

From: [Sam Le Heron](#)
To: [Tim Goodall](#)
Cc: [REDACTED]; [Tish Krishna](#); [Dillon Kelliher](#); [Chad Croft](#); [Fraser McNutt](#); [Dol, Robert](#)
Subject: Southern Links 1 - Residential South Residual Bat Effects
Date: Tuesday, 25 August 2026 11:53:00 am
Attachments: [SL1 Residential South - Residual Bat Effects Compensatory Approach.pdf](#)

Hi Tim and Hannah

Further to our discussion on residual bat effects within the SL1 Residential South site as part of pre-lodgement engagement on the Southern Links 1 substantive application, please find attached the methodology and proposed compensatory value for consideration. Ideally, HCC and the Applicant can reach an agreement on this value prior to lodgement, so I would value the opportunity to discuss further at the earliest opportunity this week.

As discussed, the methodology adopted is aligned with the previous Amberfield and Broadwater decisions, and therefore we expect the value for residual bat effects is within what HCC, and those privy to previous determinations, would expect.

Whilst it is acknowledged HCC may not be privy to all material and the full effects management hierarchy assessment that has taken the Applicant team to this point, we would value the opportunity to progress on this basis.

We also wish to reiterate that whilst the methodology adopted aligns with that taken in Amberfield and Broadwater decisions, the overall level of bat activity is significantly less given the sites location, and separation from the Peacocke Structure Plan area.

Any questions on this please let me know.

Ngā mihi | Kind regards,

SAM LE HERON
Senior Associate (MNZPI)



298 Victoria Street, Hamilton 3204

barker.co.nz



B&A Logo



Kerikeri | Whangārei | Warkworth |
Auckland | Hamilton | Cambridge |
Tauranga | Havelock North | Wellington |
Christchurch | Wānaka & Queenstown

This email and any attachments are confidential. They may contain privileged information or copyright material. If you are not an intended recipient, please do not read, copy, use or disclose the contents without authorisation and we request you delete it and contact us at once by return email.

Residual Effects Management

The post-effects management level of effect for long-tailed bat habitat is considered 'moderate' due to the loss of habitat area attributable to the proposed development. In accordance with the effects management hierarchy, once options to avoid, remedy or mitigate for adverse effects have been applied, identified residual adverse effects are proposed to be offset or compensated for through additional habitat restoration and enhancement activities.

Biodiversity offsetting and ecological compensation are characterised by adherence to demonstratable core principles as defined in national guidance¹.

Specifically, offsetting differs from compensation, in that offsetting relates to a measurable outcome, that has been quantified through a robust and transparent process, whereas compensation relies on qualitative data and professional expertise and opinion.

Offsetting is preferable to compensation, as reflected in the effects management hierarchy. Compensation is to be considered only after the potential for offsetting effects has been assessed and the level of certainty in the outcome or 'trade-off' is determined to be inadequate.

While offsetting is preferential, many residual adverse effects attributable to a project's activities cannot be demonstrably offset with adequate certainty. This occurs where valued biodiversity components and attributes are too complex or dynamic to measure within a suitable timeframe (e.g. a diversity of habitats). In addition, where species of value are highly mobile, cryptic or difficult to capture, monitor or measure, such as long-tailed bats, acquiring the necessary data to secure adequate certainty in their response to specific conservation interventions is problematic. Where these situations persist, compensation measures are typically proposed.

Determining the quantum of compensation to be applied has historically involved the application of basic multipliers in the form of a ratio (e.g. 1:3 loss:gain). Multipliers were used to indicate the magnitude of proposed habitat restoration or enhancement measures relative to the magnitude of expected impact, usually in an area-based relationship (e.g. hectares for hectares). However, the use of multipliers to determine the magnitude of compensation to be applied lacks transparency and highlights the seemingly ad-hoc nature of their application.

Consequently, the following proposed compensation approach for managing the residual adverse effects attributable to the loss of long-tailed bat habitat has been designed using the Biodiversity Compensation Model (BCM) (Baber et al. 2021) Specifically, this model allows for qualitative inputs derived from expert ecological assessment and opinion as well as available literature, for determining the magnitude of compensation measures that are considered likely to achieve the best outcome possible.

The above approach, and variations on it have been previously applied and critiqued as part of RMA processes for the following projects:

- Dome Valley Regional Landfill in Auckland, associated with the management of identified residual effects on native forest, wetlands, Hochstetter's frog, threatened wetland birds, and Long-tailed bats².
- Amberfield subdivision within the Peacocke Structure Plan Area (PSPA) in Hamilton, for the management of residual effect on Long-tailed bats³.
- Broadwater Retirement Village within the PSPA in Hamilton, for the management of

¹ Ministry for the Environment. (2023). National Policy Statement for Indigenous Biodiversity 2023. New Zealand Government

² Tonkin & Taylor, 2020, Auckland Regional Landfill-Terrestrial and Wetland Biodiversity Offsets and Compensation Framework, Waste Management NZ

³ Baber, M.L and G. Kessels 2019 Addendum report to the Supplementary Statement of Evidence of Mr Kessels dated 19 August 2019 for Hamilton City Council in relation to the Council Hearing for Weston Lea's proposed Amberfield Development

residual effect on Long-tailed bats; and

- Manawātū Tararua Highway project for the management of residual effects on terrestrial and wetland values⁴.

Biodiversity Compensation Model

The following Table 1 presents the BCM inputs (i.e., impact and compensation) and the rational/justification used. These model inputs are informed through detailed desktop and field assessments associated with the completion of the Ecological Impact Assessment (EclA), as well as related information, assessments and designs submitted as part of other resource consent applications in the Peacocke Structure Plan Area (PSA).

For the purposes of compensation modelling, habitat across the site has been classified as either higher value (i.e. potential roosting, foraging and commuting habitat) or lower value (i.e. open pasture) based on physical characteristics and on-site bat survey data. We know Long-tailed bats prefer the use of tree/forest edges for roosting, commuting and foraging (i.e. higher ecological value). While it is difficult to quantify this area of functional edge, consented developments in the PSA proposed an edge area of 15m wide along the length of tall, mature vegetation such as riparian corridors or hedgerows. This 15m is a conservative width based on current understandings of bat behaviour and ecomorphology and was considered higher value. The level of disturbance expected within these habitats has also been classified as either 'permanently lost' or 'retained but functionally disturbed' through the application of different impact uncertainty contingencies.

Table 1: BCM inputs and assumptions for impacts/compensation

Model inputs	Explanation
Project name/ref	SL1 Residential South
Biodiversity type	Long-tailed bat habitat
Technical expert Inputs	Chad Croft
Benchmark	5 – Best Available The benchmark in the model is always 5. This represents a hypothetical, but realistic, potential state. i.e., the best quality urban long-tailed bat habitat within Hamilton City based on expert opinion. Habitat that includes communal roost sites, high-quality roosting, foraging and flyway habitat, has high numbers of bats and is subject to intensive and effective pest control targeting the full suite of introduced mammals known to predate on bats as determined by a qualified bat ecologist.
How many types or sites are affected	4 – Exotic dominated low value pasture, moderate value stand of six kahikatea, moderate value riparian margin along Mangakōtukutuku Stream and artificial drains (ecological values according to EclA guidelines).
Number of proposed compensation actions	1 • Off-site predator control within known high value long-tail bat roosting sites.
Net gain target	10%
Habitat/site impacts	

⁴ Markham Josh, Terrestrial Offset and Compensation Report, for New Zealand Transport Agency dated 12 June 2020, in relation to the Manawātū Tararua Highway Environment Court Proceedings (ENV-2020-WLG-000014).

Impact risk contingency	1-2 – Low-Moderate risk/Low-Moderate value The impact risk contingency addresses the increased likelihood that adverse effects will result in the permanent and irreplaceable loss of significant biodiversity values when impacting on habitats or species that are of higher ecological value. The assigned ecological value is based on the EclAG ecological values assessment. A value of 1 multiplies the impact score by 1 (adds 0%). A value of 2 multiplies the impact score by 1.05 (adds 5%).
Impact uncertainty contingency	1 - Low uncertainty This addresses the increased risk of permanent or irreplaceable biodiversity loss. We consider this to be 'low' because the habitat is not complex, is predominantly exotic and the values are relatively easy to quantify.
Aerial extent of impact (ha)	43.2 ha
Value prior to impact	1-2 – Low - Moderate. We considered the impacted open pasture to have 'low' ecological value for long-tailed bats, equivalent to a score of 1, and the six kahikatea trees and planted riparian margins to have 'moderate' ecological value for long-tailed bats equivalent to a score of 2.
Value after impact	0 – 1.5 Assumes all open pasture habitat and the six kahikatea trees will be lost, equivalent to a score of 0. We assumed the ecological value of the 'functionally retained' riparian margin habitat to be partially impacted and therefore a score of 1.5.
Compensation⁵	
Compensation actions	Off-site Pest Animal (Predator) Control
Discount rate	3% The discount rate accounts for the time lag between loss of values at the impact site and the gain in values at the offset site. A discount rate of 3% is recommended (Baber et al. 2021). This is the same as the discount rate recommended in the BOAM user guide (Maseyk et al. 2015), which was informed by research in Gibbons et al. 2015.
Finite end point	10 years. The finite end-point is the time period (years) over which to calculate net present ecological value (NPBV). This equates to the time between the commencement of proposed compensation action(s) and an assessment of the associated benefits for the affected biodiversity value. For pest control the benefits will be realised almost immediately; however, any gains realised will diminish once the pest control ceases. Therefore, we used 10 years to provide sufficient time for predator control gains to have a lasting positive effect on the long-tail bat population.
Compensation confidence contingency	2 – High confidence. While predator control methods are well proven with technology always improving and plenty of evidence of pest control success, a 'very high confidence' (i.e. greater than 90%) in predator control outcomes cannot be absolutely correlated with direct benefits on long-tail bats. Predation is one

⁵ As previously stated, the BCM uses the term compensation, but we consider the proposed activities would achieve NNL/NG outcomes (i.e., offsetting).

	of the leading threats to long-tail bats; however, there are a number of variables which reduce the confidence that predator control will translate to automatic gains for long-tail bats. Therefore, a contingency rating of 'high confidence' (i.e. greater than 75% but less than 90%) that the predicated gains will be realised has been chosen.
Aerial extent of compensation action	68 ha
Value score prior to compensation action	3 (High value) The expectation is the off-site predator control programme will target known 'high value' long-tail bat habitat where bat number are high and there are known bat roosts.
Value score after compensation measure	4.25 – Very high Implementation of predator control at known 'high value' long-tail bat habitats is expected to modestly increase the value to 'very high' in relation to the benchmark.

The above BCM results in a 10% net gain. It is important to note that the BCM has been run based on one scenario compensation action with one choice of uncertainty and restoration outcome.

Altering model inputs such as compensation actions and levels of uncertainty obviously alters the outputs of the BCM. In order to be conservative, and as part of sense checking the outputs, the model was run again using the same selection of compensation actions, with a greater impact risk (value of 2 and 3), and have also tested increasing the impact uncertainty from a value of 1 to 2. Both scenarios still resulted in a net gain outcome in the model ranging from 0.5% to 5%.

Compensation Funding Proposal

The applicant proposes to provide upfront capital to manage and improve the resilience of Hamilton's long-tailed bat population across their range of critical habitats within the Hamilton District as a means of managing the residual effects attributable to the development. The most effective management intervention deserving of funding in this instance is considered to be large scale, regionally coordinated, pest animal (predator) control in high value long-tailed bat habitats such as communal and maternity roosting sites and high activity areas previously identified across the Hamilton long-tailed bat population's range.

The above model demonstrates that the area required for pest animal (predator) control to be applied in order to address the adverse residual effects of the development on long-tail bat habitat and achieve the ecological gains expected is 68 ha. Accordingly, the proposed funding amount is based on a calculation that estimates the dollar amount required per hectare to undertake comprehensive predator control for rodents, mustelids and possums in such habitats over a 10-year period. This approach to compensation for the management of residual effects on long-tail bat habitat has been previously consented across the Peacocke Structure Plan area, and specifically the Amberfield and Broadwater decisions.

An estimated cost for the implementation of an appropriate pest animal control programme across c. 68 ha of the Residential South Development can be determined as follows (Table 2). The per/ha rates used are the same as those used in the Amberfield and Broadwater residual effects compensation proposals with a 4.7% compound average annual inflation rate applied and rounded up to whole numbers.

Table 2: Summary of compensation funding proposal for SL1 Residential South

Phase	Area (ha)	Cost/ha	Total Cost (2026)
Start-up	68	\$280	\$19,040
Annual Maintenance	68	\$155	\$10,540
Annual Maintenance x10yrs			\$105,400
Total Cost excl GST (2036)			\$124,440