

Delmore Fast Track Application

Appendix 8: A24 (Terrestrial Ecology) to Response to Comments letter

From: Mark Delaney, Viridis. Where a different technical expert has provided input into the response this is recorded.

Date: 3 June 2026

Re: Terrestrial Ecology Response Memorandum

1.1 Introduction

This memorandum responds to the Technical Specialist Memo prepared by Auckland Council (Terrestrial Ecology) in relation to the above fast-track application (as lodged). This response addresses:

- Further information requests / technical queries; and
- Recommended amendments to consent conditions.

In this memorandum I refer to the areas of existing vegetation within the site currently subject to a protective covenant secured by consent notice interchangeably as either “covenant area” or “consent notice area”.

The following attachments are included to this memorandum:

- **Attachment A: Updated Draft Fauna Management Plan**
- **Attachment B: SEA Identification Map**

Comments that are now considered resolved are identified in green in the table below. Comments where further information has been provided are identified in blue. Comments which are noted as a point of disagreement between the Applicant and Council are included within yellow.

1.2 Response to Further Information Requests / Technical Comments

Information Request from Council on the lodged material	Applicant Response	Information Request / Technical Comment from Council under section 53 FTAA	Applicant Response under Section 55 FTAA
Comments / information requests regarding assessing values			
Point 1: It does not appear that each ecological feature identified at the site has been appropriately assessed using Tables 4 and 6 of the EIANZ guidelines. Instead, ecological values have been assigned on a more qualitative basis.	The EclA states that ecological values were determined <u>in general accordance</u> with the EIANZ Ecological Impact Assessment Guidelines (EclAG), and that wording was used deliberately. The EclA applies the EclAG framework in substance, rather than reproducing Tables 4 to 6 in a prescriptive, feature-by-feature tabulated format. The EclAG does not prescribe a single presentation format but requires that ecological values and effects are derived through a transparent and evidence-based process. The EclA meets this requirement. Ecological features were described in detail based on desktop review, field observations and targeted survey work, including vegetation, fauna and habitat assessments. These descriptions address the key EclAG considerations, including habitat condition, representativeness, ecological context, connectivity, and species values. Ecological values were then assigned using structured expert judgement informed by these	The additional information is useful to explain how ecological values were considered. No further comments.	Resolved.

	attributes. While Table 4 attributes were not explicitly tabulated, the relevant factors were clearly considered and documented. Similarly, although Table 5 was not explicitly reproduced, the EclA records the conservation status of species identified or potentially present and uses this information, together with habitat suitability and survey results, to inform ecological value. The assessment therefore considers the same matters as those set out in the EclAG species value framework. Importantly, the EclA applies the core EclAG methodology by combining ecological value with magnitude of effect using a standard matrix approach (Table 3), with resulting levels of effect summarised in Table 17. This demonstrates that the assessment is not purely qualitative, but is based on a structured and transparent evaluation of ecological value and effects. The subsequent fauna and flora response memorandum (26 March 2026) applies a more explicit tabulated assessment of terrestrial habitats against AUP Schedule 3 SEA criteria. This assessment is based on the same underlying survey data and is consistent with the ecological value framework applied in the EclA, reinforcing the conclusions reached		
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	in relation to ecological values, effects, and net biodiversity outcomes.		
Point 2: The SEA assessment identified that areas of indigenous dominant vegetation were SEA quality on the basis of the “stepping-stones, migration pathways and buffers” criterion only. However, whether these areas meet the “threat status and rarity” criterion depends on the fauna survey which is commented on.	The SEA assessment concluded that areas of indigenous-dominant vegetation meet the “stepping-stones, migration pathways and buffers” criterion, reflecting their role in providing localised ecological connectivity within a modified landscape. The assessment also considered the “threat status and rarity” criterion, which is applicable but was determined not to be met. This conclusion is supported by the results of both flora and fauna surveys undertaken for the site. No indigenous vegetation types present on the site are classified as threatened ecosystems, and no plant, animal or fungi species with a Department of Conservation national conservation status of Threatened or At Risk were recorded within these habitats. The habitats present are consistent with modified, secondary or regenerating vegetation typical of the wider area and do not support species or ecosystem types that would trigger the threat status and rarity criterion. The available survey information confirms that the “threat status and rarity” criterion is not met, and that the identification of SEA values is appropriately limited to the connectivity-	The rationale provided is acceptable, noting that some degree of subjectivity is involved in assessing the stepping stone criterion. No further comments.	Resolved.

	based criterion. Further detail regarding fauna survey methodology and results is provided in response to the relevant fauna survey comments below. It is noted that the proposal includes revegetation and habitat enhancement measures that will increase the extent and quality of indigenous vegetation across the site, including both existing vegetation and new planting. Over time, this is expected to improve ecological values, including those relevant to the “threat status and rarity” criterion.		
Point 3: The SEA assessment map does not show all areas of indigenous dominant vegetation as SEA with no explanation.	All areas of indigenous-dominant vegetation identified within the site were considered as part of the SEA assessment. The mapping presented reflects those areas that meet one or more of the AUP Schedule 3 criteria, rather than all areas where indigenous vegetation is present. The area identified in the review (Figure 1) was assessed but was not mapped as SEA. This is because, in contrast to other areas on the site, it does not make a meaningful contribution to the “stepping-stones, migration pathways and buffers” criterion. In particular, it is relatively small and isolated, does not adjoin or buffer other areas of indigenous vegetation, and is located within a	The response provides useful clarification. No further comments.	Resolved. The SEA Map is included at Attachment B.

	highly modified context adjacent to gorse and plantation forestry. As such, it does not provide a significant ecological linkage or buffering function within the wider landscape. In comparison, the areas identified as SEA are those that contribute to ecological connectivity at a broader scale, including linkages to adjacent covenant areas, mapped SEA, and the wider ecological network associated with Nukumea Scenic Reserve. These areas are also of a larger extent, which enables them to perform a more meaningful ecological function in terms of connectivity. The mapping therefore reflects a deliberate assessment of ecological function, context, and scale, rather than a simple representation of all indigenous vegetation present.		
Point 4: Wetland vegetation types were not included in the SEA assessment. Noted that all natural inland indigenous dominant wetlands meet subfactor 2(d) and qualify as SEA.	Wetland habitats within the site were identified, delineated and assessed in detail within the freshwater ecology section of the EclA, consistent with standard practice and the relevant regulatory framework for natural inland wetlands (including NPS-FM and wetland delineation protocols). The focus of the SEA assessment presented in the terrestrial section and subsequent memo was therefore on terrestrial habitat types. While it is acknowledged that natural inland indigenous-dominant wetlands can meet the	The rationale provided is useful. Regardless of whether the wetlands are classified as SEAs, there will be net gain in wetland extent and value. No further comments.	Resolved.

	AUP Schedule 3 “threat status and rarity” criterion (subfactor 2(d)), this is not applicable to the wetlands present on the site. The EcIA demonstrates that these wetlands are highly modified systems, typically dominated by exotic pasture grasses and common rush/sedge assemblages, with limited indigenous flora diversity and low structural complexity. On this basis, they are not appropriately characterised as indigenous-dominant wetlands, and do not meet the threshold for SEA identification under this criterion. Additionally, it is noted that the proposal includes wetland revegetation and habitat enhancement measures that will increase the extent and quality of indigenous vegetation within wetlands. Over time, this is expected to improve ecological values to qualify them as SEAs. Notwithstanding this, the wetlands have been appropriately assessed in terms of ecological value, function and effects, including through application of the Wetland Ecological Evaluation (WEV) framework and development of a wetland offsetting package. The proposal retains and enhances the majority of wetland areas within the site, with only a small proportion subject to disturbance, and includes substantial wetland restoration		
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	and creation resulting in a net gain in wetland extent and ecological function. Accordingly, whether or not these wetlands are considered within an SEA framework does not alter the conclusions of the EclA in respect of ecological effects, mitigation, or overall biodiversity outcomes.		
Point 5: Across fauna survey disciplines documentation of conditions is inconsistent. A table summarising visit dates, personnel, and weather conditions is needed.	Survey methodologies, timing and conditions are described within the relevant sections of the EclA and supporting fauna and flora survey documentation for each survey discipline. This approach is consistent with standard EclA practice, where survey-specific information is generally presented alongside the corresponding methods and results. While a single consolidated summary table is not a prescribed requirement under the EIANZ EclA Guidelines, a summary of survey effort has been prepared (refer Table 1 appended) to assist with clarity. This table consolidates key information on survey timing, personnel and conditions across disciplines. The absence of a consolidated table in the initial memoranda does not affect the robustness of the survey design or the conclusions of the EclA.	The new appended information is useful. No further comments.	Resolved.

	The ecological assessment is based on multiple survey methods undertaken over appropriate timeframes and supported by repeated site visits, targeted specialist surveys and supplementary observations. The level of survey effort is considered sufficient to characterise ecological values and inform the assessment of effects. Further detail regarding individual survey methodologies, effort and findings is provided in response to the specific fauna survey comments below.		
Point 6: Additional BOAM plots would have been expected in good quality, representative forest/scrub so that the benchmark values could be appropriately derived.	The vegetation plot sampling undertaken within areas of proposed vegetation removal is consistent with the BOAM methodology and relevant guidance (Maseyk et al. 2015, 2018), and is appropriate for quantifying the characteristics of vegetation subject to impact. The BOAM framework does not require benchmark values to be derived from site-specific plots, and allows for the use of published reference data, regional benchmarks, and expert judgement to define appropriate target or reference conditions. In this case, benchmark values were derived using the most appropriate and representative information available, rather than relying solely on on-site vegetation which is generally modified and variable in condition.	I agree that the BOAM does not require benchmark values to be derived from site-specific plots, although it would be useful for the ecologist to cite the references/sources from which benchmark values were obtained. No further comments.	Resolved.

	The indigenous vegetation types present on the site are common and relatively simple in composition, and do not represent rare, threatened, or highly specialised ecosystems that would necessitate the development of bespoke, site-specific benchmark plots. In this context, appropriate benchmark values can be reliably derived from existing reference data and professional judgement. While areas of higher-quality native vegetation are present within the wider site (e.g. covenant and SEA areas), these are either not subject to effects or are not necessarily representative of achievable or appropriate benchmark conditions for the vegetation types being impacted. As such, the use of site-derived benchmark plots was not considered necessary or appropriate. The approach adopted provides a robust and conservative basis for assessing vegetation loss and informing offsetting requirements, and does not affect the conclusions of the EcIA in respect of ecological effects or net biodiversity outcomes.		
Point 7: All 5 minute bird counts were conducted on a single day (15 December 2025) between 10am and 3pm which is a methodological weakness	The five-minute bird counts were undertaken in accordance with the DOC Inventory and Monitoring Toolbox guidance (Hartley & Greene, 2012). The DOC guidance does not require or explicitly recommend early	My preference is to include counts closer to sunrise, but I do not consider this would have materially change the results of the surveys at the site. No further comments.	Resolved.

and does not align with DOC protocols.	morning-only surveys, but instead provides a broad acceptable survey window, within which the surveys were undertaken. The guidance states that counts should be conducted on fine, calm days between 1.5 hours after sunrise and 1.5 hours before sunset, with a typical mid-summer survey window of approximately 0730 to 1930 NZDT. The surveys undertaken between 10:00 am and 3:00 pm fall well within this prescribed timing window and are therefore consistent with DOC protocol. Importantly, the five-minute bird counts were not relied upon in isolation and form one component of a broader avifauna assessment, which included targeted dawn surveys (including all bird species not just wetland species), multiple site visits and incidental observations across different times and conditions, desktop database review, and eDNA sampling. These multiple lines of evidence collectively provide a robust characterisation of avifauna present on the site. The survey effort is considered robust and proportionate to the scale and nature of ecological effects associated with the proposal.		
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Point 8: Only 2 locations across all 36 identified natural wetland were undertaken for dawn bird surveys (26 November and 15 December). This is inadequate spatial distribution for cryptic wetland species, particularly bittern. It would have been appropriate to undertake a targeted acoustic survey for bittern during peak booming season (Octo-Nov) given numerous wetlands and bittern known to be around area (within 10km).	The selection of wetland survey locations was targeted and deliberate, focusing on those areas with the highest ecological suitability for supporting cryptic wetland bird species. The majority of wetlands identified within the site are highly modified and pasture-dominated systems, characterised by pasture grasses with wetland ratings (e.g. Mercer grass and creeping bent), a few sporadic rushes, no structural complexity, and little to no buffering vegetation. These wetlands are typically open and subject to grazing, and are therefore unlikely to provide suitable habitat for cryptic wetland species such as bittern or crane. In contrast, the two wetlands selected for targeted dawn surveys represent the highest quality wetland habitat on the site, with features including: • greater vegetation structure and complexity, • presence of emergent wetland vegetation, • areas of open water, and • some degree of buffering from surrounding land uses.	The explanation provided is acceptable. No further comments.	Resolved.
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	These are the locations where cryptic wetland species would be most likely to occur if present, and therefore represent an appropriate and efficient focus for targeted survey effort. Notwithstanding this, the ecological assessment is based on multiple lines of evidence, including eDNA sampling, which collectively provide confidence in the characterisation of wetland bird use of the site. Targeted dawn wetland bird surveys were undertaken on 26 November 2025 and 15 December 2025, which align with the recognised booming season for Australasian bittern (<i>Botaurus poiciloptilus</i>) in New Zealand. Bittern vocal activity typically occurs during spring to early summer (approximately September to December), with peak activity commonly recorded during October and November, but extending into December, particularly in northern regions such as Auckland. The November survey therefore coincides with the peak booming period, and the December survey falls within the late phase of the active period. While longer-duration acoustic monitoring can increase detection probability, the survey		
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	approach adopted is considered fit-for-purpose, particularly given: • the limited extent of suitable wetland habitat on the site, • the targeted focus on highest-quality habitats, and • the use of multiple complementary survey methods (including eDNA sampling). No evidence of bittern was detected, and given the nature and quality of available habitat, the likelihood of regular use of the site by bittern is considered low.		
Point 9: The final ACO and pitfall trap numbers (92 and 22 respectively) in the fauna survey memo differ from those states in the EclA (120 ACOs and 24 pitfall traps) with no explanation.	The difference in ACO and pitfall trap numbers between the EclA and the subsequent fauna survey memo reflects that the EclA recorded anticipated (indicative) survey effort, as the lizard surveys were still being finalised at the time of report preparation. The fauna survey memo reports the actual survey effort undertaken. A total of 92 artificial cover objects (ACOs) and 22 pitfall traps were ultimately installed and monitored. The reduction in numbers from those indicated in the EclA reflects a combination of site-specific constraints, including areas of unsuitable habitat for effective deployment, access limitations, and	This issue has been clarified. No further comments.	Resolved.

	minor loss or disturbance of equipment during the survey period. Notwithstanding this variation, the survey effort remains consistent with accepted good practice for lizard surveys and was targeted to areas of suitable habitat, as shown in the survey mapping. The combination of ACOs, pitfall traps, manual searching and nocturnal spotlighting provides a robust level of survey coverage. The variation in device numbers does not affect the interpretation of survey results or the conclusions of the EcIA in respect of lizard presence, habitat suitability, or ecological effects.		
Point 10: Regarding the nocturnal spotlight surveys on 5 November and 17 December, the fauna survey memo does not describe transect routes, duration, weather conditions, or the habitat types covered during each night survey. For arboreal gecko detection, which is the primary purpose of spotlighting, the spatial coverage relative to available gecko habitat (particularly the SEA and western consent	The nocturnal spotlight surveys undertaken on 5 November and 17 December were targeted surveys focused on areas of suitable arboreal gecko habitat, rather than uniform coverage of the entire site. Survey effort was directed to native-dominant vegetation, including forest and scrub habitats, where arboreal geckos are most likely to occur. Areas such as open pasture, plantation forestry and highly modified habitats were not prioritised, as these are of low suitability for arboreal gecko species. The spatial extent of spotlighting effort is shown in Figure 1 (appended), which identifies	The additional information is useful. No further comments.	Resolved.

notice area) cannot be assessed from the information provided. Spotlighting transects are not mapped. Two nights of spotlighting across a 109-ha site with heterogeneous habitat remains a minimal effort for this survey type.	the areas of best-quality habitat that were systematically searched. These areas include the SEA and western consent notice/covenant areas, where suitable habitat is present. A total of approximately 21 person-hours of nocturnal spotlighting was undertaken across the two survey nights under suitable nocturnal survey conditions. Weather conditions, personnel and survey effort are summarised in Table 1 of this response. The level of survey effort is considered appropriate and consistent with accepted practice, particularly given the targeted, habitat-based approach adopted. Importantly, spotlighting was undertaken in conjunction with multiple complementary survey methods, including ACOs, pitfall trapping, and manual searching. This combined approach provides a robust level of survey coverage across habitat types and detection methods. On this basis, the survey effort is not considered minimal, and is sufficient to characterise lizard presence and habitat suitability within the site. The absence of recorded lizards is therefore considered a reliable result, while a precautionary approach		
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	has been adopted in the assessment, assuming lizards may still be present at low densities and providing for appropriate management measures.		
Point 11: Question the utility of eDNA sampling for lizards.	eDNA sampling was not used as a primary survey method for lizards, and was not relied upon in the assessment of lizard presence or absence. As outlined in the fauna survey methodology, the primary purpose of eDNA sampling was to identify freshwater species and to complement the broader ecological assessment, rather than to function as a targeted lizard survey technique. The lizard survey methodology is clearly set out separately and comprises standard and widely accepted methods, including artificial cover objects (ACOs), pitfall trapping, manual searching and nocturnal spotlighting. These methods form the basis of the lizard assessment and are considered sufficient to characterise lizard presence and habitat suitability. The eDNA component was included as a supplementary line of evidence only, recognising that it may, in some cases, detect cryptic species that are not identified through standard survey methods. It is acknowledged that eDNA detection of terrestrial reptiles, including lizards, is currently limited and	The additional information is useful. No further comments.	Resolved.

	subject to methodological constraints, and therefore results were interpreted cautiously. No lizard species were detected through eDNA sampling. However, this result was not relied upon in the EcIA, and does not influence the conclusions of the assessment. A precautionary approach has been adopted, with lizards assumed to be potentially present at low densities and appropriate management measures proposed accordingly.		
Point 12: The spatial distribution of the ten ABMs is shown approximately in Figure 5, but the methods section does not describe the rationale for placement. Ten ABMs is a reasonable number for a site of this size, but adequacy is habitat-dependent and the placement logic should be explained in the report.	The rationale for ABM placement is described in the fauna survey memo, which states: “Monitoring locations were selected to include likely flyways, riparian margins, mature shelterbelts, vegetation edges, and open pasture areas, and were marked in the field with GPS and flagging tape.” This reflects a targeted, habitat-based placement strategy, consistent with standard bat survey practice, whereby detectors are located in areas most likely to be used for commuting and foraging. In addition, ABM placement was informed by a review of existing bat information, including the DOC bat database, a recent bat survey undertaken in the area (2022–2023) for the	This issue has been clarified. No further comments.	Resolved.

	Notice of Requirement for road 6 of the Northern Project by AT and NZTA, and an earlier bat survey undertaken in 2017 along the site boundary and adjacent to the Nukumea Scenic Reserve. This information was used to ensure that monitoring locations were appropriately positioned within the broader landscape context. These habitat features and supporting information collectively represent the key movement corridors and edge environments utilised by long-tailed bats, and therefore provide an appropriate basis for maximising detection probability across the site. The spatial distribution shown in Figure 5 aligns with this approach, with detectors positioned to capture a representative range of habitat types and landscape interfaces. Accordingly, the placement of ABMs was deliberate, evidence-based, and consistent with accepted ecological practice, and the information provided in the survey documentation is sufficient to demonstrate the rationale for their deployment.		
Point 13: Question the utility of eDNA sampling for bats.	As outlined in response to Point 12, eDNA sampling was not used as a primary survey method for bats, and was not relied upon in the assessment of bat presence or absence. The primary bat survey methodology	The additional information is useful. No further comments.	Resolved.

	comprised acoustic monitoring using ABMs, which is the accepted and appropriate method for detecting bat activity. The eDNA component was included as a supplementary line of evidence only, recognising that it may, in some cases, assist in detecting cryptic species. It is acknowledged that eDNA detection of bats is currently limited and subject to methodological constraints, and results were interpreted cautiously. No bat species were detected through eDNA sampling. However, this does not influence the conclusions of the EclA, which are based on acoustic monitoring and a precautionary assessment approach.		
Point 14: There has been no assessment of invertebrate values, even though this is not critical to the report's findings given the relatively small-scale impact on vegetation. At a minimum, it would be appropriate to include a desktop assessment.	No targeted terrestrial invertebrate surveys were undertaken on the Site given the relatively small-scale impacts proposed on vegetation and the absence of identified high-value or specialised invertebrate habitats. Terrestrial invertebrate communities are generally closely linked to vegetation type, habitat complexity and indigenous plant diversity. Based on vegetation mapping and field surveys undertaken for the EclA, the Site is predominantly comprised of managed pasture, with additional areas of pine plantation, exotic-dominant vegetation, gorse	The additional information is acknowledged. No further comments.	Resolved.

	scrub and native-dominant vegetation within SEA and consent notice areas. In the absence of specialised habitats (e.g., mature undisturbed forest), terrestrial invertebrate communities are expected to reflect those typical of modified rural environments in the Auckland region and are therefore likely to be dominated by common indigenous and introduced species. However, a review of available desktop information, including publicly accessible from iNaturalist and relevant DOC New Zealand Threat Classification System (NZTCS) assessments (including Gastropoda, Lepidoptera, Hymenoptera, Onychophora and Orthoptera) was undertaken in preparing this response and did not indicate the presence of At Risk or Threatened terrestrial invertebrate species within or surrounding the Site. While records of kauri snails (<i>Paryphanta busbyi</i> – At Risk, Declining) are known within the wider northern Auckland/Northland region, these are typically associated with larger areas of intact native forest and dense leaf litter. The fragmented and edge-affected nature of native vegetation within the Site does not provide suitable habitat for this species, and their presence within the Site is considered highly unlikely.		
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	While many terrestrial invertebrate taxa in New Zealand are poorly described or classified as Data Deficient, the likelihood of Threatened or At Risk species being present is strongly constrained by habitat availability. The vegetation within the Site itself is generally fragmented, edge-affected and modified, and does not comprise intact or specialised habitats typically associated with Threatened or At Risk terrestrial invertebrate species. Potential effects on terrestrial invertebrates are primarily associated with vegetation clearance and ground disturbance. However, the majority of vegetation proposed for removal comprises low-value habitats (e.g. pasture, gorse scrub and exotic vegetation), with only a limited extent of native-dominant vegetation affected. Higher-value vegetation within SEA and consent notice/covenant areas is largely retained. Invertebrate populations are expected to be resilient to temporary disturbance due to their ability to recolonise from surrounding habitats, which will remain available within and adjacent to the Site. Overall, potential effects on terrestrial invertebrates are considered to be low, increasing to positive in conjunction with the proposed revegetation, wetland creation and habitat enhancement that are expected to		
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	improve terrestrial habitat quality and connectivity over time.		
Comments / information request regarding managing operational effects			
Wastewater and disposal			
Point 15: No assessment of effects of overview of management measures for wastewater system failure.	This is addressed in a response memo prepared by Apex (refer Appendix D of the Wastewater Memo).	Appendix D uses flow charts to work through several scenarios should the system fail. This is not an assessment of effects. As such, the response provided is not sufficient.	See below response to point 17.
Point 16: The covenant area in which the disposal field is proposed does not provide for any habitat loss or disturbance and its intended use is contrary to the reason the covenant was created.	The proposed disposal field has been specifically designed to avoid vegetation clearance and minimise disturbance, with driplines installed by hand beneath existing vegetation. This scale of disturbance is comparable to that associated with routine covenant management activities (see Point 17 below for further commentary on this point). As a result, there will be no measurable loss of indigenous vegetation and no substantive change to ecological function within the covenant area. While the covenant is intended to protect indigenous biodiversity values, the proposal does not compromise those values. The ecological characteristics of the site, including vegetation structure, habitat function and connectivity, will be retained, and the scale of	Habitat loss is likely to be negligible based on the response to Point 17 below, although the response assumes there will be no major failure of the treatment system. It is noted, however, that any adverse effects of the wastewater field and discharge are not provided for under the wording of the existing covenant (i.e. not do anything that would prejudice the health or ecological value of the area to be protected, its long-term viability and/or sustainability). From a practical perspective, in the event of a system failure, the vegetation would need to be managed for the purpose of	<i>Planning response:</i> An amendment to the wording of the consent notice has been sought as part of the substantive application which would specifically allow for the installation and operation of the wastewater infrastructure. As per the response to point 17 below, in the unlikely event that there was a system failure, this would occur at the treatment plant rather than the dispersal field location. Nonetheless, conditions have been proposed which require the consent holder to prepare an Ecological Management Plan (EMP) and a Wastewater Management Plan (WMP). Each of these plans

	disturbance is comparable to that associated with routine covenant management activities. Importantly, the covenant will continue to be managed for its ecological values, and the presence of the disposal field does not preclude or fundamentally alter this purpose.	maintaining/restoring the infrastructure rather than ecological values. We therefore still consider than an alternative (offset) covenant should be provided offsite as per the recommended condition provided at the front of this memo.	would be relevant for this area and include provisions to ensure that the wastewater infrastructure is managed, and the ecological values are maintained (refer Conditions 16 and 47 of the land use consent).
Point 17: If issues arise with the driplines in the future, it is highly likely that vegetation alteration will be required to remove and replace the lines as understorey and groundcover vegetation will have grown over and around them since their initial installation, encouraged by the increased availability of water and nutrients.	While the presence of the disposal field introduces an additional management consideration within the covenant area, it is not expected to fundamentally alter the primary management focus, which will remain the protection and enhancement of ecological values. This remains the primary management focus through the consent notice and the conditions of consent requiring active management of these areas. From an ecological management perspective, the type and scale of disturbance associated with any future dripline maintenance would be comparable to standard covenant management activities, such as weed control, pest plant removal, and occasional access for maintenance within vegetated areas. This level of low-intensity, intermittent understorey disturbance is already anticipated within covenant management and, when appropriately managed, does not compromise ecological values.	See response to Point 16.	In relation to general maintenance and/or line replacement, the reviewer appears to generally agree with my assessment. In particular, the reviewer states in Section 5.0 that “While day-to-day operational effects have been adequately addressed”, and further notes under Point 16 that “Habitat loss is likely to be negligible based on the response to Point 17 below, although the response assumes there will be no major failure of the treatment system.” On that basis, I consider the habitat loss and routine operational effects associated with maintenance and line replacement to be effectively resolved, with the remaining concern now appearing limited to a hypothetical major system failure scenario.

	To address this directly, dripline maintenance is proposed to be explicitly integrated within the ecological management framework. This includes: • aligning maintenance activities with scheduled weed and pest management; and • requiring all works to be undertaken using low-impact methods consistent with ecological management practices. This will be provided for via the conditions of consent and/or associated management plans. Further work is being done on this and amended conditions will be provided. This is not yet incorporated into the conditions being circulated 17 April. This approach ensures that any disturbance is coordinated, minimised, and no greater than that associated with routine covenant management, with vegetation disturbance localised and temporary. Accordingly, the covenant will not be managed “for infrastructure”; rather, infrastructure maintenance will be subordinate to and embedded within the ecological management regime, ensuring the primary function of the covenant is retained. From an effects perspective, this results in:		The reviewer’s further comments regarding the possibility of a “major” or “significant” treatment system failure are acknowledged. However, these comments do not alter the conclusions reached in the original response to Point 17, namely that the likelihood of the wastewater system resulting in significant adverse ecological effects within the covenant area is very low. As previously outlined, the proposal incorporates multiple safeguards consistent with municipal-scale wastewater infrastructure, including system redundancy, balance storage, real-time monitoring, controlled irrigation rates, backup power supply, and conservative treatment and discharge standards. Collectively, these measures are specifically intended to prevent uncontrolled discharge events and ensure that any system faults are identified and managed before adverse ecological effects occur. Further clarification has now been provided by Apex Water Ltd
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	• minimal installation effects; • low operational effects under appropriate treatment and management; and • maintenance effects that are consistent with existing ecological management disturbance. In terms of system performance and potential failure, the proposal incorporates multiple safeguards consistent with municipal-scale infrastructure as described by APEX and reproduced here for convenience, including: • Duty/standby redundancy for critical components • Balance tank storage to buffer inflows and prevent overloading • Real-time monitoring and controlled irrigation rates to match soil conditions • Backup power supply to maintain operation during outages • The treatment process itself produces very high-quality effluent, with nutrient concentrations significantly lower than typical environmental levels, and is designed to operate conservatively to avoid over-application.		confirming that any credible failure scenario would most likely occur at the treatment stage, rather than the disposal field itself. In such circumstances, flows would continue to be managed through redundancy, storage, operational controls and the ability to tanker wastewater off-site if required, rather than resulting in uncontrolled discharge to land. The disposal field itself is a passive, controlled system and is not considered a realistic point of catastrophic failure. Apex Water Ltd also note that the most common failure mechanism associated with wastewater drip irrigation systems is blockage caused by residual solids within the discharge. In this case, the proposed system includes filtration to less than 0.4 micron, substantially exceeding the level of filtration typically used for wastewater drip irrigation systems and effectively removing this common mode of failure. Continuous monitoring of irrigation system pressure and water quality
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	Collectively, these design features mean that the likelihood of system failure resulting in ecological effects is very low.		would additionally enable rapid detection of any significant mechanical failure or abnormal discharge condition, allowing operators or automated controls to intervene and cease discharge if required. No directly comparable New Zealand examples have been identified where a modern, highly treated MBR/RO wastewater system incorporating redundancy, balance storage, monitoring and controlled land application has failed in a manner resulting in untreated or excess wastewater being discharged through a disposal field. Examples that do exist generally relate to failures of municipal networks, outfalls, pump stations or treatment plants, and are not directly analogous to the proposed Delmore system. Accordingly, from an ecological perspective, the pathway relied on by the reviewer, namely a significant treatment system failure resulting in consequential ecological effects within the covenant vegetation, remains a
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			low-likelihood and highly managed risk scenario, and does not alter the conclusion that operational ecological effects associated with the disposal field are low.
Point 18: No assessment of alternatives has not been undertaken for the wastewater disposal field, and the applicant has not adequately demonstrated a functional need for the current location within an area of protected, SEA-quality vegetation.	<i>B&A planning response to comment:</i> The consent notice covenant area in which is proposed to be used for irrigating RO treated water is not identified and mapped as a SEA-T in the Auckland Unitary Plan (“AUP”). Rather, Viridis has identified this area as meeting the criteria for significant ecological value in Schedule 3 AUP based on the fourth criterion “stepping stones, migration pathways and buffers” as part of preparing its report. This means that the AUP RPS policy relating to effects on SEA-T’s does not apply (B7.2.2(5)) and neither do the objectives and policies in Chapter D9 of the AUP because these relate the “Significant Ecological Areas Overlay”. The AUP objectives and policies that apply to the consent notice covenant area are those in Chapter E15 of the AUP. None of these provisions require evidence demonstrating a functional need for an activity to occur within an area of native vegetation or an assessment of alternatives. Rather, they require (in	The planning response provides useful information regarding functional need and assessment of alternative sites. No further comments.	Resolved.

	summary) maintenance of ecological services and indigenous biodiversity values and protection of contiguous areas of indigenous vegetation cover, and in respect of the interface with development activities. Viridis' assessment demonstrates that these outcomes will be met with the irrigation field in place provided the recommended installation and management measures are adopted, which the applicant proposes to do. This also means that the consent notice covenant area is not an "SNA" or "significant natural area" for the purposes of the National Policy Statement 2023 Amended December 2025 ("NPSIB"). An area is only an SNA for NPSIB purposes if it was identified as such in a policy statement or plan on the NPSIB's commencement date (5 August 2023, being 28 days after the gazette date 7 July 2023) or if it was subsequently identified as an SNA on assessment against the criteria in the NPSIB (see definitions in clause 1.6). Consequently, no functional need test or requirement for alternatives assessment applies to activities within the consent notice covenant area because clause 3.10 NPSIB does not apply. However, for completeness, it is noted that even if clause 3.10 NPSIB did apply,		
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	the functional need test would not apply because Viridis' assessment is that the irrigation field would not result in any of the effects in clause 3.10(2) NPSIB. The NPSIB effects management provisions that applies to the consent notice covenant area is clause 3.16. Like the applicable AUP provisions, this clause does not require evidence demonstrating a functional need for an activity within a particular area of native vegetation. Rather, clause 3.16 states that for new subdivision, use and development outside SNAs: - Significant adverse effects must be managed by applying the effects management hierarchy; and - Other adverse effects that may adversely affect indigenous biodiversity must be managed to give effect to the objectives and policies of the NPSIB. In this case Viridis' assessment is that the irrigation field will not have significant adverse effects on indigenous biodiversity within the consent notice covenant area, provided the drip lines are installed and managed in accordance with the proposed installation and management methods. As explained at Point		
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	17, the type and scale of disturbance would be comparable to standard covenant management, and the applicant proposes to a management approach which sees maintenance of the irrigation field paired with vegetation management to ensure complementary management. More generally, Viridis' assessment demonstrates the revegetation and pest management proposed for this area as part of the project (now to be secured through a specific Ecology Management Plan in response to AC comments) will see its ecological and biodiversity values restored and enhanced which accords with policy direction in both the AUP and NPSIB. <i>Architect design team response to comment:</i> However, the applicant's design team took a careful and cross discipline approach to identifying locations for irrigation fields within the wider development design. First, areas within 15m of a stream or wetland were excluded. This was to ensure that discharged water had sufficient time and space to move through the soil before reaching the waterway. This narrowed		
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	appropriate areas quite a lot because of the nature of the network of freshwater bodies. Second, engineered slopes and naturally steep areas were excluded to avoid issues with installation and maintenance of the drip line infrastructure and so they could accommodate the related planting. Much of the site is steep, and requires engineering to make easily useable, so again, this narrowed appropriate areas quite a bit. Third, the spaces proposed for neighbourhood parks were excluded although potentially viable because of the importance placed on this community infrastructure by Auckland Council.		
Point 19: To provide certainty that there will be no net loss of indigenous biodiversity protection within the covenanted site that is proposed for use as a disposal site, recommend an offsetting approach is adopted whereby another bush area of equivalent size and ecological value is legally protected in perpetuity (see proposed conditions), while protecting	Given that: • no measurable loss of indigenous vegetation or habitat is anticipated • ecological function within the covenant is maintained • effects are minor, localised, and temporary in nature • and system performance risks are robustly managed	While I agree that most effects on the covenanted site can be adequately managed, it is optimistic to assume that a significant failure of the treatment system could not occur. The proposed legal protection of an equivalent site provides an additional layer of confidence and is not particularly onerous on the applicant (i.e. offset planting will not be necessary).	While it is acknowledged that the possibility of a significant treatment system failure can never be entirely excluded, the proposal incorporates multiple layers of redundancy, monitoring, storage and operational safeguards specifically intended to prevent uncontrolled discharge events and ensure that any faults are identified and managed before adverse ecological effects occur. As set out in response to Point 17, the

the operational needs of the irrigation field and as practicably possible the ecological values of the habitat (through weed and pest animal management).	there is no residual adverse effect on indigenous biodiversity that would necessitate an offsetting response. Furthermore, the proposal delivers substantial ecological enhancement elsewhere on the site, including revegetation and habitat restoration, resulting in a net gain in indigenous vegetation extent and ecological value. These measures are more appropriately characterised as enhancement, rather than offsetting for adverse effects that are not expected to occur. On this basis, an offsetting approach is not considered necessary or proportionate.	I have included a suggested condition of consent at the front of this memo.	likelihood of a significant system failure resulting in consequential ecological effects within the covenant area is therefore considered to be very low. Importantly, the reviewer now appears to accept that day-to-day operational effects can be adequately managed and that habitat loss associated with maintenance activities is likely to be negligible. In this context, the recommendation for an additional offset covenant appears to be based not on identified residual ecological effects, but rather on a low-likelihood contingency scenario associated with a hypothetical major system failure. While a precautionary approach is understood, this moves beyond a conventional effects-based assessment of actual and reasonably foreseeable ecological effects. From an ecological and effects-based perspective, biodiversity offsetting is intended to address residual adverse effects that
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			cannot be avoided, remedied or mitigated. In this case: • no measurable loss of indigenous vegetation or habitat is anticipated; • ecological function within the covenant area is maintained; • effects are minor, localised and temporary in nature; • operational and maintenance effects are appropriately managed through the proposed conditions and management framework; and • system performance risks are robustly managed through engineering design and operational safeguards. Accordingly, no residual adverse effect on indigenous biodiversity has been identified that would necessitate an offsetting response. Furthermore, the proposal already delivers substantial ecological enhancement across the wider site, including revegetation, wetland restoration, pest management and long-term protection and management of indigenous vegetation areas,
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			resulting in a clear net gain in indigenous vegetation extent and ecological function. These measures are more appropriately characterised as ecological enhancement and restoration, rather than offsetting for effects that are not anticipated to occur. On this basis, the proposed requirement for legal protection of an additional equivalent bush area is not considered necessary or proportionate to the level of ecological risk identified.
Operational effects on fauna			
Point 20: The EclA and subsequent response to memorandum explains that the planting of vegetated buffers will mitigate the effects of increased lighting, noise, and human disturbance. While I agree that planted buffers have positive benefits, the EclA should not rely on this alone. Consideration should be given to the type and intensity of lighting recommended to make them as fauna-friendly as	The EclA concludes that potential effects associated with lighting, noise and human disturbance are low, based on the ecological context of the site and survey findings. Despite comprehensive fauna surveys undertaken across multiple seasons and using a range of methods, no sensitive, rare or threatened terrestrial species were detected. The habitats present are generally modified, and the site is not currently supporting fauna communities that are highly vulnerable to edge effects such as light spill. In addition, the proposal includes substantial revegetation, riparian planting and habitat	I am supportive of the proposed changes to the lighting design, which will be included as a condition of consent. No further comments.	Resolved.

possible, e.g. selecting warm-white or amber LED sources and providing shielding to prevent lateral light spill. This is particularly important on lots adjoining riparian corridors and the SEA boundary, where even modest spill from garden or driveway lighting can penetrate native vegetation edges.	enhancement, which will significantly increase the extent, quality and connectivity of indigenous habitat across the site. These measures will provide improved buffering and ecological resilience over time. In this context, the reliance on vegetated buffers is considered appropriate and proportionate to the level of ecological risk identified. Notwithstanding this, and to respond to the Council's concerns in a pragmatic manner, the applicant is willing to incorporate targeted lighting controls for dwellings in close proximity to sensitive ecological areas. Specifically, it is proposed that outdoor lighting for dwellings located within 20 m of riparian corridors and the SEA boundary be designed to: • use low-intensity, warm-colour lighting (e.g. warm-white or amber spectrum); and • be directional and shielded to avoid light spill into adjacent vegetation. This is included as a condition of consent. This approach ensures that any perceived lighting effects are managed where they are most relevant, without imposing unnecessary restrictions across the wider development. On this basis, the combination of habitat		
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	enhancement and targeted lighting controls is considered sufficient to address perceived effects on fauna.		
Point 21: No restriction on domestic pets proposed. At a minimum, the EclA should have: - Discussed cat predation as an urbanisation effect. - Referenced Auckland Council's guidance on cat management in urban-fringe developments. - Acknowledged that similar subdivisions adjacent to reserves have required cat-containment conditions in recent years (i.e. Ara Hills). - Recommended conditions of consent addressing cat management — for example, requirements for cat-proof fencing on reserve boundaries, cat-free covenants on all lots and riparian margins, or mandatory microchipping and registration. - Residents society to monitor, enforce and report on compliance	The potential effects of domestic cats as a component of urbanisation are acknowledged. Domestic cats can contribute to predation pressure on indigenous fauna, particularly birds, lizards and invertebrates, and this is recognised in ecological literature as a potential effect associated with residential development. However, the ecological context of the site is an important consideration. The EclA identifies that, despite comprehensive survey effort, no sensitive, rare or threatened terrestrial fauna species were recorded, and the site is currently characterised by modified habitats and existing edge effects associated with surrounding development. As such, the baseline level of predation risk is already influenced by the existing urban environment. It is also noted that, while cat management is discussed in various strategic documents (including DOC guidance and Auckland Council biodiversity strategies), these are generally high-level and non-prescriptive, and do not establish specific requirements for domestic pet controls in relation to SEAs or comparable habitats under the RMA framework. Similarly,	The applicant's ecologist has appropriately acknowledged the potential adverse effects of domestic cats on indigenous fauna. I do not consider that the lack of threatened fauna at the site (as determined by the surveys) means that threatened fauna beyond the site (i.e. in Nukumea Scenic Reserve) would not be vulnerable to roaming cats. Overall, the proposed intention to ban cats from Stage 2 of the development is sensible and reasonable, given its proximity to large natural areas; however, the new condition of consent is not appropriate in its current form, noting that a prohibition without an enforcement and education mechanism is largely aspirational. I note there is a smaller SEA directly to the south of the Stage 1 area, and it is likely that the increased numbers of cats will put pressure on resident fauna.	The reviewer's further comments regarding domestic cat management are acknowledged. The applicant agrees that implementation and effectiveness of any cat management approach should be supported through appropriate education and administration mechanisms. Accordingly, the proposed conditions have been updated to include: - Further detail on the cat ban restriction (refer Condition 110 of the subdivision consent); - Education material provided to residents regarding responsible pet ownership and ecological values of adjacent habitats (refer Condition 34(j) of the subdivision consent); - requirements for notification of cat restrictions on property titles and sale documentation (refer Condition 34(j) of the subdivision consent); - Requirement of the Residents Society to comply with all

The DOC urban wildlife guidance and Auckland Council's own biodiversity strategy both identify cat predation management as a standard expectation for developments of this type near SEAs. Of further relevance is the proposed Grand View Estate adjacent to Nukumea Scenic Reserve where commissioners decided that cats must be excluded. Other cat-free developments in the Ōrewa area include Sunny Heights, off West Hoe Heights in Orewa, also around 570 homes, which has placed a cat-free covenant on a portion of its site registered on the title of those properties, and the Weiti Bay development in Stillwater.	while some recent developments (e.g. Ara Hills, Weiti Bay) have incorporated cat management measures, these have been site-specific responses rather than reflecting a consistent or standardised requirement. Against that background, the applicant has also adopted a site-specific, targeted approach to managing potential effects of domestic cats. This includes the proposed use of covenants preventing cat ownership within Stage 2 of the development, which: • adjoins the Nukumea Scenic Reserve and areas of higher ecological value; and • contains the largest extent of established indigenous vegetation within the site. This approach recognises that spatial buffering is an effective method for managing potential effects of domestic pets, with Stage 2 acting as a functional buffer between the wider development (Stage 1) and more sensitive ecological areas. On this basis, the proposed approach appropriately balances ecological outcomes with practical implementation, and is considered sufficient to address potential effects associated with domestic cat predation without imposing unnecessary restrictions across the entire development.		resource consents (refer Condition 34(e) of the subdivision consent); and • Nomination of a contact person to be provided to council to respond to complaints and enquiries (refer Condition 34(f)).
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	The Department of Conservation has provisionally advised this approach is considered acceptable.		
Comments / information request regarding management plans			
Fauna management plan			
Point 22: Fauna management plan bird section requires amendments to include more detail and align with standard conditions including: - The standard “bird breeding season” during which nesting bird surveys are required is 1 September to 31 March (not 1 September to 28 February as currently stated). - If nesting behaviour, or an active nest is located, an exclusion area with a diameter of 20 metres must be established around the nest (not 10 metres diameter as currently stated). - Section 1.4.1 states that “from July onwards, dotterels begin looking for breeding territory”, but it does not state when they begin breeding.	The Fauna Management Plan (FMP) provided with the application is a draft document, intended to demonstrate the proposed management framework. As set out in the consent conditions, a final FMP will be prepared and submitted to Council for certification prior to the commencement of works, and will be updated to reflect any refinements required at that time in accordance with standard preparation of final plan/certification processes. Notwithstanding this, the matters raised are largely technical clarifications and standard practice refinements and will be incorporated into the draft FMP. An updated draft FMP will be provided as part of the statutory comments phase. In particular the following will be included in the updated draft FMP: • the bird breeding season will be updated to 1 September to 31 March;	Response is appropriate and largely relates to minor matters of detail. Some updates have been made to the conditions, although a minimum setback from nesting forest birds does not appear to have been specified.	An update to the draft FMP has been made to incorporate the details identified within Column 2. Refer to Attachment A to this memorandum.

Northern New Zealand dotterel typically breed from August to February. This would mean that dotterels may begin nesting prior to the start of the nest survey period. Further information is required regarding how early dotterel nests will be located during August. - Leaving grass to grow long may deter dotterels from nesting, but it should be noted that long grass can provide good habitat for indigenous skinks. Discouraging dotterels in this way will therefore result in increased management requirements for indigenous skinks.	• nest protection measures, including appropriate exclusion distances, will be aligned with Council expectations; and • species-specific considerations (including northern New Zealand dotterel breeding behaviour and timing) will be clarified, including appropriate pre-construction survey requirements where relevant. More broadly, the final FMP will ensure that fauna management measures are responsive to habitat conditions and species present, including consideration of any interactions between management approaches (e.g. vegetation management and potential skink habitat). On this basis, the matters raised do not affect the conclusions of the EclA and are appropriately addressed either through the updating of the draft FMP or through the finalisation and certification of the FMP in accordance with consent conditions. Changes that were recommended to the FMP condition have been adopted and are shown in the conditions, except for the change relating to pests which is proposed to be included in the new condition providing for an EMP.		
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Point 23: Fauna management plan lizard section requires amendments to include more detail and align with standard conditions including: - Wording regarding the timing of vegetation removal should be firmed up and be directive so that it is clear that any vegetation that provides potential skink habitat <i>must</i> be removed between 1 October and 30 April (not “<i>should</i>” as currently stated, as this is subjective and unenforceable). - Lizard management relies on destructive searches and inspections of felled vegetation. However, for a site of this size other salvage techniques should also be included, such as pre-clearance trapping using pitfall traps, and spotlighting for geckos. - Details of the release site have not been provided and it is stated that this will be provided in the final plan, but I	As noted in response to Point 22, the FMP provided with the application is a draft document, and a final FMP will be prepared and submitted to Council for certification prior to the commencement of works in accordance with the consent conditions. The matters raised are primarily technical refinements, which will be incorporated into the draft FMP and provided as part of the statutory comments phase. In particular the following will be included in the draft FMP: • the timing of vegetation clearance will be updated to provide clear and directive wording; • additional detail on survey and salvage methodologies (including the potential use of supplementary techniques where appropriate) will be included; and Notwithstanding this, it is important to note that no lizards were recorded during comprehensive, multi-method surveys, including ACOs, pitfall trapping, manual searches and nocturnal spotlighting. On this basis, there is a high degree of confidence that lizard abundance on the site is low, and that only a small number of individuals, if any, would require relocation.	I agree that the technical matters raised can be appropriately addressed through the updated draft FMP or through the finalisation and certification of the FMP. The conditions should specify that potential skink habitat must be removed between 1 October and 30 April.	An update to the draft FMP has been made to incorporate the details identified within Column 2. Refer to Attachment A to this memorandum.
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see no reason why this couldn't be determined at this stage. - There is no mention of pest animal control in the release site, or requirements for ongoing monitoring should a significant number of lizards be relocated. This is usually a requirement of projects of this scale.	A precautionary approach has nevertheless been adopted, with lizard management measures included within the draft FMP to ensure appropriate management should individuals be encountered. The scope and scale of any salvage or relocation effort will therefore be proportionate to actual findings during works, rather than assuming the presence of significant populations. In relation to release sites, these will be confirmed in the final FMP, noting that suitability may be influenced by the timing and staging of works, availability of appropriate habitat, and the implementation of revegetation and habitat enhancement measures within the site. On this basis, the matters raised do not affect the conclusions of the EclA and are appropriately addressed through either the updated draft FMP or through the finalisation and certification of the FMP.		
Point 24: Fauna management plan bat section requires amendments to include more detail and align with standard conditions including: - The sentence that states "If no bats were detected during the pre-vegetation clearance	As noted in response to Points 22 and 23, the FMP is a draft document, and a final FMP will be prepared and submitted to Council for certification prior to the commencement of works. The matters raised are largely technical refinements, which will be incorporated into the draft FMP and provided as part of the statutory comments phase.	I agree that the technical matters raised can be appropriately addressed through the updated draft FMP. The applicant's precautionary approach is acknowledged. I recommend that the final FMP is externally reviewed once completed.	An update to the draft FMP has been made to incorporate the details identified within Column 2. Refer to Attachment A to this memorandum.

survey, felling can occur without implementation of the protocols” should be removed. As no other surveys are discussed, it is assumed that the survey being described here is the two consecutive nights of ABM monitoring required immediately prior to trees being felled. If this is the case, then no bat detections does not mean that the rest of the protocols do not need to be followed. Rather, it only means that further inspection by an arborist is not required before the trees are felled. All other aspects of the protocols still need to be followed, including inspecting the felled vegetation for evidence of bats having roosted in the tree in the past. This should be clarified. - No information is provided regarding where “additional planting is proposed to be provided and maintained for the purpose of the connectivity of long-tailed bat habitats”.	In particular the following will be included in the draft FMP: the wording relating to pre-clearance bat surveys will be removed or their intention made clearer; and Notwithstanding this, it is noted that no bats were detected during acoustic monitoring, and the EclA concludes that bat activity within the site is likely to be low or intermittent. A precautionary approach has nevertheless been adopted, with bat management measures incorporated within the FMP. In relation to the comment regarding “bat connectivity” planting, this requirement arises from the proposed consent conditions (carried over from the Notice of Requirement to achieve a consistent approach between the designation and the consent), rather than the EclA or draft FMP. As set out in the EclA, the proposal already includes substantial revegetation and habitat enhancement, including approximately 21 ha of planting beyond the 10.5 ha of planting required to offset vegetation loss, resulting in a significant net ecological gain. Accordingly, planting that contributes to habitat connectivity for bats is already inherently provided for within the broader revegetation framework, and is not relied		
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This should be provided as there is limited room available within the current plans to provide additional planting. If this “bat connectivity” planting will overlap with areas of revegetation already proposed, then this should be clarified and justified to ensure that revegetation work is not being “double counted”.	upon as a separate or additional offsetting measure. Any overlap between “connectivity” planting and proposed revegetation does not represent double counting, but rather reflects the multi-functional ecological benefits of the planting programme. On this basis, the matters raised do not affect the conclusions of the EclA and can be appropriately addressed through the updated draft FMP.		
Planting implementation plan			
Point 25: This plan is inappropriate and impractical for large-scale revegetation area, workable for high amenity landscape planting area. Separate Ecological Management Plan for ecological revegetation areas to be prepared by an ecologist in experience in large scale revegetation projects. Points recommended to include are eco sourced plants requirement not preferred where possible. The Ecological Management Plan should therefore include ongoing	The comments raised are acknowledged and largely relate to the level of detail and ecological specificity appropriate for large-scale revegetation and long-term ecological management. It is agreed that the landscape-based planting plans submitted with the application are not intended to function as a detailed ecological restoration specification, but rather to provide a conceptual framework for planting extent and typology. In response, it is proposed that a separate Ecological Management Plan (EMP) be prepared by a suitably qualified and experienced ecologist, and secured as a condition of consent, with the EMP to be submitted to Council for certification prior to implementation. The EMP will address the	The applicant acknowledges the issues raised and has proposed to prepare a separate EMP, which will specifically address ecological revegetation areas and associated ecological outcomes. I acknowledge that DOC has provide advice regarding plant species selection. I recommend that the final EMP is externally reviewed once completed. I also note that the consent conditions have not yet been updated to include reference to the EMP.	A new condition has been proposed for the revegetation areas across the site. This is included within the updated condition set (refer condition 16 of the land use consent). This is repeated below for reference: <u><i>The consent holder must prepare and submit to Council for certification, an Ecological Management Plan (EMP) prepared by a suitably qualified ecologist for all areas identified on the Drawing titled “Ecological and Landscape Management Plans Scope Delineation”, prepared by Greenwood Associates and dated 2</i></u>

management of the SEA and bush covenant areas, including maps showing the locations and coverage of pest animal control devices, methods for the control of pest plants (including gorse), infill planting for gaps created by pest plant control, and a works programme to guide contractors.	areas identified in the landscape plans as Native bush revegetation, upper riparian revegetation, lower riparian revegetation, and wetland planting mix, and will provide a detailed, ecologically-led framework for planting and ongoing management of these. The EMP will include, but not be limited to: • Eco-sourcing requirements for plant material; • Refined planting palettes and species composition, including appropriate balance of pioneer and secondary species; • Planting densities and spacing, including consideration of canopy closure objectives and site conditions; • Infill planting requirements to address gaps arising from mortality or pest plant control; • A comprehensive pest plant and pest animal management strategy, including: ○ methods, tools and control techniques; ○ spatial layout (including mapping of control areas and devices);		<u>June 2026. The EMP must include as a minimum:</u> <u>(a) The location of all revegetation planting;</u> <u>(b) Planting schedules for ecological revegetation planting (to include species, number of plants and spacings, etc.);</u> <u>(c) Infill planting schedules for gaps created in existing bush covenant areas and SEA areas following pest plant control activities;</u> <u>(d) The details and timing of revegetation planting, including which areas will be implemented prior to s224(c) certification for each stage;</u> <u>(e) Confirmation that plants will be eco-sourced from the Tamaki or Rodney Ecological Districts;</u> <u>(f) Confirmation that the required extent of revegetation required under the Biodiversity Offset Accounting Model (BOAM) has been achieved;</u> <u>(g) A programme and specification for ongoing control of</u>
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	○ servicing and monitoring regimes; and ○ adaptive management approaches; • Integration of pest management across revegetation areas, SEA and covenant areas; and • A staged works and maintenance programme to guide implementation and long-term management. The existing Planting Implementation and Maintenance Plan (IMP) will continue to apply to landscape and amenity planting areas (including streetscapes, open space planting, lot revegetation, stormwater pond edge planting and slope stabilisation areas), and will guide the practical implementation and maintenance of those areas. In contrast, the EMP will specifically address ecological revegetation areas and associated ecological outcomes. The two documents are therefore complementary, with the IMP addressing landscape and engineering-related planting, and the EMP providing the ecological restoration framework. In relation to species selection and composition, it is noted that the current planting schedules reflect a preliminary,		<u>pest plants and pest animals in perpetuity, including how these activities will be integrated with management of the wastewater irrigation infrastructure related to Consent Notice Area 6079871.2;</u> <u>(h) Locations of pest animal control devices across the site;</u> <u>(i) Methods for ensuring that the vegetation that has been planted is protected in perpetuity; and</u> <u>(i) Delegation of responsibilities between the consent holder and the Residential Society, as follows:</u> • <u>The consent holder is responsible for the establishment and maintenance of all new planting as detailed within the Landscape Plans referenced under Condition 1. until 80% canopy closure has occurred and a minimum survival rate of the plants being 90% of the original density through the entire planting area(s) has been achieved over a minimum 5 year defects liability period</u>
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	landscape-led design with some ecological input from Viridis and also from the DOC through engagement, and will be refined through the EMP process. The inclusion of a diverse range of species (including secondary and slower-growing species) reflects prior engagement with DOC and their objectives for longer-term ecological outcomes. These species will continue to be provided for alongside those needed to achieve effective early canopy establishment. It is also noted that the relative proportion of pioneer species (e.g. mānuka and kānuka) has similarly been influenced by DOC input, including consideration of fire risk, and this will continue to be taken into account during preparation of the EMP. Planting densities will likewise be reviewed and standardised through the EMP, taking into account site-specific conditions, establishment success, and relevant best practice guidance. Performance and establishment criteria (including canopy cover and survival targets developed in consultation with DOC) will apply to ecological revegetation areas addressed by the EMP. These criteria will form part of the EMP and associated consent conditions, ensuring that ecological outcomes are clearly defined and measurable. Where relevant,		<u>commencing on the date that the section 224(c) certificate is issued.</u> • <u>Once all new planting is established, the Residential Society is responsible for the ongoing maintenance and ongoing eradication of pest plants and animals.</u> <u>Advice note: Pest plant eradication means, that there are no mature, fruiting and / or flowering individuals of weed species present within the covenant area and any weed species present are dead. In addition, there must be no areas where weed species are smothering and / or out competing native vegetation including suppressing the natural regeneration processes. Pest animal control means meeting Council's minimum requirements and national standard best practice methods for control of these species to an acceptable level.</u>
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	these standards will also inform the broader planting approach, but their primary application will be to ecological restoration areas rather than landscape or amenity planting. Overall, these matters are appropriately addressed through the preparation and certification of a detailed, ecologically-led EMP, rather than further refinement of the current landscape plans. This approach ensures that revegetation and pest management are fit-for-purpose, technically robust, and responsive to site conditions, while maintaining appropriate flexibility at the implementation stage. The intent behind the planting and implementation plan was also to achieve successful planting and long term maintenance of these areas to return them to WF11 habitat in the long run. The EMP approach is a clearer and more direct method of achieving that outcome. Because of the need to take care to ensure that the EMP and the current IMP are complementary, each has the correct content requirements, and DOC's comments are properly carried over into the new conditions, the applicant team is still working on the		
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	proposed conditions relating to the EMP. These will be provided as soon as possible.		
Point 26: Pest control is highly specialised and needs own pest plant and pest animal control plan prepared by expert. Key points to address include: - pest plant and animal controls to include SEA and consent notice areas not just revegetation areas. - infill planting for gaps created by pest control. - Practical control of rabbits in the event that they are damaging plantings. The plan currently states that “kill trapping” is the most appropriate tool to control rabbits, but I am not aware of any traps that have been certified for the control of rabbits. - The type of kill trap proposed for control of possums, and their recommended spacing across the site.	Please refer to the response to Point 25 above. Pest control to be included as part of the EMP.	It is acknowledged that a detailed EMP will be prepared as a condition of consent.	Please refer to Point 25 above.

- Appropriate pulsing of toxin use to prevent bait shyness and bioaccumulation. -The frequency of trap and bat station servicing. This is currently stated as 12 monthly intervals, which is not adequate to achieve meaningful control of pest animals. - A map of the recommended layout of pest animal control devices across the site. - Ongoing control of rats and mustelids during Phase 2, currently this is only proposed during Phase 1 (the first five years after planting occurs).			
Point 27: The implementation plans states that the Phase 1 establishment period includes “a minimum of five year defects liability period commencing on the date that the section 224(c) certificate is issued”. However, the Issue of 224(c) would usually occur once the establishment period has been completed and the	This condition is accepted in principle. But the applicant team is considering specific wording. This will be provided when ready.	No further comment.	Resolved.

planting has been inspected to confirm that it has achieved 80% canopy closure and a minimum survival rate of 90% of the original density of plants. A condition is therefore recommended to allow the consent holder to enter into a bond if the early release of the 224(c) certificate is requested.			
Revegetation planting plans in landscape plan set			
Point 28: The revegetation planting schedules provided in sheets 2535/07 to 2535/09 of the landscape plans are overly diverse and include species that are not appropriate for a revegetation planting, such as small carex and grass species or very slow growing species such as nikau, that will not contribute to the initial establishment of a continuous canopy at the site. Species that are not appropriate for revegetation planting include, but are not limited to <i>Astelia solandri</i> , <i>Carex banksiana</i> ,	Please refer to the response to Point 25.	Matter already addressed.	Resolved.

Carex dissita, and Microlaena avenacea.			
Point 29: Large numbers of secondary species are also proposed. These should be limited to only a few that are known to be able to establish in open, dry, and sunny conditions, and the number of pioneering species (such as kānuka and mānuka) should be increased.	Please refer to the response to Point 25.	Matter already addressed.	Resolved.
Point 30: The spacing of all terrestrial revegetation plantings should also be amended to no more than 1.4 metres. Currently there is a mix of 1.5 for the “native bush revegetation” areas and 1.0 for the “riparian” areas; the latter generally acceptable as per the AUP(OP).	Please refer to the response to Point 25.	Matter already addressed.	Resolved.
Point 31: It is not clear whether the “slope stabilisation” and “lot revegetation” areas are intended to be amenity plantings or to contribute to the extent of offsetting	As noted in Footnote 5 of the EclA, planting associated with slope stabilisation, stormwater ponds and wetlands is excluded from the total 31.85 ha of revegetation planting proposed across the site for ecological restoration purposes.	The response is appropriate. No further comment.	Resolved.

required under the BOAM. As these areas are not true ecological restoration areas (i.e. the planting mix has been tailored to accommodate landscape considerations) these areas should not be considered to contribute to the offset planting. It is therefore recommended that the landscape planting plan and Ecological Management Plan prepared as separate plans by the relevant experts in each field.	Of this total, 10.5 ha is specifically identified and required to meet the offsetting requirements under the BOAM, and this does not include “lot revegetation” or other landscape-driven planting areas. Accordingly, there is no reliance on slope stabilisation or amenity planting to achieve offsetting outcomes, and no double counting occurs. While not included as part of the formal offset calculation, planting within lot revegetation and other non-offset areas will nevertheless provide additional ecological benefits, including increased habitat extent, connectivity, and buffering. These areas therefore contribute to the overall net ecological gain associated with the proposal in a practical sense, even if they have not been included in the pure ecological restoration revegetation figure. As set out in response to Points 25–30, it is proposed that a condition of consent being included requiring an EMP to be prepared and certified to address ecological revegetation areas, with landscape planting and ecological restoration appropriately distinguished. This approach ensures clarity of purpose and alignment with both ecological and landscape design objectives.		
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Point 32: The “slope stabilisation” and “lot revegetation” areas should only include appropriately ecosourced plants and ecologically appropriate species. The slope stabilisation planting schedule currently includes landscape cultivars such as Phormium ‘Emerald Green’ and ecologically inappropriate species such as <i>Apodasmia similis</i>.	It is agreed in principle that ecological revegetation areas should utilise ecosourced and ecologically appropriate species, and this will be addressed through the preparation of the Ecological Management Plan (EMP) as outlined in response to Point 25. However, it is important to distinguish between ecological revegetation planting and slope stabilisation planting. As set out in the EclA, slope stabilisation areas are not included within the revegetation planting proposed for offsetting purposes, and serve a primarily engineering and erosion control function, rather than ecological restoration, and species that align with the needs of that purpose have been selected. The species identified by the reviewer (e.g. Phormium ‘Emerald Green’ and <i>Apodasmia similis</i>) are associated with slope stabilisation planting (not the “lot revegetation” planting), where plant selection reflects a combination of stability, establishment success, and landscape considerations, rather than strictly ecological criteria. These species are not considered weeds and do not pose a threat to the revegetation planting. In contrast, all areas of ecological revegetation (including those contributing to offsetting and wider habitat enhancement) will be addressed	The clarification provided is acknowledged. No further comments.	Resolved.
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	through the EMP and will utilise appropriate ecosourced indigenous species, consistent with ecological restoration best practice. On this basis, the distinction between planting types is clear, and the proposed approach appropriately aligns species selection with the intended function of each planting area.		
Point 33: The wetland planting mix includes several species that require open water, such as <i>Schoenoplectus tabernaemontani</i> and <i>Eleocharis sphacelata</i>. However, there is no indication of standing water being present in the wetlands described in the EclA. These species are therefore unlikely to survive. <i>Eleocharis acuta</i> is also very small and as such is not an appropriate species to select when attempting to quickly establish a cover of indigenous species. Inappropriate species should be replaced with more of the robust, canopy-forming sedge species already recommended,	The comments raised are acknowledged and relate to the level of detail and refinement of species selection, which is appropriately addressed through the preparation of the EMP as outlined in response to Point 25. The current planting schedules are preliminary and landscape-led and will be refined through the EMP to ensure that species selection aligns with site-specific hydrological conditions, habitat characteristics, and ecological objectives. This will include review of species suitability for establishment success and canopy development. Notwithstanding this, the wetland planting mix within the landscape plans will be updated to reflect these recommendations and provided as part of the statutory comments phase. It is noted that areas of open water are present within the site (e.g. Wetland U), and species requiring such conditions may be appropriate in those specific locations. The	The clarification provided is acknowledged. No further comments.	Resolved.

e.g. <i>Carex geminata</i> and <i>Cyperus ustulatus</i> .	final allocation of wetland species will therefore be spatially targeted within the EMP, ensuring that species are matched to appropriate microhabitats. On this basis, the matters raised will either be addressed through the updated landscape schedules or through the EMP, which will provide a fit-for-purpose, ecologically robust planting specification, and do not affect the conclusions of the EclA.		
Comments / information request regarding proposed offsetting			
Point 34: The EclA should include an assessment against the principles of biodiversity offsetting listed in Appendix 8 of the AUP(OP) and/or Appendix 3 of the NPS-IB.	An assessment of the proposed biodiversity offsetting against the principles set out in AUP Appendix 8 and NPS-IB Appendix 3 is provided below. The principles are broadly consistent across both frameworks. - Avoidance, remediation, mitigation hierarchy: The proposal has applied the effects management hierarchy, with avoidance of (mapped) SEA areas, minimisation of vegetation clearance, and mitigation measures implemented prior to offsetting. Offsetting is applied only to residual adverse effects. - Limits to offsetting:	The assessment provided is appropriate. No further comments.	Resolved.

	The affected habitats are not identified as rare, vulnerable, or irreplaceable ecosystems, and do not support Threatened or At Risk species. As such, they are appropriate for offsetting. • Like-for-like / ecological equivalence: Offset planting is based on indigenous vegetation types consistent with those affected, and located within the same site and ecological context, maintaining ecological relevance. • Additionality: The proposal includes 10.5 ha of planting required to offset effects, with an additional ~21 ha of revegetation, ensuring outcomes are additional to the baseline and not otherwise required. • Timing and duration: While there is an inherent temporal lag in ecological restoration, this is addressed through early implementation of planting, ongoing management, and long-term protection, resulting in progressive ecological gains. • Landscape context and connectivity: Revegetation enhances connectivity, buffering, and ecological function,		
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	including linkages to existing SEA, covenant areas, and Nukumea Scenic Reserve. • Security of outcomes: Planting areas will be legally protected and subject to long-term management, including pest control and maintenance through an EMP and consent conditions. • No net loss / net gain: The proposal achieves no net loss and a net gain in indigenous vegetation extent, quality, and ecological function, as demonstrated through the BOAM assessment. • Monitoring and adaptive management: Monitoring and maintenance requirements will be set out in the EMP, allowing for adaptive management to ensure successful establishment and long-term outcomes. On this basis, the proposed offsetting is considered to be consistent with the principles of biodiversity offsetting under both the AUP and NPS-IB frameworks.		
Point 35: The report states that: “A conservative benchmark was therefore	The benchmark adopted in the BOAM assessment represents a conservative, high-condition example of broadleaved indigenous	I agree that the benchmark values are likely to be appropriate, however, it	Resolved.

adopted, using a very good condition example of broadleaved species scrub that supports high native species richness and includes future WF11 canopy species already present within the understorey.” However, the location of the reference (benchmark) site was not provided, nor was the plot data.	scrub, consistent with the relevant ecosystem type (WF11) within the local ecological context. As stated, this benchmark reflects a very good condition state, including high native species richness and the presence of future canopy species within the understorey. The benchmark was derived using a combination of: • published reference information and regional ecological knowledge; • field observations of comparable vegetation within the wider area; and • professional ecological judgement, consistent with standard BOAM application where site-specific benchmark plots are not always required. The use of a high-condition benchmark is intentional and conservative, ensuring that offset requirements are not underestimated. On this basis, the benchmark approach adopted is considered appropriate, conservative, and consistent with accepted BOAM methodology, and does not affect the conclusions of the EcIA.	would be useful to cite the sources. No further comments.	
Point 36: No monitoring or adaptive management details have been provided.	Monitoring and adaptive management of revegetation plantings are recognised as important components of successful	The applicant intends to include a monitoring and adaptive management framework in the EMP,	Resolved.

Monitoring of offset plantings is critical to ensure that predicted biodiversity outcomes are realised. This should include, but is not limited to, the following: • The monitoring frequency and metrics to be tracked (species composition change, canopy cover, weed incursion rates) • What constitutes "failure" of the offset and what remedial action is triggered. • How monitoring data will feed back into model assumptions (i.e. whether the trajectory curves will be updated as real data accumulates). Who has the authority to declare offset success, and at what point obligations are discharged.	ecological outcomes. It was intended that these matters would be addressed during the establishment phase through the planting and implementation plan and associated consent conditions, and in the longer term through residential society management responsibilities. These matters will be further refined and clearly set out through the EMP and updated consent conditions. The proposed offset comprises approximately 10.5 ha of standard indigenous revegetation planting, which is not considered complex or atypical, and for which there is a high level of confidence in successful establishment based on established practice in the Auckland region. Clear establishment and success criteria are already proposed through the consent framework, including: • achievement of minimum 80% canopy cover; and • a minimum 90% plant survival rate across the planting area; • over a minimum 5-year establishment period. These criteria provide measurable performance thresholds against which planting success can be assessed and will be detailed further within the EMP. The amendments to the conditions currently being	which is appropriate. No further comments.	
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	worked on will include ensuring these apply to the EMP. The EMP will also set out: • monitoring frequency and methods; • establishment targets; and • remedial actions where establishment targets are not met (e.g. infill planting, weed control). Monitoring results will be used to inform adaptive management, ensuring that any issues are identified early and addressed to maintain the intended ecological trajectory. This was always the intent behind the proposed approach to ecological restoration planting and a requirement inherent in have overarching planting objectives. The EMP approach will help to make required actions more explicit.		
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Table 1. Summary of fauna and flora survey timing, personnel and conditions

Survey type	Date(s)	Personnel	Weather / conditions	Notes
General ecological walkovers / flora inventory	November–December 2025	Mark Delaney, Brittany Pearce / Viridis ecologists	General walkover conditions suitable for field observation; species identified during repeated walkovers in key vegetated areas	Flora inventory undertaken concurrently with plot sampling. Five 10 m × 10 m vegetation plots established across vegetation proposed for removal.
Vegetation plot sampling	November–December 2025	Brittany Pearce, Timothy Yang / Viridis ecologists	Standard plot-based vegetation assessment conditions	Five representative plots (V1–V5) established across approximately 2.25 ha of proposed vegetation loss to quantify vegetation structure, composition and condition.
Five-minute bird counts	15 December 2025	Brittany Pearce, Timothy Yang / Viridis ecologists	Fine weather; no rain or strong wind	Seven count stations (BC1–BC7), spaced at least 200 m apart; counts undertaken between 10.00 am and 3.00 pm.
Targeted dawn wetland bird surveys (including playback)	26 November 2025 and 15 December 2025	Brittany Pearce, Timothy Yang / Viridis ecologists	Dawn conditions appropriate for targeted listening and playback surveys	Two 45-minute dawn surveys commencing approximately 30 minutes before sunrise; included 15 minutes of playback for bittern, banded rail, fernbird and spotless crane, followed by passive listening.
Bat acoustic monitoring (ABMs)	Installed 12 November 2025; deployed for 32 nights	Viridis ecologists with technical support from Marc Choromanski / The Ecology Studio Ltd	Valid nights assessed using Weather Underground station IWAINU6 and DOC criteria: ≥8°C for first four hours after sunset, ≤20 km/h wind, and ≤2.5 mm rainfall; 24 valid nights achieved	Ten Song Meter Mini Bat 2 detectors deployed across likely flyways, riparian margins, mature shelterbelts, vegetation edges and pasture interfaces.

Survey type	Date(s)	Personnel	Weather / conditions	Notes
eDNA sampling	15 December 2025	Viridis ecologists / samples processed by Wilderlab NZ Ltd	N/A	Six-replicate eDNA sample collected from a representative location within the central catchment to complement freshwater and terrestrial fauna surveys.
Lizard survey – ACO and pitfall installation; manual searching	4–5 November 2025	Suitably qualified ecologists from RMA Ecology Ltd under the supervision of Senior Herpetologist Dr Graham Ussher	Fine	92 ACOs and 22 pitfall traps installed; approximately 3 person-hours manual searching; gecko slough recorded during installation.
Lizard survey – nocturnal spotlighting	5 November 2025	RMA Ecology Ltd	Fine, calm; full moon; 20–14°C	Approximately 10.5–17.5 person-hours spotlighting within native forest and kānuka-dominant scrub.
Lizard survey – ACO check 1 / manual search	2 December 2025	RMA Ecology Ltd	Partly cloudy; rain later; ~22°C	Partial ACO check; approximately 0.5 person-hours manual searching; 24 ACOs inaccessible due to livestock-related H&S constraints.
Lizard survey – ACO check 2 / manual search	4 December 2025	RMA Ecology Ltd	Variable weather; ~17°C	Full ACO check; approximately 1.16 person-hours manual searching.
Lizard survey – ACO check 3 / pitfall set / manual search	10 December 2025	RMA Ecology Ltd	Fine, calm; ~25°C	ACO check, pitfall activation and approximately 1 person-hour manual searching.

Survey type	Date(s)	Personnel	Weather / conditions	Notes
Lizard survey – ACO check 4 / pitfall check / manual search	11 December 2025	RMA Ecology Ltd	Fine to partly cloudy; ~24°C	ACO check, pitfall check and approximately 1.25 person-hours manual searching.
Lizard survey – nocturnal spotlighting / remaining ACO checks	16 December 2025	RMA Ecology Ltd	Drizzle until late evening; ~18°C	Approximately 3.5 person-hours spotlighting; remaining previously inaccessible ACOs checked.
Lizard survey – pitfall checks / final ACO checks / device removal	17 December 2025	RMA Ecology Ltd	Warm with intermittent showers; 16–22°C	Full site coverage; all ACOs and pitfall traps removed.

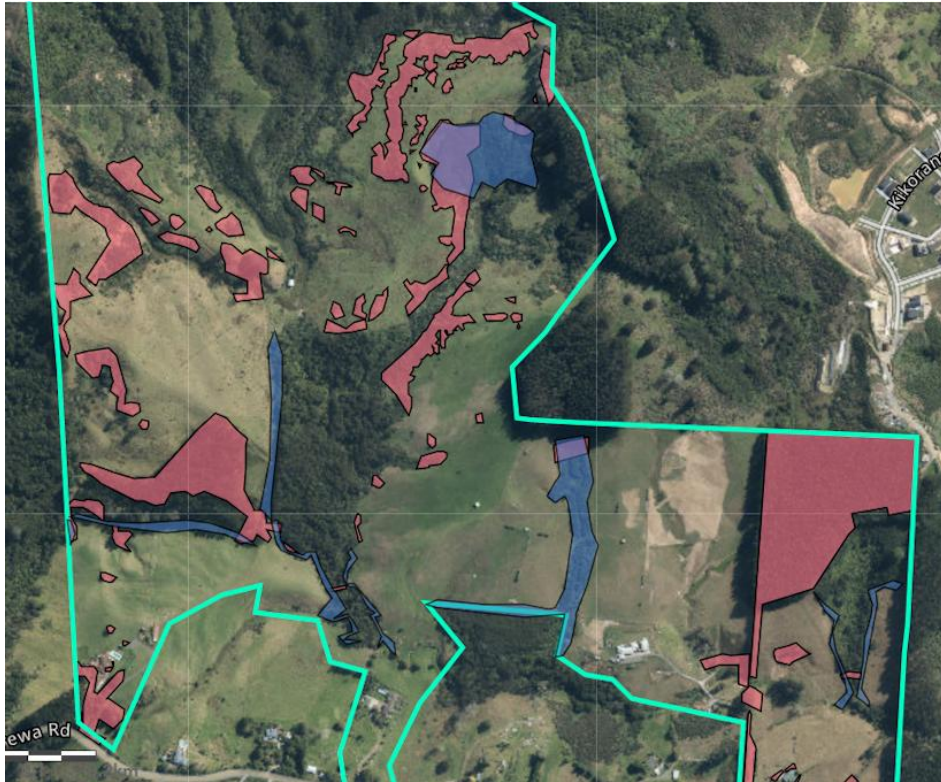


Figure 1. Manual spotlight night search areas (blue polygons) where best quality habitat for arboreal geckos was searched. The proposed vegetation clearance areas are shown in shaded red, most of which do not constitute viable native lizard habitat.

Attachment A: Updated FMP

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 Bird Survey and Management

1.2.1 Timing

In the first instance, vegetation clearance between 1 September and 31 March should be avoided where practicable.

Notwithstanding this, ground-disturbing works and vegetation clearance associated with open pasture or bare ground habitats should also take into account the potential for northern New Zealand dotterel nesting behaviour from August onwards.

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 20 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 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.

1.4 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.

1.4.1 Deterrence

From July onwards, northern New Zealand dotterels may begin establishing breeding territories, with nesting potentially occurring from August onwards. Weekly inspections of active works areas and other open habitats suitable for dotterel nesting should therefore occur from August onwards to identify any territorial or nesting behaviour prior to, and during, works.

Breeding dotterels are territorial and may display defensive behaviour to perceived threats (including people). Defensive behaviour can include alarm calling, distraction displays ('rat runs'), and injury-feigning ('broken wing') behaviour. These behaviours should be specifically looked for during 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, 2012¹).

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
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.

Where long grass is proposed as a deterrence method, consideration should also be given to the potential for rank grass and dense ground cover vegetation to provide suitable habitat for indigenous skinks. The suitability and extent of long grass deterrence should therefore be determined by the project ecologist and/or project herpetologist having regard to the habitat values present and the proposed timing of works. Alternative deterrence methods may be preferentially used in areas identified as having elevated lizard habitat values.

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

1.4.2 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.

If dotterel nesting occurs within areas also identified as potential lizard habitat, management responses will be coordinated between the project ecologist and project herpetologist to ensure adverse effects on either fauna group are appropriately managed.

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.

Vegetation management measures implemented for avifauna management purposes (including potential use of long grass as a deterrent to northern New Zealand dotterel nesting) may influence the suitability of some habitats for indigenous lizards. Accordingly, fauna management measures will be coordinated by the project ecologist and/or project herpetologist to ensure that management actions appropriately consider potential interactions between avifauna and lizard habitat requirements.

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.

2.2 Lizard Search and Capture Methodology

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

2.2.1 Timing of activities

Lizard salvage activities are confined to warmer months when lizards are the most active and likely to be detected if present. Vegetation clearance and ground disturbance within areas identified as potential

lizard habitat shall occur between 1 October and 30 April unless otherwise authorised by the project ecologist/herpetologist.;

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

2.2.2 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.

Although no indigenous lizards were detected during the surveys undertaken for the site, a precautionary approach has been adopted given the presence of some habitats with potential suitability for common indigenous skink species. Where considered appropriate by the project ecologist/herpetologist, additional salvage techniques may be implemented prior to vegetation clearance, including targeted pitfall trapping and/or nocturnal spotlight searching in higher-quality habitat areas.

2.2.3 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.

2.2.4 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.

2.2.5 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.

2.2.6 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 2.4).

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.

2.3 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 as 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.

2.4 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.

2.4.1 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.

Final release site selection will be confirmed prior to salvage works, having regard to staging, timing of vegetation clearance, habitat condition, predator management, legal protection status, and the availability of suitable receiving habitat at that time. This approach ensures that release sites remain ecologically appropriate and responsive to the final construction and management sequencing.

[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.]

2.4.2 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.

Where lizard salvage and relocation is required, pest animal management within release areas will be undertaken where considered necessary by the project ecologist/herpetologist to support lizard survival and establishment. The extent and nature of any required pest management will be proportionate to the scale of any relocation undertaken and the number of lizards identified.

2.5 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.

2.6 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.

Any post-relocation monitoring requirements will be determined by the project ecologist/herpetologist having regard to the number and species of lizards relocated (if any), the characteristics of the release site, and the scale of the relocation programme.

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 Group².

3.1 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 3.3³. 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.

3.2 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 Worker³ (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:

- 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 conditions²; 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.

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.

- Where a night does not meet optimum conditions² (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 bat 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 surveys² (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 (≤ 2.5 mm) in the first four hours after official sunset

3.3 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.

3.4 Bat Mitigation

If bats are detected on site during pre-vegetation clearance surveys, 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.

The proposal already includes substantial revegetation and habitat enhancement planting across the site, including planting within riparian corridors, revegetation areas, and retained indigenous vegetation margins. These areas will contribute to maintaining and enhancing habitat connectivity for long-tailed bats within the wider landscape. No separate bat-specific offset planting is proposed or relied upon. Rather, the habitat connectivity benefits for bats are expected to arise as a co-benefit of the wider ecological enhancement and revegetation proposed across the site.

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Attachment B: SEA Map

