To:	Damien McGahan – Aurecon		
From:	Hazel Burridge – Boffa Miskell	**Date:**	8 September 2025
Subject:	Private Plan Change 17 – Te Rapa North Industrial – Technical Specialist Memorandum for Section 42A Reporting		
Technical Area:	Ecology		
Version:	Final		

1.0 Purpose

1.1 This memorandum has been prepared to provide technical assessment under section 42A of the Resource Management Act 1991 (RMA), in respect of ecology in relation to the Private Plan Change 17 – Te Rapa North Industrial (PPC17).

2.0 Introduction

2.1 My name is Dr Hazel Burridge. I am a terrestrial ecologist with Boffa Miskell. I have twelve years' experience working as an ecologist in the UK and Aotearoa/New Zealand. My first degree is in environmental science and my PhD is in soil microbial ecology. I have specialised in bats for the last ten years and hold competencies from the Department of Conservation to handle and survey long-tailed bats. I am a Certified Environmental Practitioner.

2.2 I have been involved with terrestrial survey work and assessment for the C5 plan change and ecological implementation work for Peacockes Plan Change as well as numerous terrestrial ecology assessments for subdivision applications.

3.0 Code of Conduct

3.1 I have read the Environment Court Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023 and agree to comply with it. I confirm that the opinions expressed in this memorandum are within my area of expertise except where I state that I have relied on the advice of other persons. I have not

omitted to consider materials or facts known to me that might alter or detract from the opinions I have expressed.

4.0 Scope

4.1 This memorandum provides a technical assessment under section 42A of the Resource Management Act (RMA), focusing on ecology aspects related to PPC17 and covers the following:

- Consideration of the lodged and updated request.
- Relevant matters raised, and relief sought, in submissions.
- Recommended amendments to PPC17.

4.2 Documents considered

The following documents have been considered in the preparation of this assessment:

- *Te Rapa Private Plan Change 17 Request* (the request)
- *Appendix 07a – Terrestrial and Freshwater Ecological Effects Assessment*
- *Appendix 07b – Bat Survey and Effects Assessment*
- *Appendix 10 – Te Rapa North Structure Plan*
- *Appendix 12b – Proposed Provisions HCODP – Tracked Changes*
- *Appendix 22 – s32 Evaluation PC17 Evaluation PC17 Te Rapa North Industrial*
- *The Submissions listed in Table 1.*

Table 1 - Submissions that raise ecology matters

Number	Submitter
10	WDC made a single submission point relating to ecology
13	WRC made ten submission points relating to ecology

5.0 Site visit

5.1 I visited the site on the 26 September 2024 and joined Hamilton City Council staff for a site walkover of the site, to better understand the habitats on site. Sufficient viewpoints were available to gain a comprehensive overview of the site.

6.0 Analysis

6.1 Introduction

In addition to the documents listed in Section 4.2 the ecological review includes reference to the following report:

BECA, 2022, Te Rapa North Structure Plan – Baseline Ecological Assessment. Prepared for Hamilton City Council.

6.2 General response to subject matter/review of request etc.

It is noted that, despite the title, an effects assessment is not actually included in the Ecological Values and Effects Assessment (EVEA) report. However, the ecological features of the site are identified, and a broad assessment of the potential constraints and opportunities has been undertaken.

The EVEA report recommends that:

> *"The next phase of ecology reporting (not reported here) would normally include the following, once resource consent applications are being prepared to enable subdivision and land use development:*
> *An assessment of the type and magnitude of potential effects associated with the development, construction, and operational activities, including potential habitat loss and degradation, and direct mortality or injury of indigenous fauna; and*
> *Recommendations to address adverse effects."*

6.3 I agree that these assessments and recommendations will be required prior to any subdivision or land use consent being granted, and this is reflected in the accepted submission points from Waikato Regional Council on this topic.

7.0 Ecological Management Plan

7.1 PP17 includes a requirement for an Ecological Management Plan (EMP) to be undertaken as part of the first application for sub-division or land use consent. It is also proposed that that all subsequent applications would comply with this EMP.

7.2 For this to be applicable to all subsequent consent applications, the EMP will need to include ecological values and impacts that are identified across the whole site, and not just within the first subdivision / land use consent area. As the existing EVEA does not include an ecological effects assessment (except in relation to bats, which I

discuss below), it is not clear whether the intention is for the initial subdivision applicant to undertake this for the whole site. I recommend that:

- the points identified below, which require further survey or assessment, are clarified prior to the initial subdivision application and included in an updated Ecological Effects Assessment.
- all subsequent sub-division applications are accompanied by an Ecological Management Plan specific to that particular development, which would utilise the updated Ecological Effects Assessment.
- Specific requirements of the updated Ecological Effects Assessment are addressed below.

8.0 Bats

8.1 A separate bat report was provided with the EVEA. The Bat Survey and Effects Assessment (Blue Wattle Ecology, 2024) includes survey information relating to long-tailed bats (*Chalinolobus tuberculatus*) from within and around the site and provides a more detailed assessment of effects for this species, in addition to recommendations for management.

8.2 Survey data relating to long-tailed bats is sparse, although I agree with the assessment of likely activity levels within the site.

8.3 The Bat Survey and Effects Assessment recommends that artificial lighting strategies should establish specific lighting limits for lighting intensity and colour temperature to avoid additional light spill into the Waikato River corridor. I consider this an important ecological aspect of the plan change proposal.

8.4 Avoiding additional artificial lighting along the Waikato corridor is consistent with the following policies:

> Waikato River Corridor and Gully Systems
>
> 21.2.1f
>
> The loss or disruption of corridors or connections provided by the Waikato River corridor and gully systems which link indigenous ecosystems and habitat fragments shall be avoided.

21.2.1g

The connectivity and protective buffering of indigenous ecosystems provided by the Waikato River Corridor and gully system shall be maintained.

8.5 This is also consistent with other Plan Changes where lighting and long-tailed bats have been considered [1].

8.6 The effect of anthropogenic variables, including light, on bat activity is the most plausible explanation for why long-tailed bats do not utilise sections of available foraging along the Waikato River margins and potential urban indigenous forest roosting habitats extending north into the city. This is despite individuals being renowned for maintaining large home ranges and capable of sophisticated navigation (O' Donnell, 2005).[2]

8.7 Even slight increases in roading and lighting has been shown to decrease long-tailed bat pass rates significantly (Le Roux & Le Roux 2012).[3]

8.8 The recommendations in the Bat Survey and Assessment only apply to additional lighting. While measures to reduce the level of light reaching the Waikato River corridor from the existing dairy factory would be beneficial, they are not part of this application and the proposed lighting controls only seek to ensure that no additional lighting impact is created along the river corridor.

8.9 PC17 proposes that the first land use and subdivision consent application will provide a bespoke detailed Ecological Management Plan for the Te Rapa North Industrial Structure Plan area which will provide an assessment of confirmed and potential bat roost trees and a tree management methodology to provide for pekapeka habitat, measures to avoid, remedy, mitigate, offset or compensate potential adverse effects on indigenous habitats and demonstrates the nature of riparian planting, as required under Appendix 1.2 Information Requirements, 1.2.2.29."

8.10 This will need to be a site wide assessment, considering connectivity as well as roosting, and extending beyond the boundaries of the first subdivision applicant's property. I recommend that:

[1] Decision following the hearing of Submissions on Plan Change 5 – Peacocke Structure Plan (PC 5) to the Operative Hamilton City Plan under the Resource Management Act 1991

[2] O'Donnell, C. F. J. 2005. New Zealand long-tailed bat. In King CM ed: The handbook of New Zealand mammals. 2nd edition. Oxford University Press. Pp 98-109.

[3] Le Roux D & Le Roux N (2012) Hamilton City Bat Survey

- The lighting restrictions recommended in the Bat Survey and Effects Assessment are included in a new rule. The methods used to achieve no additional light spill onto the Waikato River corridor can be specified in the Ecological Management Plan(s). It is worth noting that this can be achieved either by controlling the lighting at source, or by providing screening and dark corridors if appropriate, or a combination of both.

- The Department of Conservation tree fell protocols are applied to all high value bat trees identified in the Bat Survey and Assessment.

9.0 Herpetofauna

9.1 The information provided in the Ecological Assessment of Effects is sparse for herpetofauna and no surveys were undertaken. As copper skinks have previously been identified on site (BECA 2022), a more detailed assessment of their numbers and habitats will be required to inform an Ecological Management Plan.

I recommend that:

- Potential reptile habitat is assessed and mapped.

- A herpetofauna survey is undertaken.

- An assessment of effects on herpetofauna is undertaken prior to the first subdivision or land use application and included in an updated Ecological Effects Assessment.

10.0 Avifauna

10.1 Surveys were undertaken for wetland birds, and other species were recorded only if heard during field visits. No At-Risk species were recorded within the site.

10.2 There are local records of At-Risk shag species which are likely to be using the Waikato River and riparian vegetation.

I recommend that:

- An assessment of effects for native avifauna is included in an updated Ecological Effects Assessment.

11.0 Fish

11.1 Four At Risk-Declining species of fish have previously been recorded in the Te Rapa stream catchment. These are Longfin eel (*Anguilla dieffenbachii*), Giant kokopu (*Galaxias argenteus*), Īnanga (*Galaxias maculatus*) and Black mudfish (*Neochanna diversus).*

11.2 A survey using Fyke nets and Gee's minnow traps was undertaken in March and June 2023.

11.3 Black mudfish are only found in Waikato, Auckland and Northland and are known to inhabit farm drains. No mudfish were found during the 2023 survey; however the EVEA acknowledges that mudfish can be difficult to survey for and often require multiple surveys over time to confirm likely absence.

11.4 Suitable habitat for īnanga and black mudfish was identified, however the location of this has not been included in the EVEA.

I recommend that:

- Potential mudfish and īnanga habitat is mapped and connectivity routes identified.
- If watercourses are proposed to be infilled or realigned, further surveys for mudfish are undertaken.
- An effects assessment is undertaken for native fish, prior to the first subdivision or land use application, and included in an updated Ecological Values and Effects Assessment.

12.0 Waterways and Wetlands

12.1 I agree that there is potential to enhance the Te Rapa Stream and its tributaries, and that the restoration and integration of natural wetlands will be beneficial.

12.2 A method for identifying wetlands has been provided, but limited detail of how the field surveys corresponded with these, particularly in the context of pasture exclusion species. I recommend that:

- Further clarity on the identification of wetlands, within the riparian margins and pasture areas is provided, with particular reference to the areas excluded due to species not included in the list of pasture exclusion species.
- A wetlands effects assessment is included in an updated Ecological Effects Assessment.

13.0 Submissions

13.1 The initial round of submissions closed on 23 May 2025. Waikato District Council and Waikato Regional Council made submissions relating to ecology at this stage.

13.2 The deadline for further submissions was 9 July 2025. No further submissions relating to ecology were received during this phase

14.0 Response to submissions

14.1 Only submissions relating to ecology have been addressed in this section. Where points have been accepted and/or additional recommendations made, it has been to ensure clarity regarding the implementation of ecological management and secure positive outcomes.

Table 2 - Submission points

Submission Point	Summary / Relief Sought	Analysis and Recommendations
10.4 - WDC	The submitter considers that key ecological matters should focus on enhancing connectivity, restoring ecological functions, preserving hydrology, and creating buffers around ecological features along streams and wetlands. Further the submitter notes the following: The two Significant Natural Areas (SNAs) within PC17, though dominated by exotic vegetation, offer potential for enhancement through native replanting, especially given their proximity to the Waikato River.	

Submission Point	Summary / Relief Sought	Analysis and Recommendations
	Industrial development will lead to increased impervious surfaces, stormwater runoff, and pollution risks. Seeks that the SNAs, wetlands and watercourses are enhanced to buffer these potential impacts, including the following: Generous riparian setback and plantings with dense multi-tiered native plantings that are managed in perpetuity Extensive and well-designed stormwater management systems that incorporate existing wetlands and watercourses with added features that treat runoff before entering the stormwater system. Incorporate fish-friendly passage designs for culverts and bridges. If unavoidable adverse effects on ecological values occur, consider that appropriate ecological offsets can be secured to current or greater ecological value, ideally within the local catchment. The submitter requests that stormwater designs, including but not limited to constructed wetlands, ponds and swales, and rain gardens at the subdivision consent stage, are provided to Waikato District Council for review.	I recommend HCC adopts plan change rules to achieve the relief sought. Additional comments If exotic vegetation is to be replaced it should be done in a staged manner, as mature exotic trees can provide roosting habitat for bats. There is potential to utilise this riparian planting to create a dark corridor adjacent to the Waikato Rivier corridor and address the lighting issue raised in Submission Point 13.17. I recommend HCC adopts plan change rules to achieve the relief sought. A cohesive design for all wetlands, ponds, swales and waterways should be reviewed for its relevance to the native fauna present and potentially on site.
13.17 - WRC	The submitter supports the measures proposed within the plan change to mitigate adverse effects of development on long-tailed bats and their habitat and seek that these be retained. The submitter notes however, the plan change application identifies recommendations within the Bat Survey and Effects Assessment relating to artificial lighting controls have not been incorporated into the plan change. The submitter considers that an update to the Bat Survey and Effects Assessment should be provided that considers the proposed departure from the recommended lighting controls and whether any alternative mitigation measures are required to address	

Submission Point	Summary / Relief Sought	Analysis and Recommendations
	adverse effects on long-tailed bats and their habitat. Seeks an updated Bat Survey and Effects Assessment that addresses the proposed departure from the recommended artificial lighting controls and whether any alternative mitigation measures are recommended. The submitter also seeks amendment of the proposed District Plan Provisions relating to effects on long-tailed bats as required to reflect any updated ecology recommendations.	I do not support this relief sought. I recommend that HCC adopts a rule to implement the lighting controls recommended in the Bat Survey and Effects Assessment. I recommend HCC amends the District Plan Provisions to include the existing recommendations in the Bat Survey and Effects assessment and any additional recommendations from the updated Ecological Effects Assessment.
13.18 - WRC	The submitter supports the proposed retention of the existing Natural Open Space Zone within the plan change area and the extension of this zone to include the Significant Natural Areas (SNAs) within the plan change site as this aligns with Objective ECO-O2 of the WRPS. Seeks that the proposed Natural Open Space Zone on the plan change site is retained, including over SNAs.	I recommend that HCC retain the proposed Natural Open Space Zone including SNAs
13.19 - WRC	The submitter supports proposed component 3.9.2.7 Blue-Green Corridor (Ecology and Stormwater Management) within the Te Rapa North Industrial Structure Plan as this aligns with Te Ture Whaimana o Te Awa o Waikato – the Vision and Strategy for the Waikato River and the provisions within the Future Proof Strategy 2024 relating to a blue-green network. Seeks that the proposed Rule 3.9.2.7 is retained.	I recommend HCC retain the proposed Rule

Submission Point	Summary / Relief Sought	Analysis and Recommendations
13.20 - WRC	The submitter supports the proposed requirements that the first land use or subdivision consent application lodged within the Te Rapa North Industrial Structure Plan area must include an Ecological Management Plan. The submitter also supports the requirement that all subsequent land use and subdivision consent applications within the zone shall demonstrate consistency with the approved Ecological Management Plan or any approved variation. Seeks that Rule 3.9.4.3 [3.9.3.3a] is retained.	I recommend that HCC amends the proposed rule to remove the responsibility from the first land use or subdivision application to create an Ecological Management Plan for all subsequent applications. Each application should develop an Ecological Management Plan to identify how the effects identified in the updated Ecological Effects Assessment will be managed within their boundaries.
13.21 - WRC	The submitter supports the proposed assessment criteria 3.9.4.4c.ii [3.9.3.5aii]. Seeks that proposed assessment crieria 3.9.4.4c.ii [3.9.3.5aii] is retained.	I recommend that HCC retain the proposed assessment criteria Section relevant to ecology - ii. Mitigation works to ensure development does not result in long-term adverse effects on the ecological values of the site, particularly in relation to pekapeka (New Zealand Long-Tail Bat) habitat and freshwater values. Additional recommendation Include herpetofauna in this section
13.22 - WRC	The submitter supports proposed Objective 12.2.5 relating to maintenance and enhancement of ecological values and the associated policies. The submitter notes the proposed Information Requirement 1.2.2.29 [1.2.2.30] for the Ecological Management Plan aligns with the recommendations of the Bat Survey and Effects Assessment. The submitter also notes the proposed policies are, however, focused on setbacks, landscaping requirements and minimising risk of harm during removal of confirmed or potential bat roost trees. It is therefore recommended that an additional broader policy be added relating to avoiding, remedying,	

Submission Point	Summary / Relief Sought	Analysis and Recommendations
	mitigating, offsetting or compensating for any more than minor adverse effects on indigenous fauna and their habitats, including long-tailed bats. The submitter considers this would link better between the proposed rules and objectives and policies and better give effect to the relevant provisions of the WRPS. The submitter also notes the proposed Explanation section supporting the objective and policies currently ends in an unfinished sentence. Seeks that Objective 12.2.5 and the associated policies are retained, but seeks an additional policy relating to avoiding, remedying, mitigating, offsetting or compensating for adverse effects on indigenous fauna and their habitats, including long-tailed bats. Complete the unfinished sentence in the Explanation section supporting the objective and policies.	I recommend HCC adopts a policy to achieve the relief sought. This will provide a means to ensure herpetofauna, particularly copper skinks, are included, providing the policy refers to all indigenous fauna and their habitats. This broader policy will also allow for any native fauna that might be discovered during future surveys. I recommend that HCC amends the proposed rule to remove the responsibility from the first land use or subdivision application to create an Ecological Management Plan for all subsequent applications.
13.23 - WRC	The submitter supports the addition of a 5m building setback requirement from SNAs for the Te Rapa North Industrial Zone, to align with the existing setback requirement in other chapters of the District Plan. Seeks that Rule 12.4.1a)xi. [12.4.1x] is retained.	I recommend that HCC retains this rule as it maintains consistency across the District Plan
3.24 - WRC	The submitter supports proposed Rule 25.2.5.4a.ii.a1, [a. ii. A. 1] including the requirements for assessment of potential bat roost trees. The submitter notes the version of the Department of Conservation 'Protocols for Minimising the Risk of Felling Bat Roosts' referenced in the proposed rule is a previous version; the most recent version of the protocols is Version 4, dated October 2024.	

Submission Point	Summary / Relief Sought	Analysis and Recommendations
	Seeks that Rule 25.2.5.4a.ii.a1. [a. ii. A. 1] is retained but amended to refer to the latest version of the Department of Conservation 'Protocols for Minimising the Risk of Felling Bat Roosts'.	I recommend HCC retains and amends the rule to achieve the relief sought. Change wording to "refer to the most recent version,".
13.25 - WRC	The submitter supports proposed Information Requirement Rule 1.2.2.29 [1.2.2.30] Te Rapa North Industrial Ecological Management Plan, including the requirements for a Bat Management Plan. The submitter notes the version of the Department of Conservation 'Protocols for Minimising the Risk of Felling Bat Roosts' referenced in the proposed rule is a previous version; the most recent version of the protocols is Version 4, dated October 2024. Seeks that Rule 1.2.2.29a [1.2.2.30a] is retained but amended to refer to the latest version of the Department of Conservation 'Protocols for Minimising the Risk of Felling Bat Roosts'.	I recommend HCC retains and amends the rule to achieve the relief sought. See 13.24 above
13.26 - WRC	The submitter supports proposed Rule 1.3.3 Assessment Criteria Q with an addition. The submitter notes Rule 3.9.4.3a) [3.9.3.3a] states the Ecological Management Plan provided as part of the first resource consent for the structure plan area shall be assessed in accordance with Appendix 1 District Plan Administration 1.3 Assessment Criteria Q. However proposed Criteria Q contains limited criteria to assess the Ecological Management Plan against. The submitter also notes the proposed Information Requirement Rule 1.2.2.29 [1.2.2.30] for the Ecological Management Plan requires that this plan includes all measures necessary to avoid, remedy, mitigate, offset or compensate for any more than minor adverse effects on habitats of indigenous fauna. The Bat Survey and Effects Assessment identifies that some form of compensatory measure is expected to be required to address the residual effects of loss of habitat for long-tailed bats.	Rule 1.3.3 Assessment criteria Q states that Council shall consider Q1e "The methods for protecting and enhancing the ecological values of Te Rapa Stream and the Waikato River Corridor. Refer to Policies 12.2.5a-e." Q4b with regard to earthworks "The extent to which the proposed development is consistent with any approved infrastructure or ecological management plan" Policy 12.2.5 states that ecological values are maintained, and where possible, enhanced, as part of use and development. The following specific criteria are provided. 12.2.5a Contribute to ecosystem connectivity by requiring setbacks and landscape requirements along the boundaries with: The Te Rapa Stream

Submission Point	Summary / Relief Sought	Analysis and Recommendations
		The Waikato River; and Significant Natural Areas. 12.2.5b Prevent development, other than that which provides for walking and cycling access, within setbacks from watercourses to avoid and mitigate adverse effects on freshwater values. 12.2.5c Require buildings to be setback from Significant Natural Areas and the Waikato River. 12.2.5d Minimise the risk of harm to long-tailed bats during any removal of confirmed or potential bat roost trees. 12.2.5e Require any removal of confirmed or potential bat roost trees to be undertaken in accordance with an approved Ecological Management Plan
	The submitter recommends to add an additional assessment criterion to enable assessment of the extent to which the proposal avoids, remedies, mitigates, offsets or compensates for adverse effects on indigenous fauna and their habitats.	I recommend HCC adopts plan change rules to achieve the relief sought. I agree with the above criteria, however, they only apply to specific fauna. The submitter's recommendation to include a wider assessment of the extent to which the proposal avoids, remedies, mitigates, offsets or compensates for adverse effects on all indigenous fauna and their habitats will include copper skink, which are confirmed as present on Site, and mudfish, which are potentially present.

15.0 Summary of responses and recommendations

15.1 I recommend accepting all of the points and requests raised by the submitters in relation to ecology with the following exceptions.

Submission 13.17 (WRC).

15.2 The submission requests an updated Bat Survey and Effects Assessment that addresses the proposed departure from the recommended artificial lighting controls and whether any alternative mitigation measures are recommended.

15.3 I consider that the Bat Survey and Effects Assessment has already addressed the risk posed by lighting the Waikato River corridor and has proposed suitable lighting controls. I recommend that the proposed lighting controls are implemented.

Submission points 13.20 and 13.22 WRC

15.4 The submitter (WRC) supports the proposed requirements that the first land use or subdivision consent application lodged within the Te Rapa North Industrial Structure Plan area must include an Ecological Management Plan.

15.5 There is insufficient information in the current Ecological Values and Effects Assessment to develop an effective Ecological Management Plan. I recommend that the Ecological Values and Effects Assessment is updated with additional survey work to provide sufficient information, particularly with reference to herpetofauna and their habitats.

15.6 The revised Ecological Values and Effects Assessment will need to be extended to assess the levels of effect before the Ecological Management Plan can address the measures to avoid, remedy, mitigate, offset or compensate for adverse effects indigenous fauna and their habitats.

15.7 This will require access to the whole site. Unless it is the intention for the initial resource consent applicant to survey and provide a management plan for the whole site, which would include land outside their ownership, I recommend that the required sitewide information, including but not limited to the bat tree roost assessment, the herpetofauna surveys and the means of ensuring mudfish habitat connectivity is gathered prior to the initial resource consent application. This would then enable separate management plans to be undertaken for each subdivision application.

16.0 Conclusions

16.1 In my opinion, from an ecology perspective, there is scope to reduce adverse effects on native fauna to low levels by implementing the existing and proposed rules and create enhancements that will benefit the freshwater fauna and flora. The current proposed mitigation is focussed on long-tailed bats, and it is important to widen the assessment and protection to all native fauna, as copper skinks have been identified on site, and mudfish are potentially present.

16.2 Adding a broader policy that includes all measures necessary to avoid, remedy, mitigate, offset or compensate for adverse effects on habitats of indigenous fauna will ensure all species are covered.

16.3 The Ecological Management Plan that is required will require more information than is currently available regarding ecological effects, as this was not fully assessed in the Ecological Values and Effects Assessment. An updated Ecological Effects Assessment is required.

Avoiding light spill into the Waikato River corridor is an important component of ecological management for this site and the recommended lighting control should be included.