Before the Expert Consenting Panel

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

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

applicant: **NZ Transport Agency Waka Kotahi**

Requiring Authority and Applicant

Statement of Evidence of Lisa Denmead for NZ Transport Agency Waka Kotahi

Dated: 28 October 2026

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STATEMENT OF EVIDENCE OF LISA DENMEAD

INTRODUCTION

1 My full name is Lisa Helen Denmead.

2 I am an ecologist, employed by WSP New Zealand Limited in the role of Principal Ecologist, a role I have held since January 2026 (previously a Senior Ecologist since January 2022).

3 I hold a BSc, MSc and PhD in Biodiversity and Ecology. I have five years' experience as a consultant ecologist and four years' experience as a lecturer in Environmental Management. My MSc and PhD research focused on invertebrate ecology. I am a member of the NZES and the EIANZ.

4 My recent relevant experience includes:

4.1 Taihape Road (2024-2025): Technical lead for invertebrate ecology. Co-author of the Ecological Impact Assessment, Wildlife Act Application and Ecological Management Plan. Implementation of ecological management for vegetation removal under the Wildlife Act Authority.

4.2 American Samoa Wind Farm (2024-2025): Technical Lead for invertebrate ecology. Development of survey methodologies for endangered snail species, field assessments and co-author of ecology report outlining mitigation options for the Wind Farm development.

4.3 SH1 Brynderwyn Hills Recovery Project (2023-2024): Technical Lead for invertebrate ecology and Task Manager for all ecological components of the Project. Co-author of the Ecological Impact Assessment, Wildlife Act Application, Ecological Management Plans and compliance reporting.

5 I have been engaged to assist the NZ Transport Agency Waka Kotahi *(NZTA)* as part of notices of requirement and application for resource consents, wildlife approvals and archaeological authorities (together, the *Application*) to develop the Brynderwyn Hills section of the Alternative to the Brynderwyn Hills (*Project*), a state highway from the intersection of SH1 and Baldrock Road in the south, through the Brynderwyn Hills to Waipū in the north; and

6 I have been involved in the Project since August 2025. I am the co-author of the Assessment of Effects on Terrestrial Ecology lodged on 8 April 2026 in support of the Project (*Terrestrial Assessment*), specialising in invertebrates.[1]

[1] Vol B, Appendix D06 – Assessment of Effects on Terrestrial Ecology (*Terrestrial Assessment*).

CODE OF CONDUCT

7 Although this matter is not before the Environment Court, I confirm that I have read the Environment Court's Code of Conduct for Expert Witnesses in its Environment Court Practice Note 2023. I agree to comply with that Code. My qualifications as an expert are set out above. I confirm that the issues addressed in this brief of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE

8 My evidence addresses:

8.1 A summary of my effects assessment particularly as it relates to comments received;

8.2 Comments from:

(a) The Department of Conservation (*DOC*) (both in its comments on the Application and the Section 51 Report); and

(b) Te Pouwhenua o Tiakiri Kūkupa Trust on behalf of Te Parawhau hapū (*Te Parawhau*); and

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

(d) Te Uri o Hau.

SCOPE OF ASSESSMENT AND METHODOLOGY

9 The purpose of the Terrestrial Assessment was to identify, assess and recommend mitigation for the potential ecological effects of the Project on terrestrial vegetation and fauna, including terrestrial invertebrates.

10 The Terrestrial Assessment identified At Risk and notable invertebrate species likely to be affected by the Project and recommended mitigation measures to manage adverse effects on those species and their habitat.

11 The Terrestrial Assessment was informed by a desktop review of existing ecological information, together with field surveys undertaken between October and November 2025. The field surveys were designed to identify terrestrial ecological values within the Project area, including indigenous vegetation and fauna potentially affected by the Project.

12 Based on the desktop assessment, the invertebrate surveys primarily targeted kauri snail and *Amborhytida dunniae (A. dunniae)*, however, incidental observations of other notable invertebrates were documented.

13 The surveys consisted of a combination of manual habitat searching (36 person hours), targeted timed 10 x 10 m plots (39), spotlighting (8 person hours in high-quality kauri snail habitat) and opportunistic surveys.

14 I used the information collected during the desktop review and field surveys to identify terrestrial invertebrate ecological values, assess the likely effects of the Project and develop mitigation measures consistent with the Ecological Impact Assessment Guidelines published by the Environment Institute of Australia and New Zealand (*EIANZ Guidelines*).

15 I identified two At Risk – Declining terrestrial snail species within the Project area, being kauri snail (*Paryphanta busbyi*) and *A. dunniae*, both of which I assessed as having High ecological value (by applying the EIANZ Guidelines).

16 I recorded *A. dunniae* in native and exotic forest, treeland and scrub including patches with and without stock access, while kauri snails were recorded only in native forest with stock excluded. The Terrestrial Assessment recognised that both species may also be present more widely, but considered their occurrence more likely in mature native forest without stock access, where cooler, moist leaf-litter conditions provide more suitable microhabitat.

17 I also considered potential effects on other notable terrestrial invertebrates identified within the Proposed Designation, including peripatus (likely *Peripatoides sympatrica*) and glow worms (*Arachnocampa luminosa*).

18 Of the At Risk terrestrial snail species identified in the Proposed Designation, only kauri snails are protected under the Wildlife Act 1953 (*Wildlife Act*). As such an authorisation under that Act is not required for direct impacts on *Amborhytida dunniae*.

SUMMARY OF EFFECTS ASSESSMENT

19 Prior to mitigation, I assessed the level of effects on the two At Risk snail species as:

19.1 Injury or mortality during habitat removal (High): due to the low mobility and detectability of native snails during vegetation clearance and earthworks.

19.2 Operational disturbance (Low): associated with vehicle movements, noise, vibration and lighting following completion of the Project.

19.3 Construction disturbance (Low): associated with noise, vibration, lighting and dust affecting snails in adjacent habitat.

19.4 Habitat loss (High): due to the loss of a large area of potential habitat and a high proportion of habitat within the local landscape.

19.5 Indirect habitat loss and degradation via habitat fragmentation and edge effects (High): due to the creation of barriers to movement, increased edge effects, increased vulnerability to drying, and increased exposure to predators.

20 I assessed the effects on the other notable invertebrates identified in the Proposed Designation as Low.

21 I recommended mitigation actions to avoid, minimise and remedy adverse effects assessed as Moderate or higher, namely effects on the At Risk snail species associated with habitat loss, habitat fragmentation, and injury or mortality during habitat removal.

22 Part A below summarises my recommended effects management to address the direct impacts on snails during habitat removal and Part B summarises my recommended effects management to address the impacts on snail habitat.

PART A: DIRECT EFFECTS ON SNAILS

Recommended effects management for direct impacts on snails

23 To address the direct risk of injury or mortality during habitat removal, I recommended salvage and relocation of kauri snails and *A. dunniae*.

24 The purpose of salvage and relocation is to minimise direct effects on individual snails by locating and relocating animals from affected areas into alternative suitable habitat prior to vegetation clearance and earthworks.

Approach to salvage and relocation

25 My recommendations for the proposed salvage and relocation methodologies for At Risk snails provide for a toolbox approach, whereby a range of salvage methods may be applied as appropriate to site conditions and habitat characteristics. The Project Snail Suitably Qualified and Experienced Person (*SQEP*) has discretion to select suitable methodologies based on their assessment of the vegetation and habitat to be removed, including pre-construction habitat assessments where required.

26 The methodologies I propose include manual habitat searches and nocturnal spotlight surveys prior to vegetation clearance, together with construction-assisted salvage during vegetation removal. These

methods are intended to maximise the likelihood of detecting and salvaging individuals prior to, and during, habitat removal thereby minimising the risk of injury or mortality to snails during vegetation clearance and earthworks.

27 Salvaged individuals are to be relocated into suitable habitat within approved Release Sites, supported by habitat enhancement, mammalian pest control, habitat protection and post-release management measures.

28 I recommend that the salvage and relocation approach described above be required through conditions and implemented through a Snail Management Plan.

Release Site suitability and capacity

29 Prior to lodgement, I assessed the suitability of the "Release Sites" proposed in the Terrestrial Assessment (the Northern, Central and Southern Release Sites). My assessment was based on the results of field surveys, the presence of suitable vegetation and microhabitat features, the known habitat requirements of kauri snails and *A. dunniae* and the potential for habitat enhancement. My assessment also considered the ability of the Release Sites to provide long-term habitat for relocated snails and to support habitat protection and restoration measures over time as well as having regard to the wider ecological mitigation proposed for the project. I set out a summary of my assessment and views on the suitability of the proposed Release Sites below.

30 I confirmed kauri snails and *A. dunniae* were present within the Southern Release Site through the survey work undertaken to inform the Terrestrial Assessment (discussed above), confirming the suitability of that habitat for both species. The Release Site is the larger of two fenced areas which together form a QEII covenant registered in 2012. The Southern Release Site comprises kauri-podocarp-broadleaf forest and is characterised by deep leaf litter, woody debris and other cover suitable for terrestrial snails.

31 The surveys cannot indicate abundance or carrying capacity. However, proposed management for the Southern Release Site includes habitat protection, enhancement and pest control, together with indigenous planting proposed adjacent to the Release Site as part of the effects management for indigenous vegetation loss. In my opinion, these measures will:

31.1 Improve habitat quality within the Release Site in the short term, including through weed management and edge buffer planting to reduce edge effects; and

31.2 Increase the extent of suitable habitat within and around the Release Site in the medium to long term through restoration planting and associated expanded stock exclusion.

32 In my opinion, these measures will improve habitat quality and increase the extent of suitable habitat available within and around the Southern Release Site to support kauri snails and *A. dunniae* over time. I therefore consider the Southern Release Site suitable for release of At Risk snails salvaged within the Proposed Designation.

33 The Northern Release Site comprises a large contiguous tract of mature kauri-podocarp, broadleaf-podocarp and kānuka forest and is bordered by pastoral hill country and smaller native remnants. Approximately 65% of the Northern Release Site is currently fenced to exclude livestock, while the remaining 35% (predominantly kānuka forest) continues to be subject to stock access.

34 I confirmed *A. dunniae* as present within the Northern Release Site through the survey work undertaken to inform the Terrestrial Assessment (discussed above), confirming the suitability of that habitat for *A.dunniae.* Although no kauri snails were identified in the Northern Release Site during field surveys, the fenced portion of the Release Site contains suitable habitat for kauri snails, including deep leaf litter, abundant woody debris and other suitable refugia. In addition, two of the vegetation types present, kauri-podocarp forest and kānuka forest, are consistent with vegetation types within the Proposed Designation where kauri snails were recorded during the Project surveys.

35 Given that kauri snails are already known to occur within the Southern Release Site, I consider relocation of salvaged kauri snails should be prioritised to that site. However, as described above, the Northern Release Site also contains suitable habitat for kauri snails and remains suitable for their relocation if required.

36 Since lodgement, proposed mitigation measures for the Northern Release Site have been refined, and restoration planting of the same scale may no longer be implemented. However, indigenous planting is proposed adjacent to the Release Site as part of the effects management for loss of indigenous vegetation. The recommended Release Site management framework includes livestock exclusion from the entire Release Site, mammalian pest control, weed management and buffer planting around the Release Site margins. In my opinion, these measures will improve habitat quality, reduce edge effects and increase the extent of suitable habitat available to terrestrial snails over time. I therefore consider the Northern Release Site suitable for release of At Risk snails salvaged within the Proposed Designation.

37 Additionally, at both Release Sites, I recommend the specific snail release location microhabitats are enhanced through the addition of large wood and other debris to provide suitable refuge and shelter on release.

38 Taking into account the suitable habitat available across the Northern and Southern Release Sites, together with my recommended habitat protection, enhancement and management measures, I consider those sites provide an appropriate basis for relocation of At Risk snails.

39 Final allocation of snails to the Release Site should be confirmed having regard to the species and numbers actually recovered, the habitat and release microhabitats available, any resident snails, completed site preparation and management, and the continued suitability of the proposed receiving site.

40 I recommend that, before snails are released, the Project Snail SQEP confirms that the receiving habitat within the proposed Release Site remains suitable for the species and numbers proposed for release, having regard to:

40.1 the species and numbers recovered, the condition and extent of available habitat;

40.2 refuge availability;

40.3 completed enhancement measures;

40.4 evidence of resident snails; and

40.5 the availability of alternative receiving habitat

Overall conclusion on the effects of injury or mortality during habitat removal

41 I concluded in the Terrestrial Assessment that the direct effects (injury or mortality) to kauri snails and *A. dunniae* during habitat removal could be minimised through salvage and relocation. The combination of salvage and relocation, together with relocation into suitable Release Sites subject to habitat enhancement, habitat protection and pest management, formed the basis of that assessment.

42 Consistent with the conclusions of the Terrestrial Assessment, I consider that subject to the implementation of my salvage and relocation approach, together with the associated Release Site management and verification measures, the direct effects of the Project on kauri snails and *A. dunniae* would be Low at a population level.

PART B: SNAIL HABITAT

Recommended effects management for impacts on snail habitat

43 To address the impacts of the Project on snail habitat loss and fragmentation, I recommended, in the Terrestrial Assessment a combined mitigation site approach comprising minimisation through

detailed design and construction methodology and a combination of habitat protection, habitat enhancement and mitigation planting within the area surrounding the Northern and Southern Release Sites (referred to in the Terrestrial Assessment as the Northern and Southern Mitigation Sites). This integrated mitigation package was intended to address multiple ecological effects across a range of ecological values, including terrestrial vegetation, lizards, frogs and native snails, and formed the basis of the original assessment of a Low post-mitigation level of effect for the two At Risk snail species.

44 Since lodgement, the combined mitigation site approach for the Project has changed as a result of Mr Singers' and Mr van Winkel's refinements to the proposed mitigation for terrestrial vegetation and Hochstetter's frog. I have subsequently reviewed the implications of those changes for kauri snails and *A. dunniae.*

45 Accordingly, my effects management approach proposed for snail habitat in the Terrestrial Assessment has also been reviewed and updated as outlined below.

Summary of updated effects management package for snail habitat

46 Consistent with the effects management hierarchy, my approach to managing effects on At Risk snail habitat seeks first to avoid, then minimise and remedy effects where practicable. A number of effects-management measures recommended by the relevant Project specialists will contribute to avoiding, minimising and remedying effects on At Risk snail habitat, including:

46.1 Project Works are excluded from the Avoid Areas, except for Ecological Works. All of the Avoid Areas, except for the kahikatea stands, comprise of vegetation types in which At Risk snails were confirmed during the Project surveys. The southernmost Avoid Area, kānuka forest, was specifically recommended for avoidance because kauri snails were recorded within that forest.

46.2 Revegetation provided for through the Landscape Concept Plan may also contribute to remedying effects on snail habitat. Where revegetation of cut and fill batters and spoil sites adjoins existing At Risk snail habitat, and appropriate indigenous vegetation is established, it can contribute to restoring habitat and reducing fragmentation caused by the Project. Where landscape planting also provides habitat suitable for At Risk snails and adjoins, expands or connects existing suitable habitat, I consider it appropriate to recognise that ecological contribution as part of the overall effects management package for snail habitat. I do not consider planting undertaken solely for landscape or natural character purposes would by itself constitute management of snail habitat effects.

46.3 Conditions requiring remediation of remnant edges of Very High and High value forest habitat where Project Works result in partial clearance and create a new remnant forest edge. Where these areas are also At Risk snail habitat, this remediation will contribute to reducing habitat degradation associated with newly created edge effects.

46.4 Indigenous riparian planting in dry areas suitable for terrestrial snails, where this planting adjoins or connects suitable terrestrial snail habitat, may contribute to increasing habitat extent and connectivity. This planting is likely to be particularly relevant to *A. dunniae*, which was recorded across a wider range of habitat types than kauri snail, including exotic riparian habitat.

46.5 The management measures recommended at the Release Sites provide an additional component of the effects management package for habitat loss, fragmentation and degradation. With the exception of additional planting, the enhancement measures do not physically replace habitat lost within the Project footprint, but will improve the condition, security and ecological function of existing At Risk snail habitat within the Proposed Designation and thereby reduce some of the consequences associated with habitat loss, fragmentation and degradation.

46.6 This approach is particularly relevant to lower-quality snail habitat loss, affected by existing pressures, including commercial forestry and native and exotic forest remnants affected by livestock access and edge effects. The Release Sites will provide higher-quality habitat than much of this affected habitat, with habitat quality expected to improve further through the proposed enhancement and management measures.

46.7 This approach also provides benefits over a shorter timeframe than new indigenous planting, which will take time to establish and develop suitable habitat.

46.8 In particular, extending stock exclusion across existing native forest habitat is expected to provide substantial benefits for snails by removing an existing source of habitat degradation and allowing ground-layer habitat, including leaf litter, woody debris and understorey vegetation, to recover over time.

46.9 Buffer planting will reduce edge effects on existing habitat, while weed management will further improve habitat condition.

46.10 Long-term protection will also reduce the risk of future habitat loss or degradation.

47 In addition to the measures outlined above, Mr Singers' recommended approach to indigenous vegetation includes offsetting and compensation measures for the loss of a number of indigenous vegetation types. I consider these measures relevant to my assessment of effects on At Risk snail habitat because much of the indigenous vegetation affected by the Project also provides potential habitat for one or both At Risk snail species. Where effects management for indigenous vegetation also protects, enhances or establishes habitat suitable for the relevant snail species, in my opinion it is appropriate to recognise that contribution as part of the overall effects management package for snail habitat. This approach recognises the overlap between the ecological values being managed without requiring separate effects management for the same habitat loss.

48 Indigenous vegetation planting recommended by Mr Singers for proposed offsetting may therefore form part of the overall effects management package for At Risk snail habitat where that planting responds to the loss of vegetation that also constitutes potential snail habitat, establishes vegetation suitable for the relevant snail species, and is located to expand or connect existing suitable habitat.

49 Similarly, indigenous vegetation compensation recommended by Mr Singers may form part of the overall effects management package for At Risk snail habitat where that compensation responds to the loss of vegetation that also constitutes potential snail habitat and the compensation provides for protection or enhancement of indigenous forest habitat suitable for the relevant snail species.

50 Although all of the management measures outlined above could contribute to managing effects on At Risk snail habitat, I cannot be certain at this stage that residual effects on At Risk snail habitat will be appropriately managed. The final extent and location of habitat loss, and the extent to which that loss is addressed through the remediation, mitigation and indigenous vegetation offsetting and compensation measures described above, will depend on detailed design and the extent to which the effects management measures described above are ultimately secured and implemented.

51 I therefore recommend that the final conditions provide for assessment and management of any remaining residual effects on At Risk snail habitat once the final Project design and effects-management outcomes are known.

52 I recommend that this framework requires the final extent of potential At Risk snail habitat loss to be determined from the detailed design and the extent to which the effects-management measures described above contribute to managing that loss to be assessed by an appropriately qualified and experienced ecologist.

53 I recommend that the amount of any remaining habitat-management requirement be determined using effects-management ratios that reflect the vegetation type affected and its value as habitat for the relevant At Risk snail species. The ratios should provide for a greater response where higher-value habitat is affected and should account for the time required for newly established habitat to develop suitable ecological function. The ratios should be applied to the final extent and category of habitat affected after recognising the contribution provided by other qualifying effects-management measures, so that only the remaining shortfall is addressed through additional planting and/or stock exclusion.

54 Under this approach, potential habitat should be identified based on vegetation types that provide suitable habitat for the relevant At Risk snail species and should not rely on the species having been confirmed as present at the particular location affected.

55 Where effects management for snail habitat is not sufficiently achieved through the effects-management measures outlined above, I recommend that any remaining requirement be met through:

55.1 additional indigenous planting that establishes habitat suitable for the relevant At Risk snail species and is located adjacent to existing indigenous forest occupied by that species; and/or

55.2 stock exclusion of existing indigenous vegetation that supports a known population of the relevant At Risk snail species or is connected to indigenous vegetation supporting a known population of that species.

Overall conclusion on the effects of habitat loss and fragmentation

56 In the Terrestrial Assessment I concluded that, following implementation of the effects management measures proposed at that time, the overall level of effect associated with habitat loss, fragmentation and degradation on the two At Risk snail species would be Low.

57 The effects management package proposed for the Project has subsequently changed. Taking the revised package described above into account, and subject to my recommendations and the relevant recommendations of the other ecological experts being appropriately secured and implemented, I consider the level of effects of the Project on At Risk snail habitat will be Low.

PART C: RESPONSE TO COMMENTS

58 The following section of my evidence responds to comments from:

58.1 DOC;

58.2 Te Parawhau; and

58.3 Patuharakeke.

Many of the comments raise overlapping issues. Accordingly, the responses below are organised by topic rather than by commenter.

Purpose of the Wildlife Act

59 DOC considers the Application does not demonstrate consistency with the protective purpose of the Wildlife Act for kauri snails.[2] In my opinion, the mitigation proposed for kauri snails is consistent with protection of kauri snails at both the individual level and the population level.

60 At the individual level, the proposed salvage and relocation measures (outlined above) minimise the risk of death and injury effects to kauri snails that may otherwise occur as a result of Project activities.

61 At the population level, in addition to the proposed salvage and release measures, the proposed Release Site management framework includes habitat protection, habitat enhancement, mammalian pest control and restoration planting. These measures are intended to support the successful establishment and persistence of relocated populations and improve the long-term availability and quality of suitable kauri snail habitat.

62 While the proposed measures cannot remove all risk of mortality to individual kauri snails, it is my opinion that the proposed management package provides an appropriate level of protection for kauri snails in the context of the Project and is consistent with the purpose of the Wildlife Act.

Adequacy of Assessment

63 The DOC s51 Report raises concerns regarding the potential presence of additional At Risk, Threatened or protected invertebrate species that may not have been identified during baseline surveys, as well as wider effects on terrestrial invertebrate communities.

64 I acknowledge that additional At Risk, Threatened or protected invertebrate species may be present within the Proposed Designation and remain undetected. This is a common limitation of terrestrial invertebrate assessments given the high diversity of species present, the limited information available regarding the distribution and ecology of many invertebrate taxa, and the cryptic nature of many species.

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[2] DOC s51 Report dated 29 July 2026 (*DOC s51 Report*).

65 However, in my opinion, this uncertainty does not mean that the Terrestrial Assessment was inadequate. As outlined above, the assessment identified the key terrestrial invertebrate values present, assessed the likely effects of the Project on those values and informed the development of mitigation measures. Consistent with the EIANZ Guidelines, the assessment was focused on identifying and assessing ecological effects at a scale appropriate to the Project and the available information.

66 Also, while the mitigation measures I proposed for invertebrates in the Terrestrial Assessment are focused on the two At Risk snail species identified, those measures, including habitat protection, habitat enhancement, and restoration planting, will also provide benefits to the wider indigenous terrestrial invertebrate communities present within the sites where those measures are applied.

Assessment and survey methodology were appropriate for kauri snails

67 DOC and Te Parawhau have raised concerns regarding the adequacy of my survey methodology for kauri snails, including that the surveys do not provide a reliable basis for determining absence, estimating abundance, or estimating number of individuals likely to be affected and that additional surveys are required prior to construction.[3] I address these matters in turn below.

68 While additional surveys may have refined my understanding of kauri snail distribution within the Proposed Designation, I do not consider they would have materially altered my conclusions in the Terrestrial Assessment or the management approach I have proposed for kauri snails.

69 I agree that the surveys cannot reliably confirm absence. Consequently, I have not used survey non-detection to conclude that kauri snails are absent from potential habitat. Similarly, the surveys do not provide a reliable basis for estimating abundance or the number of individuals that may be affected. However, the surveys were not designed for either of these purposes.

70 Estimating abundance across the scale of the Proposed Designation is not practicable given the extent of suitable habitat and the cryptic nature of kauri snails and many other terrestrial invertebrate species. Even with substantially greater survey effort, abundance and the number of individuals potentially affected could not be determined with any reasonable level of confidence.

71 Rather, the survey programme was designed to confirm the presence of At Risk, Threatened, protected and notable invertebrate species within the Proposed Designation, identify potentially suitable

[3] DOC s51 Report, Comment from Te Pouwhenua o Taikiriri Kukupa Trust (*Te Parawhau*), Te Parawhau Hapū Comments s53-53, Appendix C - Statement of Evidence of Jacqueline Wairepo dated 12 August.

habitat for those species, and inform the assessment of effects and development of management measures.

72 In my opinion, the information available was sufficient for me to assess potential effects on kauri snails and develop appropriate management measures. As outlined above, my assessment was based on confirmed records together with the presence of suitable habitat throughout the Project area and recognised that kauri snails may be present within suitable habitat regardless of whether they were detected during baseline surveys.

Release Site suitability and capacity for At Risk snails

73 DOC has made several statements suggesting that the proposed Release Sites are either uncertain or unsuitable for the release of kauri snails, including concerns in relation to insufficient capacity.[4] Te Parawhau[5] has also raised concerns that there is insufficient information to demonstrate the proposed Release Sites are suitable for the species proposed to be relocated. I address these matters below.

74 In my opinion, the available information indicates that the proposed Release Sites are suitable for the relocation of *A.dunniae* and kauri snails and the proposed management measures will increase the extent and quality of habitat available to support both resident and relocated snails over time.

75 I acknowledge there is uncertainty regarding the capacity of the proposed Release Sites to support relocated snails. However, this uncertainty is not unusual for fauna relocations and does not, in my view, mean the Release Sites are unsuitable. While further Release Site-specific surveys could provide useful information, release site surveys do not typically provide certainty regarding resident population size, prey availability or carrying capacity.

76 I consider release site suitability can be, and was, appropriately assessed having regard to habitat suitability, habitat extent, habitat condition, connectivity to surrounding indigenous vegetation, known species records and the proposed management measures. These were all factors I considered in selecting and assessing the proposed Release Sites.

77 As described above, both Release Sites contain suitable habitat for the At Risk snails. The Southern Release Site also supports an existing kauri snail population, while the Northern Release Site contains vegetation types and microhabitat characteristics consistent with areas elsewhere in the Proposed Designation where kauri snails were recorded. The recommended management

[4] DOC s51 Report; Comment from DOC, Appendix E – Statement of Advice of Dr Jamie Stavert on Invertebrates dated 20 October 2026.

[5] Comment from Te Parawhau, Review of Wildlife Approval Conditions dated July 2026.

measures will further improve habitat quality and extent and support the establishment and persistence of relocated populations over time.

78 Given that kauri snails are already known to occur within the Southern Release Site, relocation of salvaged kauri snails should be prioritised to that site. However, as described above, the Northern Release Site also contains suitable habitat for kauri snails and remains suitable for their relocation if required.

79 Taking into account the suitable habitat available across the Northern and Southern Release Sites, together with my recommended habitat protection, enhancement and management measures, I consider those sites provide an appropriate basis for relocation of At Risk snails. Final allocation should be confirmed by the Project Snail SQEP prior to release having regard to the species and numbers actually recovered, the habitat and release microhabitats available, any resident snails, completed site preparation and management, and the continued suitability of the proposed receiving site.

Amendments to effects management measures

80 In addition to the matters outlined above, DOC, Te Parawhau, Patuharakeke and Te Uri o Hau have proposed specific amendments to NZTA's proposed effects management measures, including:

80.1 Requirements for fixed, minimum salvage requirements across the Proposed Designation for snails;

80.2 Addition of weather conditions for snail salvage;

80.3 Longer pest control including measurable targets;

80.4 Requirements for additional monitoring and management responses;

80.5 Requirements for DOC to assess lead entomologists as part of the Application;

80.6 Effects on snail habitat;

80.7 Specific changes to the proposed Wildlife Approval conditions; and

80.8 Hapū involvement in ecological management

81 I address these matters below.

Minimum salvage effort specifications are not required

82 DOC has proposed that minimum salvage effort requirements be specified for kauri snails across the Proposed Designation. In my

opinion, a fixed minimum salvage requirement is not appropriate for a project of this scale and complexity.

83 Habitat quality, habitat extent, vegetation type, weather conditions and the likelihood of kauri snail occurrence vary considerably across the Proposed Designation. Consequently, the most appropriate survey and salvage methods, and the level of effort required, will also vary between locations. A prescriptive minimum requirement may result in survey and salvage effort being applied in a manner that is not appropriate for the habitat present, rather than allowing methods and effort to be tailored to site-specific conditions.

84 I consider an approach whereby a suitably qualified and experienced person determines the appropriate salvage methods and level of effort, informed by the pre-construction habitat assessment, is most likely to achieve effective outcomes. This allows the methods and effort to be tailored to the habitat and site-specific conditions encountered, rather than prescribing a fixed minimum salvage effort across the Proposed Designation.

Addition of weather conditions for snail salvage

85 DOC has proposed snail-specific weather conditions are included in the draft EMP.[6]

86 I agree that snail salvage should be undertaken under suitable weather and moisture conditions to maximise the likelihood of detecting At Risk snails. I therefore recommend that the final conditions require snail survey and salvage to occur during suitable weather and moisture conditions for snail activity and detection and to avoid prolonged dry conditions likely to materially reduce detectability.

Long-term population outcomes depend on habitat management

87 DOC has proposed longer-term mammalian pest control and the inclusion of outcome-based pest-control requirements at the Release Sites)[7]. Patuharakeke have also suggested amendments to the Wildlife Approval conditions to include specific performance targets and monitoring requirements[8].

88 NZTA's proposed pest control is intended to support the survival and establishment of relocated animals following release. While I agree that extending pest control would provide ecological benefit, I do not consider that pest control should be the primary mechanism by

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6 Comment from DOC, Appendix E – Statement of Advice of Dr Jamie Stavert on Invertebrates dated 20 October 2026.

7 DOC s51 Report.

8 Comment from Te Patuharakeke Te Iwi Trust Board (*Patuharakeke*)– expert Kaupapa Maori covering letter with appendices dated 20 October 2026, Rural Design Ecological Review on behalf of Patuharakeke Te Iwi Trust Board dated October 2026.

which long-term population outcomes are achieved. Although pest control will benefit both resident and relocated kauri snails while it is being undertaken, those benefits will not persist when pest control ceases.

89 In my opinion, the long-term outcomes for kauri snail populations will depend principally on the availability, protection and enhancement of suitable habitat within the Release Sites.

90 Therefore, pest control at the Release Sites should be targeted at supporting the survival and establishment of relocated animals following release, while habitat protection, restoration and enhancement should be used to provide the conditions necessary to support populations over the longer term.

91 I agree measurable pest-control targets are key to evaluating whether pest-control objectives will be achieved. I recommend the final conditions include a requirement for a Pest Management Plan with more detailed requirements, including measurable performance targets, monitoring of performance against those targets, and management responses where applicable targets are not being achieved.

Additional monitoring and management responses

92 DOC and Te Parawhau have raised concerns regarding the proposed monitoring framework for relocated kauri snails.[9]

93 I agree that post-release monitoring has an important role in informing whether relocated kauri snails persist at Release Sites and whether the proposed management measures are being implemented as intended.

94 However, I do not consider it practicable to establish quantitative population targets or success criteria for kauri snails. Kauri snails can be difficult to detect and occur at variable densities, meaning that monitoring results may not reliably reflect population size or trends. Consequently, the absence of detections during a monitoring event does not necessarily indicate that a population has failed to establish.

95 In my opinion, monitoring is more appropriately focused on determining whether relocated kauri snails persist at the Release Sites, whether pest-control objectives are being achieved, and whether the habitat protection, restoration and enhancement measures proposed for the Release Sites are performing as intended. Together, these measures provide an appropriate basis for

[9] Comment from DOC, Appendix E – Statement of Advice of Dr Jamie Stavert on Invertebrates dated 20 October 2026; Comment from Te Pouwhenua o Taikiriri Kukupa Trust (*Te Parawhau*), Te Parawhau Hapū Comments s53-53, Appendix C - Statement of Evidence of Jacqueline Wairepo dated 12 August.

assessing the effectiveness of the proposed management framework. Where monitoring indicates that a habitat, pest-management or other management outcome is not being achieved, I recommend that the Project Snail SQEP review the likely cause, identify and implement any appropriate change to management, and undertake further monitoring or verification to assess the effectiveness of that response. I recommend that this monitoring, review, response and verification framework be secured through the final conditions and implemented through a Snail Management Plan and Pest Management Plan, as applicable.

96 DOC and Patuharakeke have also questioned the proposed threshold for post-release monitoring.[10] I acknowledge their concern regarding the proposed threshold of 20 individuals and that the current threshold is not supported by a specific empirical basis. I am not aware of any established monitoring threshold for kauri snail relocations. However, thresholds have been used for lizards, another cryptic fauna group, where monitoring is unlikely to provide meaningful information below a certain level of salvage or relocation effort. In my opinion, some form of threshold is appropriate given the cryptic nature of kauri snails and the limitations of post-release monitoring. Where only a small number of individuals are relocated, monitoring may have limited ability to provide meaningful information regarding persistence because the likelihood of detecting relocated animals is inherently low.

Project Entomologist competency requirements

97 DOC has proposed that the Project Entomologist be assessed and approved by DOC as part of the Application[11] and Te Parawhau has raised concerns regarding the reliance on a generic Suitably Qualified Person where activities involve Protected Wildlife, taonga species, threatened species, At Risk species, regionally significant species, or habitats supporting such species[12].

98 I agree that survey, salvage, relocation and monitoring of At Risk snails should be undertaken under the direction of an appropriately qualified and experienced ecologist with specific experience relating to indigenous terrestrial snails. However, I do not consider it necessary or practical for a specific individual to be identified and assessed as part of the current Application. The Project will be implemented over an extended timeframe and the personnel available to undertake these works may change over the life of the Project.

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10 Comment from DOC, Appendix E – Statement of Advice of Dr Jamie Stavert on Invertebrates dated 20 October 2026. Comment from Patuharakeke, Rural Design Ecological Review.

11 DOC s51 Report.

12 Comment from Te Parawhau, Review of Wildlife Approval Conditions dated July 2026.

99 I recommend that the Wildlife Approval conditions include activity-specific competency requirements, rather than requiring the identification or approval of a particular individual. I recommend the conditions adopt this approach by including a more detailed SQEP definition and requiring the Project Snail SQEP to have demonstrated qualifications, training and experience relevant to indigenous terrestrial snails.

Effects on Snail habitat

100 DOC and Te Parawhau have made several statements about the mitigation proposed for effects on snail habitat, suggesting it is inadequate and/or results in residual effects.

101 As outlined above, the mitigation proposed for effects on At Risk snail habitat has developed since the Terrestrial Assessment was prepared. In my opinion, subject to the adoption of my recommendations, NZTA's effects management package is appropriate to manage effects on At Risk snail habitat such that the level of effects will be Low.

Hapū involvement in ecological management

102 Patuharakeke and Te Uri o Hau have raised matters regarding how hapū involvement in ecological management should be provided for through the Project conditions and the CVMP. These include participation in ecological monitoring and management, information sharing and reporting, and cultural inductions for personnel undertaking Project works.

103 From an ecological management perspective, in my experience, early and ongoing involvement of mana whenua can contribute to better ecological outcomes through effective implementation of ecological management measures, shared knowledge and timely communication where ecological matters arise during works. This could include, for example, cultural inductions for personnel undertaking Project works, opportunities for hapū representatives to participate in ecological monitoring, salvage and relocation activities, and to receive relevant ecological monitoring, reporting and notifications. I therefore support this being clearly provided for in the conditions. I understand NZTA is not opposed in principle to providing for these matters.

Changes to conditions

104 Te Parawhau have suggested extensive changes to the Wildlife Approval conditions as lodged by NZTA. I have considered these suggestions in preparing my evidence and in providing input into the updated conditions that NZTA will propose. Also, where relevant to At Risk snails, I have addressed some of the matters raised in the sections above.

CONCLUSIONS

105 I consider the key ecological effects of the Project on terrestrial invertebrates and their habitat have been identified and assessed at a scale appropriate to the Project. Although there are limitations to the survey information, the surveys and assessment were sufficient to identify potentially suitable habitat for At Risk, Threatened, protected and notable invertebrate species within the Proposed Designation, and to inform the assessment of effects and development of management measures.

106 The key ecological effects identified were the effects on kauri snails and *A. dunniae* associated with habitat removal, fragmentation and injury or mortality during vegetation removal. My evidence has focused on the management required to address those effects.

107 I consider salvage and relocation to be an appropriate means of minimising the risk of injury or mortality during habitat removal. I recommend the salvage methods be selected by a suitably qualified and experienced snail ecologist having regard to the habitat and site conditions encountered. Salvaged snails should be relocated to the Northern and Southern Release Sites subject to the Project Snail SQEP confirming prior to release that the relevant Release Site remains suitable for release.

108 I consider both of the Release Sites have habitat suitable for relocated At Risk snails. Kauri snails are known from the Southern Release Site and *A. dunniae* has been recorded at both Release Sites. The proposed habitat enhancement, protection and pest management will further improve the habitat available for resident and relocated snails.

109 On this basis, and subject to implementation of my recommendations through conditions, I consider the direct effects of the Project on kauri snails and *A. dunniae* will be Low at a population level.

110 The management of effects on At Risk snail habitat has changed since the Terrestrial Assessment was prepared. The current approach recognises that a number of measures proposed for other ecological values will also manage effects on snail habitat where the ecological values overlap. These include avoidance of identified vegetation, forest-edge remediation, revegetation and riparian planting, Release Site enhancement, and indigenous vegetation offsetting and compensation where those measures protect, enhance or establish habitat suitable for the relevant snail species.

111 I recommend the proposed conditions also provide a mechanism to identify any remaining effects on At Risk snail habitat once the final extent of habitat loss and the contribution of those other effects-management measures are known, and to provide additional effects management where required. This requirement is important because

the extent of residual habitat effect (if any) and therefore the need for additional effects management, cannot be determined until detailed design is complete and the contribution of the other effects-management measures is known.

112 Subject to implementation of that framework, I consider the effects of habitat loss, fragmentation and degradation on At Risk snail habitat will be Low.

Lisa Denmead
28 October 2026