TO:	Andrew Allsopp-Smith, Andrew Fawcet Vineway Limited	Date:	30 June 2025
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FROM:	Mark Delaney, Amanda Good		

DELMORE FAST TRACK APPLICATION - RESPONSE TO AUCKLAND COUNCIL TERRESTRIAL ECOLOGY QUERIES

Background

Vineway Limited (Vineway) has applied for approvals under the Fast-track Approvals Act 2024 to develop approximately 109 ha of land at Upper Ōrewa Road and Russell Road ('the site'). As part of the application, Viridis Limited (Viridis) prepared an Ecological Impact Assessment (EcIA) assessing the potential effects of the proposal on the receiving environment (Viridis 2025a). In accordance with the fast-track process, Auckland Council (AC) has been engaged to review and comment on the application. Initial feedback on the EcIA and the proposal's potential environmental effects was provided in two technical memorandums prepared by AC (2025a, 2025b). Viridis provided a response (Viridis 2025b) to the terrestrial ecological comments (AC 2025a). AC reviewed this response and has subsequently issued a technical memorandum with updated terrestrial ecology comments (AC 2025c). Viridis have reviewed this latest AC technical memorandum and have incorporated further responses in this updated memorandum.

This memorandum has been prepared by Viridis in response to the majority of issues raised by AC's technical ecology reviews. Relevant terrestrial ecology queries from AC have been labelled in accordance with the Applicant Response Table and reproduced in italics below for ease of reference. Responses to the issues raised by AC not addressed in this memo are provided either in the Applicant Response Table, by other technical experts, or have been addressed in the response to AC freshwater ecology queries memorandum prepared by Viridis (2025c).

Response to Queries

Terrestrial Ecology

Item 5: The EcIA may not have accurately mapped or depicted all areas of indigenous vegetation or wetland on the site.

Based on our meeting with AC about its feedback and before preparing this response, we understand that this comment is not directed at any specific location, but rather reflects the fact that the AC specialist was unable to access all parts of the site due to their own time constraints. Viridis attended the site with the AC specialist on 13 May 2025, during which the majority of the site was accessed directly by the AC specialist. Only the northernmost and westernmost sections were not accessed directly, although these were visually assessed from a distance. I note also that the majority of these areas are outside the development footprint, and are subject to revegetation and/or buffer planting only.

For the areas that were directly accessed, no specific concerns were raised regarding the mapping of indigenous vegetation. We consider the mapping presented in the EcIA to be a fair and accurate representation of the indigenous vegetation present on site.

With respect to wetlands, the AC freshwater ecology specialist identified three additional areas requiring further investigation. These will be addressed in a supplementary memorandum responding to the comments from AC's freshwater ecology specialist.

Item 8: Offsets have not been evaluated against potential values, in calculating for loss. Lacks assessment against AUP Appendix 8 and/or accountancy models such as the Guidance on Good Practice Biodiversity Offsetting in New Zealand 2014. Noting that amendments to covenants are only possible when conditions are imposed by Council irrespective of the magnitude of effects.

Natural regeneration is occurring within the areas of proposed indigenous vegetation removal, both in the specific part of the area where vegetation will be removed and also across the wider vegetated area. Seedlings and saplings of canopy species present, indicating a functioning successional trajectory. As such, it has the potential to develop into a mature indigenous ecosystem (e.g., WF11 – kauri, podocarp, broadleaved forest). Although the area may currently be degraded or partially modified, it contributes to a broader ecological network, offering habitat for mobile indigenous fauna such as native birds (e.g., tūī, kererū), reptiles, and invertebrates. Given the location relative to existing forest remnants or SEA-Ts identified in the AUP, the site has potential to support greater biodiversity through connectivity enhancement. The vegetation also plays a role in buffering adjacent ecological features such as wetlands or streams, reducing edge effects and protecting hydrological and soil stability functions. The potential ecological value of the affected areas has been taken into account in the assessment of appropriate mitigation measures.

The AUP Appendix 8 biodiversity offsetting framework is provided below in bold:

1. **Restoration, enhancement and protection actions will only be considered a biodiversity offset where it is used to offset the significant residual effects of activities after the adverse effects have been avoided, remedied or mitigated.**
2. **Restoration, enhancement and protection actions undertaken as a biodiversity offset are demonstrably additional to what otherwise would occur, including that they are additional to any avoidance, remediation or mitigation undertaken in relation to the adverse effects of the activity.**
3. **Offset actions should be undertaken close to the location of development, where this will result in the best ecological outcome.**
4. **The values to be lost through the activity to which the offset applies are counterbalanced by the proposed offsetting activity, which is at least commensurate with the adverse effects on indigenous biodiversity. Where possible the overall result should be no net loss, and preferably a net gain in ecological values.**
5. **The offset is applied so that the ecological values being achieved through the offset are the same or similar to those being lost.**

Our assessment against this framework is provided below:

1. Avoidance, remediation, mitigation, and also minimisation have been considered through design refinement. Offsetting is only proposed for unavoidable loss.
2. Offset actions proposed go beyond existing legal obligations, AUP expected enhancement outcomes and current baseline conditions. They focus on areas not subject to protective

consent notices, or they result in planting of areas covered by the consent notices that are not current covered in native vegetation.

3. Offset actions are located within the application site.
4. A total of 2.25 ha of native and exotic dominant vegetation is proposed to be removed, including where these vegetation types are within riparian and wetland margins and consent notice areas. This area does not include the removal of gorse scrub or pine planation, which is considered a permitted activity and positive outcome in itself. The overall revegetation planting proposed will comprise a total area of 32.8 ha, equivalent to a 1:14.6 replacement ratio. All revegetation planting is proposed to be protected and managed under consent notices. This planting will greatly increase the ecological value of the Site through improving plant species diversity and abundance, habitat diversity and abundance, freshwater quality and habitat, connectivity (within the Site and to the wider environment) and ecological resilience. As such the proposed offset actions are expected to achieve a net gain in ecological values even when taking into account potential values.

   Given the ongoing biodiversity crisis in Auckland (characterised by habitat fragmentation, invasive species pressures, and declining native species populations), large-scale, permanent restoration efforts such as this are vital. The extent and strategic placement of the proposed planting will create more robust and connected ecological networks, directly supporting regional restoration targets and long-term biodiversity outcomes.
5. Offsets target the same ecosystem type (WF11), using appropriate species and restoration techniques.

The proposed offset is considered consistent with the principles outlined in AUP Appendix 8.

Item 9: The flora surveys appear to be rapid and not a thorough assessment of botanical value; noting that the area is known for a range of threatened plant species. This has consequences for several activities proposed within covenanted areas, including alteration and/or loss of habitat, and installation of wastewater disposal fields.

The vegetation survey conducted as part of the EcIA was intended to provide a representative assessment of vegetation types across the site, including within covenanted areas. While the survey was undertaken using standard rapid assessment techniques, it was carried out by experienced ecologists familiar with the local flora, and particular attention was given to identifying any threatened or regionally uncommon species.

Importantly, a higher level of assessment was applied in areas where indigenous vegetation removal is proposed, including more detailed identification of species and habitat condition. The overall level of assessment was considered proportionate to the magnitude of indigenous vegetation removal, with effort focused on the most ecologically sensitive or potentially impacted areas. It is important to keep in mind that areas of indigenous vegetation on site are predominantly free from works.

It is also noted that:

- Vegetation clearance is being avoided in locations where threatened plant species are more likely to occur, including within AUP SEA-Ts (which are over the northern and western parts of Stage 2) and indigenous vegetation adjoining the Nukumea Reserve.

- At the time of survey, no threatened or regionally uncommon plant species were observed within the areas proposed for disturbance or infrastructure installation (e.g. wastewater disposal fields).
- An independent arborist assessment also did not identify the presence of any threatened plant species within or adjacent to proposed works areas. This assessment was provided with the substantive application as lodged.

For the reasons identified above it is considered that the flora surveys provide a sufficient level of detail, and as such, the effects of proposed activities on species within the affected areas have been considered appropriately.

Item 10: No formal surveys have been completed for fauna, including nationally or regional threatened species, especially as they relate to urbanisation, and adverse effects on lizards, birds and bats from pet ownership, lighting and/or noise. The EcIA cannot be considered complete or an accurate reflection of fauna values given the desktop analysis presented. This is a significant oversight of the application.

- *I note that the adjacent development at Ara Hills has restrictions on pet ownership that was caucused at the application hearing.*

This response also relates to paragraphs 7.1-7.5 of the updated terrestrial ecology technical memorandum (AC 2025c).

We consider that the assessment approach was appropriate, effects-based, and proportionate to the scale and nature of the proposed vegetation clearance and associated works. Additional surveys would not provide further information that would change the assessment. It is important to note that the nature of surveys means it is still not guaranteed that all species present would be identified if further survey works were to be undertaken, therefore, a conservative approach would still be taken regardless, reflecting habitat availability and desktop based assessments.

The EcIA assessment was informed by:

- A comprehensive desktop review of available up-to-date databases and published information, including DOC's Bioweb, ARDs, eBird, and regional ecological datasets;
- Recent and relevant field data, most notably the 2022–2023 long-tailed bat survey (Cullen 2023), which involved 93 acoustic monitoring deployments within 10 km of the site. Given that long-tailed bats are capable of travelling over 25 km in a single night, this dataset provides a meaningful understanding of their likely presence and movement patterns in the wider area;
- Habitat assessments undertaken during the field visit, which evaluated the suitability of on-site habitat for threatened or at-risk species such as indigenous lizards, birds, and bats.

We acknowledge that certain fauna species, particularly cryptic or low-density species like lizards or bats, are difficult to detect without targeted survey methods. However, detailed species-specific surveys are typically reserved for instances where there is a high likelihood of presence and where works may impact high-value or sensitive habitat, such as larger forest remnants or SEA-Ts.

In this case:

- The assessments showed that the site is not known to be subject to high bat use;
- The extent of indigenous vegetation removal is modest, and areas with higher ecological value, including SEA-Ts and indigenous vegetation adjacent to the Nukumea Reserve, are being avoided;

- A precautionary and conservative approach was adopted. Both long-tailed bats and indigenous lizards were assumed present where suitable habitat exists, and the potential for adverse effects was addressed on that basis;
- Residual risk to fauna will be managed through standard appropriate mitigation measures, including timing of vegetation clearance to avoid peak bird breeding season, pre-clearance surveys for lizards and bats, management plans, and planting to enhance ecological connectivity.

To ensure effective management of potential effects on fauna, a condition-based approach has been adopted for the whole site, aligned with the ecological management framework already approved under the NOR6 designation. These conditions:

- Require pre-construction ecological surveys within all areas of proposed vegetation removal (including wetlands), not just within Identified Biodiversity Areas associated with the NOR6 designation;
- Require preparation of a finalised Fauna Management Plan, informed by these surveys, to be submitted and certified by AC as a condition of consent.

This approach ensures that the presence any species of concern (e.g., bats, lizards, birds) are confirmed and managed appropriately. It aligns with the existing NOR6 designation conditions, thereby simplifying implementation and allowing more detailed fauna surveys at the appropriate stage of project delivery.

A draft fauna management plan has also been prepared and is attached to this memo.

In summary, while the EcIA is based on desktop and habitat-level assessment, it reflects a realistic and appropriately cautious identification of fauna values, supported by regionally relevant data and a robust, condition-led effects management framework. This is consistent with accepted ecological practice for projects of similar scale and context and additional surveys would not provide further information that would change the assessment, given its already conservative nature.

With respect to the AC specialist's comments about protecting fauna values after construction:

- In regard to lighting and noise effects, the overall development includes 16.1 ha of riparian and buffer planting within 20 m of streams and wetlands, of which 10.5 ha lies within 10 m. Beyond the 20 m riparian zone, an additional 16.7 ha of revegetation planting is proposed. This planting enhances connectivity and provides buffering between SEA-Ts, areas protected by consent notices, and riparian margins. As a result, extensive areas of 20 m riparian buffer are achieved, with some areas exceeding this width.

  In the areas where development is closest to Nukumea Reserve or SEA-T, a minimum 40 m planted setback is proposed to the nearest rear lawn. In other locations, planted setbacks typically range from 100 m to 300 m. Additionally, the closest lots adjoining Nukumea Reserve are positioned well below natural ground level, separated by 1:3 planted batters along the site boundary.

  These substantial setbacks, planted buffers, and the lowered lot elevations together provide effective mitigation of light spill and noise. This is considered appropriate, particularly as the site is not identified as a high-use area for bats or a significant seabird nesting area.

Item 14: A Wastewater disposal field is proposed with covenant area on 55 Russell Road; the EcIA and AEE are silent on the effect of vegetation alteration and damage, or the short / long term implications of a commercial sized operation with the protected area; or whether open paddocks available before the latter stages of the development would be more suitable. Avoidance has not been demonstrated. The covenant area is steep, and suitability of the location hasn't been demonstrated with regards to freshwater values and surface runoff associated with a commercial scale disposal area. Wastewater field is not envisaged nor allowed in covenant areas, especially at this scale (not wording of the consent notice). If temporary how will the installation be decommissioned or is it envisaged that the 1000's meters of irrigation pipe be left in situ?

Vegetation alteration or damage

The proposed irrigation area lies within a bush covenant dominated by young, regenerating native vegetation that largely reflects the early successional stages of its historic WF11 ecosystem type (Kauri, podocarp, broadleaved forest; Singers *et al.* 2017a). The area is comprised of predominantly mānuka (*Leptospermum scoparium*), kānuka (*Kunzea robusta*), māhoe (*Melicytus ramiflorus*), red māpou (*Myrsine australis*) and tree ferns (*Cyathea* sp) (Figure 1a-d). Beyond the edges, the covenant area supports a sparse understorey comprised mainly of common weeds, with ferns and grasses scattered throughout (Figure 1e-f). While the area is regenerating well, it would benefit from enhanced weed and pest control.

To establish the wastewater disposal field, surface irrigation lines (on-grade pressure drippers) would be installed by hand at one metre intervals, minimising disturbance. At one metre spacing there is flexibility to allow for this spacing to be increased to accommodate any obstacles on a case-by-case basis while still being able to deliver the volumes required. No canopy or substantial vegetation removal is proposed. Short term impacts involving the installation of the surface irrigation field will be limited to light clearance of low-lying vegetation within the understorey consisting of mainly of common weeds, with ferns and common grasses.

The covenant (6079871.2) does not explicitly prohibit the establishment of an irrigation field within the protected area. Instead, it requires that the landowner shall:

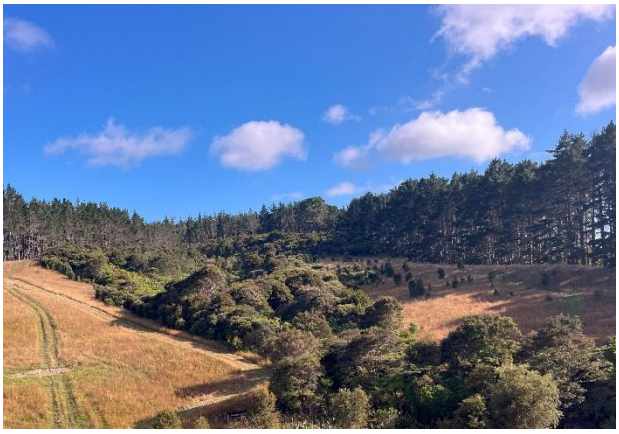
- *Preserve the native vegetation, wildlife habitat and the natural landscape within the areas of wetland and buffer riparian margins.*
- *Not (without the prior written consent of the council and then only in strict compliance with any conditions imposed by the council) cut down, damage or destroy, or permit the cutting down, damage or destruction of the vegetation or wildlife habitats within the area to be protected.*
- *Not do anything that would prejudice the health or ecological value of the area to be protected, their long-term viability and/or sustainability.*

The method of installation (hand-laid, on-grade dripper lines) will avoid any significant disturbance to vegetation or wildlife habitat. No vegetation clearance is proposed for installation or maintenance beyond what would typically occur as part of manual weed and pest control, irrespective of the irrigation proposal. However, as outlined within Section 7.5.3 of the lodged AEE, the applicant has sought to vary the first schedule of the covenant to enable vegetation removal within the specified extent of the covenanted area, as authorised by the application.

While some light clearance of low-growing understorey vegetation is anticipated, the associated effects are considered less than minor. These works are consistent with the intent of the covenant, as they will

not compromise the ecological health, values, or long-term viability of the area. The potential impact on indigenous understorey vegetation is expected to be similar to what would occur under standard pest plant management practices, regardless of the irrigation proposal. This is because the limited vegetation clearance required for the irrigation area primarily involves weed species and does not include the removal of significant indigenous habitat or mature native vegetation. The proposal has been designed specifically to avoid impacts on the ecological values that the covenant seeks to protect, and the limited clearance required has been appropriately considered within that context.

a)



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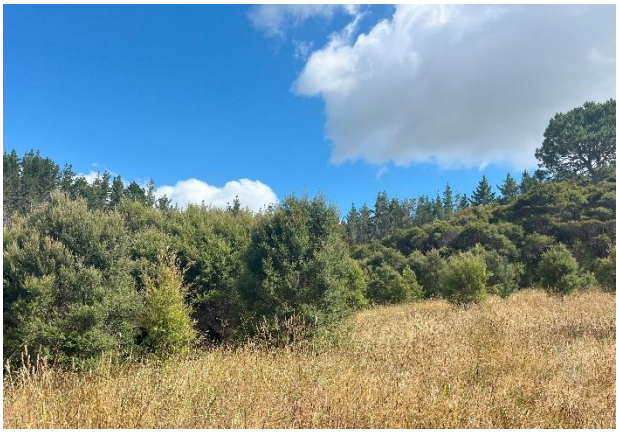

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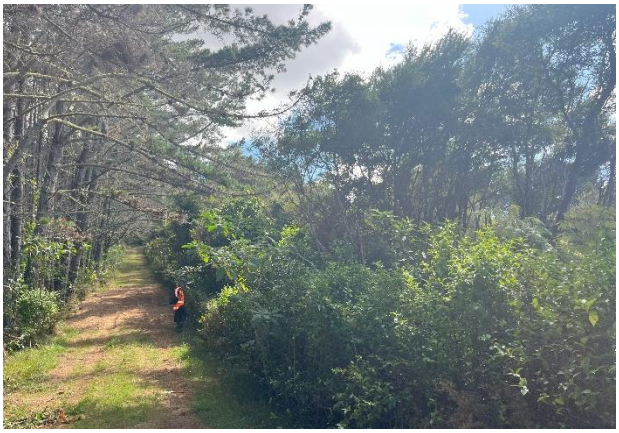

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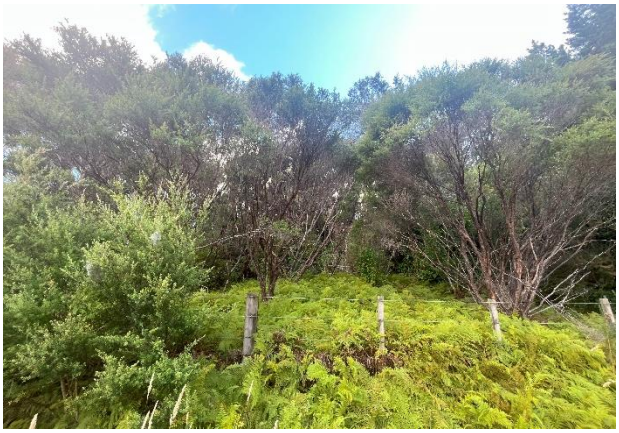
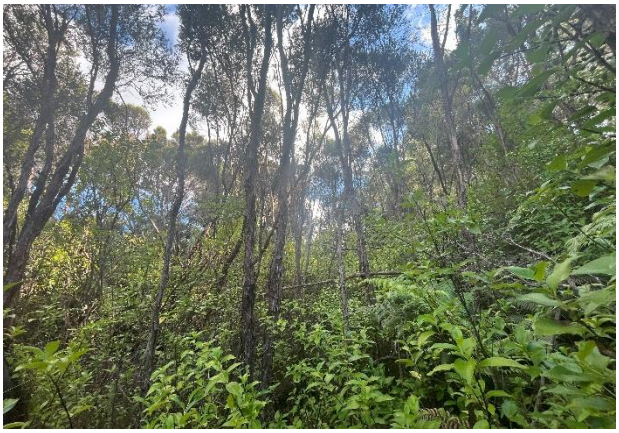


e)



f)

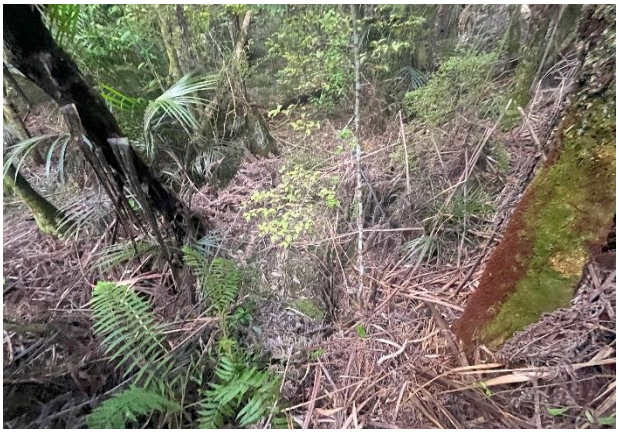


Figure 1. The proposed irrigation area within the site's covenant bush (a-f). Pictured 14 January 2025.

Ongoing operational effects

The proposed irrigation of treated wastewater within the covenant area has been carefully designed to avoid negative environmental effects and ensure the short-term and long-term health of the site. Key controls are in place to manage soil moisture, protect vegetation, and maintain slope stability. Specifically:

- The effluent will be treated to a high standard, with reverse osmosis included as part of the treatment train (Apex 2025), ensuring minimal nutrient and contaminant load.
- Recent research (Meister 2022) shows that long-term irrigation of treated municipal wastewater, at rates exceeding 4000 mm/yr, had no negative impact on native species such as mānuka and kānuka.
- Soils in the proposed irrigation area are classified as category 5 soils under GD06 (Riley 2025), which can support irrigation application rates where 2-3 mm/day is proposed. Increased application rates in drier periods are supported by the modelled evapotranspiration deficiency of soils during summer, as per Apex (2025).
- Riley Consultants (2025) also reported that the proposed disposal area is '*suitable with respect to stability*'.
- Real-time soil moisture monitoring will be implemented (Apex 2025) to adjust irrigation rates and prevent overloading of the disposal field.

Together, these factors demonstrate that ongoing irrigation operations will maintain appropriate soil moisture and protect the health and sustainability of the covenant vegetation.

Site selection

The location of the irrigation field within the covenant reflects site constraints, land ownership and practical operational requirements. The placement of the irrigation field is subject to land availability, topography, soil suitability, and proximity to the wastewater infrastructure, all of which limit viable locations. As outlined in the application, much of the balance land is either committed to other aspects of the development, topographically unsuitable, or would require significantly more earthworks, vegetation clearance, or infrastructure extension, all of which carry their own environmental and practical challenges. Ultimately, the covenant area was selected after a consideration of alternatives, which concluded that:

- No pasture or cleared land within the development footprint post-design was large enough to accommodate the 1-ha irrigation field.
- Discharging a portion of the treated wastewater to land is preferred ecologically over direct discharge to water alone, as it provides additional treatment through filtration, plant uptake, and soil processes.
- This approach aligns with cultural values and is part of the overall master-plan design that has been confirmed as acceptable by Ngati Manuhiri, Ngaati Whanaunga, and Te Kawarau a Maki[1], as

[1] I understand that Te Kawarau a Maki has two residual points Vineway is waiting for a response on but these do not relate to the wastewater treatment irrigation field.

irrigation through the land allows the water to pass through the earth before reaching freshwater environments.

- The covenant area is suitably vegetated and stable, making it appropriate for low-impact, passive irrigation.

Note that while the Apex report (Apex 2025) refers to a 5-hectare irrigation field, this relates to potential future scenarios explored to assess the system's long-term capacity and possible expansion. It does not form part of the current proposal under assessment. The application currently proposes irrigation over a 1-hectare area, which aligns with the ecological assessment. This 1-hectare proposal was the basis for the review undertaken by Dylan Walton, Auckland Council's wastewater specialist.

Freshwater, erosion and run-off risks

The risk of treated wastewater percolating from the proposed irrigation area and interacting with the downstream freshwater environment is addressed in Viridis (2025b, 2025d), which assess potential impacts on both water quality and freshwater ecology.

It is anticipated that a significant proportion of the irrigated discharge will be absorbed or lost via evapotranspiration, consistent with the characteristics of densely vegetated environments. Native bush, such as the on-site covenant area where irrigation is proposed, has been reported to intercept and evapotranspire a substantial portion of water inputs—up to one-third in some cases (Environment Guide 2025)—with further reductions expected through soil infiltration and absorption. When combined with real-time soil moisture monitoring (Apex 2025), the risk of surface runoff or adverse downstream effects is considered to be very low.

A 15 m setback from the tributary located within the covenant will also be maintained, in accordance with guidance from TP10/GD01. Erosion risk will be managed through appropriate application rates and the natural filtration capacity of the receiving environment.

Long-term use or decommission

Long-term maintenance and operational activities are expected to be limited to weekly routine inspections, with equipment maintenance undertaken once annually. Weed and pest control can coincide with these visits.

If decommissioned, all irrigation lines will be removed, which is expected to have less ecological effect than the installation of the irrigation lines. Any compacted areas can be remediated through replanting and monitoring.

Item 15: The landscape plan indicates several recreational trails and 'lookouts' within covenant areas. The formation and loss of habitat is not permitted or expected by the protections afforded by ongoing obligations [Consent notice]. The effects of which have not been evaluated in the EcIA and/or AEE. Presently the application retains most the covenants within private ownership and tied to individual Lots. There is a likelihood that those individual lot owners would be held liable for any activities that results in any damage to habitat within these covenants [entry would be allowed to thousands of other residents].

We also understand that from an urban design and open space connectivity perspective, other AC specialists have requested the inclusion of pedestrian linkages through existing covenant areas.

However, from an ecological perspective, we do not support the formation of new tracks or trails within existing covenant areas. In our view, the introduction of new accessways in these locations would likely

result in high ecological impact, particularly through fragmentation, edge effects, and loss or degradation of habitat. These potential effects have not been accounted for in the current assessment.

That said, if such connections are ultimately considered necessary or desirable by the decision-makers, we note that the adverse ecological effects could likely be mitigated appropriately under the current proposal, provided:

- The track layout and extent is minimised as far as practicable. To date this consideration has been a key part of the applicant's design process when developing potential track and trail alignments;
- Sensitive construction methods are adopted (e.g., hand clearance, boardwalks where appropriate, minimal excavation);
- The existing mitigation package, including revegetation planting and fauna management, is implemented effectively.

We defer to the Panel's discretion to determine whether the benefits of pedestrian connectivity through existing covenant areas outweigh the ecological effects. From an ecological standpoint, our preference remains to avoid new track formation within these existing protected areas wherever possible. However, we understand that AC specialists have also requested the inclusion of a pedestrian linkage through the southeastern narrow strip of land connecting to Russell Road, which is currently designated for revegetation planting. In this instance, we support the inclusion of a trail, as the area does not contain established indigenous vegetation and the proposed track will not impact the offsetting quantums.

Item 21: Wetland delineation does not follow nationally prescribed methodologies, e.g. MfE wetland delineation protocols.

We disagree with this assertion, and point out that no specific examples or areas have been identified by AC's specialist where the assessment is considered to deviate from the required methods.

As outlined in the EcIA, wetland delineations were undertaken in accordance with the Ministry for the Environment's wetland delineation protocols (MfE, 2020), including consideration of hydrology, vegetation composition, and soil indicators. The process followed reflects current best practice and nationally accepted methodology for identifying and assessing wetlands.

We also note that the AC freshwater ecology specialist did not raise any concerns regarding the methodology or the delineation of wetlands, despite reviewing the same material. The AC freshwater ecology specialist did identify some areas for further investigation which we have done, and will be addressed in a supplementary memorandum responding to the comments from AC's freshwater ecology specialist.

Item 22: Offsetting Plan contains details that should be assessed in the application, for example "Works to ensure a wetland hydrology is created and maintained" is providing an assessment of adverse effects as a condition and leaving the application open to subjective discretion.

Additional information confirming that wetland hydrology can be achieved at the proposed offset sites 8 will be provided in a supplementary memorandum responding to the comments from AC's freshwater ecology specialist.

Notwithstanding the above, we do not agree that the condition in question constitutes an assessment of effects being left to the consenting stage. As outlined in the EcIA, an appropriate assessment of

ecological effects has been undertaken, including the potential impacts on wetlands and the suitability of the proposed offsetting. The conditions proposed are intended to secure the implementation of the offset, not to defer or replace the assessment of effects.

In our view, the requirement for a detailed wetland offset plan as a condition of consent is consistent with standard practice, and allows for refinement of design and implementation details at the appropriate stage of project delivery, without undermining the robustness and relevancy of the effects assessment already provided. This approach ensures that outcomes are ecologically viable, measurable, and enforceable, while retaining flexibility for site-specific design refinement within an approved and effects-assessed framework.

Item 23: The location for wetland offsets is unknown and doesn't prescribe how impact and offset sites are to be evaluated.

The locations of the proposed wetland offset areas are clearly identified in Figure 41 of the EcIA, as well as in the lodged landscape plan drawing series 2180 (Appendix 10) prepared by Greenwood Associates.

While the EcIA is considered to provide the adequate information regarding the wetland impact and offset sites, wetland offsetting evaluations will be addressed in a supplementary memorandum responding to the comments from AC's freshwater ecology specialist.

Item 24: The wetland offset quantum has not been assessed against Appendix 8 of the Unitary Plan and is based on non-scientific ratios. The EcIA and AEE do not provide justification why a deviation away from AUP Appendix 8 is necessary. Qualitative and quantitative analysis must be used in calculating appropriate offsets.

Although a direct assessment against Appendix 8 of the AUP has not previously been provided, we do not consider that the approach taken departs from the intent or requirements of Appendix 8.

Nonetheless, wetland offset calculations and a more detailed assessment in relation to Appendix 8 will be provided in a supplementary memorandum responding to the comments from AC's freshwater ecology specialist.

Revegetation planting - The applicant's ecologist writes that the "…. enhancement and restoration measures will make a significant contribution to addressing the critical environmental challenge of national biodiversity loss and degradation". I disagree. The applicant's ecologist provides no justification for this statement through qualitative or quantitative analysis. The statement is subjective. Whilst the terrestrial revegetation may be considered additional to the biodiversity enhancement and restoration expected by AUP(OP) and National Objectives and Policy (for existing SEAs and freshwater habitats), the 16.7ha of terrestrial revegetation is not significant in itself.

Ecosystems globally are undergoing rapid transformation due to human activities and environmental changes like climate change, threatening biodiversity and the vital ecosystem services it provides (Singers et al., 2017b). The Auckland region supports a diverse range of ecosystems and species but faces significant pressures from habitat loss, fragmentation, invasive species, diseases, pollution, and climate change (Auckland Regional Council, 2010).

Many ecosystem types in Auckland have been reduced to less than 10% of their original extent since pre-human times. Overall, only about 30% of indigenous vegetation cover remains, with just 23% of original indigenous forest and scrub ecosystems intact (Griffiths et al., 2021). Only 16% of the WF11 ecosystem (kauri, podocarp, broadleaf forest) remains in the Auckland region (Griffiths et al., 2021). The

Auckland region is also home to over 200 native terrestrial and freshwater species classified as threatened or at risk (Auckland Council, 2020). These losses reflect over 150 years of urbanisation, agriculture, and land clearance, resulting in nearly 40% of Auckland's terrestrial and wetland ecosystems being classified as Critically Endangered (Singers et al., 2017b).

Wetlands have suffered similarly severe declines. Pre-human wetland cover in Auckland is estimated at ~21,000 hectares, but now freshwater wetlands cover less than 0.5% of the land area, indicating a loss of over 97% (Auckland Council, 2017; Auckland Council, n.d.).

Within the site, the WF11 ecosystem was historically present but has now been largely removed or degraded. Currently, approximately 23.5 hectares of native-dominant vegetation exist on-site, of which about 12 ha are WF11. The native dominant vegetation within the site was disconnected and pest plant species such as gorse (*Ulex europaeus*), woolly nightshade (*Solanum mauritianum*), pampas (*Cortaderia selloana*), willow (*Salix spp*.) and blackberry (*Rubus fruticosus*) were common

Mr. Statham compares the adjacent Scenic Reserve with the subject site to make a point that the site is not delivering a similar sized area of planting, and therefore cannot be a regionally significant contribution. It is considered that this statement is reductive and inconsiderate of the planning and spatial context. The Nukumea Scenic Reserve which Mr. Statham refers to is zoned Open Space – Conservation Zone. The subject site is zoned Future Urban Zone, and as such, is anticipated to be subject to urban development under the AUP. The Delmore project includes approximately 32 ha of indigenous revegetation planting, more than doubling the site's existing native vegetation. It also enhances the ecological value of the existing vegetation by providing buffering and improving connectivity. Planting will focus on restoring the WF11 ecosystem, supporting the recovery and connectivity of this endangered forest type, of which only 16% remains regionally. This represents a meaningful contribution to reversing the decline of WF11. In addition to these terrestrial gains, the planting will enhance around 2 ha of existing wetland and 6 kilometres of stream habitat, while also creating 0.2 ha of new wetland, contributing to efforts to address the region's extensive wetland loss.

By increasing the diversity and abundance of native plant species, the proposed planting will better support a wider range of indigenous fauna, including birds, invertebrates, and lizards that rely on native vegetation for food, shelter, and breeding habitat. Enhancing habitat diversity and abundance will create a mosaic of ecological niches across the site, while improved connectivity, both within the site and with surrounding natural areas, will allow for greater movement of native species, promoting gene flow and recolonisation of restored areas. These improvements will also help buffer the site's and the neighbouring ecosystems from future environmental pressures, such as pest incursions and the effects of climate change, thereby strengthening ecological resilience.

Collectively, these outcomes will significantly enhance the ecological value of the site, transitioning it from a fragmented and partially degraded state to a functioning, interconnected indigenous ecosystem. They will also improve ecological connectivity and provide additional buffering to the Nukumea Reserve, supporting its overall ecological integrity. Given the widespread loss and fragmentation of native habitats across the Auckland region, where many ecosystem types, such as WF11 ecosytems and wetlands, have been reduced to a fraction of their original extent, this project represents a regionally significant ecological gain. By actively restoring threatened ecosystem types, supporting native species recovery, and addressing the loss of ecological connectivity, the project will make a meaningful and measurable contribution to tackling Auckland's ongoing decline of indigenous biodiversity.

Conclusion

In Section 4.9 of Mr. Statham's Memorandum, he states:

"My recommendation from an ecological perspective is that consent should be declined due to material information gaps and inadequate assessment of ecological effects. The development proposal does not demonstrate how significant adverse effects on indigenous biodiversity will be appropriately avoided, remediated, mitigated, or offset."

For the reasons outlined above, it is unclear what information gaps and lack of assessment Mr. Statham is referring to. Further assessment has been provided to Mr. Statham on June 19 in response to his specific requests. As noted above, the proposal demonstrates that any adverse effects on indigenous vegetation have been appropriately avoided, remediated, mitigated and offset as necessary. The ecological contribution of approximately 32 ha of new planting, the enhancement and addition of wetland area and collective enhancement of the ecological value (including habitat diversity and abundance) of the site constitutes a regionally significant benefit.

As such, it is unclear why the application should be declined on an ecological basis. It is considered that the application should be granted for all of the reasons provided above.

Attachments: Delmore Fast Track Application - Fauna Management Plan - DRAFT

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1 AVIFAUNA MANAGEMENT

Clearing of vegetation has the potential to negatively impact on birds, particularly if birds are nesting in vegetation at the time it is cleared. Native avifauna are legally protected by the Wildlife Act 1953 (WA) and significant habitats for indigenous fauna are protected under the Resource Management Act 1991 (RMA).

Wildlife Act (1953) Authority

Most indigenous birds are legally protected under the Wildlife Act (and subsequent amendments). A Wildlife Act Authority (WAA) is required to capture, handle, and relocate native wildlife.

Resource Management Act 1991

Landscape features that provide significant habitat for indigenous species, including birds, are protected under the RMA (Section 6(c)). This includes ostensibly low value exotic vegetation that can support populations of native birds.

1.1 Potential Adverse Effects on Birds

The project requires earthworks and vegetation clearance. If indigenous birds are present within the affected area, potential adverse effects on birds may include:

Direct effects:

- Adult and chick mortality during physical clearance/construction works
- Injury during physical clearance/construction works

Indirect effects:

- Temporary loss of habitat
- Temporary noise and dust disturbance
- Disruption to nesting and breeding behaviour

Site development cannot be achieved without vegetation removal, and therefore potential adverse effects on native birds cannot be avoided. Adult birds are highly mobile and expected to move to nearby unaffected habitat once disturbance commences. Nesting birds and chicks that have not fledged are unable to move away. Therefore, managing effects on birds requires mitigation through monitoring for signs of nesting activity and displays of breeding behaviour.

To mitigate the effects of direct mortality and indirect disturbance on breeding and nesting birds, the following protocol will be followed for all vegetation that will be cleared.

1.2 Terrestrial Bird Survey and Management

1.2.1 Timing

In the first instance, vegetation clearance between 1 September and 28 (29) February should be avoided where practicable.

If vegetation clearance must occur within this time frame, the nesting bird survey protocols will be adopted, as detailed below.

1.2.2 Nesting bird survey

- A survey will be undertaken to identify if and/or where native bird nesting behaviour (including courtship, nest building, and active nesting) is occurring.
- The survey will be completed by an appropriately qualified ecologist.
- The survey will include inspections for tree cavities, tree nests and ground nesting species such as pūkeko.
- Where no nesting behaviour or activity is observed, the vegetation may be cleared within 24 hours of the survey being completed. If clearance does not occur within 24 hours, the area must be surveyed again to verify the absence of nesting behaviour prior to clearance.
- If nesting behaviour, or an active nest is located, an exclusion area with a diameter of 10 m will be demarcated around the tree (or nest if it is a ground nest) and works shall not occur within this cordon until it has been confirmed by the appropriately qualified ecologist that all nestlings have fledged. Once the appropriately qualified ecologist has confirmed this, the vegetation may be cleared.

1.3 Wetland Bird Survey and Management

1.3.1 Timing

In the first instance, works within 50 m of wetlands between 1 September and 28 (29) February should be avoided where practicable.

If works within 50 m of wetlands must occur within this time frame, the nesting bird survey protocols will be adopted, as detailed below.

1.3.2 Nesting bird survey.

- A survey will be undertaken within 50 m of any wetland where works are proposed to identify if and/or where native wetland bird nesting behaviour (including courtship, nest building, and active nesting) is occurring.
- Surveys shall be undertaken prior to any such works taking place and repeated at the beginning of each wetland bird breeding season until the completion of construction.
- Where no nesting behaviour or activity is observed, works within wetlands may occur within 24 hours of the survey being completed. If clearance does not occur within 24 hours, the area must be surveyed again to verify the absence of nesting behaviour prior to clearance.
- If nesting behaviour, or an active nest is located, an exclusion area with a diameter of 50 m will be demarcated around the nest and works shall not occur within this cordon until it has been confirmed by the appropriately qualified ecologist that all nestlings have fledged. Once the appropriately qualified ecologist has confirmed this, works within wetlands may occur.

1.4 Inadvertent Bird Injury or Death

If a native bird is found injured or dead during vegetation clearance, the following steps will be taken:

- Injured native birds will be placed in an appropriate carrying box/cloth bag and immediately transported to a veterinarian for assessment.

- If the species has a conservation status of At Risk or Threatened (Robertson et al. 2017), the local Department of Conservation (DoC) office will be contacted as soon as practicable, but within 24 hours.
- All deceased birds (including those found dead on site, or any that are ultimately euthanised by a veterinarian) will be transported to the local DoC office as soon as practicable.
- All injuries or mortalities will be accurately recorded and reported to DoC on request.

Native bird management is required in all areas where vegetation clearance will occur, including the grassed paddocks on the flat portion of the site.

1.5 Management of Dotterels

The site does not currently provide habitat for NZ dotterels (*Charadrius obscurus aquilonius*; Threatened – Nationally Increasing). In Auckland they tend to favour open areas and bare ground. They are known from the wider Silverdale area, with eBird.org records showing them in various urban areas, though mostly around the fringe. As works progress, it is expected the open areas will be generated by earthworks and clearance of the pasture within the site. It is possible that they may utilise these open areas as they become available. Dotterels are known to establish nests on construction sites where habitat conditions are suitable.

1.5.1 Deterrence

From July onwards, dotterels begin looking for breeding territory. Weekly inspections of the works area should occur to determine if dotterels are present. Breeding dotterels are territorial and will show defensive behaviour to anything that they think is a threat (including people). Defensive behaviour includes alarm calls, running in front of potential threats to distract and lure them away ('rat run'), and pretending to be injured ('broken wing'). It is this behaviour that should be looked for during weekly site inspections.

The easiest method to manage dotterels on a site is to deter them from establishing nests in the first place. From early July onwards, one or more of the methods in Table 1 should be employed to discourage dotterel presence within the site.

Table 1. Deterrence options (adapted from NZTA, 2012[1]).

Method	Description	Likelihood of success	Comments
Long grass	Allow grass to grow long so not considered by dotterels to be a good place to lay eggs.	High	Leave grass to grow from at least April to ensure it is long
Machinery*	Park large machinery close to where dotterels are showing an interest. Start the engine from time to time.	Moderate	Machinery cannot be left for long periods or the birds may get used to it.
Silt fences	Erect shade cloth at knee height. Place in rows. Space at 5– 10 m.	High	These fences obscure dotterel vision from nesting sites as they actively seek areas with good sight lines

[1] NZTA. 2012. Guidance in Relation to New Zealand Dotterels on NZTA Land. NZ Transport Agency, Wellington.

Metallic or reflective tape	Streamers attached to posts that flutter when there is wind	Moderate	Works for a short time (up to three weeks) and then birds habituate

* to be used in early to mid-July only. If nests establish, movement of machinery increases the risk of nest damage.

The likelihood of success column used in Table 1 has been developed based on known dotterel behaviours. However, they are known to become used to activities, such as machinery, if it is left stationary for any period of time, and reflective tape can become ineffective within a few weeks. Actions that alter the site to make it less attractive for nesting are considered to be the most effective options over a long period of time.

1.5.2 Eggs found within the construction zone

If, despite deterrence options being in place, eggs are still found within the construction zone, the following measures should be followed.

- If eggs are found on the ground within the construction zone activities within 50 metres of the nest are to stop immediately and people are to leave the area.
- Contact the project ecologist.
- If the nest needs to be marked in order for the project ecologist, or others, to find it the markers should be at least 10 m away from the nest. Use two on either side of the nest if necessary as long as they are at least 10 m away.
- The project ecologist will monitor the nest on a weekly basis to confirm when chicks have fledged (usually 6-7 weeks after hatching). Once this has occurred, the ecologist will confirm when works in the area can re-commence.

2 HERPETOFAUNA MANAGEMENT

2.1 Management of Potential Adverse Effects on Lizards

2.1.1 Statutory protections and management of lizards

Wildlife Act (1953) Authority

All indigenous lizards are legally protected under the Wildlife Act (and subsequent amendments). A WAA is required to capture, handle, and relocate native wildlife.

Resource Management Act 1991

Landscape features that provide significant habitat for indigenous species are protected under the RMA (Section 6(c)). This includes ostensibly low value exotic vegetation that can support populations of native lizards.

2.1.2 Potential adverse effects on lizards

The project requires earthworks and vegetation clearance. If indigenous lizards are present within the affected area, potential adverse effects on lizards may include:

Direct effects:

- Lizard mortality during physical clearance/construction works
- Injury during physical clearance/construction works

Indirect effects:

- Temporary loss of habitat
- Temporary noise and dust disturbance

Site development cannot be achieved without vegetation removal, and therefore potential adverse effects on indigenous herpetofauna cannot be avoided. Managing the effects on lizards requires mitigation through a salvage and relocation programme and potential release site habitat enhancement.

2.1.3 Project herpetologist

A suitably qualified herpetologist or ecologist ('project herpetologist') is required to implement all herpetofauna management, and a WAA to capture and relocate indigenous lizards is required. The credentials and contact details for the project herpetologist are outlined below:

[To be included as part of final plan]

2.2 Lizard Habitat

A review of the DoC's herpetofauna database (accessed 06/11/2024) found a relatively high number of records for lizard species within 10 km of the Site. The most commonly recorded species were the introduced plague skink (*Lampropholis delicata*, 49), with forest gecko (*Mokopirirakau granulatus* – At-Risk, declining, 46) being the next most common. There were 20 records for copper skink (*Oligosoma aeneum* – At-Risk, declining), 11 for ornate skink (*Oligosoma ornatum* – At-Risk, declining) and four for elegant gecko (*Naultinus elegans* – At-Risk, declining).

The main potential lizard habitat present within the site was in the areas of native vegetation. Skinks are also likely to be present in the gorse scrub and any thick rank grass. Given the number of observations in

the surrounding area and connection to other suitable habitat (i.e., Nukumea Scenic Reserve), it is considered likely that native lizards, including geckos are present within the site.

2.3 Lizard Search and Capture Methodology

Lizard capture and relocation will be associated with consented vegetation clearance activities through the methods outlined in this section.

2.3.1 Timing of activities

Vegetation clearance should occur between October and April (inclusive); lizard salvage activities are confined to warmer months when lizards are the most active and likely to be detected if present.

All lizard management activities are required to be undertaken during fine, calm, and dry weather.

The timing for the proposed vegetation clearance is:

[To be included as part of final plan]

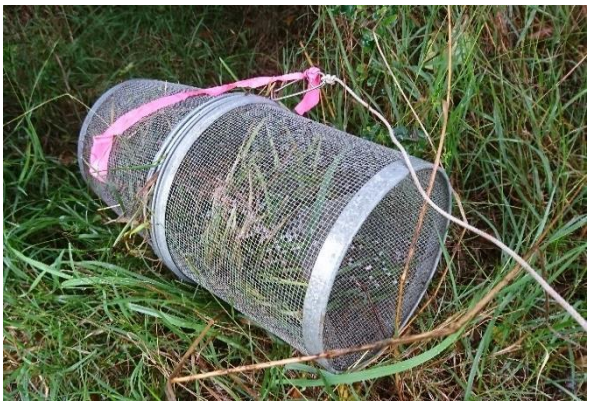
2.3.2 Trapping and habitat searches

A minimum three-day intensive trapping period using a combination of artificial cover objects (ACOs), baited pitfall traps and/or baited funnel traps (Figure 1) will be undertaken prior to vegetation removal at a density deemed suitable by the project herpetologist. Key points for this trapping are:

- All traps shall be embedded in, and furnished with, vegetation to protect any captured lizards from heat and exposure during confinement.
- ACOs and pitfall traps shall be installed at least four weeks prior to commencement of trapping to allow them to 'bed in' to the environment.
- Each trap will be baited with fruit and will contain a wetted sponge to reduce risk of desiccation.
- Traps are to be placed in shaded areas away from potential inundation with water, and checked no more than 24 hourly while active, to limit adverse effects on lizards (stress, desiccation, drowning etc.).
- When not in use, all pitfall traps shall be deactivated (sealed closed or furnished to the upper rim so that lizards may escape).
- All native lizards shall be released at the designated release site immediately upon capture.

During trap checks, the project herpetologist shall hand search all vegetation, logs and debris to capture lizards and to identify important areas that should be targeted for destructive searching.

a)



b)

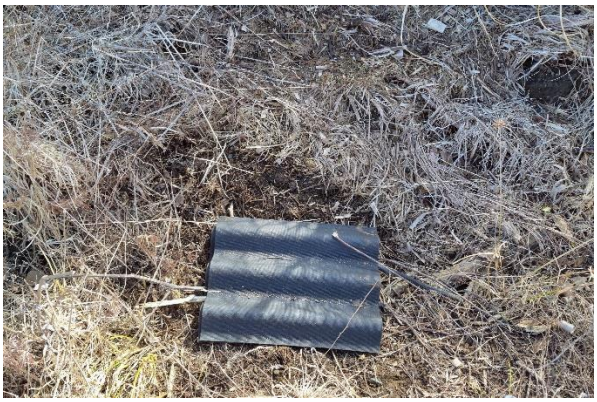


Figure 1. a) a funnel trap, b) an ACO.

2.3.3 Nocturnal spotlight searches (geckos)

Nocturnal spotlight searches would be undertaken within areas of potential gecko habitat affected by proposed clearance. Spotlight searches would target nocturnal and arboreal species. A minimum search effort of 6-person search hours would be undertaken using powerful torches and binoculars over three nights within the week prior to any vegetation clearance. If a gecko is sighted and cannot be captured (e.g. due to height), then the affected tree shall be marked / taped and the project herpetologist shall undertake a targeted search of that tree during vegetation removal. All native lizards shall be released at the designated release site immediately upon capture or until vegetation clearance is complete.

2.3.4 Destructive searches

Destructive searches will be undertaken by the project herpetologist prior to vegetation removal, in coordination with the appropriate contractor undertaking the clearance works. This will involve systematic manual searches of suitable habitat (e.g. log piles, tree bark) and destruction of habitat where practicable. Leaf litter, ground cover vegetation and small debris may be hand-raked, and larger debris overturned to search for refuging lizards.

2.3.5 Felled trees searches

Destructive searches involve searching through branches and foliage of felled vegetation. The crowns of large trees shall be felled intact as far as practicable. All branches and foliage of felled vegetation will be thoroughly searched. Where practicable, the crowns of any larger trees that cannot be fully searched after felling should be left in any areas of vegetation to remain on site, to allow any undetected lizards to disperse naturally.

2.3.6 Construction (machinery) assisted searches

Suitable ground cover will be searched during machine-assisted clearance. The machine will be fitted with a toothed scraping bucket (or similar) during vegetation clearance to lift habitat such as non-woody vegetation, logs, and debris piles.

Machine-assisted searches will continue until all habitat for lizards has been removed and there is no suitable habitat for native lizards remaining within the affected area, as assessed by the project herpetologist.

2.3.7 Post-clearance search

At the conclusion of the machine-assisted searches and vegetation clearance, the suitably qualified ecologist would undertake a final site walk over to detect any remaining lizards.

2.3.8 Lizard handling and containment

All indigenous lizards found during the destructive searches, machine-assisted searches and post-clearance search, will only be captured and handled by, or under supervision of, the DoC-authorised suitably qualified ecologist. Hands should be sterilised before and after handling lizards, along with all field equipment that indigenous lizards may encounter.

All captured lizards would be placed in a holding container(s) with adequate ventilation and kept at ambient temperature. Vegetation, soil and leaf litter from the capture site will be placed in the box to provide shelter and protection during containment/transport. Lizards would only be held temporarily for the period of the active searches or trap inspections, before being released at the approved relocation site (refer Section 2.5).

It is not anticipated that lizard taxa with conservation statuses higher than 'At Risk' would be encountered on-site. However, if 'Threatened' lizard species were encountered, the individual(s) would be captured and temporarily contained, and the local DoC office contacted for further instruction.

2.4 Inadvertent Lizard Injury or Death

The following steps will be implemented should any injured or dead indigenous lizards be found during the vegetation clearance activities:

- The project herpetologist would notify DoC at soon as possible (within 24 hours);
- Any lizard death of 'Threatened', 'At Risk' or 'Data Deficient' species shall be sent to Massey University Wildlife post-mortem service for necropsy. The body should be chilled if it can be delivered within 24 hours, or frozen if delivery will take longer than 24 hours;
- Where appropriate, measures shall be undertaken to minimise further lizard deaths;
- Injured lizards found during salvage will be taken to a suitably qualified vet as soon as possible for assessment and treatment. Injured lizards will be kept in an appropriate portable enclosure (i.e., a clean, well-ventilated (plastic container) under the direction of the project herpetologist to ensure the lizard is handled appropriately until it can be treated;
- Lizards assessed by the vet or alternative specialist as uninjured, or otherwise in suitable condition for release, would be transported to the relocation site in the portable enclosure and released; and
- Euthanasia of an injured lizard is only to be undertaken under direction from DOC.

2.5 Release Site

All salvaged indigenous lizards are required to be released into an approved release site. Factors that should be considered when selecting a release site include ecological appropriateness, long-term security, habitat suitability, and protection from predators and future human disturbance (DOC Lizard Technical Advisory Group, 2019). Key considerations include, but are not limited to, the following:

- It is important that the release site is an appropriate distance from the project footprint to prevent the lizards from re-entering the works area. However, the release site should be located as close as possible to the salvage site to help retain similar microhabitats and environmental conditions.

- The habitat within the release site should be representative to, or of higher ecological value than the salvage site.
- Areas with long-term protection should be favoured, such as reserves managed by DoC or Council, vegetation covenants or areas protected by Auckland Unitary Plan provisions (e.g., SEA overlay, riparian habitat).
- Potential existing species composition and density at the release site should be considered as far as practicable, to limit potential adverse effects of intra- and inter-species competition at the release site.

2.5.1 Proposed release site

It is generally preferred that lizards are relocated within or adjacent to the project footprint as far as practicable, to maintain local biodiversity and reduce the risk of adverse effects that may occur with longer distance relocations. A key consideration of relocation is ensuring the habitat suitability (quantity and quality) is present to support relocated lizards.

[Details within this section will be included in the final Fauna Management Plan, and will recommend release sites within the site, and/or within the surrounding environment. Figure showing potential release sites will be included.]

2.5.2 Habitat enhancement

Refuge structures (e.g., felled logs, rocks, branches) should be recovered prior to vegetation clearance by the project herpetologist and relocated into the release sites. In addition, if five or more indigenous lizards are captured for relocation, the implementation of supplementary refugia is also recommended prior to lizard release. The provision of permanent refuges, including but not limited to log piles, natural debris (e.g. decaying vegetation), artificial cover objects (i.e., Onduline sheets) and rock piles should be installed to supplement the natural refuges already present. Salvaged skinks would be released beneath these refuge structures to provide immediate protection.

2.6 Capture Trigger

If more than 20 native lizards are captured, then contact should be made with DoC immediately to discuss the next steps. These may include continuation with the current programme, additional habitat enhancement and/or protection, or the requirement of additional permits.

2.7 Completion Reporting

A completion report or Amphibian/Reptile Distribution Scheme (ARDS) Card will be prepared by the project herpetologist and submitted to Auckland Council within 30 days of the completion of all vegetation removal. The information provided should detail the number of lizards captured and the locations they were captured from, and whether any post-release monitoring (and timing) is recommended based on the number of lizards salvaged.

3 BAT MANAGEMENT

All vegetation removal should occur under the following protocols. The protocols are required to minimise the likelihood of adverse effects on potentially occupied bat roosts as vegetation is cleared. They have been adopted from the *Protocols for minimising the risk of felling bat roosts* prepared by the New Zealand Bat Recovery Group[2]. If no bats were detected during the pre-vegetation clearance survey, felling can occur without implementation of the protocols.

3.1.1 Timing of activities

The timing for the proposed vegetation removal is:

[To be included as part of final plan]

3.2 Identification of Potential Roost Habitat

All trees to be removed within the site should be visually assessed prior to vegetation clearance by an appropriately qualified ecologist with Competency 3.3[3]. Each tree should be classified as either high risk, or low risk, with regard to bat roost habitat.

Low risk trees have a diameter at breast height (DBH) of ≤ 150 mm.

High risk trees have a DBH of ≥ 150 mm and have one or more of the following features:

- Holes, cavities, crevices, cracks and/or fractured limbs that could potentially support roosting bat/s
- Hollow trunks and/or branches
- Loose, flaking bark, or deep incised bark crevices that could potentially support bat/s
- Deadwood (including debris caught in tree forks) or epiphyte communities in the canopy or in the trunk that could potentially support bat roosts
- Evidence of bat droppings, grease marks and/or urine staining around cavities

All low-risk trees can be felled at any time, subject to requirements of other management measures (e.g. for birds). The only exception is where low risk trees have evidence of bat droppings, grease marks and/or urine staining around cavities, in which case they will be treated as high-risk trees.

High risk trees, including adjacent groupings of high-risk trees will be subject to a pre-felling assessment. Pre-felling assessments will be undertaken by an appropriately qualified ecologist.

3.3 Pre-felling Procedures

High risk vegetation should only be cleared between 1 October and 30 April to align with the season when bats are active. A Competent Bat Worker[3] (CBW) will be present to supervise the clearance of all high-risk vegetation and they must be available at all times during the vegetation removal stages in order to respond immediately to any incidental discoveries of bats within the site.

The following procedure must be adhered to:

[2] DoC 2024. Protocols for minimising the risk of felling occupied bat roosts (Bat Roost Protocols). Dated October 2024.

[3] A person who has been certified as 'Competent' in a particular skill by the NZ Bat Recovery Group.

- All high-risk vegetation will be clearly identified by a CBW prior to clearance commencing.
- All high-risk vegetation will be acoustically monitored using ABMs for two consecutive nights (with optimal weather conditions[2]; Table 2) immediately prior to vegetation removal. Results will be analysed the following morning, as early as possible. If vegetation removal does not take place the day after monitoring, monitoring will continue until it does.
- Where a night does not meet optimum conditions[2] (Table 2), monitoring must continue to take place until a total of two consecutive nights of optimum conditions have been monitored.
- If no bats are recorded:
    - The ecologist will notify the site manager immediately after data is reviewed, and permission will be given to clear the monitored vegetation within 24 hours.
- If bats are recorded:
    - If bat activity recorded on the ABM/s suggest bats may be roosting in the vicinity of the ABM, or if a bat roost is observed, the site manager shall be notified immediately after reviewing the data and the affected vegetation cannot be cleared until additional investigations have been completed.
    - The ABM survey must continue until no bat activity has been recorded for two consecutive nights; OR
    - If safe to do so, the suspected roost/s will be visually assessed by an arborist trained to identify bat roosts. The arborist will take photos of any roosts or roost evidence found. If necessary, an endoscope and handheld bet detector will be used to examine potential features.
- If bat roosts are confirmed:
    - The tree/s will not be removed until further acoustic monitoring (for seven nights) confirms the bats have abandoned the roost.
    - The tree/s will be clearly marked and a 10 m radius exclusion zone established around the site. The zone will be identified with fencing or other appropriate materials. All relevant people (e.g. site manager, vegetation contractors) will be notified the area must be left as is.
    - Representatives from DoC and Auckland Council will be informed via email, of the relevant information, including photos if available. The CBW, DoC and Council will agree on options for next steps in the event roosting continues after seven nights.
    - If bats are still roosting in the tree/s after seven nights, a meeting will be held between the CBW, site manager, DoC and Council to determine an appropriate way forward. The meeting must occur within three days of the end of the seven day monitoring period.
    - Immediately following clearance of high-risk vegetation, trees will be inspected for bats and evidence of bat roosts by the CBW.

Table 2. Optimal weather conditions required for bat surveys[2] (derived from DoC 2024).

Component	Conditions
Timing	Begin one hour before sunset and end one hour after official sunrise
Temperature	Temperatures of 8°C or higher for the first four hours after official sunset
Wind	Little to no wind of ≤ 20 km/hour for the first four hours after official sunset
Precipitation	Little to no precipitation (≤ 2.5mm) in the first four hours after official sunset

3.4 Managing and Reporting Injury or Mortality

If any living bat/s are found during or after vegetation clearance that are not able to fly away, they will be taken immediately to a veterinarian for assessment. Bats will be placed in a clean, dark, cotton bag by the CBW, and then in a carrier to ensure safe transportation. The site manager, and relevant representatives from DoC and Council will be notified as soon as practicable, but within 24 hours of the bat being found. Any bat found dead or subsequently euthanised by a veterinarian will be returned to DoC.

Bats assessed by the veterinarian as uninjured will be transported back to site in the cotton bag and placed in an open, temporary artificial roost box suspended within a tree outside of the site but as close as possible to the site the animal was found. The roost box will be open to allow the animal to come and go as it chooses and will be placed within the tree prior to dusk on the same day the bat is found.

3.5 Bat Mitigation

If bats are detected on site during the pre-vegetation clearance survey, mitigation in the form of habitat enhancement will be required if vegetation to be cleared is identified as suitable for bat nesting/roosting.

To replace roosting habitat following vegetation clearance, artificial bat roost boxes will be installed in area suitable for roosting, as directed by the CBW. Emphasis should be placed on the established riparian bush areas or SEAs in the immediate surrounding environment, as they will be largely protected from future vegetation clearance.

The number of roost boxes will be installed at a rate of one per every 10 high risk bat roost tree/s removed. The boxes should be installed at a minimum height of four metres from the ground, with no clutter within 2 m of the box opening. ‘Possum bands’ will be wrapped around each tree where a box is installed to deter mammalian predators. Any bat box installed must be checked annually to remove any nesting materials that have been brought in by birds.

In recent years, several bat box designs have been installed at sites in New Zealand:

- A timber ‘Kent’ bat box design (Auckland Council);
- A timber ‘Microbat box’ design (Auckland Council);
- A bespoke timber design similar to the ‘Kent’ (Waikato Regional Council); and
- Four Schwegler ‘woodcrete’ designs (models 2F, 2FN, 1FF and 1FD; DoC, South Canterbury).

Any of these designs are considered suitable for use within the site, as needed.

3.6 Revegetation areas

[Provide details of areas where vegetation is to be retained and where additional planting is proposed to be provided and maintained for the purposes of the connectivity of long tail bat habitats. This is to be completed post consent]