Response to S92 Request for Further information relating to the Alliance Ecology Assessment of Ecological Effects Report and the Qualitative Biodiversity Modelling report. **NB: this table does not address S92 questions on the Bluewattle Ecology Bat Report**		
Item	Question	Response from Applicant ecologists
Waipa district council S92 Request for Further information Memo from Andrew Blayney dated 13 June, 2023		
Methods, Item 1	The methods note the field investigations involving "habitat assessments" that were used to characterise fauna habitats. Please provide further detail on how avifauna and herpetofauna habitats were classified and how it was determined which species are included within this assessment.	Noted - response provided in updated report at Section 3.4
Methods, Item 2	Section 2.2.1 notes "general field investigations" were carried out in 13 and 14 January 2021. Were any further investigations, other than for bats, undertaken to understand the values of the site? If so, please provide the results of these investigations.	Yes - additional field investigations have been undertaken to address S92 questions and relevant information is now provided in the updated reports and associated management plans.
Methods, Item 3	Section 2.2.2 details the methods for delimiting wetlands which appear to be based on guidance and methods developed shortly after the gazetting of the National Policy Statement for Freshwater Management. More recently formal guidance from the Ministry for the Environment has been developed for identifying wetland hydrology, hydric soils identification, and areas which meet the pasture exclusion. Please confirm whether any of these more recently developed protocols impact the assessment. Note: during the site visit, in Gully E I noted patches of Carex sp. (appeared to be *Carex* geminata from the distance observed) on the east facing scarp. These appeared to be in a different location to the small area of seepage wetland identified in/or near Gully E in Appendix A - Figure 1. Please confirm this area was surveyed in terms of potential wetlands.	Noted - updated information on wetlands based on further field investigations in October 2023 has been provided to address this question and to align with the more recent formal guidance from MfE. This information has now been provided - in general terms the updated assessment indicates a reduction in extent of wetlands from 0.309 ha to 0.17 ha. The reduction of 0.139 ha is mostly due to a reduction in the loss estimate in Gully A based on analysis of aerial drone imagery (a wetland assessment could not be carried out due to accessibility issues stemming from dense gorse and blackberry). The WDP survey (Appendix D) included survey of the east-facing scarp in Gully E.

Methods, Item 4	Section 2.3.1 please clarify how fauna habitat values have been assessed within the method specified and whether this value then fits into the subsequent assessment of ecosystem and habitat types.	Noted - response provided in updated report at Section 3.4. To confirm, fauna habitat values are included in the assessment of vegetation/habitat value (refer Table 4.2).
Ecological Characteristics and Values, Item 1	Section 3.4 notes that the presence of fauna "was assessed based on a combination of field observations and assessments of habitat suitability for a range of species". Please provide further information on both the "presence, possible occasional use, possible presence" terms described with Table 3.4. Please also provide information on the habitat values/quality for fauna within the site and provide a map of these features or clarify the relationship between the identified vegetation types and habitat value/quality for the fauna identified.	Noted - response provided in updated report at Section 3.4. To confirm, fauna habitat values are included in the assessment of vegetation/habitat value (refer Table 4.2). Additionally the Long-Tailed Bat Management Plan provides further detail and mapping of habitat values for long-tailed bat. The BCM report (Appendix E) further qualifies the quality of habitat impacted for fauna species for which residual adverse effects are 'Moderate' or greater.
Ecological Characteristics and Values, Item 2	Table 3.4; this table appears to be incomplete particularly with regards to avifauna. For example, morepork, silver eye, fantail, stream and river associated shag species, pukeko, swamp harrier, grey warbler, paradise shelduck, and sacred kingfisher1. These species are all legally protected species which are likely resident or utilise the site on a regular basis. There is also no information provided on how or why only copper skink are the only lizard species included. It is unclear what criteria have been used for inclusion in this effect assessment. Please either clarify how the species chosen were included and provide justification on the exclusion of the other species or update the assessment to capture a fulsome assessment of the avifauna and herpetofauna values of the site.	Noted - response provided in updated report at Sections 3.4 and 4.3.1. The assessment of habitat suitability for herpetofauna species is described in Section 3.4. There is no habitat for lizards other than copper skink as there is no potential source population – e.g mature native forest from which lizards could colonise.

Ecological Characteristics and Values, Item 3	Table 3.4; please clarify the sources for the information presented within the threat status column. I noted that copper skink are now classified as At-Risk – Declining (Hitchmough et al., 2021). Please also confirm the source of information for Regionally Uncommon species – *Peripatus novaezealandiae* I am not aware of being regionally uncommon. *Peripatoides suteri* is listed within Overdyck (2020). Updates to the conversation status of individual species may have flow on effects to the impact assessment please review and update in light of these changes.	Noted - report updated to reflect current (2023) threat status under the NZTCS. Key to note that I have excluded reference to Regionally uncommon for *Peripatus novaezealandiae* on the basis that this was my assessment rather than a formal one.
Assessment of Ecological Effects, Item 1	Section 4.1; Please confirm and check the areal extent of habitat loss listed within this section. I have not reviewed GIS layers however, visually, it appears that there is more "Exotic dominated scrub" impacted than "Exotic pine plantation forest" in Appendix A – Figure 1.	Noted - response provided in updated report at Section 4.1. Mapping and areal extents have been updated with accuracy improved through drone imagery assessment. Error re mixup in exotic scrub and exotic pine plantation areal extents now corrected.
Assessment of Ecological Effects, Item 2	Section 4.2; Please provide more detail on the "Further refinement of the project footprint…." and whether this changes the areal extent outlined in Section 4.1 above.	Reference to this further refinement has been removed, and it is assumed that the proposed project footprint does not change. See update to the report at Section 4.2.
Assessment of Ecological Effects, Item 3	Section 4.2; "These measures to avoid, remedy or mitigate potential adverse effects will be detailed in the respective ecological management plans as mandated through proposed consent conditions set out in the AEE." There have been no proposed consent conditions provided in the AEE. Please provide further detail on the proposed management plans and what must be included in these management plans.	Noted - response provided in updated report at Section 4.2 and draft management plans are now provided.
Assessment of Ecological Effects, Item 4	Section 4.2; Please also provide any information on the required effects management strategies that may not form part of a management plan but limit or inform on activities that may have been intended to be captured by the proposed consent conditions.	Please refer to updates to the effects management sections of the Ecology Report, and the draft Ecological Management Plan.

Assessment of Ecological Effects, Item 5	Section 4.3; Table 4.3.1 describes the value of the terrestrial vegetation and wetland habitat types and Table 4.3.2 described the values for species. It is unclear how the value of fauna habitats has been captured. The assessment within Table 4.3.1 appears to be solely focused on vegetation composition and vegetation condition with no account for habitat values, despite the terms ecosystem type and habitat type being used interchangeably. The assessment within Table 4.3.2 aligns with the EIANZ guideline for species. Table 4.3.2, later in the assessment, provides some further commentary on the habitats lost and some quantum for different species. however, the habitat values are not described nor mapped anywhere in the assessment beyond this brief description. Please clarify the assessment with regards to the habitat values of fauna and thereafter how the proposal impacts on these values.	Noted - response provided in updated report at Section 4.3.2 and further clarified in Section 3.4. Bat habitat usage is further described and mapped in the Long-Tailed Bat Management Plan. The BCM report (Appendix E) further qualifies the quality of habitat impacted for fauna species for which residual adverse effects are 'Moderate' or greater. Notably for herpetofauna, copper skink are conservatively assumed to be present in all habitat types except managed pasture.
Assessment of Ecological Effects, Item 6	Table 4.3.2.1, related to the above request. Please provide detail on the fauna habitats being described as “variable quality habitat” with regards to multiple fauna species to provide an understanding of the habitat values present and the impacts on these species.	Noted - response provided in updated report at section 4.3.2. The BCM report further qualifies the quality of habitat impacted for fauna species for which residual adverse effects are 'Moderate' or greater. The Long-Tailed Bat Management Plan also provides further detail on bat habitat use.
Assessment of Ecological Effects, Item 7	Table 4.3.2.1; related to an above request. Please clarify the statements regarding ”Further refinement of project footprint”.	This statement has been removed and it is assumed that the proposed project footprint does not change. See update to the report at Table 4.4.
Assessment of Ecological Effects, Item 8	Table 4.3.2.1; the project effects column provides assessment in general alignment with the EIANZ guidance with regards to assessing the proportion of the element/feature being impacted. However, captured in brief are some of the nuances of these effects (for example the connectivity of habitats with regards to bats). Please provide more information of the effects on habitats and species with regards to the baseline condition and characteristics of the habitats available.	Noted - the magnitude of effect has in all instances been assessed against the baseline condition using the criteria set out in Appendix C, Table 4.

Assessment of Ecological Effects, Item 9	Table 4.3.2.1; please provide additional information and explanation on the following strategy to manage for effects with regards to bats: "Avoidance of clearance during bat breeding season when detection of roost sites is less likely".	Response provided in updated report at Section 4.3.2.
Assessment of Ecological Effects, Item 10	Table 4.3.2.1; Please provide information on how the magnitude of effect on bats detailed as "Moderate" within this table is reconciled with the effects assessment provided within the Bluewattle Ecology (2021) report in section 4.2.	The magnitude of effects in Table 4.4 is assessed after measures to avoid, remedy or mitigate for effects. These measures include adherence to bat roost tree felling protocols as detailed in the LBMP. The equivalent assessment in the Bluewattle report applies before measures to avoid, remedy or mitigate adverse effects.
Residual effects management, Item 1	While I acknowledge this is not Government policy this section refers to the Draft National Policy Statement for Indigenous Biodiversity (Ministry for the Environment, 2019). Please provide comment whether there are any changes to this section in light of the more recently released exposure draft (Ministry for the Environment & Department of Conservation, 2022).	Noted - response to NPS-IB and NPS-FM (February 2023) provided in updated report at Sections 5.6 and 5.7.
Residual effects management, Item 2	Section 5.2; Please clarify and provide specific and targeted objectives with regard the compensating for the loss of long-tailed bat habitats including roosting, foraging, and commuting habitats.	Noted - refer to updated bat report, BCM report (long-tailed bat) and draft Long-Tailed Bat Management Plan within the EMP.
Residual effects management, Item 3	Section 5.5; Please provide more detail on the proposed compensation package, particularly with regards to the recommendations provided within the recommendations with Section 5 of the Bluewattle Ecology (2021) report. I acknowledge that a discount rate has been used to ensure the time lag for habitat creation to be effective has been used. However, please also detail how the time lag for habitat replacement will be managed with regards to fauna.	Gerry to confirm response and update where required - note that artificial roost boxes are now proposed to address the issue of time lag with respect to roost availability

Residual effects management, Item 4	Section 5.5; The restoration proposed, based on the description here, and within the QBM model is restricted solely to the riparian planting around the floodplain wetlands present. The report provides no information on the composition or health of these wetlands, and I am uncertain what the impact of simply planting around the wetlands will achieve. I would also assume that restoration of the wetlands themselves would be more aligned with the principles of compensation than simply buffer planting. Why has no restoration been proposed within the wetlands within the compensation area?	Noted - response provided in updated report at Appendix D based on October 2023 field investigations and native wetland revegetation and enrichment planting now proposed
Residual effects management, Item 5	Section 5.6; I understand the concept of trade-up with regards to the floristic composition of the proposed compensation. I am concerned the trade up in the vegetative composition of the compensation proposal does not adequately manage for effects on long-tailed bats and there are values, more important than vegetative values, lost in the trade up. Please provide information/comment on the concept of 'trade-up' and how the proposal is a trade up with regards to long-tailed bat habitats and to confirm that no values that are lost in this trade-up are to Threatened or At-Risk species.	Noted - please refer to updated BCM regarding bats and wetlands in particular that illustrate trade-ups. Also tables 5.6 and 5.7 of the updated Ecology Report which address the compensation principles of the NPS-IB and NPS-FM. No values for Threatened or At Risk species are expected to be lost in a trade up, and all Threatened and At Risk species are expected to benefit from the proposed habitat restoration and enhancement.
Qualitative Biodiversity Modelling Report. Item 1	3 Long-tailed bat QBM Benchmark: This model is intended to be solely for bats, I am unsure the specific relevance with regards to "mature native forest" with regards to long-tailed bat habitat. Please provide further detail on the hypothetical benchmark in regard to the functional habitat features and resources for long-tailed bats relevant to this population and landscape.	Noted - response provided in updated BCM report at Section 4
Qualitative Biodiversity Modelling Report. Item 2	Impact model: Please provide further detail and justification of the value scores prior to impacts with regards to bat habitat.	Noted - response provided in updated BCM report at Section 4.

Qualitative Biodiversity Modelling Report. Item 3	Compensation model inputs; Compensation contingency (confidence) – the explanation provided here appears to be focused on the ability to implement planting and vegetation establishment, rather than the confidence with which this creates additional bat habitat and subsequent value to the long-tailed bat habitat. Please provide information on how the 'High Confidence" selected here relates to the certainty of efficacy with regards to creating long-tailed bat habitats and providing value to long-tailed bats as a species.	Noted - response provided in updated BCM report at Section 4.
Qualitative Biodiversity Modelling Report. Item 3	Value score prior to compensation; The compensation site is located in an incised valley, along a waterway, with individual large trees, near large vegetation, and contains several wetlands. These are habitat characteristics preferred by long-tailed bats and can be productive for foraging and utilised for commuting. Please provide more information and justification of the values score used here with regards to the value of the habitat for long-tailed bats. It would also be useful to understand the current use of the proposed compensation area by long-tailed bats.	Noted - response provided in updated BCM report at Section 4.
Qualitative Biodiversity Modelling Report. Item 4	Value score after compensation measure; The scoring here appears to put a high weighting on the composition of the vegetation proposed to be planted. This weighting means there is an assessment of a Δ of 2 between pre and post compensation. I am unclear what, in terms of specific value to long-tailed bats, compared to the baseline is being provided within the timeframe proposed. Please provide further information and justification of the scoring provided with particular regard to the additional habitat resources such as foraging, commuting, and roosting provided by the compensation actions proposed.	Noted - response provided in updated BCM report at Section 4.
Qualitative Biodiversity Modelling Report. Item 5	It appears that the net gain outcome is much lower than the target of 20% and I am uncertain based on the information provided there is justification for several inputs to the model. Please provide a sensitivity analysis to demonstrate the risk	Noted - please refer to the updated BCM for bats at Section 4. The bat model has been re-assessed to now exclude temporary loss of pasture which will be rehabilitated (which reduces the severity of effect).

	on not achieving a likely no net loss or net gain outcome with changes to the inputs of the model.	
Qualitative Biodiversity Modelling Report. Item 6	Compensation actions: Ref comment made regarding Section 5.5 of the main report - it is unclear why compensation actions are restricted to revegetation around the wetlands present. Please provide context to this approach. Note the explanation of the value score after compensation for both compensation actions refers to "wetland revegetation post compensation score".	Noted - response provided in updated report - native revegetation and native enrichment of compensation wetlands are now proposed.
Qualitative Biodiversity Modelling Report. Item 7	Value scores pre and post compensation actions; I am not aware of any survey or assessment of the condition of the wetlands present within the compensation site. This is necessary to score these features within this model. Please provide further information to inform and justify the value scores presented within this model.	Noted - response provided in updated report at Appendix D including outcomes of further fieldwork. This fieldwork included the assessment of wetlands at the proposed compensation site
Qualitative Biodiversity Modelling Report. Item 8	As above for the other two components of the compensation package. Please provide further information on the explanation and assessment that justifies the scoring used within this model.	Noted - response provided in updated BCM report at Section 4. Noting that there has been a shift from a 'Terrestrial fauna assemblage' model to a 'Copper Skink' model.
Memo from WRC: Ecology matters		
Item 1	What will this planting look like, i.e. what species will be used, what density of plants, what size (length/width) of buffer will be provided?	Noted - the Habitat Restoration and Enhancement Plan (a sub-plan of the EMP) contains detailed planting specifications, based on additional fieldwork and mapping
Item 2	Will this be wetland habitat being created or terrestrial habitat being used as a buffer to the wetland?	No wetland habitat is proposed to be recreated for reasons set out in the ecology report. However, the extent of native dominated wetland will be increased and the overall ecological integrity of wetlands improved through native wetland planting and enrichment and planting of terrestrial margins.

Item 3	Will there be new wetland area created, or restoration of wetland area, to compensate for the loss of gully seepage wetland or only protection of what is currently there?	As above
Item 4	Regarding the WQBM, was the condition or values of the wetland areas surveyed/assessed or how was this considered in when determining the value scores and if the proposed compensation provides a net gain?	Noted - response provided in updated report including at section 2.2.3, the BCM report and via draft management plans and based on additional fieldwork
Item 5	Is this all the data that was collected, or can Council be provided with the other field data?	All data collected is now provided in the ecology report
Item 6	Were plots undertaken or was this based on just looking at the wetland area as a whole and estimating vegetation types?	The wetland area was looked at as a whole, as described in Section 2.2.3 of the report.
Item 7	There is mention of confirming status as natural wetlands vs constructed wetlands. Please provide additional information on which wetlands were considered constructed and their location	All wetlands were considered 'natural inland wetlands'.
Item 8	What methods were used for detecting threatened species, including wetland birds etc or was this just based on associated data sources and incidental sightings?	Habitat suitability based on associated data sources and incidental sightings and professional experience on habitat quality for indigenous species.
Item 9	Please provide a full map of where wetlands were delineated, and information on which areas were only assessed via aerial imagery.	Noted - response provided see Appendix A, figures 1 - 3
Item 10	Please provide further information on what this means. i.e., what possible changes may be made and what effects this may have. Will there be precautions put in place to ensure that any changes to the project footprint which may have effects on wetlands will be captured, adequately assessed, and accounted for works occurring/restoration plans.	This has not been addressed yet as conditions are yet to be proposed.
Item 11	Please provide an assessment of the ecological values and potential effects of the proposal on the Karapiro Stream.	Noted - response provided in updated report including at sections 3.3, 3.4 and 4.3. Appendix F details the additional fieldwork undertaken.
Item 12	Please confirm or otherwise the presence of Black mudfish on or near the site and provide an assessment of the effects of the proposal on this species.	Noted - response provided in updated report at Section 3.4 and additional fieldwork. See Appendix F.

Item 13	As set out in the Waipa District Council section 92 request dated 19 June (and associated Boffa Miskell memo), please provide a copy of the response from the project ecologist to the matters raised.	Addressed via this S92 response table