Before the Expert Consenting Panel

under: the Fast-track Approvals Act 2024 (*FTAA*)

in the matter of: notices of requirement and applications for resource consents, wildlife approvals and archaeological authorities by the NZ Transport Agency Waka Kotahi to develop the Brynderwyn Hills section of the Alternative to the Brynderwyn Hills Project, a state highway from the intersection of State Highway 1 and Baldrock Road in the south, through the Brynderwyn Hills to Waipū in the north.

applicant: **NZ Transport Agency Waka Kotahi**

Requiring Authority and Applicant

Statement of Evidence of Leigh Bull for NZ Transport Agency Waka Kotahi

Dated: 28 October 2026

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STATEMENT OF EVIDENCE OF LEIGH BULL

INTRODUCTION

1 My full name is Leigh Sandra Bull.

2 I am a Director and Avifauna Ecologist with BlueGreen Ecology Limited. I hold the qualifications of Bachelor of Science (Zoology), Masters of Science with Honours (Ecology) and PhD (Ecology) from Victoria University of Wellington. My area of specialisation is ornithology. I have worked as a professional ecologist for 20 years (not including 11 years of tertiary study).

3 My evidence has been prepared to support NZ Transport Agency Waka Kotahi *(NZTA)* as part of the response to comments on the notices of requirement and applications for resource consents, wildlife approvals and archaeological authorities (together, the *Application*) to develop the Brynderwyn Hills section of the Alternative to the Brynderwyn Hills (*Project*), a state highway from the intersection of SH1 and Baldrock Road in the south, through the Brynderwyn Hills to Waipū in the north.

4 I have appeared as an expert witness before Council hearings, Environment Court hearings, Board of Inquiry hearings, at a Decision-Making Committee hearing for marine consents associated with the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012, and at a hearing under the Resource Management (Natural and Built Environment and Spatial Planning Repeal and Interim Fast-Track Consenting) Act 2023.

5 My professional memberships include the New Zealand Ornithological Society and the Environment Institute of Australia and New Zealand (EIANZ). I am a Certified Environmental Practitioner (Ecology Specialist) with the EIANZ and am bound by the Institute's code of ethics.

6 My experience relevant to this application is as follows:

6.1 Transmission Gully motorway – Prepared the avifauna assessment and developed methods and measures to avoid, minimise and mitigate potential effects. Provided expert evidence on behalf of NZ Transport Agency Waka Kotahi (*NZTA*) for the Environment Court hearing.

6.2 Mackays to Peka Peka – Prepared the avifauna assessment and developed methods and measures to avoid, minimise and mitigate potential effects. Provided expert evidence on behalf of NZTA for the Board of Inquiry hearing.

6.3 East West Link – Undertook field investigations, prepared the avifauna assessment and developed

methods and measures to avoid, minimise and mitigate potential effects. Provided expert evidence on behalf of NZTA for the East-West Link Board of Inquiry hearing.

6.4 Ara Tūhono – Pūhoi to Warkworth motorway – Provided expert evidence on behalf of NZTA for the Board of Inquiry hearing.

6.5 Ara Tūhono – Warkworth to Wellsford motorway – Prepared the avifauna assessment and developed methods and measures to avoid, minimise and mitigate potential effects. Provided expert evidence on behalf of NZTA for the Council hearing.

1.1 Northport Expansion – Prepared an assessment of effects on coastal avifauna in relation to Northport's Eastern expansion (13 ha reclamation) and developed methods and measures to avoid, minimise and mitigate potential effects. Appeared as an expert witness for the Council and Environment Court hearings.

7 I have been involved with this Project since early 2025. I am the author of the Assessment of Effects on Avifauna Ecology lodged on 8 April 2026 in support of the Project (*Avifauna Assessment*).[1]

CODE OF CONDUCT

8 Although this matter is not before the Environment Court, I confirm that I have read the Environment Court's Code of Conduct for Expert Witnesses in its Environment Court Practice Note 2023. I agree to comply with that Code. 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.

SCOPE OF EVIDENCE

9 My evidence:

9.1 Provides a summary of my original assessment approach and methodology, particularly as it related to comments received;

9.2 Outlines my recommended approach for managing potential adverse effects of the Project on avifauna; and

9.3 Responds to comments from:

[1] Vol B, Appendix D08 – Assessment of Effects on Avifauna Ecology (*Avifauna Assessment*).

(a) The Director General of Conservation on behalf of the Department of Conservation (*DOC*) (both in its comments on the Application and in its report prepared pursuant to section 51 of the Fast-track Approvals Act 2024 for the Project (*Section 51 Report*));

(b) Te Parawhāu ki Tai (representing Te Parawhau and Te Pouwhenua o Tiakiriri Kukupa Trust) (*Te Parawhau*);

(c) Patuharakeke Iwi Trust Board (*Patuharakeke*); and

(d) Te Uri o Hau Settlement Trust on behalf of Te Uri o Hau hapū (*Te Uri o Hau*).

ASSESSMENT APPROACH AND METHODOLOGY

10 I used a combination of desktop and field data to identify avifauna species and habitat that are known or likely to be present within the Indicative Alignment and / or Proposed Designation. Desktop sources were used to identify avifauna species and habitats within the wider landscape (i.e. within 5 km of the Proposed Designation).

11 For the assessment of effects, I used the Environment Institute of Australia and New Zealand (EIANZ) guidelines for undertaking ecological impact assessments, whereby ecological values are assigned and the magnitude of effects identified in order to determine the overall level of effects of the proposal. Notably:

11.1 I used the species approach to determine ecological value, whereby species are assigned values according to their Threat Classification.

11.2 I determined the magnitude of effect at the scale of the Ecological District.

12 I applied a conservative approach when undertaking the assessment of effects, whereby:

12.1 As outlined in Section 4.1 of the Avifauna Assessment, I included a number of species that were not recorded in the Proposed Designation in my assessment, but which I considered could either potentially be present in the Proposed Designation or impacted by the proposed activities.

12.2 Wherever potential habitat was identified, I assumed the species that primarily associate with that habitat could be present.

RECOMMENDED APPROACH TO MANAGING EFFECTS ON AVIFAUNA

13 As summarised in Section 4.1.5 of the Avifauna Assessment, without any effects management measures, overall, at the scale of the Ecological District, I determined the level of potential effects of the Project to be Low to Very Low on the majority of species. Those species for which more than minor adverse effects were determined were:

13.1 **Potential High levels of effects** for Australasian bittern, North Island fernbird, New Zealand pipit and spotless crake.

13.2 **Potential Moderate levels** of effect for North Island kākā.

14 These levels of effects are due to the *Threatened* or *At Risk* status of the species, and the potential for injury and / or mortalities of breeding birds, as well as the loss of habitat types that are limited in the Ecological District.

15 As such, my approach to managing those more than minor adverse effects through the effects management hierarchy is as follows:

15.1 Avoid where practicable: Australasian bittern, fernbird, spotless crake, pipit and North Island kākā – vegetation clearance during non-breeding season to avoid direct impacts or otherwise requiring pre-clearance checks.

15.2 Minimise where practicable: Trying to minimise footprint of the Project and minimising locations of spoil sites, opportunities to minimise further by undertaking works in the non-breeding season and establish appropriate setback distances of works from nests if works occur during the breeding season.

15.3 Remedy where practicable: Potentially return of some areas to pasture once construction is completed may reinstate pipit foraging habitat.

15.4 Where more than minor residual adverse effects remain, offsetting provided where possible: Implementation of wetlands and terrestrial indigenous vegetation.

16 Based on the implementation of the measures outlined above and in the Avifauna Assessment, it is my view that the level of residual adverse effects post-application of mitigation will be Low to Very Low (i.e. not significant) for Australasian bittern, North Island fernbird, NZ pipit, spotless crake and North Island kākā.

RESPONSE TO COMMENTS

17 The following section of my evidence responds to comments from DOC, Te Parawhau ki Tai, Patuharakeke and Te Uri o Hau. In particular, my evidence addresses:

17.1 My opinion that the Project's potential effects can be avoided or managed in such a way that a permit under the Wildlife Act 1953 (*Wildlife Act*) is not needed for the Project;

17.2 The robustness of my assessment methodology, as it relates to the use of desktop information and surveys;

17.3 The Project's potential impacts on avifauna habitat; and

17.4 Suggested amendments to effects management measures, including pre-construction surveys, construction methodologies, stormwater design specifications and operational effects management measures.

Wildlife Act Permits are not necessary for Avifauna

18 In its Section 51 Report, DOC has suggested that a permit under the Wildlife Act is necessary for the Project given the potential for construction to "*foreseeably kill or injure protected birds or destroy their eggs or nests*".[2]

19 As outlined in Section 5.1 of the Avifauna Assessment and discussed above, effects on nesting *Threatened* or *At Risk* birds (including cryptic marshbirds) can be avoided through undertaking vegetation clearance during the non-breeding season (generally February to August).

20 If vegetation clearance is to be undertaken during the breeding season, as outlined in Table 17 and Section 5.1 of the Avifauna Assessment and noted above, the Avifauna Management Plan (*AMP*) is to include measures to confirm no birds are present immediately prior to habitat clearance works. These measures could also be applied to Not Threatened avifauna species such as kiwi.

21 However, if these measures could not be applied, then Wildlife Act authorisation would be required for construction to "*foreseeably kill or injure protected birds or destroy their eggs or nests*".

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[2] Section 51(2)(c) wildlife approval report for – Alternative to Brynderwyn Hills [FTAA-2603-1178] prepared by the Department of Conservation on behalf of the Director-General of Conservation dated 29 July 2026 (*Section 51 Report*), pages 10 and 24 at sections 5.6.1 and 6.7.18.

Assessment methodology was appropriate

22 There were numerous comments that my methods were inadequate for the purposes of undertaking an assessment of effects on avifauna. In particular, commenters questioned:

22.1 Use of desktop information to understand the existing environment as it relates to avifauna;[3] and

22.2 The nature, timing and extent of surveys (including targeted surveys for particular species).[4]

23 As outlined in Section 2.1 of the Avifauna Assessment:

> "*The Indicative Alignment within the Proposed Designation represents a possible alignment which has been developed for assessment purposes, illustrating what the Project's final design might look like, and the effects generated by its construction and operation. The alignment that gets built, including the design and placement of bridges, culverts, stormwater systems, soil disposal areas and landscaping, will be refined and confirmed during the detailed design stage*".

24 Avifauna are capable of inhabiting the entire ~1,000 ha Proposed Designation. As explained above, given it is not feasible to repeatedly survey the entire area, desktop sources were used to obtain a compiled list of avifauna species that have previously been recorded within or adjacent to the Proposed Designation.

25 I also identified avifauna habitat types within the Proposed Designation.

26 I then used expert ornithological knowledge to determine:

26.1 The avifauna species likely to associate with the habitats I had identified within the Proposed Designation; and

26.2 Any species that weren't recorded through the desktop sources, but for which I considered potential habitat exists within the Proposed Designation.

27 Therefore, while I did not conduct targeted surveys, I applied a conservative approach whereby:

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[3] Section 51 Report, Appendix A – Frogs, lizards and avifauna, page 17 at paragraph 45. Comments from Te Pouwhenua o Tiakiri Kūkupa Trust on behalf of Te Parawhau hapū (*Te Parawhau Hapū Comments*), Appendix B2 – Statement of Evidence on behalf of Jacqueline Wairepo, pages 12 and 13 at paragraphs 9.1-9.4.

[4] Section 51 Report, Appendix A – Frogs, lizards and avifauna, pages 17-18 at paragraphs 44 and 46. Te Parawhau Hapū Comments, Appendix B2 – Statement of Evidence on behalf of Jacqueline Wairepo, pages 12 and 13 at paragraphs 9.1-9.4.

27.1 As outlined in Section 4.1 of the Avifauna Assessment, I included several species that were not recorded in the Proposed Designation in my assessment, including Australasian bittern, Australasian little grebe, North Island kākā, North Island brown kiwi and a variety of petrel species.

27.2 Wherever potential habitat was identified, I assumed the species that primarily associate with that habitat could be present.

28 With regard to kiwi, a number of the comments[5] referenced Piroa Conservation Trust surveys, which show the presence of kiwi in the area (refer to Figure 1 below). Over 40 kiwi have been released at Marunui northwest of Mangawhai, with birds spreading into the Brynderwyns.

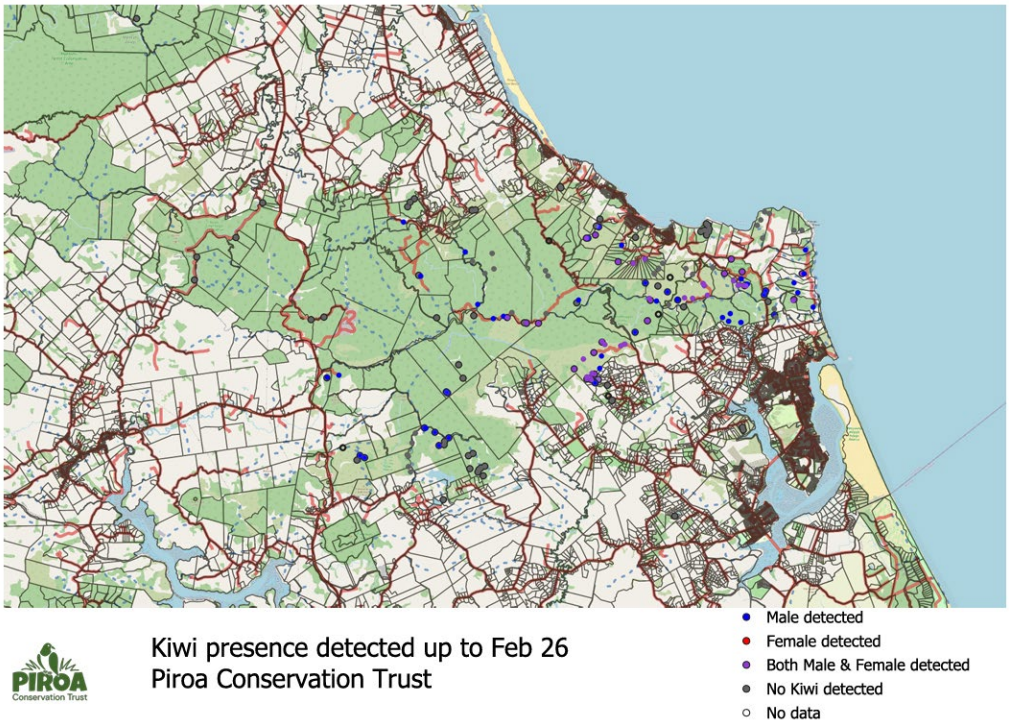

Figure 1: Piroa Conservation Trust map of kiwi presence up to February 2026 (Source: https://www.piroaconservation.org.nz/page102)

29 While this survey data did not form part of the Avifauna Assessment, as noted above, I had assumed that kiwi could be

[5] DOC Comments regarding fast-track project: Alternative to the Brynderwyn Hills (*DOC Comments*), Appendix C - Frogs, lizards and avifauna, pages 52 at paragraph 131; Patuharakeke Te Iwi Trust Board Comments, Ecological Review of Fast Track Application FTAA-2603-1178 Alternative to Brynderwyn Hills Northland Corridor (Section 2B) (*Patuharakeke Ecology Comments)*, page 55 at paragraph 179; Te Parawhau Hapū Comments, Appendix C – Statement of Evidence on behalf of Jacqueline Wairepo, page 12 at paragraph 9.1.

present in the Proposed Designation and, as such, undertook my assessment on that basis.

30 Thus, I note that none of the comments received identified any additional avifauna species that I did not include in the Avifauna Assessment. As such, I consider the species listed in my assessment to represent a complete list of all species potentially within the Proposed Designation.

Impacts on avifauna habitat

31 DOC, Te Parawhau ki Tai and Patuharakeke have made several statements about the need for further consideration of potential effects on avifauna habitat,[6] and the need for amendments to NZTA's proposed mitigation package to address these potential effects. I address these matters in turn below.

Consideration of effects on avifauna habitat

32 At paragraph 138 of its Appendix C, DOC queries the difference in the terms 'Indicative Alignment' and 'Construction Footprint,' which are used in Table 4 and Appendix B of the Avifauna Assessment respectively.[7] As DOC correctly identifies, these terms do mean the same thing in the context of this assessment, and Construction Footprint was left in the report in error. Both these tables should identify 'Indicative Alignment' rather than 'Construction Footprint'.

33 In terms of Table 4 identifying 370.33 ha under the Indicative Alignment compared to 114.9 ha in Appendix B, I note that not all terrestrial vegetation communities within the Indicative Alignment were mapped by WSP (e.g. exotic pasture etc).

34 At paragraph 139, DOC queries why mitigation was considered only for wetlands 11, 12, 13, 14 and 24 within the Proposed Designation.

35 As noted above:

> "*The Indicative Alignment within the Proposed Designation represents a possible alignment which has been developed for assessment purposes, illustrating what the Project's final design might look like, and the effects generated by its construction and operation".*

36 Thus, given the levels of effects that I assessed for the various avifauna species as a result of potential impacts on wetland habitats within the current Indicative Alignment, I considered it appropriate that mitigation be provided for area s of wetland that may be lost

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[6] DOC Comments, Appendix C - Frogs, lizards and avifauna, pages 51-52 at paragraphs 127-135.

[7] Ibid.

which provide potential habitat for *Threatened* or *At Risk* species (i.e. wetlands 11, 12, 13, 14 and 24).

37 However, should changes in the Project's final design result in impacts that differ from what has been assessed (i.e. larger areas of these wetlands or different wetlands than those listed), then those would need to be appropriately mitigated.

38 Therefore, the conditions have been written in such a way to accommodate potential changes in the Indicative Alignment design, while ensuring they provide for sufficient management and mitigation of cryptic marshbird wetland habitat.

39 DOC has also identified additional potential wetlands within the Proposed Designation[8] and I have considered each of those in terms of their potential avifauna values.

40 With the exception of a small area of raupō in Wetland 25, the wetlands south of the Brynderwyn Hills (i.e. wetlands 25-33) identified by DOC appear to be scattered, low stature exotic-dominated features in pasture, which are of limited value to *Threatened* or *At Risk* freshwater / wetland avifauna species, and would not provide nesting habitat for these species. While they may provide foraging opportunities for Australasian bittern, and a number of Not Threatened species (e.g. paradise shelduck, pūkeko, white-faced heron etc), there is an abundance of similar habitat in the surrounding landscape, both within and outside of the Proposed Designation.

41 To the north of the Brynderwyn Hills, wetlands 34-37, which appear to be under the Indicative Alignment, will not provide nesting habitat for freshwater / wetland avifauna species, including *Threatened* or *At Risk* species. While they may provide foraging opportunities for Australasian bittern, and a number of Not Threatened species (e.g. paradise shelduck, pūkeko, white-faced heron etc), there is an abundance of similar habitat in the surrounding landscape, both within and outside of the Proposed Designation.

42 Wetlands 38 and 39, both outside the Indicative Alignment, may provide habitat for North Island fernbird as both form parts of wider ecosystems in which I identified this species as occurring. Both wetlands may also provide foraging habitat for Australasian bittern.

43 None of the additional wetlands identified by DOC within the Indicative Alignment will provide nesting habitat for *Threatened* or *At Risk* freshwater / wetland avifauna species.

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[8] DOC Comments, Appendix B – Terrestrial and wetland vegetation, page 64 at paragraph 221 and Table 4.

44 The identification of additional wetlands by DOC within the Proposed Designation, but outside of the Indicative Alignment, further shows the availability of foraging habitat for freshwater / wetland avifauna species in this area.

45 The presence of these habitats does not change the magnitude of effects that I identified in the Avifauna Assessment for freshwater / wetland avifauna species, nor does it change any of my recommendations regarding proposed mitigations.

46 Te Parawhau[9] criticised my use of primary habitat associations for assessing potential effects on avifauna. As stated in Section 4.1 of the Avifauna Assessment, this approach resulted in the exclusion of the following species from my assessment of effects:

46.1 Introduced / exotic species, which are not native to New Zealand; and

46.2 Species whose primary habitat are coastal / estuarine and oceanic environments as neither of these habitat types occur within the Proposed Designation.

47 My approach resulted in me undertaking my assessment on 45 avifauna species (as listed in Table 11 of the Avifauna Assessment) and it remains my opinion that it was an appropriate approach for this Project based on the habitat types over which this Project spans, and the potential direct and indirect effects of the Project.

48 Te Parawhau[10] also stated that I underestimated habitat availability through the simplification of habitat associations, particularly for pastoral, riparian and wetland environments, noting that this is important for species such as North Island kiwi, which use a wider habitat mosaic for foraging and movement than indigenous forest.

49 In the Avifauna Assessment I referenced the use of a mosaic or network of habitats by a number of species such as kiwi and bittern. I also identified species secondary habitat associations (refer to Appendix C of the Avifauna Assessment) and considered impacts on species from activities in multiple habitat types (e.g. refer to Tables 12 to 14 in the Avifauna Assessment). As such, I strongly disagree with the assertion that I underestimated habitat availability through the simplification of habitat associations.

Amendments to mitigation for avifauna habitat

50 DOC has sought that wetland and terrestrial habitat should be replaced at a higher ratio than 1:1 due to lag effects and uncertainty about wetland function and whether like-for-like

[9] Te Parawhau Hapū Comments at Appendix C – Statement of Evidence on behalf of Jacqueline Wairepo, page 13 at paragraph 9.6.

[10] Te Parawhau Hapū Comments at Appendix B2 – Statement of Evidence on behalf of Rebecca Lodge at paragraphs 5.1.1-5.1.2.

replacement will be achieved.[11] Te Parawhau and Patuharakeke have made similar comments, seeking advanced wetland creation and higher replacement ratios.[12]

51 I note that the comments received only made reference to the proposed 1:1 replacement ratio for avifauna wetlands. None of the commenters acknowledged or referenced the other offset ratios that I have proposed, as listed in Table 2 of proposed Condition RC39, to account for timing of replacement and whether or not the area is created as a contiguous habitat:

51.1 1:1 where the wetland is established prior to the loss and created as contiguous habitat; or

51.2 1:1.5 where the wetland is established prior to the loss and not created as contiguous habitat; or

51.3 1:2 where the wetland is established after the loss and not created as contiguous habitat.

52 I consider the above ratios are appropriate for the Project and note that they would apply to any wetland habitat lost that provides potential habitat for *Threatened* or *At Risk* species (irrespective of whether it is impacted by the Indicative Alignment).

53 I note that with respect to avifauna, proposed Condition RC39 Table 2 only considered wetland habitat creation. However, it may be possible that wetlands of Low or Negligible value (as identified in the Freshwater Assessment) may be enhanced as part of the wetland offset package.

54 As such, I have recommended that the following criteria be included in Condition RC39 Table 2 with regard to wetland restoration for avifauna habitat:

Parameter	**Criteria**	**Rationale**
Restoration ratio	As per the high value wetlands (Table 2 in the resource consent conditions)	High value wetlands would provide habitat for all cryptic marshbird species
Area of restored (completed) habitat	>1.5 ha	Average core bittern booming habitat is 1.2 ha, so 1.5 ha provided is slightly larger than this

[11] DOC Comments, Appendix C - Frogs, lizards and avifauna, page 59 at paragraph 155(b).

[12] Te Parawhau Hapū Comments, Appendix C – Statement of Evidence on behalf of Jacqueline Wairepo, page 14 at paragraph 9.9; Patuharakeke Ecology Comments, page 55 to 56 at paragraphs 189 to 190.

Parameter	Criteria	Rationale
Setback distance	>300m from the closest edge of the carriageway	Currently, known locations of bittern in the area are within 300 m of the existing SH1

55 For offset wetlands in particular, DOC has sought that replacement wetlands are sited a "considerable distance (e.g. 1 km)" from any major road to minimise adverse effects such as collision risk.[13] I disagree. Instead, I consider the appropriateness of an offset location needs to be considered on a case-by-case basis (e.g. as is done in paragraphs 56 and 57 below).

56 I consider offset actions should generally be undertaken close to the location of development to ensure the affected local ecosystem and community retain their specific biological values.

57 As noted in Section 5.2 of the Avifauna Assessment, two potential locations have been identified for the replacement wetland habitat. One potential site is at the corner of existing SH1 and SH12. I consider this an appropriate potential location (despite it being less than 1 km from a major road) based on:

57.1 The site being situated in a lower bowl;

57.2 Being located approximately 1 km to the east of the Indicative Alignment; and

57.3 The level of vehicle traffic along the current SH1 will be much reduced as a result of the Project.

58 The second potential site is the Brynderwyn Farm Pond SNA (Q08/066), which could be enhanced / extended through the planting of wetland vegetation. I consider this an appropriate location (again, even though it is close to a major road) based on:

58.1 The Indicative Alignment being in a 'cut' when it runs adjacent to the site (refer to Figure 2 below), meaning that birds will have the protection of the batter slope to fly over;

58.2 There is no wetland habitat to the east of the site, so birds are unlikely to cross the existing adjacent SH1; and

58.3 The level of vehicle traffic along the current SH1 will be much reduced as a result of the Project.

[13] DOC Comments, Appendix C - Frogs, lizards and avifauna, page 60 at paragraph 156.

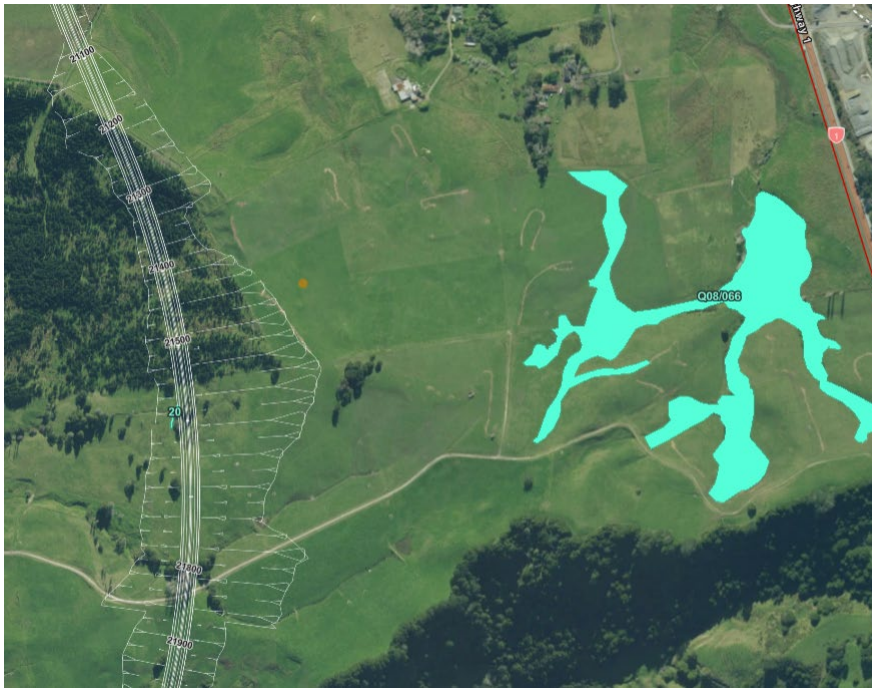

Figure 2: Drawing of Indicative Alignment showing it in a 'cut' to the west of the Brynderwyn Farm Pond SNA (Q08/066)

59 DOC has also sought implementation of a revegetation plan, requiring spoil areas and batter slopes along the road corridor to be replanted with indigenous vegetation for terrestrial forest habitat.[14]

60 While such planting may provide avifauna habitat, the location of planting so close to a carriageway would increase the risk of collision with vehicles. As such, I do not consider the proposed planting to be an appropriate mitigation approach for avifauna. I also do not consider it necessary to mitigate the Project's potential effects.

Amendments to effects management measures

61 The absence of offsetting for potential effects on Not Threatened species has been criticised by commenters.[15]

62 As noted previously, I applied the EIANZ guidelines to undertake my assessment, according to which, the overall level of effect of a development can be used to guide the extent and nature of the ecological management response required (including the need for biodiversity offsetting or compensation) as follows:

62.1 Very High adverse effects require a net biodiversity gain.

62.2 High and Moderate adverse effects require no net loss of biodiversity values.

[14] DOC Comments, Appendix C - Frogs, lizards and avifauna, page 60 at paragraph 160(a).

[15] Patuharakeke Ecology Comments, page 55 at paragraph 188.

62.3 Low and Very Low effects should not normally be a concern. If effects are assessed taking impact management developed during project shaping into consideration, then it is essential that prescribed impact management is carried out to ensure Low or Very Low effects.

63 Thus, based on the Low or Very Low levels of potential effects that were determined for all other species, no offsetting is required. However, I note that the revegetation planting (and associated weed and pest control) required to address impacts on terrestrial indigenous vegetation loss, as outlined in proposed Conditions D27 and D28, will benefit those Not Threatened species.

64 DOC and Te Parawhau have proposed specific amendments to NZTA's proposed effects management measures, including:

64.1 Pre-construction surveys for specific species;

64.2 Construction methodologies;

64.3 Stormwater design specifications in relation to kiwi; and

64.4 Operational effects management measures for kiwi.

65 I address these matters in turn below.

Pre-construction surveys for specific species

66 DOC and Te Parawhau have sought that pre-construction surveys be undertaken for specific avifauna species, including:

66.1 For birds generally, in broader avifauna inventories across forested areas;[16]

66.2 For wetland birds, during both breeding and non-breeding seasons;[17] and

66.3 For kiwi, both:

(a) During the month of May immediately before any works may occur;[18] and

[16] Te Parawhau Hapū Comments at Appendix C – Statement of Evidence on behalf of Jacqueline Wairepo, pages 14-15 at paragraph 9.10.

[17] DOC Comments, Appendix C - Frogs, lizards and avifauna, pages 7 and 51-52 at paragraphs 16 and 127-130. Te Parawhau Hapū Comments at Appendix C – Statement of Evidence on behalf of Jacqueline Wairepo, pages 14-15 at paragraph 9.10.

[18] DOC Comments, Appendix C - Frogs, lizards and avifauna, page 60 at paragraph 159. Te Parawhau Hapū Comments at Appendix B2 – Statement of Evidence on behalf of Jacqueline Wairepo, pages 14-15 at paragraph 9.10.

(b) During daylight hours through the construction period.[19]

67 As identified in Table 11 in the Avifauna Assessment, and outlined above, an exhaustive list of species on which I conducted the effects assessment included species known and likely to be present within the Proposed Designation, and which may be impacted by the construction and operational activities of the Project.

68 As an expert ornithologist, I have a thorough understanding of species ecology, habitat preferences and general distribution, and, as explained above, took a conservative approach to my assessment whereby I assumed species could be present if potential habitat was present within the Proposed Designation.

69 Through the Avifauna Management Plan, pre-construction surveys have been proposed as a means of managing construction effects on Threatened and At Risk species. I recommend the Management Plan also include methods for Not Threatened native species such as kiwi. However, if the current local population increases prior to construction of the Project, the NZTA may consider a wildlife authority is needed and could apply at that time.

Construction methodologies for managing effects on avifauna

70 DOC has proposed protocols to be adopted as part of the construction methodology to manage effects on riverine habitats for avifauna, including:

70.1 Restricting works with high sediment flows (e.g. earthworks) to periods outside the time of the year the tara iti / fairy tern are present in the Waipū estuary (August to March), i.e. essentially limiting earthworks to April to July;[20] and

70.2 Staging realignment of the Waihoihoi River by allowing half the river to flow through the new alignment until the habitat stabilises to maintain old habitat for as long as possible until new habitat is developed.[21]

71 As outlined in the evidence of Mr Graeme Ridley, the Project's Earthworks and Sediment Control (ESC) expert, the waterways entering the Waipū estuary currently receive sediment inputs (total suspended sediments; TSS) from the surrounding land uses, with TSS increasing during rainfall events.

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19 DOC Comments, Appendix C - Frogs, lizards and avifauna, page 59 at paragraph 155(a).

20 DOC Comments, Appendix C - Frogs, lizards and avifauna, pages 56 and 61 at paragraphs 149 and 163.

21 DOC Comments, Appendix C - Frogs, lizards and avifauna, page 60 at paragraph 158.

72 Mr Ridley also writes that the winter period (generally considered to be 1 May to 30 September) is recognised as the time of year when higher rainfall is more likely, while in the summer period, cyclonic rain events can occur.

73 As noted by DOC, tara iti will not be foraging in the Waipū estuary during the winter months. Furthermore, if a cyclonic event was to occur during the breeding season, tara iti foraging would be impacted for a period irrespective of whether Project earthworks were occurring.

74 In his evidence, Mr Ridley writes that where ESC measures for the Project discharge to receiving environments, this will typically be at times when there is significant rainfall, and will be for short periods of time only.

75 As such, I do not believe it is necessary for works with potential high sediment flows to be restricted to outside the tara iti breeding season based on:

75.1 The implementation of the erosion and sediment controls as outlined in the proposed Conditions;

75.2 The existing water quality / sediment inputs from the surrounding land uses;

75.3 The likely absence of tara iti from the Waipū estuary during the winter months when higher rainfalls are likely to occur;

75.4 The negligible effects of TSS on water quality should a summer cyclonic event occur when tara iti are present;

75.5 The typically short duration over which TSS may be elevated during rainfall events; and

75.6 The known[22] behaviour of tara iti to be able to forage in the marine environment during the breeding season (i.e. outside of estuaries).

76 In terms of the realignment of the Waihoihoi River, the species likely to be present in that area and the potential level of Project impact does not, in my opinion, warrant a staged construction approach particularly given the remaining riverine habitat that will be available to freshwater avifauna.

[22] Ball, J.J. (2023). Foraging ecology and habitat suitability of the critically endangered New Zealand Fairy Tern or Tara Iti (*Sternula neresis davisae*) in Northland, New Zealand. Unpublished Master of Science, Massey University, Albany.

77 DOC has also sought inclusion of restrictions on activities to manage effects from noise, lighting and vibration during the peak bird breeding season.[23]

78 As outlined in Section 5.1 of the Avifauna Assessment, I have proposed that the AMP include implementation of appropriate work exclusion zones around any nests that are found within and adjacent (i.e. within 100 m) to the proposed work area. Thus, it is my opinion that the restrictions proposed by DOC are not required as the effects are managed through the implementation of exclusion / setback zones.

79 Te Parawhau has sought implementation of kiwi management measures including pre-construction kiwi surveys, dog-assisted detection, monitoring programmes and restricting construction timing around the breeding season (including for breeding kiwi in Northland between March and April).[24]

80 As noted previously, I recommend measures to avoid impacts on kiwi be included in the AMP, and these measures could include the use of dog-assisted detections and exclusion zones around nesting birds.

Stormwater design specifications

81 DOC has sought that specific stormwater design specifications are implemented to manage effects on kiwi. In particular:

81.1 Water retention ponds are designed and constructed with appropriate gradients (1:3 slope) and natural substances to avoid trapping kiwi to enable them to climb out;[25] and

81.2 Culverts designed to allow kiwi passage to manage fragmentation effects, including:[26]

(a) For shorter culverts, using a square box culvert where possible to enable kiwi to pass; and

(b) For longer culverts, permanent barriers to prevent kiwi ingress.

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23 DOC Comments, Appendix C - Frogs, lizards and avifauna, page 64 at paragraph 178.

24 Te Parawhau Hapū Comments at Appendix C – Statement of Evidence on behalf of Jacqueline Wairepo, page 14 at paragraph 9.8.

25 DOC Comments, Appendix C - Frogs, lizards and avifauna, pages 59 and 61 at paragraphs 153 and 165.

26 DOC Comments, Appendix C - Frogs, lizards and avifauna, page 61 at paragraph 161.

82 I support the design and construction of water retention ponds to avoid trapping kiwi and have recommended amendments to NZTA's conditions to provide for this.

83 Conditions that facilitate kiwi passage through culverts include:

83.1 Preserving some stream bank on either side of the water channel so as to create a dry, natural walkway for kiwi to traverse without entering the water flow; and

83.2 A natural floor to prevent slipping.

84 In his Freshwater Assessment and evidence, Dr Keesing outlines the following culvert design features to facilitate fish passage:

84.1 Low gradient;

84.2 Culvert sizing that regulates velocities; and

84.3 Installation and development of in-culvert bed substrates.

84.4 These criteria are reflected in proposed Condition RC38 and also include that the width of the culvert be wider than the watercourse it has replaced (i.e. preserving some stream bank).

85 Thus, the design features listed above and in proposed Condition RC38 are consistent with kiwi passage requirements.

86 Where culverts do not provide fish passage (i.e. do not have natural floor), I consider that the bottom surfaces need to be designed to allow kiwi to pass through them (e.g. roughened or non-slip surfaces) and have recommended amendments to NZTA's conditions to provide for this.

87 With regard to the inclusion of permanent barriers in long culverts to prevent kiwi ingress, I understand from Mr Warren Bird (Stormwater Engineer for the Project) that any such measures would affect the flow capacity of the culvert. Furthermore, a number of the long culverts on the Brynderwyn Hills section will be installed at steep gradients, which in themselves would not provide kiwi passage (i.e. long steep smooth culverts).

Operational effects management measures

88 DOC has raised concerns about the potential for kiwi to establish within the Proposed Designation, and has sought implementation of measures to protect kiwi that may begin to cross the State Highway

carriageway such as strategically placed fencing and predator control.[27]

89 I do not consider such measures are required to manage this potential effect, which is already present due to the existing State Highway.

CONCLUSIONS

Avifauna Assessment

90 I undertook an assessment of potential effects of the Project on 45 native species following the EIANZ Guidelines, and determined that without any effects management measures, and at the scale of the Ecological District, **the level of potential effects to be Low to Very Low on the majority of species**, with the exceptions being:

90.1 Potential High levels of effects for Australasian bittern, North Island fernbird, New Zealand pipit and spotless crake.

90.2 Potential Moderate levels of effect for North Island kākā.

91 These levels of effects are due to the *Threatened* or *At Risk* status of the species, and the potential for injury and / or mortalities of breeding birds, as well as the loss of habitat types that are limited in the Ecological District.

92 As such, my approach to managing those more than minor adverse effects through the effects management hierarchy is as follows:

92.1 Avoid where practicable: Australasian bittern, fernbird, spotless crake, pipit and North Island kākā – vegetation clearance during non-breeding season to avoid direct impacts or otherwise requiring pre-clearance checks.

92.2 Minimise where practicable: Trying to minimise footprint of the Project and minimising locations of spoil sites, opportunities to minimise further by undertaking works in the non-breeding season and establish appropriate setback distances of works from nests if works occur during the breeding season.

92.3 Remedy where practicable: Potentially return of some areas to pasture once construction is completed may reinstate pipit foraging habitat.

[27] DOC Comments, Appendix C - Frogs, lizards and avifauna, page 61 at paragraph 161.

92.4 Where more than minor residual adverse effects remain, offsetting provided where possible: Implementation of wetlands and terrestrial indigenous vegetation.

93 Based on the implementation of the measures outlined above and, in my assessment, it is my view that the level of residual adverse effects post-application of mitigation will be Low to Very Low (i.e. not significant) for Australasian bittern, North Island fernbird, NZ pipit, spotless crake and North Island kākā.

Response to Comments

Wildlife permit

94 If vegetation clearance is to be undertaken during the breeding season, as outlined in Table 17 and Section 5.1 of the Avifauna Assessment and noted above, the AMP is to include measures to confirm no birds are present immediately prior to habitat clearance works. These measures could also be applied to Not Threatened avifauna species.

95 However, if these measures could not be applied, then Wildlife Act authorisation would be required for construction to "*foreseeably kill or injure protected birds or destroy their eggs or nests*".

Assessment methodology

96 I applied a conservative approach when undertaking my assessment of effects, whereby:

96.1 As outlined in Section 4.1 of the Avifauna Assessment, I included several species that were not recorded in the Proposed Designation in my assessment, but which I considered could either potentially be present within the Proposed Designation or impacted by the proposed activities.

96.2 Wherever potential habitat was identified, I assumed the species that primarily associate with that habitat could be present.

Additional wetlands

97 In terms of the additional wetlands identified by DOC in the Indicative Alignment, none of these will provide nesting habitat for *Threatened* or *At Risk* freshwater / wetland avifauna species.

98 The identification of additional wetlands within the Proposed Designation, but outside of the Indicative Alignment, further shows the availability of foraging habitat for freshwater / wetland avifauna species.

99 Thus, the presence of these habitats does not change the magnitude of effects that I identified in the Avifauna Assessment for freshwater / wetland avifauna species, nor does it change any of my recommendations regarding proposed mitigations.

Amendments to mitigation measures

100 In terms of wetland habitat, I have outlined the reasons for my proposed offset ratios as well as the proposed locations. It is my opinion that both of these are appropriate for the Project.

101 DOC has sought implementation of a revegetation plan, requiring batter slopes along the road corridor to be replanted with indigenous vegetation for terrestrial forest habitat.

102 While such planting may provide avifauna habitat, the location of planting so close to a carriageway would increase the risk of collision with vehicles. As such, I do not consider the proposed planting to be an appropriate mitigation approach for avifauna. I also do not consider it necessary to mitigate effects.

Amendment to effects management measures

103 For reasons outlined in this evidence, it is my opinion that the majority of the proposed measures outlined by DOC and Te Parawhau are not required.

104 As noted previously, I recommend measures to avoid impacts on kiwi (Not Threatened) be included in the AMP. I support the design and construction of water retention ponds to avoid trapping kiwi, and the design of culverts to facilitate kiwi passage where possible. However, with regard to the potential for kiwi crossing the State Highway carriageway when it is operational, I do not consider fencing or predator control are required to manage this potential effect which is already present due to the existing State Highway.

Leigh Bull
28 October 2026