorporating the submitters points:

'The braided rivers within Selwyn District are distinctive and continue to provide important habitats for indigenous fauna despite being modified by flood-protection works, weed invasion, and gravel extraction'

4.7 The submitter is also concerned the EIB-Overview ignores the evolutionary development of ecosystems and should have a focus on exotic species that are endangered in their place of origin, and suggests additional text for this.

4.8 The current EIB-Overview provides no context on ecological change in Selwyn District, but this would be helpful with respect to identifying the original natural vegetation cover of the

[1] Williams P.A., Wiser S., Clarkson B. and Stanley M.C. 2007: New Zealand's historically rare ecosystems set in a physical and physiognomic framework. *New Zealand Journal of Ecology 31*: 119-128.

District. To our knowledge, no potential natural ecosystem mapping has been undertaken in Canterbury Region, but within Selwyn District there is:

- A largely natural vegetation cover in the western mountains
- Modified and patchy indigenous cover on the Port Hills, Malvern Hills and on the lower slopes on the foothills of the western ranges, and in the inland basins of the Rakaia River and Waimakariri River.
- Largely exotic vegetation cover on the Canterbury Plains and in more intensively developed parts of the inland basins.

4.9 I do not support a focus in the chapter on exotic species that are rare in the original parts of their global range, as the key focus of the chapter should be on indigenous biodiversity, which is largely endemic to New Zealand. I note that Zoos in New Zealand increasingly play a part in the conservation of exotic species.

Forest & Bird submission

4.10 The Royal Forest and Bird Protection Society of New Zealand Inc. (Forest & Bird) suggests a range of changes to the EIB-Overview, including listing additional protected areas and important landforms, qualifying the modification of braided rivers, and listing as an additional function of indigenous vegetation, that it provides for nature-based solutions to climate change and climate change mitigation. Forest & Bird also request a description of the almost-continuous public conservation land in the high country part of the district, and that in these areas, there are intact vegetation sequences from the mountain tops to the valley floors.

4.11 These suggestions have merit, in particular, it is a notable omission that New Zealand's first-established conservation park protecting tussock grassland ecosystems, the Korowai-Torlesse Tussocklands Park, which is wholly within Selwyn District, is not currently listed in the EIB-Overview. The Castle Hill Conservation Area the submitter suggests should be included is already included in the EIB-Overview. The two other areas of conservation land listed by the submitter, which could be added to the EIB-Overview, are:

- Lake Pearson Moana Rua Conservation Area, centred on Lake Pearson.
- Peak Hill Conservation Area on the west side of Lake Coleridge

4.12 The submitter requests that two landforms - river margins and terraces - are included in the EIB-Overview description of 'areas with significant values'. This description is of broad

ecosystem classes (forest, shrubland, tussock-land, grassland, wetland) so landform descriptions such as 'river margins and terraces' are out of place in it.

4.13 I agree that river margins and terraces can provide important habitat, and this is to an extent addressed in some of the vegetation descriptions in EIB-SCHED3, List B, for example matagouri shrubland on alluvial surfaces.

4.14 As with the Hamish Rennie submission, Forest & Bird have an issue with the description of braided rivers as being highly modified, and request that the description be amended so that 'highly modified' includes only the lower reaches. The description suggested as a response to the Hamish Rennie submission is also appropriate here.

'The braided rivers within Selwyn District are distinctive and continue to provide important habitats for indigenous fauna despite being modified by flood-protection works, weed invasion, and gravel extraction'

4.15 I agree that Forest & Bird's suggestions for an amended description and additional function at the concluding part of the EIB-Overview would improve the current text. Climate change functions, such as carbon sequestration, are not listed as functions in the current text.

Indigenous vegetation and natural ecosystems are important because they have the following functions to:

- *provide natural solutions to climate change and resilience to its effects.*

4.16 Forest & Bird's request for a better description of protected areas and ecological sequences could be added to the third paragraph of the current EIB-Overview. The full paragraph, taking account of other aspects of Forest & Bird's submission, with suggested new text underlined, could read:

The high country is a mix of extensive tussock lands, shrublands, scrub, secondary and regenerating native forest, areas of original forest, improved pasture, and exotic forestry. <u>The high country is notable for intact natural sequences from valley floor to alpine ecosystems in places.</u> Several rare and threatened animal and plant species are found in the high country, including four endemic species in the Castle Hill Basin. Over 50% of the high country is under some form of protection, particularly in relation to its conservation values<u>, and west of State Highway 73 there is an almost unbroken sequence of public conservation land from the Main Divide to the eastern foothills</u>. These areas include Arthurs Pass National Park (114,356 hectares), of which approximately half is in the Selwyn District, and Craigieburn <u>Forest</u> Park, <u>Korowai/Torlesse Tussocklands Park,</u> Castle Hill Conservation Area, Lance McCaskill

Nature Reserve, Cave Stream Scenic Reserve, Lake Grasmere Scenic Reserve, Lake Pearson Moana Rua Conservation Area, and Peak Hill Conservation Area, which are wholly within Selwyn District. There are also extensive areas of indigenous grassland and shrublands, together with a number of forest remnants outside the conservation estate.

5. INDIGENOUS VEGETATION DEFINITION

5.1 Numerous submissions focussed on the definition of indigenous vegetation. The proposed definition is:

Naturally occurring flora containing plant species that are native to the area.

5.2 There are two parts to the definition of indigenous vegetation. Firstly, a definition of 'vegetation', and secondly, a definition of 'indigenous'.

5.3 A problem with the proposed definition of 'vegetation' is that it refers to 'flora containing plant species'. Flora are plant species, so this translates to 'species containing plant species', which does not make sense.

5.4 Environment Canterbury, Upper Waimakariri/Rakaia Group, Federated Farmers of New Zealand - North Canterbury, Environmental Defence Society, and the Director General of Conservation submit that the definition in the draft National Policy Statement on Indigenous Biodiversity (NPS-IB) (or a similar definition) be used:

means vascular and non-vascular plants that, in relation to a particular area, are native to the ecological district in which that area is located.

5.5 The draft NPS-IB definition of vegetation refers to 'vascular and non-vascular plants' but does not specify how many need to be present, so could define just two individual plants as 'vegetation'.

5.6 'Vegetation' generally refers to an assemblage or community of plants. The term 'community' is more deterministic than 'assemblage' reflecting an expected composition of plant species, and would be preferable because of this.

5.7 The next part of the definition relates to whether the assemblage or community is indigenous. The key matter is that they are present naturally within an area, rather than simply being 'native to the area'. This helps to exclude indigenous plants that are planted in gardens or other amenity areas. Alternatively, planted indigenous vegetation can be addressed in an exemption to the rules.

5.8 Forest & Bird submit that the notified definition be deleted and replace with a definition that specifies naturally-occurring plant species must be present:

Naturally occurring plant species native to the area.

5.9 The problem with this definition is that it doesn't require a community of plant species to be present. It is broader than the NPS-IB definition, in specifying a more ambiguous 'area', rather than an 'ecological district', but in practice, these two terms are likely to be interpreted similarly.

5.10 Indigenous vegetation definitions in older plans typically required the plant species that are native to an area to be dominant, with dominance typically expressed as an arbitrary percentage of plant cover. These rules have proved problematic in cases where important indigenous cushion and mat vegetation does not reach the cover threshold to achieve dominance. If a dominance term is required, the definition should not include arbitrary cover thresholds.

5.11 Trustpower Limited suggest that the proposed indigenous vegetation definition is replaced by one that is based on the NPS-IB definition, but which also includes a dominance term:

Means a predominant community of vascular and nonvascular plants that, in relation to a particular area, are native to the ecological district in which that area is located.

5.12 It is not clear what a 'predominant community' is, but I assume the submitter means a community dominated by native plants. As noted above, dominance terms in 'indigenous vegetation' definitions have been commonly used in plans, but have proved problematic.

5.13 Whether non-vascular plants need to be specified in the definition is moot. Non-vascular plants are still plants, and are covered by the general term 'plant'.

5.14 Taking into account all the above points, a suitable and concise definition of indigenous vegetation for Selwyn District could be:

A naturally occurring plant community containing plant species that are native to the area.

6. INDIGENOUS BIODIVERSITY DEFINITION

6.1 The proposed plan has a relatively narrow definition of indigenous biodiversity, that relates only to indigenous species:

Includes all plants and animals that occur naturally in New Zealand and have evolved or arrived without any assistance from humans. Indigenous species include migratory species visiting New Zealand on a regular or irregular basis.

6.2 Federated Farmers of New Zealand - North Canterbury and Trustpower, submit that this definition is replaced by the NPS-IB definition:

Indigenous biodiversity is biodiversity that is naturally occurring anywhere in New Zealand. It includes all New Zealand's ecosystems, indigenous vegetation, indigenous fauna, and the habitats of indigenous vegetation and fauna.

6.3 This definition is superior than the proposed definition, in that it has wider coverage than species, and includes indigenous ecosystems, vegetation, and habitats. It could be improved by referring to the habitats of indigenous flora, or plant species, rather than habitats of indigenous vegetation.

6.4 The Director General of Conservation submits that the proposed definition is amended by including New Zealand's ecosystems, habitats of indigenous vegetation, and fauna. This amended definition does not include habitats of indigenous flora/plant species, nor habitats of indigenous fauna.

6.5 Taking account of the points made above, I suggest that the following definition of 'indigenous biodiversity' would be appropriate for Selwyn District:

Indigenous biodiversity is biodiversity that is naturally occurring anywhere in New Zealand. It includes all New Zealand's ecosystems, indigenous vegetation, indigenous fauna, and the habitats of indigenous flora and fauna.

7. IMPROVED PASTURE DEFINITION

7.1 The proposed definition of 'improved pasture' is:

An area of pasture where exotic pasture species have been deliberately introduced, where those exotic pasture species dominate in cover and composition, and where the naturally occurring indigenous species are largely absent from that area

7.2 This definition includes a dominance term for exotic species cover and composition, and that the naturally occurring indigenous species (presumably plant species) are largely absent. This reflects a common scenario where scattered indigenous plants may be present in areas of improved pasture. Like most definitions of improved pasture, it requires an intent or action for deliberate introduction of exotic pasture species.

7.3 North Canterbury Fish and Game request that the proposed definition be deleted and replaced with a definition for 'converted pasture':

Converted pasture: grassland that has been converted to intensive pasture by cultivation and/or irrigation.

7.4 The submitter's definition of improved pasture would work in areas that can be cultivated and/or irrigated, but would not apply to improved pasture on hill country in Selwyn District.

7.5 Coleridge Downs Ltd submits that the improved pasture definition is amended for this reason, and means an area of pasture:

1. where exotic pasture species have been deliberately introduced; and

i. is used for livestock grazing and has been routinely or rotationally so used since 1 June 1996; or

ii. at any time on or after 1 June 1996 was modified or enhanced for the purpose of livestock grazing by cultivation, irrigation, oversowing, top-dressing, and/or direct drilling.

7.6 This definition broadens the scope to improved pasture on uncultivated land, but it may be difficult to assess compliance with it. For example, it may be difficult to verify whether oversowing and/or top dressing has been undertaken.

7.7 Forest & Bird requests that the proposed definition is deleted and replaced with a definition that requires mapping of improved pasture:

An area of pasture where indigenous vegetation has been fully removed and where the vegetation has been converted to exotic pasture or crops, at the time this plan was written, and that has been mapped.

7.8 This definition is mutually exclusive of indigenous vegetation, as it requires indigenous vegetation to have been fully removed. It also requires mapping of improved pasture. This mapping can be done, and would provide certainty, but the mapping step would require additional resources and time (at minimum, several months).

7.9 Overall, the proposed plan definition of improved pasture is the most practical of the definitions suggested. Mapping improved pasture would provide an alternative basis for this.

8. INDIGENOUS FAUNA DEFINITION

8.1 The proposed definition of indigenous fauna is.

All animals that occur naturally in New Zealand and have evolved or arrived without any assistance from humans. It includes migratory species visiting New Zealand on a regular or irregular basis.

8.2 Federated Farmers of New Zealand - North Canterbury request that this definition be deleted, and that the NPS-IB definition of 'indigenous biodiversity' adequately defines indigenous fauna.

8.3 The proposed definition provides more specificity than the NPS-IB definition of 'indigenous biodiversity', which does not define 'indigenous fauna'. The proposed definition explains what 'naturally occurring' means. On this basis, the proposed definition should be retained.

9. INDIGENOUS VEGETATION CLEARANCE DEFINITION

9.1 The proposed plan defines indigenous vegetation clearance as:

The clearing or removal of indigenous vegetation by any means, including over-grazing, cutting, crushing, cultivation, spraying, irrigation, chemical application, drainage, stop banking, overplanting, over sowing, or burning.

9.2 This definition is very broad, referring to clearance by any means, and specifying typical clearance mechanisms. Numerous submissions have focussed on this definition, with various alternative approaches suggested.

9.3 Environment Canterbury submit that the definition should be amended to include earthworks. From an ecological perspective, earthworks clear not only vegetation but underlying soil, and thus have the potential to generate long-lasting and significant adverse effects on indigenous vegetation and habitats. As noted above, the current definition refers to clearance 'by any means', which should cover earthworks, but earthworks could be listed to emphasise this mechanism of vegetation clearance.

9.4 The Upper Waimakariri/Raikaia Group submits that edge effects should be included as an example of vegetation clearance. Edge effects are typically cited when forest is cleared, leaving an exposed edge that experiences a changed microclimate, generally being more windy, less humid, and with more light. This can result in dieback of sensitive ground layer and understorey vegetation within the uncleared forest. Edge effects are more a modification of vegetation, and many vegetation clearance definitions include 'modification'. If the

definition included 'modification' as well as clearance and removal, this would address effects generated despite vegetation being not fully clear or remove vegetation, such as edge effects, and herbicide spraying that kills some indigenous plants but not others.

9.5 Horticulture New Zealand submits that the proposed definition is deleted, on the basis that actions such as irrigation, drainage, and stop-banking are not means of vegetation clearance, and replaced with:

The modification, burning, cutting, crushing, spraying, and removal by physical, mechanical, chemical or other means of indigenous vegetation.

9.6 The submitter also requests clarification of the meaning of 'over-planting' and 'over-sowing', in particular that these would not apply to planting or sowing of indigenous species.

9.7 Drainage, irrigation, and stop-banking are activities that can result in direct or indirect vegetation clearance, so all warrant inclusion in the definition for clarity. Over-planting and over-sowing could be defined further.

9.8 The submitter also requests three exclusions to the vegetation clearance definition, these being clearance associated with routine maintenance of shelterbelts, clearance of scattered trees, shrubs, or regenerating bush amongst pasture or horticultural crops, and vegetation infected by an unwanted organism. If these matters were addressed as exemptions, shelter belt clearance would be more appropriate as an exemption to the definition of indigenous vegetation. Vegetation affected by unwanted organisms could be addressed under the Biosecurity Act. Alternatively, these matters could be addressed as exemptions to the vegetation clearance rules.

9.9 Beef + Lamb New Zealand and Deer Industry New Zealand want the definition of indigenous vegetation clearance amended to ensure that it refers to the clearance of the majority of plants present, and not to individual plants.

9.10 The indigenous vegetation clearance definition specifically refers to indigenous vegetation, and not to individual plants, but the 'indigenous vegetation' definition would also need to. A broad definition of indigenous vegetation clearance is appropriate, while rules can be used to limit its application if necessary. This issue should be reassessed once the definition of 'indigenous vegetation' becomes agreed.

9.11 Dairy Holdings Ltd and Craigmore Farming Services Ltd submit that drainage should be specified as 'artificial drainage' on the grounds of not capturing natural drainage. The submitter is also concerned that the definition is enforceable, and that terms such as 'over

grazing' need more definition. In my experience, adding the word 'artificial' to drainage is not necessary, as drainage is widely understood to refer to anthropogenic causes. Terms such as 'over-grazing', 'over-planting', and 'over-sowing' could all be subject to more definition.

9.12 Forest & Bird submits that the vegetation clearance definition is amended by adding the causes of shading or invasion, and that edge effects need to be included. Over-planting includes clearance by shading, and in general, shading from one side would not result in clearance of indigenous vegetation, though could result in slight modification. Weed invasion would not normally be considered invasion because it is an 'ecological process', but invasion by wilding trees is more predictable and could be considered. Including 'modification' in the indigenous vegetation clearance definition would meet some of the submitters concerns.

9.13 Federated Farmers of New Zealand - North Canterbury submit that the proposed definition is deleted and replaced by a new definition:

Indigenous vegetation clearance means the removal of indigenous vegetation by cutting, crushing, application of chemicals, drainage, burning, cultivation, over-planting, application of seed of exotic pasture species, mobstocking and/or changes to soils, hydrology or landforms. It does not include grazing, trimming, or damage to indigenous vegetation where the vegetation is able to regenerate.

9.14 This definition refers to only removal of vegetation, and not modification, and applies only to the specific clearance mechanisms that are included in the definition. A such it has a narrower focus than the proposed definition, in that irrigation, drainage, and stop banking are not listed, and clearance by any means is not specified. It is not clear how the compliance with the proposed exclusions would be assessed, and if used, terms such as 'trimming' and scenarios of vegetation regeneration would need further definition. The proposed definition is therefore preferred.

9.15 The Director-General of Conservation supports the proposed definition but seeks that 'trampling' be added as a mechanism of clearance to address the impact of cattle in sensitive ecosystems such as mossfield and kettleholes. 'Trampling' could be added, as it doesn't constrain or expand the proposed definition, but it may be best treated as a component of over-grazing, and defined with that term.

9.16 Duncan and Kate Calder and Robin Jamison and Richard Reed submit that the use of terms 'over-grazing', 'over-planting' and 'over-sowing' are all vague and need more explicit definition. The submitters suggest an alternative definition that goes some way to better-defining over-grazing and over-sowing, and deletes reference to over-planting.

9.17 In summary, the proposed definition of 'indigenous vegetation clearance' should be amended to include the term 'modification', and could then be defined as:

The clearing, modification, or removal of indigenous vegetation by any means, including over-grazing, cutting, crushing, cultivation, spraying, irrigation, chemical application, drainage, stop banking, overplanting, over sowing, or burning.

9.18 Over-grazing, over-planting, and over-sowing could be subject to further definition and listed among the existing definitions. Suggested definitions of these terms are:

Over-planting means the planting of exotic plants into an area of indigenous vegetation.

Over-grazing/trampling means the practice of confining farm stock to an area of land resulting in the depletion or destruction of indigenous vegetation by intensive grazing and/or trampling.

Over-sowing means the over-sowing of exotic seeds on land that cannot be proven to have been over-sown in the past as part of a farming operation.

10. OTHER DEFINITIONS

10.1 Forest & Bird seeks a new definition for edge effects. As described above, edge effects can be included in the definition of 'indigenous vegetation clearance' by adding a 'modification' term. This solution is preferable as 'indigenous vegetation clearance' is already referred to in proposed vegetation clearance rules.

10.2 Forest & Bird also request a new definition for 'regular cycle', depending on whether the submitter's gains relief to other submissions on rules and definitions. The suggested 'regular cycle' definition is from the NPS-IB:

The periodic clearance of regenerating indigenous vegetation that is demonstrated to be part of a consistent management regime in place for the purpose of maintaining improved pasture

10.3 This term has utility and could help to meet the concerns of other submitters who are concerned about regenerating vegetation.

10.4 Federated Farmers of New Zealand - North Canterbury request a new definition of 'ancillary rural earthworks' is inserted:

Ancillary rural earthworks means any earthworks associated with the maintenance and construction of facilities typically associated with farming activities, including, but not limited to farm tracks/roads (up to 6m wide), landings, stock races, silage pits, farm drains, farm

effluent ponds, feeding pads, fencing and erosion and sediment control measures, and burying of material infected by unwanted organisms (as declared by Ministry of Primary Industries Chief Technical Officer or an emergency declared by the Minister under the Biosecurity Act 1993)

10.5 If the intention is to provide a permitted activity framework for 'ancillary rural activities', there is a significant risk that this could adversely affect areas of indigenous vegetation and habitat, including significant areas. This is particularly risky with no significant natural areas currently scheduled in the plan. Activities within the suggested definition that could generate significant adverse effects include construction of farm tracks/roads, drainage works, and construction of effluent ponds.

10.6 This submitter also requests an insertion of a new definition for 'native grasslands':

Native grasslands - Means land used for dryland, pastoral grazing which may have had exotic species deliberately or accidentally introduced, but where indigenous species are still visually apparent in and are regenerating or are able to regenerate. It includes tussock grasslands and woody scrubland which is oversown or top-dressed.

10.7 This definition could tie in with a permitted framework for over-sowing and top-dressing, as these activities can generally be undertaken over hill country areas that have previously experienced routine over-sowing and top-dressing, without significant changes to indigenous cover and composition.

10.8 This submitter also requests an insertion of a new definition for 'over-sowing and topdressing of native grasslands':

Oversowing or topdressing of native grasslands - Means the application of fertiliser or grass seed by manual or mechanical means to 'native grasslands' in circumstances where the indigenous vegetation cover is not removed or is allowed to regenerate.

10.9 As noted above, this could be provided for without significant adverse effects in areas where over-sowing and topdressing has been routinely applied as part of farm management in the past.

11. INDIGENOUS VEGETATION CLEARANCE RULES

11.1 The majority of submissions focus on the framework governing the activity status of indigenous vegetation clearance.

11.2 Ellesmere Sustainable Agriculture Inc submits that an amendment is made to proposed rule EIB-R1.4 to provide two further exemptions to the rule:

v. has been planted as part of an ecological or enhancement restoration project and has grown in an area reducing or diverting natural waterbody flow;

vi. has been planted as part of an ecological or enhancement restoration project and has died, fallen or shifted location due to natural processes.

11.3 Proposed rule EIB-R1.4c already allows clearance of indigenous vegetation causing imminent danger to human life, structures, infrastructure, or important infrastructure, which allows indigenous vegetation to be cleared if there is danger, or waterway blockage that would cause danger or damage to infrastructure. This would mean the submitters first exemption is not required. The second exemption relates to vegetation in an ecological restoration project that has died, fallen, or shifted location due to natural processes. In such projects, any dead or fallen indigenous vegetation should ideally be left on site, but could be moved and/or cut up to facilitate access and safety considerations. In general vegetation clearance rules do not apply to dead vegetation. The proposed rule framework does not provide an exemption for vegetation that is regenerating after previous lawful clearance, or regenerating on land previously clear of indigenous vegetation, but this could be considered.

11.4 The submitter also seeks to amend rule EIB-R1.20, which restricts clearance within ten metres of lakes, by adding an exemption for the clearance of dead and damaged vegetation. Clearance of willows already has an exemption, provided that it is undertaken between March and August, and dead vegetation could be included in this exemption if necessary for the avoidance of doubt. Clearance of damaged vegetation is not supported as an exemption, as assessment of damage is subjective and damaged vegetation may recover.

11.5 Environment Canterbury seek to amend rule EIB-R1.8., by removing text that permits clearance of 500 m2 of indigenous vegetation per hectare over a 5-year period. The submitter suggests this would undermine Objective EIB-O1.1 in the absence of having significant natural areas scheduled in the plan.

11.6 I agree that this clearance could result in adverse effects on significant indigenous vegetation, and therefore support the submitter's suggested amendment. I note that EIB-SCHED3, which is referred to in EIB-R1.8 focusses on vegetation and habitats, not all of which have listed species, hence the text of constraint b. could be changed to refer to the 'vegetation/habitat types' not listed in List A.

11.7 Environment Canterbury also seek to amend Rule 1.12 in the same way, which I support. As with EIB-R1.8, a constraint to clearance in EIB-R1.12 refers to 'species' in List B, and should refer to 'vegetation/habitats' as these are focus of List B and some habitats have no species listed.

11.8 Environment Canterbury also seeks to remove rule EIB-R1-22 and combine it with an amended rule EIB-R1.24 which it believes will have the same outcome while being more efficient. The submitters preferred amendment would provide restricted discretionary status to promote use of biodiversity management plans, but if these do not accompany applications, activity status would be fully discretionary. The suggested combination of these rules does not include the protection of uncultivated land on the Canterbury Plains.

11.9 Environment Canterbury suggests an alternative solution, which is to delete rules EIB-R1.8, EIB-R1.12, EIB-R1.22, and EIB-R1.24, and replace it with a new rule, which similarly has restricted discretionary status provided that clearance is not within an SNA, and is accompanied by a Biodiversity Management Plan in accordance with EIB-SCHED2.

11.10 The vegetation and habitats within List A and List B of EIB-SCHED3 are not part of this suggested framework, which is a weakness of it. Under the Biodiversity Management Plan approach, significance assessment is only undertaken for areas of 'high biodiversity value' according to the criteria in 'EIB-APP1' (which appears to have been changed to EIB-SCHED1), and those criteria do not refer to EIB-SCHED3. In addition, the vegetation and habitats listed in EIB-SCHED3 are more intuitive than the ecological significance criteria, and more likely to be understood by landholders. In my opinion, clearance should not be within a vegetation/habitat within EIB-SCHED3, in addition to not being within an SNA, if this rule is adopted into the plan.

11.11 In addition, the suggested framework does not include the EIB-R1.24 provision that restricts clearance of indigenous vegetation on uncultivated land on the Canterbury Plains. This provision should in my opinion be retained.

11.12 Environment Canterbury submit that limited clearance of indigenous vegetation in the Port Hills Indigenous Biodiversity Overlay, the Hills and High Country Indigenous Biodiversity Overlay, and the Major Rivers Overlay is likely to undermine EIB-O1.1 in the absence of scheduled SNAs, and thus seeks deletion of EIB-R1.4m and EIB-R1.4n which establish maximum clearance thresholds within these areas.

11.13 Forest & Bird also submit that permitted clearance under EIB-R1.24m would not be consistent with the Council's requirement to maintain indigenous biodiversity.

11.14 The Director-General of Conservation also opposes EIB-R1.4, submitting that it allows for large scale clearance without consideration of the potential adverse effects on indigenous vegetation and indigenous fauna. The submitters key concern with EIB-R1.4 is that it relates to only two overlays, and seeks area thresholds for permitted clearance.

11.15 Conversely, Mt Algidus Station, Glenthorne Station, Lake Coleridge, Mt Oakden, and Acheron Stations (the Stations) submit that permitted indigenous vegetation clearance under EIB-R1.4n is too restrictive, and seeks a larger permitted clearance area (800 m^2) over a shorter (2 year) period, in particular to deal with regrowing matagouri.

11.16 I agree that the permitted clearance levels in EIB-R1.4m and EIB-R1.4n could risk clearance of significant natural areas. This risk could be minimised by allowing such clearance only outside SNAs and only above the area thresholds for vegetation and habitats listed in a revised EIB-SCHED3. A revised EIB-SCHED3 could also help address the concerns that the Stations have with respect to clearance of matagouri. This is discussed further in the section of my evidence that deals with EIB-SCHED3.

11.17 The Director-General of Conservation opposes EIB-R1.6 as providing no certainty that values within an SNA will be protected. I agree that further restriction on the activities outlined in the proposed EIB-R1.6 is warranted. In particular, the provision in EIB-R1.6f to clear indigenous vegetation in an SNA to remove a potential fire risk comprises a loophole that could allow considerable clearance of SNA values. This reference to fire risk should be removed. There also needs to be area or other thresholds for vegetation clearance under EIB-R1.6a-c, so that maintenance, repair, and replacement activities do not result in loss of the significant values of SNAs. Commonly, permitted clearance of SNA vegetation for maintenance of linear features such as fences and farm tracks is restricted to a narrow corridor along the feature.

11.18 Horticulture New Zealand seeks to either retain EIB-R1.4 and amend the definition of indigenous vegetation clearance, or amend EIB-R1.4 so that it allows routine maintenance of shelter belts, clearance of scattered trees or shrubs or regenerating bush, and clearance of vegetation infected by unwanted organisms. These concerns have been partly dealt with in my response to the indigenous vegetation clearance definition. There is no exemption for regenerating indigenous vegetation on land that has previously been lawfully cleared. Such exemptions are typically provided for in district plans, in districts where regenerating indigenous vegetation has a history of being controlled by landholders.

11.19 An exemption could be provided for vegetation clearance outside SNAs and outside vegetation/habitats listed in SCHED3. A tentative exemption is suggested below:

Clearance of indigenous vegetation from areas that within the last ten years, have been cultivated or clear of such vegetation, provided that the clearance is associated with a permitted land use.

11.20 Dairy Holdings Ltd and Craigmore Farming Services Ltd submit that indigenous vegetation clearance within an area of improved pasture (EIB-R1.24) is not a matter that requires control, as improved pasture will have been formed by cultivation or direct drilling. However improved pasture has not necessarily been established by cultivation or direct drilling, as in hill country it will have been established by fire and/or mechanical clearance of indigenous vegetation and ongoing grazing. In these circumstances there are more likely to be areas of indigenous vegetation in areas of pasture that have not been cultivated in the past.

11.21 Rakaia Irrigation Ltd submits that the reference to past cultivation is removed from EIB-R1.24. This would make the rule more restrictive, and apply to all areas of improved pasture on the Canterbury Plains, rather than just those areas that have never been cultivated. This does not reflect the intention of the proposed rule.

11.22 The Director-General of Conservation opposes EIB-R1.24 and suggests it is replaced by a time-bound improved pasture condition, for example where maintenance has occurred within the previous ten years. In my opinion this suggestion would be make it more difficult to assess compliance. Unlike the proposed rule, it doesn't focus on the key issue of potential clearance of uncultivated land, which is now rare on the Canterbury Plains. In contrast, uncultivated land can generally be clearly distinguished, due to the persistence of original braided channel landforms. The proposed EIB-R1.24 is supported.

12. EIB-SCHED3 VEGETATION/HABITAT/SPECIES LISTS

12.1 Waka Kotahi supports the inclusion of EIB-SCHED3, but considers it should be reviewed to determine if all areas and types listed are appropriate.

12.2 The Director-General of Conservation submits that EIB-SCHED3 should be amended to include other naturally rare and threatened ecosystems in Canterbury, and suggests other specific amendments.

12.3 The description of vegetation types, habitats, and species in EIB-SCHED3 have significant utility in the framework or rules governing indigenous vegetation clearance, as these descriptions are more likely to be understood and correctly interpreted by landholders than the ecological significance criteria in EIB-SCHED1 or the list of threatened species in the current plan. In the proposed plan, EIB-SCHED3 is only referred to in rules EIB-R1.8 and

EIB-R1.12. EIB-SCHED3 could also be used where appropriate in other rules, so that indigenous vegetation clearance is not permitted above the thresholds within EIB-SCHED3.

12.4 The additional ecosystems identified in the Director-General of Conservation submission are the Canterbury Plains, braided rivers, and Te Waihora. Of these suggestions, Canterbury Plains is a large region rather than an ecosystem, but it could be listed in List B, as very little indigenous vegetation remains on the Canterbury Plains. Vegetation clearance in water bodies is generally a responsibility of the regional council and this point is made in the Environment Canterbury submission. Thus braided rivers and Te Waihora probably do not need to be included in EIB-SCHED3. A suggested description of the Canterbury Plains in List B could be:

- *Any indigenous vegetation on the Canterbury Plains.*

12.5 List A refers to areas of indigenous vegetation and habitats in the Port Hills area. It is appropriate that no maximum area of clearance are associated with old growth forest, as this would take centuries to remedy. The Director-General of Conservation submits that rimu (*Dacrydium cupressinum*), miro (*Prumnopitys ferruginea*), and cedar (*Libocedrus bidwilii*) should be added to the trees in the old-growth description, and I agree that this is warranted, albeit these species prefer moist forest which will be of limited extent in the Port Hills Area.

12.6 In my opinion, there should also be no permitted clearance of regenerating podocarp/hardwood forest or mixed hardwood forest, which currently is associated with a permitted clearance threshold of 0.1 hectares.

12.7 The low altitude small-leaved shrubland is also likely to be an important ecosystem that should have no permitted clearance. It is not clear whether the shrubland needs to include all or just one of the listed shrub species, and in my opinion the description should refer to 'one or more' of the listed species being present. The Director-General of Conservation suggests adding matagouri to the small-leaved shrubland description, and this is supported for the Port Hills Area.

12.8 In my opinion it would be more appropriate to have a 0.1 hectare maximum clearance threshold for mature and/or regenerating kānuka forest where any individual kānuka are 4 metres or greater in height.

12.9 List B refers to the Hills and High Country Area and River Areas. In my opinion, there should be no permitted clearance of low-elevation small leaved shrubland or subalpine mixed shrubland, as these are important shrubland types that often provide significant habitat for indigenous lizards and invertebrates. The Director-General of Conservation requests

additional shrubs are added to the small leaved shrubland description, comprising mānuka (*Leptospermum scoparium*), kānuka (*Kunzea robusta*) and makahikatoa (*Kunzea serotina*). These additions are supported. As with the descriptions in List A, it is not clear whether all of the listed species, or just one of them, needs to be present to trigger non-permitted status. In my opinion the presence of just one of the listed shrub species should need to be present to trigger non-permitted activity status.

12.10 The Director-General of Conservation also requests the addition of matagouri to the small-leaved shrubland description, and to the subalpine shrubland description. Provisions relating to matagouri in the Hills, High Country, and River Areas require careful consideration, because matagouri is known to respond positively to application of superphosphate fertiliser, and farmers often seek to clear regrowing matagouri to preserve pasture and access (e.g. the Stations submission). Low-stature matagouri-dominant shrubland is generally less ecologically important, for example other small-leaved shrubs, such as species of *Hebe*, *Olearia*, *Coprosma*, *Dracophyllum*, and tauhinu (*Ozothamnus vauvilliersi*) are known to provide habitat for a much-richer assemblage of indigenous Lepidoptera (moths and butterflies) than matagouri[2].

12.11 EIB-SCHED3 already contains a provision protecting matagouri on depositional surfaces, and I agree with the Director-General of Conservation submission that matagouri on moraine landforms should also be part of this description. In my opinion, matagouri does not need to be added to the small-leaved shrubland and subalpine shrubland descriptions if a 'one or more' approach is used to trigger activity status, as it is the more diverse shrublands containing assemblages of the other listed species, often together with matagouri, that are ecologically important. For example, these more diverse shrublands are often present in riparian areas and gullies where they help to shade and buffer streams.

12.12 The Director-General of Conservation submission suggests that density thresholds should not be used to define short tussock grasslands, on the basis that these thresholds might exclude depauperate or degraded grasslands that still comprise significant indigenous vegetation and habitat. This highlights that the descriptions do not include low stature cushion and mat vegetation which often contains scattered short tussocks and may be ecologically significant. Cushion and mat vegetation could be described as:

[2] Patrick B.H. 2021: Indigenous hostplants of New Zealand's endemic Lepidoptera. *Canterbury Botanical Society Newsletter 52*: 4-36.

- *Cushion and mat vegetation with one or more species of Raoulia., Pimelea,, Acaena, Epilobium., or Muehlenbeckia. Scattered short tussocks and/or matagouri may also be present.*

12.13 In addition, the amount of permitted clearance could depend on whether these grassland types are present on depositional surfaces, or are on hillslopes, as their ecological importance varies between these habitats[3]. There could be no permitted clearance of short tussock grassland on the more ecologically-important depositional surfaces, while allowing 0.25 hectares of permitted clearance on hillslopes.

12.14 Depositional surfaces are more important ecologically as they tend to be more productive sites that indigenous vegetation has been widely cleared from, are subject to natural disturbance regimes that help indigenous vegetation to persist, and often provide habitat for Threatened and At Risk plants, lizards, and invertebrates.

12.15 Furthermore, the canopy cover threshold for silver tussock grassland could be reduced to 20%, consistent with the threshold for hard tussock grassland.

12.16 Including a description of cushion and mat habitat types, allowing permitted clearance of short tussock grassland only on hillslopes, and reducing the canopy cover threshold for silver tussock grassland, may resolve the Director-General of Conservation's concerns with respect to short tussock grasslands.

12.17 I agree with the Director-General of Conservation that there should be no permitted clearance of rock outcrops or limestone substrates. These habitats can have significant indigenous vegetation and significant indigenous fauna habitat, and would generally require an effects assessment to determine if consent for clearance should be granted.

13. THE UTILITY OF A THREATENED SPECIES LIST

13.1 The Director-General of Conservation requests that a list of Threatened and At Risk vascular plant species is included in the framework for determining permitted vegetation clearance. The list provided by the submitter is comprehensive and based on the current national threat classification for vascular plant species[4].

[3] Shanks A., Glenny D., Gibson R., Rosser K., Roozen D., Phillipson S., Steven J., and Arand J. Coleridge, Craigieburn, and Cass Ecological Districts. Survey report for the Protected Natural Areas Programme. Department of Conservation, Wellington.

[4] de Lange P.J., Rolfe J.R., Barkla J.W., Courtney S.P., Champion P.D., Perrie L.R., Beadel S.M., Ford K.A., Breitwieser I., Schönberger I., Hindmarsh-Walls R., Heenan P.B. and Ladley K. 2018: Conservation status of New Zealand indigenous vascular plants, 2017. *New Zealand Threat Classification Series 22*. Department of Conservation, Wellington. 82 pp.

13.2 In my opinion an amended EIB-SCHED3 will provide more value than a species list, as the descriptions in EIB-SCHED3 will be more easily interpreted by landholders than a plant species list. However, a list can still have some utility, as it may incentivise an ecological assessment being commissioned prior to any clearance, and facilitate assessment of compliance. The list provided by the Director-General of Conservation could therefore be used in the permitted status framework.

14. SIGNIFICANT NATURAL AREAS AND EIB-SCHED4

14.1 The Director-General of Conservation submits that the definition of a significant natural area is amended. The proposed plan definition is:

An area identified as meeting the criteria set out in EIB-SCHED1 for listing in the district plan as a significant natural area in relation to indigenous biodiversity.

14.2 The submitter suggests this is amended by referring to Schedule EIB-SCHED4, which would ultimately be the schedule for scheduled significant natural areas. The submitters preferred definition is:

An area identified as meeting the criteria set out in EIB-SCHED1 for determining significant indigenous vegetation and significant habitat of indigenous fauna, or an area listed in EIB-SCHED4 - Significant Natural Areas.

14.3 This suggested assessment is reasonable, as the first significant natural areas could be listed in EIB-SCHED4 as part of the district plan review process, and further areas could be adopted as plan changes.

14.4 Environment Canterbury submit that two areas of long term lease land at West Melton meet the criteria for ecological significance and warrant inclusion in EIB-SCHED4 and the Significant Natural Areas Overlay. I agree that these sites meet the ecological significance criteria in EIB-SCHED1 and that they warrant inclusion in EIB-SCHED4 and the Significant Natural Areas Overlay. These sites are examples of uncultivated land on the Canterbury Plains, which is a focus of EIB-R1.24, and have very high ecological value.