Before a Hearings Panel
Appointed by the Otago Regional Council

under: the Resource Management Act 1991

in the matter of: submissions and further submissions on the Proposed Otago Regional Policy Statement (non-freshwater parts)

and: **Sanford Limited**

Submitter #122

Statement of Evidence of Dr Hilke Giles

Dated: 23 November 2022

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STATEMENT OF EVIDENCE OF DR HILKE GILES

INTRODUCTION

1 My full name is Hilke Giles.

2 I am a coastal and systems scientist and the Managing Director of Pisces Consulting Limited.

3 My qualifications include a PhD and MSc in Marine Biology, a Postgraduate Diploma in Management Studies, and a Diploma in Law from the University of Waikato. I also hold a MSc-equivalent degree in Applied Systems Science from the University of Osnabrück, Germany, and am a certified independent hearings commissioner.

4 I have been working as an independent consultant in my environmental consultancy company, Pisces Consulting Limited, since March 2018. Previously, I worked for eight years at Waikato Regional Council (as a Coastal Scientist and Coastal Science Team Leader) and at the National Institute of Water and Atmospheric Research (*NIWA*) as a postdoc and sediment biogeochemist.

5 I have more than 15 years' of professional coastal science experience obtained from a variety of roles in research and applied science, largely focussing on managing ecological effects of anthropogenic activities, including marine farming, including:

5.1 Leading an operational review of the Marlborough District Council's Ecologically Significant Marine Sites programme to ensure it provides appropriate protection of marine biodiversity values.

5.2 Working on the Ministry for the Environment Environmental Limits Working Group and Natural and Rural Reference Group, established to help develop advice for the Resource Management Review Panel under the current resource management system reform.

5.3 Post-doctoral and subsequent research and scientific investigations on the environmental impacts of finfish aquaculture, including on benthic habitats and species.

5.4 Development of best practice guidance, and approaches for limits and standards for managing effects of marine farming and other anthropogenic activities affecting the coastal environment.

5.5 Preparation of assessments of environmental effects (*AEEs*) for marine farm resource consent applications (and other

activities in the coastal marine area) and provision of associated advice, including evidence for council hearings.

5.6 Design, implementation and reporting of benthic and water quality baseline and monitoring surveys for marine farms (and other activities in the coastal marine area).

5.7 Review of AEEs, monitoring and management plans and reports, and other consent-related documents on behalf of councils and provision of associated advice, including evidence for council hearings.

5.8 General advice to councils, industry, and central government on aquaculture and other costal science-related matters, for example, to support aquaculture development, environmental management, coastal plan reviews and developments, and national and regional state of the environment reporting.

6 I am a member of the New Zealand Marine Sciences Society and was elected as President from 2016-2018. I am also a member of the New Zealand Coastal Society. I have authored or co-authored 11 scientific peer-reviewed journal papers.

7 I have previously been engaged by Sanford Limited (*Sanford*) to:

7.1 assist with the assessment of ecological effects of the expansion of salmon farming in Big Glory Bay (2018);

7.2 review the environmental monitoring plan for Big Glory Bay salmon farms (2018-19); and

7.3 assist with the assessment of environmental effects of a proposed open ocean marine farm at the south-eastern end of Foveaux Strait (Project South, 2019-20).

8 I have no commercial relationship with Sanford, save in my role as expert in relation to the projects listed in paragraph 7 and this evidence.

SCOPE AND STRUCTURE OF EVIDENCE

9 My evidence addresses:

9.1 Significance criteria in APP2 of the proposed Otago Regional Policy Statement 2021 (*pORPS*) as recommended in the Section 42A Hearing Report (*proposed significance criteria*); and

9.2 Management of adverse effects on areas identified as significant under the proposed significance criteria under

Policy CE-P5 as recommended in the Section 42A Hearing Report.

10 For the purposes of preparing my evidence, I have read:

10.1 Sanford's submission;

10.2 The submission by the Director-General of Conservation; and

10.3 The relevant parts of Section 42A Hearing Report Chapter 8 (CE – Coastal environment) and Chapter 10 (ECO – Ecosystems and indigenous biodiversity), specifically those addressing Policy CE – P5 and APP2 of the pORPS.

11 In my evidence I refer to a review of council significance criteria conducted by Fenwick (2018) who compared the significance criteria of several regional and unitary councils (*councils*) and significance criteria developed by the international researchers.

12 The significance criteria by Marlborough District Council (*MDC*) have been modified recently and some information about these criteria provided in Fenwick (2018) is no longer current. This evidence refers to the MDC significance criteria of the appeals version of the proposed Marlborough Environment Plan (shown in **Appendix 1**).

13 Scientific literature reviewed and referred to in my evidence is listed in the reference list at the end of my evidence.

14 The structure of my evidence is as follows:

14.1 Paragraph 16-28 provide a summary of evidence;

14.2 Paragraph 29-32 provide relevant background on council significance criteria;

14.3 Paragraph 33-40 present a comparison of the proposed criteria to those of other councils and New Zealand Coastal Policy Statement (*NZCPS*) Policy 11;

14.4 Paragraph 41-44 describes the implications of the broader scope and ambiguity in the proposed criteria;

14.5 Paragraph 45-48 discuss the scope of the proposed criteria in comparison to NZCPS Policy 11(A);

14.6 Paragraph 49-53 present my views on whether it is necessary to avoid adverse effects on all areas identified through the proposed criteria;

14.7 Paragraph 54-57 present further comments on specific proposed criteria ((f)(ii), (fA), and (h)); and

14.8 Paragraph 58-66 present my conclusions and recommendations.

15 While this is a Council hearing, I confirm that I have read the Environment Court's Code of Conduct for Expert Witnesses, and I agree to comply with it. My qualifications as an expert are set out above. I confirm that the issues addressed in this brief of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SUMMARY OF EVIDENCE

16 Most of the proposed significance criteria in the officers' version of APP2 are similar to significance criteria of other councils. However, there are critical differences and unique features of the proposed significance criteria that means they would likely apply to a wider range of areas within the coastal environment than those in these other regions and add ambiguity and new ecological grounds for determining significance.

17 Proposed significance criteria that are notably more ambiguous and/or broader in scope than criteria used by some or all other councils to determine significance include criteria (a), (b), (e), (f)(ii), (fA), (g)(i)-(iv)and (h).

18 Proposed significance criteria that match NZCPS Policy 11(a) descriptors are (d)(i), (iii), and (f)(i). Proposed criteria (a)-(c), (f)(ii) and f(iii) are similar to Policy 11(a) descriptors but due to their broader wording it is likely these proposed criteria would capture more and/or larger areas than those captured under the respective NZCPS descriptors.

19 Proposed significance criterion (g)(iv) matches Policy 11(b)(iii). Proposed criteria (d)(ii), (e), (g)(i)-(iii), and (h) are similar to Policy 11(b) descriptors but due to their broader wording and scope it is likely these proposed criteria would capture more and/or larger areas than those captured under the respective NZCPS descriptors.

20 Importantly, other councils, similar to the approach of the NZCPS, apply tiered protection approaches to areas or sites that meet significance criteria and/or rank criteria to determine the degree of significance. The blanket 'avoid effects' provision recommended in the Section 42A Hearing Report without any ranking of criteria is, in my view, unique in New Zealand and has wide-ranging consequences on the management of adverse effects of activities in the Otago coastal environment.

21 The combination of broader and partially ambiguous significance criteria and the blanket 'avoid effects' provision would result in a greater proportion of the Otago coastal environment being identified as significant and covered by an 'avoid effects' policy direction than the proportion identified under NZCPS Policy 11(a).

22 The proposed approach to protecting indigenous biodiversity would also require avoidance of effects in areas which fall under NZCPS Policy 11(b) and others not captured at all by Policy 11.

23 While it is not clear what areas would be covered by the more ambiguous and/or broad criteria, it is possible that areas could be large.

24 I conclude that the proposed approach goes beyond what is necessary to protect indigenous biodiversity in the pORPS.

25 Specifically, I do not consider it necessary to avoid effects on all areas likely to be identified under the officers' version of APP2 and I consider it likely that some parts of the coastal environment potentially captured under the criteria may not contain indigenous vegetation or habitats of indigenous fauna that would be considered significant in terms of RMA section 6(c).

26 In addition, as a consequence of the relatively high ambiguity and broad scope of some of the proposed criteria, implementation of APP2 may be difficult because:

26.1 Ambiguous or broad criteria make it more difficult to achieve the scientific rigor required for assessment and determination of significance. This may provide more scope for legitimate disagreement among experts over whether an ecosystem component is 'significant' or not.

26.2 Ambiguity and broadness also create a risk of potentially overly cautious application of significance criteria, resulting in the restriction of activities in areas that is not necessary to suitably protect biodiversity. While it is not clear what areas would be covered by the ambiguous and/or broad criteria, it is possible that areas could be large.

27 In my opinion, the following amendments are critical to improve the proposed approach to protecting indigenous biodiversity through the combination of Policy CE-P5 and significance criteria in APP2:

27.1 Reduce the ambiguities in and tighten the scope of significance criteria, especially criteria (a), (b), (e), (f)(ii), (fA), (g)(i)-(iv)and (h).

27.2 Amend Policy CE-P5 so that areas captured under the significance criteria in APP2 do not automatically trigger the need for adverse effects to be avoided but are protected under a tiered approach similar to that of the NZCPS and used by other councils.

28 **Mr Low** has included a revised suite of significance criteria in his evidence which respond to matters raised in **Appendix 2** and paragraph 52-55 of my evidence. In my opinion, they are a useful starting point, however, developing these types of criteria requires multidisciplinary input and, in my view, they would benefit from further refinement through expert caucusing or a similar process.

BACKGROUND ON SIGNIFICANCE CRITERIA FOR INDIGENOUS BIODIVERSITY BY COUNCILS

29 Section 6(c) of the RMA requires protection of "*significant ... vegetation and significant habitats of indigenous fauna*" but does not provide a definition of significance. The RMA also requires recognition of and provision for additional matters of national importance relating to biodiversity, including safeguarding the life-supporting capacity of ecosystems (section 5(2)(b)) and intrinsic values of ecosystems (section 7(d)).

30 For the coastal environment, NZCPS Policy 11 (*Policy 11*) provides direction for achieving the purpose of the RMA with respect to managing the effects of activities on indigenous biodiversity, including the protection of significant indigenous biodiversity as well as the other matters described in paragraph 29.

31 Importantly, Policy 11 contains three protection levels:

31.1 Firstly, it directs the avoidance of adverse effects of activities on the most valuable and vulnerable components of New Zealand's indigenous biodiversity, which are defined though descriptors under Policy 11(a).

31.2 Secondly, Policy 11 requires that significant adverse effects of activities on other defined categories of indigenous vegetation, habitats, and ecosystems (identified through descriptors under Policy 11(b)) be avoided.

31.3 Thirdly, where adverse effects on biodiversity components defined under Policy 11(b) are not significant, all other adverse effects of activities on indigenous biodiversity should be avoided, remedied, or mitigated.

32 There is no nationally accepted set of criteria for defining or identifying areas of significant indigenous vegetation and significant habitats of indigenous fauna, as required by Section 6(c) of the

RMA. Most councils have developed criteria for identifying these areas in their region or district as well as associated policy and plan provisions for their protection. Due to regional variation in the interpretation of significance and different approaches for the protection of identified areas and sites, there are differences in significance criteria and associated policy provisions among councils. Importantly, similar to the structure of NZCPS Policy 11, other councils apply tiered protection approaches to areas that meet significance criteria and/or rank criteria to determine the degree of significance.

COMPARISION OF PROPOSED SIGNIFICANCE CRITERIA TO THOSE OF OTHER COUNCILS AND NZCPS POLICY 11

33 In this section I provide a comparison of the proposed criteria to significance criteria of other councils (shown in **Appendix 1**) to:

33.1 support my comparison of the proposed criteria with the descriptors of NZCPS Policy 11; and

33.2 identify the extent to which the proposed criteria are broader and more ambiguous than those of other councils.

34 An analysis of differences between the proposed criteria and those of Auckland Council (*AC*), Environment Southland (*ES*), and Marlborough District Council (*MDC*)[1] and comments on ambiguity and broad nature of criteria are provided in **Appendix 2**.

35 I focussed on significance criteria of MDC, ES, and AC as these are generally more similar to the proposed criteria than those of other councils.

36 My analysis of proposed criteria is provided in **Appendix 2** and paragraphs 52-55. **Table 1** below presents the findings of my comparisons of the proposed criteria with the significance criteria of other council criteria and with the descriptors of Policy 11.

37 **Table 1** indicates where proposed criteria are worded broader than the respective NZCPS descriptor or council significance criteria. This means it is likely some proposed criterion would capture more and/or larger areas than those captured under the respective NZCPS descriptors or council significance criteria.

[1] A complete comparison of the proposed criteria and criteria used by other councils is out of scope of my evidence. I focussed on the criteria of Marlborough District Council, Environment Southland, and Auckland Council as those are generally most similar to the proposed criteria. These councils' significance criteria are shown in Appendix 1.

38 In summary:

38.1 Proposed significance criteria that are notably more ambiguous and/or broader in scope than criteria used by some or all other councils to determine significance include criteria (a), (b), (e), (f)(ii), (fA), (g)(i)-(iv)and (h).

38.2 Proposed significance criteria that match NZCPS Policy 11(a) descriptors are (d)(i), (iii), and (f)(i). Proposed criteria (a)-(c), (f)(ii) and f(iii) are similar to Policy 11(a) descriptors but due to their broader wording it is likely these proposed criteria would capture more and/or larger areas than those captured under the respective NZCPS descriptors.

38.3 Proposed significance criterion (g)(iv) matches Policy 11(b)(iii). Proposed criteria (d)(ii), (e), (g)(i)-(iii), and (h) are similar to Policy 11(b) descriptors but due to their broader wording and scope it is likely these proposed criteria would capture more and/or larger areas than those captured under the respective NZCPS descriptors.

Table 1. Comparisons of the proposed criteria with significance criteria of Auckland Council (AC), Environment Southland (ES), and Marlborough District Council (MDC) and with the descriptors of NZCPS Policy 11(a) and (b). 'Broader' indicates that proposed criterion is worded broader than the respective NZCPS descriptor or council significance criteria.

Proposed criterion	Comparison to			Comment
	NZCPS 11(a)	NZCPS 11(b)	Significance criteria of other councils	
(a)	(v) - broader		Broader than MDC and ES criteria, similar to AC criterion	
(b)	(v) – broader		Broader than AC criteria, no matching MDC or ES criteria	
(c)	(v) – broader		Identical to AC criterion, broader than MDC and ES criteria	
(d)(i)	(i), (ii)		No comparison provided as very similar to council criteria	
(d)(ii)		(iii) - broader		
(d)(iii)	(iii), (iv)			
(e)		(i) – broader	Very similar to MDC and ES criteria, broader than AC criterion	Phrase 'high diversity' is ambiguous
(f)(i)	(iv)		No comparison provided as very similar to council criteria	
(f)(ii)	(iii) – broader		Similar to AC criterion, broader than MDC criterion, no matching ES criterion	Proposed criterion does not require endemic species to be threatened or of any particular importance or vulnerability
(f)(iii)	(v) - broader		Similar to AC criterion and very similar to MDC and ES criteria	
(fA)			No matching AC, ES, or MDC criteria	Phrase 'relatively high natural productivity' is ambiguous
(g)(i)		(vi) – broader	Broader than ES and MDC criteria, no matching AC criterion	MDC criterion is a 'management criterion', meaning it is not used for or directly relevant to the determination of ecological significance
(g)(ii)		(vi) - broader		
(g)(iii)		(ii) - broader	Broader than AC, ES, and MDC criteria	
(g)(iv)		(iii)	Identical to ES and MDC criteria, no matching AC criterion	
(h)		(iii) - broader	No matching ES and MDC criteria, some similarity to AC criterion	

IMPLICATIONS OF BROADER SCOPE AND AMBIGUITY IN THE PROPOSED CRITERIA

39 As demonstrated above, some of the Officer's proposed significance criteria are ambiguous and broad. While some ambiguity and broadness are inevitable in significance criteria, there are critical differences and unique features in some of the proposed significance criteria that render them broader and more ambiguous than those used in Policy 11 or contained in the significance criteria of the other councils. As a consequence, some proposed criteria would likely apply to a wider range of areas within the coastal environment than those in other regions.

40 Ambiguity and broad criteria are particularly challenging for assessments in the coastal environment because of the limited scientific information on New Zealand's subtidal coastal habitats.[2]

41 Ambiguous or broad criteria make it more difficult to achieve the scientific rigor required for assessment and determination of significance. This may provide more scope for legitimate disagreement among experts over whether an ecosystem component is 'significant' or not.

42 Ambiguity and broadness also create a risk of potentially overly cautious application of significance criteria, resulting in the restriction of activities in areas that is not necessary to achieve the protection of indigenous biodiversity. While it is not clear what areas would be covered by the ambiguous and/or broad criteria, it is possible that areas could be large.

SCOPE OF THE PROPOSED SIGNIFICANCE CRITERIA IN COMPARISON TO NZCPS POLICY 11(A)

43 Policy 11(a) directs that effects be avoided on a specified list of indigenous taxa, species, vegetation types, habitats, ecosystems, and areas.

44 Descriptors in Policy 11(a) focus on indigenous ecosystems and vegetation types that are threatened, on the habitats of indigenous species that are at the limit of their natural range, nationally significant examples of indigenous community types, and areas protected under other legislation.

[2] For example, the Section 42A Hearing Report (Chapter 8) states that "[t]here is currently limited region-specific information about the matters addressed by Policy 11, meaning there is limited Otago-specific direction to guide the application of Policy 11", p.69.

45 As shown in **Table 1** above and further described in this evidence, many proposed significance criteria in APP2 are broader than the descriptors in Policy 11(a).[3]

46 As a consequence, the proposed significance criteria would capture areas of the Otago coastal environment which fall under NZCPS Policy 11(b) or not be captured at all by NZCPS Policy 11.

IS IT NECESSARY TO AVOID ADVERSE EFFECTS ON ALL AREAS IDENTIFIED THROUGH THE PROPOSED SIGNIFICANCE CRITERIA?

47 As outlined above, the proposed significance criteria cover both NZCPS Policy 11(a) and (b) as well as other components of biodiversity not addressed in NZCPS Policy 11. This means that APP2 as recommended in the Section 42A Hearing Report covers the most valuable and vulnerable components of New Zealand's indigenous biodiversity, which are identified under NZCPS Policy 11(a) as well as components that are of lower ecological value and/or more robust and tolerant of the effects of activities.

48 I do not agree that avoiding effects is necessary for all areas that would be identified under APP2.

49 As shown in Table 1, only proposed criteria (d)(i) and (iii) and (f)(i) match well with NZCPS Policy 11(a) criteria and I support the direction of 'avoid effects' for these criteria.

50 Proposed criteria (a)-(c) and f(ii)-(iii) would capture some areas that would also be captured by Policy 11(a) and thus require effects to be avoided; however, their broader nature means that these criteria would also capture other areas and for these a site-specific assessment would be required to determine the appropriate level of protection and it is likely that in many instances a lower level of protection would be sustainable.

51 For proposed criteria shown in **Table 1** as being comparable to Policy 11(b) descriptors or to no Policy 11 descriptors, it would not be ecologically meaningful or necessary to trigger an automatic requirement to avoid effects. As for the criteria described in the previous paragraph, a site-specific assessment would be required to determine the appropriate level of protection and it is unlikely that avoidance of adverse effects would be necessary.

[3] Indicated as proposed criteria that do not match Policy 11(a) or (b) descriptors at all or those that are shown as 'partial' match with the respective 11(a) descriptors in Table 1.

FURTHER COMMENTS ON SPECIFIC PROPOSED CRITERIA

52 This section provides additional comments on proposed criteria (f)(ii), (fA), and (h). My comments provide further information on comparisons with descriptors of NZCPS Policy 11 and highlight specific problems identified with criteria, including the potential for capturing large areas and the implications of the 'avoid adverse effects' policy direction for the management of activities in the Otago coastal environment.

53 Proposed criterion (f)(ii) '*An area that supports or provides habitat for: … Indigenous species that are endemic to the Otago region*':

53.1 This criterion has been described in **Table 1** as partially matching NZCPS Policy 11(a)(iii). However, a critical difference to this policy descriptor is that the proposed criterion does not require endemic species to be threatened or of any particular importance or vulnerability.

53.2 As a consequence, the use of an area by endemic species that are not at any risk of decline or degradation and tolerant to effects of activities could trigger this criterion and result in the area being assessed as significant. The areas potentially covered by this criterion could be very large.

53.3 I do not agree that an area should be considered significant due to it being used by endemic marine mammals, seabirds or other indigenous fauna that are not threatened, of no particular ecological importance, and not vulnerable.

53.4 This situation is even more problematic if significance status automatically triggers an 'avoid adverse effects' requirement.

53.5 For these reasons, I am of the opinion that the combination of proposed criterion (f)(ii) and Policy CE-P5 goes beyond what is necessary to protect endemic species.

54 Proposed criterion (fA) '*Vegetation, habitats, species, populations,* and *species assemblages that [have] relatively high natural productivity*':

54.1 I understand proposed criterion (fA) was inserted in response to the submission by the Director-General of Conservation.

54.2 This criterion is similar to a criterion titled '*biological productivity*' developed by international experts under the Convention on Biological Diversity (*CBD*; Fenwick, 2018).

54.3 The CBD biological productivity criterion is defined as an area "containing species, populations or communities with

comparatively higher natural biological productivity" and the rationale for the criterion is its "important role in fuelling ecosystems and increasing the growth rates of organisms and their capacity for reproduction" (Fenwick, 2018; p.19).

54.4 These matters are not covered under Policy 11, which is why proposed criterion (fA) is outside the scope of Policy 11.

54.5 As explained by Fenwick (2018), this criterion differs appreciably from the criteria recognised and used by the Environment Court in cases involving evaluating the significance of areas of terrestrial and wetland habitats (NZEC 2001, 2004) and (Fenwick, 2018).

54.6 I am not aware of any reason why the situation in Otago is sufficiently different to other regions to warrant it being included as a significance criterion.

54.7 I am also not aware of any reason why a strict 'avoid adverse effects' approach is required for the areas and what specific values are intended to be covered by this criterion.

54.8 No reasoning is provided in the Section 42A Hearing Report why the areas defined through proposed criterion (fA) require adverse effects of activities to be avoided.

54.9 The Department of Conservation submission provides an example of what may be captured by the criterion that exemplifies this. The example is upwelling. Areas in which upwelling occurs are known to have a comparatively high biological productivity because colder and nutrient rich water rises and nutrients 'fertilise' the water column, resulting in higher phytoplankton productivity and associated changes in the food web, such as increased fish abundance.

54.10 Off the Otago coast, comparatively high biological productivity resulting from upwelling has been described in relation to the Southland Front (*SF*), a narrow front passing along the east coast of New Zealand's South Island. The SF has been reported as a region of enhanced phytoplankton productivity within New Zealand (Pinkerton et al., 2005). While this area is predominantly outside the Otago Coastal Marine Area, they influence water quality, including productivity, in the coastal waters.

54.11 It is possible that a large proportion of the offshore parts of the Otago coastal environment is influenced, at least to some degree, by upwelling and associated high biological productivity. Identifying and delineating areas affected by these processes is difficult, if not impossible. It is therefore

not clear what area would potentially be covered by this proposed criterion; however, it is possible that it could be very large, covering much of the offshore parts of the Otago coastal environment.

54.12 This example highlights the potential broad application of proposed criterion (fA) and the potential broad and unjustified restriction of activities in the Otago coastal environment arising from this criterion.

55 Proposed criterion (h) '*An area that contains sensitive habitats or species that are fragile to anthropogenic effects or have slow recovery from anthropogenic effects*':

55.1 This criterion has been added in response to the submission by the Director-General of Conservation. However, the wording of the criterion has been modified and is considerably broader than the criterion of the Director-General of Conservation requested, which was:

> "Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity) or with slow recovery"[4] (important differences underlined).

55.2 The Director-General of Conservation provided examples of areas covered by this criterion, which reflect Policy 11(b)(i) and (iii)[5], as well as specific examples of habitats and species, which clearly demonstrate that this criterion is most similar to the Policy 11(b) descriptors.

55.3 As worded by the Director-General of Conservation the criterion is, in my opinion, largely an interpretation of Policy 11(b)(iii). It is highly likely that any area meeting the descriptor of the submission would also be assessed as meeting Policy 11(b)(iii).

55.4 However, the changes made by the S42A reporting officer have added ambiguity and resulted in a much broader criterion than the one requested by the Director-General of Conservation.

[4] Submission by the Director-General of Conservation, p.25.

[5] "Areas containing predominantly indigenous vegetation in the coastal environment" and "Indigenous ecosystems and habitats that are only found in the coastal environment and are particularly vulnerable to modification, including estuaries, intertidal zones rocky reef systems, eelgrass and saltmarsh" (submission by the Director-General of Conservation, p.25).

55.5 In my opinion, the proposed criterion is not suitable as a significance criterion because it would likely identify areas of vegetation and habitats of indigenous fauna that would not be classified as significant under section 6(c) of the RMA.

55.6 In the context of an effects assessment, the potentially broad application of criterion (h), i.e., potentially any sensitivity and any anthropogenic effect, could be problematic.

55.7 The Director-General of Conservation reasoned that "[i]n the absence of protection, associated biodiversity may not be able to persist"[6] but did not specify a level of protection required. The very clear linkages to Policy 11(b) made by the Director-General of Conservation indicate, in my opinion, that they deemed the level of protection provided under Policy 11(b) to be appropriate for areas identified as significant under this criterion.

CONCLUSION

56 In conclusion, I have identified critical differences and unique features of the proposed significance criteria that means they would likely apply to a wider range of areas within the coastal environment than those in other regions and add ambiguity and new ecological grounds for determining significance.

57 Other councils, similar to the approach of the NZCPS, apply tiered protection approaches to areas or sites that meet significance criteria and/or rank criteria to determine the degree of significance. In my view, the blanket 'avoid effects' provision recommended in the Section 42A Hearing Report without any ranking of criteria would be unique in New Zealand and could have wide-ranging consequences on the management of adverse effects of activities in the Otago coastal environment.

58 The combination of broader and partially ambiguous significance criteria and the blanket 'avoid effects' provision would result in a greater proportion of the Otago coastal environment being identified as significant and covered by an 'avoid effects' policy direction than the proportion identified under NZCPS Policy 11(a).

59 The proposed approach to protecting indigenous biodiversity would also require avoidance of effects in areas which fall under NZCPS Policy 11(b) and others not captured at all by NZCPS Policy 11.

[6] Submission by the Director-General of Conservation, p.25.

60 While it is not clear what areas would be covered by the more ambiguous and/or broad criteria, it is possible that areas could be large.

61 I conclude that the proposed approach to protecting indigenous biodiversity goes beyond what is necessary to achieve the protection of indigenous biodiversity.

62 Specifically, I do not consider it necessary to avoid effects on all areas likely to be identified under the officers' version of APP2 and I consider it likely that some parts of the coastal environment potentially captured under the criteria may not contain indigenous vegetation or habitats of indigenous fauna that would be considered significant in terms of RMA section 6(c).

63 In addition, as a consequence of the relatively high ambiguity and broad scope of some of the proposed criteria, implementation of APP2 may be difficult because:

63.1 Ambiguous or broad criteria make it more difficult to achieve the scientific rigor required for assessment and determination of significance. This may provide more scope for legitimate disagreement among experts over whether an ecosystem component is 'significant' or not.

63.2 Ambiguity and broadness also create a risk of potentially overly cautious application of significance criteria, resulting in the restriction of activities in areas that is not necessary to achieve the protection of indigenous biodiversity. While it is not clear what areas would be covered by the ambiguous and/or broad criteria, it is possible that areas could be large.

64 In my opinion, the following amendments are critical to improve the proposed approach to protecting indigenous biodiversity through the combination of Policy CE-P5 and significance criteria in APP2:

64.1 Reduce the ambiguities in and tighten the scope of significance criteria, especially criteria (a), (b), (e), (f)(ii), (fA), (g)(i)-(iv) and (h).

64.2 Amend Policy CE-P5 so that areas captured under the significance criteria in APP2 do not automatically trigger the need for adverse effects to be avoided but are protected under a tiered approach similar to that of the NZCPS and used by other councils.

65 **Mr Low** has included a revised suite of significance criteria in his evidence which respond to matters raised in **Appendix 2** and paragraph 52-55 of my evidence. In my opinion, they are a useful starting point, however, developing these types of criteria requires

multidisciplinary input and, in my view, they would benefit from further refinement through expert caucusing or a similar process.

Dated: 23 November 2022

Hilke Giles

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APPENDIX 1: SIGNIFICANCE CRITERIA OF OTHER COUNCILS

Auckland Council

Schedule 4 Significant Ecological Areas – Marine Schedule

Factors for assessing ecological value [rps]

An area shall be considered an area of significant indigenous vegetation and/or a significant habitat of indigenous fauna in the coastal marine area if it meets one or more of the sub-factors (1) to (6) below, with factors (1) to (5) being applied first, and factor (6) last to identify gaps in representation across marine habitats and ecosystems, and to identify best examples of each habitat or ecosystem. These factors are also referred to in B7.2.2(3).

These factors have been used to determine the areas included in Schedule 4 Significant Ecological Areas – Marine Schedule, and will be used to assess proposed future additions to the schedule.

FACTORS:

(1) RECOGNISED INTERNATIONAL OR NATIONAL SIGNIFICANCE

Sub-factor:

(a) it is an area identified as internationally or nationally significant for either indigenous marine ecosystems or biodiversity, or with reference to the species that utilise these ecosystems.

(2) THREAT STATUS AND RARITY

Sub-factors:

(a) it is a habitat that is required to provide for the life cycle of a marine plant or animal that is locally rare and has been assessed under the New Zealand Threat Classification System (NZTCS), and determined to have a national 'At Risk' conservation status of Naturally Uncommon, Relict, Recovering and Declining; or

(b) it is a habitat that is required to provide for the life cycle of a plant or animal that occurs naturally in Auckland and has been assessed as having a regional threatened conservation status including Regionally Critical, Endangered and Vulnerable and Serious and Gradual Decline; or

(c) it is a habitat that is required to provide for the life cycle of a plant or animal that occurs naturally in Auckland and has been assessed by a nationally or internationally recognised assessment process (e.g. NZTCS, IUCN) and determined to have a threatened conservation status including Critical, Endangered, or Vulnerable; or

(d) it is a habitat that occurs naturally in Auckland and is required to provide for the life cycle of a marine animal that is listed as a Protected Species in Schedule 7A of the Wildlife Act (1953); or

(e) it is an indigenous marine habitat or ecosystem that occurs naturally in Auckland and has been assessed by the Council or other national

assessment process to be threatened based on evidence and expert advice; or

(f) it is an indigenous vegetation or habitat of indigenous fauna that occurs within an indigenous coastal ecosystem as identified in NZCPS Policy 11b(iii) as being particularly vulnerable to modification.

(3) UNIQUENESS OR DISTINCTIVENESS

Sub-factors:

(a) it is habitat for a marine plant or animal that is endemic or near-endemic to the Auckland region; or

(b) it is an indigenous ecosystem that is endemic to the Auckland region or supports ecological assemblages, structural forms or unusual combinations of species that are endemic to the Auckland region; or

(c) it is a habitat that supports occurrences of a plant, animal or fungi that are the largest specimen or largest population of the indigenous species in Auckland or New Zealand.

(4) DIVERSITY

Sub-factors:

(a) it is an intact habitat sequence extending across an environmental gradient, and including both floral and faunal habitat components; or

(b) it includes a large number of intertidal and/or subtidal habitats; or

(c) it is a habitat type that supports a high species richness for its type.

(5) STEPPING STONES, BUFFERS AND MIGRATION PATHWAYS

Sub-factors:

(a) it is a site which makes an important contribution to the resilience and ecological integrity of surrounding areas; or

(b) it is part of a network of sites that cumulatively provide important habitat for indigenous fauna or when aggregated make an important contribution to ecological function and integrity; or

(c) it is an example of an indigenous ecosystem, or habitat of indigenous fauna that is used by key species permanently or intermittently for an essential part of their life cycle, including migratory pathways, roosting or feeding areas; or

(d) it is an example of an ecosystem, indigenous vegetation or habitat of indigenous fauna, that is immediately adjacent to, and provides protection for, indigenous biodiversity in an existing protected natural area (established for the purposes of biodiversity protection for either terrestrial or marine

protection) or an area identified as significant under the 'threat status and rarity' or 'uniqueness' factor.

(6) REPRESENTATIVENESS

Sub-factors:

(a) it is an example of an indigenous marine ecosystem (including both intertidal and sub-tidal habitats, and including both faunal and floral components) that makes up part of at least 10% of the natural extent of each of Auckland's original marine ecosystem types and reflecting the environmental gradients of the region; and

(b) it is an example of an indigenous marine ecosystem, or habitat of indigenous marine fauna (including both intertidal and sub-tidal habitats, and including both faunal and floral components), that is characteristic or typical of the natural marine ecosystem diversity of Auckland; or

(c) it is a habitat that is important to indigenous species of Auckland, either seasonally or permanently, including for migratory species and species at different stages of their life cycle (and including refuges from predation, or key habitat for feeding, breeding, spawning, roosting, resting, or haul out areas for marine mammals); or

(d) it is an ecosystem that contains an intact ecological sequence across an environmental gradient (e.g., intact intertidal vegetation sequence including seagrass, mangrove, saltmarsh, and terrestrial coastal vegetation); or

(e) it is an ecosystem that contains a large number of marine habitat types, with the full range of habitats represented that is typical for that depth and exposure within the Auckland region; or

(f) it is a habitat or ecosystem of particular importance for indigenous or migratory species.

Appendix 3: Significance Assessment Criteria

The purpose of the following criteria is to determine whether an area is significant in terms of Section 6(c) of the Resource Management Act 1991.

Although Appendix 2 includes a schedule of threatened, at risk and rare habitats, this is by no means definitive. Policy BIO.2 requires site-specific (on the ground) ecological assessments to verify the ecological significance of the Schedule in Appendix 2 and determine where there is the potential for activities and development to affect other areas of indigenous biodiversity that could be deemed to be significant indigenous vegetation or significant habitats of indigenous fauna.

An area is significant if it meets one or more of the criteria listed below.

(a) Representativeness

(i) Indigenous vegetation or habitat of indigenous fauna that is representative, typical or characteristic of the natural diversity of the relevant ecological district or coastal biogeographic region. This can include degraded examples where they are some of the best remaining examples of their type, or represent all that remains of indigenous biodiversity in some areas.

(ii) Indigenous vegetation or habitat of indigenous fauna that is a relatively large example of its type within the relevant ecological district or coastal biogeographic region.

(b) Rarity/Distinctiveness

(i) Indigenous vegetation or habitat of indigenous fauna that has been reduced to less than 20% of its former extent in the Region, or relevant land environment, ecological district, freshwater environment, or coastal biogeographic region.

(ii) Indigenous vegetation or habitat of indigenous fauna that supports an indigenous species that is threatened, at risk, or uncommon, nationally or within the relevant ecological district or coastal biogeographic region.

(iii) The site contains indigenous vegetation or an indigenous species at its distribution limit within Southland Region or nationally.

(iv) Indigenous vegetation or an association of indigenous species that is distinctive, of restricted occurrence, occurs within an originally rare ecosystem, or has developed as a result of an unusual environmental factor or combinations of factors.

(c) Diversity and Pattern

(i) Indigenous vegetation or habitat of indigenous fauna that contains a high diversity of indigenous ecosystem or habitat types, indigenous taxa, or has changes in species composition reflecting the existence of diverse natural features or ecological gradients.

(d) Ecological Context

(i) Vegetation or habitat of indigenous fauna that provides or contributes to: an ecological linkage, ecological corridor or network; buffering function; or ecosystem service.

(ii) A wetland which plays an important hydrological, biological or ecological role in the natural functioning of a water body, including a river or coastal system, or springs, lakes and streams.

(iii) Indigenous vegetation or habitat of indigenous fauna that provides important habitat (including, but not limited to, refuges from predation, or key habitat for feeding, breeding, or resting) for indigenous species, either seasonally or permanently.

Marlborough District Council

Extracted from appeals version of proposed Marlborough Environment Plan

Appendix 3

Comment [1]: COMPLETE APPENDIX UNDER APPEAL

Ecological Significance Criteria for terrestrial, wetland, freshwater and ~~coastal~~ marine environments

Comment [2]: Trustpower Limited ENV-2020-CHC-50

The following provides explanations or guidelines for the application of ecological significance criteria in the assessment of sites.

The scale at which significance is to be determined depends on the type of environment:

Rankings within each criterion are: **H** = High; **M** = Medium; **L** = Low. They collectively contribute to an overall ranking, indicating the degree of significance. For a site to be considered significant, one of the first four criteria (representativeness, rarity, diversity and pattern or distinctiveness) must rank **M** or **H**.

The ecological criteria are to be applied by suitably qualified and experienced ecologists in their field of expertise.

Identification Criteria

Representativeness

- ~~1.~~ Indigenous vegetation or habitat of indigenous fauna that is representative, typical or characteristic of the natural diversity of the relevant ecological district. This can include degraded examples where they are some of the best remaining examples of their type, or represent all that remains of indigenous biodiversity in some areas.
- ~~2~~. Indigenous vegetation or habitat of indigenous fauna that is a relatively large example of its type within the relevant ecological district.
- ~~3~~. Additionally for the coastal marine area the site is significant if it contains biological features (habitat, species, community) that represent a good example within the biogeographic area.

H: The site contains one of the best examples of the characteristic ecosystem types in the region or ecological district or biogeographic area for sites within the coastal marine area.

M: The site contains one of the better examples, but not the best, of the characteristic ecosystem types in the region or ecological district or biogeographic area for sites within the coastal marine area.

L: The site contains an example, but not one of the better or best, of the characteristic ecosystem types in the region or ecological district or biogeographic area for sites within the coastal marine area.

Rarity

- ~~4.~~ Indigenous vegetation or habitat of indigenous fauna that has been reduced to less than 20% of its former extent in Marlborough, ~~or relevant land environment~~, ecological district, biogeographic area or freshwater environment.

- 5. Indigenous vegetation or habitat of indigenous fauna that supports an indigenous species that is threatened, at risk, or uncommon, nationally or within the relevant ecological district or biogeographic area for sites within the coastal marine area.

- 6. The site contains indigenous vegetation or an indigenous species that is endemic to Marlborough or that are at distributional limits within Marlborough.

H: The site contains nationally threatened or rare flora, fauna or communities; or the site contains several examples of regionally or locally threatened or rare flora, fauna or communities.

M: The site contains one or a few regionally or locally (but not nationally) threatened or rare flora, fauna or communities.

L: The site is not known to contain flora, fauna or communities that are threatened or rare in the ecological district or biogeographic area, regionally or nationally.

Diversity and pattern

- 7. Indigenous vegetation or habitat of indigenous fauna that contains a high diversity of indigenous ecosystem or habitat types, indigenous taxa, or has changes in species composition reflecting the existence of diverse natural features or ecological gradients.

H: The site contains an unusually high diversity of species and ecosystem types.

M: The site contains a moderate diversity of species and ecosystem types.

L: The site contains a relatively low diversity of species and ecosystem types.

Distinctiveness

- 8. Indigenous vegetation or an association of indigenous species that is distinctive, of restricted occurrence, occurs within an originally rare ecosystem, or has developed as a result of an unusual environmental factor or combinations of factors.

H: The site contains any ecological feature that is unique nationally, in the region or in the ecological district or biogeographic area; or it contains several such features that are outstanding regionally or in the ecological district or biogeographic area.

M: The site contains ecological features that are notable or unusual but not outstanding or unique nationally, in the region or in the ecological district or biogeographic area.

L: The site contains no ecological features that are outstanding or unique nationally, in the region or in the ecological district or biogeographic area; i.e. the ecological features are typical rather than distinctive or special.

Management Criteria

Size and shape

- 9. The site is significant if it is moderate to large in size and is physically compact or cohesive.

H: The site is large in size for the region or ecological district or biogeographic area and is compact in shapecohesive.

M: The site is moderate in size for the region or ecological district or biogeographic area and is cohesivecompact in shape; or the site is relatively large but not very compact or cohesive.

L: The site is small in size for the region or ecological district or biogeographic area, or the site is moderate in size but not at all ~~compact or~~ cohesive.

Connectivity/ecological context

- ~~10.1~~Vegetation or habitat of indigenous fauna that provides or contributes to an important ecological linkage or network, or provides an important buffering function.
- ~~11.~~A wetland which plays an important hydrological, biological or ecological role in the natural functioning of a river or coastal system.
- ~~12.~~Indigenous vegetation or habitat of indigenous fauna that provides important habitat (including refuges from predation, or key habitat for feeding, breeding, or resting) for indigenous species, either seasonally or permanently.

H: The site is close or well connected to a large natural area or several other natural areas.

M: The site is in the vicinity of other natural areas but only partially connected to them or at an appreciable distance.

L: The site is very isolated from other natural areas.

Sustainability

- ~~13.~~The site is significant if it is ecologically resilient, i.e. its natural ecological integrity and processes (functioning) are largely self-sustaining.

H: The site can maintain its ecological integrity and processes with minimal human assistance.

M: The site requires some but not much human assistance to maintain its ecological integrity and processes.

L: The site requires much human assistance to maintain its ecological integrity and processes.

Adjacent catchment modification in respect of significant sites within the coastal marine area

- ~~14.~~Catchments that drain large tracts of land can lead to high sediment loading into adjacent marine areas. A site in the coastal marine area is significant if the adjacent catchment is >400 ha and clad in relatively mature native vegetative cover resulting in a long term stable environment with markedly reduced sediment and contaminant run-off compared to developed or modified catchments.

H: The site is dominated by an adjacent land catchment area with stable and relatively mature native vegetation (>400ha) that is legally protected.

M: The site is dominated by an adjacent land catchment area with stable and relatively mature native vegetation (>400ha) with partial or no legal protection.

L: The site is surrounded by an adjacent land catchment area (>400ha) that is farmed, highly modified or has limited relatively mature vegetative cover.

Glossary

Ecological District: An Ecological District is defined as a local part of New Zealand where the topographical, geological, climatic, soils and biological features produce a characteristic landscape and range of biological communities (see map).

Biogeographic Area: A geographical area of similar ecology and habitats where the community structure and grouping of species is distinct (see map).

Comment [3]: Minister of Conservation
ENV-2020-CHC-42

Comment [4]: Marine Farming Assn Inc & Aquaculture NZ
ENV-2020-CHC-74

Amend Appendix 3 so that it reflects 2015 Davidson amendments to the Davidson 2011 report, from which this appendix has been adopted.

Comment [5]: Royal Forest and Bird Protection Society of New Zealand Incorporated
ENV-2020-CHC-64

APPENDIX 2: EXAMPLES OF SPECIFIC DIFFERENCES AMONG PROPOSED CRITERIA AND SIGNIFICANCE CRITERIA OF OTHER COUNCILS

Proposed criterion (a) '*An area that is an example of an indigenous vegetation type or habitat that is typical or characteristic of the original natural diversity of the relevant ecological district or coastal marine biogeographic region. This may include degraded examples of their type or represent all that remains of indigenous vegetation and habitats of indigenous fauna in some areas*'

- The first MDC criterion under heading representativeness (formerly criterion 1) and Environment Southland significance criterion (a)(i) are worded as follows:

  "Indigenous vegetation or habitat of indigenous fauna that is representative, typical or characteristic of the natural diversity of the relevant ecological district or coastal biogeographic region. This can include degraded examples <u>where they are some of the best remaining examples of their type</u>, or represent all that remains of indigenous biodiversity in some areas" (emphasis on part of criterion that is more specific added).

- The MDC and es criteria require degraded examples to be some of the best remaining examples of their type, while proposed criterion (a) would consider any example as potentially denoting significant vegetation or habitat.

- Proposed criterion (a) is therefore broader than similar criteria by MDC and ES.

- The proposed criterion is similar to AC criterion (6)(b).

Proposed criterion (b) '*An indigenous marine ecosystem (including both intertidal and sub-tidal habitats, and including both faunal and floral assemblages) that makes up part of at least 10% of the natural extent of each of Otago's original marine ecosystem types*'

- AC criterion (6)(a) is worded as follows:

  "it is an example of an indigenous marine ecosystem (including both intertidal and sub-tidal habitats, and including both faunal and floral components) that makes up part of at least 10% of the natural extent of each of Auckland's original marine ecosystem types <u>and reflecting the environmental gradients of the region</u>" (emphasis on part of criterion that is more specific added).

- The AC criterion requires the area to reflect the environmental gradients of the region, which is not a requirement under proposed criterion (b).

- Proposed criterion (b) is therefore broader than a similar criterion by AC. No significance criteria matching proposed criterion (b) are included in the criteria by MDC and ES.

Proposed criterion (c) '*An indigenous marine ecosystem, or habitat of indigenous marine fauna (including both intertidal and sub-tidal habitats, and including both faunal and floral components), that is characteristic or typical of the natural marine ecosystem diversity of Otago*'

- This proposed criterion is identical to AC criterion 6(b).

- The proposed criterion is most similar to the first MDC criterion under heading representativeness (formerly criterion 1) and Environment Southland significance criterion (a)(i), which are described above under proposed criterion (a).

- The criteria by MDC and ES define area as indigenous vegetation or habitat of indigenous fauna, while this proposed criterion also refers to indigenous marine ecosystems.

- Proposed criterion (c) is therefore broader than the comparable criteria by MDC and ES.

Proposed criterion (e) '*An area that supports a high diversity of indigenous ecosystem types, indigenous taxa or has changes in species composition reflecting the existence of diverse natural features or gradients*'

- This proposed criterion is very similar to ES criterion (c)(i) and the MDC criterion under heading diversity and pattern (formerly criterion 7). MDC requires diversity of species and ecosystem types to be ranked as part of the significance assessment.

- This proposed criterion is similar to AC criteria (4)(a) and (c); however, these criteria require environmental gradients to contain "an intact habitat sequence" ((4)(a)) and instead of *high diversity*, require habitat types to support *high species richness for its type* ((4)(c)).

- Proposed criterion (e) is therefore very similar to criteria by MDC and ES but broader than the most comparable criteria by AC.

- The phrase *high diversity* is ambiguous without contextual scientific information as there are no generic thresholds or categories for diversity, particularly when applied to ecosystem

types. This ambiguity applies to significance criteria of several councils.

- For example, Fenwick (2018) describes that in New Zealand's coastal environment:

  > "Habitats are diverse in spatial scale and usually occur in mosaics in space (and time). For example, a sand beach, the habitat for tuatua, may be >50 km^2 in extent locally, whereas a small estuary, habitat for marsh plants and invertebrates, may be <1 km^2 and include wetland, mudflat, sand beach, subtidal sediment and rocky habitats."[7]

- It could be interpreted that the description in paragraph ☐ matches proposed criterion (e) in terms of the invertebrate species composition expected along the habitat gradients within a typical New Zealand estuary. This is clearly not the intent of the proposed criterion or criteria of other councils, and it is highly unlikely that ecologists would assess such an area significant. It is, however, an important illustration of the ambiguous nature of this criterion.

Proposed criterion (f)(ii) '*An area that supports or provides habitat for: … Indigenous species that are endemic to the Otago region*'

- This proposed criterion is similar to AC criterion (3)(a) and identical to the first part of the third MDC criterion under heading *rarity* (formerly criterion 6).

- However, a critical difference to the MDC criterion is that the proposed criterion does not require endemic species to be threatened or of any particular importance or vulnerability.

- MDC applies a ranking system to significance criteria as part of determining significance. Each criterion is ranked as *high*, *medium*, or *low* by suitably qualified and experienced ecologists in the respective field of expertise. For an area to be considered significant, one of the criteria under categories *representativeness*, *rarity*, *diversity and pattern*, or *distinctiveness* must rank *medium* or *high*.

- In terms of proposed criterion (f)(ii), the absence of threat or rarity would result in a ranking of *low* for significance criteria in the *rarity* category. This, in turn, would not support the area to be identified as significant.

[7] Fenwick (2018), p.10.

• No significance criteria matching proposed criterion (f)(ii) is included in the criteria by ES. • In conclusion, proposed criterion (f)(ii) is similar to criteria by AC and MDC but broader than the matching MDC criterion.
Proposed criterion (f)(iii) '*An area that supports or provides habitat for: … Indigenous vegetation or an association of indigenous species that is distinctive, of restricted occurrence, or has developed as a result of an unusual environmental factor or combinations of factors*' • This proposed criterion is similar to AC criterion (3)(b) and very similar to the first part of the MDC criterion under heading *distinctiveness* (formerly criterion 8) and ES criterion 11.
Proposed criterion (fA) '*Vegetation, habitats, species, populations, and* species *assemblages that [have] relatively high natural productivity*' • This criterion is not reflected in significance criteria used by other councils. • The phrase *relatively high natural productivity* is ambiguous. It could be applied to habitats that are resilient to adverse effects of anthropogenic activities and not at risk of degradation.
Proposed criterion (g)(i) 'The relationship of the area with its surroundings (both within Otago and between Otago and the adjoining regions), including: … An area that has important connectivity value allowing dispersal of indigenous flora and fauna between different areas', and proposed criterion (g)(ii) 'The relationship of the area with its surroundings (both within Otago and between Otago and the adjoining regions), including: … An area that has an important buffering function that helps to protect the values of an adjacent area or feature' • As other councils generally combine the descriptors of proposed criteria (g)(i) and (ii) I comment on them together. • These proposed criteria are similar to ES significant criterion (d)(i) and the first MDC criterion under heading connectivity/ecological context (formerly criterion 10). • A key difference is that the proposed criteria do not stipulate any requirements regarding vegetation or habitat for the 'area' assessed. In contrast, ES and MDC stipulate that the 'area' needs to comprise 'vegetation or habitat of indigenous fauna. • Therefore, the proposed criteria capture a broader type of areas than ES and MDC.

- A critical difference to the criterion by MDC is that the MDC criterion is a *management criterion*, which means that it is not used for or directly relevant to the determination of ecological significance.

- No significance criteria matching these proposed criteria are included in the criteria by AC.

Proposed criterion (g)(iii) 'The relationship of the area with its surroundings (both within Otago and between Otago and the adjoining regions), including: … An area that is important for indigenous fauna during some part of their life cycle, either regularly or on an irregular basis, e.g. for feeding, resting, nesting, breeding, spawning or refuges from predation'

- The proposed criterion is similar to ES criterion (d)(iii) and the third MDC criterion under heading connectivity/ecological context (formerly criterion 12). The ES and MDC criteria are worded as follows:

  > "Indigenous vegetation or habitat of indigenous fauna that provides important habitat (including, but not limited to, refuges from predation, or key habitat for feeding, breeding, or resting) for indigenous species, either seasonally or permanently".

- The proposed criterion is similar to AC criterion (6)(c).

- The ES and MDC criteria specify that the area needs to provide important habitat and, in terms of feeding, breeding, and resting, that the area under assessment needs to be 'key habitat'. The AC criterion also contains a reference to 'key habitat'.

- As for the previous criteria, ES and MDC stipulate that the 'area' needs to comprise 'vegetation or habitat of indigenous fauna.

- A critical difference to the criterion by MDC is that the MDC criterion is a *management criterion*, which means that it is not used for or directly relevant to the determination of ecological significance.

- Therefore, the proposed criterion captures a broader type of areas than ES, MDC, and AC.

Proposed criterion (g)(iv) 'The relationship of the area with its surroundings (both within Otago and between Otago and the adjoining regions), including: … A wetland which plays an important hydrological,

biological or ecological role in the natural functioning of a river or coastal ecosystem' • The proposed criterion is identical to ES criterion (d)(ii) and the second MDC criterion under heading connectivity/ecological context (formerly criterion 11). • A critical difference to the criterion by MDC is that the MDC criterion is a *management criterion*, which means that it is not used for or directly relevant to the determination of ecological significance. • No significance criteria matching these proposed criteria are included in the criteria by AC.
Proposed criterion (h) '*An area that contains sensitive habitats or species* that *are fragile to anthropogenic effects or have slow recovery from anthropogenic effects*' • Significance criteria by MDC and ES do not include any criteria that match this proposed criterion. • AC criterion (2)(f) addresses the vulnerability to modification and is worded as follows: "it is an indigenous vegetation or habitat of indigenous fauna that occurs within an indigenous coastal ecosystem as identified in NZCPS Policy 11b(iii) as being particularly vulnerable to modification" • The proposed criterion is substantially different from the Policy 11(b)(iii) descriptor, and thus from AC criterion (2)(f). The proposed criterion is more ambiguous than Policy 11(b)(iii).