

BEFORE THE WAIMAKARIRI DISTRICT COUNCIL

In the matter of **the Resource Management Act 1991**

And

In the matter of **a submission and further submission on the
proposed Waimakariri District Plan**

**Evidence of Richard Ian Clayton
on behalf of the Director-General of Conservation *Tumuaki Ahurei*
Submitter ID: 419, Further Submitter ID: 77
Hearing Stream 7A, Ecosystems and Indigenous Biodiversity
Dated: 2 September 2024**

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Executive Summary

1. My evidence provides a brief overview of the pre-human and current ecology of the Waimakariri District. It addresses the major ecosystem types, what and where they exist and their declining status due to both historic and ongoing environmental pressure.
2. It highlights areas of remaining (terrestrial and wetland) biodiversity in Waimakariri that require particular attention and the importance of focussing rules and assessments on the protection of the uncommon species and ecosystems when considering the proposed district plan's overall strategic goal i.e. that "the quality and quantity of indigenous ecosystems and habitat is maintained so there is at least no overall loss and significant indigenous vegetation and habitats are protected".
3. Setbacks and buffer zones for SNAs from irrigation infrastructure is discussed.
4. And finally comments on the proposed changes to the three specific SNA boundaries are provided.

Richard Clayton

Introduction

5. My full name is Richard Ian Clayton
6. I have been asked by the Director-General of Conservation *Tumuaki Ahurei* (Director-General, D-G), to provide expert evidence on the proposed Waimakariri District Plan (the proposed Plan).

Qualifications and experience

7. I am employed by the Department of Conservation (DOC) as an Ecologist. I have worked for DOC since 2018. In my role I provide technical and scientific advice to DOC's work managing threatened plant species and ecosystems in the Eastern South Island.
8. I have previously been employed by Manaaki Whenua Landcare Research as a researcher in animal pest ecology and plant conservation for five years. I have also worked as a contractor and ecological consultant for both regional and central government organizations.
9. I have experience in planning conservation management and reporting on significance of ecological values using standard significance criteria, such as those outlined in the Canterbury Regional Policy Statement, and the National Policy Statement for Indigenous Biodiversity.
10. My qualifications are MSc Ecology (with distinction) obtained at Otago University in 2004. My thesis was on the impacts of introduced rats on the island flora of Rakiura/Stewart Island.
11. I have previously provided evidence on regional pest management plans on behalf of DOC. I am currently providing ecological advice and comments as part of preliminary input to the district plans for Waimakariri, Selwyn, Timaru and Waitaki District Councils.
12. I am a committee member of the New Zealand Plant Conservation Network, representing DOC on this forum.
13. I am also a part of the group of experts inside DOC who manage threatened plant species funds, management and priorities - the equivalent of a threatened taxa advisory group.

14. I have written or contributed to numerous peer-reviewed publications on plant ecology and wider conservation efforts in New Zealand (see Appendix 1).

Code of Conduct

15. I confirm that I have read the code of conduct for expert witnesses (Code) as contained in the Environment Court Practice Note 2023. I have complied with the Practic Note and Code when preparing my written statement of evidence and I will do so when I give oral evidence at the hearing.
16. For the avoidance of doubt, in providing this evidence as an expert witness in accordance with the Code, I acknowledge that I have an overriding duty to impartially assist the Panel on matters within my area of expertise. The views and opinions expressed are my own expert views and opinions, and I do not speak on behalf of the Director-General.
17. The data, information, facts and assumptions I have considered in forming my opinions are set out in my evidence to follow. The reasons for the views and opinions expressed are also set out in the evidence to follow. This includes where relevant:
- (a) Why other alternative interpretations of data are not supported;
 - (b) Any qualification if my evidence may be incomplete or inaccurate without such qualification;
 - (c) Any knowledge gaps and the potential implications of the knowledge gap;
 - (d) If my opinion is not firm or concluded because of insufficient research or data or for any other reason;
 - (e) An assessment of the level of confidence and the likelihood of any outcomes specified in my conclusion(s).
18. Unless I state otherwise, this evidence is within my sphere of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Scope

19. I have been asked to provide evidence in relation to the proposed Plan, the D-G's submission (419), and the D-G's further submission (19).
20. My evidence is divided into the following parts:
 - (a) Terminology.
 - (b) Ecological context for biodiversity in the Waimakariri District with emphasis on a brief overview of the history, status and trend of key ecosystems and species.
 - (c) The rationale for continued identification and monitoring of biodiversity, and better management and restoration of key threatened species and ecosystems.
 - (d) Overall support for the proposed framework to manage significant natural areas as outlined in the plan.
 - (e) Specific comments on proposed rule ECO-R4 irrigation infrastructure; and changes to boundaries of specific SNAs.
21. The evidence in this statement provides further detail on evidence and comments previously provided by DOC during the public notification of the plan and by my colleagues during previous hearings.

Material Considered

- (a) In preparing my evidence I have read and relied upon the following documents: Proposed Waimakariri District Plan Review
- (b) The s32 Evaluation Reports:
 - (i) 1 Overview s32 Report
 - (ii) 11 Ecosystems and Biodiversity s32 Report
- (c) The D-G's submission dated 26 November 2021
- (d) The D-G's further submission dated 21 November 2022

- (e) The s42A Officer's Report: Pūnaha hauropi me te rerenga rauropi taketake – Ecosystems and Indigenous Biodiversity Chapter, dated 16 August 2024
- (f) Key references on ecosystem and species threat classifications
- (g) Evidence of my colleague Ms Elizabeth Williams

TERMINOLOGY

22. Explanation of important terms and concepts used in ecological reporting and used throughout my evidence:

- (a) **Ecological Districts**, themselves a subset of Ecological Regions are a structural classification based on biogeographical features. An Ecological District is an area where topographic, climatic, soil and biological features, and the broad cultural patterns produce a characteristic landscape and range of biological communities. They have been used as a basis for ecological reporting for over 40 years in New Zealand (McEwen, 1987).
- (b) The **Protected Areas Network** consists of: public conservation land, reserves and covenants from QEII, councils and other agencies such as Nga Whenua Rahui.
- (c) **Land Environments New Zealand (LENZ)** is a classification that uses physical data to describe environments that can then be overlaid with biotic data and/or layers of protection. It is most usefully applied to the common ecosystems – forests, sub-alpine grasslands etc. (Cieraad *et al.*, 2015).
- (d) **Naturally Uncommon Ecosystems** are those that originally (i.e. pre-human) occupied small areas (maximum size for the largest ~130,000 ha in total e.g. estuaries, or inland outwash plains and moraine fields, but usually much less – e.g. kettleholes, coastal wetlands and limestone tors which are often only several hundred ha in total). (Wiser *et al.* 2013)
- (e) **Threat rankings** have been assigned to ecosystems, environments and species using standard criteria developed by the IUCN (for ecosystems

Holdaway *et al.*, 2012), by peer-reviewed literature (for environments; Cieraad *et al.*, 2015) and by the New Zealand Threat Classification for species (Townsend *et al.*, 2008). These are generally grouped by degree of concern e.g. “Nationally Critical”; “Endangered”, or “Vulnerable”. Each term has a specific set of qualifying criteria and relies on best knowledge of an expert panel. For threatened species, these panels converge every five years to update the lists.

THE ECOSYSTEMS AND SPECIES OF THE WAIMAKARIRI DISTRICT

23. The Waimakariri District covers part of four Ecological Districts, these being Torlesse, Oxford, High Plains and Low Plains. The landscape is made up of the plains with rolling hill country, foothills and low mountain ranges. One major inland basin is present (the Lees Valley) and two major braided rivers are present (the Waimakariri and Rakahuri/Ashley).
24. The major, historic reductions to all ecosystem types in the Waimakariri District occurred through the mass clearance events initiated by early Polynesian, Māori, and European colonizers. Almost no low plains forests and Savannah-type treelands remain, wetlands have been almost completely removed, braided rivers are compromised in form and function etc., and remnant, uncommon ecosystems/habitat for threatened species are highly fragmented, particularly in the lower altitude parts of the district (Harding, 2009).
25. Ongoing, current threats to the remaining indigenous ecosystems are due to both a reduction in area and compromised functioning (MFE, 2024) associated with:
 - (a) Conversion of land for new uses – e.g. increased amounts of forestry, cropping, and subdivision;
 - (b) Intensification of land use for agricultural purposes – irrigation, increased nutrient and pesticide application, homogenization of crops etc.;
 - (c) Increased and cumulative pressure from introduced invasive species, particularly wilding pines, browsers and small mammalian pests;
 - (d) Climate Change, which both exacerbates existing pressures on native biodiversity and creates new pressures.

26. Even since 1990, Davis (2019) estimated >80% of indigenous vegetation remnants on the Plains formerly recommended for protection have been removed. Many kanuka remnants have been destroyed or reduced in size and wetlands, particularly inland have either been drained, or developed e.g. 50% of wetlands in the Lees Valley alone.
27. The remaining areas of indigenous vegetation in the district are partly protected by public conservation land mostly focussed on foothills and low montane beech (+/- podocarp and hardwood) forest, with associated tussock grasslands, sub-alpine and alpine vegetation above tree line. The majority of this land is managed by DOC at two large parcels around the Mt Oxford and Mt Thomas Conservation Areas. A large marginal strip managed by DOC also exists along a stretch of the Rakauri/Ashley River. Other smaller reserves are present at the coast, and some other small reserves are managed by various council agencies.
28. Combined, these areas make up less than 15% of the terrestrial land within the Waimakariri District boundary (~222,000 ha). For the Low and High Plains Ecological Districts, these figures are much lower, being 1% and 1.5% respectively (Harding, 2009).
29. If remaining indigenous vegetation is overlaid against degree of protection, the entire Canterbury Plains are considered acutely threatened (Cieraad et al., 2015), given very low levels of formal land protection exist for remaining indigenous vegetation.
30. Despite the history of and ongoing environmental pressure, Waimakariri District does still contain many important remnants of both common (tussock grasslands, herbfields, forests and shrublands) and uncommon native ecosystems.
31. Notable examples of naturally uncommon ecosystems include:
 - (a) all remaining wetlands, both coastal (e.g. Ashworth Ponds) and inland (e.g. the ephemeral wetlands in Lees Valley);
 - (b) coastal dune systems (active dunes and dune slacks) and coastal lagoons, e.g. at Tutaepatu;
 - (c) limestone outcrops and tors,

- (d) the inland outwash basin of Lees Valley and
 - (e) wetlands adjacent to the braided rivers and their margins.
32. These remnant ecosystems all have high threat status levels (Holdaway *et al.*, 2012), but specific mention is required for any remaining wetlands, including those in the Lees Valley and at the Ashley and Waimakariri River mouths which are all Critically Endangered.
 33. The naturally uncommon ecosystems contain important indigenous biodiversity. For example, small and ephemeral wetlands contribute disproportionately higher numbers of both common, uncommon and threatened species to regional biodiversity (Richardson *et al.*, 2015). Overall, the uncommon ecosystems cover <10% of New Zealand's land area but contain ~86% of the threatened flora (Holdaway *et al.*, 2012).
 34. For native flora, approximately one third of all New Zealand's Threatened plants and one quarter of the Vulnerable taxa are in the Canterbury Region (DOC internal data). The Waimakariri District contains regional endemics found nowhere else in the world, including Critically Endangered Waipara Gentian *Gentianella calcis* subsp. *Waipara*, the Lees Valley Daisy *Brachyscombe pinnata* or have their national stronghold in the district (e.g. *Sebaea ovata*).
 35. For fauna values, there are many notable species of threatened braided river and wetland birds, such as the Bittern / Matuku-hūrepo (Threatened: Nationally Critical), Wrybill / Ngutu pare (At risk: recovering) and Black-billed gulls / Tarāpuka (At risk: declining).

Definitions and Rules

36. I agree with the criteria for assessing SNAs as outlined in (ECO-APP1) and the matters of discretion (ECO-MD1) noting that these follow NPSIB criteria.
37. I strongly support that rules applying to SNAs would apply regardless of whether the site has been included as a mapped area in district plan schedule(s).
38. Identification of SNAs will require a rigorous assessment process using appropriately qualified ecologists who are familiar with updated assessment criteria. The criteria in the plan contain an important nuance that is highly relevant in the Waimakariri District, being that indigenous vegetation can be

highly modified from some pre-human, or historic time, but could still be considered the best example remaining in an ecological district for a particular habitat or ecosystem type. In practice, making these assessments require a strong understanding of local ecology and botany and considerable experience interpreting site assessments in an ecological district context.

39. In relation to the complexity of new areas being assessed as SNAs, it is worth noting that the exercise undertaken by expert consultants at the pre-consultation phase of this plan to create an updated list of SNAs (Wildlands, 2021) included some that were not subsequently carried through into the proposed plan. The authority to assess, or veto, an area gaining SNA classification will likely remain a contentious issue for the life of this plan and will leave many areas of remnant indigenous vegetation vulnerable to other rules.
40. I note that the allowance for indigenous vegetation clearance for the purpose of maintaining improved pasture will continue to create poor outcomes for biodiversity in the Waimakariri District unless proper assessment is undertaken. Noting that this rule would only be relevant outside of SNAs, many of the indigenous biodiversity remnants in the Waimakariri District (including habitat for Threatened or At Risk species) could still be considered as improved pasture using the pDP definition. A good example of this comes from the Lees Valley where multiple threatened plant species – *Brachyscombe pinnata*, *Sonchus novaezealandeae* and *Gingidia enysii* are present in a predominantly farmed landscape, specifically the areas that have been farmed passively over the last century (i.e. with light sheep grazing).
41. Maintenance of improved pasture in some areas has allowed the destruction of indigenous vegetation in other districts (e.g. at Kaitorete) and led to intensive farming models, particularly in dryland ecosystems, wetland margins or otherwise low-productivity land.

IRRIGATION SETBACKS

42. I support the council's ecologist who recommended a 50 m buffer around new irrigation activities from SNAs (s42A report). The reference list cited by the council's expert ecologist as evidence of effects is sufficient rationale to justify this rule.

43. I also disagree with the proposed change to exclude all wetland SNAs from this rule for the following reasons.
- (a) The hydrology of wetlands is far more complex than would be expected from an irrigation system applying water in a way that maximises pasture or crop growth. For example, many wetland ecosystems (e.g. ephemeral ones) are not always wet and rely on periods and/or cycles of drying/inundation for the unique assemblage of plants to exist and to create habitat for native fauna. Some plants in these environments are micro-habitat specialists, occupying subtle ecotones between dry and wet margins (such as *Sebaea ovalis* – Nationally Critical), or during periods when land is exposed during drier parts of the year.
 - (b) Effects from irrigation on land are not limited to the application of water (RAMSAR, 2022), but also include:
 - (i) Cultivation of soils for pasture or crop production
 - (ii) Increased nutrient and/or pesticide application to support these pasture/crops
 - (iii) Higher densities of stock and therefore cumulative effects of their impacts, largely associated with effluent and animal waste and/or depletion of soils.
44. These activities would have negative, ongoing impacts on wetlands as much as other ecosystem types, and in some cases (e.g. near ephemeral wetlands and in coastal dunes) the effects would be even greater, given high sensitivity of the ecosystems to these effects. A buffer of 50 m of irrigation infrastructure from SNA sites without exceptions is the most consistent way of protecting the remaining wetlands in the Waimakariri District, including those that are assessed as SNAs.

COMMENTS ON PROPOSED CHANGES TO SNA SITE BOUNDARIES

45. The PDP proposes changes to SNA boundaries, namely sites SNA 034, SNA 048 and SNA 051. Although I am not familiar with these sites and have not visited them, I have reviewed the evidence provided by Wildlands ecologists and the updated suggestions from the council's ecologist.

46. For SNA 034 Manor Park Bush, I agree with the original assessment from Wildlands ecologists that the area of treeland is a legitimate part of the SNA. I therefore oppose the changes to remove these areas and create isolated SNA islands around the individual trees. The continuation of light grazing (currently occurring at the site and arguably helping to restrict weed encroachment) could be a permitted activity to manage conservation values at the site.
47. For SNA 048 and SNA 051, I agree that the proposed SNA boundaries have included areas dominated by woody and herbaceous exotic weeds and therefore should not by themselves be considered as an SNA. However, I also note that the exotic woody vegetation is acting as a buffer to the small remnants of beech (and podocarp) trees still present in the core of the habitat. If this buffer is removed (presumably by a spray operation), the remaining habitat will become severely fragmented and subject to intense edge effects, eventually leading to the virtual destruction of any remaining biodiversity. As for SNA 034, the singling out of individual trees within patches as outposts of the SNA islands won't provide management of biodiversity values at the site. A better compromise would be including a continuous amount of regenerating scrub that directly surrounds these remnant trees. These habitats would provide a meaningful contribution to buffering and supporting the remnant biodiversity, which being largely represented by forest species will naturally recover in due course.
48. Principles of 'best practice' reserve design (Diamond, 1975) also suggest that larger, continuous and circular boundaries should be chosen over smaller, isolated, fragmented ones and I therefore recommend that the SNA boundary for these SNA 048 and SNA 051 includes of a buffer of woody weed vegetation as was proposed in the original.

Conclusion

49. I strongly support the provisions in this plan that allow for protection of significant natural areas and the recommendation to apply these rules regardless of whether the area has been scheduled/mapped or not.
50. It is noted that wetland SNAs are likely to suffer from adjacent irrigation effects, both due to ongoing water application, and due to the associated practices that would accompany this activity. Including a substantial buffer of 50 m for these SNAs as for others, would mostly remove effects.

51. The continuation of an active, expert-driven assessment process to improve knowledge of extent, status and trend in SNAs across the whole district is still required to give a degree of certainty to all parties involved in the management of these areas. Without this, or by relying on the trigger rules alone, Waimakariri's remaining biodiversity will likely be resigned to ongoing decline that we have witnessed over recent decades, and therefore fail to achieve the policies and outcomes sought from the plan.



Richard Clayton

2 September 2024

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APPENDIX 1 PEER-REVIEWED AUTHORSHIP

| TITLE | CITED BY | YEAR |
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