ECOLOGICAL REVIEW OF FAST TRACK APPLICATION FTAA-2603-1178 – ALTERNATIVE TO THE BRYNDERWYN HILLS -

Northland Corridor (Section 2B)

Prepared for:

Patuharakeke Te Iwi Trust Board

Prepared by:

Kyle Sutherland, BSc (Hons), MSc – Senior Ecologist

Christine Evans, BSc (Hons), PhD – Senior Ecologist

Jack Warden, BAppSci – Senior Ecologist

Rural Design 1984 Limited

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Preface

This report is an independent ecological review prepared by Rural Design 1984 Limited (RDL) on behalf of Patuharakeke Te Iwi Trust Board (Patuharakeke), as mana whenua with primary cultural, environmental, and Treaty interests in the Project area. It has been prepared to assist the Expert Panel appointed under the Fast-track Approvals Act 2024 (FTAA) in its assessment of the substantive application lodged by NZ Transport Agency Waka Kotahi (NZTA) for the Alternative to the Brynderwyn Hills – Northland Corridor (Section 2B) [FTAA-2603-1178]. This report is based on the review of the three specialist technical reports submitted with the application — the Assessments of Effects on Terrestrial Ecology (Appendix D06), Freshwater Ecology (Appendix D07), and Avifauna Ecology (Appendix D08) — together with the main application volumes (A, B, and C), the Draft Consent Conditions circulated on 22 June 2026, the updated Designation Conditions released on 13 July 2026, the Draft Ecological Management Plan (Revision A, 13 July 2026), the Patuharakeke Cultural Impact Assessment, the Department of Conservation Section 51(2)(c) Wildlife Approval Report released on 29 July 2026, the Draft Proposed Frog Management Package (v3) (NZTA, 28 August 2026), and the Ecological Effects Mitigation Table v2 (NZTA, 28 August 2026). RDL concludes that NZTA's ecological assessments understate the significance of effects on Hochstetter's frog, native lizards, kauri snail, long-tailed bat, Australasian bittern, freshwater fish communities, and indigenous vegetation; that the proposed mitigation and offsetting framework is insufficient in both specificity and ecological rigour for a project of this scale and irreversibility; and that key ecological decisions have been deferred to post-consent processes in a manner that prevents the Panel from fully assessing the adequacy of the effects management framework at this stage. This report is intended to assist the Panel by identifying those deficiencies in detail and setting out the specific further information and conditions that would be required before the ecological effects of the Project can be considered adequately characterised and managed.

Contents

Preface 2
Contents 3
1.0 Introduction 6
1.1 Scope of Review 7
1.2 Executive Summary 7
1.3 Note on Habitat Area Figures 9
2.0 Summary of Technical Documents Addressed by this Report 10
2.1 Volume A – Main Application 10
2.2 Volume B – RMA Approvals 11
2.3 Volume C – Wildlife Act Approvals 17
2.4 Assessment of Effects on Terrestrial Ecology (Appendix D06) 18
2.5 Assessment of Effects on Freshwater Ecology (Appendix D07) 20
2.6 Assessment of Effects on Avifauna Ecology (Appendix D08) 21
2.7 Draft Consent Conditions (22 June 2026) 23
2.8 Updated Designation Conditions (13 July 2026) 25
2.9 Draft Ecological Management Plan 26
2.10 Department of Conservation Section 51(2)(c) Wildlife Approval Report 28
2.11 Draft Proposed Frog Management Package v3 (28 August 2026) 30
2.12 Ecological Effects Mitigation Table v2 (28 August 2026) 31
3.0 Critical Commentary: Assessment of Effects on Terrestrial Ecology (Appendix D06) 33
3.1 Vegetation Values & Residual Effects 33
3.2 Hochstetter's Frog 36
3.3 Long-tailed Bats 38
3.4 Mitigation Duration, Planting Context & Timing 41
3.5 Threatened Plant Species & Updated Threat Classifications 42
3.6 Kahikatea Forest Remnants 43
4.0 Critical Commentary: Assessment of Effects on Freshwater Ecology (Appendix D07) 44
4.1 Survey Methodology 44
4.2 Farm Drainage Channel Determination 45
4.3 Regulation 70 NES-FW and Culvert Design 46
4.4 Stream Loss, Realignment Feasibility & NPS-FM Consistency 47
4.5 Natural Inland Wetlands 48
4.6 Diversion of the Waihoihoi River Meander Loop 51

4.7 Groundwater Drawdown 51
5.0 Critical Commentary: Assessment of Effects on Avifauna Ecology (Appendix D08) 52
5.1 Survey Methodology 52
5.2 North Island Brown Kiwi 53
5.3 Australasian Bittern & Wetland Assessment 54
5.4 Mitigation Ratios, Timing & Adequacy 55
6.0 Critical Commentary: Volume B – RMA Approvals (Ecology Provisions) 57
7.0 Critical Commentary: Volume C – Wildlife Act Approvals 59
8.0 Critical Commentary: Draft Consent Conditions 60
9.0 Critical Commentary: Updated Designation Conditions 63
9.1 CVMP as an Ecology Management Tool 63
9.2 Unchanged Ecological Conditions 64
10.0 Critical Commentary: Draft Ecological Management Plan 64
10.1 Hochstetter's frog - Salvage Methodology Limitations 64
10.2 Hochstetter's Frog - Release Site Suitability 65
10.3 Hochstetter's Frog - Release Site Capacity 66
10.4 Hochstetter's Frog - Monitoring 66
10.5 Lizard & Invertebrates 67
11.0 Critical Commentary: DOC Section 51(2)(c) Wildlife Approval Report 67
12.0 Critical Commentary: Draft Proposed Frog Management Package (v3) 68
13.0 Critical Commentary: Ecological Effects Mitigation Table (v2) 70
14.0 Overarching Issues 72
14.1 The Flexible Consenting Approach & Ecological Assessment Certainty 72
14.2 Survey Timing & Adequacy of Baseline Data 75
14.3 Additional Data Sources Not Consulted 75
14.4 Replacement Ratios & Temporal Discounting 76
14.5 NPS-IB Net Outcome 76
15.0 Conclusions 76
16.0 Recommendations 80
16.1 Overarching Requirements 80
16.2 Indigenous Vegetation 81
16.3 Revegetation Planting 82
16.4 Freshwater Ecology 82
16.5 Natural Inland Wetlands 83
16.6 Avifauna, Bats & Kiwi 83
16.7 Wildlife Act Approvals and Translocation Sites 83

16.7.1 General....83
16.7.2 Establishment Timeframes by Species....84
16.7.3 Northern Site (20.9 ha)....84
16.7.4 Central Site (up to approximately 95.9 ha)....84
16.7.5 Southern Site (14.5 ha)....85
16.8 Predator Monitoring Schedule....85
17.0 References....86
APPENDIX 1 – Ecological Avoidance Areas....90
APPENDIX 2 – Maximum Clearance Limits....93
APPENDIX 3 – Critical Species Schedule....100
APPENDIX 4 – Monitoring Schedule....103

1.0 Introduction

1. Patuharakeke Te Iwi Trust Board (Patuharakeke) has engaged Rural Design 1984 Limited (RDL) to undertake an independent review of the ecological technical documents submitted in support of the Substantive Application lodged by NZ Transport Agency Waka Kotahi (NZTA) under the Fast-track Approvals Act 2024 (FTAA) for the Alternative to the Brynderwyn Hills – Northland Corridor (the Project). The Project involves the construction, operation and maintenance of a four-lane, median-divided highway from Pukekaroro to Waipu across the Brynderwyn Hills (referred to as Section 2B of the Northland Corridor). This review has been prepared to support Patuharakeke's engagement with the Expert Panel appointed under the FTAA process and to provide an independent professional ecological review of the ecological information provided to the Panel.

2. The documents reviewed for the purposes of this report are:

   (a) Volume A – Substantive Application under the Fast-track Approvals Act 2024: Main Application (NZTA, April 2026)

   (b) Volume B – Substantive Application under the Fast-track Approvals Act 2024: RMA Approvals (NZTA, April 2026)

   (c) Volume C – Substantive Application under the Fast-track Approvals Act 2024: Wildlife Act Approvals (NZTA, April 2026)

   (d) Appendix D06 – Assessment of Effects on Terrestrial Ecology (WSP, April 2026)

   (e) Appendix D07 – Assessment of Effects on Freshwater Ecology (BlueGreen Ecology Limited, April 2026)

   (f) Appendix D08 – Assessment of Effects on Avifauna Ecology (BlueGreen Ecology Limited, April 2026)

   (g) Cultural Impact Assessment: Section 2B Alternative to the Brynderwyn Hills Highway (Te Pou Taiao o Patuharakeke Te Iwi Trust Board, March 2026)

   (h) NC – A2B – Draft Designation Conditions, Draft Regional Resource Consent Conditions, Draft Archaeological Authority Conditions, and Draft Soil Contamination Consent Conditions (22 June 2026)

   (i) Northland Corridor – Brynderwyn Hills Section of the Alternative to the Brynderwyn Hills Project – Proposed Designation Conditions (Draft as at 13 July 2026)

   (j) Draft Ecological Management Plan – Alternative to the Brynderwyn Hills, Brynderwyn Hills Section, Revision A (NZTA, 13 July 2026) [Document 10722-PTA-2B0-PE-RPT-0022]

   (k) Fast-track Approvals Act Wildlife Approval Report – Section 51(2)(c) Report for the Alternative to Brynderwyn Hills [FTAA-2603-1178] (Department of Conservation, 29 July 2026)

(l) Draft Proposed Frog Management Package (v3) (NZTA, 28 August 2026)

(m) Ecological Effects Mitigation Table v2 (NZTA, 28 August 2026)

1.1 Scope of Review

3. This review focuses on the Assessment of Effects on Terrestrial Ecology (Appendix D06), the Assessment of Effects on Freshwater Ecology (Appendix D07), the Assessment of Effects on Avifauna Ecology (Appendix D08), and relevant sections of the main application volumes and supporting appendices, including the ecological mitigation and offset proposals and any draft consent conditions provided at the time of review. This review also provides commentary on the adequacy of the technical assessments in those reports, identifies key gaps or uncertainties within them, and sets out detailed ecological advice on route-related issues for Section 2B.

4. The review is directed at identifying key ecological gaps, constraints, and deficiencies across four primary areas:

(a) indigenous vegetation and habitat types including threatened ecosystems;

(b) freshwater systems including streams, wetlands, riparian margins, and fish passage;

(c) avifauna and other threatened or at-risk terrestrial fauna species including long-tailed bat (*Chalinolobus tuberculatus*) and Hochstetter's frog (*Leiopelma hochstetteri*); and

(d) the kahikatea (*Dacrycarpus dacrydioides*) stands at the proposed Waipu interchange.

1.2 Executive Summary

5. The Project proposes a 17.6 km four-lane highway through the Brynderwyn Hills between Baldrock Road and Millbrook Road, traversing terrain of high ecological value including an Outstanding Natural Landscape (ONL), significant indigenous forest and scrub, stream habitat supporting threatened freshwater species, and one of the highest known densities of Hochstetter's frog recorded in the Northland region. Approximately 370 ha of landcover is predicted to be lost during the construction phase, including approximately 295 ha of indigenous vegetation within the Proposed Designation.

6. The scale of ecological effects is substantial. Within the application, approximately 11 km of stream habitat is at risk of direct physical impact through culverting, diversion, and dewatering — comprising approximately 5.7 km of perennial stream and approximately 5 km of intermittent stream. At least 23 natural inland wetlands are present within the Proposed Designation, including three assessed as High ecological value. Catchment-scale wetland losses are significant: modelling indicates a 22.6%

loss of wetland area within the Waihoihoi catchment and 30.7% within the Wairau catchment.

7. Key terrestrial habitats assessed within the Assessment of Effects on Terrestrial Ecology include, but is not limited to 24.5 ha of kauri-podocarp forest, 31.2 ha of tōtara-associated forest types, and 9.3 ha of kahikatea forest (Appendix D06, Table 7).

8. RDL has prepared three appendices to this report in response to the deficiencies identified throughout this review, particularly the absence of site-specific ecological constraints within the current flexible consenting framework. These three appendices are intended to be read alongside this report and incorporated into the consent conditions for the Project. They are referred to throughout the report and are directly reflected in the recommendations in Section 16.

   (a) Appendix 1 sets out Ecological Avoidance Areas: features and habitat types that should not be disturbed under any circumstances regardless of final alignment decisions, because their ecological values are irreplaceable or because any loss cannot be adequately offset.

   (b) Appendix 2 sets out Maximum Clearance Limits: habitat types for which some clearance may be unavoidable but where a defined upper limit is necessary to prevent aggregate losses that would undermine the ecological functioning of the Proposed Designation corridor.

   (c) Appendix 3 is a Critical Species Schedule that applies species-level protection requirements across all habitat types, independent of polygon classification, wherever individual specimens of nationally threatened or regionally significant plant species are confirmed during pre-clearance surveys.

9. RDL finds that the ecological assessments of effects supporting the application understate the significance of the ecological values and effects. Survey effort for avifauna was inadequate for a project of this scale and duration, with a single site visit and twelve five-minute bird count locations providing an insufficient basis for the effects characterisation offered. Freshwater ecological values across intermittent and ephemeral channels were systematically underassessed, with eDNA the sole fish survey method and farm drainage channels excluded based on historical imagery alone. The terrestrial ecology assessment acknowledges residual High effects on Hochstetter's frog and Very High value vegetation but provides no offsetting framework for either.

10. The Hochstetter's frog population within the surveyed stream reaches is estimated at approximately 2,607 individuals once baseline survey under detection is corrected using the applicant's own 8.2x multiplier — a population for which salvage translocation has not been shown to be effective at a fraction of this scale on the same site. Applying the same density to the full 14.2 km of stream results in

approximately 21,900 frogs affected and represents an unprecedented scale of impact for this species.

11. Overarching deficiencies apply across all three ecological assessments of effects (terrestrial ecology, freshwater ecology and avifauna ecology). The outcomes-based consenting framework, in the absence of a confirmed alignment, means all ecological effects characterisations remain theoretical because the precise effect will depend on the final road alignment and the final extent of associated works. Some alignments will have more significant effects than others because, for example, they go through a critical habitat location. Single-season surveys across all taxa are inadequate for a project of this duration and ecological complexity. Offset ratios of 1:1 are also inadequate and are applied across indigenous vegetation, wetland, and stream habitats without the use of best-practice accounting tools. In RDL's experience, 1:1 ratios are completely contrary to best-practice and result in a net loss due to difficulties associated with replication, implementation, timelags and efficacy. This is why often ratios of much greater than 1:1 are traditionally proposed.

12. The Patuharakeke Cultural Impact Assessment (CIA) contains independently gathered ecological data not referenced in the NZTA assessments, including long-tailed bat survey data from Pukekauri forest and frog density data for Zone 2 not appropriately analysed in Appendix D06. RDL has drawn on this data where directly relevant to the ecological assessment.

13. This review makes recommendations directed at the Panel on survey adequacy, offset methodology and minimum ratios, management plan timing, avoidance areas and clearance limits (Appendices 1 to 3), translocation site predator control and monitoring, and species-specific requirements for Hochstetter's frog, long-tailed bat, kiwi and Australasian bittern.

1.3 Note on Habitat Area Figures

14. Two sets of habitat area figures (area sizes) appear in the ecological literature relevant to this Project and both are referenced in the documents reviewed. The first is drawn from Appendix D06 (Table 7, Assessment of Effects on Terrestrial Ecology, April 2026), which classifies vegetation by dominant type at the polygon level: 24.5 ha of kauri-podocarp forest, 31.2 ha of tōtara-associated forest types combined, and 9.3 ha of kahikatea forest and associated types. These figures reflect the area size of each polygon where the named species forms the dominant or co-dominant vegetation tier.

15. The second set of figures comes from the Patuharakeke Cultural Impact Assessment (Table 0.3, CIA, 2026), which assesses habitat at the species distribution level rather than by dominant vegetation type: 57 ha of kauri (*Agathis australis*), 42.5 ha of tōtara (*Podocarpus totara*), and 9.3 ha of kahikatea across the Proposed Designation. These

higher figures reflect the fact that both kauri and tōtara occur as canopy components within other classified vegetation types — for example, kauri occurring occasionally within kohekohe-taraire-tawa-podocarp/broadleaf forest and kanuka (*Kunzea robusta*) forest polygons that are not classified as kauri-podocarp forest by D06.

16. Both approaches are internally consistent with their respective methodologies. The D06 figures are used as the basis for RDL's habitat area assessments in Appendices 1 and 2 of this review, as they reflect the polygon-classification framework used in the ecological assessment and provide the clearest basis for cross-referencing with the effects assessment tables in D06. The CIA figures reflect a species-level accounting of the full distribution of those species across the Proposed Designation, which has its own validity for understanding cumulative species-level risk.

2.0 Summary of Technical Documents Addressed by this Report

2.1 Volume A – Main Application

17. Volume A is the primary application document and sets the overall framework for the Project. The Project is described as a listed project under Schedule 2 of the FTAA and constitutes a Road of National Significance. Its stated purpose is to provide an alternative transport route through the Brynderwyn Hills that is more resilient to severe weather events than the existing State Highway 1 (SH1), following significant disruption caused by Cyclone Gabrielle in 2023. NZTA estimates the Project can be constructed in approximately six years across five earthworks seasons, with four earthworks zones progressing concurrently.

18. The application seeks approval under the FTAA on the basis that the Project constitutes specified infrastructure providing significant national and regional benefits and that there is a functional need for the Project in this location. NZTA identifies four principal benefits: a more resilient and reliable transport connection between Auckland and Whangārei; improved road safety; improved travel efficiency and reliability; and regional and national economic benefits arising from a more secure and efficient corridor.

19. Volume A describes the Proposed Designation and the Indicative Alignment, which forms the basis for all technical assessments included in the ecological assessments that are focused on this report, but does not represent the final design. NZTA has explicitly stated it does not intend to include a condition requiring the Project to be constructed in general accordance with specified drawings and documents — the equivalent of a standard "Condition 1" in conventional resource consent practice. NZTA's position is that the road alignment will be refined and modified during detailed design, and that binding the consent to specific drawings would require costly and time-consuming amendments. The ecological assessments are consequently

prepared based on the Indicative Alignment, with the explicit acknowledgment that the final footprint may differ and may be located anywhere in the Proposed Designation.

20. The Project involves the construction of a 17.6 km four-lane highway designated for 110 km/h travel, requiring extensive earthworks including deep rock cutting and crushing through the Brynderwyn ridgeline, large-scale indigenous vegetation clearance, culverting and realignment of natural waterways, and the loss of natural inland wetlands. Approximately 295 ha of indigenous vegetation falls within the Proposed Designation. The Project proposes approximately 71 culverts and a major diversion of the Waihoihoi River. Significant earthworks are required across all four zones, with an indicative total cut of approximately 12.6 million m^3 and indicative total fill of approximately 7.4 million m^3. Surplus material will be managed through spoil sites to be confirmed at detailed design stage.

21. Volume A acknowledges that not all adverse ecological effects can be avoided and that residual effects will require offsetting. Volume B is more explicit: when NZTA's proposed package of mitigation measures is taken into account, the overall effects of the Project are assessed as ranging between less than minor to more than minor, but in the case of very high-value vegetation and Hochstetter's frog, high residual effects remain for which mitigation and offset measures will be confirmed at detailed design. No Biodiversity Offset Accounting Model (BOAM) has been provided, no confirmed offset sites are identified, and no quantified offset obligation is specified in the proposed conditions.

2.2 Volume B – RMA Approvals

22. Volume B – RMA Approvals addresses the Project's compliance with the Resource Management Act 1991 (RMA), relevant national policy statements, and regional planning documents. From an ecology perspective, the most significant provisions are the assessments against the National Policy Statement for Freshwater Management 2020 (NPS-FM), the National Policy Statement for Indigenous Biodiversity 2023 (NPS-IB), and the National Environmental Standards for Freshwater Regulations 2020 (NES-FW).

23. In respect of the NPS-FM, the application relies on the specified infrastructure exemption under Clause 3.22(1)(b), stating that the Project provides significant national and regional benefits, has a functional need in its location, and applies the effects management hierarchy. The application concedes only partial consistency with Policy 6, which requires no further loss of natural inland wetland extent, and asserts consistency with Policies 7, 8 and 9 on the basis that culverts and stream realignments will recreate current stream extent and ecological value. RDL challenges that assertion in Sections 4.4 and 4.6, given the step-cascade morphology of the

affected streams and the absence of demonstrated precedent for ecological equivalence in realigned channels in comparable Northland hill-country conditions.

24. In respect of the NPS-IB, the application relies on the specified infrastructure exemption under Clause 3.11(1) and claims the Project is partially consistent with Objective 1(a) and 1(b)(ii) — the objective of maintaining indigenous biodiversity so that there is no overall loss. The application is explicit that not all vegetation loss will be mitigated. No Biodiversity Offset Accounting Model or equivalent quantitative tool is provided to demonstrate that the partial consistency position is defensible at a population or ecosystem level.

25. In respect of the NES-FW, resource consent is required under Regulation 45 (construction of specified infrastructure near natural inland wetlands), Regulation 57 (reclamation of rivers), and Regulation 71 (culverts that do not comply with the standard fish passage conditions under Regulation 70(2)). The application's position that all culverts will meet Regulation 70, deferred to detailed design, is not an adequate basis for concluding fish passage effects are managed. As discussed in Section 4.3, five named streams have gradients where in-pipe substrate retention is already identified as unachievable, meaning Regulation 70 compliance at those locations is not merely deferred but is likely unattainable.

26. Volume B – RMA Approvals sets out a summary assessment of the actual and potential ecological effects of the Project in Part D, drawing on the specialist technical assessments in Appendices D06, D07, and D08. Table 10 provides a high-level summary of all effect types and their assessed scale post-mitigation. Please refer to Table 1 below for the summary of effects on ecology specifically as presented in Table 10 of Volume B – RMA Approvals.

27. In relation to terrestrial ecology, Volume B – RMA Approvals characterises loss of indigenous vegetation as 'Less than Minor' to 'More than Minor' post-mitigation, with residual adverse effects on Very High and High value vegetation and on Hochstetter's frog specifically described as 'More than Minor'. Table 2 in this report provides a more detailed breakdown across vegetation, lizards, Hochstetter's frog, long-tailed bats, and invertebrates. For vegetation, unmitigated effects are assessed as Moderate to Very High, with 18 ha of Very High value and 7 ha of High value indigenous vegetation directly affected. Post-mitigation, effects on Very High and High value vegetation remain assessed as High, with mitigation comprising 1:1 replacement planting of indigenous vegetation, 50:1 compensation for kauri trees over 50 cm Diameter at Breast Height (DBH), and mitigation planting across the three indicative Mitigation and Release Sites totalling approximately 198 ha.

28. For Hochstetter's frog, unmitigated effects are assessed as Very High across all effect types. Post-mitigation, direct habitat loss and fragmentation remain at High, with injury and death during clearance reduced to Low through salvage and relocation. For long-tailed bats, unmitigated effects range from Moderate to Very High, with post-

mitigation effects assessed as Low through implementation of the Department of Conservation (DOC) Bat Roost Protocol, habitat planting, and lighting restrictions. The adequacy of these assessments is addressed in detail in Section 3 of this review.

Table 1: Summary of actual and potential effects on ecology presented by NZTA, taken from Volume B – RMA Approvals, Table 10, pp. 40

Actual or potential effect / type of effect Scale of effect	Scale of effect
Ecology	
Terrestrial Effects: Potential adverse effects include vegetation loss, habitat loss and fragmentation injury or death of indigenous fauna during construction works and from vehicle collisions, and operational disturbance including from noise, vibration and artificial lighting.	**Less than Minor to More than Minor** residual adverse effects are identified for vegetation and Hochstetter's frogs as detailed in Table 12. Mitigation for the effects on vegetation includes minimisation of native vegetation and native fauna species habitat loss; replacement planting for kauri trees and any indigenous plant species with 'Very High' or 'High' value; mitigation planting and enhancement of existing vegetation at the three indicative "Mitigation and Release Sites"; including for the purpose of protected fauna and maintenance and monitoring requirements for habitat enhancement and mitigation planting. Establishing and implementation of Bat and vegetation management protocols during vegetation clearance is also promoted.
Freshwater Effects: Potential adverse effects include stream and habitat loss from reclamation, stream realignment at spoil sites, stream realignment on natural ground, culverts and fish passage, Impacts on natural inland wetlands and potential effects on streams and wetlands due to groundwater drawdown.	**Negligible to No More than Minor** Mitigation includes like for like stream realignment, culvert design that allows for benthic habitat, typical flow conditions and fish passage. Wetland reestablishment and offset is recommended to mitigate high value wetland habitat impacted
Avifauna Effects: Potential adverse effects include habitat loss, injury/mortalities from construction works, and vehicle collisions and disturbance/displacement during operational phase.	**Less than Minor** Mitigation includes minimising habitat loss; preparation and implementation of an Avifauna Management Plan (AMP); and replacement, at a ratio of 1:1, any wetland features that may be utilised by cryptic marshbirds that include those located within Wetlands 13, 14, 15, 16 and 26.

Table 2: Showing a summary of construction and operational effects of the Project on terrestrial ecology presented by NZTA taken from Volume B – RMA Approvals, Table 12, pp. 59-61

Ecological component / Species	Potential construction and/or operational effects from the Project	Unmitigated level of effect	Recommended Mitigation by Specialists	Mitigated Level of Effect
Vegetation	▪ Direct loss of 18 ha of very high value indigenous vegetation,7 ha of high value vegetation and 4 ha of moderate value vegetation.	▪ Moderate to Very High	▪ Minimisation through Detailed Design and construction methodology ▪ Mitigation planting of pasture at the Northern and Southern Mitigation and Release Sites (as detailed in Section D7.1.1 below of this Report) totalling 39.5 ha. ▪ Replacement of rotational pine forestry with mitigation planting totalling 103.6 ha. ▪ Enhancement of existing vegetation with low to moderate ecological value at all three indicative Mitigation Sites (Northern, Central and Southern as detailed in Section D7.1.1 of this Report) totalling 15.6 ha.	▪ Effect on vegetation with very high and high ecological value will be 'High'. ▪ Effect on vegetation with moderate ecological value will be 'Low'.
	▪ Habitat fragmentation	▪ '**Very High**' for areas comprising of very high and high value ecological vegetation types.	Reduce fragmentation and edge effects at the Northern and Southern Mitigation Sites through infill and remediation planting.	High
	▪ Permanent loss of *At Risk* or *Threatened* plants. And potential for spread of pathogens	▪ **'Very High'** for Kauri. ▪ 'Low' for other plant species.	▪ Minimisation through Detailed Design and construction methodology ▪ Compensation planting at a ratio of 50:1 for trees larger than 50 cm Diameter at Breast Height (DBH). ▪ Application of Biosecurity Protocols	Moderate
Lizard Habitat loss and fragmentation Only one indigenous species, copper skink, has been confirmed on site. The effects on species that have not been confirmed on site are not considered.	Direct loss of potential high value (*At Risk* lizard) habitat.	▪ '**High**' for Copper skink. ▪ 'Very Low' to 'Low' for other species.	▪ Minimisation through detailed design and construction methodology. ▪ Mitigation planting and enhancement of existing native vegetation at the three Mitigation Sites. ▪ Reduce fragmentation and edge effects at Northern and Southern Mitigation and Release Sites through stock exclusion, pest control and infill and remediation planting. ▪ Creation of habitat at the Central Mitigation and Release Site, providing higher quality connectivity between other habitat within the landscape. ▪ Reduce fragmentation and edge effects at North and South Mitigation Sites through stock exclusion, pest control and infill and remediation planting. ▪ Creation of habitat at the Central Mitigation site, providing higher quality connectivity between other habitat within the landscape.	Low

Ecological component / Species	Potential construction and/or operational effects from the Project	Unmitigated level of effect	Recommended Mitigation by Specialists	Mitigated Level of Effect
Frogs The only native frog identified within the Proposed Designation is Hochstetter's Frog, which has a national threat classification of '*At Risk – Declining*' and has a 'High' ecological value.	Direct loss of Hochstetter's frog habitat	**Very High**	▪ Minimisation through Detailed Design and construction methodology. ▪ Mitigation enhancement and protection of existing riparian native vegetation at the Northern and Central Mitigation and Release Sites totalling 14.2 km (direct habitat loss) ▪ Mitigation for effects on Hochstetter's frogs are also addressed under the WAA in Volume C of the Substantive Application.	**High**
	Habitat fragmentation	**Very High**	Reduce fragmentation and edge effects at the Northern and Central Mitigation and Release Sites through habitat enhancement totalling 11.7 km additional riparian enhancement.	High
	Indirect habitat loss and reduction in remaining habitat quality due to habitat fragmentation effects and associated edge effects.	**High**	▪ Minimisation though habitat enhancement and buffer planting. ▪ Minimisation by ensuring spoil site and culvert design does not result in significant hydrological changes downstream of works impacting frog habitat. ▪ Mitigation via stormwater and run off management such as incorporating swales and detention ponds in the design. ▪ Mitigation by using increased culvert diameters to allow for upstream frog movements in low flow conditions.	Low
	Injury or death during habitat removal and displacement with increase predation and resource pressure	**Very High**	▪ Salvage and relocation within appropriate. seasonal constraints and under strict frog hygiene protocols.	Low
	Indirect construction disturbance such as sedimentation, noise, lighting and vibration.	**High**	▪ Best practice sediment and erosion control measures are implemented. ▪ Continuous water quality monitoring near streams with confirmed frog presence. ▪ Under the Wildlife Approval, undertaking the salvage of frogs prior to blasting or heavy vibration in nearby impacted streams where frogs may be adversely impacted by the work.	Low
	Operational disturbance (noise, vibration, Artificial Light at Night (ALAN)).	Low	▪ Staging works effectively to reduce ongoing operation disturbance to frogs. ▪ Ensuring frog hygiene protocols are strictly followed.	Low
Bats Long-tailed bats have been identified within the Proposed	Direct loss of high potential bat habitat (roosting, foraging, and commuting)	Moderate	▪ Minimisation through Detailed Design and construction methodology. ▪ Mitigation planting and enhancement of existing native vegetation at the three Mitigation and Release Sites allowed for under vegetation and frog mitigation.	Low
	Habitat fragmentation.	**High**	▪ Reduce fragmentation and edge effects at the Northern and Southern Mitigation and Release Sites through infill and remediation planting.	Low

Ecological component / Species	Potential construction and/or operational effects from the Project	Unmitigated level of effect	Recommended Mitigation by Specialists	Mitigated Level of Effect
Designation, which are classified as '*Threatened* – Nationally Critical' and have 'Very High' ecological value.			▪ Vegetation and foraging habitat allowed for under vegetation and frog mitigation.	
	Injury or death during vegetation removal.	**Very High**	Implementation of DOC's Bat Roost Protocol.	Low
	Mortality by vehicle collision.	Moderate	Retain/install bat hop-overs.	Low
	Indirect construction disturbance such as noise, vibration and lighting.	Moderate	Bat roost protocols	Low
	Operational disturbance from noise, vibration and lighting.	**High**	Restrictions on lighting in proximity to bat roost habitat.	Low
Invertebrate Habitats Invertebrates identified within the Proposed Designation include kauri snail and Amborhytida dunnaie which are classified as '*At Risk – Declining*' with 'High' ecological value, and glow worms and Peripatus which are classified as 'Low' with 'Low' ecological value.	Direct loss of potential habitat Kauri snail and *A. dunniaie* ('High' value), peripatus ('Low' value) and glow worms ('Low' value).	▪ **'High'** for Kauri snail and *A. dunniaie*. ▪ 'Low' for other notable species.	▪ Minimisation through Detailed Design and construction methodology. ▪ Mitigation planting and enhancement of existing native vegetation at the Northern and Southern Mitigation and Release Sites .	Low
	Indirect habitat loss and reduction in remaining habitat quality due to habitat fragmentation and associated edge effects.	▪ **'High'** for Kauri snail and *A. dunniaie*. ▪ 'Low' for other notable species.	Reduce fragmentation and edge effects at the Northern and Southern Mitigation and Release Sites through stock exclusion, pest control and infill and remediation planting.	Low
	Injury or death during habitat removal and displacement.	▪ **'High'** for Kauri snail and *A. dunniaie*. ▪ 'Low' for other notable species.	Salvage and relocation within appropriate seasonal constraints.	Low

2.3 Volume C – Wildlife Act Approvals

29. Volume C seeks Wildlife Approvals under Schedule 7 of the FTAA to authorise the handling, salvage, transfer, relocation, and incidental killing of protected wildlife in connection with the Project. Protected wildlife within the scope of this application comprises native lizards (copper skink (*Oligosoma aeneum*), forest gecko (*Mokopirirakau granulatus*), Pacific gecko (*Dactylocnemis pacificus*), elegant gecko (*Naultinus elegans*), ornate skink (*Oligosoma ornatum*), moko skink (*Oligosoma moco*), and any other protected lizard species, Hochstetter's frog "northland" sensu (*Leiopelma aff. hochstetteri "Northland"*), and native invertebrates (principally kauri snail and *Amborhytida dunniae*). Volume C explicitly states that while avifauna and bat species are present within or adjacent to the Proposed Designation and are fully protected under the Wildlife Act 1953, neither group is included in the scope of the Wildlife Approval application (WAA). RDL does not agree with that conclusion for the reasons set out in Section 7.0.

30. The key actions sought to be authorised are pre-clearance fauna surveys, salvage and relocation of individuals to identified Release Sites, and incidental killing where unavoidable. Three indicative Mitigation and Release Sites have been identified — a Northern Site of approximately 54.5 ha, a Central Site of up to approximately 114 ha within the Zentral Forest property, and a Southern Site of approximately 29 ha — though the precise extent and location of each will be confirmed at detailed design stage. Wildlife salvaged from the construction footprint will be transferred to Release Sites within which suitable habitat will be identified or created prior to transfer, subject to mammalian pest control commencing three months prior to relocation and continuing for three years following completion at each site.

31. For Hochstetter's frog, the proposed measures include development and implementation of a Hochstetter's Frog Management Plan, identification and creation of suitable stream habitat at Release Sites, salvage and relocation under strict frog hygiene protocols consistent with the DOC Indigenous Frog Hygiene and Handling Protocols, and mammalian pest control at Release Sites.

32. For lizards, measures include a Lizard Management Plan, identification of suitable habitat at Release Sites, salvage and relocation within appropriate seasonal constraints, and pest control. For invertebrates, the approach follows equivalent principles with salvage, relocation, and habitat preparation.

33. Notwithstanding the proposed mitigation measures, Volume C acknowledges that residual post-mitigation effects on Hochstetter's frog remain High for habitat loss and habitat fragmentation. No formal baseline population surveys are required prior to relocation to enable post-relocation monitoring, and no success criteria or adaptive

management obligations for relocated populations are specified in the proposed conditions. The adequacy of these provisions is addressed in Section 7 of this review.

2.4 Assessment of Effects on Terrestrial Ecology (Appendix D06)

34. The overarching methodology follows the Environment Institute of Australia and New Zealand (EIANZ) Ecological Impact Assessment Guidelines (2nd edition) (EcIA), applying a stepped process of value assignment across four matters — representativeness, rarity and distinctiveness, diversity and pattern, and ecological context — before determining the magnitude and overall level of effect using a value-by-magnitude matrix (Roper-Lindsay 2018). Desktop data sources included the DOC Bioweb database, Protected Natural Areas Programme (PNAP) reports, iNaturalist, the Global Biodiversity Information Facility, DOC Threat Classification publications, and ecological reports from the Brynderwyn Hills Recovery Project. Field surveys were conducted between September and November 2025 for vegetation, lizards, frogs, and invertebrates, with supplementary acoustic bat monitoring in two phases: September to November 2025 and January to February 2026.

35. Vegetation surveys were conducted by walk-through assessment using Atkinson (1985) nomenclature, with percentage cover estimated by tier. Lizard surveys comprised approximately 52 person-hours of manual habitat searches, deployment of 165 double-layered artificial cover objects, and nocturnal spotlighting over six nights totalling approximately 49 person-hours. Hochstetter's frog surveys comprised 55 targeted 50 m transect surveys covering 2.8 km of stream over 48.8 hours of two-person effort, using a double-observer protocol. Acoustic bat surveys involved deployment of 48 Automated Bat Monitors (ABMs) across the Proposed Designation, with results processed by a competency-certified analyst.

36. Field surveys identified 35 vegetation types across the Proposed Designation (Table 7). Of the mapped vegetation polygons, 23 were assessed as Very High ecological value and 27 as High value (Table 13). Within the Indicative Alignment, approximately 18 ha of Very High value and 7 ha of High value indigenous vegetation are directly affected, along with 4 ha of Moderate value, 12 ha of Low value, and 59 ha of Negligible value vegetation. Two Nationally Threatened plant species were confirmed: poroporo (*Solanum aviculare* var. *aviculare*; Threatened – Nationally Endangered) and *Muehlenbeckia complexa* var. *grandifolia* (Threatened – Nationally Vulnerable); with five At Risk – Declining species and three At Risk – Naturally Uncommon species.

37. Only one native lizard species was confirmed during field surveys: copper skink (At Risk – Declining; High ecological value), with 16 individuals recorded within the northern Proposed Designation. Five additional native lizard species are considered likely or possibly present based on desktop records but were not detected during surveys.

38. Hochstetter's frogs were confirmed across 55 transects within the hill-country streams of the Proposed Designation, with the highest densities recorded within the Brynderwyn Range ONL. A total of 318 frogs were detected during baseline surveys across 2,800 m of surveyed stream, equating to an overall baseline density of 11.4 frogs per 100 m. This figure is adjusted to an estimated actual density of 93.1 frogs per 100 m by applying an 8.2x correction factor derived from the 2024 Recovery Project, which found that salvage operations recovered approximately 8.2 times more frogs from the same stream reaches than baseline survey methods had detected. Within the Brynderwyn Range ONL, where 9 transects were conducted across 390 m of stream and 198 frogs were detected, the adjusted frog density reaches 416.3 frogs per 100 m — representing one of the highest densities recorded for this species.

39. Acoustic bat monitoring detected very low levels of long-tailed bat activity: 106 passes across 48 sites in Survey 1 and 16 passes across 40 sites in Survey 2. Despite these low detection rates, long-tailed bats are classified as Threatened – Nationally Critical and accordingly assigned Very High ecological value, with bat habitat throughout the Proposed Designation assessed as Very High value in Zones 2 and 3 and High value in Zones 1 and 4 (O'Donnell et al. 2018). Invertebrate surveys confirmed 18 kauri snails (12 empty shells) and 60 *Amborhytida dunniae* shells (47 empty), both assigned High ecological value as At Risk – Declining species.

40. Unmitigated effects on Very High value vegetation are assessed as Very High; on High value vegetation as High; and on Moderate and Low value vegetation as Moderate and Low respectively. Kauri is assessed as Very High for both direct loss and indirect spread of kauri dieback. Hochstetter's frog unmitigated effects are Very High for direct habitat loss, habitat fragmentation, and injury or death during clearance. Long-tailed bat unmitigated effects are Very High for injury or death during vegetation removal and High for habitat fragmentation.

41. Three indicative Mitigation and Release Sites are proposed: a Northern Site (approximately 54.5 ha), a Central Site (up to approximately 114 ha, predominantly commercial pine plantation), and a Southern Site (approximately 29 ha). Mitigation planting across these sites totals approximately 39.5 ha of pasture-to-native conversion at the Northern and Southern sites, 103.6 ha of pine plantation replacement at the Central Site, and 15.6 ha of existing low-to-moderate value vegetation enhancement. Mammalian pest control is proposed for five years at each site. The recommended replacement planting ratio for Very High and High value indigenous vegetation is 1:1. Kauri compensation is proposed at 50:1 for trees over 50 cm DBH.

42. Post-mitigation, effects on Very High value vegetation remain High, and on High value vegetation remain Moderate — both acknowledged as warranting further offsetting that the assessment does not specify. Post-mitigation effects on Hochstetter's frog remain High for direct habitat loss and habitat fragmentation. Post-mitigation effects

on long-tailed bats and lizards are assessed as Low. The assessment explicitly states that the residual High effects on Very High value vegetation and Hochstetter's frog "*may require further measures to offset or compensate*" but then provides none.

2.5 Assessment of Effects on Freshwater Ecology (Appendix D07)

43. The assessment applies the EIANZ EcIA Guidelines and evaluates freshwater effects at the catchment scale rather than the stream scale, on the basis that a catchment is the ecologically meaningful unit for assessing proportional stream and wetland loss. The five EIANZ parameters are assessed against condition metrics including Stream Ecological Valuation (SEV) scores, Rapid Habitat Assessment (RHA) scores, eDNA-derived Macroinvertebrate Community Index (MCI) values, Fish Index of Biotic Integrity (IBI) scores, and field observations. Magnitude of effect on streams is calculated as the proportion of perennial and intermittent stream length in each catchment affected.

44. Field surveys were conducted in October and November 2025. SEV data and eDNA samples were collected at each perennial and intermittent stream intersected by the Indicative Alignment. No traditional physical fish sampling methods — electric fishing, fyke netting, or hīnaki — were employed. Fish fauna was assessed entirely through eDNA, with fish Index of Biotic Integrity scores derived from eDNA results used as the primary fish community metric in the effects assessment (Joy & Death 2004). Farm drainage channels in the Ahuroa lowland were excluded from the freshwater assessment on the basis that a 1973 aerial photograph does not show stream patterns in the relevant paddocks.

45. A total of 25 natural inland wetlands were identified within the Proposed Designation. Of these, 22 are characterised as predominantly exotic pasture wetlands and assessed as having Negligible to Low indigenous biodiversity. The remaining three wetlands assessed as having ecological value are Wetland 8 (raupō (*Typha orientalis*)-dominated, 1.25 ha, High value), Wetland 16 (partially High value), and Wetland 24 (raupō gully, 3.16 ha total, High value). The proportion of identified and impacted natural inland wetlands in each catchment is: 0.8% of the Ahuroa catchment, 22.6% of the Waihoihoi catchment and 30.7% of the Wairau catchment.

46. Stream condition and value across the 12 surveyed streams ranges from Low to High. The Piroa tributary west is assessed as the highest value perennial stream at High value. The Waihoihoi main stem is assessed as High value due to its fish passage function for the catchment, despite poor macroinvertebrate condition. The author of the Assessment of Effects on Freshwater Ecology, Dr Keesing, explicitly states that he does not consider it appropriate to assess streams at the reach scale, and uses the catchment as the spatial baseline to determine proportional magnitude of effect.

47. Total stream habitat affected by the Indicative Alignment, including spoil sites, is approximately 5.78 km of perennial stream and 5.05 km of intermittent stream, totalling approximately 10.93 km. Net stream loss after realignment and culverting is assessed at 554 m, on the assumption that all proposed stream realignments and spoil-site realignments deliver equivalent hydrological outcomes. If spoil-site realignments are unsuccessful, the worst-case stream loss is 4,984 m. The assessment characterises the 554 m net loss as a negligible change.

48. Dr Keesing states that stream realignment is justified on the basis that a realigned channel designed to replicate the same channel morphology, depths, wetted width, velocity profile, riparian condition, and substrate as the impacted stream will achieve "*at least equivalent ecological values within approximately six months to a year*". Dr Keesing draws on his experience monitoring realigned streams at Transmission Gully and Mackays to Peka Peka to support this assessment. He acknowledges that spoil-site realignments carry greater hydrological uncertainty and recommends a trial realignment be undertaken at one spoil site before proceeding with others.

49. For culvert impacts, 4 streams (Pine Mid tributary, Piroa western tributary, Waipu North tributary, and Waipu South tributary) have gradients over 10% at which in-pipe substrate retention may not be achievable, leaving these streams to be treated as stream loss. This adjustment is not carried through into the cumulative stream loss accounting.

50. The Indicative Alignment impacts 11 of the 25 natural inland wetlands within the Proposed Designation identified by Dr Keesing including one indigenous wetland (wetland 24 - approximately 1 ha, High value, High level of effect), one mixed vegetation wetland (wetland 21) and nine exotic pasture wetlands (Appendix D07, Table 18 p. 54). The assessment recommends a 2 ha offset wetland for Wetland 24 — including at least 1 ha of raupō and 1 ha of sedge and rushland — at the corner of SH1 and SH12, or alternatively at the Brynderwyn Farm Pond Significant Natural Area (SNA) (Q08/066). No mitigation is recommended for any of the mixed or exotic pasture natural inland wetlands.

51. On groundwater drawdown, the WSP assessment (Appendix D12) predicts moderate to very high drawdown at four large cut areas proximate to perennial streams and wetlands 3-18, 20, 24 and Q08/066. Dr Keesing acknowledges these predictions but concludes actual freshwater effects will be subtle and difficult to measure, drawing on 15 years of monitoring at Transmission Gully and Mackays to Peka Peka to support the view that the drawdown modelled will not eventuate to the extent predicted.

2.6 Assessment of Effects on Avifauna Ecology (Appendix D08)

52. The assessment methodology follows the EIANZ EcIA Guidelines with ecological value assigned to species using the New Zealand Threat Classification System as specified

in Robertson et al. (2021). Magnitude of effect is assessed at the scale of the Ecological District. The field survey programme consisted of five-minute bird counts (5MBCs) conducted opportunistically at 12 locations alongside terrestrial field investigations. A single site visit was conducted on 29 October 2025 to view potential key avifauna habitats. No wetland bird surveys or boom count surveys were undertaken, and no passive audio recording or spotlighting was employed.

53. A total of 87 avifauna species were recorded within the Proposed Designation and 5 km buffer. Of these, 25 were recorded within the Indicative Alignment. Freshwater and wetland habitats within the Proposed Designation hold the highest concentration of Threatened and At Risk avifauna associations relative to other habitat types. Wetland 24 is the most ecologically significant wetland, identified as potential habitat for Australasian bittern / Matuku-hūrepo (*Botaurus poiciloptilus*; Threatened – Nationally Critical; Very High ecological value), spotless crake / Pūweto (*Zapornia tabuensis*; At Risk – Declining; High), and North Island fernbird / Mātātā (*Poodytes punctatus vealeae*; At Risk – Declining; High). Bittern were recorded only within the 5 km buffer, not within the Proposed Designation itself.

54. North Island brown kiwi / Kiwi-nui (*Apteryx mantelli*) are assigned a "Not Threatened" classification and therefore "Low" ecological value under the EIANZ framework. The assessment notes kiwi are likely present within the Proposed Designation based on a 1997 PNAP record (Goldwater et al. 2012). No kiwi-specific surveys were conducted. The Piroa Conservation Trust 2024 survey confirming kiwi presence near the current SH1 alignment was not incorporated into the assessment (Searchfield, 2024). Given the species is considered 'not threatened', the Avifauna report does not provide any consideration for its protection despite acknowledging that there is a potential for direct injuries and/or mortalities on the species as a result of construction activities.

55. North Island kākā (*Nestor meridionalis septentrionalis*; At Risk – Recovering; Moderate ecological value) are assessed as having a Moderate level of unmitigated effect, attributable to direct loss of potential breeding habitat in native forest. No other forest-dwelling species has been considered to receive any form of protection within the Avifauna report.

56. Without mitigation, potential High levels of effects are identified for Australasian bittern, North Island fernbird, NZ pipit (*Anthus novaeseelandiae*; At Risk – Declining; High), and spotless crake. All species assessed as having High or Moderate unmitigated effects are assessed as reducible to Low or Very Low post-mitigation through: preparation and implementation of an Avifauna Management Plan (AMP) including pre-clearance surveys and nesting bird exclusion zones; 1:1 ratio replacement of 2.44 ha of wetland vegetation; and minimisation of operational lighting. Two indicative offset locations are proposed for the 2.44 ha wetland replacement: the corner of SH1 and SH12, and the Brynderwyn Farm Pond SNA (Q08/066).

57. The assessment does not evaluate the landscape-scale network use of wetlands by bittern, does not assess the suitability of the proposed SH1/SH12 offset site against bittern habitat requirements, and does not require pre-clearance targeted surveys for bittern, spotless crake or other cryptic wetland species as a condition of the mitigation framework. The implications of these gaps are addressed in Section 5 of this review.

2.7 Draft Consent Conditions (22 June 2026)

58. Four sets of draft conditions were circulated on 22 June 2026 for the Project: proposed Designation Conditions, proposed Regional Resource Consent Conditions, proposed Archaeological Authority Conditions, and proposed Soil Contamination Consent Conditions. The Archaeological and Contamination conditions are not addressed in this review. The ecology-relevant provisions in the Designation and Resource Consent conditions are summarised below.

59. The Designation Conditions address ecology under three discrete heads. Conditions D28 to D31 address indigenous vegetation loss. Mitigation planting is required at a ratio of 50:1 for individual kauri greater than 50 cm DBH and only 1:1 (by area) for all other existing indigenous vegetation within the Proposed Designation, with planting to be completed within two years of loss and maintained for five years. Conditions D23 to D27 require a Landscape Concept Plan (LCP) before Project Works begin. The LCP must address retention of substantial indigenous vegetation, eco-sourced revegetation of cut and fill batters in ecologically sensitive locations including the bush-clad escarpment and summit area of the Brynderwyn Hills, revegetation of any spoil disposal sites within the Summit Area, indigenous riparian planting of any stream diversions in the Pukekaroro tributary, and — if the Waihoihoi River meander loop is diverted — the creation of an equivalent meander loop with indigenous riparian planting. A 10 m indigenous riparian buffer is required on the southern side of the Piroa Stream.

60. Conditions D32 to D34 address bats. Vegetation clearance protocols consistent with the DOC Bat Roost Protocol (Version 4, October 2024) are required, including protective banding of potential roost trees. Where an active roost tree is identified within 50 m of Project Works, a setback must be implemented and activities generating excessive noise, vibration, or artificial lighting must cease until a Suitably Qualified Person confirms the bats have vacated. A report outlining these protocols must be provided to Council for information before Project Works begin. No formal Wildlife Act authorisation for bats is required as a condition, nor has one been applied for, and no post-clearance bat monitoring or population-level outcome reporting is specified.

61. Conditions D35 to D37 require an Avifauna Management Plan (AMP) before Project Works begin. The AMP must include pre-construction surveys of non-pasture vegetation during the breeding season (August to February), visual inspection of habitat within three days prior to felling, checking of cavities for nesting morepork (*Ninox novaeseelandiae*), sacred kingfisher (*Todiramphus sanctus*), and kākā, incidental discovery protocols for active nests found within 100 m of Project Works, and exclusion zones of 50 m or 100 m radius for Threatened and At Risk species respectively. The AMP must be prepared in consultation with Iwi Representatives. The AMP does not include any kiwi-specific provisions. No targeted pre-clearance surveys for Australasian bittern, no boom count surveys, and no specific marshbird exclusion zone requirements are prescribed.

62. The Regional Resource Consent Conditions address freshwater and wetland ecology. Conditions RC34 to RC39 govern works in watercourses. The Waihoihoi main stream must be bridged or realigned. For any perennial watercourse that is lost, SEV-based riparian compensation is required, calculated using a formula comparing the pre- and post-works SEV value of the lost reach against the improvement achievable through riparian planting in a comparable reach. Riparian compensation works must include 10 m wide indigenous planting on each side of the compensation watercourse, fenced against stock, and maintained for five years or until 80% indigenous canopy cover is achieved. Realigned watercourses must be designed to replicate the dimensions, substrate mosaic, and hydrological heterogeneity of the reclaimed reach, and where realignment occurs at a spoil site, the realigned channel must be situated at the junction between spoil and natural ground. Permanent culverts must be designed for fish passage in five named streams and in all other watercourses where upstream fish habitat exists, with substrate retention and no obstructions at the culvert entrance or exit.

63. Conditions RC40 to RC49 address natural inland wetland loss. For Wetlands 8, 16, Q08/066, and 24, replacement ratios vary from 1:1 where replacement is established three years prior to loss, to 1:1.5 where established within one year of loss, to 1:2 where established within two to five years of loss. For Wetlands 11, 12, 13, and 14 — identified as habitat for Australasian bittern, spotless crake, and North Island fernbird collectively termed Cryptic Marsh Bird Species — replacement ratios range from 1:1 where contiguous habitat is established prior to loss, to 1:2 where non-contiguous habitat is established after loss. A Wetland Management Plan (WMP) is required and must address the extent of wetland loss, the quantum and design of replacement wetland for each wetland group, and the specific habitat requirements for Cryptic Marsh Bird Species. Replacement wetland for Wetlands 8, 16, Q08/066, and 24 must be located within the same catchment or ecological district, include raupō in solid stands, sedgeland and rushland edges, a 10 m dry riparian buffer, and be set back from the operational carriageway at a distance determined by a Suitably Qualified

Person. Where creation of replacement wetland is not practicable, a financial compensation payment to a conservation body is required. Wetland establishment is defined as achieving 80% vegetation cover, absence of persistent invasive weeds, and typical hydrology.

2.8 Updated Designation Conditions (13 July 2026)

64. A revised set of proposed Designation Conditions was released on 13 July 2026. These conditions supersede and expand on the June 2026 conditions already summarised in Section 2.7, with the most significant ecology-relevant addition being a new suite of Cultural Values Management Plan (CVMP) conditions which include ecology aspects. The ecology conditions addressing indigenous vegetation, bats, and avifauna (Conditions D27–D37) are substantively unchanged from the June 2026 version. The landscape conditions (D21–D26) are also substantially the same. The key changes of ecological relevance are addressed below.

65. The revised conditions introduce a CVMP framework under Conditions D10A to D10I. The CVMP is required to be prepared by the Requiring Authority in consultation with Hapū, which are now explicitly defined to include Te Uri o Hau, Patuharakeke Te Iwi Trust Board, and Te Parawhau ki Tai. The CVMP must identify cultural sites and values from the three Cultural Values Assessments (including the Patuharakeke CIA reviewed in this report) that may be impacted by the final design, set out measures to manage effects on those values where practicable, define roles and responsibilities for Hapū during Project Works, establish communication procedures, and specify any tikanga to be implemented during specific works. The CVMP must be provided to Hapū in draft with at least 15 Working Days for comment before finalisation. Where Hapū feedback is not incorporated, written reasons must be provided. The CVMP is required to be completed at least two months prior to construction. RDL understands that Patuharakeke has commented on the adequacy of this proposal in other documents submitted to the Panel.

66. Conditions D10H and D10I establish an Avoid Area around the Brynderwyn Bus Crash Memorial Site, requiring notification to Te Uri o Hau and installation of protective measures before Project Works commence in proximity to that area. This provision is not directly relevant to ecological values.

67. The definitions in the revised conditions now explicitly list all three Cultural Values Assessments — the Patuharakeke CIA, the Te Parawhau ki Tai assessment, and the Te Uri o Hau assessment — confirming all three are formally incorporated into the conditions framework. This is a change from the June 2026 version, which did not reference these documents specifically in the definitions.

68. The ecological conditions (D27–D37) are substantively unchanged from the June 2026 version. Indigenous vegetation mitigation remains at a 1:1 ratio for Existing Indigenous Vegetation and 50:1 for kauri greater than 50 cm DBH, with five-year maintenance. The bat and avifauna conditions remain as described in Section 2.7.

2.9 Draft Ecological Management Plan

69. The Draft Ecological Management Plan (EMP) was released on 13 July 2026 as Revision A (Document 10722-PTA-2B0-PE-RPT-0022) and provides species-specific management protocols for Hochstetter's frog, native lizards, and native invertebrates. The EMP does not address avifauna, bats, kiwi, freshwater fish, or vegetation management. It is explicitly a draft document that will be finalised in accordance with the conditions applied to the Wildlife Act Approvals, meaning key decisions remain deferred to post-consent processes. The EMP is structured as three discrete management plans — a Hochstetter's Frog Management Plan (HFMP), a Lizard Management Plan (LMP), and an Invertebrate Management Plan (IMP) — together with a Release Sites section, an Accidental Discovery Protocol, and monitoring and reporting requirements.

70. The HFMP establishes a four-phase salvage and relocation programme for Hochstetter's frog:

(a) Phase 1, commencing at least ten days prior to vegetation clearance, involves daytime manual habitat searches using two-person teams. Refugia identified during Phase 1 are removed from the stream and selected rocks are re-deployed as "Judas rocks" intended to attract frogs not detected during the initial search. Frog exclusion barriers may be placed upstream and downstream of impacted reaches.

(b) Phase 2, commencing at least five days prior to works, involves two nights of nocturnal searching, though this phase is noted as "not always employed for health and safety reasons" and is at the Project Herpetologist's discretion.

(c) Phase 3, immediately prior to earthworks, involves a final search.

(d) Phase 4 involves machinery-assisted salvage during works where feasible. All salvage must occur between 1 October and 30 April at temperatures between 10°C and 20°C.

71. The HFMP acknowledges that some areas cannot be fully searched, explicitly noting that survey 2.25 was abandoned after 25 m because the stream was unsafe to enter beyond that point. The EMP notes that frogs from the northern Brynderwyn foothills will be released to the Northern Release Site, while frogs from the Brynderwyn Hills ONL may be released to either the Northern or Central Release Site, with the Project Herpetologist determining the allocation.

72. The LMP covers copper skink (the only confirmed species), together with Pacific gecko, forest gecko, elegant gecko, moko skink, and ornate skink as likely or possible. Salvage methods include artificial cover objects deployed for a minimum of six weeks, manual habitat searches, pitfall and funnel trapping, nocturnal spotlighting for arboreal gecko species, destructive habitat searches, and supervised vegetation clearance. The Project Herpetologist retains discretion to determine survey effort, modify methods, and include or exclude areas based on habitat type and quality. The LMP notes that properties within the site could not all be accessed during the pre-consenting assessment period, meaning pre-construction habitat assessments will be required before salvage can occur in those areas.

73. The IMP covers kauri snail, *Amborhytida dunniae*, and peripatus (*Peripatoides sympatrica*). Salvage methods include manual habitat searches and nocturnal spotlight searches, to be conducted within two weeks before scheduled vegetation clearance. The Project Entomologist has discretion to exclude areas from searches on the basis of habitat condition, land use, and the absence of snail records from desktop assessments or previous field surveys. The IMP notes that kauri snail hatchlings are known to spend time in trees and shrubs up to six metres above ground, and that nocturnal behaviour may result in daytime surveys failing to detect individuals.

74. Three Release Sites are proposed:

(a) The Northern Release Site (approximately 20.9 ha) is located in the foothills of the Brynderwyn Hills, comprising mature kauri-podocarp and broadleaf-podocarp forest assessed as Very High value. The site contains approximately 7.7 km of Moderate quality stream habitat considered suitable for frog relocation. It is intended as a release site for Hochstetter's frog, kauri snail, *A. dunniae*, copper skink, and native geckos.

(b) The Central Release Site (up to approximately 95.9 ha) is located within the Zentral Forest property and is predominantly rotational pine forestry with scattered pockets of indigenous forest. It contains streams supporting low-density Hochstetter's frog populations. It is designated as a frog-only release site with management focused on a 10 m no-harvest setback either side of release streams, sediment reduction, and habitat enhancement.

(c) The Southern Release Site (approximately 14.5 ha) is a remnant kauri-podocarp-broadleaf forest block protected under a Queen Elizabeth the Second National Trust (QEII) covenant. No Hochstetter's frogs were confirmed there during surveys, and the EMP states the site is "possibly unsuitable for frog relocations due to the underlying geology influencing pH levels within streams." The Southern Site is intended for kauri snail, *A. dunniae*, copper skink, and native geckos.

75. Mammalian pest control is required at all three sites for three months before relocation and three years following completion of relocation. At the Central Site, pest control targets only pigs and rats; at the Northern and Southern Sites the target species list is broader, including mustelids, possums, cats, and hedgehogs.

67. The monitoring programme requires post-release frog monitoring at one and three years following relocation, and then two, five, and ten years after pest control ceases. The stated monitoring objective is to confirm the continuous presence of a breeding population at the release sites rather than to determine whether individual relocated frogs survive or reproduce. The number and location of monitoring transects will be determined with input from a biostatistician once the extent of the release sites is confirmed. Performance indicators require consistent or increasing detection of frogs and juveniles across monitored transects. Lizard monitoring applies only where more than 20 individuals of a single species are relocated, with surveys at two and five years. Where monitoring outcomes are not achieved, the only specified management response is an additional two years of pest control. No monitoring of *A. dunniae* is proposed post-salvage; kauri snail monitoring applies only where more than 20 individuals are relocated.

2.10 Department of Conservation Section 51(2)(c) Wildlife Approval Report

77. The Department of Conservation has submitted a report (Section 51(2)(c) wildlife approval report for – Alternative to Brynderwyn Hills [FTAA-2603-1178]) regarding the application's wildlife act approvals. DOC's overarching conclusion is that the application is inconsistent with the protective purpose of the Wildlife Act 1953. This conclusion is driven primarily by the likely effects on Hochstetter's frogs, for which the scale of impact is described as unprecedented and the proposed mitigation measures are assessed as providing insufficient confidence that the affected population will be adequately protected. DOC also concludes that the application does not presently demonstrate consistency with the protective purpose of the Wildlife Act for lizards and kauri snails.

78. In relation to Hochstetter's frogs, DOC applies the applicant's own adjusted density figures to the full 14.2 km of frog stream habitat estimated to be permanently lost, yielding an estimated 21,900 frogs directly affected — approximately 16,250 of these within high-quality indigenous stream habitat. DOC notes that the highest recorded densities occur in Brynderwyn Hills headwater streams within the indicative alignment, with 60 frogs recorded within a single 25 m transect, and characterises this habitat as irreplaceable.

79. DOC identifies the following specific deficiencies in the proposed frog management:

(a) the salvage and relocation methodology is unproven at this scale and relies on untested techniques, including "Judas rocks" for which no evidence of effectiveness exists for Hochstetter's frogs;

(b) many frogs will remain undetected because steep and complex habitat cannot be fully searched, meaning some areas will yield 100% frog mortality;

(c) the proposed release sites have not been assessed for baseline frog populations or carrying capacity;

(d) predator control of three years is insufficient for a species that may live for approximately 30 years; and

(e) monitoring is not designed to determine whether relocated frogs survive or reproduce, because both proposed release sites already support resident frog populations and individual identification has not been proposed.

80. DOC notes that the Auckland Regional Landfill at Dome Valley, which may affect 500 to 2,000 frogs, is proposing substantially more intensive management including a predator-fenced release site — yet the Brynderwyn Hills Project, estimated to affect 21,900 frogs, proposes comparatively limited safeguards. DOC considers that the application relies almost entirely on salvage and relocation without first demonstrating that effects have been avoided and minimised as far as practicable, and notes that no offsetting or compensation is proposed despite significant residual effects that the applicant's own assessment characterises as High.

81. For lizards, DOC notes that only 16 copper skinks were confirmed during surveys, that large parts of the Proposed Designation were not surveyed, and that hundreds of lizards may be found during more intensive salvage operations. The species and numbers affected remain uncertain, proposed release sites have not had resident population or carrying capacity surveys undertaken, and three years of predator control is considered insufficient. The proposed monitoring applies only where more than 20 individuals of a single species are relocated, leaving smaller translocations entirely unmonitored.

82. For kauri snails, DOC concludes that the survey information does not provide a reliable basis for estimating population size or the number affected, that salvage effort is largely discretionary, that release-site suitability and capacity have not been demonstrated, and that the proposed monitoring and contingency framework is inadequate. DOC notes that if monitoring fails to confirm persistence, the only proposed management response is an additional two years of predator control, with no further monitoring required.

83. On avifauna, DOC notes that vegetation clearance and other construction works may foreseeably kill or injure protected birds, destroy eggs or nests, or disturb nesting wildlife. DOC identifies particular uncertainty regarding cryptic wetland birds — specifically Australasian bittern and spotless crake — and whether kiwi are present

within the Proposed Designation. DOC states that further surveys are required to establish the species present and the likely effects, and that if protected birds, eggs, or nests may foreseeably be harmed or destroyed, a wildlife approval for avifauna would be required and should be considered as part of the Panel's overall assessment.

84. In relation to the draft EMP, DOC identifies fundamental concerns: the proposed conditions specify what management plans must contain but not the ecological outcomes they must achieve; important matters including release-site selection and capacity, survey and salvage effort, pest-control standards, and monitoring design are all deferred to the final EMP; and the deemed-certified provision (WA5) — under which the EMP would be certified if DOC does not respond within 20 working days — is explicitly not supported by DOC. DOC states that it is unable to recommend conditions that would provide adequate assurance that wildlife will be protected and, if the Panel is minded to approve the application, strongly recommends that additional information be requested from the applicant before any decision is made.

2.11 Draft Proposed Frog Management Package v3 (28 August 2026)

85. The Proposed Frog Management Package (Draft V3, 28 August 2026) is a three-layer framework document released by NZTA in response to concerns raised in the DOC Section 51(2)(c) report about the adequacy of the Wildlife Act Approvals application and the Draft Ecological Management Plan for Hochstetter's frog management. It does not replace the EMP but proposes an overarching framework to sit above it.

86. Layer 1 proposes to maximise relocation success through a Release Site Selection Framework. No release site may be used unless assessed against ten specified criteria including habitat suitability, water quality, food availability, occupancy status, carrying capacity, predator and stock risks, forestry and sediment risks, long-term legal protection, monitoring feasibility, and independent review. Three priority candidate sites are identified for assessment under the framework: Pukekaroro Scenic Reserve, Pukeareinga/Maungatoroto Scenic Reserve, and the Maranui Conservation Project/Brynderwyn Scenic Reserve area. These sites differ from the three sites proposed in the Assessment of Effects on Terrestrial Ecology and Draft EMP and are outside the Proposed Designation. Pre-release management at each site is proposed to include habitat enhancement, stock exclusion, pest management, sediment management, and legal protection, with independent review or verification where appropriate.

87. Layer 2 proposes to measure relocation success through five tiers: Tier 1 (implementation — frogs salvaged and released); Tier 2 (persistence — continued occupancy at release sites); Tier 3 (establishment — occupancy maintained over

time); Tier 4 (population contribution — evidence of recruitment and viable populations); and Tier 5 (genetic contribution — genomic monitoring of donor and receiving populations). Programme-level success is to be assessed across the portfolio of release sites rather than on a site-by-site basis, with three illustrative performance categories: High Success, Moderate Success, and Low Success. The document explicitly states that specific success criteria, thresholds, and review triggers require further development in consultation with DOC.

88. Layer 3 establishes a pathway for additional management if agreed success criteria are not met, including adaptive management measures (increased pest control, expanded habitat enhancement, additional release sites, modified release allocations) and, as a contingent component, a conservation and compensation package that may include additional funding, habitat protection, and further management obligations.

2.12 Ecological Effects Mitigation Table v2 (28 August 2026)

89. The Ecological Effects Mitigation Table consolidates the proposed ecological effects management measures across all taxa and environmental values into a single summary document. It covers eight effect categories: general ecology design measures, streams, wetlands, avifauna, indigenous vegetation, bats, lizard and snail habitat under RMA, and lizard, snail, and frog management under the Wildlife Act Approvals.

90. For general ecology, the Mitigation Table proposes that Project Works shall not be undertaken within mapped avoid areas or mapped ecological areas except for ecological works. Additionally, Project Works should avoid the kahikatea stands at Waipu and the Release Sites.

91. For streams, during construction, it is proposed that along with standard erosion and sediment controls, the Waihoihoi main stem must be bridged or realigned, and temporary bridges are preferred for haul road crossings of five named streams, with temporary culverts permitted where bridges are not practicable. In terms of design, it is proposed that stream enhancement for any watercourse loss is undertaken at 1:1 ratio and permanent culverts are designed to provide fish passage and benthic habitat substrate. Riparian planting of at least a 10 m buffer is also proposed for watercourses where riparian works are proposed.

92. For wetlands, replacement is proposed for loss of existing wetlands providing habitat for threatened or at-risk avifauna and for loss of indigenous wetlands of high or moderate value. Replacement ratios remain as per the draft conditions — 1:2 where established within two to five years of loss, 1:1.5 within one year, or 1:1 where established three years prior to loss. Replacement wetlands must include raupō,

fencing, and be located in the same catchment or ecological district and set back an appropriate distance from the carriageway. Wetland compensation is proposed for when wetland replacement is unfeasible.

93. For avifauna, measures are limited to pre-construction nesting surveys, incidental discovery protocols, and exclusion zones of 25 m for general indigenous bird species and 50–100 m for Threatened or At-Risk species. Wetland replacement is cross-referenced as the primary avifauna habitat response.

94. For indigenous vegetation, three management approaches are proposed. Biosecurity measures address kauri dieback (*Phytophthora agathidicida*) risks specifically in relation to three named polygon areas (V1_228, V4_64, and V4_66). Remediation of fragmentation involves weed control to facilitate native regeneration towards 80% native dominance on margins of specified Very High and High value vegetation polygons. Offsetting for vegetation community loss proposes mitigation planting at a ratio of 1:3 for moderate to high value vegetation areas across a list of specified polygons, with an 80% tree survival and 80% canopy cover target by year ten, stock exclusion, and a trading-up mechanism allowing loss of tōtara and kānuka forest to be offset by additional pūriri (*Vitex lucens*) forest restoration. Replacement of less common species including kawaka (*Libocedrus plumosa*) and rimu (*Dacrydium cupressinum*) is proposed through inclusion in planting designs. Compensation for Very High value vegetation polygons (V4_64, V4_66, V2_35, V2_22, V2_7, V2_3) and for loss of threatened and at-risk plants such as kauri is noted separately as compensation rather than mitigation.

95. For bats, DOC bat roost protocols during vegetation clearance remain the sole management measure, with setbacks to be established around any confirmed active roost.

96. For lizards and kauri snails under the Wildlife Act, NZTA proposed that pre-construction surveys must identify all suitable habitat within the clearance footprint, with salvage and relocation to the Northern and Southern Release Sites prior to construction. Pest control is required for three months prior to relocation and five years following completion and Release Sites must be protected by covenant. Lizard and Snail Management Plans will need to be certified by DOC. No compensation is proposed for either taxon on the basis that residual effects are assessed as low.

97. For Hochstetter's frog under the Wildlife Act, NZTA proposes that pre-construction surveys will identify all suitable frog habitat. Frogs north of the ONL will be released to the Northern Release Site first, then the Central Release Site, then additional sites (factors to determine suitability of these sites still to be drafted). Frogs south of the ONL will be released to the Southern Release Site (noted as still to be confirmed) then additional sites. The salvage window is specified as 1 December to 30 April. The same

pest control measures and covenant protection of Release Sites described above are proposed. A Hochstetter's Frog Management Plan will need to be certified by DOC. Compensation for translocation failure is noted as "to be discussed."

3.0 Critical Commentary: Assessment of Effects on Terrestrial Ecology (Appendix D06)

3.1 Vegetation Values & Residual Effects

98. The terrestrial ecology assessment identifies approximately 18 ha of Very High value and 7 ha of High value indigenous vegetation within the Indicative Alignment. Poroporo, a Nationally Endangered plant species confirmed during field surveys and recorded as observed in Table 8 of Appendix D06, does not appear anywhere in Table 17. This means that a Nationally Endangered species confirmed present within the Proposed Designation during surveys has received no effects assessment. Under the EIANZ EcIA Guidelines, a Nationally Endangered species warrants Very High ecological value (Roper-Lindsay 2018).

99. The vegetation classification methodology applied in Appendix D06 warrants further examination. The report states general accordance with Atkinson (1985) for vegetation naming conventions and references Singers et al. (2017) for classification of certain indigenous ecosystem types, but the vegetation types described in Appendix D of that report do not consistently align with either framework. Several of the named vegetation types group ecologically unrelated species into single classification units without clearly identifying the dominant species or tier (Singers 2014).

100. For example, "exotic pine forest/mixed native and exotic scrub/ranked grassland" does not indicate which component is dominant across the mapped area, making it difficult to assign ecological value with confidence or to assess whether the EIANZ criteria have been applied consistently. This ambiguity in the classification scheme has downstream consequences: if the dominant type within a mapped polygon is correctly native scrub rather than pine, its ecological value may be significantly undervalued (Singers 2019). For the Panel, this means that at the moment it does not have the evidence it needs to understand the actual values within the Proposed Designation and Indicative Alignment and therefore cannot determine the adequacy of any mitigation proposed and ultimately the extent of adverse impacts. The terrestrial ecological assessment appears more consistent with an Atkins-style habitat type delineation than a Singers-based ecosystem classification, but this is not stated in the report.

101. At least one vegetation type mapped as terrestrial habitat may in practice qualify as wetland habitat. Crack willow (*Salix fragilis*) is a facultative wetland species

(FACW under the Clarkson et al. (2021) wetland plant indicator system), and where crack willow is the dominant canopy species in a mapped vegetation unit, the underlying feature may meet the definition of a natural inland wetland rather than a terrestrial vegetation type. RDL recommends that the classification methodology be revisited to confirm dominant vegetation type within each mapped unit, to reconcile the approach against Singers et al. (2017) and Atkinson (1985) more explicitly, and to identify any mapped terrestrial units where wetland indicators are present.

102. Volume B, Table 10, states that post-mitigation effects on the distinctive kahikatea forest remnants at the entrance to Waipu will be "minor" if mitigation includes avoidance of the northern kahikatea forest remnants. No evidence is provided in any of the technical materials to demonstrate how avoidance of the kahikatea forest remnants is achievable, given that the Proposed Designation layout includes two roundabouts in the immediate vicinity of these remnants. The minor post-mitigation effect rating is conditional on avoidance being achieved, yet the mechanism and feasibility of that avoidance are undemonstrated. A similar approach is applied to kauri in Zone 2, where the Project states kauri will be avoided to the extent practicable, without detailed design confirming how kauri exclusion zones will be maintained relative to cut batters, drainage works, and vegetation clearance in adjacent pine forest.

103. WSP acknowledges that residual adverse effects on Very High and High value vegetation remain at Moderate and High levels respectively, even after mitigation. The report states these residual effects "*may be acceptable considering the purpose and relevant decision-making provisions of the FTAA*." This is not a conclusion within the scope of the ecological assessment or about ecology, it is a matter for the Panel to determine. The proper role of the ecological assessment is to characterise residual effects and identify what further measures would be required to avoid, remedy, or mitigate them. The assessment does not fulfil this role. RDL considers this a significant gap, with direct implications for RDL's and the Panel's ability to assess whether the Project's ecological effects are adequately managed.

104. Having regard to the ecological values identified above, RDL considers the following vegetation types within the Proposed Designation to be avoidance priorities — features for which clearance cannot be adequately offset or compensated and which should be avoided as a primary management obligation rather than treated as clearance subject to offset. Kahikatea forest and its associated types (kahikatea treeland, kahikatea-kauri-tōtara treeland, and kahikatea-pukatea forest, totalling 9.3 ha) represent a nationally rare lowland wetland-margin forest type confined to alluvial floodplain conditions and irreplaceable on any ecologically meaningful timeframe (see Section 3.6 for more detail). Nīkau (*Rhopalostylis sapida*) treeland (0.1 ha) is limited in extent and any clearance would eliminate it entirely from the

Proposed Designation footprint. Remnant Riparian podocarp-hardwood-kānuka treeland (13.1 ha) is distributed along watercourses throughout all four zones, provides the primary long-tailed bat foraging corridor across the Proposed Designation and also provides riparian bank habitat for Hochstetter's frog. All three of these vegetation types are included in the Ecological Avoidance Areas set out in Appendix 1 of this review, along with the specific polygon references and ecological justifications for each.

105. A fundamental limitation of the effects assessment as structured is that vegetation loss has been characterised as total hectares by value class rather than at the level of individual vegetation polygons or ecosystem types. This approach is a consequence of the maximum clearance framework applied to the Proposed Designation: because the final alignment has not been confirmed, effects are assessed across the full potential clearance envelope without specifying which individual polygons will be removed.

106. The practical consequence is that not all areas assessed as "Very High value" are treated as ecologically distinct, yet within that value class, the Proposed Designation contains vegetation types of very different rarity, irreplaceability, and ecological function. For example, mature kauri-podocarp forest on ridge systems, kahikatea remnants on the coastal plain, and high-density Hochstetter's frog habitat in headwater streams are each assessed as Very High value, but their ecological equivalence ends there. Clearing any one of these types produces fundamentally different consequences for biodiversity, for associated species, and for the feasibility of meaningful offset.

107. Without knowing which specific polygons will be cleared, it is not possible to determine whether irreversibility thresholds have been crossed, what offset quantum is actually required, or whether the proposed mitigation sites are appropriate for the ecosystem type being lost. The Panel should not accept maximum clearance accounting as a substitute for polygon-specific effects assessment.

108. Before consent is granted, NZTA should be required to identify which vegetation types and individual polygons within the Proposed Designation are proposed for clearance under the Indicative Alignment, to assess the effects of that specific clearance, and to demonstrate that the proposed offsets are calibrated to the ecological characteristics of what is actually being lost. RDL's specific avoidance areas and maximum clearance limits for vegetation types within the Proposed Designation are set out in Appendices 1 and 2.

3.2 Hochstetter's Frog

109. Hochstetter's frog was detected at high densities in hill-country streams within Zone 2, including within commercial pine forest. One survey recorded 20 individuals in a single 50 m transect within pine forest, indicating locally high population densities. Zone 2 is identified as the area of greatest frog impact, given the scale of vegetation clearance and stream works associated with the pine plantation and underlying SNA forest.

110. Post-mitigation effects on Hochstetter's frog are assessed as high, and WSP explicitly acknowledges that "*further measures to offset or compensate for the residual High level of effect on Hochstetter's frog may be required*". However, no such measures are proposed. The recommended actions — pest control for five years, pre-clearance salvage and relocation, and stream habitat enhancement at mitigation sites — are not demonstrated to be sufficient to offset frog population-level losses at the scale of impact anticipated in Zone 2. The Central Mitigation Site is predominantly commercial pine plantation, which will provide limited habitat value for Hochstetter's frog until the plantation is cleared and native regeneration is established — a timeframe of at least 15 to 20 years.

111. Relocation of Hochstetter's frogs from the construction footprint to receiver sites is presented as a key mitigation measure. There is no published evidence that Hochstetter's frog translocation has produced self-sustaining populations. Unlike gecko and skink relocations, for which some evidence base exists, Hochstetter's frogs are obligate stream-dwellers with specific microhabitat requirements (cool, well-oxygenated, coarse-substrate streams in native forest), strong site fidelity, and limited dispersal capacity. The assumption that individuals salvaged from construction sites can be successfully relocated and establish self-sustaining populations at receiver sites is not supported by published evidence. This is a significant gap in the ecological justification for accepting High residual effects on this species. For the Panel this means that it has no evidenced basis for treating relocation as a measure capable of reducing adverse effects on Hochstetter's frog, and therefore cannot accept the High residual effect rating as one that has been adequately mitigated.

112. The 2024 NZTA Brynderwyn Hills Recovery Project provides the most directly comparable dataset. WSP's compliance report records 150 frogs salvaged from 144 m of impacted stream across 327 person-hours of effort across four salvage phases, yet concludes that "relocation success or otherwise is not possible to verify" because individual marking was not approved and relocated frogs could not be distinguished from resident individuals at receiver sites (WSP, 2024c).

113. Applying D06's own corrected density figure of 93.1 frogs per 100 m across the 2,800 m of stream surveyed during baseline transect surveys yields an estimated total

affected population of approximately 2,607 individuals. Extrapolating the Recovery Project's salvage intensity to this length implies approximately 6,356 person-hours of pre-clearance effort before earthworks begin. In its Section 51(2)(c) Wildlife Approval Report, DOC applied the same corrected density figures to the 14.2 km of total frog habitat estimated to be permanently lost across the Proposed Designation, yielding an estimated 21,900 frogs directly affected. The application does not address whether salvage at this scale is operationally feasible, nor how outcomes would be verified when they could not be verified at one-twentieth the stream length. For the Panel, this means that, given the resourcing implied by the above figures, it cannot be confident that the suggested mitigation strategy is environmentally effective let alone operationally feasible.

114. Wren et al. (2023) reviewed the full available record of Hochstetter's frog translocations and found that any meaningful indication of population establishment requires post-release monitoring exceeding 25 years, a minimum founder cohort of more than 70 individuals, and active predator control at receiver sites — and that mitigation-driven translocations, where IUCN best practice protocols are less consistently applied and long-term monitoring is rarely sustained, produce consistently worse outcomes than conservation-driven ones. The Recovery Project translocation did not meet these criteria, nor does the current application at a scale approximately seventeen times larger in terms of individual frogs affected.

115. A further point warrants noting. Appendix D06 itself acknowledges, at page 34, that the loss of Moderate and High quality frog habitat — in particular the high-value low-flow breeding headwater streams within the ONL — is likely to displace frogs into less suitable habitat with naturally lower carrying capacity, increasing predation risk and decreasing breeding success. This is the applicant's own assessment of the ecological consequence of habitat loss, independent of translocation. It confirms that adverse effects on the Hochstetter's frog population will occur from habitat displacement alone, regardless of whether translocation succeeds or fails. On that basis, offsetting or compensation for frog habitat loss should be required as a baseline condition from the outset and not deferred as a contingent response to translocation failure. The Proposed Frog Management Package's Layer 3 compensation component, which is contingent on failure being demonstrated, does not adequately address this point.

116. The interaction between the freshwater and terrestrial ecology assessments in relation to Hochstetter's frogs also warrants note. The terrestrial assessment identifies all streams in the Brynderwyn Hills ONL as high-quality frog habitat. The freshwater assessment does not specifically address Hochstetter's frog when evaluating stream values or deriving the mitigation requirement for stream losses. This compartmentalisation means that neither assessment fully captures the aggregate effect on Hochstetter's frog populations, and the combined ecological

loss to this species across both stream and terrestrial habitat dimensions is not reported in any single document.

117. To conclude, if translocation cannot be relied upon to mitigate the effects of frog habitat loss, then avoidance of frog habitat is the only meaningful ecological management response. This applies especially to the high-density headwater streams within the Brynderwyn Hills ONL, where adjusted densities of 416.3 frogs per 100 m have been recorded and where DOC has independently characterised the habitat as irreplaceable. These streams are included in the Ecological Avoidance Areas in Appendix 1 of this review. Their avoidance is not merely preferable, it is the only management approach consistent with the protective purpose of the Wildlife Act 1953 in a context where the alternative (salvage and translocation) has been demonstrated not to be verifiable as a mitigation measure.

3.3 Long-tailed Bats

118. The acoustic bat survey methodology is robust: 48 automated bat monitors deployed across the Proposed Designation, recording across 21 valid nights in two deployment periods, with results processed by a competency-certified analyst. Long-tailed bat activity was detected at low levels, primarily in Zones 2–4, consistent with the distribution of mature native and non-commercial exotic forest in those zones. The assessment characterises bat habitat loss, fragmentation, and the risk of roost felling as the primary effects of concern, with unmitigated levels of effect assessed as High or Very High for some effects.

119. Post-mitigation, WSP concludes effects on bats will be Low, primarily through implementation of the DOC Bat Roost Protocol during vegetation clearance. Canopy bridge and green overpass structures have been proposed as mitigation in comparable international contexts (e.g. Soanes et al. 2024) and identified as warranting urgent investigation for long-tailed bats in New Zealand (Jones et al. 2019), yet the assessment makes no reference to them. The introduction of a new four-lane highway through an area where bats are already using forest fragments on either side of SH1 creates a new and persistent barrier to bat movement. Fragmentation effects, particularly in Zone 2 where the Indicative Alignment bisects a large native and non-commercial forest block, are likely to be ongoing and cumulative with the existing SH1 barrier.

120. WSP's own Brynderwyn Hills Recovery Project provides a directly comparable local precedent. Acoustic surveys undertaken across that project's 2023–2024 works following the same methodologies recorded a total of thirteen long-tailed bat passes across three seasonal deployments of fifteen ABMs, described in that assessment as indicating "very low (<1 passes per night (ppn))" activity. Calculated across the full survey effort of 779 valid detector-nights, using the same total-passes-over-total-nights method applied in the Terrestrial report, the Recovery

Project survey equates to approximately 0.02 ppn — consistent with, rather than lower than, the 0.06 ppn and 0.02 ppn recorded for Survey 1 and Survey 2 within the Terrestrial report.

121. The Brynderwyn Hills Recovery Project resulted in the permanent loss and modification of 10.69 ha of High potential bat habitat. To manage this loss, WSP required implementation of a Bat Management Plan (BMP), under which approximately 300 trees identified as potential bat roosts were individually risk-rated, marked, and, where rated high-risk, subject to a minimum of two consecutive nights of acoustic monitoring by a competency-certified bat ecologist prior to felling.

122. NZTA proposes to manage a considerably larger area of bat habitat loss through a lighter mitigation pathway. Long-tailed bat activity recorded across the Proposed Designation is comparable to that recorded for the Brynderwyn Hills Recovery Project once measured on the same basis. However, the current Project proposes the direct loss of 163 ha of High potential bat habitat —approximately fifteen times the 10.69 ha lost under the Brynderwyn Hills Recovery Project — through implementation of the DOC Bat Roost Protocol alone, with no accompanying BMP. WSP has therefore applied a lower standard of bat management to a site with a comparable level of confirmed activity and approximately fifteen times the habitat exposure of a project in the same landscape for which it considered a BMP necessary. For the Panel, this means that it cannot rely on WSP's assessment of adequacy for bat mitigation, because WSP has not applied its own demonstrated standard of practice consistently between two comparable projects in the same forest, and has not explained why a considerably larger area of habitat loss should attract a lesser level of species management than a considerably smaller one.

123. Logistically speaking, a BMP is not simply a restatement of the Bat Roost Protocol; it is the document that translates the Bat Roost Protocol's general steps into a site-specific, enforceable programme. Under the Brynderwyn Hills Recovery Project's BMP, every tree proposed for removal was individually assessed by a bat ecologist for roost features, physically marked and flagged where rated high-risk, restricted to felling between October and May at air temperatures of 10°C or above to avoid torpor season, and, where rated high-risk, monitored acoustically for a minimum of two consecutive valid nights using ABMs spaced no more than 50 m apart, under the oversight of an ecologist holding a specific DOC bat-handling competency.

124. None of this detail is proposed within the Bat Roost Protocol, which is the Project's mitigation measure. Given the assessment's own finding that the unmitigated level of effect for injury or death during vegetation removal is Very High, and given the scale of habitat loss involved, a BMP that outlines an equivalent, site-specific programme is necessary to give the Panel, the consent holder, and future

contractors a fixed and auditable standard, rather than a general reference to a national guidance document that leaves the operational detail undetermined.

125. In terms of operational feasibility, the scale implications of applying an equivalent standard to the current Project are substantial. The Recovery Project's rate of approximately 300 risk-rated trees across 10.69 ha of habitat loss equates to roughly 28 trees per hectare. Applied to the 163 ha of High potential bat habitat proposed to be lost under the current Project, this rate implies approximately 4,575 trees requiring individual risk-rating, with an unknown but likely substantial proportion requiring a minimum of two consecutive nights of dedicated acoustic monitoring each before felling can proceed. The application does not address whether an assessment and monitoring programme of this magnitude is achievable within the Project's construction programme, how many competency-certified bat ecologists this would require, or how monitoring would be sequenced across a designation of this length without significantly delaying construction. For the Panel, this means that, given the scale implied by these figures, it cannot be confident that the Bat Roost Protocol is operationally deliverable at this scale without the same planning, monitoring intensity, and competency oversight that WSP itself considered necessary at a fraction of the size.

126. Native lizards, Hochstetter's frogs, and kauri snails are each managed under Wildlife Act Authority conditions — an authorisation regime that expressly provides for, and requires reporting of, incidental injury or mortality arising from vegetation removal and construction activities. Long-tailed bats are the only protected species group addressed in this assessment for which no such authorisation has been sought. Management instead rests entirely on the premise that a properly implemented Bat Roost Protocol will prevent bats from being present, and therefore at risk, during felling. That premise is only as sound as the operational programme behind it, and, for the reasons set out above, the scale of habitat loss proposed here raises doubt as to whether the Protocol can be delivered with the rigour it requires. Unlike every other protected species addressed in this application, no Wildlife Act Authority has been sought to authorise, manage, or require reporting of incidental bat mortality should that Protocol fall short at this scale. For the Panel, this means that the one species group facing the greatest risk of a shortfall in mitigation is also the only one for which the application has made no regulatory provision for that shortfall occurring.

127. The Remnant Riparian podocarp-hardwood-kānuka treeland, distributed along watercourses throughout all four zones (polygons V1_79, V1_114, V1_159 and associated fragments), represents the primary bat foraging corridor within the Proposed Designation. At 13.1 ha total extent and Very High ecological value, it provides the riparian connectivity on which long-tailed bats depend for movement between the larger forest blocks in Zone 2 and the lowland areas to the north and

south. Clearance of this vegetation type would interrupt that connectivity at multiple points along the 17.6 km corridor. Alongside its bat foraging function, it provides Hochstetter's frog riparian bank habitat and streambank stability. RDL considers this vegetation type an avoidance priority, as reflected in Appendix 1.

3.4 Mitigation Duration, Planting Context & Timing

128. Pest control at the three proposed mitigation sites is proposed for five years. In the Northland context, where exotic predator pressure is persistent and where indigenous bird, lizard, and invertebrate recovery is demonstrably dependent on sustained pest management, five years of pest control is widely regarded as inadequate to establish self-sustaining ecosystems within revegetated areas. DOC's own standards for ecological restoration projects of national significance typically require pest control for a minimum of ten years post-planting. The five-year timeframe should be considered a minimum starting point, not a commitment adequate to deliver the ecological outcomes claimed. This applies to revegetation planting. Release sites for translocated fauna require longer periods matched to the life history of each species, as set out in Section 16.7.

129. The three mitigation sites are predominantly characterised by steep hillslopes, gullies, and — in the case of the Central Site — commercial pine plantation. The proposed mitigation planting will largely involve establishing native species in open pasture, an environment characterised by high weed pressure (particularly kikuyu (*Cenchrus clandestinus*) and other aggressive pasture grasses in Northland), stock access risk, and unfavourable microclimate for shade-tolerant understorey species. Planting in open pasture within sites bounded by production farmland carries a substantially higher establishment failure risk than planting within or adjacent to existing indigenous vegetation. The assessment does not address this specific risk or propose site preparation works to reduce weed competition prior to planting.

130. Monitoring of mitigation planting is proposed under "*Standard NZTA monitoring for the first five years post construction*." This is not an ecologically derived monitoring programme. No specific monitoring metrics, adaptive management triggers, or corrective action requirements are described. For a project where the ecological assessment acknowledges Moderate to High residual effects on Hochstetter's frog and Very High and High value vegetation, a monitoring and adaptive management programme should be a consent condition with specified ecological outcome targets, not a reference to NZTA's standard maintenance schedule.

131. The timing-related issue discussed in relation to avifauna mitigation in Section 5.4 applies equally to terrestrial wetland values. To the extent that any terrestrial vegetation management proposed as part of the Wetland Management Plan involves wetland edge and buffer planting, this work should be sequenced to

provide established structure before the original wetland habitat is cleared — not planned as a post-clearance revegetation exercise.

3.5 Threatened Plant Species & Updated Threat Classifications

132. Ten threatened or at-risk plant species (de Lange 2024) were confirmed within the Proposed Designation, including poroporo (Threatened – Nationally Endangered), kauri (At Risk – Declining), and several other at-risk declining or naturally uncommon species. The assessment does not describe translocation protocols or transplantation methodologies for individual specimens of these species that will be impacted by the Indicative Alignment. For a Nationally Endangered species such as poroporo, and for at-risk species potentially represented by few individuals at the site scale, individual plant management is warranted and should be specified in an ecological management plan rather than deferred.

133. The field surveys were conducted in the September to November 2025 period. Since that time, the regional plant threat classifications for Northland have been updated. These classifications identify several species now recognised as regionally declining or threatened that may be present within the Proposed Designation. The terrestrial ecology assessment does not incorporate these updated classifications. RDL recommends that the Panel require WSP to confirm whether any species recorded during surveys have had their threat status updated since the assessment was completed.

134. Three additional species recorded in or adjacent to the Proposed Designation warrant pre-clearance survey obligations across all vegetation types, independent of polygon classification. Northern rātā (*Metrosideros robusta*; At Risk – Declining) is a hemiepiphyte that occurs across multiple forest types and cannot be predicted from dominant vegetation classification; its presence within any clearance footprint should trigger the obligations set out in Appendix 3. Kawaka occurs occasionally within kauri-podocarp forest in the Proposed Designation. It is naturally sparse, depends on disturbance to regenerate, and is listed as Near Threatened on the IUCN Red List (Farjon & Carter 2013); its natural sparseness and declining population trend qualify it for the species-level protection in Appendix 3. Ramarama (*Lophomyrtus bullata*; Threatened – Nationally Critical) was not confirmed during field surveys, but a recent record from the Brynderwyn Hills Recovery Project led Appendix D06 to assume it may be present in mature native forest; given its national rarity and low detection probability during standard walk-through surveys, any confirmed detection during pre-clearance survey should trigger an immediate halt to works pending a specific effects assessment.

135. Furthermore, from a review of iNaturalist.nz (citizen science data recording website), it was noted that WSP ecologists (who undertook the field work (Vegetation)) had uploaded multiple, geotagged plant observations from within the Proposed

Designation that they could not identify, many of these being common and typical species. Incorrect plant species identification can lead to errors in delineating, defining and describing habitats. Incorrectly classifying habitats can lead to an inaccurate assessment of their significance, potentially underestimating the ecological value. This creates an issue for the Panel because it is not clear whether the vegetation assessment has been conducted by an expert, and also the Panel cannot be certain about the nature and extent of vegetation values adversely impacted.

3.6 Kahikatea Forest Remnants

136. The most northern section of the Proposed Designation, where two roundabouts near the Braigh are proposed, contains two kahikatea forest remnants surrounded by kahikatea treeland. These two remnants are referred to in Appendix D06 as V1_74 (0.44 ha) and V1_83 (0.57 ha), totalling 1.01 ha, and are assessed as Very High ecological value. The surrounding kahikatea treeland is assessed as Moderate to High value, totalling 0.6 ha.

137. RDL understands that as well as having immense ecological value, these remnants hold high cultural value for Patuharakeke, representing a landscape element of pre-modification coastal plain environment along the existing SH1 corridor. Ecologically, their loss would represent the elimination of a rare and locally irreplaceable vegetation type from this stretch of the coastal plain.

138. The Waipu Tie-in at the northern end of the alignment connects the new mainline to the existing SH1 via an interim at-grade arrangement incorporating a roundabout at Millbrook Road, with a second roundabout on the eastern side linking to SH1 north and south and The Braigh. The main application states this interim arrangement is designed to allow for a future interchange to be constructed as part of the subsequent North Waipu to Port Marsden Highway section, meaning the footprint at this location is intended to accommodate further construction works beyond the current Project. The combined footprint of the interim tie-in and its eventual upgrade to a full grade-separated interchange substantially increases the probability that both kahikatea remnants — V1_74 and V1_83, totalling 1.01 ha of Very High ecological value — will be directly impacted, rather than the partial 0.4 ha loss reported in Table 16 of Appendix D06.

139. The kahikatea remnants contain threatened and at-risk plant species, notably *M. complexa* var. *grandifolia* (Threatened – Nationally Vulnerable) and *Carmichaelia australis* (At Risk – Declining), as confirmed in Appendix D06, Appendix O. Copper skinks (At Risk – Declining) were also found in and in the vicinity of these remnants during WSP field surveys. The combination of very high value vegetation type, threatened and at-risk plant species, and at-risk lizard fauna makes these remnants

ecologically significant at a level that warrants maximum avoidance effort. This is reflected in RDL's recommendations and within Appendix 1 to 3.

140. There is a discrepancy between the total area of kahikatea forest remnants confirmed in the Proposed Designation (1.01 ha across V1_74 and V1_83) and the total loss of this vegetation type reported in Table 16 of Appendix D06, which states 0.4 ha of kahikatea forest will be lost. Given the extent of the Proposed Designation at this location and the placement of the two proposed roundabouts directly in the vicinity of both remnants, it appears likely that all kahikatea forest will be removed, more than doubling the vegetation loss figure presented in Table 16. This discrepancy requires clarification, as it has a direct bearing on the assessed level of effect and the mitigation obligation for this vegetation type.

141. WSP proposes mitigation for the loss of Very High and High value vegetation communities, with recommended actions including minimisation of loss through detailed design and mitigation planting at the three proposed mitigation and release sites. Table 10 of Volume B states that post-mitigation effects on the distinctive kahikatea remnants at the entrance to Waipu will be minor if mitigation includes avoidance of the northern stand. As noted in Section 3.1, it is not clear how avoidance of these remnants is achievable given the Proposed Designation and Indicative Alignment layout. If one or both remnants cannot be avoided, the total area of kahikatea forest lost will significantly exceed the figure reported in Table 16.

142. If avoidance cannot be demonstrated, the three existing mitigation sites are not appropriate locations for kahikatea forest replacement. Kahikatea is a lowland wetland-margin forest species that establishes naturally on alluvial floodplains with high water tables — not on steep hillslopes or gullies. The three existing mitigation sites are predominantly characterised by hillslope and gully terrain that does not replicate the alluvial floodplain conditions required for kahikatea forest development. Mitigation planting on these sites will not achieve like-for-like replacement of this vegetation type. This means that the loss of these areas would essentially go unaddressed.

4.0 Critical Commentary: Assessment of Effects on Freshwater Ecology (Appendix D07)

4.1 Survey Methodology

143. The fish fauna assessment relies primarily on environmental DNA (eDNA) sampling. eDNA is a useful screening and detection tool for species presence and diversity; it can confirm whether a species has recently been present in a waterway, and give a picture of the community of species that occur there. However, eDNA provides no information about population size, density, age structure, or abundance. Nothing

about the population condition or status of any fish species in the affected streams can be determined from eDNA data alone.

144. For an assessment of this scale and significance involving the permanent loss and culverting of streams supporting nationally at-risk species, eDNA should complement, not substitute for, traditional physical fish sampling methods such as electric fishing, fyke netting, and hīnaki (eel traps). No traditional survey methods are reported in Appendix D07. The absence of quantitative fish survey data means that fish densities, population structures, reach-specific habitat use, and the significance of individual stream reaches to local fish populations cannot be characterised. This directly undermines the adequacy of the fish passage assessment and the evaluation of stream losses.

145. Critically, the lack of population-level data means that no fish translocation management plan can be meaningfully prepared or implemented. Before any stream works commence — whether culverting, realignment, or dewatering — traditional physical fish surveys should be required across all affected perennial and intermittent streams. This baseline is necessary to characterise the fish assemblages present, to determine which species and life stages will require salvage, and to develop a credible translocation management plan that identifies receiver sites, handling protocols, and post-translocation monitoring obligations. This is not a matter of detail to be resolved at detailed design; it is a prerequisite for assessing the adequacy of the freshwater effects management framework before consent is granted. The draft consent conditions do not require traditional physical fish surveys at any stage, an omission addressed in Section 8.

146. Long-fin eel (*Anguilla dieffenbachii*; At Risk – Declining) is confirmed in the majority of eDNA-surveyed waterways, yet the assessment does not provide population-level analysis sufficient to determine whether stream losses will affect eel subpopulations in the affected catchments. The at-risk status of long-fin eel requires a more rigorous treatment than the assessment provides.

147. Macroinvertebrate community characterisation was similarly reliant on Wilderlab eDNA. While eDNA provides a broad representation of taxa richness, reliance on this method alone for MCI-based value determinations in streams of mixed ecological value raises concerns about precision, particularly for headwater and intermittent streams where eDNA transport dynamics differ from perennial systems.

4.2 Farm Drainage Channel Determination

148. The assessment excludes a number of waterways in the northern Ahuroa floodplain from consideration on the basis that they are farm drainage channels and therefore fall outside the RMA definition of a river. This determination relies primarily on a 1973 aerial photograph that does not show stream patterns in the relevant paddocks.

Agricultural drainage and waterway modification in Northland was extensive and ongoing well before 1973, and the absence of visible stream patterns in a single historical aerial image does not preclude the prior existence of natural watercourses at those locations. Retrolens imagery from earlier periods, LINZ topographic mapping, and LiDAR-based terrain analysis should have been examined before any waterway was excluded on artificial waterway grounds.

149. The practical significance of this determination is that any ecological values in these waterways — including potential long-fin eel and short-fin eel (*Anguilla australis*) use — have been excluded from the effects assessment. Given that the northern portion of the Proposed Designation traverses lowland plains where eel populations would be expected, this exclusion may understate the freshwater ecology effects of the Project.

4.3 Regulation 70 NES-FW and Culvert Design

150. The assessment recommends culvert designs meeting the conditions of Regulation 70 of the NES-FW as the primary mechanism for maintaining fish passage. However, Appendix D07 acknowledges (Table 16) that several streams may be unable to achieve in-pipe substrate retention due to gradient. Specifically, four streams — Pine Mid Tributary, Piroa Western Tributary, Waipu North Tributary and Waipu South Tributary — are noted as having gradients where substrate retention may not be achievable, retaining only 40–71% of original SEV at those locations.

151. Where in-pipe substrate retention cannot be achieved, the assessment states the culvert length should be considered stream loss. However, this logic is not carried through into the cumulative stream loss accounting or the mitigation requirements. The reported net stream loss of 554 m should be increased to account for effective habitat loss within culverts where substrate retention is not achievable. The failure to do so understates the actual ecological impact on fish communities.

152. Piroa Main Stem warrants separate mention. It is not one of the four gradient-affected streams, and Appendix D07 identifies it as a stream where fish passage must be provided because of the habitat upstream. It has the highest pre-works SEV score of any stream in Table 16 (0.76) and one of the richest macroinvertebrate communities recorded (40 taxa, 17 EPT taxa). Even where a culvert meets every design recommendation, Table 16 predicts it will retain only 39% of its SEV. That loss is not counted as stream loss, because Appendix D07 treats a culvert as loss only where its design recommendations cannot be met. The stream that stands to lose the most value from culverting is therefore the one whose loss is least accounted for.

153. For all remaining culvert crossings where compliance is asserted to be achievable, the assessment provides no design specifications demonstrating how this will be

accomplished. Given the step-cascade morphology of these streams (e.g. high gradients, coarse bedload, and natural drop structures), in-pipe substrate retention and maintenance of natural gradient through a culvert are inherently difficult to achieve, and the assessment provides no site-specific analysis demonstrating how the hydrological and substrate conditions required by Regulation 70 will be replicated at each crossing. Asserting compliance is a 'design goal' without demonstrating how it will be achieved is not an adequate basis for concluding that effects on fish passage will be less than minor (Franklin 2024). Culvert design specifications demonstrating Regulation 70 compliance for each crossing should be required as a consent condition before construction commences at that location, not deferred to detailed design. No post-construction fish passage monitoring is proposed to verify whether culverts are functioning as intended — this is a further gap that should be addressed through a consent condition requiring passage verification surveys at defined intervals following culvert installation.

4.4 Stream Loss, Realignment Feasibility & NPS-FM Consistency

154. The net stream loss figures (between 554 m and 4,984 m depending on whether spoil-site realignments succeed) presented in Appendix D07 do not reflect the actual scale of stream aquatic habitat disturbed by the Project. In total, approximately 5.7 km of perennial stream and 5 km of intermittent stream are intersected by the Indicative Alignment including spoil sites, totalling approximately 11 km. This total affected length is the more meaningful metric for assessing effects on fish communities, freshwater invertebrates, riparian vegetation, and stream-associated species.

155. The problem with framing effects at the catchment scale is most clearly illustrated by the assessment's own figures. A best-case net loss of 554 m and a worst-case of 4,984 m represent a ninefold difference in permanent stream habitat destroyed. Despite this, the assessment concludes that effects on the catchment will be less than minor under either scenario. When both figures are expressed as a proportion of total catchment stream length, both appear numerically small. But the catchment is not the ecological unit being lost since a species inhabiting a specific stream may not directly benefit from stream habitat elsewhere in the catchment.

156. Stream-dependent species experience ecological effects at the stream and population level. A fish assemblage relying on a specific perennial stream for spawning and refuge is not buffered by further stream kilometres elsewhere in the catchment. The same applies to Hochstetter's frog occupying high-density headwater habitat. The loss of 4,984 m of stream represents a substantially different ecological outcome than the loss of 554 m. This difference would be clearly apparent if effects were assessed at the stream level rather than diluted across a catchment-scale.

157. A separate concern relates to the physical character of the affected streams. The freshwater assessment describes them as falling downstream in steps through small waterfalls and cascades — a step-cascade morphology characteristic of high-gradient hill-country streams with coarse bedload, bedrock outcrops, and large woody debris providing structural complexity. RDL is not confident that these hydraulic and geomorphic characteristics can be replicated in a realigned channel constructed over compacted fill at a spoil site. The hydrology of the original watercourse depends on local catchment processes, groundwater inputs, and hillslope drainage that will not apply to a channel on fill.

158. The international stream restoration literature supports this concern. A synthesis of 345 stream restoration projects found few strong conclusions about ecological effectiveness due to limited monitoring and short study periods (Roni et al. 2008). Bernhardt & Palmer (2011) concluded that channel reconfiguration projects were finding little evidence for measurable ecological improvement. Palmer et al. (2014) found ecological improvements in only 7% of channel reconfiguration projects reviewed. For Hochstetter's frog specifically, the consequences are direct: the species requires stacked rock, bedrock crevice, weathered woody debris, and stable low-sediment flow regimes. Larvae exhibit strong site fidelity and are highly sensitive to sedimentation. A newly constructed realigned channel will most likely lack this structural complexity and generate elevated fine sediment disturbance in its early phase, creating poor habitat conditions for the species.

159. The assessment acknowledges significant uncertainty about whether realigned streams at spoil sites will retain sufficient hydrology and proposes a trial-and-monitor approach before proceeding with further realignments. This does not constitute an adequate basis for granting consent now in RDL's opinion. A trial-and-monitor approach defers the fundamental question of whether this mitigation mechanism works to after the point at which clearance and earthworks have already commenced. If the trial fails, the habitat is already gone. RDL's recommended maximum clearance limit for moderate-quality Hochstetter's frog stream habitat (2.6 km of the 10.3 km total) is set out in Appendix 2, based on the proportion of that habitat that could potentially be bridged or culverted with fish passage maintained, while leaving the majority undisturbed.

4.5 Natural Inland Wetlands

160. The catchment-specific affected wetland figures reported in Appendix D07 may be significant and are likely not adequately characterised in the assessment. "Background water quality monitoring across the Waihoihoi and Wairau catchments documents functioning freshwater systems with characteristic invertebrate and algal communities prior to any Project-related disturbance (Ballinger 2012), providing further context for the significance of the proportional wetland losses

reported below. Impacts/losses in the Waihoihoi catchment (22.6% of catchment wetland area) and the Wairau catchment (30.7%) cannot be characterised as minor or negligible in the context of the loss of wetlands both nationally, where wetlands now cover less than 10% of their historical range (Ausseil et al. 2011), and locally, where approximately 95% of Northland's historical wetland extent has been lost (Leathwick 2018; NRC 2016). A loss of nearly one-third of the Wairau catchment's wetland area is likely to be a significant effect if no mitigation actions are proposed.

161. The recommendation that exotic pasture natural inland wetlands receive no mitigation is essentially treating these wetlands as not being natural inland wetlands as defined by the NPS-FW, which is not correct (Ministry for the Environment 2022), and as having no ecological value, which is also not correct. There is no apparent reason why NZTA could not replace these low-value wetlands with indigenous wetland vegetation, delivering a biodiversity gain rather than a loss by default, as part of a package of mitigation/offset measures.

162. Wetlands 24, 8, and 16 are the three natural inland wetlands within the Proposed Designation assessed as having High ecological value. They collectively represent the most ecologically significant wetland habitat within the Proposed Designation, and the primary basis for effects on Cryptic Marsh Bird Species including Australasian bittern, spotless crake, and North Island fernbird.

163. For Wetland 24, the application proposes a 2 ha replacement wetland comprising at least 1 ha of raupō in large solid stands, 1 ha of sedgeland and rushland edges, and a 20 m inland riparian buffer. This is the only named wetland with a specific offset proposal. Two indicative offset sites have been identified:

(a) a lower bowl of approximately 4 ha at the intersection of SH1 and SH12, and

(b) the Brynderwyn Farm Pond SNA (Q08/066).

164. Neither site has been confirmed as achievable. No geotechnical, hydrological, or vegetation assessment has been provided for the SH1/SH12 intersection to confirm it can support raupō establishment, and as noted in Section 5.3, this site is not mapped as a wetland by NRC. The Q08/066 site has previously received fencing, planting and covenant protection that must be discounted from any offset calculation. The replacement ratio itself is also inappropriate as addressed in Section 5.4, and Appendix 1.

165. For Wetlands 8 and 16, no specific offset sites have been identified. Both are covered under the generic replacement formula in Condition RC40 only if the final alignment clips them, with no named offset sites, no ecological suitability assessments, and no design specifications before the Panel.

166. As it currently stands, none of the three wetlands (Wetlands 24, 8, 16) has a confirmed, ecologically defensible offset pathway before the Panel. Two offset sites

are proposed for Wetland 24 yet neither of them have been appropriately assessed. Wetlands 8 and 16 have no proposed offset sites at all. Across all three, the same fundamental constraint applies: newly created raupō wetland cannot provide equivalent functional habitat for Australasian bittern, spotless crake, or North Island fernbird for at least five to ten years following establishment (Williams 2024; Zedler & Kercher 2005), and there is no confirmed evidence the proposed offset sites can even achieve raupō establishment. Avoidance rather than offsetting is the appropriate primary response for all three wetlands. The case for replacement rather than avoidance has not been made by the application. All three wetlands are included in the Ecological Avoidance Areas set out in Appendix 1 of this review.

167. A cross-disciplinary concern also warrants noting. The freshwater assessment assigns ecological values to streams based on SEV scoring, MCI indices, and fish eDNA, which are all freshwater metrics. But the same streams in Zone 2 are confirmed by the terrestrial assessment to support Hochstetter's frog at high densities, and the bat assessment confirms long-tailed bats foraging along the same riparian corridors. Neither of those values registers in the freshwater effects assessment. A stream assessed as Moderate value under freshwater metrics alone may simultaneously represent critical frog habitat and a primary bat foraging corridor — a combination that would warrant a higher ecological value if assessed holistically. The freshwater effects of the Project are therefore systematically understated, because the freshwater assessment is not designed to capture the full ecological significance of the features it is evaluating.

168. This tendency to reach conclusions that diverge from independent assessments extends beyond cross-disciplinary comparisons. Wetland Q08/066 is mapped as a natural inland wetland by the Northland Regional Council, is formally recognised as part of a Protected Natural Area (PNA) and Significant Natural Area (SNA) (Lux & Beadel 2006) and is subject to a conservation covenant granted by Kaipara District Council specifically by virtue of its status as a wetland, to be maintained as such in perpetuity. Despite this, the freshwater assessment concludes that the gully arms of Q08/066 are likely exempt from qualifying as a natural inland wetland under the NPS-FM. Where a wetland has been independently mapped by the regional authority, formally scheduled as a significant natural area, and legally protected through covenant on the basis of its wetland character, that is a strong convergence of evidence. A conclusion that contradicts all three of those independent determinations requires rigorous justification but none is provided.

169. Taken alongside the cross-disciplinary value discrepancies identified above, this represents a broader pattern in the freshwater assessment of reaching conclusions on ecological classification and significance that are at odds with other authoritative sources. That pattern gives the Panel reason to treat the freshwater

assessment's conclusions on feature classification and ecological value with caution.

4.6 Diversion of the Waihoihoi River Meander Loop

170. The Indicative Alignment requires the diversion of a meander loop of the Waihoihoi River in the Ahuroa lowland. The ecological significance of this diversion has not been adequately addressed in the freshwater ecology assessment. River meanders provide ecologically distinct habitat not present in straight or modified channel reaches: lateral erosion bars, point bar deposits, variation in flow velocity across the bend, and associated pool and riffle sequences. These structural features collectively support habitat diversity for freshwater fish, macroinvertebrates, and riparian species. In a lowland agricultural landscape where the Waihoihoi River has already been subject to modification, the retention of existing meander features holds disproportionate ecological significance.

171. The realignment of a natural meander into a straightened channel will result in increased flow velocity, reduced pool habitat, loss of lateral connectivity with floodplain features, and a reduction in channel bed diversity. Downstream effects — including increased bedload transport and altered sediment dynamics — may affect reaches and fish habitat well beyond the immediate Project footprint. These effects are not assessed in Appendix D07. This means that there is an entire category of adverse ecological impact in respect of which the Panel has no evidence. The meander diversion should receive specific ecological assessment independent of the general stream loss accounting.

4.7 Groundwater Drawdown

172. The WSP groundwater assessment (Appendix D12) predicts potentially extensive drawdown at four large cut areas, with very high drawdown predicted at several locations proximate to perennial streams and natural inland wetlands. The freshwater ecology assessment acknowledges these predictions but concludes that actual effects will be subtle and difficult to measure, on the basis of the author's personal experience monitoring groundwater behaviour at Transmission Gully and Mackays to Peka Peka over 15 years. In RDL's view, that is not an adequate methodological basis for dismissing modelled site-specific predictions. The Kapiti Coast foothills are geologically distinct from the Brynderwyn Hills — the former is predominantly greywacke and sedimentary sequences, the latter argillite, greywacke, and clay-rich sandstone with significantly different groundwater storage capacity, permeability, and catchment response characteristics. What was observed at a different site in a different geological context does not constitute evidence that modelled drawdown at this site will not eventuate. No site-specific hydrogeological analysis is provided to support that conclusion.

173. This is not an isolated methodological choice. The same reasoning — substituting monitoring experience from Transmission Gully and Mackays to Peka Peka for site-specific evidence — is applied elsewhere in Appendix D07 to support the conclusion that stream realignment will achieve ecological equivalence in Northland hill-country conditions. In both cases, an assertion is made about ecological outcomes at this site, in this geology, based on what was observed somewhere else. Where an assessment repeatedly relies on analogies to unrelated projects in place of site-specific analysis, the Panel should treat the resulting conclusions with caution, particularly where those conclusions contradict modelled predictions or dismiss effects that other technical assessments identify as potentially significant.

5.0 Critical Commentary: Assessment of Effects on Avifauna Ecology (Appendix D08)

5.1 Survey Methodology

174. The field survey effort underlying Appendix D08 is inadequate for an application of this scale and ecological significance. The avifauna survey consisted of 5MBCs conducted opportunistically at 12 locations alongside terrestrial surveys, incidental observations, and a single site inspection on 29 October 2025. This falls well short of what would be expected for a major infrastructure project traversing multiple SNAs, freshwater wetlands of high ecological value, and known habitat for cryptic and Nationally Critical species.

175. For projects affecting potential habitat of Australasian bittern — classified as Threatened - Nationally Critical and with a national population estimated at fewer than 1,000 individuals — targeted detection surveys are standard and necessary to establish presence and absence. The internationally recognised survey protocol for bittern is boom count surveys conducted at dawn or dusk during the breeding season (August to December) (O'Donnell et al. 2013). No boom surveys were conducted for this assessment, which means whether bittern currently use Wetland 24, Wetland 8, or any other wetland within the Proposed Designation as breeding habitat remains unresolved. The absence of confirmed records within the Proposed Designation should not be interpreted as confirmed absence, and this distinction is critical.

176. No dedicated wetland bird transects, spotlighting, or passive audio recording were employed. Fernbird and spotless crake detections from 5MBCs at locations adjacent to freshwater habitats are unlikely to capture the full extent of use of riparian and wetland vegetation by these species, given their cryptic nature and reliance on specific calling conditions. Spotless crake (At Risk – Declining) is strongly underdetected by standard 5MBCs, particularly when those counts are conducted

opportunistically alongside terrestrial rather than aquatic survey effort. Surveying for cryptic species such as these often requires the use of standardized playbacks to confirm presence or absence, and an indication of abundance.

177. The 5MBCs were conducted at only 12 locations across a 17.6 km linear corridor passing through multiple distinct habitat types including native forest, riparian scrub, pine plantation, and wetland complexes. This spatial coverage is insufficient to characterise avifauna communities across the Proposed Designation, and the opportunistic nature of the counts means the locations were not selected on the basis of avifauna habitat value alone. A single five-minute count at each location is likely to underrepresent the species using that habitat, particularly cryptic and low-density species. The assessment does not acknowledge this limitation or qualify its conclusions to account for it.

178. The cumulative effect of these survey limitations is that the avifauna baseline for this Project is fundamentally incomplete. If one is unsure about the presence, distribution, and habitat use of these species within the Proposed Designation, one cannot accurately determine the nature and extent of the Project's adverse effects on them, or whether the proposed mitigation is proportionate to what is actually at risk. The survey data before the Panel is insufficient to support the conclusions drawn from it.

5.2 North Island Brown Kiwi

179. The assessment of kiwi effects relies on a 1997 PNAP survey record of kiwi probe holes and scat at the Pukeareinga Scenic Reserve, and a 2020 national distribution model. More recent and site-specific data exists and was not incorporated into the assessment. A 2024 publicly available kiwi survey by the Piroa Conservation Trust confirmed kiwi detections approximately 100 m east of the current SH1 alignment within the broader Brynderwyn Hills area (Searchfield, 2024). Additionally, the 2024 WSP compliance reporting for the Brynderwyn Hills Recovery Project — a project whose survey area falls substantially within the current Proposed Designation — recorded a female kiwi detected within the works area in 2023 (WSP, 2024b).

180. In response to this uncertainty, WSP developed a kiwi management protocol as part of that project's Avifauna Management Plan, which required daily pre-clearance checks for kiwi prior to vegetation clearance commencing throughout construction. The avifauna assessment for the current Project does not reference this precedent, does not incorporate the Piroa Trust 2024 survey data, and does not propose any kiwi-specific management measures. Given that WSP's own recovery project recognised that "*occasional kiwi presence left uncertainty around the risk of harm posed by the project*" and implemented daily pre-clearance checks in response, the absence of equivalent provisions in Appendix D08 for a project at a scale substantially larger is concerning.

181. Standard protocol for construction projects where kiwi may be present requires the use of a contracted, certified kiwi dog handler for pre-clearance searches, immediate cessation of works if a kiwi or active burrow is identified, and notification to DOC (DOC n.d.; DOC 2020). None of this is required under the current proposed Avifauna Management Plan conditions (D35–D37), which make no specific reference to kiwi. The AMP conditions and any Wildlife Act authorisation granted for this Project must be revised to include kiwi-specific pre-clearance survey requirements, encounter protocols, and stop-work obligations.

5.3 Australasian Bittern & Wetland Assessment

182. Wetland 24 is the most ecologically significant wetland within the Indicative Alignment: a raupō-dominated natural inland wetland of approximately 3 ha assessed as High value, with approximately 1 ha to be lost under the Indicative Alignment. Despite its clear suitability as bittern habitat and despite confirmed bittern presence within 5 km of the Proposed Designation, no targeted surveys were conducted to determine whether bittern use this wetland. The assessment defaults to "potential" use. For a Nationally Critical species, potential must be tested through appropriate survey effort before effects can be characterised.

183. Australasian bittern are known to use landscape-scale networks of wetlands for foraging and breeding. The network within and surrounding the Proposed Designation — including Wetlands 8, 13, 14, 16, and 24 — may collectively support individual bittern across the landscape. The assessment does not evaluate landscape connectivity for bittern, despite describing the species in the same report as using "a network of wetlands across the landscape" (Williams 2024). A Nationally Critical species that moves across wetland networks requires a landscape-scale assessment, not a wetland-by-wetland appraisal.

184. The leading cause of young bittern mortality in New Zealand is vehicle strike (Williams, Jarman & Battley 2025). Bittern forage in roadside drains and along vegetated margins at night. The primary proposed replacement wetland is located at the corner of SH1 and SH12, bounded on at least two sides by existing state highway infrastructure. Concluding that post-mitigation effects are Low while establishing bittern habitat at a major road junction directly contradicts the known biology of the species. This is not like-for-like replacement for Wetland 24, which sits more than 800 m from existing roading infrastructure.

185. The SH1/SH12 offset site is not identified as a wetland on the Northland Regional Council's 2026 wetland layer and is not connected to an existing wetland system. An offset for the loss of a mapped natural inland wetland cannot credibly be delivered at a location not independently recognised as wetland by the relevant regional authority.

186. The alternative Q08/066 offset site is mapped as a wetland by NRC and is located away from the highway corridor, making it the more appropriate of the two proposed locations. However, Q08/066 is subject to an existing conservation covenant (Resource Consent RM200222, Kaipara District Council) and has received fencing and indigenous planting within the last five years. The ecological trajectory of this site is already partially attributable to prior investment. Any gains from further enhancement works must be discounted accordingly when calculating net offsetting value — gains that would have occurred anyway without the Project cannot count as valid offset.

187. Taken together, the Panel is left without a credible offset pathway for Wetland 24. Bittern presence has not been confirmed or ruled out through appropriate survey. The landscape-scale network value of the wetland complex has not been assessed. The primary proposed offset site is not a mapped wetland and sits immediately adjacent to state highway infrastructure, which are conditions that contradict the known ecology of the species the offset is intended to protect. The secondary site carries prior investment that must be discounted. No confirmed, ecologically sound replacement wetland exists before the Panel at the time of this application. The Panel cannot be satisfied that the effects on Wetland 24 have been adequately characterised, or that the proposed mitigation is proportionate to what is at risk.

5.4 Mitigation Ratios, Timing & Adequacy

188. The recommended mitigation for avifauna habitat loss is confined to North Island kākā and the three cryptic marshbird species: Australasian bittern, North Island fernbird, and spotless crake. No offsetting or mitigation measures are proposed for any other avifauna species affected by the Project, including forest birds such as tūī (*Prosthemadera novaeseelandiae*), bellbird (*Anthornis melanura*), kererū (*Hemiphaga novaeseelandiae*), tomtit (*Petroica macrocephala toitoi*), grey warbler (*Gerygone igata*), and silvereye (*Zosterops lateralis*) that will lose approximately 37 ha of native forest and scrubland habitat and 63 ha of exotic pine forest habitat under the Indicative Alignment.

189. The proposed replacement of 2.44 ha of wetland habitat at a 1:1 ratio does not adequately account for the time required for a newly created raupō wetland to develop the ecological conditions on which cryptic marshbird species depend. Australasian bittern require structurally mature, dense raupō stands, appropriate and stable water levels, and an established aquatic prey base — none of which are present in a newly created wetland (Williams 2024). North Island fernbird are extremely weak flyers and highly reluctant to leave existing cover, which substantially limits their capacity to colonise new wetland habitat even where that habitat is structurally suitable (Watts et al. 2012).

190. A newly created raupō wetland is unlikely to provide equivalent functional habitat for these species until the planted vegetation has reached structural maturity and the aquatic prey community has developed. This is a process that typically takes well in excess of five years, with the establishment of self-sustaining breeding populations requiring considerably longer and contingent on sustained predator control and active habitat management (Williams 2024; Zedler & Kercher 2005). A 1:1 replacement ratio on a deferred timeline, at a site immediately adjacent to existing state highway infrastructure, does not constitute meaningful mitigation for the loss of an established, functionally mature, and roadside-remote wetland of the size and quality of Wetland 24.

191. The peer-reviewed offsetting literature supports a ratio well above 1:1 in these circumstances, and for two separate reasons.

(a) First, multiplier-based offset frameworks are specifically designed to correct for exactly the delayed and uncertain gain described above, with reviews of applied offset multipliers internationally finding ratios typically in the range of 2:1 to 6:1 for restoration-based offsets involving time lag and delivery risk (e.g. Laitila, Moilanen & Pouzols 2014).

(b) Second, and independently of time lag, the Australasian bittern's specific reliance on structurally mature raupō stands surrounded by deep water for nesting (O'Donnell 2011), and its recovery's dependence on sustained predator control, water level management and reedbed condition rather than vegetation establishment alone (Williams 2024; O'Donnell & Robertson 2016), means a site immediately adjacent to state highway infrastructure is unlikely to reach the same realised habitat value per hectare as the wetland it replaces, even once structurally mature.

192. On this basis, RDL's primary position is that Wetlands 24, 8, and 16 should be avoided, as set out in Appendix 1 of this review. In the event that avoidance of any of these wetlands cannot be demonstrated through detailed design, a minimum offset ratio of 3:1 should apply, increasing to 5:1 where the replacement site carries additional delivery risk such as road proximity or unconfirmed hydrology. This is the fallback position only as the case for replacement rather than avoidance has not been made by the application for any of the three wetlands.

193. A timing issue applies that is absent from both Appendix D08 and the proposed consent conditions. Fernbird, spotless crake, and other cryptic marshbirds require established wetland vegetation — specifically emergent and dense low-shrub cover — to colonise new habitat. Establishing replacement wetland habitat after the original wetland is cleared creates a temporal gap during which no suitable habitat exists within the affected landscape, exposing any remaining local populations to increased pressure at a critical period. Best practice for cryptic marshbird mitigation requires replacement habitat to be established and demonstrably colonised before

the original habitat is disturbed. This sequencing is not proposed in the mitigation framework and is not required under any of the proposed consent conditions.

194. The proposed replacement wetland locations have not been confirmed at the time of this application. Selection of appropriate replacement wetland sites for a Nationally Critical species requires specialist ecological input, landscape-scale habitat connectivity assessment, and confirmation that hydrological and substrate conditions can support the target vegetation structure (Williams 2024). None of this has been demonstrated. The conclusion that "*outcome-based criteria will ensure effects are adequately managed regardless of the final design*" (D08 p.5) is circular and flawed: outcome-based criteria provide no assurance of the claimed ecological outcomes in the absence of confirmed mitigation sites and a credible implementation pathway.

6.0 Critical Commentary: Volume B – RMA Approvals (Ecology Provisions)

195. Volume B – RMA Approvals provides the statutory planning framework for the Project's resource consents and designation. From an ecology perspective, the following issues should be considered.

196. Volume B acknowledges that the NPS-IB objective of no overall net loss of indigenous biodiversity is only partially met by this Project. The justification relies on the specified infrastructure exemptions under Clause 3.11 of the NPS-IB. Regardless of the legal pathway available, no Biodiversity Offset Accounting Model or equivalent biodiversity accounting instrument has been provided to demonstrate the overall biodiversity position of the Project. This is a direct consequence of the unconfirmed alignment because the final footprint is unknown, actual losses cannot be quantified with confidence, and therefore what is required to offset or compensate those losses cannot be properly calculated. The Panel is being asked to accept that the mitigation and offset package is adequate without any quantitative accounting to support that claim. That is not an adequate basis for granting consent in RDL's opinion.

197. Proposed Condition D28 specifies mitigation planting at 1:1 for areas of Very High indigenous vegetation lost. This ratio is inadequate for two reasons:

a) First, the ratio itself does not reflect best practice. Very High value indigenous vegetation such as mature podocarp-broadleaf or kahikatea forest cannot be ecologically replaced on a 1:1 basis by revegetation planting within any meaningful timeframe. The Transmission Gully Board of Inquiry required 534 ha of restoration for a project where approximately 200 ha of native vegetation was directly affected, resulting in a de facto ratio of

approximately 2.7:1 and expert evidence before that inquiry identified ratios greater than 1:1 as necessary, with a 3x ratio considered appropriate for wetland ecosystems (Myers, BOI evidence, NSP000005). The Ecological Effects Mitigation Table v2 has since adopted a ratio of three hectares planted for every hectare lost for moderate to high value vegetation (Section 13.0), which RDL considers the minimum acceptable for those classes. Very High value vegetation requires a higher ratio, as replacement planting may take decades to a century to reach equivalent ecological function. Offset multipliers applied to restoration-based offsets with long time lags and delivery risk typically range from 2:1 to 6:1 (Laitila, Moilanen & Pouzols 2014). A minimum of 5:1 for Very High value vegetation, at the upper end of that range, reflects the lag times involved. Features in Appendix 1 are not eligible for offset at any ratio. Where the final alignment remains unconfirmed, a BOAM should be required to calculate the offset obligation once the footprint is known and that calculation should inform the conditions before consent is granted, not after.

b) Second, the ratio is applied to a total area figure that itself obscures what is actually being lost. As discussed in Section 3.1, the effects assessment groups vegetation into broad value classes and reports losses at the class level — hectares of Very High, High, Moderate. But not all Very High vegetation polygons are ecologically equivalent. Some represent ecosystem types that are nationally rare, irreplaceable on any practical timescale, and whose loss cannot be addressed through revegetation at any ratio; the kahikatea forest remnants at the Waipu interchange being the clearest example. Others, while legitimately Very High value, are more widespread and more amenable to offset. By applying a single ratio across all Very High value vegetation irrespective of ecosystem type, Condition D28 treats irreplaceable and recoverable values as equivalent. The consequence is that the offset obligation for the most ecologically significant losses is significantly understated, regardless of the ratio applied. A polygon-specific offset framework, distinguishing between ecosystem types by rarity and replaceability, is required before a ratio condition can be considered adequate.

198. Proposed Condition D29 establishes requirements for mitigation planting: it must be undertaken within two years of the loss, planted at appropriate spacing in suitable locations, eco-sourced from the same or neighbouring ecological district, and of suitable species composition. While these requirements are broadly appropriate, they are insufficient to ensure mitigation planting achieves its intended ecological function. There is no requirement that recipient sites be assessed for ecological suitability for the target vegetation type prior to planting, no requirement that weed composition and competitive pressure be addressed before establishment begins,

and no success criterion against which to measure whether the planting has achieved the intended ecological outcome. These are all standard, best practice conditions. Condition D29 defines process, not outcome.

199. To date, a draft ecological management plan (rev A, 13 July 2026) has been prepared and released for review that outlines the Hochstetter's Frog MP, lizard MP and invertebrate MP. The draft proposed designation conditions (13 July 2026) outlines conditions for indigenous vegetation, bats and avifauna and the draft proposed regional resource conditions (13 July 2026) outline the conditions for wetlands and watercourse realignment and culvert design. The overall position of Volume B – RMA Approvals that management plans will be prepared once the final design is known and submitted to the relevant consent authority 20 working days before Project Works begin is a significant limitation on the ability to assess the adequacy of the proposed mitigation package. Twenty working days is insufficient notice for meaningful review by affected parties or iwi. All management plans of this significance (not just ecology addressing frogs, lizards and invertebrates) would ordinarily be provided in draft form so that there can be confidence that the management methods are feasible and will, at a high level, achieve objectives set in the conditions and the purpose of the Plan.

200. The aggregate characterisation of freshwater effects in Volume B – RMA Approvals as "Negligible to No More than Minor" is not consistent with the freshwater ecology assessment itself, which acknowledges High residual effects for Wetland 24, worst-case stream losses of 4,984 m, catchment wetland losses of 22.6% and 30.7% in two catchments, and only partial consistency with NPS-FM Policies 6 and 7. The effects summary in Volume B should accurately reflect the upper range of assessed effects across all ecological values.

7.0 Critical Commentary: Volume C – Wildlife Act Approvals

201. The scope of the Wildlife Act approvals application does not include bats or avifauna at risk of incidental killing despite many of these species being fully protected under the Wildlife Act 1953 and despite acknowledging there is potential for incidental death to occur. NZTA's decision to exclude bats from the formal WAA scope and to manage bat effects through the proposed Bat Roost Protocol (Conditions D32–D34) means there is no formal Wildlife Act authorisation for bat disturbance or mortality during vegetation clearance. The Bat Roost Protocol conditions do not require the level of monitoring, reporting, or adaptive management that a Wildlife Act authorisation would typically entail. Given the Very High unmitigated level of effect assessed for bat mortality risk during vegetation removal, and the extent of habitat clearance that will be undertaken, the basis for excluding bats from the Wildlife Act approval scope is not clearly articulated and should be addressed.

202. As noted in Section 5.2, kiwi are confirmed present within and adjacent to the Proposed Designation. NZTA is not seeking any Wildlife Act authorisation for kiwi incidental killing, encounter, handling, or relocation during construction. Again the size of the Project and the known presence of kiwi mean all of these outcomes are realistic. The Avifauna Management Plan proposed under Condition D37 is intended to address kiwi management, but it has not been prepared, is not subject to prior approval, and does not constitute a Wildlife Act authorisation. The absence of either specific Wildlife Act cover or confirmed consent conditions for kiwi management represents a gap in the application that should be remedied. The standard protocol for kiwi management on vegetation clearance projects including the requirement for a contracted, certified kiwi dog handler to conduct pre-clearance searches and to manage any kiwi or active burrows encountered is discussed further in Section 5.2 of this review.

203. Release sites for lizards, frogs, and invertebrates have not been confirmed at the time of this application. Volume C states that suitable habitat will be identified or created prior to transfer and relocation. For Hochstetter's frog in particular, the suitability of the release site is critical: the species is stream-dependent, has specific microhabitat requirements, demonstrates strong site fidelity, and moves poorly across terrestrial environments. The assumption that suitable release habitat can be identified and prepared at the time of construction is not an adequate basis for a Wildlife Act approval. Suitable release sites and habitat preparation plans should be confirmed before consent is granted.

204. As discussed in Section 3.2, there is no published evidence that Hochstetter's frog translocation has produced self-sustaining populations or is effective as a conservation tool. Approving Wildlife Act authorisations for Hochstetter's frog translocation in this context is not an adequate ecological basis for concluding that effects will be managed to an acceptable level.

205. Volume C does not require formal baseline population surveys for any of the target species prior to the commencement of salvage operations. Without pre-salvage population data, the effectiveness of relocation cannot be monitored or evaluated. Success criteria for lizard and frog relocations including minimum population detection rates at release sites and specified post-relocation survey intervals should be required as conditions of the Wildlife Act approval. An adaptive management framework for post-relocation monitoring, with specified triggers for remedial action, should be a condition.

8.0 Critical Commentary: Draft Consent Conditions

206. The draft conditions still contain deficiencies across each area of ecological significance.

207. A foundational issue underlies many of the deficiencies discussed throughout this report. The draft conditions have been written to manage ecological effects within a broad Proposed Designation many times wider than the actual road footprint without a confirmed alignment, confirmed spoil site locations, or confirmed construction methodology. This means the conditions are not calibrated to the effects of a specific design; they are calibrated to a maximum possible clearance scenario, within which the final project could take many different forms.

208. The ecological consequence is that conditions cannot be set with reference to the actual features that will be affected such as the specific vegetation polygons, wetlands, streams, and species populations that sit within the alignment. They can only be set with reference to total value classes across the entire Proposed Designation. Where the conditions prove inadequate on their own terms through insufficient ratios, unenforceable standards, or deferred obligations then those two failures compound one another. The Proposed Designation boundary defines what can be cleared, but imposes no ecological constraint on which specific areas within that envelope are cleared, in what order, or at all. The most ecologically sensitive features within the Proposed Designation are accordingly left without site-specific protection.

209. RDL's response to this structural deficiency is set out in Appendices 1, 2, and 3 of this review, which identify specific avoidance areas, maximum clearance limits by habitat type, and critical species protection requirements that, if incorporated into the consent conditions, would provide the site-specific ecological constraints that the current Proposed Designation envelope approach lacks.

210. Regarding indigenous vegetation, Condition D28's 1:1 ratio for Existing Indigenous Vegetation and five-year maintenance period under D31 are inadequate for the reasons addressed in Sections 3.1 and 14.4 of this review. Very High value indigenous vegetation such as mature kauri-podocarp-broadleaved forest cannot be meaningfully replaced at 1:1 by revegetation planting within any ecologically relevant timeframe. The absence of a BOAM, addressed in Sections 6 and 14, means the no net loss obligation cannot be demonstrated quantitatively. Condition D29 defines process requirements for where and how planting must occur but prescribes no ecological outcome targets. The five-year maintenance period under Condition D31 is insufficient for the reasons discussed in Sections 3.4 and 6.

211. RDL also notes that Volume B of the application records the 1:1 vegetation replacement ratio as reflecting the recommendation of Mr Simon Chapman, the applicant's own terrestrial ecology expert. A review of Appendix D06 confirms that Mr Chapman did not recommend a 1:1 ratio for any planting in his report. The misattribution of an inadequate ratio to the applicant's own expert, in the primary

application document, is a matter the Panel should be aware of when weighing the overall reliability of the effects summary in Volume B.

212. Regarding bats, Conditions D32 and D32A implement the DOC Bat Roost Protocol as operational procedure, which is the procedural minimum but does not go far enough. No Wildlife Act authorisation for bats is sought or required under the conditions, no post-clearance population-level monitoring is specified, and there is no requirement to assess bat movement across the road corridor during operation. The Very High unmitigated risk of bat mortality during vegetation clearance, acknowledged in Appendix D06, is managed only by a pre-clearance protocol report submitted to Council for information rather than for approval. The conditions do not require canopy connectivity measures to maintain bat flight lines across the new highway corridor.

213. Regarding avifauna, the AMP required by Condition D35 contains no kiwi-specific provisions. North Island brown kiwi are confirmed within the Proposed Designation and the absence of any pre-clearance requirement for kiwi, encounter protocols, stop-works provisions, or certification kiwi handler protocols is a direct gap identified in Section 5.2 of this review. The AMP prescribes pre-construction surveys only for active nests; it does not require targeted boom count surveys for Australasian bittern, nor dedicated wetland bird surveys for spotless crake or fernbird prior to clearance of wetland and riparian habitat. These omissions mean the AMP cannot deliver the pre-construction baseline data necessary to characterise effects on the Nationally Critical species most at risk from the Project.

214. Regarding freshwater, the SEV-based compensation formula in Condition RC35 goes further than a simple length-based loss accounting approach, but it applies only to perennial watercourse loss and does not address the loss of intermittent stream reaches, which collectively represent a substantial fraction of total stream habitat affected. The formula also operates independently of the ecological value of the species the stream supports: a stream carrying high-density Hochstetter's frog populations receives the same compensation framework as a degraded pasture drain. No traditional physical fish survey is required before stream works commence, meaning there is no population-level baseline from which to assess fish translocation requirements or verify compliance outcomes. The realignment design requirements in RC37 are expressed as aspirational outcomes ("as far as practicable") rather than enforceable standards, and there are no success criteria against which post-construction stream condition must be measured.

215. The wetland offset ratios in Condition RC40 go further than the 1:1 ratio proposed in Appendix D07 but remain insufficient. However, the setback distance between replacement wetland and the operational carriageway for Cryptic Marsh Bird Species is left entirely to a Suitably Qualified Person's determination at Condition

RC43(c)(vi) and RC44(c)(ii), without any minimum specified. Given that vehicle strike is among the most commonly recorded causes of Australasian bittern mortality and that the primary driver of bittern habitat value includes distance from road infrastructure, the absence of a specified minimum setback is a clear shortcoming. The definition of Wetland Establishment at Condition RC49 requires only 80% vegetation cover, no persistent weeds, and typical hydrology but it does not require confirmed occupancy or breeding activity by any Cryptic Marsh Bird Species. A wetland that meets these criteria is not necessarily functional bittern or fernbird habitat.

9.0 Critical Commentary: Updated Designation Conditions

9.1 CVMP as an Ecology Management Tool

216. The CVMP conditions provide for Patuharakeke involvement in ecological management which RDL supports. However, looking at the specific ecological elements included, RDL notes that it does not specifically address taonga species management, noting that the CIA shows that taonga species overlap with the most threatened and therefore high value species from an ecological perspective - the Hochstetter's frog, long-tailed bat, kiwi, long-fin eel, and lizard species identified in the CIA as taonga fauna at risk.

217. The Patuharakeke Values Management Plan recommended in the CIA included two specific elements that have not been provided for in NZTA's conditions: a Habitat Management Plan and prior offset sequencing before any habitat removal commences. From an ecological perspective, both are warranted independently of their cultural basis.

218. A Habitat Management Plan would require NZTA to identify and map the specific habitats of ecological significance within the Proposed Designation before works begin — the stream reaches, wetland features, and vegetation communities that support the threatened species identified in both the CIA and the ecological assessments. That spatial mapping does not currently exist in the application. Without it, the most ecologically sensitive features within the Proposed Designation have no specific protection beyond the general Avoid Areas, and the conditions cannot be calibrated to what is actually at risk.

219. Prior offset sequencing is also ecologically justified. Replacement wetland habitat must be established and colonised before original wetland is cleared, otherwise cryptic marshbirds have nowhere to go during the gap. Hochstetter's frog release sites must be prepared and assessed as suitable before salvage begins. Vegetation offsets accrue a biodiversity debt from the moment of clearance that compounds

the longer the replacement takes to establish. The DOC Good Practice Biodiversity Offsetting Guidance is clear that offset actions should be in place before or at the time of the impact they are intended to address. Neither the CVMP conditions nor the ecological conditions provide for this. Both a Habitat Management Plan and prior offset sequencing should be required as consent conditions.

9.2 Unchanged Ecological Conditions

220. The ecology conditions (D27–D37) remain generally unchanged from the June 2026 version. All of the deficiencies identified in Section 8 of this review apply equally to the July 2026 version: the 1:1 vegetation replacement ratio without temporal discounting, the five-year maintenance period, the absence of kiwi-specific AMP provisions, the absence of mandatory bittern boom surveys, and the absence of and the absence of independent approval of the AMP and Landscape Concept Plan before certification

221. The definition of "Existing Indigenous Vegetation" that determines what vegetation attracts the 1:1 mitigation obligation is referenced to in a map in Appendix C but not provided in the conditions document before the Panel. The precise extent of the mitigation obligation under Condition D27 cannot be assessed without knowing the geographic scope of Existing Indigenous Vegetation as mapped. The Panel should require Appendix C to be provided and assessed before any conditions are finalised.

222. The landscape conditions (D23(a)) require replacement planting of kahikatea and tōtara "if the alignment impacts the kahikatea/tōtara stands." As noted in Section 3.6 of this review, the two kahikatea remnants at the Waipu interchange (V1_74 and V1_83) are very likely to be directly impacted by the dual roundabout layout. The conditional framing of this provision — "if the alignment impacts" — is appropriate given the indicative alignment, but it means the protection is entirely dependent on detailed design confirmation. If the Panel grants consent without confirming the final alignment through these remnants, the replacement planting obligation may be triggered only after consent is granted and clearance has commenced, providing no practical protection for the remnants during the critical design decision window.

10.0 Critical Commentary: Draft Ecological Management Plan

10.1 Hochstetter's frog - Salvage Methodology Limitations

223. The EMP explicitly acknowledges that survey 2.25, which is one of the highest density frog transects recorded with 60 frogs in 25 m, was abandoned because the stream was unsafe to survey beyond 25 m. This is a direct acknowledgement that some of the most ecologically significant frog habitat within the Proposed Designation

cannot be safely accessed for salvage purposes. Frogs remaining in these inaccessible areas when works commence will face 100% mortality. The EMP provides no management response to this situation beyond the general Accidental Discovery Protocol.

224. The Phase 2 nocturnal search is explicitly subject to health and safety discretion and therefore "*not always employed*." Given that Hochstetter's frogs are nocturnal and that nocturnal detection rates are typically higher than diurnal rates for this species (Bishop et al. 2013), the optional nature of Phase 2 is a substantive gap in salvage effort. Phase 2 should be a mandatory minimum requirement, not a discretionary component.

225. The "Judas rock" methodology is presented as a standard technique. As noted in the DOC s51 report, the effectiveness of this method for Hochstetter's frogs is unknown and has not been tested at this scale. The EMP should not rely on an unproven technique as a primary mechanism for capturing frogs not detected during Phase 1.

226. The EMP specifies teams of two people will conduct the frog salvage and translocation, but the number of teams is not specified, and the hours needed to conduct the salvage work has not been considered for operational feasibility within the EMP. As noted in Section 3.2, the surveyed reaches alone imply over 6,000 person-hours of salvage. At the Recovery Project rate of 327 person-hours per 150 frogs, DOC's estimate of 21,900 frogs across 14.2 km of stream implies over 47,700 person-hours, equivalent to more than 13 years of full-time work for a single two-person team, before seasonal restrictions.

10.2 Hochstetter's Frog - Release Site Suitability

227. The EMP's own species ranking (Table 6-5) identifies the Central Release Site as the preferred release site for Hochstetter's frog, ranked ahead of the Northern Site. Yet the Central Site is predominantly rotational pine plantation supporting only low-density frog populations, while the frogs being relocated from Zone 2 — specifically from the Brynderwyn Hills ONL — originate from high-quality, high-density habitat. Relocating frogs from one of the highest-density populations recorded for this species in New Zealand into streams within active commercial pine forestry is not an ecologically sound exchange.

228. The Southern Release Site is acknowledged as "*possibly unsuitable for frog relocations due to the underlying geology influencing pH levels within streams*." This is the first time pH has been identified as a specific site-exclusion criterion in the application materials, and it raises an important question that is not addressed in the EMP: if geology influences pH at the Southern Site to the degree that frogs are

excluded, what is the known pH of streams within the Northern and Central Release Sites and what is the acceptable pH range for Hochstetter's frog populations?

229. Pest control at the Central Release Site targets only pigs and rats, while the Northern and Southern Sites require control of the full suite of mammalian predators including mustelids, possums, cats, and hedgehogs. Given that the Central Site is the preferred release site for the most ecologically significant frog population, the restricted pest control target list at that site is difficult to justify.

10.3 Hochstetter's Frog - Release Site Capacity

230. The EMP states that baseline surveys at release sites will be undertaken within three months prior to initial relocation to inform carrying capacity assessments, with the Project Herpetologist determining the number of frogs that can be relocated to each site. The EMP provides no criteria for what constitutes adequate carrying capacity, no threshold at which a site would be assessed as unable to receive further frogs, and no plan for what happens if the combined carrying capacity of all three release sites is insufficient for the estimated number of frogs requiring relocation. As noted in Section 3.2 of this review, applying the applicant's corrected density figure of 93.1 frogs per 100 m across the surveyed transect reaches alone yields approximately 2,607 individuals. DOC's application of the same density to 14.2 km of total frog habitat estimates approximately 21,900 frogs directly affected. At no point does the EMP grapple with these numbers in the context of release site capacity.

10.4 Hochstetter's Frog - Monitoring

231. The monitoring programme's stated objective to confirm the continuous presence of a breeding population at the release sites is not equivalent to confirming that relocated frogs have survived and established. Both the Northern and Central Release Sites already support resident Hochstetter's frog populations. Post-release detection of frogs or juveniles at those sites will reflect the combined presence of resident and relocated individuals and cannot, without individual marking, distinguish between them. The EMP does not propose individual marking of relocated frogs, does not address how the monitoring transects will be positioned to detect relocated individuals rather than residents, and does not demonstrate that the proposed number of transects can detect a meaningful decline in population. The monitoring schedule extends to ten years post-pest control cessation, which is well short of the 25 years identified by Wren et al (2023). Further, the first monitoring event is at one-year post-release, which provides no mechanism to detect and respond to early translocation failure within the critical establishment window. The monitoring programme cannot evaluate whether the translocation has worked. This

is precisely the design flaw DOC identified in its s51 report, and it remains unresolved in the draft EMP.

10.5 Lizard & Invertebrates

232. The threshold of 20 individuals for triggering any post-release monitoring for lizards and kauri snails is arbitrary and unjustified. The EMP provides no rationale for the 20-individual threshold and no management framework for translocations that fall below it. No post-release monitoring of *A. dunniae* is proposed at all, despite this species being classified At Risk – Declining. Given that only 13 live kauri snails were found during surveys, it is possible that the 20-individual threshold for kauri snail monitoring may not be met, leaving the effectiveness of snail relocation entirely unverified.

233. The proposed pest control periods are also short relative to the life history of the species being moved. Increases in skink abundance have been recorded within three years of intensive predator control (Reardon et al. 2012), but confirming a self-sustaining breeding population requires monitoring well beyond that initial response. Kauri snails can live 20 years or more (DOC n.d.), so persistence cannot be confirmed until at least one generation has turned over. Three to five years of pest control ends before either outcome can be tested.

11.0 Critical Commentary: DOC Section 51(2)(c) Wildlife Approval Report

234. The findings of the DOC Section 51(2)(c) Wildlife Approval Report are consistent with and substantially reinforce the concerns raised in this review, and RDL endorses DOC's conclusions. Several specific points from the DOC report warrant note in this context.

235. DOC's estimate of 21,900 Hochstetter's frogs directly affected is substantially higher than the estimate in Section 3.2 of this review, which was based on applying the applicant's adjusted density to the 2,800 m of stream surveyed during field transects and yielded approximately 2,607 individuals. DOC applied the same density figures to the full 14.2 km of frog stream habitat estimated to be permanently lost — a more comprehensive calculation, derived from D06's own assessment of total frog habitat within the Proposed Designation rather than the transect survey footprint alone. The 21,900 figure should be treated as the more appropriate estimate of frog population impact.

236. DOC's finding that the application excludes avifauna from the wildlife approval scope, despite construction works foreseeably killing or injuring protected birds, is

consistent with the concerns raised in Sections 5 and 7 of this review regarding the exclusion of kiwi and bats. DOC specifically identifies uncertainty about bittern, spotless crake, and kiwi as requiring resolution through further survey before any approval is granted. The Panel should treat DOC's position on this as independent corroboration of the survey adequacy concerns identified in Section 5.1 of this report.

237. DOC considers the draft EMP to be inadequate for the scale of effects identified. Most significantly, DOC cannot recommend conditions that would ensure consistency with the Wildlife Act. This is the government department responsible for administering the Wildlife Act concluding that the application fails the Act's own protective purpose. RDL agrees with DOC that the fundamental issues with the application, which include the scale of frog mortality, the undemonstrated release site capacity, the absence of any offsetting or compensation, and the proposed deferral of critical decisions to post-consent management plan processes, cannot be resolved through conditions alone without substantially more information from the applicant.

238. RDL also notes that DOC has released further statements and correspondence since this review was prepared that have not been incorporated here. The reviewer would welcome the opportunity to address any further DOC or other expert agency material if the Panel determines that further ecological commentary would assist its deliberations.

12.0 Critical Commentary: Draft Proposed Frog Management Package (v3)

239. The Proposed Frog Management Package is a process document. It establishes how decisions will be made rather than what those decisions will be. Almost every substantive parameter is explicitly deferred to later development. The document states directly that "specific success criteria, thresholds and review triggers will require further development in consultation with DOC." The Panel is being asked to accept a consenting framework on the basis of a framework for developing that framework. No binding commitment to any ecologically measurable standard is made in this document.

240. The three sites nominated for assessment: Pukekaroro Scenic Reserve, Pukeareinga/Maungatoroto Scenic Reserve, and the Maranui Conservation Project/Brynderwyn Scenic Reserve area differ substantively from the three sites described in the Draft EMP (Northern Site 20.9 ha, Central Site 95.9 ha within Zentral Forest pine plantation, Southern Site 14.5 ha). The substitution of two DOC scenic reserves and a conservation project area for the Zentral Forest pine plantation is a substantial change with no explanation provided. More importantly, none of the

three candidate sites has been assessed against the Release Site Selection Framework. The document proposes to confirm site suitability before relocation commences, but no timeline for completing those assessments is provided, no indication of whether these sites are likely to pass the framework criteria is offered, and no alternative is identified if they do not.

241. The performance categories present "Moderate Success" defined as mixed release-site outcomes where "overall programme objectives are largely achieved" as a sufficient outcome. For a project estimated to affect between 2,607 and 21,900 Hochstetter's frogs from what DOC has described as an irreplaceable population, a management package that classifies mixed and partial outcomes as sufficient does not meet the protective purpose of the Wildlife Act. The document explicitly states that the objective is to avoid relying on a simple pass/fail determination and instead recognise varying levels of ecological performance. For an At Risk – Declining species (Burns et al. 2025) at the scale of impact proposed, a pass/fail framework anchored to demonstrable population establishment is precisely what is required.

242. As identified in Section 3.2 of this review and confirmed by the DOC s51 report, the monitoring framework cannot distinguish between relocated and resident frogs at occupied release sites without individual marking or an equivalent methodology. The management package proposes that Tier 5 genomic monitoring is the only mechanism capable of resolving that problem. It is described as subject to feasibility and technical development, does not replace traditional monitoring methods, and is framed as an additional line of evidence rather than a primary monitoring requirement. If genomic monitoring is not implemented, the programme will have no means of determining whether relocated frogs have survived or reproduced at any of the proposed release sites but this is not addressed.

243. The framework contains no reference to Wren et al. (2023), which reviewed the full available record of Hochstetter's frog translocations and established minimum requirements for any meaningful assessment of population establishment — a minimum founder cohort of 70 individuals, monitoring exceeding 25 years, and active predator control throughout. None of these criteria appear in the framework. The absence of any engagement with the published scientific literature on this species' translocation outcomes is a significant gap in a document intended to demonstrate that relocation can succeed.

244. The frog management package acknowledges that salvage numbers may exceed release site capacity and proposes activating additional Framework-assessed sites as a contingency. No additional sites beyond the three candidates have been identified. Given DOC's estimate of approximately 21,900 frogs affected across 14.2 km of frog habitat and given that three unassessed scenic reserves of unknown capacity constitute the current candidate portfolio, the probability that salvage

numbers will exceed release site capacity is high. A contingency that relies on identifying and assessing additional sites at the time of the problem rather than in advance is not adequate management for this scenario.

245. Several of the framework's most critical elements including success criteria, thresholds, review triggers, and compensation measures are proposed to be developed in consultation with DOC. The DOC s51 report concluded that the application is inconsistent with the protective purpose of the Wildlife Act and that DOC cannot recommend conditions that would provide adequate assurance that wildlife will be protected. NZTA is proposing to co-develop the key parameters of the frog management framework with the same regulatory body that has formally concluded the application fails the Act's requirements. Whether that consultation will produce agreed outcomes, and on what timeline, is entirely uncertain.

13.0 Critical Commentary: Ecological Effects Mitigation Table (v2)

246. A foundational definitional gap applies across the mitigation package as a whole. The definition of 'Project Works' used throughout the proposed conditions appears to exclude 'Establishment Works' — the vegetation clearance, haul road construction, and yard preparation that precede and enable the main construction works. If Establishment Works are not subject to the same avoid area and mapped ecological area protections as Project Works, then the ecological protections in the designation conditions may not apply during the period when some of the most ecologically damaging site preparation activities occur. This includes vegetation clearance for access tracks and construction yards in areas such as Zone 2, where Hochstetter's frog habitat, Very High value indigenous vegetation, and kauri are present. RDL considers this a significant gap that should be specifically addressed in the conditions.

247. The 1:3 mitigation planting ratio for moderate to high value vegetation represents an advance on the 1:1 ratio in the original Condition D28. The specific polygon references, the 80% canopy cover success criterion by year ten, and the trading-up mechanism for pūriri forest restoration are more specific than earlier iterations, but do not resolve fundamental inadequacies discussed within the body of this report.

248. However, the 1:3 ratio applies only to moderate and high value areas across a defined list of polygons. Very High value vegetation (kānuka/tanekaha dominant: V4_64, V4_66 and taraire/kohekohe/broadleaved podocarp forest : V2_35, V2_22, V2_7, V2_3) is placed under a separate "compensation" heading with no ratio specified. The distinction between mitigation planting at 1:3 and unspecified compensation for Very High value loss leaves the most ecologically significant

vegetation losses without a quantified offset obligation. A minimum compensation ratio for Very High value vegetation polygons should be specified and should exceed 1:3 to reflect the greater irreplaceability of those types. RDL recommends no less than 5:1(Section 6).

249. The proposed mitigation planting list does not include the two kahikatea remnants at the Waipu interchange, V1_74 and V1_83, as offset targets despite those polygons being the highest priority avoidance areas in this review and in CIA Table 0.3. They appear only as a mitigation planting destination "planting to join up stands" which is a different and lesser obligation than treating their potential loss as an offset requiring a defined ratio. If the final alignment clips either remnant, offsetting for their loss must be implemented

250. The compensation for threatened and at-risk plant species stated as "inclusion into restoration planting areas" is not equivalent to the species-specific ratios set out in Appendix 3 of this review. Kawaka and rimu are mentioned for inclusion in planting designs, but no trigger threshold, DBH criterion, or ratio is specified for either.

251. The original Draft EMP specified a salvage window of 1 October to 30 April. This document specifies 1 December to 30 April, which removes October and November from the permitted salvage period. October and November are part of the Hochstetter's frog active season and the period immediately preceding the breeding season when detection rates are typically higher. Narrowing the salvage window by two months reduces the total available salvage effort for what DOC estimates to be approximately 21,900 affected frogs. No ecological justification for this change is provided in the document.

252. Three substantive components of the frog management framework are explicitly marked as "*still to be drafted*" in this August 2026 document: the specific factors for assessing release site suitability for additional sites; the pre-release management actions at all Release Sites; and the detailed criteria for any frog habitat assessment. These are not minor details but rather substantive ecological parameters on which the adequacy of the translocation programme depends. A document presented to the Panel in August 2026 that contains these gaps in the frog section cannot be accepted as a complete effects management framework for the species with the highest assessed ecological effects in the entire application.

253. Frogs found south of the ONL are proposed to be released to the Southern Release Site, which is still to be confirmed. As noted in this review and in the DOC s51 report, the Southern Site was identified in the Draft EMP as possibly unsuitable for frog relocations due to the underlying geology influencing pH levels within streams. This site suitability issue remains unresolved with frogs from south of the ONL currently having no confirmed receiver site.

254. The Proposed Frog Management Package (discussed in Section 12 of this review) identifies three new candidate sites for frog release assessment: Pukekaroro Scenic Reserve, Pukeareinga/Maungatoroto Scenic Reserve, and the Maranui Conservation Project/Brynderwyn Scenic Reserve area yet the Ecological Effects Mitigation Table continues to refer to the original Northern, Central, and Southern Release Sites. There is no explanation provided for whether the new candidate sites supplement or replace the original sites. The Panel requires clarification on which release sites are currently proposed and which documents represent NZTA's current position.

255. The avifauna section is substantively unchanged from the original June 2026 designation conditions. No bittern boom surveys are required. No kiwi-specific provisions are included. No targeted wetland bird surveys before clearance of wetland or riparian habitat are proposed. The sole avifauna construction measure being pre-clearance nesting surveys and exclusion zones does not address any of the baseline survey gaps identified in Section 5.1 of this review or the concerns raised by DOC regarding bittern, spotless crake, and kiwi management.

256. DOC bat roost protocols during vegetation clearance remain the only bat management measure. Five years of pest control at release sites benefits lizards and snails but there is no equivalent post-clearance monitoring or pest management obligation specific to bats. Bat movement across the highway corridor during operation is not addressed. The concerns about post-clearance bat population monitoring raised in Sections 3.3 and 8 of this review are not addressed in this document.

257. The document summarises mitigation and compensation measures but contains no monitoring programme, no adaptive management triggers, and no review schedule for any taxon. For a project with acknowledged High to Very High residual effects on multiple threatened species, the absence of a monitoring framework from the ecological effects management summary is a significant gap.

258. Where monitoring is proposed, it is to be undertaken by or on behalf of NZTA. Monitoring against consent performance targets should be carried out by an independent party reporting directly to the consent authority, so that compliance data is not generated by the party whose compliance is being assessed.

14.0 Overarching Issues

14.1 The Flexible Consenting Approach & Ecological Assessment Certainty

259. The most fundamental concern with the ecological assessments is their dependence on an indicative alignment that is explicitly not binding on the final

design. All three ecology reports state that the effects assessment, mitigation, and recommendations would remain appropriate regardless of the final alignment within the Proposed Designation. This assertion cannot be made with confidence for any of the ecological values identified in this review.

- Hochstetter's frog populations are concentrated in specific headwater stream reaches within the ONL — which reaches fall within the final footprint, and which are avoided, determines the scale of population impact entirely.
- The spatial extent of Wetland 24 that will be lost depends on exactly where the road goes through that gully, and whether the replacement wetland obligation is 0.5 ha or 1.5 ha follows from that.
- The kahikatea forest remnants at the Waipu interchange will either be avoided or destroyed depending on the final roundabout layout. These two outcomes have fundamentally different ecological and cultural consequences.
- Kauri exclusion zones cannot be confirmed without knowing the exact position of cut batters and drainage works relative to individual trees.
- Kauri snail salvage planning cannot be done without knowing which areas of moist forested habitat fall within the construction footprint.
- Lizard survey and salvage priorities cannot be set without a confirmed footprint, particularly for arboreal gecko species whose habitat is concentrated in specific forest types.
- Long-tailed bat roost trees and primary foraging corridors through Zone 2 cannot be managed without knowing how the final alignment interacts with the native forest block.
- The 25 natural inland wetlands within the Proposed Designation will be affected to varying degrees depending on where exactly the road and spoil sites land — some may be avoided entirely and others destroyed in full.
- The 23 Very High and 27 High value vegetation polygons mapped across the Proposed Designation are not uniformly distributed; which specific polygons are cleared determines whether the most irreplaceable ecosystem types are lost.

260. In practice, the effects of the Project on specific ecological values will depend on exact alignment decisions, culvert locations, spoil site placements, and construction access routes, all of which are unconfirmed. It is not possible to properly assess the adequacy of proposed mitigation and offset measures on the basis of an analysis whose premises may not reflect the actual project.

261. The main application states that spoil sites will be identified to manage surplus material, with erosion and sediment controls implemented to mitigate environmental effects, and that spoil sites required for the construction of the Project will be provided at the detailed design stage (Volume A, p. 33). With a total indicative cut of approximately 12.6 million m³ across the four earthworks zones, the volume of

surplus material requiring disposal is substantial. Spoil sites in hill-country terrain of this nature will require stream realignment, vegetation clearance, and significant earthworks in their own right, with downstream effects on water quality, freshwater habitat, and terrestrial fauna, which do not appear to be considered at the consenting stage. The ecological effects of spoil site placement are not incidental but rather a primary mechanism through which stream loss, wetland impacts, and habitat loss for species such as Hochstetter's frog will occur. Deferring their identification and effects assessment to detailed design means a key component of the Project's total ecological footprint has not been assessed and cannot be assessed until after consent is granted.

262. The deficiencies described above are not individually resolvable through adjustments to specific conditions; they reflect a structural problem with how the application has been framed. In RDL's assessment, there are two approaches available to the Panel to address this.

263. The first is to require NZTA to confirm the final alignment before consent is granted, and to reassess all mitigation and offset obligations against that confirmed footprint. This would allow effects on specific features (e.g. individual stream reaches, vegetation polygons, wetlands, and species populations) to be characterised accurately, and would enable offset obligations to be calculated against what is actually being lost rather than against a maximum clearance envelope. This is the most ecologically rigorous approach and would produce the most defensible conditions.

264. The second approach, if a confirmed alignment cannot be required at this stage, is to establish:

(a) hard avoidance areas protecting ecological features whose loss cannot be adequately mitigated including the kahikatea forest remnants at the Waipu interchange, high-density Hochstetter's frog stream reaches within the ONL, Wetland 24, Wetland 8, wetland 16, kauri exclusion zones, and any other features identified in Appendices 1 to 3;

(b) maximum vegetation clearance limits by ecosystem type and value class, preventing total loss of any irreplaceable vegetation type within the Proposed Designation regardless of alignment decisions; and

(c) a requirement that once the final alignment is confirmed within those constraints, all mitigation and offset calculations are revisited and recalibrated against the actual footprint before any clearance commences. RDL has contributed to the identification of avoidance areas and maximum clearance thresholds from an ecological perspective, and these are set out in Appendices 1 to 3.

14.2 Survey Timing & Adequacy of Baseline Data

265. All three ecological assessments are based on field surveys conducted within a single season (September to November 2025), with limited supplementary bat monitoring extending to February 2026. A survey programme confined to five months in a single season cannot constitute an adequate ecological baseline for a project of this scale and duration. This is particularly relevant for species exhibiting seasonal variation in detectability including Australasian bittern, which is surveyed using boom counts during breeding (August–December); long-tailed bats, which require multi-season deployment to capture summer and winter activity patterns; and Hochstetter's frog, whose detection rates vary with stream flow and temperature. The EIANZ EcIA Guidelines require survey effort to be fit for purpose and proportionate to project significance. A project traversing multiple ecological districts, affecting nationally threatened and critically endangered species, and spanning six years of construction plainly requires more than a single season of data to characterise ecological values with any confidence.

266. The timing of the surveys (approximately five months before the application was lodged) means that data collection and reporting were compressed into a very short timeframe. A one-year survey programme, covering at least one full breeding season and one winter period, would be the minimum expected for a project of this ecological significance and footprint. This is further discussed in section 16.0 of this report, where robust survey data prior to any vegetation clearance commences should be used to update the effects assessment and recalibrate mitigation and offset obligations.

14.3 Additional Data Sources Not Consulted

267. All three ecological assessments were prepared without reference to several data sources directly relevant to species distribution and ecological values within the Proposed Designation. The 2024 Piroa Trust kiwi survey data, which recorded kiwi detections approximately 100 m from the existing SH1 alignment was not incorporated into the avifauna assessment, despite being directly relevant to the Project corridor. Updated Northland regional plant threat classifications, published since the field surveys were completed, were not reflected in the terrestrial ecology assessment. The cumulative effect of these omissions is an ecological baseline that may underrepresent the extent and significance of species values within the Proposed Designation, and therefore an assessment that may understate the effects of the Project on those values.

268. The specific data sources that should be incorporated into a revised baseline, and the survey requirements needed to address these gaps before clearance commences, are addressed in the recommendations in Section 16.0 and reflected in the draft conditions that RDL has contributed to.

14.4 Replacement Ratios & Temporal Discounting

269. As discussed in relation to Condition D28 in Sections 6 and 8, a 1:1 replacement ratio has been applied across vegetation mitigation, avifauna wetland habitat replacement, and freshwater wetland offset alike. The common deficiency in each case is the absence of temporal discounting. For mature podocarp-broadleaf or kahikatea forest, the lag time before planted habitat reaches equivalent ecological function is decades to centuries. For bittern habitat in a large mature raupō wetland, the lag time before a newly created wetland provides equivalent bittern habitat is conservatively 5 to 15 years. During this period, there is a net biodiversity debt that is not accounted for in the 1:1 framework.

270. The NPS-IB and NPS-FM both contemplate the use of multipliers in offset ratios to address temporal discounting, degree of uncertainty, and the relative value of what is being lost versus what is being gained. The BOAM framework provides a methodology for incorporating these factors. The specific minimum offset ratios recommended for vegetation and wetland values are discussed in Sections 5.4 and 6, and a summary is provided in the recommendations at Section 16.0. The requirement for a BOAM to calculate and confirm these obligations before consent is granted is reflected in the draft conditions that RDL has contributed to.

14.5 NPS-IB Net Outcome

271. The NPS-IB objective is to maintain indigenous biodiversity across New Zealand so that there is at least no overall loss of indigenous biodiversity. The application acknowledges only partial consistency with this objective and does not include a BOAM or equivalent biodiversity accounting instrument to demonstrate the overall biodiversity position of the Project. Without this, the Panel cannot assess whether the Project achieves no overall net loss or falls short of it, and by how much.

272. The application also does not demonstrate adherence to the mitigation hierarchy as set out in the NPS-IB, with appropriate specificity, that residual effects on Very High value indigenous vegetation, Hochstetter's frog, natural inland wetlands, and kahikatea forest remnants have been minimised to the extent practicable. There is a clear need for a BOAM in the application.

15.0 Conclusions

273. Having reviewed the documents listed in Section 1.0, RDL is of the opinion that the ecological technical assessments submitted in support of this application contain significant gaps in survey methodology, unrealistic and overly optimistic characterisations of residual effects, and mitigation and offset commitments that are insufficient in specificity and ecological ambition for a project of this scale and

significance. The aspect of the Project underpinning these deficiencies is the failure to confirm an alignment, which is then exacerbated by a failure to properly quantify adverse impacts. The following summarises the key areas of deficiency.

(a) Overarching:

- flexible consenting approach creating fundamental uncertainty about actual ecological effects;
- single-season survey data inadequate for a project of this significance;
- multiple relevant data sources not consulted;
- Frog Management Package and Mitigation Table presented as frameworks for making decisions rather than decisions themselves, with core ecological parameters (success thresholds, review triggers, release site allocations) deferred to post-consent stage;
- all substantive ecological management plans deferred to post-consent stage;
- monitoring programme absent from the Ecological Effects Mitigation Table across all taxa with no adaptive management triggers or review schedule for any species group;
- no BOAM or equivalent biodiversity accounting provided;
- Establishment Works definitionally excluded from avoid area and ecological protection conditions, leaving site preparation activities unprotected;
- acknowledged partial consistency with NPS-IB and NPS-FM policies not translated into a credible, quantified offset commitment; and

(b) Terrestrial ecology:

- acknowledged High residual effects on Hochstetter's frog with no additional offset plan;
- no published evidence supporting effectiveness of Hochstetter's frog translocation;
- frog salvage window narrowed from 1 October–30 April (Draft EMP) to 1 December–30 April (Mitigation Table v2) without ecological justification, reducing available salvage effort for an estimated 21,900 frogs;
- pre-release management actions for all proposed release sites explicitly marked as still to be drafted as of August 2026;
- proposed Frog Management Package identifies three new candidate release sites that differ from the draft EMP's three sites, with no explanation and no assessment of either set;

- long-tailed bat managed through the DOC Bat Roost Protocol (generic guidance) for a loss of 163 ha of High potential bat habitat, while the Brynderwyn Hills Recovery Project involving 10.69 ha of habitat loss in the same landscape required a site-specific Bat Management Plan; no ecological justification provided for applying a lower management standard to a project fifteen times larger;
- kauri snail monitoring threshold of 20 individuals creating a realistic risk that the threshold is never triggered — given that only 13 live individuals were confirmed during surveys — leaving the effectiveness of kauri snail relocation entirely unverified regardless of outcomes;
- vegetation classification methodology not independently verified and requiring reconciliation before effects can be assessed with confidence;
- five-year pest control duration inadequate;
- mitigation sites predominantly hillslope and gully terrain unsuitable for floodplain-dependent vegetation types;
- pasture establishment context not addressed;
- ecological values potentially assessed too low for some vegetation types;
- updated Northland plant threat classifications not incorporated;
- pest control periods at release sites (three to five years) short relative to the life histories of the species being moved;
- deferred management plans for threatened plant species; and
- Very High value vegetation polygons placed under unspecified "compensation" in the Mitigation Table with no ratio stated, while 1:3 ratio for moderate to high value vegetation applies to a defined list of polygons only. There is no quantified offset obligation provided for the most ecologically significant vegetation losses.

(c) Freshwater:

- reliance on eDNA as the sole fish survey method provides species presence and diversity data only. It does not provide for population-level information or a basis for a fish translocation management plan;
- substitution of the author's personal experience monitoring analogous projects in a different geological setting for site-specific quantifiable analysis or modelling, applied both to the groundwater drawdown conclusion and to the stream realignment equivalence conclusion;

- approximately 11 km of stream aquatic habitat affected, not adequately conveyed through net loss statistics;
- step-cascade stream morphology making spoil-site realignment feasibility undemonstrated;
- no published evidence for stream realignment success in comparable environments;
- Waihoihoi River meander loop diversion not specifically assessed;
- minimal consideration given to catchment wetland losses of 22.6% and 30.7%;
- Regulation 70 compliance assumed rather than demonstrated;
- groundwater drawdown risks inadequately assessed; and
- no mitigation proposed for pastoral wetland losses despite NES-FW obligations.

(d) Avifauna:

- inadequate field survey effort (single five-minute bird counts at 12 locations, undertaken opportunistically during terrestrial fieldwork, and one site visit)
- no targeted bittern boom surveys;
- kiwi assessment relying on data nearly 30 years old;
- proposed primary bittern mitigation site not mapped as a wetland by NRC and located adjacent to state highway infrastructure;
- 1:1 replacement ratio not accounting for temporal lag;
- mitigation habitat not sequenced to precede wetland loss;
- no mitigation for forest bird species despite significant native forest and scrub loss;
- no kiwi-specific consent conditions; and
- bats and kiwi excluded from the Wildlife Act application scope.

(e) Avoidance priorities — habitat and vegetation:

- discrepancy between NZTA's stated vegetation loss (0.4 ha) and likely actual loss of up to 1.01 ha of Very High value kahikatea forest at the Waipu interchange, with existing mitigation sites on hillslope terrain unsuitable for like-for-like replacement of a lowland floodplain forest type;
- Brynderwyn Hills ONL headwater streams supporting Hochstetter's frog at 416.3 frogs per 100 m and characterised by DOC as irreplaceable is not identified as an avoidance area in any application document, and no offsetting framework is proposed for their loss;

- the three High ecological value wetlands within the Proposed Designation (wetlands 24, 8, 16) are not provided with a credible avoidance case and the proposed offset sites are either ecologically inadequate or unconfirmed;
- Waihoihoi River meander loop proposed for diversion without any specific ecological assessment of the effects of that diversion;
- nīkau treeland (0.1 ha) within the Proposed Designation, for which any clearance would constitute effective total loss of the type within the designation footprint, with no avoidance protection proposed; and
- remnant riparian podocarp-hardwood-kānuka treeland (13.1 ha), the primary long-tailed bat foraging corridor and Hochstetter's frog riparian bank habitat throughout all four zones, without any specific retention obligation proposed in the application.

(f) Critical species:

- poroporo (Threatened — Nationally Endangered) confirmed during field surveys but absent from the effects assessment in Table 17 of Appendix D06. This species has received no effects characterisation;
- ramarama (Threatened — Nationally Critical) present in desktop records within the Proposed Designation but not specifically targeted during surveys, with no halt-and-assess protocol required under any proposed condition;
- kauri dieback risk applies across all vegetation types where kauri occurs as a canopy component and not only within polygons classified as kauri-podocarp forest, yet the application's dieback management provisions are limited to three named polygons, leaving kauri in other vegetation types unprotected;
- kawaka, northern rātā (At Risk — Declining), and *M. complexa* var. *grandifolia* (Threatened — Nationally Vulnerable) occur across multiple vegetation types and cannot be protected through polygon-level avoidance alone. No species-level pre-clearance survey obligations are proposed for any of these species in any application document; and

16.0 Recommendations

16.1 Overarching Requirements

274. A Biodiversity Offset Accounting Model (BOAM) or equivalent must be prepared and provided to the Panel before consent is granted, demonstrating the Project's position against the NPS-IB 'no overall net loss' objective. All ratios in these recommendations

should be considered as the minimum, pending completion of that BOAM. Ratios in these recommendations are expressed as area of offset to area lost.

275. The Avifauna, Bat, Ecological (frogs, lizards and invertebrates), Wetland, Freshwater Habitat and Terrestrial Habitat Management Plans must be provided to the Panel and approved by the consent authority before consent is granted, not 20 working days before Project Works begin. The Terrestrial Habitat Management Plan must map all ecologically significant habitat within the Proposed Designation. Replacement habitat must be established and functioning before the habitat it replaces is removed.

276. Appendix C (Existing Indigenous Vegetation) must be provided to the Panel before conditions are finalised.

277. Project Works must be defined to include Establishment Works, including haul roads, access tracks and construction yards, so that avoid area and ecological protections apply from the start of site preparation.

278. NZTA must demonstrate through detailed design that avoidance of the features in Appendix 1 has been sought. Where a feature cannot be avoided, written justification supported by design documentation showing the alternatives considered, and the functional reasons for rejecting them, must be provided and assessed before clearance proceeds.

16.2 Indigenous Vegetation

279. Appendices 1, 2 and 3 of this report must be incorporated as enforceable consent conditions.

280. Clearance must be sequenced as follows. Features in Appendix 1 must not be cleared. Clearance of all other indigenous vegetation types must not exceed the limits in Appendix 2. Pre-clearance surveys for all species in Appendix 3 must be completed before clearance, with results used to locate specimens, calculate offset obligations and determine where avoidance is practicable. Offsets for residual clearance within Appendix 2 limits must be calculated through a completed BOAM, at no less than 3:1 for Moderate and High value vegetation and no less than 5:1 for Very High value vegetation.

281. WSP must confirm that the vegetation classification in Appendix D06 is consistent with Singers et al. (2017), and that the dominant vegetation type of each mapped polygon has been verified, before any conditions relying on that classification are finalised.

16.3 Revegetation Planting

282. Revegetation planting undertaken as mitigation or offset, where no fauna will be translocated, must be managed toward a self-sustaining indigenous habitat capable of being colonised by dispersing native fauna.

283. Monitoring, maintenance and pest control must continue for a minimum of ten years from planting. This reflects DOC's standard for ecological restoration projects of national significance, which requires pest control for a minimum of ten years post-planting, and the five to ten year period identified for newly created habitat to reach functional maturity (Williams 2024; Zedler & Kercher 2005). The five-year period typical of smaller restoration projects is not adequate at this scale.

284. Maintenance and monitoring must be intensive in years one to three, when plant losses, weed competition and browse pressure are greatest, and may reduce in frequency from year four where success criteria are being met. Success must be measured against ecological outcomes, including indigenous canopy cover, presence of keystone native fauna species, weed cover and natural regeneration, assessed at years three, five and ten. Failure to meet criteria at any review must trigger remedial action before the next review. Pest monitoring must follow the schedule in Section 16.8.

16.4 Freshwater Ecology

285. Traditional fish surveys using electric fishing, fyke netting and hīnaki must be completed across all perennial and intermittent streams within the Indicative Alignment before stream works begin, and must inform a fish translocation management plan. Post-construction monitoring must confirm upstream passage for long-fin eel and banded kōkopu at all culverts, with adaptive management where passage fails.

286. Stream realignments must be monitored against SEV retention, macroinvertebrate recovery, fish passage and, where relevant, Hochstetter's frog recolonisation. Reporting intervals, thresholds and adaptive management must be set before construction. Conclusions on groundwater drawdown and realignment equivalence that rely on experience from other projects must be supported by site-specific evidence before being accepted.

287. Culverts where in-pipe substrate cannot be retained, including those on Pine Mid Tributary, Piroa Western Tributary, Waipu North Tributary and Waipu South Tributary (Appendix D07, Table 16), must be counted as permanent stream loss and compensated accordingly.

288. Hochstetter's frog stream reaches that cannot be safely salvaged must be identified by the Project Herpetologist before works begin and treated as 100% frog mortality. The affected population must be estimated and offset or compensated before clearance, independent of salvage numbers recovered.

16.5 Natural Inland Wetlands

289. Avoidance of Wetlands 24, 8 and 16 is the primary position. Where avoidance cannot be demonstrated through detailed design, a minimum offset ratio of 3:1 applies, increasing to 5:1 where the replacement site carries delivery risk such as road proximity or unconfirmed hydrology.

290. Replacement wetland sites must be confirmed before consent. Sites must be no closer to a road corridor than the wetland being lost, ground-truthed, surveyed for wetland birds, and supported by hydrological and vegetation assessments confirming suitability for raupō and Cryptic Marsh Bird Species. The SH1/SH12 site does not meet these requirements.

16.6 Avifauna, Bats & Kiwi

291. Australasian bittern boom count surveys must be completed across all raupō and rush-dominated wetlands within the Proposed Designation before effects on wetland values, or the adequacy of the avifauna offset, are determined.

292. Current Piroa Conservation Trust kiwi data must be obtained and incorporated into a revised avifauna assessment before consent is granted.

293. Bats and kiwi must be brought within the scope of the Wildlife Act Approvals, with pre-clearance surveys, encounter protocols and post-clearance monitoring required as conditions.

16.7 Wildlife Act Approvals and Translocation Sites

16.7.1 General

294. The objective of each translocation is a self-sustaining breeding population. Monitoring at each site must be designed to test that objective for each species, over a period matched to its lifespan and reproductive rate.

295. Release sites must be confirmed before consent, with baseline population surveys, habitat preparation plans and carrying capacity assessments completed before salvage begins.

296. Predator control must begin at least three months before the first release at each site and continue for 35 years, being the life of the consent (see Appendix 4). Control

must extend across the whole of each site, as translocated animals will disperse beyond their release points.

297. Monitoring must be undertaken by an independent third party.

298. The 20-individual threshold for post-release monitoring of lizards and kauri snail must be removed. Only 13 live kauri snails were found during surveys, so the threshold may never be reached. Monitoring must apply to all translocations of At Risk – Declining species regardless of cohort size.

16.7.2 Establishment Timeframes by Species

299. **Hochstetter's frog**. Meaningful assessment of population establishment requires post-release monitoring exceeding 25 years (Wren et al. 2023), and the species may live for approximately 30 years (DOC Section 51(2)(c) report). Monitoring must occur at six months, one, three and five years post-release, then at five-yearly intervals to year 35 (see Appendix 4).

300. **Native lizards**. Increases in skink abundance have been recorded within three years of intensive predator control (Reardon et al. 2012). Establishment of a breeding population should therefore be evident within ten years. Monitoring must occur at years two, five and ten post-release, then at five-yearly intervals to year 35 (see Appendix 4).

301. **Kauri snail**. Kauri snails can live 20 years or more (DOC n.d.). Persistence cannot be confirmed until at least one full generation has turned over. Monitoring must occur at years two, five, ten, fifteen and twenty post-release, then at five-yearly intervals to year 35 (see Appendix 4).

16.7.3 Northern Site (20.9 ha)

302. The Northern Site will receive Hochstetter's frog, native lizards and kauri snail. Predator control must cover the entire 20.9 ha. The site must be permanently fenced to exclude stock.

16.7.4 Central Site (up to approximately 95.9 ha)

303. The Central Site will receive Hochstetter's frog only. Although frog habitat is confined to the stream network, predator control must cover the entire site. Restricting predator control to stream margins within an active pine plantation would allow continual reinvasion from the surrounding forest, particularly during harvesting. Predator control must target mustelids, possums, cats and hedgehogs in addition to the pigs and rats currently proposed.

16.7.5 Southern Site (14.5 ha)

304. The Southern Site will receive native lizards and kauri snail. Predator control must cover the entire 14.5 ha. Existing QEII fencing must be confirmed as stock-proof and upgraded where required.

16.8 Predator Monitoring Schedule

305. Predator monitoring at all revegetation and translocation sites must follow a tiered schedule for the duration of predator control at each site. For rats, mice, possums and mustelids, monitoring must be quarterly in years one to three, biannual in years four to ten, and annual from year eleven (see Appendix 4). For feral cats, pigs, deer, goats and hedgehogs, monitoring must be biannual in years one to five and annual thereafter (see Appendix 4). At translocation sites, year one begins when predator control commences, three months before the first release.

306. Trigger thresholds for each species must be set in the relevant management plan. Any exceedance must return monitoring to the higher frequency until the threshold has been met for two consecutive periods. As eradication is the objective for cats, pigs, deer, goats and hedgehogs, any detection of these species must return monitoring to biannual. Thresholds at translocation sites must be lower than at revegetation sites, and any detection of a mustelid, cat or hedgehog within a translocation site must trigger additional control, not only increased monitoring.

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APPENDIX 1 – Ecological Avoidance Areas

Table 3: Features listed here must not be cleared, disturbed, dewatered, drained, or physically impacted by construction, earthworks, or spoil deposition. Works within the Proposed Designation must be designed to avoid these areas entirely. Species specific avoidance applies and can be seen within APPENDIX 3. All vegetation areas are drawn from Appendix D06, Table 7. Stream and wetland areas are drawn from Appendix D07.

Habitat / Feature	Total Area in Proposed Designation	Area to be Retained	Location Description	Ecological Justification
Kahikatea forest (all types: kahikatea forest, kahikatea treeland, kahikatea-kauri-tōtara treeland, kahikatea-pukatea forest)	9.3 ha	9.3 ha	• V1_74 (0.44 ha) and V1_83 (0.57 ha) near Waipu interchange and The Braigh; V1_144 (2.54 ha) kahikatea-pukatea forest, Zone 1; • V1_214 (1.61 ha) kahikatea-kauri-tōtara treeland, Zone 1; • V1_66, V1_71, V1_72, V1_76, V1_77, V1_83, V1_85, V1_87 (kahikatea treeland, Zone 1 northern corridor totalling approximately 2.15 ha); • remaining area in scattered foothills polygons	• Nationally rare lowland wetland-margin forest type confined to alluvial floodplain conditions; • irreplaceable on any ecologically meaningful timeframe; • remnants at Waipu interchange contain Nationally Vulnerable plant (*Muehlenbeckia complexa* var. *grandifolia*) and At Risk – Declining *Carmichaelia australis* and copper skink; • loss would eliminate a regionally distinctive vegetation type from the coastal plain corridor.
Nīkau treeland	0.1 ha	0.1 ha	• Single or few small occurrences within designation	• any clearance would constitute effective total loss of this type within the Proposed Designation.
Brynderwyn Hills ONL headwater streams: all perennial and intermittent streams within the Brynderwyn Range ONL supporting high-density Hochstetter's frog populations	3.85 km	3.85 km	• All perennial and intermittent headwater streams within the Brynderwyn Range ONL, principally Zone 2. Includes the streams where transect 2.25 recorded 60 frogs in 25 m and transect 2.29 recorded 57 frogs in 50 m. These are the cascade and seepage headwaters	• DOC characterises this habitat as irreplaceable (DOC s51 report). Adjusted frog density of 416.3 frogs per 100 m is one of the highest recorded globally for Hochstetter's frog. Translocation from this habitat to lower-quality pine forest streams is ecologically unsound;

Habitat / Feature	Total Area in Proposed Designation	Area to be Retained	Location Description	Ecological Justification
			draining the ONL ridgeline within the proposed Zone 2 earthworks area	• salvage of frogs from inaccessible steep reaches is impossible; • DOC estimates approximately 16,250 frogs within high-quality indigenous stream habitat across the Proposed Designation, concentrated in these headwaters. Destruction of this habitat would cause mortality of several thousand frogs from a genetically distinct Northern Clade population.
Wetland 8	1.25 ha	1.25 ha	• Raupō-dominated wetland, Zone 1, northern designation	• High ecological value; • raupō-dominated; • Cryptic Marsh Bird Species habitat; • part of the wetland network potentially used by Australasian bittern across the landscape.
Wetland 16	Area not confirmed in D07	All confirmed area	• Zone 2 / Zone 3 boundary area	• Partially High ecological value; • Cryptic Marsh Bird Species habitat
Wetland 24	3.16 ha	3.16 ha	• Raupō gully wetland, Zone 1, approximately 800 m east of existing SH1 alignment	• High ecological value; • largest raupō wetland within the Proposed Designation; • confirmed suitability as Australasian bittern habitat (large raupō stand, farm drain foraging margins, riparian connectivity); • no targeted bittern surveys conducted so potential use by a Nationally Critical species cannot be ruled out; • loss of established mature raupō structure cannot be offset on any relevant timeframe;

Habitat / Feature	Total Area in Proposed Designation	Area to be Retained	Location Description	Ecological Justification
				• offset sites proposed in application are ecologically inadequate for reasons addressed in Section 5.3.
Remnant Riparian podocarp-hardwood-kānuka treeland	13.1 ha	13.1 ha	• Riparian corridor fringing watercourses throughout all four zones: V1_79, V1_114, V1_159 (Zone 1); • scattered riparian fragments in Zones 2–4 along named streams	• Very High ecological value; • primary long-tailed bat foraging corridor along riparian margins; • Hochstetter's frog riparian bank habitat; • streambank stability and water quality function; • contains At Risk – Declining riparian plant species; • loss of riparian connectivity would fragment bat movement across the Proposed Designation
Waihoihoi River meander loop	Existing meander extent	Full meander to be retained	• Ahuroa lowland, Zone 1; • meander loop proposed for diversion under Indicative Alignment	• Unique geomorphic and ecological feature; • meander habitat provides pool and riffle diversity not present in straightened channels; • no specific ecological assessment of diversion effects has been conducted; • diversion would cause downstream bedload and sediment dynamic effects not assessed in D07.

APPENDIX 2 – Maximum Clearance Limits

Table 4: Features listed here may be partially cleared within the stated maximum limits, subject to conditions. Maximum limits represent the outer ecological tolerance for clearance of each type. Where the stated maximum has been reached, no further clearance of that type is permitted regardless of alignment decisions. all clearance within these limits remains subject to the mitigation, offset and BOAM requirements set out in the consent conditions. Clearance in excess of these limits requires a revised effects assessment and recalculation of offsets before proceeding. Species specific avoidance applies and can be seen within APPENDIX 3. All vegetation areas are drawn from Appendix D06, Table 7. Stream and wetland areas are drawn from Appendix D07 and D08. Offsetting ratios for clearance within the limits stated in this table are to be determined through a BOAM or equivalent biodiversity accounting instrument. Offset ratios must account for the full ecological value of each affected area including flora, fauna, freshwater, and bat values — not vegetation area alone. No clearance within Table B limits may proceed without an approved offset plan demonstrating no net loss of ecological value.

Habitat / Feature	Total Area in Proposed Designation	Maximum clearance	Areas to be Retained	Ecological Justification
Kauri-podocarp forest	24.5 ha	5 ha	• Prioritise the two largest Zone 2 blocks (V2_35 equivalent kauri-podocarp associations and Zone 3 V3_15 at 11.74 ha); • Zone 1 ridge fringe polygons V1_226, V1_227, V1_228; Zone 4 V4_63 and V4_114. Isolated smaller polygons have lower retention priority where alignment cannot avoid them.	• Some kauri-podocarp clearance is unavoidable given the road must cross the Brynderwyn Hills ridgeline. • The 5 ha limit (~20%) retains the substantial majority of this type while providing alignment flexibility. • Any clearance must be accompanied by a strict kauri dieback (*Phytophthora agathidicida*) management plan. • Individual kauri trees must be identified, mapped, and retained where possible. • Consultation with Iwi mandatory prior to tree removal. • All clearance subject to Appendix 3 pre-clearance species checks.
Kānuka forest	58.4 ha	15 ha	• Retained area should prioritise large contiguous blocks in Zone 2 (V4_57 7.5 ha, V4_61–V4_68 series, V4_112 0.1 ha) and Zone 1 connections (V1_231 7.25 ha);	• Primary long-tailed bat roosting and foraging habitat; • supports tomtit, kākā, and resident bird assemblages;

Habitat / Feature	Total Area in Proposed Designation	Maximum clearance	Areas to be Retained	Ecological Justification
			• smaller isolated polygons have lower retention priority	• 15 ha maximum clearance (~26%) allows some alignment flexibility while retaining bat corridor function through Zone 2; • contiguous blocks must be prioritised for retention over isolated fragments; • all clearance subject to Appendix 3 pre-clearance species checks.
Kohekohe-taraire-tawa-podocarp/broadleaf forest	49.7 ha	13 ha	• Retained area should prioritise the three largest contiguous polygons in Zone 2: V2_35 (17.06 ha) and V2_39 (19.21 ha) in Zone 2 core; • V1_226 (5.45 ha) Zone 1; • smaller polygons lower priority	• Very High ecological value; • supports kākā (At Risk – Recovering), tomtit, and other forest-interior birds; • provides bat foraging and roosting habitat; • kohekohe (*Dysoxylum spectabile*) is an important bat food plant; 13 ha limit (~26%) reflects the ecological importance of maintaining large contiguous forest blocks; • clearing beyond this would fragment Zone 2 forest below connectivity threshold for bat movement; • all clearance subject to Appendix 3 pre-clearance species checks.
Broadleaved species scrub forest	26.8 ha	7 ha	• Retained area to prioritise blocks adjacent to existing Very High value vegetation for connectivity (V2_3 8.33 ha, V2_27 1.24 ha); • blocks isolated in pasture landscape lower retention priority	• High ecological value; • provides bat foraging and bird habitat; • functions as transitional habitat connecting mature forest blocks; • 7 ha limit (~26%) reflects moderate recoverability relative to mature forest types; • all clearance subject to Appendix 3 pre-clearance species checks.

Habitat / Feature	Total Area in Proposed Designation	Maximum clearance	Areas to be Retained	Ecological Justification
Pūriri forest	1.7 ha	0.3 ha	• Prioritise V4_38 (0.93 ha, the largest remnant, Moderate value) and the other Moderate value remnants (V4_42, V4_43)	• Heavily modified by grazing but retains a mature pūriri canopy that cannot be replaced within any practical timeframe; • Remnants have recovery potential if stock are excluded • Clearance limited to the footprint already identified in Appendix D06.
Kānuka treeland / native and exotic scrub / ranked grassland	6.2 ha	2 ha	• Retain blocks contiguous with kānuka forest polygons; • isolated fragments in pasture may be cleared within limit	• Moderate to High ecological value; • mixed vegetation type with variable indigenous values; • some clearance permissible as part of alignment where avoidance is not practicable; • residual kānuka treeland provides bat foraging and transitional bird habitat; • all clearance subject to Appendix 3 pre-clearance species checks.
Scattered podocarp-broadleaf-kānuka treeland / mixed native and exotic scrub / ranked grassland	3.1 ha	0.6 ha	• Retain blocks with direct connectivity to High or Very High value forest; • isolated fragments lower retention priority	• High ecological value; • scattered remnants have disproportionate ecological value as stepping stones in fragmented landscape; • 0.6 ha (~20%) limit reflects limited total extent; • all clearance subject to Appendix 3 pre-clearance species checks.
Planted native vegetation	11.2 ha	4 ha	• Retain planted areas adjacent to existing natural indigenous vegetation; • isolated planted areas in pasture may be cleared within limit.	• Lower ecological value than natural vegetation of equivalent age; • some clearance permissible; • retained areas provide bat foraging and bird habitat transition zones;

Habitat / Feature	Total Area in Proposed Designation	Maximum clearance	Areas to be Retained	Ecological Justification
				• mandatory replanting obligation applies to all cleared area; • all clearance subject to Appendix 3 pre-clearance species checks.
Hochstetter's frog stream habitat — moderate quality (Zone 1 foothills, Zone 3 QEII covenant streams, Zone 4 southern headwaters)	10.3 km	2.6 km	• Zone 1 foothills streams (Waihoihoi tributaries with moderate frog density); • Zone 3 QEII covenant streams; • Zone 4 southern Kaiwaka River tributaries. High-density ONL streams are in Table A (no clearance). Only moderate quality habitat in natural ground (not spoil sites) is eligible for this limit	• Some stream habitat loss is unavoidable where the road crosses watercourses; • The 2.6 km limit reflects the proportion that might be bridged or culverted with fish passage maintained under Regulation 70, while leaving the majority of moderate-quality frog habitat undisturbed; • Any stream loss within this limit must be offset through pre-construction traditional fish surveys and a fish translocation plan; • Spoil-site realignments are excluded from the retained stream accounting; • all clearance subject to Appendix 3 pre-clearance species checks.
Natural inland wetlands — exotic pastoral wetlands with confirmed or potential Cryptic Marsh Bird Species usage including wetlands 3, 11, 12, 13 and 14	Combined extent to be confirmed by updated wetland delineation	10% of each wetland's extent	• All wetlands that are identified in D08 and/or the consent conditions as Cryptic Marsh Bird Species habitat and subject to offset at no less than 3:1 (Section 16.5), subject to BOAM, irrespective of their exotic nature; • Retained area must include the highest vegetation cover portions of each wetland.	• Pre-clearance targeted surveys for bittern, spotless crake, and fernbird must be completed before any clearance of these wetlands; • If active use confirmed, avoidance applies absolutely; • If no use confirmed by appropriate survey, maximum 10% clearance with offset at no less than 3:1 (Section 16.5), subject to BOAM offset ratios applied;

Habitat / Feature	Total Area in Proposed Designation	Maximum clearance	Areas to be Retained	Ecological Justification
				• In practice avoidance is strongly preferred given unresolved survey gaps; • all clearance subject to Appendix 3 pre-clearance species checks.
All other natural inland wetlands (exotic pasture wetlands including wetlands 1, 2, 4, 5, 6, 7, 9, 10, 15, 17, 18, 19, 20, 21, 22, 23)	Combined extent to be confirmed by wetland delineation; estimated 5–10 ha total across designation	50% of total identified area maximum	• Retained wetlands to include those with highest connectivity to named high-value wetlands and those closest to riparian corridors	• NES-FW protection applies to all natural inland wetlands regardless of vegetation composition; • cumulative loss of the pastoral wetlands represents significant loss of wetland hydrological function at catchment scale; • 50% maximum limit reflects pragmatic acknowledgment that some pastoral wetland clearance may be unavoidable while requiring that more than half are retained as functional wetland habitat; • all cleared area to be offset at no less than 3:1 (Section 16.5), subject to BOAM; • all clearance subject to Appendix 3 pre-clearance species checks
Anthropic tōtara forest	19.5 ha	5 ha	• Retain contiguous blocks on ridge margins in Zones 1 and 2; • isolated planted specimens in pasture-adjacent areas may be cleared within the limit.	• Anthropic tōtara has moderate to high ecological value depending on age and structure; • Some clearance is more defensible than for natural forest types. • Mature specimens with bat roosting potential must be assessed before clearance and retained where possible; • all clearance subject to Appendix 3 pre-clearance species checks.

Habitat / Feature	Total Area in Proposed Designation	Maximum clearance	Areas to be Retained	Ecological Justification
Tōtara forest / native broadleaf scrub	2.9 ha	0.6 ha	• Prioritise retention of the largest contiguous block (V1_175, 1.46 ha) as it is assessed as High ecological value and provides riparian and transitional forest connectivity in the northern designation; • Smaller Moderate value polygons (V1_152, V1_176) have lower retention priority within the 20% limit	• High ecological value; • provides bat foraging and transitional forest bird habitat in Zone 1; • tōtara is slow-growing and individual mature specimens take decades to replace; • 20% maximum clearance retains the substantial majority of this type while providing limited alignment flexibility; • all clearance subject to Appendix 3 pre-clearance species checks.
Tōtara-kānuka forest / mixed native and exotic scrub / ranked grassland	4.8 ha	1.0 ha	• Retain blocks with direct connectivity to adjacent indigenous forest polygons; • isolated fragments in the pastoral matrix have lower retention priority within the 20% limit; • Pre-clearance survey to confirm all polygon locations and values before clearance commences in any area of this type	• High to Moderate ecological value; • mixed vegetation type with variable indigenous values including tōtara as canopy component; • provides bat foraging habitat and bird movement corridors between forest blocks; • 20% maximum clearance limit reflects the mixed ecological character of this type while ensuring the majority is retained; • all clearance subject to Appendix 3 pre-clearance species checks.
Tōtara-kauri / broadleaf scrub	4.0 ha	0.8 ha	• Prioritise retention of the two largest polygons in Zone 3 — V3_27 (1.87 ha) and V3_39 (1.32 ha). These are the highest-value and most contiguous areas of this type within the Proposed Designation and together account for 3.19 ha.	• Very High and High ecological value across all four polygons; • supports bat foraging and forest bird habitat in Zones 3 and 4; • kauri is recorded as a canopy component of this vegetation type — Appendix 3 kauri DBH triggers apply

Habitat / Feature	Total Area in Proposed Designation	Maximum clearance	Areas to be Retained	Ecological Justification
			• V3_29 and V4_105 are small and isolated and may be cleared within the 20% limit if avoidance is not practicable	within any area of this type proposed for clearance regardless of the Table B clearance limit; • 20% maximum clearance is ecologically appropriate for a type with high value but limited representation in the designation.

APPENDIX 3 – Critical Species Schedule

Table 5: This schedule applies across all vegetation types within the Proposed Designation regardless of dominant habitat classification. A pre-clearance survey for all species listed below is mandatory before any vegetation removal commences. Where a species is confirmed within a proposed clearance footprint, the trigger, clearance ratio, and actions in the relevant row apply in addition to any Appendix 1 or 2 requirements. Where a species is confirmed within an Appendix 1 Avoidance Area, avoidance takes precedence. DBH is measured at 1.3 m above ground; for multi-stemmed individuals, the largest stem applies.

Species	Range	Trigger	Clearance Ratio	Actions	Ecological Justification
Kauri (*Agathis australis*)	All vegetation types within Proposed Designation	≥50 cm DBH	50:1 eco-sourced kauri planted at approved mitigation site	• Individual must be mapped and an exclusion zone of 20× DBH radius applied. • No clearance, earthworks, or machinery movement within exclusion zone. • Where avoidance is not practicable, a 50:1 replacement applies. • Strict kauri dieback hygiene protocols in accordance with DOC Kauri Dieback programme requirements apply to all works within 50 m of any kauri regardless of DBH.	• At Risk – Declining nationally; • slow-growing with large individuals representing centuries of development; • functionally irreplaceable as the dominant species of the kauri forest ecosystem; • kauri dieback means any soil disturbance adjacent to kauri carries irreversible disease transmission risk at a landscape scale; • Brynderwyn Hills population is part of a fragmented and declining distribution in the upper Northland region.
Kauri (*Agathis australis*)	All vegetation types within Proposed Designation	≥2.5 cm and <50 cm DBH	10:1 eco-sourced kauri planted at approved mitigation site	• All kauri in this size class must be identified and mapped during pre-clearance survey. • Propagation from locally sourced seed or cuttings at 10:1 is required. • Strict kauri dieback hygiene protocols in accordance with DOC Kauri Dieback programme requirements apply to all works within 50 m of any kauri regardless of DBH.	• As above

Kawaka (*Libocedrus plumosa*)	Confirmed within kauri-podocarp forest polygons and potentially present in adjacent forest types	≥30 cm DBH	10:1 eco-sourced kawaka planted at approved mitigation site	• Individual must be mapped. • Replacement planting must use locally sourced propagation material from the Waipu or Otamatea Ecological Districts.	• Not Threatened nationally but carries declining population size and trend qualifiers (DPS, DPT); • naturally sparse and discontinuous in distribution; slow-growing with limited natural regeneration in modified landscapes.
Northern rātā (*Metrosideros robusta*)	All forest vegetation types — hemiepiphytic, grows across multiple canopy types	Stem or trunk diameter ≥20 cm at base	5:1 eco-sourced northern rātā established at approved mitigation site	• Individual must be mapped. • Specialist pre-clearance assessment required. • seed banking and propagation from locally sourced material required before clearance.	• At Risk – Declining nationally; • hemiepiphytic growth form means it occurs across multiple forest types and cannot be predicted from polygon classification alone; • provides important floral resources for forest birds and structural habitat for long-tailed bats; • population decline driven by possum browsing and habitat loss; • individual trees take decades to reach ecological maturity and cannot be replaced on any meaningful timeframe.
Northern rātā (*Metrosideros robusta*	All forest vegetation types	Stem or trunk diameter ≥5 cm and <20 cm at base	3:1 eco-sourced northern rātā established at approved mitigation site	• Individual must be mapped. Propagation from locally sourced cuttings required before clearance proceeds.	• As above
Ramarama (*Lophomyrtus bullata*)	All habitat types — not confirmed during surveys but present in	Any confirmed individual with stem	Works at that location halted immediately — no clearance ratio permits removal	• Pre-clearance survey must specifically target ramarama. • Any confirmed individual triggers immediate halt of works within 50 m	• Threatened – Nationally Critical; • one of the rarest indigenous plants in New Zealand;

	desktop records within designation	diameter ≥1 cm	without prior assessment	and notification to DOC and the consent authority within 24 hours. • No clearance may proceed until a species-specific effects assessment has been completed and approved. • Propagation from locally sourced cuttings at 20:1 required for any individual removed where avoidance is not possible.	• not confirmed during field surveys but present in desktop records within the Proposed Designation; • low detection probability during standard surveys; • any confirmed individual represents a nationally significant find warranting immediate assessment before any clearance proceeds.
Poroporo (*Solanum aviculare* var. *aviculare*)	All habitat types — shrub, most likely at disturbed forest margins and scrub edges	Any confirmed individual with stem diameter ≥1 cm	Works at that location halted until effects assessment completed	• Pre-clearance survey must confirm all poroporo locations within or adjacent to clearance footprint. • Works at confirmed locations must not proceed until an effects assessment specific to that population has been completed and provided to the consent authority. • Seed banking at 20:1 at a DOC-approved facility required for any individual removed where avoidance is not possible.	• Threatened – Nationally Endangered; • confirmed during D06 field surveys but absent from the effects assessment in Table 17. No effects characterisation has been completed for this species; • occurs at disturbed forest margins across multiple vegetation types and is not captured by polygon-based protection; • halt-and-assess trigger reflects the gap in the existing assessment.
Muehlenbeckia complexa var. *grandifolia*	Confirmed in kahikatea forest remnants; scrambling liane present in northern designation margins	Any confirmed individual with stem diameter ≥0.5 cm at base	10:1 locally eco-sourced specimens propagated and established at approved receiver site	• Individual specimen mapping mandatory during pre-clearance survey. • Propagation from locally sourced cuttings or seed at 10:1 is required.	• Threatened – Nationally Vulnerable; • confirmed during D06 field surveys within the kahikatea forest remnants at the northern end of the designation; • naturally uncommon in Northland; • as the species is dependent on established native forest structure, it cannot establish in open ground and its habitat is entirely contingent on retention of surrounding vegetation.

APPENDIX 4 – Monitoring Schedule

Table 5: Indicative monitoring schedule for translocated species and pest animals on the North Site. Note Hochstetter's frogs should be monitored at 6 months and all pest animals should be controlled for 3 months prior to translocation. Blue = quarterly, yellow = biannually and orange = annual.

Northern Site															
Species \ Year	1	2	3	4	5	6	7	8	9	10	15	20	25	30	35
	Translocated Species														
Hochstetters Frog	•		•		•					•	•	•	•	•	•
Native Lizards		•			•					•	•	•	•	•	•
Kauri Snail		•			•					•	•	•	•	•	•
	Pest Species														
Rat															
Mustelid															
Mice															
Possum															
Feral Cat															
Pig															
Deer															
Goat															
Hedgehog															

Table 6: Indicative monitoring schedule for translocated species and pest animals on the Central Site. Note Hochstetter's frogs should be monitored at 6 months and all pest animals should be controlled for 3 months prior to translocation. Blue = quarterly, yellow = biannually and orange = annual.

Central Site															
Species \ Year	1	2	3	4	5	6	7	8	9	10	15	20	25	30	35
	Translocated Species														
Hochstetters Frog	•		•		•					•	•	•	•	•	•
	Pest Species														
Rat															
Mustelid															
Mice															
Possum															
Feral Cat															
Pig															
Deer															
Goat															
Hedgehog															

Table7: Indicative monitoring schedule for translocated species and pest animals on the Southern Site. Note Hochstetter's frogs should be monitored at 6 months and all pest animals should be controlled for 3 months prior to translocation. Blue = quarterly, yellow = biannually and orange = annual.

Southern Site															
Species \ Year	1	2	3	4	5	6	7	8	9	10	15	20	25	30	35
	Translocated Species														
Native Lizards		•			•					•	•	•	•	•	•
Kauri Snail		•			•					•	•	•	•	•	•
	Pest Species														
Rat															
Mustelid															
Mice															
Possum															
Feral Cat															
Pig															
Deer															
Goat															
Hedgehog															