

IN THE MATTER of the Resource
Management Act 1991

AND

IN THE MATTER of the Proposed One Plan
notified by the Manawatu-
Wanganui Regional Council,
hearing related to
Biodiversity & Heritage

STATEMENT OF EVIDENCE OF WILLIAM BRUCE SHAW

INTRODUCTION

1. My name is William Bruce Shaw. I am Principal Ecologist and a Director of Wildland Consultants Ltd, based in Rotorua. I have a Master of Science degree from the University of Canterbury, 1980, and a Bachelor of Science in Earth Sciences and Biology from the University of Waikato, 1977. My professional memberships include the Royal Society of New Zealand, the New Zealand Ecological Society, the New Zealand Biosecurity Institute, the Ornithological Society of New Zealand, the New Zealand Botanical Society, the New Zealand Association of Resource Managers, and the Resource Management Law Association.
2. I am the author of 24 conference papers, 27 scientific or technical publications, 39 published articles, and more than 300 reports on ecological issues.
3. I have been a practising ecologist since 1980, and have lectured in ecology and nature conservation at Lincoln College and the Waiariki Institute of Technology. I previously worked for a consulting firm in Christchurch, and have undertaken ecological survey work and related assessments in urban, rural, and remote back country situations over more than 30 years. From 1986-1990 I was employed as a Scientist by the Forest Research Institute, Rotorua, specialising in forest ecology, threatened plants, vegetation mapping, and the management of natural areas. From 1990 to 1996 I was a

Conservancy Advisory Scientist (1990-1994) and then (1994-1996) Protection, Planning and Use Manager for the Department of Conservation.

4. Since 1996 I have been Principal Ecologist and Director of Wildland Consultants Ltd. I have particular expertise in ecological management (especially ecological restoration), the evaluation of ecological significance, and the assessment of ecological effects of actual and proposed land uses.
5. I have worked on many projects in the Manawatu-Wanganui Region, including:
 - Botanical surveys of the upper Moawhango catchment and north-west Ruahine Ranges;
 - Large-scale natural area surveys in various parts of the region, including Taumaranui Ecological District, lowland Wanganui, and Manawatu Plains;
 - Restoration of wetlands in the Ohau area;
 - A national-level comparison of remnant indigenous ecosystems in the Horowhenua and other parts of New Zealand;
 - Willow control along the Moawhango River (oversight of the implementation programme);
 - Ecological restoration planning for the Moawhango River;
 - Ecological assessment of potential wind farms, and associated ecological mitigation packages and revegetation trials;
 - Ecological restoration planning for the cut-off loop of the Manawatu River, at Foxton;
 - Industrial and residential development in Palmerston North;
 - Extension of “The Chateau” in Tongariro National Park;
 - Proposed coastal subdivisions at Himatangi and Waitarere.

OTHER RELEVANT EXPERIENCE

6. I have been involved in the identification of Significant Natural Areas and related protection measures in statutory plans since the early 1980s. My experience includes:
- membership of a project team to develop the vegetation and classification used in Landcover Database Version 2 (published by Terralink in 2004);
 - involvement in many natural area surveys for district and regional councils;
 - development of a ranking system for natural areas that has been applied nationally for 20 years;
 - development of national and regional level vegetation classifications;
 - application of heritage criteria in Policy Statements;
 - preparation of District Plan provisions relating to indigenous biodiversity;
 - application of District Plans in many parts of New Zealand.
7. I have also written regional policy on indigenous biodiversity, including natural heritage criteria (Bay of Plenty Regional Policy Statement), operational policy for implementation of biodiversity on private lands (Bay of Plenty Region 2000), and I am the lead author of a technical guideline for application of natural heritage criteria in the Waikato Region, for Environment Waikato.
8. I have read the Code of Conduct for Expert Witnesses 2006 and have complied with it in the preparation of this statement of evidence and have applied it as if it were a duty to the Hearings Panel. Except where I state that I am relying upon the specified evidence of another person, my evidence in this statement is within my area of expertise. I have not omitted

to consider any material facts known to me that might alter or detract from the opinions which I express below.

INVOLVEMENT WITH THE PROPOSED ONE PLAN

9. In 2007 I reviewed biodiversity provisions in the Proposed One Plan for Mighty River Power Limited (“Mighty River Power”) and reported on those findings prior to Mighty River Power’s submissions being lodged with the Council.
10. In June 2008 I attended a meeting with Council and Mighty River Power staff to discuss and clarify relevant parts of the Proposed One Plan.

RELEVANT DOCUMENTS

11. My evidence focuses on the biodiversity provisions in the Proposed One Plan, and the section 42A report of Ms Fleur Maseyk, both of which I have read. I have also read the evidence (Section 42A report) of Mr John Maasen and Mr Alistair Beveridge, on indigenous biodiversity.

SCOPE OF EVIDENCE

12. My evidence addresses the following aspects of the Proposed One Plan:
 - Wording of Objective 7-1.
 - Various aspects of Schedule E.

SUMMARY OF EVIDENCE

13. In general I support the recommendations made by Ms Maseyk in her evidence (section 42A report) and the recommendations made in the Officer Report, however there are some matters where I disagree with those recommendations or consider that additional changes can be made to improve the workability and certainty of the Policy Statement and Plan.
14. In particular I recommend the following changes:

- that Objective 7-1 (and policies 7-2 and 7-3) are reworded to make it clear that assessments of effects undertaken under the ambit of this plan, using the criteria “representativeness”, “rarity and distinctiveness” and “ecological context” are related to the features that make a site ecologically significant.
- that the maps provided in the Proposal One Plan, and in respect of this part of the hearing. Figure E.1 in particular, should be at a better scale and higher resolution, to allow more certain interpretation and application of the Plan;
- that Table E.1 in Schedule E requires further amendment to provide greater precision and certainty for users in determining what is and is not defined as a habitat for the purposes of the Proposed One Plan.
- amendment of Table E.1, as per the evidence of Ms Maseyk, should address the following matters:
 - the description of “kanuka forest” should be used as a template for the type of level of detail to be provided in other habitat descriptions;
 - more detail should be provided in the “Defined As” column of Table E.1, which could be achieved by shifting much of the information in the “Indicative Description” column into that column;
 - the references to Leathwick *et al.* 2005 and other stand-alone documents in the “Defined As” column should be shifted to a new column, with the title of “Further Definition if required”, or similar;
 - the term “broadleaf” should be removed and replaced with “broadleaved”.
- The definitions of habitats in Table E.1 could be reviewed by a caucus of relevant specialists during the course of this hearing.
- Twelve habitats have been removed from Table E.1 and two have been added and I support these changes.

- Major changes to Table E.3 are proposed by Ms Maseyk in her evidence, and I support her recommendation.
- Ms Maseyk has also recommended that Water Management Zones and Sub-zones are not used for the purpose of ecological evaluation, and I support that recommendation.
- I have also suggested a change to the definition provided for the criterion “ecological context”, to clarify that it applies to indigenous habitats.

OVERVIEW OF ONE PLAN APPROACH

15. In preparing the Proposed One Plan, the Council has acknowledged the difficulties associated with preparing a Policy Statement and Plan to protect indigenous biodiversity across a large and varied region with an uneven and patchy level of information on indigenous vegetation and habitats of indigenous fauna. In the absence of detailed site-specific information the Council has developed a criteria-based approach. This approach differs from that used by other regional councils in that it is primarily based on (1) the use of a predictive model to map and analyse the former and current extent of indigenous vegetation and habitats; and (2) based on this analysis, a list of significant habitat types has been defined and is presented in the Proposed One Plan.
16. Other components have been added to this analysis:
 - Expert advice from relevant specialists;
 - A list of naturally and nationally uncommon habitat types compiled by Landcare Research.
17. A detailed description of the methods used in the predictive modelling and related analysis is provided in the evidence of Ms Maseyk, on pages 11-30.
18. The approach used by the Council is new and, as far as I am aware, the first time this approach has been used as the basis for biodiversity provisions in a regional plan.

19. In my opinion this is a reasonable approach to take in the circumstances, especially to obtain and provide a regional overview of vegetation and habitats on a regional basis. It needs to be acknowledged, however, that, with the notable exception of kanuka forest and wetland types in the list of habitats in Schedule E of the proposed One Plan, the list of habitat types has been generated from a predictive model based on climate, landform, and soil; i.e. environmental pattern has been applied as a surrogate for biodiversity pattern or ecosystem character. This sort of approach also underlines the need for as much care as possible to be given to the criteria, so that they can be as definite as possible, bearing in mind that they will never achieve the precision of a map. Current indigenous vegetation cover has been characterised by comparing predicted vegetation patterns with Landcover Database Version 2 (published by Terralink in 2004) to assess present extent.
20. Selected thresholds have then been applied to the results of this analysis, to classify habitat types by level of threat. This has been done using three categories:
- Threatened: reduced to 20% or less of former extent;
 - At Risk: 20-50% of former cover remaining;
 - No threat category: 50-100% of former extent remaining.
21. These threat categories are consistent with the recently-released set of national priorities (MfE and DOC 2007a and b) for the protection of indigenous biodiversity on private lands:
1. To protect indigenous vegetation associated with land environments that have 20% or less remaining indigenous cover.
 2. To protect indigenous vegetation associated with sand dunes and wetlands.
 3. To protect indigenous vegetation associated with “originally rare” terrestrial ecosystems types.

4. To protect habitats of acutely and chronically threatened indigenous species.
22. The wetland data layer in Landcover Database (Version 2) was replaced with data from the “Wetlands of National Importance” project (Ausseil *et al.* in press); as quoted in the evidence of Ms Maseyk.
23. Components of the list of nationally rare ecosystems (Williams *et al.* 2006) relevant to Manawatu-Wanganui Region have been incorporated into the Proposed One Plan and are classified as “Rare”.
24. Threatened species have been addressed by including an extensive list of species known to be present in the region.

COMMENTS ON THE OVERALL APPROACH

25. As already noted, this is a new approach by a regional (or district) council.
26. The approach used is reasonable, but there is considerable scope for inaccuracies with the mapping as the maps included in the relevant parts of the Proposed One Plan are at such a coarse scale that they will be difficult to apply. I discuss this matter further below. I know that this particular hearing only relates to Living Heritage issues, but I will refer to maps contained in Schedule D of the Proposed One Plan as the sub-catchment based maps contained in it have been used as the basis for the key map in Schedule E (Figure E.1).
27. Some habitat types may have been missed, as was the case for kanuka forest, because they were not identified by the predictive model or in subsequent discussions with specialist advisors.
28. Some habitat types may not warrant the level of threat ranking that they have been assigned, but there is no way of checking this as the base data is not available to parties other than Landcare Research and the Council. The system is thus not transparent or testable because the source data on which it is based is not publicly available.

29. The use of Landcover Database Version 2 for coarse-level analysis is appropriate but cannot be relied on for fine-scale analysis or mapping (c.f. Brockerhoff *et al.* 2008).
30. It is also key that the definitions or descriptions of the habitat types are formulated as precisely as possible, to avoid subsequent debates about whether or not a particular area amounts to one of the listed habitats. I discuss this matter further below.

OBJECTIVES AND POLICIES

31. Objective 7-1 and Policies 7-2 and 7-3 in the proposed One Plan are linked directly to the criteria “representativeness”, “rarity and distinctiveness”, and “ecological context”. The wording of the objective and policies needs further consideration, for the following reasons:
 - The wording as notified is not clear and cannot be applied in a meaningful fashion.
 - Objective 7-1 requires no loss or modification, even very minor, of a “rare or threatened habitat”, which is unreasonable. A no net loss requirement would be reasonable. Minor modification would also be reasonable, subject to mitigation.
32. **Objective** 7-1(a) states:- “(a) rare and threatened habitats*, as defined in Schedule E, are protected from activities that may cause any loss or modification to the representativeness, distinctiveness, or ecological context of these areas.”

Suggested Alternative

33. I have read Mr Peterson’s evidence on Objective 7-1 and its relationship to Policies 7-2 and 7-3 (as he suggests they should read) and I consider that his suggested approach is sensible and workable from an ecological point of view. I support the approach that he advocates to Objective 7-1 and Policies 7-2 and 7-3.

Explanation

34. Activities will not, in themselves, directly affect the criteria. Rather, they will affect plants, fauna, waterways, and the like that are the ecologically significant features within a site.
35. Well-worded, useful, and technically-robust criteria are an important component of statutory plans as they will be used, applied, and tested repeatedly over the life of a plan.
36. Objective 7-1(a) as notified does not allow for “any loss or modification” to rare and threatened habitats. This could preclude walking tracks, huts, or pylons located on clearings within a rare and threatened habitat, and many other activities that have only minor or even less than minor effects. I note that the Officer’s Report recognises this and recommends removal of the word “any” and replacement of it with the words “more than minor”. I support this approach but do not think that it goes far enough because there may be situations where even “more than minor” effects can be mitigated through substantial off-set mitigation packages, particularly where they result in significant net ecological gain. In addition I agree with Mr Peterson that there is a risk in trying to paraphrase supporting Policies within the Objective. Simplification of the Objective and expansion of the supporting Policies seems to me to be an effective way to approach the issue.

PRESENTATION OF MAP-BASED INFORMATION

37. Maps are an important aspect of information presentation in the Proposed One Plan, and they all appear to be presented as A4 sheets with varying scales. Water Management Zones for the entire region, are shown on Map D:1 (page D11), without titles for the zones, at a scale of 6.5 cm = 100 km, while more detailed maps are presented as Maps D:2-8. The scales on these maps vary. For example, on Map D:2, c.6.3 cm = 50 km, while on Map D:3 c.5.3 cm = 90 km, Map D:4 4.6 cm = 50 km; Map D:5.8 cm = 50 km, and so on.

38. The notations on the maps also vary. The overall map of water management (Map D:1) includes the following statement:
- “Information in this map is indicative only. In all cases refer to associated tables”
39. Maps D:2-8, however, do not include this statement, but do have the notation:
- “Shading of Water Management Zones is for display purposes only”
40. “Ecosystems of value” of streams are shown on Maps D:9, at a scale of 3.1 cm = 50 km. Thus 1 mm, on this map, equates to 1.6 km or thereabouts.
41. In carrying out studies for Mighty River Power I attempted to apply the Proposed One Plan provisions. I found it difficult to determine the actual location of the boundaries of Water Management Zones and Sub-zones in the Proposed One Plan, even making use of the smaller scale maps such as Map D:2 that show boundaries in more detail. It is difficult to be sure that a catchment is in a particular Water Management Sub-zone, although that can be confirmed through careful application of Schedule D, Table D.2.
42. Figure E:1 (page E8 displays the Water Management Sub-zones colour-coded (red, orange, yellow) to indicate criteria.
43. Figure E:1 is an important and integral part of Schedule E as it is linked directly to Table E.2. However there is no equivalent of Table D.2 in Schedule E, and the Figure is the only indicator of “zone” boundaries.
44. In my attempts to apply the provision of the Proposed One Plan I also obtained a hard copy A0-sized map of Water Management Zones and Sub-zones, scale 12.5 cm = 50 km, directly from Horizons Regional Council. This is easier to interpret but still not straightforward as Sub-zone labels are obscured by other detail on the map.

45. There are no maps of vegetation pattern in the Proposed One Plan. Horizons Regional Council, however, did provide me with:
- A0 hard copy maps (12.5 cm = 50 km) of predicted indigenous vegetation cover and remaining indigenous vegetation cover; and
 - Printouts of a section of the vegetation maps at a scale of 1:50,000 (2 cm = 1 km), with Water Mangement Sub-zones shown.
46. I found only the latter to be easily interpretable in terms of local landforms and features such as roads, streams, topography, and other easily-recognisable features.
47. I suggest that interpretation and application of the Proposed One Plan would be improved considerably by improvement of mapping detail showing the boundaries between the “zones” shown in Figure E.1 at a scale of 1:50000 or better.

SCHEDULE E

48. Schedule E in the proposed One Plan comprises some introductory definitions (“rare and threatened habitats”, “at-risk habitats”, and “indigenous vegetation”) and is then followed by four tables:
- Table E1 - habitat types and classifications;
 - Table E2 - forest and shrubland habitat (dominated by woody vegetation);
 - Table E3 - threatened species in the Manawatu-Wanganui Region;
 - Table E4 - four criteria for the assessment of ecological significance (“representativeness”, “rarity and distinctiveness”, “ecological context”, and “previously assessed sites”).

SUGGESTED CHANGES TO SCHEDULE E

49. Ms Maseyk, in Section 10 (Reconsidering Schedule E) of her evidence, has suggested many changes to Schedule E, amounting to a redrafting of the Schedule. I support the need for a redrafting of the Schedule and will address the changes suggested by Ms Maseyk and also provide some additional ones.

Treeland

50. No comment required.

Rare Habitat Types

51. Ms Maseyk notes that additional rare habitat types are likely to become known over time and that Schedule E will need to be extended. This is acknowledged, and it is also an issue that applies to threatened species and nationally rare ecosystem types in general, and updating of information will require future changes to the Proposed One Plan.

Implementation of Table E.1

52. Ms Maseyk suggests that the introductory section relating to “rare and threatened” and “at risk” habitat types at the start of Appendix E is reworded to merge the treatment of these two categories. The definition of “at risk” habitat has been altered by deleting reference, in the introductory wording, to “(b) any vegetation (whether indigenous or not) within 20 metres of an area identified in Schedule D as being a site of significance aquatic”. This has been replaced by listing “riparian margin” as a habitat type in Table E.1 (on Page 74 of Ms Maseyk’s evidence). I support this approach. I note that there are a couple of typographical errors in Ms Maseyk’s evidence. The word “meets” on line 3 of the major paragraph of the introductory section should read “meet” and there is an additional and unnecessary “for” in the second to last line of the same paragraph.
53. Guidelines are now also provided for the implementation of Schedule E, including the use of consultant ecologists and consultation with Council’s

staff. It is also suggested, by Ms Maseyk, that a section is now provided on interpretation of Schedule E, including a diagrammatic flow chart (Page 68 of Ms Maseyk's evidence). This is helpful and I support its inclusion.

Habitat Type Definition as Presented in Table E.1

54. Table E.1 (as originally notified) provides a habitat type name for four broad classes of habitats:

- "Forest habitat named for and defined by dominant vegetation type".
- "Habitat named for structural vegetation class and defined by physical environment and dominant vegetation type".
- "Wetland habitat named for wetland type and defined by physical environment and vegetation type".
- "Habitat type named for the physical environment and defined by habitat".

55. Three columns have been used within each of these categories:

- Habitat Type.
- Habitat Type Description.
- Rule Stream Classification.

56. Ms Maseyk has presented a recommended replacement version of Table E.1 where these four categories are not used. Rather, a system of four columns is used for all habitats included, providing the following information:

- Habitat Type Name;
- Defined As;
- Rule Stream Classification;

- Indicative Description.
57. This is a simpler system and I support the recommendation to not utilise the four broad classes of habitats listed above.
58. There are, however, still problems with the system now being advocated by Ms Maseyk. Table E.1 is a critically important part of the assessment that must be made to determine whether a landowner or resource user has “rare”, “threatened”, “at risk”, or “unclassified vegetation” under consideration, and whether a resource consent is required (as per Page 68 of Ms Maseyk’s evidence). The threat status of each habitat type is presented in Table E.1 under the heading Rule Stream Classification.
59. As already noted, it is very important that the definitions or descriptions of habitat types are formatted and presented as clearly as possible, to avoid or at least minimise subsequent debates about whether or not a particular area equates to one of the listed habitats. On this basis, I have the following comments on the new version of Table E.1, as presented in Ms Maseyk’s evidence:
- The forest habitat names utilised are commonly-used and well-understood names.
 - The “Defined As” column, as presented, is problematical. Most habitat types have a simple expanded type name in this column, with a list of species and reference to a publication or report for further information.
 - The “Defined As” example for “Hardwood/broadleaf forest” is “Kauri/taraire-kohekohe-tawa forest”, which does not occur at all in the Manawatu-Wanganui Region. The reference “document” provided for further information in the “Defined As” column, Leathwick *et al.* 2005, is a display poster, published by Landcare Research, and is not an easy document to get access to or, for a non-ecologist, to comprehend and interpret.

60. A notable exception to this approach, for forest habitats, is the “Defined As” definition for kanuka forest. This definition clearly sets out:
- Species composition/dominance;
 - Dimensions.
61. I support this approach and the level of detail presented in this instance.
62. I suggest that the information on forest habitats in Table E.1, as presented in the evidence of Ms Maseyk, should be revised along the following lines:
- Carefully review the habitat descriptions and species names presented, to ensure that details are correct.
 - Provide more detail in the “Defined As” column. This could be done relatively easily by shifting much of the information in the “Indicative Description” column to the “Defined As” column. The description of kanuka forest presented in Ms Maseyk’s evidence provides a useful template for the type of information that should be provided. This is not a major undertaking for an experienced vegetation ecologist.
 - Remove the reference to Leathwick *et al.* 2005 from the “Defined As” column and place this in a new column entitled “Further Definition if required”, or similar.
 - Delete the column title “Indicative Description”.
63. These comments also apply to the definitions provided in Table E.1 for:
- Lichenfield, tussockland, herbfield, shrubland, scrub on silicic-intermediate rock;
 - Grassland, sedgeland on active dunelands;
 - Grassland, tussockland, herbfield, shrubland on stable dunelands;
 - Tussockland, herbfield, scrub, forest on inland duneland.

64. Definitions of these habitats are “supported” by reference to Williams *et al.* 2006 in the “Defined As” column. However this reference is a Landcare Research internal report (LC0506/185) and is not readily available to landholders or resource users (or even to ecologists).
65. The definitions provided for wetland habitats in the “Defined As” and “Indicative Description” columns are more straight forward and the reference referred to (Johnson and Gerbeaux 2006) is at least a published book and can be purchased. My comments above on the structure of Table E.1, still apply, however.
66. The restructuring of Table E.1 and redefinition of the constituent habitat types is a discrete task that could be addressed by the caucusing of relevant specialist witnesses during the course of this hearing.

Habitat Types to be Added to Table E.1

67. It is suggested, on Pages 51-53 of Ms Maseyk’s evidence, that twelve habitat types are removed from Table E.1, on the basis that they fall within the “No Threat” category. This is appropriate and simplifies Table E.1.
68. As already noted, two habitat types are suggested for addition to Table E.1: “riparian margin” and “habitat type containing species”. Details of this proposal are contained at page 51 of Ms Maseyk’s evidence.

- Riparian Margin Habitat

- This habitat type would be classified as “At Risk” and is defined as “any vegetation (whether indigenous or not, and including classified elsewhere in Schedule E) within 20 m of an area as identified in Schedule D as being a Site of Significance-Aquatic.”
- Schedule D (Table D.2) provides a list of “Values by Zone in the Manawatu-Wanganui Region” and includes columns entitled “Sites of Significance for Aquatic Biodiversity” and “Sites of Significance for Riparian Biodiversity”, among 21 other “Zone Wide Values”. The specific features that give a particular Water Management Sub-zone a tick (✓) in

the table are not identified but the approach used is nevertheless useful as it provides a clear indication that there are likely to be significant values associated with waterways in particular Sub-zones.

- Habitat Type Containing Species
 - This would also be classified as “At Risk” and is defined as “any vegetation (whether indigenous or not, and including vegetation that has not been classified elsewhere in Schedule E) that contains, or could be reasonably known to contain, any species as listed in Table E.3 of this Schedule”.
 - Table E.3 in Schedule E is a comprehensive list of threatened species that occur in a diverse range of indigenous and non-indigenous vegetation, including some that utilise farmland and exotic plantation forest. Ms Maseyk recommends a substantial reduction of Table E3, which I support, and only six threatened species (all threatened plants) are to be retained. I support the suggested addition to Table E.1 on this basis.

Other Suggested Changes to Table E.1

69. The term “broadleaf” has been used throughout the Table in a number of the habitat type names and in the definitions of those types. “Broadleaf” is a very specific term, generally used to refer to the species known as broadleaf or kapuka - *Griselinia littoralis* (or puka, *Griselinia lucida*). The term “broadleaf” in Table E.1 has been defined as “dominated by common broadleaf (woody flowering plants) species” and various examples of “broadleaf” species are provided, including kamaki, titoki, tawa, fuchsia, maire [species not defined], and hinau.
70. The term “broadleaf”, as used in Table E.1, should be changed throughout to “broadleaved”, or “broadleaved species”, or “broadleaved forest”. A definition of “broadleaved” should also be provided, using the species listed above.

Table E.2

71. Twenty-one criteria are provided in Table E.2 and “an area of any habitat described in Table E.1 is also required to meet one of these [“the following”] criteria to be considered habitat for the purposes of this plan.”
72. Some aspects of Table E.2, and its application, as set out in the evidence of Ms Maseyk, are unclear and need to be clarified. The application of Table E.2 seems appropriate if it is to be directly linked to habitats classified as “threatened” or “at risk” in Table E.1. My interpretation of Table E.2 is that the criteria in this table only apply to the habitat types listed in Table E.1. If this is the case, then no further comment is required. If this is not the case, and if Table E.2 could, potentially, be applied to “unclassified vegetation”, then this needs to be addressed.
73. Table E.2(b) is a list of criteria for exclusion of sites from consideration in terms of Table E.1 (and Table E.2). This list is appropriate and I support it.

Table E.3

74. Table E.3 is a lengthy list of threatened species that occur in the Manawatu-Wanganui Region, their threat rankings, and lists of Water Management Zones and Sub-Zones where these species may occur. The intention is that these lists would be used in conjunction with the criteria in Table E.2 to trigger a requirement, or otherwise, for a resource consent. There are some significant problems with Table E.3 and its application, as set out in the notified Proposed One Plan. Obvious issues are that:

- The distributional records are not complete;
- The threat rankings are based on the system of Molloy *et al.* (2002), with actual rankings from the threat classification lists in de Lange *et al.* (2004) and Hitchmough *et al.* (2005). However, a new system has recently been released (Townsend *et al.* 2008). Threat classification rankings are also reviewed every few years by the Department of Conservation, and new rankings will soon become available, at least for

some groups of biota. It is likely, in fact probable, that several sets of revised rankings will become available during the life of the Proposed One Plan;

- Several species in Table E.3 have been assigned distributions of “Throughout the Region”. This is likely to be correct but they nevertheless do not occur in all habitat types, and most have very specific habitat requirements (e.g. lizards). There are species, however, that do occur widely throughout the region and do, at times, range across almost all habitat types, including farmland, residential areas, exotic plantation forests (e.g. NZ falcon). These types of distributions and patterns of habitat use make it difficult for users to apply Table E.3 as currently presented.

75. In recognition of these problems with Table E.3, Ms Maseyk has recommended major changes to the table, with only six threatened plant species to be retained. I support this recommendation.

Table E.4

Criteria for Evaluation of Ecological Significance

76. Table E.4 (and also Page 42 of Ms Maseyk’s evidence) outlines the four criteria used for the assessment of ecological significance:

- Representativeness;
- Rarity and distinctiveness;
- Ecological context;
- Previously assessed sites.

77. The first three of these is also an integral part of Objective 7-1 (Page 7-4 of the Proposed One Plan) and Policies 7-1 and 7-3 (Pages 7-5 and 7-6 respectively of the Proposed One Plan). I also note that the evidence of Ms Helen Marr, in the Horizons Regional Council planners report on

biodiversity, recommends that these criteria are removed from Schedule E and placed in the Chapter 7, as Table 7.1.

78. In Table 7 on Page 42 of Ms Maseyk's evidence it is noted that "A site has to meet one of these criteria to be considered ecologically significant".
79. Ms Maseyk's evidence requests two changes to the definitions of the criteria:
- The first relates to the definition of "representativeness" and requests the deletion of "water management zone, or water management sub-zone" as evaluation frameworks. I support this change as ecological districts and ecological regions provide commonly-accepted and practical frameworks for the evaluation of this criterion.
 - The second change requested is in relation to the "rarity and distinctiveness" criterion, where it is also suggested that, similar to the change discussed above, that water management zones and sub-zones are not used as a framework for the assessment of endemism. I also support this change, although a species that was endemic to a water management zone or sub-zone may potentially be particularly rare or have only a very limited distribution. Having said that, ecological districts and regions are more commonly used for that type of evaluation.
80. I have some other suggested changes to the criteria outlined in Table 7 of Ms Maseyk's evidence and in Table E.4 of the proposed One Plan.
81. **Criterion:** "**Rarity and Distinctiveness** - The site supports one or more species that are classified as threatened (as determined by the New Zealand Threat Classification System)."

As already noted, the New Zealand threat classification system (Molloy *et al.* 2002) has undergone a recent revision (Townsend *et al.* 2008). The Molloy *et al.* (2002) system is the basis of the currently-used lists of threatened species in New Zealand (Hitchmough *et al.* 2007; de Lange *et al.* 2004). There is a significant difference in the two systems in that the "At Risk" category in Molloy *et al.* (2002) is classed as "threatened", whereas it is not

included in the “threatened category” in Townsend *et al.* (2008). I suggest that it is made clear that the threat rankings referred to in this criterion are as per Townsend *et al.* (2008) or any later revision of this system, although I believe that a future change to the RPS would be required to reflect any such amendments to the threat rankings.

82. **Criterion:** “**Ecological Context** - The site provides connectivity (physical connections) between two or more areas of indigenous habitat.”

This criterion requires clarification otherwise, as currently worded, it could apply to pasture, exotic plantation forest, bracken fernland, and a wide range of other habitat types that are not generally ecologically significant. I suggest the following wording for consideration:

The site is indigenous vegetation or habitat that provides connectivity between two or more ecologically significant areas of indigenous habitat.

83. Spatial scale is very important when applying the criteria of representativeness, rarity and distinctiveness, and ecological context, particularly representativeness. The following is from the Proposed One Plan (Page E-32):

“In most instances, a site will be evaluated for significance at the water management sub-zone scale. However, a site may possess values or species that make it significant at a larger spatial scale - for example, **water management zone level**, regional level, national level, or international level. Ecological significance can also be assessed at an ecological spatial scale such as ecological district or ecological region. **Regardless of scale, a site will always be classified by its highest level of significance.**”

Desktop and field-based assessment will be incorporated when determining the ecological significance of a site.” [My emphasis in **bold**.]

84. It is not appropriate to assess ecological significance at the level of the water management zone as an alternative to the other frameworks suggested (which are appropriate) and then to assign the “highest level of significance”.

Ms Maseyk has also indicated that this is not appropriate and has recommended that ecological districts and regions and various other national frameworks are used for the assessment of ecological significance. I concur with this recommendation.

CONCLUSIONS

85. The Horizons Regional Council Proposed One Plan implements a new and unique approach, for a regional plan, to address the issue of indigenous biodiversity on a region-wide basis. This approach is criteria-based, using defined habitat types as triggers, combined with consideration of area thresholds and four criteria for evaluation of ecological significance. The approach set out in the notified Proposed One Plan has significant problems associated with it and will create considerable uncertainty and tensions for resource users and, in my view, for regional council staff applying the plan.
86. These problems have been recognised and most have been addressed in the evidence of Ms Maseyk, for Horizons Regional Council. I concur with the changes recommended by Ms Maseyk and have suggested additional ones, which I suggest will help to improve certainty of interpretation and implementation of the Proposed One Plan to achieve its biodiversity objectives.

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