

**BEFORE AN EXPERT PANEL
TEKAPO POWER SCHEME**

FTAA-2503-1035

Under the

FAST-TRACK APPROVALS ACT 2024

In the matter of

an application for replacement resource consents in
relation to the Tekapo Power Scheme

By

GENESIS ENERGY LIMITED
Applicant

**SUPPLEMENTARY STATEMENT OF EVIDENCE OF MICHAEL HARDING
TERRESTRIAL ECOLOGY**

29 September 2025

Royal Forest and Bird Protection Society of New Zealand

Solicitor Acting:
T C T Williams

Email: [REDACTED]
Phone: [REDACTED]

Counsel:
P D Anderson

Email: [REDACTED]
Phone: [REDACTED]

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List of Abbreviations

DOC	Department of Conservation
IBEP	Indigenous Biodiversity Enhancement Programme
PRR	Project River Recovery
TPS	Tekapō Power Scheme
WPS	Waitaki Power Scheme

Introduction

1. My full name is Michael Arthur Coupland Harding.
2. I have been asked by the Royal Forest and Bird Protection Society to respond to Christina Robb's review of the IBEP programme, as set out in a memorandum attached to Minute 6 of the Expert Panel (25 September 2025).

Qualifications and Experience

3. I am an independent Environmental Consultant working from offices in Nelson and Dunedin. My qualifications and experience are set out in paragraphs 3 & 4 of my primary evidence (dated 18 August 2025).

Code of Conduct

4. I have read the code of conduct for expert witnesses contained in the Environment Court's Practice Note 2023 (the Code). I have complied with the Code when preparing this written statement of evidence. The data, information, facts, and assumptions I have considered in forming my opinions are set out in my evidence. 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

5. I understand that the scope of Christina Robb's advice was to assist the Panel to understand the following:¹
 - The success of Project River Recovery in delivering ecological gains to compensate for the effects of the Combined Waitaki Power Scheme.
 - The degree of comfort that the Panel can have that the IBEP (including its first 10-year strategic plan "Kahu Ora") approach now proposed, together with the increased level of funding, will deliver significant ecological/biodiversity improvements for the catchment.

¹ Minute 6 Attachment: Christina Robb Memorandum, para 1.

- Whether the proposed IBEP conditions are appropriate in terms of securing the IBEP and providing for ongoing assessment and reporting of the outcomes of the IBEP sufficient that stakeholders can assess its efficacy as compensation for the effects of the Tekapo Power Scheme over the life of the consent (assuming 35 years duration).
6. This supplementary evidence provides a response to the adequacy of Christina Robb’s advice on the matters in paragraph 5 (above) with respect to terrestrial ecology (specifically vegetation and ecosystem processes).

Success of Project River Recovery in providing ecological compensation

7. Ms Robb states that Project River Recovery has “delivered documented ecological gains for the Waitaki catchment” and she lists those gains.² I concur that PRR has delivered “ecological gains”. However, Ms Robb provides no evidence that those gains adequately compensate for the effects of the activity (the “Combined Waitaki Power Scheme”).
8. There is compelling evidence that an ongoing effect of the Waitaki Power Scheme (WPS) is the loss of distinctive and ecologically significant indigenous vegetation on floodplain surfaces, including those of the Tekapō River. That evidence is clearly set out – and referenced – in the material Ms Robb reviewed for the preparation of her memorandum.³
9. The evidence is that the natural functioning of Tekapō, Pūkaki and lower Ōhau rivers has been lost through dewatering.⁴ The resulting abandoned floodplain surfaces continue to be progressively stabilised – and the distinctive indigenous vegetation displaced – by vegetation succession, including the colonisation and spread of naturalised (exotic) plants.
10. PRR has delivered very limited – if any – ecological gains for terrestrial vegetation on most parts of the Tekapō River floodplain. PRR weed control on the Tekapō River is limited to gorse, broom, Russell lupin and willow in the upper river.⁵ Much of the weed

² Minute 6 Attachment: Christina Robb Memorandum, para 4.

³ *ibid*, para 3. I assume the “technical advice” to which she refers (in her para 3) is the evidence provided to the Panel for FTAA-2503-1035 (no reference is provided).

⁴ Hoyle, J. 2023. Assessment of Environmental Effects of the Waitaki Power Scheme, River Geomorphology. NIWA; Stecca, G.; Hicks, D.M.; Measures, R.; Henderson, R. 2023. Numerical modelling prediction of vegetation trajectories under different flow regimes in New Zealand braided rivers. *Journal of Geophysical Research: Earth Surface* 128; Statement of Evidence, J. Hoyle (ENV-2024-WLG-000060), 25 May 2025.

⁵ Schori, J.; Gale, S.; Hines, C; Nelson, D. 2021a. Project River Recovery annual report 01 July 2020 to 30 June 2021. *Project River Recovery Internal Report* 2021/01. 34p; Dean Nelson (DOC), pers.comm., 2022.

control to which Ms Robb refers occurs elsewhere. And, weed control alone is insufficient to maintain ecologically significant indigenous vegetation on young floodplain surfaces. Maintenance of that ecologically distinct vegetation requires restoration of a naturally functioning river.⁶

11. Further, the extensive PRR weed control to which Ms Robb refers is principally to maintain open (sparsely vegetated) habitats for riverbed birds, rather than to maintain the vegetation typical of floodplain surfaces. It appears that maintenance of the distinct floodplain vegetation of the Tekapō River was not actively considered during the development of PRR.⁷
12. The control of woody weeds that I have observed on the Tekapō, Pūkaki and lower Ōhau rivers is indiscriminate. Herbicide is typically applied by boom spraying, including from a helicopter. It removes (kills) all woody plant species, including indigenous species and including At Risk⁸ species (such as the mat daisy *Raoulia australis*).⁹
13. Loss of the distinctive indigenous vegetation on floodplain surfaces, and indiscriminate weed control, also pose a significant threat to populations of indigenous invertebrate species, including Threatened species. Invertebrate expert Dr Barbara Barratt concludes that if these new floodplain surfaces are lost – and not recreated – “it is inevitable that there will be adverse consequences for terrestrial invertebrates”.¹⁰

Likelihood of significant ecological improvements under IBEP

14. Ms Robb states that the “panel can be reasonably confident that the IBEP will deliver ecological and biodiversity benefits in the Waitaki catchment” because it will build on PRR, has increased funding, and “Kahu Ora contains outcomes for each zone which form the basis on ongoing monitoring, evaluation and reporting”.¹¹
15. Ms Robb’s memorandum contains little analysis of the expected ecological gains arising from IBEP. The proposed gains are listed uncritically. Ms Robb states that she has

⁶ Evidence of Michael Harding (FTAA-2503-1035), 18 August 2025, para 57-59.

⁷ Evidence of K Hughey, (ENV-2024-WLG-000060), 28 May 2025.

⁸ As determined by de Lange, P.J.; Gosden, J.; Courtney, S.P.; Fergus, A.J.; Barkla, J.W.; Beadel, S.M.; Champion, P.D.; Hindmarsh-Walls, R.; Makan, T.; Michel, P. 2024. Conservation status of vascular plants in Aotearoa New Zealand, 2023. New Zealand Threat Classification Series 43. Department of Conservation, Wellington, New Zealand.

⁹ Evidence of Michael Harding (ENV-2024-WLG-000060), 4 July 2025, para 78 & Appendix 1.

¹⁰ Evidence of Barbara Barratt (ENV-WLG-000060), 29 August 2025, para 43.

¹¹ Minute 6 Attachment: Christina Robb Memorandum, para 6.

reviewed the technical evidence, but only once does she refer to that evidence.¹² The technical evidence that Ms Robb has reviewed contains robust analyses (referenced to data and other evidence) which challenge the likely effectiveness of IBEP and the adequacy of the compensation funding.

16. For example, the ecological significance, loss, and management of floodplain vegetation are clearly set out in my primary evidence.¹³ My evidence discusses not only the failure of PRR to address that loss, but also the risk that IBEP (and Kahu Ora) management (weed control) may exacerbate that loss.¹⁴ Ms Robb’s memorandum makes no reference to the loss of floodplain vegetation. It provides no analysis of whether PRR has successfully compensated for those effects of the WPS or whether IBEP will deliver “significant ecological/biodiversity improvements” for floodplain vegetation.
17. The creation of eight islands to support nesting river birds is a key component of the compensation proposed through IBEP. The vulnerability of birds on nesting islands, and the risk that such islands will not provide effective compensation, are discussed in the primary evidence of Dr Rachel McClellan.¹⁵ Ms Robb’s memorandum makes no reference to the risks associated with that activity and therefore whether the islands will provide sustainable “ecological/biodiversity improvements”.
18. Further, Ms Robb’s memorandum does not adequately address one of the key questions posed by the Panel: “The degree of comfort that the Panel can have that the IBEP will deliver significant ecological/biodiversity improvements for the catchment”.¹⁶ Ms Robb states that the Panel can be reasonably confident that the IBEP will deliver ecological and biodiversity “benefits”¹⁷ or “outcomes”¹⁸ but does not state whether those benefits/outcomes/improvements will be significant.
19. Components of IBEP that are relevant to floodplain vegetation are to increase habitat availability for indigenous flora and fauna through weed control, and to increase populations of some Threatened species through browser control.¹⁹ Proposed priority

¹² Minute 6 Attachment: Christina Robb Memorandum, para 12.

¹³ Evidence of Michael Harding (FTAA-2503-1035), 18 August 2025, para 30-38; para 46-54; para 55-60.

¹⁴ *ibid*, para 67.

¹⁵ Evidence of Rachel McClellan (FTAA-2503-1035), 25 August 2025, para 78-82.

¹⁶ Minute 6 Attachment: Christina Robb Memorandum, para 1.

¹⁷ *ibid*, para 6.

¹⁸ *ibid*, para 18.

¹⁹ Genesis Energy Limited – Tekapo Power Scheme Replacement Resource Consents AEE, April 2025, pages 178-179.

actions for Tekapō River are “weed and predator management” in the “upper reach of the Takapō River which has relatively low infestations of woody weeds and moderate levels of residual populations of key threatened species”.²⁰

20. The evidence available to me, and my experience of braided riverbed systems, is that any ecological gains through IBEP for floodplain vegetation in the Tekapō River (and other WPS rivers) will be at best minor and most likely unsustainable. Those actions will be insufficient to provide “significant ecological/biodiversity improvements”.

Conclusions

21. Ms Robb’s memorandum concludes that the “panel can be reasonably confident that the IBEP will deliver ecological and biodiversity outcomes in the Waitaki catchment” and notes that it is an ambitious programme.²¹ A programme to protect the indigenous biodiversity affected by the TPS should have outcomes that are more certain; that is, outcomes that can be secured with unqualified confidence. Ms Robb’s memorandum does not provide that assurance.
22. Further, Ms Robb’s memorandum does not address a key question: whether IBEP will adequately compensate for the ecological effects of the WPS. The evidence available to me, and my experience of braided riverbed systems, is that any ecological gains through IBEP for floodplain vegetation in the Tekapō River (and other WPS rivers) will be at best minor and most likely unsustainable. Those gains will not adequately compensate for the existing and ongoing effects of the TPS (or WPS) on floodplain vegetation.
23. If natural flows are not restored to the Tekapō River, additional compensation will be necessary to adequately compensate for the adverse effects of the activity. The limited weed control proposed through IBEP will not provide adequate compensation. A more appropriate level of compensation would be wider scale weed control and/or the protection of similar vegetation elsewhere in the Waitaki Basin, as described in my primary evidence.²²

²⁰ Genesis Energy Limited – Tekapo Power Scheme Replacement Resource Consents AEE, April 2025, pages 183-184.

²¹ Minute 6 Attachment: Christina Robb Memorandum, para 18.

²² Evidence of Michael Harding (FTAA-2503-1035), 18 August 2025, para 64-75.

A handwritten signature in black ink that reads "Mike Hardy". The script is cursive and fluid, with the first and last names clearly legible.

Mike Harding

29 September 2025