Proposed Otago Regional Policy Statement Hearing – Ecosystems and Indigenous Biodiversity Chapter ('ECO')

Speaking notes for Dr Marine Richarson

1. I provide here a summary of my evidence dated 23 November 2022, followed by further statements relative to APP2 – Significance criteria for indigenous biodiversity of the pORPS held 31 March 2023.

Summary of written evidence

2. I provided evidence[1] related to the freshwater values present in the Otago region, with a focus on threatened habitats and species.

3. Otago's freshwater species form part of a complex management landscape, as they present a broad range of life histories, ecological requirements, and responses to anthropogenic threats.

4. I note that several freshwater species come under the umbrella of "compulsory values" in Appendix 1A of the NPS-FM as Threatened species or mahinga kai.

5. Non-diadromous[2] galaxiids represent a significant and highly threatened proportion of the endemic fish fauna of New Zealand; many are endemic to the Otago Region, some are endemic to Otago and neighbouring regions. Non-diadromous galaxiids have a distribution range that is often constrained. Populations are often fragmented and vulnerable to incursions from introduced salmonids.

6. Diadromous fish species present wide distributions at the national scale and are highly mobile within and across catchments. Some species display regional structuring. Diadromous species vary in their respective ecological requirements and life histories, but population trends are generally declining, with many species classified Threatened or At Risk.

7. The Otago Region is also host to macroinvertebrate taxa that represent significant freshwater values, including several threatened species and two mahinga kai species (kōura freshwater crayfish and kākahi mussel). These taxa must in my view be considered in identifying outstanding water bodies and areas of significant indigenous biodiversity in the Region.

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[1] Evidence of Dr Marine Richarson (freshwater) for the Director-General of Conservation dated 23 November 2022

[2] I.e., Species that do not move between freshwater and marine environments

8. Policies and methods of the pORPS must provide for indigenous freshwater taxa within catchments and across domains (land, freshwater, coastal environment) to address the whole range of pressures they face, including pollution, land use, climate change, pest and introduced sports species and their cumulative effects.

9. The pORPS policies and methods must also reconcile the priority need for connectivity from source to sea for diadromous species and for protection at site for less mobile species. Catchment-wide provisions and the adoption of minimum flows are insufficient to adequately protect non-diadromous galaxiids and their habitats, leaving populations highly vulnerable to local extinction. Conversely, diadromous and highly mobile species require a catchment-wide management approach, ki uta ki tai.

10. I support amending objectives and policies towards indigenous biodiversity using an outcome-driven approach which adopts outcome statements that rely on clear and measurable criteria.

11. To achieve this, I suggest explicitly referencing the New Zealand Threat Classification System (NZTCS). The NZTCS relies on the use of criteria and qualifiers that can be applied across animal and plant taxa, across the terrestrial, freshwater, and coastal domains. While in my view a threat status alone should not provide the threshold to activate policies in the pORPS, the NZTCS criteria and qualifiers can usefully help identify the nature and footprint of the threats to manage and can help trigger the right mechanisms to manage a given taxon.

Updates to previous evidence

12. In order to assist the Panel, I am providing an update of my thinking having:

    a. listened to questions from the Panel;

    b. completed the ecological expert conferencing of March 31st, 2023, that led to the Joint Witness Statement (JWS) relative to APP2 of the pORPS.

13. In my evidence, I adopted the framework of criteria for identifying areas that qualify as significant natural areas provided in the Exposure draft National Policy Statement for Indigenous Biodiversity, Appendix 1. Following the JWS relative to APP2 of the pORPS, I submit that the statements in my evidence hold. However, I provide further reflections on APP2 below.

14. Fundamentally, and as I demonstrated through my evidence, I believe that policies of the pORPS need to solve the issue of integrating management across the terrestrial,

freshwater and coastal domains for vastly different organisms and varying degrees of complexity. These policies should be flexible enough to be able to switch focus from individual taxa to areas and their living biota and incorporate the reality that freshwater environments are dynamic and subject to change.

15. The criteria in APP2 as they stand at the end of the expert conferencing might be "good enough", although they need to be tested against pORPS policies in different situations. In particular: ideally, I would have liked the opportunity to conduct full thought experiments on all the criteria. It is particularly important to test APP2 where criteria apply differently to various spectra (e.g., terrestrial vs coastal vs freshwater taxa, plants vs animals, highly mobile vs sessile organisms, etc…). For example, it is yet unclear to me whether the Representativeness criterion can seamlessly apply to freshwater assemblages or freshwater ecosystems.

16. I thought that meeting at least one of the criteria may be a low threshold for significance, which might not be problematic in itself; however, this needs to be confirmed by using different models and examples.

17. When incorporating considerations of geographic scale, domain or taxonomic group, uniform decision criteria or units seem ill-advised (one size does not fit all). Depending on the case, some groupings might be more relevant than others to determine significance. Such groupings may range from highly specific (e.g., a particular ecological guild[3]) to generic (e.g., biotic components[4]), and might encompass different scales (e.g., area of endemism, subregions, regions, realms), which might lead to difficulty to generate systematic or actionable policies.

18. One approach (taken in the APP2) is to use the "most useful spatial scale depending on the case considered", which might encompass terms such as "ecological district", "biogeographic region" or "biogeographic unit". But this can be problematic because different delimitations of analytical units can result in different outcomes. For instance, I find myself struggling to find a term properly encompassing a notion of "ecologically relevant" area for the Rarity criterion (d)(ii) that would apply across the board. Using fundamental definitions and concepts might be useful here, although this also may vary depending on assumptions or approach, methodology and grouping used. Explicit and clearly defined criteria and, within criteria, analytical units

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[3] A group of species that exploit the same resources, or that exploit different resources in related ways.
[4] Living things that have a direct or indirect effect on other organisms.

(e.g., individual taxon, species assemblage, ecosystem or habitat type) might be useful to answer to policy objectives.

19. This hints at the notion that case-by-case analysis and expert opinion should be systematically required, which was highlighted for instance in the JWS (General matters §6) to interpret some of the APP2 criteria. However, a strategy of "opting for the best unit for each case" might be lacking for a clear policy development in the absence of clear direction on how to define that "best unit" for each type of question or issue that arises. Therefore, this calls even more for policies and methods to be framed adequately.

20. Choosing the best unit and scheme could be based on measurable objectives. I therefore support the DG proposal for new objectives, which I believe addresses these concerns and still provides a clear pathway for outcome-driven policies. I also support the proposal and wording in the legal submissions and the summaries of evidence given today in the hearing by Bruce McKinlay, Cassie Mealey and Murray Brass.

Addressing the Panel's additional question previously posed to me

21. Following a question from Commissioner Sullivan in Coastal Environment chapter regarding threats to biodiversity, I answered it at the time based on my personal impression. I stated during the Coastal Environment hearings that in my opinion, habitat degradation and regression was the most dire and direct threat to freshwater species. I maintain this opinion, noting that pollution, direct exploitation, introduced species, and the cumulative effects of all these pressures might contribute directly or indirectly to habitat degradation and adversely affect species persistence. The ANZBS biodiversity report 2020 provides a useful summary of data to support this opinion.

Dr Marine Richarson