BEFORE THE ENVIRONMENT COURT

In the matter of	appeals under clause 14 of the First Schedule to the Resource Management Act 1991 concerning proposed One Plan for the Manawatu-Wanganui Region.
between	**MIGHTY RIVER POWER LTD** **ENV-2010-WLG-000139**
and	**OSFLO SPREADING INDUSTRIES LTD** **ENV-2010-WLG-000143**
and	**CHIEF OF THE NEW ZEALAND DEFENCE FORCE** **ENV-2010-WLG-000144**
and	**TRUSTPOWER LTD** **ENV-2010-WLG-000145**
and	**ERNSLAW ONE LTD** **ENV-2010-WLG-000146**
and	**NEW ZEALAND HISTORIC PLACES TRUST** **ENV-2010-WLG-000147**
and	**FEDERATED FARMERS OF NEW ZEALAND** **ENV-2010-WLG-000148**
and	**MERIDIAN ENERGY LTD** **ENV-2010-WLG-000149**
and	**DEPARTMENT OF CONSERVATION** **ENV-2010-WLG-000150**
and	**NEW ZEALAND PORK INDUSTRY BOARD** **ENV-2010-WLG-000151**
and	**PROPERTY RIGHTS IN NEW ZEALAND** **ENV-2010-WLG-000152**
and	**NEW ZEALAND TRANSPORT AGENCY** **ENV-2010-WLG-000153**
and	**HORTICULTURE NEW ZEALAND** **ENV-2010-WLG-000155**
and	**WANGANUI DISTRICT COUNCIL** **ENV-2010-WLG-000156**
and	**WELLINGTON FISH & GAME COUNCIL** **ENV-2010-WLG-000157**

and	**A DAY** **ENV-2010-WLG-000158**
and	**GENESIS POWER LTD** **ENV-2010-WLG-000159**
and	**WATER & ENVIRONMENTAL CARE ASSOCIATION INC.** **ENV-2010-WLG-000160**
and	**HANCOCK FOREST MANAGEMENT NZ LTD** **ENV-2010-WLG-000161**
and	**RAYONIER NEW ZEALAND LTD** **ENV-2010-WLG-000162**
and	**NEW ZEALAND FOREST MANAGERS LTD** **ENV-2010-WLG-000164**
and	**P F OLSEN LTD** **ENV-2010-WLG-000165** *Appellants*
and	**MANAWATU-WANGANUI REGIONAL COUNCIL** *Respondent*

EVIDENCE IN REPLY OF FLEUR MASEYK FOR MANAWATU-WANGANUI REGIONAL COUNCIL

Dated: March 2012

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PART 1: INTRODUCTION

Qualifications and experience

1 My name is Fleur Jennifer Foster Maseyk. I have a Bachelor of Science (ecology) and a Master of Science (in plant ecology and conservation biology). Both degrees were awarded by the University of Auckland. I have fourteen years experience working as an ecologist in New Zealand and overseas. I have been a member of the New Zealand Ecological Society for over ten years, holding a position on the Society's Council for the last four years, and am currently the Vice President. I am also a qualified RMA decision-maker under the 'Making Good Decisions' programme.

2 I am currently working as a consultant ecologist operating as a practice leader within The Catalyst Group. Prior to joining the Catalyst Group, I worked for the Manawatu-Wanganui Regional Council (Horizons) for seven and a half years, five years of which I held the role of Senior Environmental Scientist – Ecology within the Regional Planning and Regulatory Group.

3 While with Horizons, I led the monitoring and research component of Horizons' biodiversity programme. A core function of my position was to provide technical advice to the Consents, Compliance and Environmental Management teams, and to senior management and council. I also provided technical assessment of resource consent applications. My advice role extended to landowners and I regularly undertook site visits to this end.

4 Key projects I led and delivered during my employment with Horizons include: the Regional Pest Plant Management Strategy review; field survey of over 500 forest fragments to increase Horizons' knowledge of regional indigenous biodiversity at the property scale and to enable strategic delivery of enhancement works; assessment of these more than 500 surveyed sites for ecological value and significance; development of a prioritisation and site selection process to determine eligibility for enhancement funding; and development of the ecological science that informed the Notified Version of the Proposed One Plan (NV POP).

Expert Witness Code of Conduct

5 I have read and am familiar with the Code of Conduct for Expert Witnesses in the Environment Court's Consolidated Practice Note 2011 and I agree to comply with it. The evidence presented within this statement is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

My previous involvement with the Proposed One Plan

6 My involvement with the Proposed One Plan (POP) commenced in 2005. I was asked to lead the formulation of a framework for the protection of indigenous biodiversity on private land suitable for inclusion in a regional plan. I led the technical aspects of the development of the approach for terrestrial biodiversity presented in the Notified Version of the POP (NV POP), and contracted and project managed Landcare Research (Hamilton) to conduct core analyses.

7 I presented a section 42A report, supplementary evidence, and an end of hearing report to the Biodiversity and Heritage Hearing Panel as well as further communication as requested by the Chairperson. I led expert caucusing and reported to the Hearing Chairperson on the outcomes of this caucusing. I drafted the Schedule E in the NV POP (with the exception of Table E.3), as well as all subsequent versions in response to submissions and incorporating input from expert caucusing.

8 Since the release of the decisions on the POP, I have been involved in mediation and led the technical caucusing. I also prepared an affidavit regarding ecological and regional context relevant to the jurisdictional question on biodiversity for the Environment Court Hearing (20 December 2011).

9 Upon my departure from Horizons in December 2011, I was contracted by Horizons to continue to provide technical expert evidence on the topic of indigenous biological diversity.

Abbreviations used in this statement

DV POP	Decisions Version of the Proposed One Plan
Horizons	Manawatu-Wanganui Regional Council
NV POP	Notified Version of the Proposed One Plan
POP	Proposed One Plan
TEB	Technical Evidence Bundle

Scope of statement

10 This statement has been prepared in response to technical evidence presented to the Environment Court on the topic of indigenous biological diversity. I provide an indication of where the technical experts are in agreement and where they are not, and a brief explanation of the positions held (Table 1). I then reiterate the technical basis for agreement on those issues where agreement exists. Further discussion is provided on the few remaining unresolved issues, and I outline my position in relation to that of the other technical experts.

11 I have briefly addressed other issues raised by the other technical experts in their Statements of Evidence, but which were not in of themselves the subject of appeal, mediation or caucusing, where I consider some attention to these issues is warranted.

12 The indigenous biodiversity *s*chedule (Schedule E) underwent several iterations during the course of the hearings. To assist in the understanding of the evolutionary nature of Schedule E, and because I refer to different versions within this statement, I have provided a brief recap on these alterations in Appendix 1.

13 This statement will not discuss the methodologies for the identification and classification of habitat types listed in Schedule E, except where reference to the methods and tools used is relevant to the discussion presented within this evidence.

14 I have read and comment on the technical evidence of the following ecological experts:

- Mr Matiu Park (Boffa Miskell for TrustPower Ltd and Meridian Energy Ltd)
- Ms Amy Hawcroft (for the Minister of Conservation and Wellington Fish and Game Council)
- Dr Philippe Gerbeaux (for the Minister of Conservation and Wellington Fish and Game Council)

I also make reference to the evidence of the following planners:

- Ms Helen Marr (Perception Planning for the Minister of Conservation and Wellington Fish and Game Council)
- Ms Clare Barton (for Horizons)

15 My statement of evidence is organised into five parts:

I. Introduction
II. The importance of indigenous biodiversity to the Manawatu-Wanganui Region, the current state and extent of indigenous biodiversity, and implications of lack of protection for indigenous biodiversity at a regional scale.
III. Matters raised by technical experts that underwent caucusing
IV. Other issues raised by technical experts
V. Conclusions

PART II: THE IMPORTANCE OF INDIGENOUS BIODIVERSITY TO THE MANAWATU-WANGANUI REGION, THE CURRENT STATE AND EXTENT OF INDIGENOUS BIODIVERSITY, AND IMPLICATIONS OF LACK OF PROTECTION FOR INDIGENOUS BIODIVERSITY AT A REGIONAL SCALE

16 The biological, geological, and ecological values previously and currently found within the Manawatu-Wanganui Region have been well outlined in my previous evidence to the Hearing Panel. This background information has also been eloquently described in Ms Hawcroft's Statement of Evidence in Chief before the Court.

17 Likewise, the following points have been well discussed previously by myself and more recently Ms Hawcroft, and in relation to wetland habitat by Dr Gerbeaux:

- the previous and current state and extent of indigenous biodiversity,
- the role of indigenous biodiversity and the services it provides, and the importance of these roles and services to economic and social considerations,
- ongoing direct and indirect threats and ecological processes that result in the observed continued decline of extent and quality of indigenous biodiversity,
- the tangible and intangible implications of continued loss, degradation, or reduction in extent of indigenous biodiversity,
- national policy and priority responses to the current state of indigenous biodiversity in New Zealand, and governmental commitments to international agreements pertaining to biodiversity,
- the contribution that *rare* and *threatened* habitat types make to regional and national indigenous biodiversity, and why habitat types listed in Schedule E and classified as either *rare* or *threatened* are worthy of a very high level of protection,
- the contribution that *at-risk* habitat types make to regional indigenous biodiversity and why habitat types listed in Schedule E and classified as *at-risk* are also worthy of protection.

18 In the interests of reducing page length and avoiding repetition, I will not restate these discussions here. However, the ecological technical evidence in its entirety deserves to be brought to mind as it described and explained the above points and in doing so illustrated the need for a strong policy response.

PART III: MATTERS RAISED BY TECHNICAL EXPERTS THAT UNDERWENT CAUCUSING

19 A number of issues were raised by the technical experts during the course of the appeal process, and these were addressed during associated mediation and caucusing. The number of technical issues under appeal was not considerable, and several were resolved during the course of mediation. I have provided a summary table below (Table 1) of technical issues that were the subject of caucusing (31 January 2012), or raised in Statements of Evidence in Chief.

20 These issues are further discussed below.

Table 1: Summary table of issues raised by technical experts during the appeal process and consequent mediation, caucusing, or in evidence to the Environment Court. Where there is disagreement a brief statement of position is provided.

AH = Amy Hawcroft (for the Minister of Conservation & Wellington Fish and Game Council), PG = Philippe Gerbeaux (for the Minister of Conservation & Wellington Fish and Game Council), SC = Spencer Clubb (for the Minister of Conservation & Wellington Fish and Game Council), MP = Matiu Park (Boffa Miskell for TrustPower Ltd and Meridian Energy Ltd), FM = Fleur Maseyk (The Catalyst Group for Horizons)

Issue raised	Degree of Agreement	Explanation
1. Criteria for assessing significance of, and the effects of activities on an area of habitat (Policy 12-6)	Unresolved	Disagreement remains regarding the manner in which the concept of 'functioning ecosystem processes' is incorporated into the policy.[1] AH, PG and FM are of the opinion that the concept of 'functioning ecosystem processes' be prefaced with an 'or' and captured within the policy as recorded in the Record of Technical Conferencing (31 January 2012). MP is of the opinion that 'functioning ecosystem processes' be prefaced with an 'and' and be included in the policy as a stand alone criterion.
2. Requirement for field assessment for determination of significance (Policy 7-2A)	Unresolved	Disagreement remains over whether all areas of *rare* and *threatened* habitat types listed in Schedule E should be considered to be significant.[1] AH, PG and FM are of the opinion that these habitat types are ecological significant and all patches of a *rare* or *threatened* habitat type that meets the definitions in Table E.1 and criteria in E.2a, and doesn't meet any criteria in Table E.2 are ecological significant. MP is of the opinion that some areas of *rare* or *threatened* habitat will not be ecologically significant and a site visit should be required to determine significance.

[1] Agreement on these issues was reached and recorded during technical caucusing held on 31 January 2012. However, the Statement of Evidence of Mr Park (for TrustPower Ltd and Meridian Energy Ltd) brings these issues back into dispute.

Issue raised	Degree of Agreement	Explanation
3. Biodiversity offsetting	Partially unresolved	a. Agreement across all experts that the term 'biodiversity offsets' should be consistent with the definition and principles of the Business and Biodiversity Offsets Programme b. Agreement that there is no requirement for the definition of 'net gain' given the point a. c. Disagreement exists in regards the need for flexibility in the application of mitigation policy as a component of biodiversity offsetting. MP and FM consider that an element of flexibility in the application of mitigation policy can result in positive outcomes, of greater benefit to biodiversity than a more rigid policy might allow. The experts representing the Minister of Conservation & the Wellington Fish and Game Council consider too much discretion in the application of this policy will result in continued biodiversity decline.
4. Fundamental framework, content and development of Schedule E	Agree	Agreement regarding the approach and intent of Schedule E and its development were confirmed during discussions with experts and iterated within evidence.
5. Mapping of Schedule E habitats	Agree	Mapping of Schedule E habitat types is not possible or cost effective at the regional scale.[2]
6. Definition of 'riparian margin' in the plan glossary	Agree	It was agreed that there is no requirement for a definition of 'riparian margin' to be included in the plan glossary.[2] The habitat type label 'riparian margin' is specific to the habitat type defined and described in Schedule E and does not apply to any area of land or vegetation outside of this definition.

[2] As recorded from technical caucusing held on 31 January 2012.

Issues remaining unresolved between technical experts

Issue 1: Criteria for assessing significance of, and the effects of activities on an area of habitat (Policy 12-6)

21 As Mr Park has returned to his original viewpoint on the manner in which the concept of *'functioning ecosystem processes'* is captured within the list of criteria provided in Policy 12-6[3], this issue is once again in contention.

22 It is my opinion that the process for determining ecological significance (and thus a demonstrated need for regulatory protection) and the consideration of site-specific values and condition (critical to making sound management decisions) have become confused.

23 Incorporating the concept of 'functioning ecosystem processes' into Policy 12-6 as a stand alone criterion that needs to be meet in *addition* to being either under-represented habitat type (criterion (i)(A)), or highly representative habitat type (criterion (i)(B)), would in my opinion raise the threshold unacceptably high.

24 When presented as a stand alone criterion, the meaning becomes ambiguous. What level of function? What processes? The usefulness of such a criterion is further restricted by the current incomplete understanding of, for example, the drivers of ecological functions and processes, how they manifest themselves, operate across trophic levels, or how they can be easily recognised or measured. How much functionality can be absent or compromised before a site fails to pass the test? This is a crucial question given the highly modified nature of much of the Region's remaining indigenous habitat.

25 To overcome the problems in interpreting the term 'functioning ecosystem processes', the concept of long-term viability (sometimes referred to as sustainability) can be substituted. Again, this introduces elements such as size and condition to the significance assessment which I consider to be inappropriate. Small, modified, functionally compromised sites can still

[3] Statement of Evidence of Matiu Park, 17 February 2012, paragraphs 6.1 onwards, page 13.

possess enough ecological value to be significant. Such sites could reasonably be argued to be in poor condition and of relatively low value when compared to other larger, more intact sites, but they can still be significant.

26 Dr Gerbeaux has provided evidence[4] that even small and modified areas of wetland habitat within the Manawatu-Wanganui Region are ecologically significant.

27 The application of criteria as proposed by Mr Park sets a high threshold and a very narrow definition of significance whereby it can be assumed considerably fewer sites would pass the test, allowing for greater freedom to impact on indigenous biodiversity unrestrained by the resource consent process.

28 It is my opinion that this would be inappropriate given the strong evidence regarding both the significance of the habitat types listed in Schedule E, and the demonstrated continued vulnerability and decline of areas of these habitat types.

29 The exercise of determining ecological significance should not be confused with identifying the largest or best sites. I do not consider ecological significance to be a measure of quality, or that ecological significance *per se* compares sites against each other. Recognition of ecological significance should reflect where ecological values, processes, or functions exist and where an informed decision-making process regarding activities that may impact on these values (such as the resource consent process) is necessary.

30 In my view, it is important that the inclusion of the words 'functioning ecosystem processes' is incorporated into criterion (i) (A) of Policy 12-6 and is preceded with an '*or'* not an '*and'.* This was agreed by all parties during expert caucusing.[5]

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[4] Statement of Evidence in Chief of Philippe Gerbeaux, 17 February 2012, paragraphs 42 – 47.

[5] Aas reflected in the Record of Technical Conferencing on Biodiversity, 31 January 2012.

31 Further, I maintain that only one criteria within Policy 12-6 needs to be meet in order for an area of habitat to be considered significant.

32 Beyond the question of ecological significance, the same list of criteria can be applied to determine and describe specific ecological values present within a site. While a site only needs to meet one of the criteria listed in Policy 12-6 to be considered ecological significant, a site may possess more than one ecological value (as tested by the criteria).

33 Areas of habitat types considered to be significant are consequently captured by the consenting process. The nature of the ecological values of the site in question can at this point be identified and described. Consequently, any potential effects of the proposed activity can then be assessed in relation to those identified site-specific values.

34 It is only at the point of assessment of effect, and consideration of options for enhancement actions, mitigation, biodiversity offsetting or other management decisions, that the condition and long-term sustainability of the site becomes of paramount relevance.

35 To conclude, I stand by my previous evidence on this issue[6], reiterate my agreement with the wording agreed to during expert caucusing[5], and concur with Ms Hawcroft and Dr Gerbeux's evidence on this issue.

Issue 2: Requirement for field assessment for determination of significance (Policy 7-2A)

36 It seems to me that the discussion between the experts in regards significance criteria listed in Policy 12-6 (Issue 1), and a requirement for field assessment (Issue 2) are closely entwined. I state this as both issues essentially come back to a consideration of *condition*.

37 As I have maintained throughout my previous evidence and in this statement, condition (or functioning processes / long-term viability /

[6] In particular see Evidence and Supplementary Recommendations, paragraphs 59 – 67, TEB pp. 2864-2915, and Response to Supplementary Evidence of Technical Experts, paragraphs 37 – 42, TEB pp.2940-2991.

sustainability), while valid as an element of *one* measure of ecological significance[7], should not be a requirement of determining significance in *addition* to meeting other criteria.

38 The value of a site visit and opportunity for discussion with a landowner has been raised by other experts and by Ms Barton[8]. However, I consider that there is an element of confusion about the stated purpose of such site visits. I agree that site visits and in-field conversations with landowners or applicants are extremely useful and indeed imperative for ease of implementation of Schedule E. The purpose of these site visits, however, is to ground-truth the predicted vegetation cover with the on-ground reality. That is, confirm whether the vegetation in question meets firstly the definition and description of any habitat type listed in Schedule E, secondly, meets the criteria presented for the relevant habitat type in Table E.2(a), and thirdly, does not meet any criteria in Table E.2(b). The site visit is also useful to begin a conversation around the potential for alternative plans which could avoid detrimental impact on the habitat of concern.

39 The initial site visit conducted by Horizons is not undertaken for the purpose of determining significance. This is because if an in-field determination that the area of vegetation does indeed match definitions and meets criteria for any habitat type classified in Schedule E as being *rare* or *threatened,* the site is already considered to be ecologically significant. This point has been discussed within my previous evidence and that of others.[9]

40 To have concern that an area of habitat type listed in Schedule E and classified as either *rare* or *threatened* will not necessarily be ecologically significant indicates either a mistrust of the methodology whereby habitat types were classified, or an opinion that the criteria for assessing significance are lacking. Mr Park's Statement of Evidence[10] would suggest that the former is not true. Discussion of the later is presented in response to Issue 1 (above).

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[7] Policy 12-6, (i)(B).
[8] Statement of Evidence in Chief of Clare Barton, 17 February 2012, paragraph 55.
[9] E.g. Amy Hawcroft, Philippe Gerbeaux, Helen Marr, Clare Barton.
[10] E.g. Paragraph 3.4.

41 I remain confident that areas of habitat types classified in Schedule E as *rare* or *threatened* will be ecological significant and I reiterate that Table E.2 of Schedule E provides a useful mechanism by which non-significant sites are effectively filtered out of the plan provisions. [11]

Issues remaining partially unresolved between technical experts

Issue 3: Biodiversity offsetting

42 The technical experts have agreed that where the term 'biodiversity offset' is used it should be done so in a manner consistent with the definition and principles of the Business and Biodiversity Offsets Programme (BBOP).[12]

43 Mr Park has identified that the concept of biodiversity offsetting is relatively new[13] and untested in New Zealand and that there is no single agreed method for determining appropriate currencies or calculating an offset, and has provided some examples of ecological concerns still under debate[14].

44 Although I agree with Mr Park on these points, it is my opinion that previous attempts at addressing biodiversity loss, thought to be offsetting[15], have not in effect resulted in a net biodiversity gain. The inadequacies have come about due to a number of reasons including[16]:

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[11] Evidence and Supplementary Recommendations of Fleur Maseyk for the Biodiversity Hearing, paragraph 84, TEB pp. 2916-2939.

[12] BBOP has been well described in the Statement of Evidence in Chief of Spencer Clubb, 17 February 2012.

[13] My own experience with biodiversity offsetting is limited, although I have an understanding of BBOP and recent research and development in this area having sat on the technical working group of the Department of Conservation's Biodiversity Offset Research Project.

[14] Statement of Evidence of Matiu Park, 17 February 2012, paragraphs 5.7 onwards, page 11.

[15] Practical application has shown a distinction between 'mitigation' and 'off-setting' to be false. What might be thought to be an off-set is usually just more onerous mitigation. Mr Clubb's detailed description of the BBOP principles illustrates that the two are not the same. This provides further emphasis for the necessity to explicitly defining the term 'biodiversity offset'.

[16] I have come to these conclusions based on involvement in discussions as part of the offsets working group (see footnote 13), first hand knowledge of consenting processes and practices, and in *pers. comm.* with Marie Brown (Phd candidate at the University of Waikato researching ecological compensation (mitigation/offsets) in New Zealand) regarding her research findings.

i. confusion over the subtleties between ‘mitigation’, ‘biodiversity offsetting’, ‘environmental compensation’, and ‘financial contribution’, and what each actually addresses and achieves,
ii. a well intentioned but genuine misunderstanding of what biodiversity offsetting entails and should look like,
iii. a lack of willingness or ability to acknowledge the true value of biodiversity or invest the true cost of replacement,
iv. limited understanding of the complexities of successfully restoring habitat or replacing biodiversity,
v. no transparency of process,
vi. no attempt to monitor efforts, thus no accountability for delivery of proposed offsets or confidence in outcome.

45 There is an urgent need for decision makers and ecologists to become well-versed and up-skilled in the concepts, principles and application of biodiversity offsetting. In the meantime though, continued attempts to apply offsets (or mitigation) are unlikely to cease. Therefore, and although the path is rife with uncertainly, I consider some guidance within planning documents is appropriate. To do otherwise would result in the continued acceptance of untested application of theory and blind faith in unproven results. The BBOP principles offer a sound and sensible platform to provide such guidance, and I consider all ten BBOP principles to be imperative.

46 As the application of biodiversity offsetting is in its early stages in New Zealand, the success of outcomes is untested and will remain so until we are some tens of years down the track. However, the application of the regime of establishing an offset package has been tested and shown to be successful and appropriate in the New Zealand context[17].

47 However, I hasten to add that, in agreement with Mr Park, an element of flexibility in the application of mitigation would provide increased scope for achieving greater biodiversity gain than would otherwise occur. This flexibility should not be boundless however, and it is paramount that due diligence is given to the consequences of any management actions

[17] Findings of the Department of Conservation’s Biodiversity Offset Research Project *pers. comm.* Gerri Ward (Project Manager), and demonstrated by, for e.g., Hauauru Ma Raki (HMR) wind farm proposal.

proposed under the guise of mitigation. Certain fundamental principals of biodiversity offsetting should equally apply to 'mitigation packages'.

48 It is imperative that the irreplaceability of some elements of biodiversity and some habitat types is recognised. It is misguided to accept an 'out-of-kind' trade as adequately addressing the loss of irreplaceable biodiversity at the site of activity. There might well be a laudable biodiversity outcome that would otherwise not occur in exchange for some sanctioned biodiversity loss, but it should not be seen as a net biodiversity gain.

49 Further, it should not be ignored that a certain loss now is being traded for an uncertain gain in the indeterminable future. This spatial and temporal loss needs to be adequately accounted for, whether as part of mitigation or offsetting. However, the duration of the lag time before lost habitat, biodiversity value, or ecological function is replaced is often long and difficult to determine precisely. An anticipated gain may not occur within acceptable timeframes in effect proving the lost biodiversity to be irreplaceable.

50 In regard to the Wellington Fish and Game Council and the Minister of Conservation's appeal on how biodiversity offsetting is captured by the plan, I have some reservation as to the interpretation of "…are mitigated within the area of habitat affected by the activity"[18] (my emphasis).

51 While this proposed approach is preferable in many cases, inflexibility on where mitigation can occur could prevent workable solutions for landowners that equally result in positive biodiversity outcomes. It is acknowledged that an 'out-of-kind' trade compromises a net biodiversity gain, but in the context of mitigation rather than offsetting, this might (in carefully considered cases) be appropriate.

52 For example, a proposed activity that may have a detrimental impact on an area of habitat could be a part of a larger on-farm land management programme that has been developed in conjunction with Horizons. In such cases, the ability to account for previous or current 'good works', or to agree on an out-of-kind mitigation package away from the "area of habitat affected

[18] Statement of Evidence in Chief of Helen Marr, 17 February 2012, page 52.

by the activity" could, on balance, have a greater benefit that would otherwise be achieved.

53 Care does need to be taken however, that works on farm accounted for as mitigation will be maintained, and not easily lost with changing influences on farm management (e.g. stock prices, fertiliser prices, advances in machinery or technology).

54 Although "within the area of habitat affected" seems potentially overly restrictive, a strong element of locality to the application of mitigation is critical. Mitigation should ideally happen in as close proximity to the area of loss. Options should be sought in or as close to the area of impact in the first instance, only moving further afield when closer options are exhausted. It would seem reasonable to restrict options for mitigation to within the ecological district or Region[19].

55 Proximity of mitigation is ecologically important. This is because biodiversity pattern (distribution of habitat) in the landscape allows for connectivity between areas of habitat, ecological processes and dispersal of species to occur. It can also ensure persistence of habitat and/or food supply within the locality of activity. This is equally critical for species that have restricted mobility as for those species that travel large distances across the landscape.

56 Proximity of mitigation is also important to reduce the risk of permanent landscape transformation and to maintain the extent of indigenous vegetation cover within an area.

57 A critical component of effective biodiversity offsetting is monitoring and evaluation. Ms Hawcroft provides a thorough explanation of the need for biodiversity monitoring and explains that monitoring can be effectively

[19] An ecological district is a local part of New Zealand where the topographical, geological, climatic, soil and biological features, including the broad cultural pattern, produce a characteristic landscape and range of biological communities. Thus, each ecological district is a unique unit with its own distinctive general pattern of ecosystems and special features that together forms an ecological region of similar broad characteristics but which differ from neighbouring ecological regions (Simpson, 1982; McEwen, 1987).

undertaken at different intensities and frequencies for different purposes[20]. I agree with Ms Hawcroft that a monitoring programme should be tailored specifically to the situation. Monitoring does not need to be onerous to be effective, but a monitoring programme does need to be as light or as intense as the proposal warrants.

58 Adequate monitoring and evaluation built into an offset package allows for an adaptive management approach. This allows for a change in management action deemed to be necessary to achieve a true offset, as informed by monitoring results. As Ms Hawcroft has illustrated, there is an evolving understanding of the outcomes of management interventions. This lack of complete knowledge reinforces the need for adequate monitoring measures, and the ability to respond to the findings. Monitoring results, reported on with transparency and made easily accessible, can also be used to inform future management decisions or policy directions.

Issues in agreement between technical experts

59 A couple of issues of import in regards to which the technical experts are in agreement are still 'alive' in the wider debate regarding the biodiversity provisions of the DV POP. To assist the Court in placing these issues within a technical context, I have provided below an explanation as to the reasons why the technical experts are in agreement.

Issue 4: Fundamental framework, content and development of Schedule E

60 A number of key aspects of the development and presentation of Schedule E, as well as key technical assumptions are agreed by the technical experts including that:

a. the methodologies and tools relied upon for the construction of Schedule E are considered to be appropriate and suitably robust,
b. Schedule E is a useful representation of the habitat types that require protection,

[20] Statement of Evidence in Chief, Amy Hawcroft, 17 February 2012, paragraph 114 onwards.

c. the habitat types listed in Schedule E are classified appropriately,[21]
d. there is a need for a high level of protection for *rare* and *threatened* habitat types, and
e. greater discretion is appropriate for habitat types classified as *at-risk*, but areas of these habitat types are also vulnerable, subject to pressures that result in continued decline and therefore some protection for these habitat types is also warranted.

Issue 5: Mapping of Schedule E habitat types

61 It has been suggested that in order for Schedule E to be implementable at the property scale all areas of vegetation that meet habitat type definitions and inclusion criteria for all of the 32 habitat types that are listed in Schedule E should be mapped.[22]

62 It is acknowledged that field survey resulting in maps of ecologically significant areas that were appended to plans and drove provisions was common practice in the past. This can largely be attributable to the previous absence of alternative methods and tools for identifying areas of important indigenous biodiversity. The development of the NV POP took advantage of relatively recent developments in ecological modelling to arrive at a considerably more cost effective, yet more sophisticated approach to identifying habitat types (and thus indigenous biodiversity) of importance to the Region[23]. The technical experts are in agreement that the methods and tools used to inform Schedule E are now widely used and accepted.

63 Field survey, assessment and mapping is methodology that all the involved technical experts are well-versed in. Therefore, it is with a high degree of confidence that we collectively have agreed to the inherent limitations of mapping for the purposes of regulation of activities.

64 The limitations of a region-wide mapping exercise were first tabled in my section 42A report to the Biodiversity and Heritage Hearing.[24] Ms Hawcroft

[21] Note the discussion regarding naturally uncommon habitat types in Part V of this evidence.
[22] Federated Farmers appeal point #40 & Horticulture New Zealand's appeal point #78.
[23] Maseyk, 2007; Maseyk, 2008; Hawcroft, 2012; Park, 2012.
[24] Section 42A Report of Fleur Maseyk, TEB, paragraphs 113-123, pages 2805-2808.

provides further referenced comment on the limitations of relying on field survey to build schedules for inclusion in plans.[25]

65 In the past, and elsewhere the country, field-survey and mapping exercises tended to provide an incomplete list of important areas of indigenous biodiversity. This approach led to protracted litigation over the delineation of habitat boundaries or the inclusion of properties in planning documents. Frameworks reliant on these approaches have in the past lead to inconsistent (jeopardising biodiversity outcome), and unfair (placing restrictions on some landowners and not others) application of policy as some landowners have fought to keep their properties out of planning documents, while others have not or have simply not been aware of the inclusion of their property. The discussion becomes one driven by wishes of individual landowners rather than ecological science or policy need. Thus, plan objectives can quickly become compromised.

66 Habitat extent can change over time through natural or induced disturbance or successional events, and static maps can become quickly out of date requiring a plan change to rectify. Wetland habitat, the extent of which can, and does, change from season to season, year to year, and in varying ways in response to surrounding land use, illustrates nicely the inherent difficulty in determining extent of habitat for the purposes of long-term regulatory protection.

67 The critical aspect of Schedule E is whether an area of habitat is of a type listed in the schedule. Determining the exact extent of an area of habitat in time and space relevant to a proposed application is best done by in-field confirmation guided by ecological defined descriptions. It is by far more efficient to undertake field-survey for a regulatory purpose on an as-required basis.

68 By relying on habitat type descriptions rather than mapped areas, the restrictions on activities or requirement to obtain a resource consent only apply to the area of interest, and not to a previously mapped geographical

[25] Statement of Evidence in Chief of Amy Hawcroft, 17 February 2012, paragraph 49, page 16.

space which may or may not continue to support scheduled habitat into the future.

69 The inefficiencies and inadequacies of mapping sites for regulatory purposes, should not be confused with the benefit of in-field survey to gain greater understanding and knowledge of regional indigenous biodiversity for non-regulatory purposes. The increased knowledge gained from such surveys targeted specifically at areas of interest (and in no way attempting to identify and map every area of indigenous vegetation within the region) is critical for making informed and justifiable management and funding decisions for the purpose of biodiversity enhancement.

70 The two purposes – regulatory management and non-regulatory management –are very specific. While together they provide a complimentary approach to achieve long-term protection of biodiversity pattern and process, they are appropriately driven by different tools and methods of identification. Field-survey and mapping enhances certain targeted non-regulatory methods, but is clearly an inferior and unjustifiably expensive undertaking for the purposes of regulation.

71 By their very nature, a mapping approach or a schedule of known sites will not serve any advantage over or produce a result as inclusive as a definition-based schedule of habitat types such as Schedule E. The technical experts have been in agreement throughout the hearing and appeal process on this issue.

PART IV: OTHER ISSUES

72 There were additional points raised by the technical experts which, while they are not major issues under dispute, warrant some degree of comment. I have provided relevant discussion below.

A. Are the naturally uncommon habitat types listed in Schedule E and classified as 'rare' appropriately classified?
B. Which category should the criterion relating to induced uncommonness sit within Policy 12-6?

A. Are the naturally uncommon habitat types listed in Schedule E and classified 'rare' appropriately classified?

73 The methodology for the identification of naturally uncommon habitat types was heavily reliant on an eight year (initiated in 2005) research programme undertaken by Landcare Research. As development of the POP and Schedule E progressed two publications become available, the first in 2006[26] and the second in 2007.[27]

74 Although representing work in progress, these two publications (Williams, et al., 2006 & 2007) highlight the uniqueness of naturally uncommon habitat types and the tendency for such habitats to support a high number of endemic (and often threatened) species. Such habitat types also support obligate species, that is species that can only exist within specific physical and environmental conditions and which can not successfully exist outside of those conditions. Therefore, loss or degradation of these habitat types results in the loss of or reduction in fitness of the species reliant on them.

75 The evidence was compelling for the need to include naturally uncommon habitat types in any policy framework aimed at the maintenance of indigenous biodiversity. The technical experts agreed this to be the case,

[26] Williams. P.A., Wiser, S., Clarkson, B., Stanley, M. 2006. A physical and physiognomic framework for defining and naming originally rare terrestrial ecosystems: first approximation. *Landcare Research Internal Report: LCO506/185*. Landcare Research New Zealand Ltd.

[27] Williams, P.A., Wiser, S., Clarkson, B., Stanley, M. 2007. New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. *New Zealand Journal of Ecology 31(2): 119-128*.

but over the course of caucusing we did deviate from the manner in which ecosystems (which Schedule E represents as habitat types) are described in Williams, et al. (2006 & 2007).

76 The changes were done in agreement with the experts involved in caucusing at the time[28] and reflected in Version III of Schedule E as presented in my supplementary evidence[29] (see also Appendix 1).

77 The primary drivers for these changes were to ensure habitat types of concern to the interested parties were captured, and to do this in a clear and simple manner. I concede that with the intention to provide clarity and ease of application of the schedule, we might have oversimplified and unduly broadened the habitat definition and description for the habitat types 'Cliffs, scraps and tors' and 'Screes and boulderfields'

78 Bare substrate provides habitat for a number of indigenous flora and fauna. The species of most concern are those specialised to such physical environments and those currently on the threatened species list (as is not uncommon for species of rare habitat types). Equally importantly, bare substrate is a critical component of ecological functions and processes within certain ecosystems. As Ms Hawcroft mentions,[30] the importance of 'bare substrate' was added to Schedule E during expert caucusing at an early stage of the process (see also Appendix 1).

79 It was the intention of the experts to capture the critical functional and habitat provision role of bare substrate within certain habitat types. It was not the intention to capture areas without any significant ecological values.

80 Mr Park[31] has raised doubt over whether all cliffs captured by the Schedule E definition and criteria are likely to be ecologically significant, and Ms

[28] Amy Hawcroft and Graeme LaCock (for the Minister of Conservation), Matiu Park (Boffa Miskell for TrustPower Ltd and Merdian Energy Ltd), Willie Shaw (Wildland Consultants for Mighty River Power) & Fleur Maseyk (Horizons Regional Council).
[29] Evidence and Supplementary Recommendations of Fleur Maseyk for the Biodiversity Hearing. TEB pp. 2916-2939, Appendix 1.
[30] Statement of Evidence in Chief of Amy Hawcroft, paragraph 83, page 24.
[31] Statement of Evidence of Matiu Park, paragraph 4.9 onwards, page 8.

Hawcroft[32] also notes the uncertainty surrounding the classification of the habitat types 'Cliffs, scraps and tors' and 'Screes and boulderfields'. Ms Hawcroft has provided a suggested solution by which the classification for 'Cliffs, scraps and tors' and 'Screes and boulderfields' is revised to *at-risk* and the classification for the duneland habitat types ('Active duneland', 'Stable duneland' and 'Inland duneland') be revised to *threatened*. I agree with Ms Hawcroft that the duneland habitat types would warrant a classification of *threatened* should they be found to in fact not be originally uncommon.

81 However, I am not of a mind to 'downgrade' the classification for those habitat types currently identified within Schedule E as being naturally uncommon habitat types classified as rare. The inclusion and classification of these habitat types was based on the best available research. The resolution of this uncertainty in time could equally prove that these habitat types *were* originally uncommon as not. In the case of the former, and given the considerable and often disproportionate contribution of originally uncommon habitat types to regional and national indigenous biodiversity[33], it is my opinion that a precautionary approach is warranted.

82 I would be more inclined to consider greater specificity regarding:

a. geophysical definitions, and
b. the pattern of interaction between bare substrate and indigenous flora or fauna

for the habitat types 'Cliffs, scarps and tors' and 'Screes and boulderfields'. This could go some way to addressing Mr Park's concern regarding the lack of significant ecological values exhibited by cliff sites within the Region that he is familiar with whilst retaining the ecological fundamentals upon which Schedule E was constructed.

83 Critically, areas that are truly naturally rare habitat should not be exposed to the risk of sanctioned decline or loss just because no species of importance were recorded during the typically narrow window of search effort. Recognition of the ecological value of naturally rare habitat types should not

[32] Statement of Evidence in Chief of Amy Hawcroft paragraph 105 onwards, page 29.
[33] Maseyk, 2007 & 2008; Williams et al., 2006 & 2007; Hawcroft, 2012.

be reliant on the presence of key species at the time of survey. The species that tend to rely on such habitat types are characteristically highly mobile, transient or short-lived. The presence, absence or detectability of species can be seasonally or weather dependent. As rare habitat types are by definition naturally uncommon in the landscape, continued availability is critical to allow for ongoing species occupancy and ecological processes at the landscape scale.

84 Continued loss of, or interrupted access to, critical habitat across the landscape can result in cascading impacts on those species for which this habitat is critical even if the area appeared to be 'unused' at the time of the search effort.

85 I consider that Schedule E could function effectively regardless of whether any changes are made to these habitat types at this point. This is because the initial site visit to determine whether the site in question meets the definitions and criteria in Schedule E will quickly identify those sites lacking significant values. Such sites would not be captured by the consenting process.

86 In light of the above discussion, I do not see how the Schedule E framework would add unduly onerous requirements for a large-scale development proposal such as citied in Mr Park's Statement of Evidence (paragraph 4.11, page 8). I consider that for a proposal of this nature, a comprehensive in-field survey for threatened flora or fauna that would potentially be adversely affected by the proposal is entirely appropriate.

87 I agree with Mr Park[34] that a site visit is often required to determine whether a site meets Schedule E definitions and criteria (Table E.1, Table E.2(a) & (b)). Should the site be found to not meet both habitat type definitions and criteria, there is no need to apply for a resource consent.

88 In my mind, this process is not dissimilar to situations elsewhere, where an initial site visit is necessary to assess significance prior to determining resource consent requirements.

[34] Statement of Evidence of Matiu Park, paragraph 4.12, page 9.

89 The assumption regarding significance only applies to sites that meet the specifications of Schedule E for habitat types classified as rare or threatened, and not to sites that do not. I am in agreement with Mr Park that those sites that do not meet Schedule E definitions and criteria should not be assumed to be significant in the context of RMA s6(c), in the absence of an in-field assessment to determine significance.

B. Which category should the criterion relating to induced uncommonness sit within Policy 12-6?

90 Dr Gerbeaux[35] has raised the question whether the criteria within Policy 12-6 are within the correct categories.

91 The three categories provided within Policy 12-6 for assessing the significance of, and the effects of activities on an area of habitat are:

i. Representativeness
ii. Rarity and distinctiveness
iii. Ecological context

92 The first category, representativeness, encompasses two criteria[36]:

i. in terms of representativeness, that habitat:

A. comprises indigenous habitat type that is under-represented (20% or less of known or likely former cover), or
B. is an area of indigenous vegetation that is typical of the habitat type in terms of species composition, structure and diversity, or large relative to other areas of the same habitat type in the ecological district or ecological region, or has functioning ecosystem processes.

[35] Statement of Evidence in Chief of Philippe Gerbeaux, paragraph 36, page 9.
[36] Wording of this policy as replicated here follows that agreed to by the technical experts as per the Record of Technical Conferencing on Biodiversity 31-January-2012.

93 The category of ‘representativeness’ therefore captures areas of habitat type that is now uncommon (induced rarity) in the landscape, and areas of habitat that may be of a common habitat type but are particularly ‘good’ examples of this habitat type in terms of species composition, size of area, and intactness of ecological systems and processes.

94 Criterion A captures areas of habitat type that is now under-represented and therefore provides a (often imperfect) *representation* of previous vegetation cover. Criterion B captures areas of habitat that can be considered to be highly *representative* of former vegetation cover in a more complete sense (i.e. a greater number of the components (species, processes, interactions) remain present). A given area of habitat can conceivably meet both criterion A and B.

95 Both depictions of habitat within the landscape can be considered to express *representativeness*, and this is the way they are presented within the DV POP. Dr Gerbeaux makes the point that criterion A (under-represented habitat) should sit within the category ‘rarity and distinctiveness’.

96 This is not a novel suggestion, and ecologists have grappled with the placement of certain criterion within categories on other occasions and for other plans. It is my opinion that both options for the placement of the criterion to capture under-represented habitat could be argued to be appropriate. However, consideration was given to consistency with common usage and published literature when placing criteria within categories.

97 Should there be an inclination to rearrange the assessment criteria between categories the option of editing the current categories could be considered. For example:

i. Representativeness
ii. Natural rarity and distinctiveness
iii. Induced rarity
iv. Ecological context

with the criteria:

‘comprises indigenous habitat type that is under-represented (20% or less of known or likely former cover)’ *currently included under the representativeness category* , and:

‘is classified as threatened (as determined by the New Zealand Threat Classification System and Lists) *currently included under the rarity and distinctiveness category*

included under the category ‘Induced rarity’.

98 However, it is my view that at this stage the discussion is largely immaterial, and rearrangement of criteria unnecessary. What is critical is that the wording of the criteria is adequate to clearly differentiate between the two applications of the concept of ‘representativeness’ and that there is no scope for confusion as to what each criteria would and would not capture. I believe the wording as recommended as a result of technical caucusing[37] provides this clarity.

[37] As recorded within the Record of Technical Conferencing on Biodiversity 31 January 2012.

PART V: CONCLUSIONS

99 The Manawatu-Wanganui Region comprises diverse physical, biological and climatic environments. The current representation of indigenous biodiversity within the regional landscape has been shaped by environmental (e.g. mountain building, climate change, natural disturbance events) and cultural (Maori and European) history, and contemporary pressures and drivers of decline.

100 A number of identified habitat types present within the Region have been drastically reduced from predicted pre-human extents. Other habitat types are known to be naturally uncommon. Still other habitat types provide critical habitat for species threatened with extinction. Areas of remaining indigenous biodiversity have been illustrated to be vulnerable to further decline as a result of a number drivers, including land-use and development.

101 Schedule E provides a novel yet effective mechanism upon which to build policy that is responsive to these issues. It is accepted that the methodologies and tools used to identify, describe and classify habitat types listed in Schedule E are scientifically robust. It is also agreed that a schedule of habitat types of ecological importance is a superior approach than traditional methods of mapping individual sites of significance.

102 The list of criteria provided in Policy 12-6 as agreed to during expert caucusing is appropriate for checking ecological significance and guiding the identification and description of site values.

103 Assessment of condition is a separate consideration to that of determining ecological significance. It is, however, a consideration that is critical at the point of decision making and in the situation of comparing two or more sites against each other, but not one that should distract from determination of significance in the first instance.

104 A site visit, while critical to determine whether an area of vegetation is captured by Schedule E, is not necessary to determine ecological significance for areas of habitat type classified as *rare* or *threatened.* This process of initial ‘checking for capture’ is not dissimilar to other approaches where a site

visit is first required to determine whether a given site is captured by plan provisions or not.

105 Biodiversity offsetting is an emerging field and because of this the success of biodiversity offsetting remains untested in New Zealand. There is no doubt a new skill-set is required for decision makers and ecologists to design and implement effective offsetting packages. However, success in setting up an offsetting regime in-line with emerging international best practice has been proven. Meanwhile, the collective track record of attempting mitigation within the Resource Management Act framework has in most cases sold biodiversity short, is rarely transparent, and infrequently monitored and reported on. It is my opinion that guidance within policy regarding how and when biodiversity offsets should be applied is timely.

106 With the development of alternative and robust methods to identify areas of significant indigenous vegetation and areas of significant habitat of indigenous fauna, mapping of individual sites *for the purposes of applying regulatory protection* has become a piecemeal, protracted, costly and redundant exercise at best and one open to constant litigation at worst.

107 The scientific research on naturally uncommon habitat types is continuing to evolve. Understanding of the contribution these habitat types and ecosystems make to regional indigenous biodiversity, and certainty about their classification, will increase with time. Nonetheless, the inclusion of habitat types currently considered to be naturally uncommon reflects the best knowledge available at the time of drafting. Collaborative attempts to make Schedule E as straightforward as possible have inadvertently over-simplified definitions of some habitat types classified within the schedule as *rare*. However, I consider that Schedule E can be implemented in a manner that ensures only areas of habitat that warrant protection are captured.

108 There is no need to rearrange criteria listed in Policy 12-6 between categories. The current listing is in line with common usage and published literature.

FLEUR MASEYK, ECOLOGIST

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APPENDIX 1: THE EVOLUTION OF SCHEDULE E

1 Changes to Schedule E were incorporated in response to submissions, technical caucusing, further development of knowledge and thinking over this time, requests from the hearing committee and in acknowledgment of the schedule requiring further work.

2 Substantial collaborative and thoughtful effort was invested in each version of Schedule E. Consequently, I consider that each version presented on behalf of Horizons represents an improvement on the last, in terms of: accuracy, usability and clarity; maintaining consistency with the overriding framework of the schedule; and keeping the Schedule in line with the desired outcome of maintaining indigenous biodiversity within the Region.

3 The Chairperson's Minute #7 (14 April 2009) contained a further iteration of Schedule E (as drafted by the Hearings Committee) to which, on request from the Chairperson, myself and Helen Marr provided response to (7 May 2009).

4 Schedule E, as it appears in the DV POP, is largely reminiscent (barring some relatively minor word changes) of Version V Schedule E and was agreed to by the technical experts at the time.

Table 1: The seven versions of Schedule E and a summary of recommended changes for subsequent versions. The justification for the recommended changes are provided in the corresponding evidence reports. All evidence and reports referred to in the table below are those authored by myself.

Schedule E Version	**Presented**	**Date Released / Date of Hearing**	**Summary of recommended changes** (these changes were then reflected in the subsequent version of Schedule E)
I	Notified Version Proposed One Plan	31 May 2007	
II	Biodiversity & Heritage Hearing Appendix 4 of Section 42A Report	20-21 November 2008	**Changes to the list of habitat types** • Two habitat types added to Table E.1 • 12 habitat types removed from Table E.1 **Habitat type descriptions and definitions** • Clarification of habitat type descriptions and definitions, and definitive references included **Table E.2** • Introduction of 'treeland' into Table E.2a **Table E.3** • Considerable rationalisation of Table E.3 (the threatened species table) **Table E.4** • Table E.4 (significance criteria) removed from Schedule E
III	Biodiversity & Heritage Hearing Appendix 1 of Supplementary Evidence Report	20-21 November 2008	**Changes to the list of habitat types** • Five additional habitat types (one threatened, two at-risk, and two rare habitat types) not able to be predicted using models added to Table E.1 **Changes to presentation of rare habitat type** • Rewording of habitat type name and definition to create the habitat types 'Cliffs, scraps and tors', and 'Screes and boulderfields' classified as rare **Changes to criteria presented in Table E.2(a) and (b)** • To amend thresholds considered to be ineffectual in capturing areas of interest or excluding those that aren't • Consolidate criteria where appropriate • Delete criteria no longer required due to other changes to Schedule E • Add criteria in association with the recommended additional

Schedule E Version	Presented	Date Released / Date of Hearing	**Summary of recommended changes** (these changes were then reflected in the subsequent version of Schedule E)
			habitat types • Amend inclusion criteria to more explicitly describe areas of vegetation to be included in Schedule E • Add or amend exclusion criteria to more explicitly describe areas of vegetation to be excluded from Schedule E **Table E.3** • Deletion of the remainder of Table E.3 **Editorial changes** • Further clarity provided to ensure more robust and accurate habitat type labels, definitions and more informative descriptions • Inclusion of a brief glossary • Inclusion of the potential presence of threatened plant species within habitat type descriptions • Updating of references used • Column heading changes • Rearrangement of habitat types to place like with like • Insertion of subheadings to make Table E.1 easier to read and to link Table E.1 to Table E.2
IV	Biodiversity & Heritage Hearing 'Recommended changes to Schedule E'	1-2 December 2008	• Correction of references • An expansion of the glossary • A clarification of definition of the term 'heathland' • A number of grammatical and structural amendments
V	Biodiversity & Heritage Hearing Response to Supplementary Evidence of Technical Experts (End of Hearing Report)	23 January 2009	**General editing** • Corrections to grammar • Rewording throughout the schedule as required for simplicity, clarity and legality **Use of the word 'indigenous'** • The word 'indigenous' removed from the front-end definition and placed throughout the schedule as required and consequential changes **Interpreting Schedule E – text and flow diagram**

Schedule E Version	Presented	Date Released / Date of Hearing	**Summary of recommended changes** (these changes were then reflected in the subsequent version of Schedule E)
			• Minor text changes • Stipulation that consent requirement refers to biodiversity provisions only **Sub-headings in Table E.1** • A number of editorial changes to be more informative and consistent **Riparian margin habitat type** • Rewording of 'Riparian margin' habitat type **Organisation of habitat types in Table E.1** • Rearranged Table E.1 to group habitat types by vegetation structure and by classification **References** • Deleted references from schedule and removed footnotes **Wetland habitat type definitions and descriptions** • Wetland habitat type definitions expanded to provide more clarity, text shifted between 'Definition' and 'Further Description' columns • Habitat type descriptions expanded for easier differentiation between types • Marsh wetland habitat type was been added (with swamp wetland) to provide clarification between marsh and swamp wetland **Naturally uncommon habitat types classified as rare** • Fauna information added to 'Further Description' column as appropriate • Clarity provided to detail the importance of 'bare substrate' as a component of habitat types as necessary **Table E.2** • Editing of sub-headings for consistency between Table E.1 & Table E.2 & consequential reordering of criteria • A number of criteria condensed or combined • Deletion of criteria where other criteria, or provisions elsewhere in the plan provide adequate cover

Schedule E Version	**Presented**	**Date Released / Date of Hearing**	**Summary of recommended changes** (these changes were then reflected in the subsequent version of Schedule E)
			Figure E.1 • Delete Figure E.1 • Remove all reference to Figure E.1 in Table E.1 **Glossary** • Add three definitions to the glossary • Shift the Schedule E glossary definitions to the Plan glossary • Asterisks added to defined words
VI	Decisions Version Proposed One Plan	24 August 2010	