Before the Fast-track Panel

Under: Fast-track Approvals Act 2024

In the matter of: FTAA-2603-1178 – Alternative to the Brynderwyn Hills Project (Brynderwyn Hills section)

Statement of advice: Nick Goldwater

Terrestrial and wetland offsetting

Independent consultant

11 August 2026

Department of Conservation
Te Papa Atawhai

Te Kāwanatanga o Aotearoa
New Zealand Government

Introduction

1. My full name is Nicholas Paul Goldwater.

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2. I have been requested to provide expert advice to the Director-General of Conservation (DOC/the Department) for the purposes of his comments on the Alternative to the Brynderwyn Hills Project Fast-track application.

Qualification and Experience

3. I am a Senior Principal Ecologist with Wildland Consultants Ltd (Wildlands) based in Auckland. I have been employed as an independent consultant ecologist with Wildland Consultants since 2008 and I am currently the Acting National Lead Ecologist.
4. I have a Master of Science (First Class Honours) in ecology and environmental science from the University of Auckland and have more than 18 years' experience in ecological consultancy. In my role, I undertake field assessments, provide technical advice and services, and manage projects for a range of clients. I have undertaken numerous ecological surveys throughout the Northland region.
5. I have considerable experience with consents relating to vegetation removal and ecological restoration, including large infrastructure projects, subdivisions, and quarrying activities, all involving the assessment of environmental effects under the Resource Management Act 1991 (RMA) and national and regional policy statements and the Fast-track Approvals Act 2024 (FTAA). I have assisted councils with numerous projects that include baseline biodiversity surveys, consent reviews, preparation of Ecological Management Plans, and field surveys of vegetation and habitats, threatened plants, indigenous fish, birds, and reptiles.
6. I have an excellent understanding and experience of terrestrial and wetland ecology in the Northland region. Work that is especially relevant to this application includes:

i. Advising the Expert Panel on terrestrial and wetland matters for four fast-track applications, including one application by the New Zealand Transport Agency (NZTA; State Highway 1 Cambridge to Piarere Long-term Improvements).

ii. Providing advice on freshwater offsetting for the Department of Conservation in relation to the now constructed Te Ahu a Turanga (Manawatū Tararua highway Project).

iii. Providing ongoing ecological advice for New Plymouth District Council in relation to the consented Te Ara o Te Ata (Mt Messenger Bypass), which is currently being constructed.

iv. Lead terrestrial ecologist for the consented Ōtaki to North of Levin Highway Project (2021-2022).

v. Lead author of the Natural Areas of Rodney (Northland Conservancy) Ecological District: reconnaissance survey report for the Protected Natural Areas Programme[1].

Code of conduct

7. Whilst it is acknowledged this is not an Environment Court Proceeding, I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023. I have complied with the Code of Conduct in the preparation of this advice. Unless I state otherwise, this advice is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Scope of advice and expert opinion

8. My expert advice relates to the following:

[1] Goldwater, N., Graham, P., Holland, W., Beadel, S., Martin, T, Myers, S. 2012. Natural Areas of the Rodney Ecological District (Northland Conservancy). Reconnaissance Survey Report for the Protected Natural Areas Programme. Department of Conservation, Whangarei.

i. Adequacy of the Applicant's assessment of offsetting for terrestrial and wetland ecology, including identification of any values that have not been assessed or have been insufficiently characterised.

ii. Adequacy of the Applicant's proposed effects management measures, particularly in regard to offsetting.

iii. Comments on conditions.

Material Considered

9. In preparing this advice I have reviewed the following documents as part of the substantive application:

i. Volume B, Appendix D06 - Assessment of Effects on Terrestrial Ecology 10722-PTA-2B0-PE-RPT-0011. Revision A. 2 April 2026.

ii. Volume B, Appendix D07 - Assessment of Effects on Freshwater Ecology 10722-PTA-2B0-PE-RPT-0010. Revision A. April 2026.

iii. Volume B, Appendix D08 - Assessment of Effects on Avifauna Ecology. 10722-PTA-2B0-PE-RPT-0009. Revision A. April 2026.

iv. Volume B, Appendix D - Resource Consent Conditions (13 July 2026)

v. Volume B, Appendix E – Designation Conditions (13 July 2026)

vi. Volume B, Appendix C – Wildlife Approval Conditions (13 July 2026)

vii. Statements of evidence prepared on behalf of the Department of Conservation by Dr Tim Martin (terrestrial and freshwater vegetation effects assessments), Dr Richard Storey (freshwater offsetting), Dr Amber McEwen (freshwater values), Dr Rhys Burns (avifauna, herpetofauna, and frogs), Tertia Thurley (bats), and Dr Jamie Stavert (invertebrates).

viii. I visited parts of the proposed Designation corridor on 26 June 2026. A site inspection was undertaken by a combination of 4WD and on foot, with a focus on assessing the accuracy of the vegetation types and values identified and mapped by the Applicant. The survey included the following areas, from north to south:

a. Indigenous riparian forest alongside the Waihoihoi Stream visible from Glenmohr Road.

b. Wetland 2 and a proposed diversion of the Waihoihoi Stream.

c. Wetlands 11-15 and 17-19.

d. The proposed northern mitigation site.

e. An area of plantation forestry on the Brynderwyn Hills.

f. Potential wetland areas in pasture immediately to the south of where the alignment would cross the Piroa Stream.

g. The southern parts of the proposed wetland mitigation site (known as Q08/066).

h. The proposed southern mitigation site.

i. The upper arm of a gully system 300 metres north of Wetland 24.

j. Wetland 24.

Summary of project and findings

11. The Northland Corridor (Brynderwyn Hills section of the Brynderwyn Hills Alternative) is a major roading infrastructure project seeking consent under the Fast-track Approvals Act 2024 (FTAA), defined as 'specified infrastructure' by the National Policy Statement of Freshwater Management (NPS-FM) and subject to the National Policy Statement for Infrastructure 2025 (NPS-I) and the NPS-FM. The Project traverses terrain supporting significant indigenous vegetation, including kauri-podocarp forest communities, Hochstetter's frog habitat, long-tailed bat roosting and foraging areas, and freshwater systems including the Waihoihoi catchment and higher-value wetlands. Ecological effects are addressed in Appendices D06 (Terrestrial Ecology), D07 (Freshwater Ecology), and D08 (Avifauna).

12. Both the terrestrial and freshwater assessments identify residual adverse effects of Moderate to High following avoidance, minimisation, and remediation, triggering an obligation to consider biodiversity offsetting under the applicable statutory and policy framework.

13. Terrestrial indigenous vegetation loss within areas of significant indigenous vegetation is identified, engaging obligations under the National Policy Statement for Indigenous Biodiversity 2023 (NPS-IB). However, the assessment does not present a formal offset package accounted for using the Biodiversity Offsetting Accounting Model (BOAM), nor does it demonstrate the offset principles of additionality, equivalence, and permanence required by standard Environment Institute of Australia and New Zealand (EIANZ) practice (Roper-Lindsay et al. 2018) or long-standing DOC guidelines. These principles are also set out in Appendix 3 of the NPS-IB.

14. Wetland loss engages the National Policy Statement for Freshwater Management 2020 (NPS-FM), specifically the no-further-loss direction under Policy 6 and the associated effects management hierarchy under the National Environmental Standards for Freshwater 2020 (NES-FW). However, the assessment applies "like-for-like" and "trading up" concepts in a manner that serves to eliminate rather than improve the offset obligation, and the wetland offset proposal (including the candidate site Q08/066) has not been demonstrated to meet additionality or perpetuity requirements.

15. Both assessments appear to treat the FTAA's high threshold for declining consent and the NPS-I 's weighting of infrastructure benefits as though they substantively relax or waive offsetting obligations. This could result in potentially significant residual effects on terrestrial and wetland ecology not being addressed by the Applicant.

Adequacy of addressing residual effects on terrestrial vegetation

Proposed mitigation for addressing loss of habitats

16. The Applicant estimates that 39 hectares of indigenous-dominated vegetation could be affected by the Project, of which 18 hectares are 'Very High' value, seven hectares are 'High' value, and four hectares are 'Moderate' value.

17. The Applicant proposes to address unmitigated effects on vegetation assessed as 'Very High' and 'High' by undertaking mitigation planting of pasture (up to 39.5 hectares at the Northern and Southern sites) and replacement of pine forestry with indigenous planting (up to 103.6 hectares at the Central site). No such mitigation is proposed for unmitigated effects assessed as 'Moderate', which is contrary to the direction provided in the

EIANZ guidelines. Table 17 of the Terrestrial Assessment only proposes mitigation for unmitigated levels of effects that are 'High' or 'Very High'.

Key issues with the mitigation approach

18. The Applicant has essentially proposed a pooled mitigation package to address residual effects across multiple ecological features. These include 'Very High' value kauri-podocarp forest, 'High' value kohekohe-taraire-tawa-podocarp/broadleaf forest and tōtara-kauri/broadleaf scrub, Hochstetter's frog habitat, bat foraging and roosting habitat, lizard habitat, and kauri snail habitat.

19. There is no quantification of what is being lost by habitat type, no corresponding quantification of what is being gained by habitat type, and no demonstration that losses and gains are equivalent at the level of the individual habitat or ecological feature. The mitigation areas are treated as a combined pool of ecological benefit capable of addressing all residual effects across all sensitive features simultaneously.

20. Even though the amount of planting appears generous in the mitigation areas, this action is more akin to compensation— not offsets in any technically defensible sense. For example, the Applicant has not demonstrated a 'like for like' trade or 'no net loss' with a BOAM or similar accounting model.

21. A key problem with the Applicant's approach is that distinct terrestrial habitat types have been aggregated. This means, for instance, that the loss of rare habitats such as kahikatea treeland or tōtara forest on alluvium would potentially be addressed by planting hillslope forest species. Aggregating habitat types allows a net gain in one habitat type (e.g. hillslope forest, which may be comparatively common and easy to establish), and cannot be used to offset a net loss in a completely different, rarer habitat type (kahikatea alluvial treeland). Put simply, aggregating habitat types has the effect of masking the loss of rarer, more threatened habitat types behind the gain of a more common one.

22. The BOAM framework is designed to prevent this outcome. Its core design principle is that no net loss must be demonstrated at the level of individual biodiversity attributes, not in aggregate across biodiversity types. As the BOAM User Manual (Maseyk et al. 2015)[2] states:

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[2] **Maseyk, F.J.F.; Maron, M.; Dutson, G.; Possingham, H.P.; Seaton, R.; Carlyon, G.; Beveridge, A. (2015).** *A biodiversity offsets accounting model for New Zealand. User Manual.* Contract Report No.

"No net loss for a biodiversity type is demonstrated when all associated components demonstrate no net loss. Thus, no net loss at the project-level is supported for all biodiversity types when all associated components demonstrate no net loss."

23. And on aggregation risk specifically:

"To minimise concealed loss, calculations for biodiversity components within biodiversity types are explicit and disaggregated. If a user chooses to aggregate calculations for biodiversity attributes into a single metric for each biodiversity component, exchange restrictions should be considered to avoid unacceptable concealed loss. Using a disaggregated currency increases transparency and allows 'winners and losers' to be easily identified."

24. The consequence of the aggregation approach is that the mitigation looks impressive at a high level — 143 hectares is clearly a large area — but this obscures the fact that specific ecological deficits, at the level of individual habitat attributes, remain unquantified and unaddressed. It is impossible to determine whether the proposed mitigation programme would demonstrate, for example, no net loss for kauri-podocarp forest canopy structure, or for Hochstetter's frog microhabitat quality, because the assessment has not been structured to answer those questions.

25. A BOAM-based assessment would require the Applicant to produce a 'winners and losers' table that makes transparent exactly which biodiversity components the proposed mitigation package will and will not address. It would likely reveal that the package — as currently scoped, located within the proposed designation boundary, and weighted toward early-successional planting — fails to demonstrate no net loss for the highest-value and most specialised elements of the ecology affected, and that those elements represent genuine limits to offsetting requiring either redesign of the project footprint to avoid them or formal compensation in acknowledgment of their irreplaceability.

26. The BOAM also introduces time preference discounting into the accounting, which interacts with the aggregation problem in a specific way. Losses are immediate and certain — 18 hectares of 'Very High' value forest will be lost at the commencement of construction. Gains from planting and restoration

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2014-008. Prepared by The Catalyst Group for the Department of Conservation, Hamilton. March 2015.

accrue slowly and with uncertainty over many decades. The BOAM accounts for this temporal imbalance through a discount rate applied to offset gains, reducing their net present biodiversity value to reflect the ecological reality that a certain loss now is not equivalent to an uncertain gain later.

27. No such accounting has been applied to the proposed mitigation package. Rather, the Applicant describes the mitigation sites in terms of their eventual potential — 39.5 hectares that will become native forest, 103.6 hectares that will transition from pine to indigenous regeneration — without any acknowledgment that ecological gains from young indigenous planting are not equivalent in present-value terms to losses of mature forest. Furthermore, it is not clear how the protection of existing indigenous vegetation in the Northern and Southern Mitigation Sites would satisfy the additionality principle, noting that, for example, parts of the Southern Mitigation Site are already fenced and legally protected under a QEII covenant.

28. A BOAM would apply a discount rate (typically 3%) to the offset gains and would require the offset area or the confidence in offset actions to be scaled up accordingly to demonstrate no net loss at the required attributes.

29. There is a strong precedent for using BOAMs for large infrastructure projects in New Zealand, noting they have been used in recent NZTA projects, including Te Ahu a Turanga: Manawatū Tararua Highway and Ōtaki to north of Levin: Te Pae o Tararua highway.

<u>Proposed mitigation for addressing loss of kauri</u>

30. The proposed 50:1 kauri offset planting ratio is noted for individual trees over 50 centimetres DBH, acknowledging that kauri of up to approximately 80 years can still have DBHs less than 50 centimetres. This ratio does not address the loss of kauri-podocarp forest communities and their associated understorey, invertebrate assemblages, and structural complexity. The ratio is also presented without any ecological basis for why 50:1 is sufficient at this scale and why 50 centimetres DBH is an appropriate threshold.

31. As Dr Martin notes in his statement of advice, the proposed mitigation approach for kauri would be much stronger if the basal area of kauri lost was calculated, potentially to be done at the time of felling, local growth rates were investigated, and the application included enough seedlings to ensure basal area is replaced within a timeframe of 20 to 30 years. I agree with this recommendation but would prefer for it to be included as part of a BOAM so that all attributes (and all size classes) – not just basal area – in the affected

kauri forests are appropriately accounted for. Basal area would also be a key attribute use in BOAMs for other habitats with mature, longer living tree species, e.g. in Piroa Stream forest and alluvial forests and treelands.

Assessment of residual effects on terrestrial vegetation

32. In Table 24 of the Assessment of Effects on Terrestrial Ecology, the authors have assessed the residual (mitigated) level of effects on 'Very High' value and 'High' value vegetation communities as 'High', and they have assessed the mitigated level of effect on kauri as 'Moderate'. In Table 26, the authors have assessed the overall mitigated effect on Hochstetter's frogs as 'High' (in relation to habitat loss and fragmentation). The header in both tables state that *"Effects in bold warrant further measures to offset or compensate for these effects".* I assume it is an error that the 'High' levels of effect are not in bold, particularly given the statement in Section 6 (page 44) just prior to Tables 23 to 26, that the authors consider post mitigation effects that have been assessed as being 'Moderate' or higher warrant further measures to offset or compensate for these effects (with reference to the EIANZ Guidelines).

33. Nonetheless, the authors acknowledge there are residual effects that need to be addressed, although it is not clear if they are in fact recommending that management extend to a 'Moderate' unmitigated level of effect, e.g. loss of kauri. Instead, the authors conclude that *"those residual effects may be acceptable considering the purpose and relevant decision-making provisions of the FTAA in the context of the enabling benefits of the Project."*

34. Overall, the Applicant has departed from the mitigation hierarchy and the policy direction of the NPS-IB without clear justification. As a result, a key component of the application, namely offsetting and/or compensation for those residual effects, is effectively absent from the Terrestrial Assessment.

Adequacy of addressing residual effects on wetland vegetation

Proposed approach for addressing impacts on wetlands

35. The author estimates that approximately 3.05 hectares of wetland habitat will be affected by the Project, although a breakdown by wetland number has not been provided. A consolidated area table for all 25 wetlands would be standard practice in an assessment of this nature and would allow a

straightforward comparison between total wetland +extent present, total lost, and total retained.

36. The author treats wetlands with higher ecological values differently to those with lower ecological value and condition (as outlined in Section 5.4 (Natural Inland Wetlands) of the Assessment of Effects on Freshwater Ecology). Accordingly, in the assessment the author proposes offsetting for three wetlands only: Wetlands 8, 16, and 24. (Note that offsetting has been extended to include Wetlands 11, 12, 13, and 14 in the Resource Consent Conditions). Section 5.4.1 and the surrounding discussion in Section 5.4.2 recommend no mitigation at all for most natural inland wetlands that will be impacted, including those incorrectly characterised as "exotic pasture" wetlands.

37. The author has dismissed the use of a BOAM *"for an impact on 1 ha of raupō wetland"* in favour of using offset ratios based on the timing of the restoration works. This means the earlier the works start, the lower the offset ratio, with the logic being that being that restoration works carried out prior to construction results in a reduced lag period.

38. I am familiar with such ratios being used for other large infrastructure projects, one of which I reviewed for the Department of Conservation (Cambridge to Piarere Highway). While it is my preference for BOAMs to be used to address wetland loss – as was the case for the Ōtaki to north of Levin: Te Pae o Tararua Highway – I am comfortable with the use of ratios for small, modified wetlands if they are commensurate to the values being lost. However, I consider the ratios currently proposed by the author to be too low. I discuss this later in my advice.

<u>Key issues with the offsetting approach for wetland loss</u>

39. The author asserts that because these wetlands are of low or negligible ecological value, they do not warrant protection of their extent and therefore no avoidance, remedy, mitigation, or offset is needed. This is a values-based perspective that is not provided for in the NPS-FM. Policy 6 of the NPS-FM states unambiguously: *"There is no further loss of extent of natural inland wetlands."* It does not condition that obligation on ecological value. Importantly, the no-further-loss directive applies to all natural inland wetlands that meet the definition, noting that the author confirms that all 25 identified features do meet the NPS-FM definition.

40. I consider there is a contradiction in the report, as it simultaneously confirms that these are natural inland wetlands under the NPS-FM and then asserts that Policy 6 does not apply to them because they are low value.

41. The author then offers a secondary assertion: the NPS-FM offset principles require a *"like for like"* response, and recreating exotic pasture wetlands is *"not consistent with the intention of the policies and objectives in the NPS-FM."* This statement is misleading. I refer to offsetting principle 3 in Appendix 6 of the NPS-FM (principles for aquatic offsetting) below:

> ***No net loss and preferably a net gain:*** *This is demonstrated by a like-for-like quantitative loss/gain calculation, and is achieved when the extent or values gained at the offset site (measured by type, amount and condition) are equivalent to or* ***exceed*** *those being lost at the impact site.*

42. The report implies that like-for-like trades must be equivalent to the values being lost at the impact site, whereas the above principle specifically allows for offsets to exceed those values. It would be nonsensical to offset a degraded exotic-dominant wetland by revegetating another wetland with exotic plants.

43. In addition, the author has not used the EIANZ guidelines to assess wetland value; rather, they have provided a summary of indigenous biodiversity, ecosystem health, and hydrological function (Table 4 of the Wetland Assessment). Further, there appears to be an inconsistency between the avifauna habitat values assessed in the Assessment of Effects on Avifauna (prepared by Dr Bull) and those assessed for wetlands in the Assessment of Effects on Freshwater. For example, mātātā/fernbird was recorded at Wetlands 11 and 13 (as per Table 9 in the Avifauna Assessment); however, the Wetland Assessment has still assigned these wetlands overall ecological values of 'Negligible' and 'Low' respectively. Based on the EIANZ guidelines, these wetlands should have at least a 'Moderate' ecological value due to the presence of an 'At Risk – Declining' bird species. In addition, as Dr McEwan notes in her evidence, it is possible that threatened fish species such as black mudfish (At Risk – Declining) are present in some of the wetlands to be impacted. Any wetland that supports black mudfish would have 'Moderate' to 'High' ecological value.

44. Regardless of the proposed approach to offsetting, it is evident that following the desktop review undertaken by Dr Martin and the site visit we completed on 26 June 2026, large areas of natural wetlands have been omitted from the

Wetland Assessment, noting that an additional 15 natural inland wetlands or likely wetlands have been identified by Dr Martin and myself through desktop review and/or ground-truthing. Furthermore, the composition of several wetlands has been mischaracterised by the Applicant, resulting in understated ecological values. For example, Wetland 13 was described by the Applicant as exotic-dominant with 'Negligible' indigenous biodiversity and 'Low' ecological value, when the site visit demonstrated that parts of the wetland support a moderate to high proportion of indigenous plant species such as giant umbrella sedge (*Cyperus ustulatus*), rautahi (*Carex lessoniana*), and pukio (*C. secta*), the latter of which is classified as Regionally At Risk – Declining' in Northland.

45. The presence of at least 4.88 hectares of wetland habitat and 1.71 hectares of likely wetland habitat (as mapped by Dr Martin) that were omitted from the wetland assessment within the Assessment of Effects on Freshwater Ecology – including wetlands dominated by indigenous plant species (Appendix 1: Plates 1 and 2) – combined with the understating of existing wetland values, undermines the entire offsetting approach proposed by the Applicant.

<u>Adequacy of the proposed offset sites</u>

46. As Dr Martin has explained in his statement of advice, the two proposed wetland offset sites are not appropriate. The site on the southwest corner of the intersection of SH1 and SH12 appears to be poplar and willow treeland on a hill slope with little to no wetland habitat, while further to the south, wetland Q08/066 includes existing natural inland wetland that has already been fenced and enhanced with indigenous planting (Appendix 1; Plates 3 and 4). As such, there is limited scope for further restoration - and certainly not in the quantum required once wetlands that were not mapped are accounted for in the assessment.

47. Based on the site visit, it is evident there are ample areas of degraded wetlands throughout the Project Designation that are far more suitable for offsetting purposes than wetland Q08/066. It is unclear why these have not been considered by the author.

48. I note the author considers that any offset site would not need to be legally protected in perpetuity. I do not agree. All offset sites should be protected either permanently or for the life of the Project in adherence to the offsetting principle of long-term outcomes.

Comments on consent conditions

Overview

49. The Designation and Wildlife Approvals conditions do not include any performance standards or targets with regard to ecological outcomes in regard to indigenous planting, pest plant control, and pest animal control. The substantive ecological work is almost entirely deferred to the management plans. This risks the Applicant not being held to account if key objectives/targets in the management plans are not achieved.

50. The conditions contain no mechanism capable of demonstrating a "no net loss" or net gain outcome for indigenous biodiversity, because ratios are asserted rather than calculated from any attribute-level (BOAM) analysis. As such, the conditions cannot currently be relied upon to secure the outcome set in the NPS-IB.

51. The conditions provide a mortality-avoidance mechanism for avifauna, lizards, and frogs, but no mechanism for offsetting the loss of habitat on which those species depend, noting, in particular, low-fecundity species such as Hochstetter's frog are poor candidates for translocation-only responses.

52. I have not provided detailed comments on the Resource Consent conditions, as these have been addressed in detail by Dr Martin.

Designation conditions

53. Condition D23 appears to conflate landscape and ecology by discussing replacement planting of kahikatea/tōtara stands. This needs to be addressed in the Ecology conditions and the EMP. (Note: the EMP appears to address fauna-related management; there is no information on pest plant control and indigenous planting).

54. Condition D27 includes a 1:1 ratio for “areas of existing indigenous vegetation”, which means that all affected vegetation is aggregated, which presumably includes high value habitats. A 1:1 ratio does not allow for any lag period and is not appropriate to address high value habitats. This condition describes a mechanism (replanting at a ratio) without ever stating the biodiversity outcome the mechanism is meant to secure.

56. There is only a vague reference to the locations of the planting areas in Condition D28. The condition should refer to a set of drawings or maps. The

proposed maintenance period of five years will need to be extended if canopy closure and/or pest plant control targets have not been met.

57. There is no clear mention of a Bat Management Plan (BMP) in Condition D33. This condition should refer to the BMP rather than a 'report'. This condition should clearly outline the objectives and key management measures in the BMP. It should also address the residual effects on foraging habitat or landscape connectivity from vegetation removal generally (not just roost trees) and measures to offset or compensate for the loss of roost habitat.

58. The conditions relating to avifauna management are generally appropriate, although they should include requirements for reporting during and post-construction, and they should specify that targeted surveys for cryptic wetland birds will be undertaken.

Wildlife Approval conditions

59. Condition WA18 assumes there will be suitable habitats to which frogs can be relocated. Based on the site visit, it is likely that such areas will be limited within the designation where frogs are not already at carrying capacity. Furthermore, there is also no mention of pre-salvage surveys at nominated relocation sites for lizards and frogs, which is an important omission.

60. Condition WA25 should refer specifically to lizards, Hochstetter's frogs, and kauri snails. It should also specify the species of pests being targeted and include performance targets, e.g. RTC of 5% for rats. Monitoring of pests also needs to be included to ensure that performance targets are met. There is also no mechanism for extending pest control if monitoring were to show the population has not established by Year 3, largely because, per the point below, there is no population monitoring that could trigger that anyway.

62. Condition WA27 does not include a requirement to monitor whether translocated frogs and lizards subsequently survive, breed, or establish a viable population at the release sites – despite monitoring being a requirement of the EMP. There is also no mechanism for adaptive management should relocations fail.

63. The final report required by Condition WA29 at 24 months post-completion of construction is also a short window against Hochstetter's frog generation times and slow population recovery. It is positioned to capture whether the salvage was carried out, not whether the translocated population survives.

Conclusion

64. In my opinion, neither the Assessment of Effects on Terrestrial Ecology Assessment nor the Assessment of Effects on Freshwater Ecology has appropriately applied the mitigation hierarchy. In both assessments, the effects management framework required by the applicable national policy statements — NPS-IB 2023 for terrestrial indigenous biodiversity and NPS-FM 2020 for freshwater — has not been properly worked through to its conclusion. Avoidance, minimisation, and remediation have not been demonstrably exhausted before offsetting or compensation was considered, and in each case the residual effects that remain have not been met with offsetting or compensation of a type, scale, or rigour sufficient to address them.

65. The relevant National Policy Statements are relevant, and they do not relieve the Applicant of the obligation to properly assess the effects of its proposed activity and work through the mitigation hierarchy.

66. On this basis, I do not consider the Terrestrial or Freshwater Ecology Assessments provide an adequate basis for the Panel to be satisfied that the terrestrial, wetland and freshwater values have been appropriately assessed, nor that the adverse effects of the Project on terrestrial and wetland and freshwater ecology will be appropriately avoided, remedied, mitigated, offset or compensated for.

Recommendations

<u>Terrestrial ecology</u>

67. Based on the proposed mitigation approach of enhancement and revegetation, BOAMs would need to be developed that address (i) the loss of extent in exchange for a net gain in area (i.e. through the revegetation of pasture and former forestry) and/or (ii) a loss of extent in exchange for an improvement in condition of existing indigenous habitats (i.e. through stock exclusion and pest animal and plant control). This would need to account for existing protected and/or fenced areas of indigenous forest within the mitigation sites to ensure that the principle of additionality is satisfied.

68. To develop defensible BOAMs, the Applicant would need to collect field data from all affected terrestrial habitats as well as the proposed enhancement areas (including confirmation that all terrestrial habitats have been

appropriately mapped, described, and assessed). These data would inform attributes such as canopy height and cover, species diversity, basal area, and percentage ground cover, and are typically collected by measuring 10x10-metre vegetation plots. The BOAMs would also need to be informed by robust benchmark values, either collected from the field and/or from relevant literature, as well as well-informed offset model assumptions.

69. Terrestrial offsets should follow the principles of offsetting listed in Appendix 3 of the NPS-IB if they are to be considered robust.

Wetland ecology

70. The offsetting approach needs to be reconsidered once the Applicant has appropriately mapped, described, and assessed all natural inland wetlands within the Project Designation. It is recommended that offsetting is applied to all natural inland wetlands affected by the Project, in line with the policy direction of the NPS-FM.

71. If ratios – rather than BOAMs – are to be used to determine the quantum of wetland offset, they should be calibrated to the ecological value of affected wetlands, i.e. larger ratios should be used for higher value wetlands. The current ratios recommended in the Wetland Assessment are too low considering that several wetlands have been undervalued. I suggest the following offset ratios and wetland categories:

    - If the offset wetland is restored within five years after the impact: apply a 1:2 ratio for low-value wetlands; a 1:3 ratio for moderate-value wetlands, and a 1:4 ratio for high-value wetlands.
    - If the offset wetland is restored within one year after the impact: apply a 1:1.5 ratio for low-value wetlands; a 1:2.5 ratio for moderate-value wetlands, and a 1:3.5 ratio for high-value wetlands.
    - If the offset wetland is restored more than three years before the impact: apply a 1:1 ratio for low-value wetlands; a 1:2 ratio for moderate-value wetlands, and a 1:3 ratio for high-value wetlands.

72. For clarity, the offset ratios provided above are appropriate for offsetting wetland dominated by herbaceous (i.e. non-woody) wetland vegetation. To address the loss of higher value kahikatea forest on a seepage in Wetland 12, it would be more appropriate to apply a BOAM which includes basal area (as discussed earlier in my evidence).

73. Offset sites should be chosen based on the greatest ecological benefit being realised. For instance, the restoration of large, degraded wetlands where linkages with terrestrial vegetation can be established, as opposed to restoring smaller, more isolated habitats. Alternatively, sites where wetland hydrology could be restored via earthworks (e.g. by filling or blocking drains) could also be potential candidates for offsetting.

74. Wetland offsets should also follow the principles of offsetting listed in Appendix 3 of the NPS-IB if they are to be considered robust.

APPENDIX 1: SITE PHOTOGRAPHS





Plates 1 and 2 – Wetland near Piroa Stream within the Project footprint and not mapped by the Applicant. The dominant species in this wetland is the indigenous sedge *Eleocharis acuta*. 26 June 2026.





Plates 3 and 4 – Southern arms of the proposed offset wetland (Q08/066), which have been fenced and planted with indigenous species. 26 June 2026.