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## MEMORANDUM

Attention: Harrisville Twenty Three Limited  
c/o Craig Forrester and Vanessa Eddy, The Surveying Company  
Date: 31 July 2023  
From: Kelly Hayhurst, Senior Ecologist, Ecology New Zealand Ltd  
Project: 22138.1.003Rev0 Ecology Summary for Proposed Zone Change

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## 1. INTRODUCTION

### 1.1. Report Scope

This memorandum<sup>1</sup>, prepared by Ecology New Zealand Limited ('ENZL') for Harrisville Twenty Three Limited ('the Client'), presents an ecological assessment of the site associated with a plan zone change. Specifically, this memo identifies potential and actual ecological constraints to the proposed upzoning and advises on any ecological opportunities.

### 1.2. Proposed Plan Change

The client wishes to rezone the land at 23A Harrisville Road to a 'relevant residential zone and include the land as Medium Density Residential 2 Zone (MDRZ 2) through Variation 3'<sup>2</sup>. When demonstrating the density potential of the site, The Surveying Company (TSC) have provided a table of the potential yields from the zones (Table 1). This yield is based on ultimate lot sizes of 350m<sup>2</sup> - 450m<sup>2</sup> as well as some larger lots, and only utilising an area of land that does not present unfavourable contours as identified on the concept plans as the building line restriction (Figure 1)<sup>3</sup>

Table 1: Yield table from TSC (July 2023).

Zone	Min Lot Size	Yield
Village Zone (Operative)	2500m <sup>2</sup> – 8000m <sup>2</sup>	7 dwelling units

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<sup>1</sup> This memo is subject to the limitations provided in Appendix A.

<sup>2</sup> As described within the Harrisville and Greig – Legal Submissions on V3 – 24 July 2023 by Peter Fuller

<sup>3</sup> Slope Stability Assessment and Remedial Work. Tisley Engineering Limited. Dated 7th July 2023. As depicted on relevant subdivision concept plans by TSC, as the building line restriction. Geotechnical Report PG16277/01 Tisley Engineering Limited.

Zone	Min Lot Size	Yield
One dwelling unit	Avg. 3000m <sup>2</sup>	
Large Lot Zone One dwelling unit One Minor dwelling unit (with a min net site area of 1000m <sup>2</sup> )	2500m <sup>2</sup>	7 dwelling units + 7 minor dwelling units = 14 units
MDRZ 2 Zone Three dwelling units	450m <sup>2</sup>	31 dwelling units



Figure 1: Excerpt indicating the non-buildable area from TSC (medium density concept, July 2023).

### 1.3. Site Location

The site is located in Tuakau, Waikato and is currently zoned as 'Rural & Rural Residential'. The site is 2.7ha and is comprised mainly of active pasture, with a gully system running along its northern boundary, before opening into a wetland system to the northwest. The site is gently contoured at the southern border before falling steeply towards the gully system containing a permanent stream system and wetland. There are scattered indigenous trees within the open pasture area; residential houses surround the land to the east, south and west and an area of open land and indigenous vegetation to the north. No significant natural areas are identified within the site or its immediate boundaries.



Figure 2: The subject site and Waikato Regional Council overland flow paths and contours layer.

## 2. METHODOLOGY

A desktop review was undertaken to ascertain information relating to the site's ecological characteristics. Existing databases reviewed included:

- DOC Bio-web Herpetofauna database;
- DOC Bat database;
- iNaturalist New Zealand;
- New Zealand Freshwater Fish Database (NZFFD); and
- Previous ENZL surveys from the area.

A site assessment was undertaken on the 30<sup>th</sup> July by ENZL ecologists to ground truth the desktop assessment. Previous site assessments by ENZL had ground truthed the previously delineated wetland area and documented pest plants for a planting plan.

## 3. ECOLOGICAL VALUES

### 3.1. Terrestrial

The site is predominately used for pastoral purposes and is grazed by stock (Figure 3). While much of the gully area is fenced off via non-permanent electric fences, there was evidence of recent stock damage throughout the gully system. A summary of the potential values and species present on-site are described in the sections below.



Figure 3: Overview of the site's pastoral landscape leading down to a gully system.

### 3.1.1. Vegetation – Botanical Values

The site comprises exotic pasture species, with two isolated, remnant tōtara (*Podocarpus totara*) and one Rimu (*Dacrydium cupressinum*) within the pasture area. The gully system contained a mixture of exotic and pest plants within the site along the true left bank of the stream, with indigenous dominating vegetation located immediately offsite on the true right bank. Mature pine trees (*Pinus* sp.) were present throughout the gully system, in varying stages of senesce, with a thick layer of pine needs preventing regeneration at the ground tier. Some indigenous vegetation persisted, mainly woody species such as tōtara and typical regenerating species māpou (*Myrsine australis*) and māhoe (*Melicytus ramiflorus*). The general vegetation is not representative of a particular ecosystem, being modified and impacted by exotic and pest plants. Overall the botanical value of vegetation at the site was very low, increasing to moderate in the gully<sup>4</sup>. Vegetation as a habitat for fauna is described in each fauna section below, and the value of the riparian vegetation to the stream system is described in section 3.2.

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4 Vegetation off site and within the gully containing remnant native vegetation was of higher botanical value.

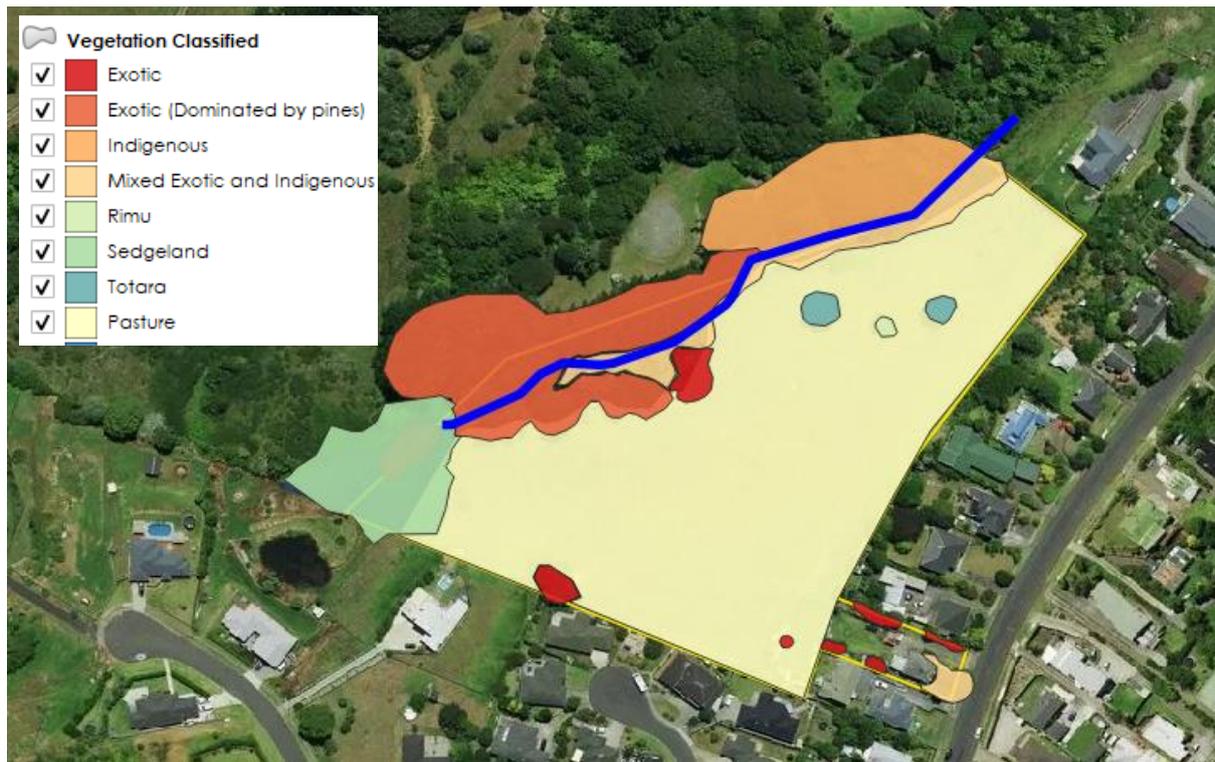


Figure 4:Vegetation type mapped at the site.

### 3.1.2. Birds

A search of the iNaturalist database showed several indigenous species recorded in the vicinity of the site. During the site assessment, pīwakawaka (*Rhipidura fuliginosa*), tūi (*Prosthemadera novaeseelandiae*) and kererū (*Hemiphaga novaeseelandiae*) were noted, along with exotic birds, Eastern rosellas (*Platycercus eximius*) and magpies (*Gymnorhina tibicen*). No threatened birds were recorded at or within the vicinity of the site. The habitat for birds at the site was focused within the gully system, where the multi-tiered vegetation and diversity in species created abundant nesting and resources for bird species to persist. Based on the desktop assessment and the available habitats noted on-site, a moderate diversity of birds are likely to utilise the site and are likely to be common forest and urban birds typical of the area. Overall, the habitat and resources for indigenous birds at the site are of moderate ecological value within the gully and low in the pasture / majority of the site.

### 3.1.3. Bats

A Department of Conservation's Database search shows the closest records of threatened – nationally critical<sup>5</sup> long-tailed bats (*Chalinolobus tuberculatus*) are 6km to the north, 9km to the east, 4km to the south and 11km to the west, with multiple records in all directions (Figure 5)<sup>6</sup>. The only vegetation at the site that was sufficiently large to provide roosting and foraging

5 O'Donnell CFJ, Borkin KM, Christie JE, Lloyd B, Parsons S, Hitchmough RA 2018. Conservation status of New Zealand bats, 2017. New Zealand Threat Classification Series 21.

6 Department of Conservation Bat Database, 2022

resources<sup>7</sup> for long-tailed bats is concentrated within the steep gully area. This habitat is in the form of mature pine trees, tree ferns, and mature indigenous podocarps with epiphytes (Figure 6). The scattered totara in the paddock also contained potential cavity features for bats. The site hosts open paddock area, a stream and gully system which bats often use as a resource for foraging, and they use linear features to traverse the landscape – with frequent and rapid movements over average range lengths of 3.3–10.9 km (max = 19 km) being previously recorded<sup>8</sup>. The gully system at the site is well-vegetated but disconnected downstream by residential dwellings, limiting the linear pathway. There is no apparent flight path along the downstream sections of the gully system to the wider stream system. Overall, the habitat availability at the site is of moderate to high ecological quality in the gully area, and low generally for the majority of the site.

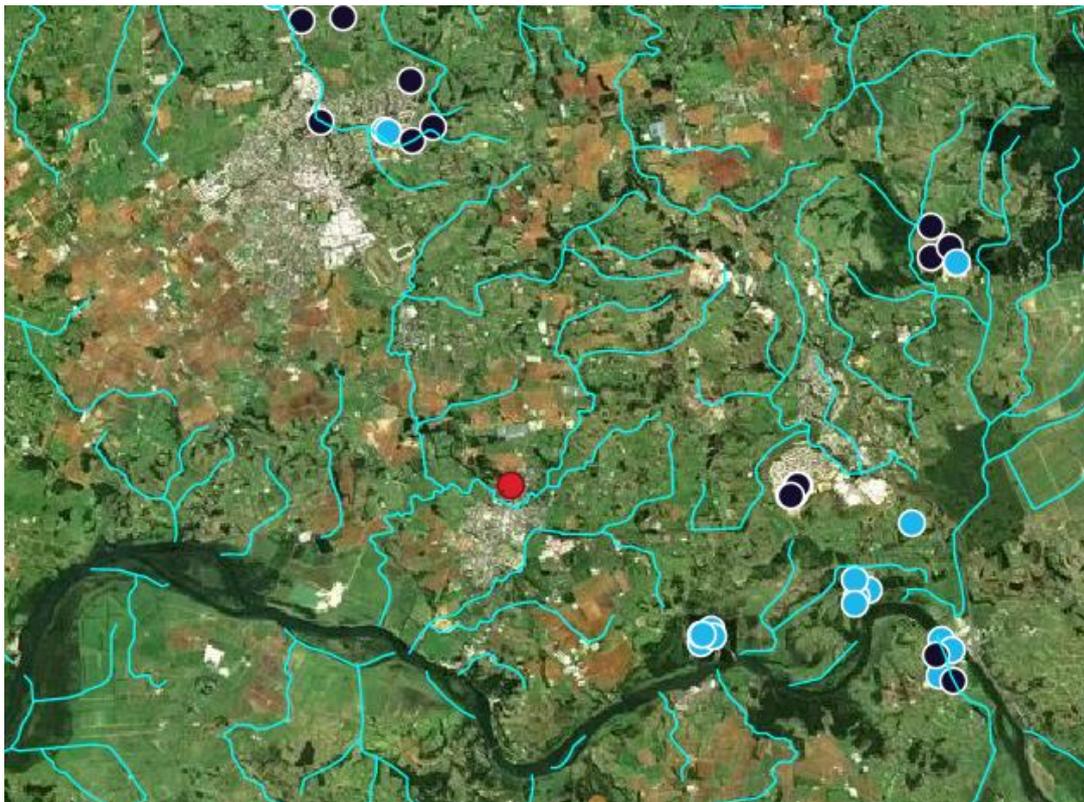


Figure 5: Department of Conservation Bat Records in proximity to the site in blue, records indicating no bats detected in black.

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7 Bat roosts tend to be observed in mature trees that are >15cm Diameter at breast height (DBH); however, native bats have also been observed in tree ferns and cabbage trees - Sedgely JA and CFJ O'Donnell (1999) Roost selection by the long-tailed bat, *Chalinolobus tuberculatus*, in temperate New Zealand rainforest and its implications for the conservation of bats in managed forests. *Biological Conservation* 88: 261–276; Sedgely, JA and CFJ O'Donnell (2004) Roost use by long-tailed bats in South Canterbury: examining predictions of roost-site selection in a highly fragmented landscape. *New Zealand Journal of Ecology* 28, no.1: 1–18.

8 O'Donnell CFJ, 2006, Home range and use of space by *Chalinolobus tuberculatus*, a temperate rainforest bat from New Zealand, *Journal of Zoology*, 28 February 2006 <https://doi.org/10.1017/S095283690100022X>



Figure 6: Potential bat habitat in the gully at the site.

#### 3.1.4. Lizards

The Department of Conservation's Herpetofauna Database review indicated the closest indigenous lizard record was an ornate skink (*Oligosoma ornatum*) 7.0km away in Pukekohe, Auckland. The habitat at the site was very limited for lizards, featuring little arboreal habitat and small amounts of ground-dwelling habitat in the form of rotting pine logs and inorganic debris around the existing dwelling<sup>9</sup>. There was no habitat present in the majority of the site. Overall, the habitat quality for indigenous lizards is low, and the site is unlikely to support a local population.

### 3.2. Aquatic

An unnamed tributary of the Whakapipi Stream in the Waikato River catchment flowed along the site's northern boundary in a westerly direction. The stream was noted as soft-bottomed with a clay substrate and had good habitat heterogeneity with riffles, runs, and pools (Figure 7). No significant fish passage restriction was noted, and the riparian cover was well formed, providing shade and nutrient input.

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<sup>9</sup> Copper skinks have been observed persisting in urban and rural environments, including old house sites, urban gardens, and rural hedgerows where grasses grow thick and provide cover - Observations from the herpetologists at Ecology New Zealand from various projects around New Zealand.



Figure 7: Stream system at the site.

A natural wetland previously identified by AB Ecology<sup>10</sup> was present at the western extent of the site and was identified as a Cyprus sedgeland (Figure 8). The wetland was being impacted by pest plants Pampas (*Cortaderia selloana*), woolly nightshade (*Solanum mauritianum*) and the exotic blackberry (*Rubus fruticosus*). The identified natural wetland contained a channelised stream system flowing through the wetland area to the southwest, and there was a channel flowing into the wetland from the southeast. There were few indicators of pest animal impact (i.e., grazing damage), and the wetland had been fenced off on the southeast side on-site. The wetland area did not emit a sulphurous smell when the vegetation was disturbed. However, there was evidence of filamentous algae blooms and bacteria in the stream channel flowing through the wetland and the channel feeding into the wetland from the southeast. From historical aerial imagery, the wetland complex does not appear to have been altered in size.

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<sup>10</sup> Wetland delineation at 23A Harrisville Road, Tuakau. Prepared by AB Ecology Ltd. Dated 8th December 2021.



Figure 8: Sedgeland at the site.

Freshwater fauna present within the wider catchment include Common bully (*Gobiomorphus cotidianus* – Not threatened), shortfin eel (*Anguilla australis* – Not threatened) and the Longfin eel (*Anguilla dieffenbachia*), which is classified as 'At Risk–Declining' by the New Zealand threat classification system.<sup>11</sup> Given that there is good instream habitat, and no obvious fish passage restraints observed (although it is noted that a full assessment of the stream system was out of scope for this memo), this species could be expected to be found within the stream site.

Overall given the permanent stream system, the potential for threatened species to utilise the site and the presence of a natural wetland which are rare nationally, the site's Aquatic features are considered to be of high ecological value.

## 4. POTENTIAL ECOLOGICAL CONSTRAINTS AND OPPORTUNITIES

### 4.1. Terrestrial

#### 4.1.1. Vegetation

This assessment does not identify any significant ecological constraints associated with vegetation at the site, as a result of the proposed district plan zone change from Rural-Residential/Large Lot Zoning to Medium Density Residential 2 Zone. It is expected that indigenous vegetation values could be enhanced at the subdivision stage for either zone

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<sup>11</sup> Dunn 2018. Conservation status of New Zealand freshwater fishes, 2017. New Zealand Threat Classification Series 24

density, with restoration and pest management of the wetland and stream riparian areas and setbacks.

#### 4.1.2. Birds

This assessment does not identify any constraints on the plan change associated with indigenous birds or their habitat. It is expected that potential future works such as vegetation removal could result in injury or mortality to indigenous birds; however, this could be easily avoided by removing trees outside of the main bird breeding season. Design of the future subdivision plan for the zone could incorporate bird-friendly resources (i.e., native fruiting and flowering trees that provide food and habitat for birds) into the landscape requirements increasing the availability and likelihood of indigenous birds utilising the site. Restoration and pest management of the wetland and stream riparian areas and setbacks will also increase resource availability for indigenous birds.

#### 4.1.3. Bats

The likelihood of bats utilising the site is considered moderate due to the habitat availability and proximity to previously recorded bat activity. Bat presence cannot be discounted due to a lack of seasonal survey information. Consequently, an assessment of current bat utilisation is not within the scope of this memo. Any potential direct impacts attributable to the site's development (under either zone specifications) would be associated with tree removal (as this could result in injury or mortality) and indirect impacts associated with light, sound and the increase in predators attributable to intensified residential activities. The effects of tree removal can be managed through the implementation of best-practice vegetation removal protocols at future planning and building stages. Potential future opportunities for the management of effects on bats include street and building lighting requirements in line with best practice standards and implementing a predator control programme, which can be incorporated into concept plans and future resource consent conditions.

#### 4.1.4. Lizards

There is limited suitable habitat available across the site for indigenous lizards, and the proposed plan change is unlikely to have a significant ecological effect on indigenous lizard populations. Industry-standard best practice lizard management can be addressed at the resource consent stage to manage any potential effects on lizards at the site.

### 4.2. Aquatic

Effects from the development at the site will likely result from changes in the impervious surface coverage and stormwater management. Given that the contours of the gully system are steep and there are geotechnical restraints, it is not expected that the gully and stream system or wetland will be directly impacted, as no works are expected to be undertaken within these areas. It is also expected that the minimum setback of 23m from the stream and 20m from the

wetland, as required under the proposed zone change<sup>12</sup>, would be the same as what is required for the current zone and relevant under other policies (e.g. the National Environmental Standards for Freshwater, 2020). This requirement, coupled with the site constraints, means that in some places, over 20m of riparian zone would be proposed for protection and management.

Any stormwater infrastructure is expected to be designed per the Waikato Regional Council Stormwater Management Guidelines, and future earthworks at the subdivision stage be subject to best practice erosion and sediment control during works. Potential enhancement and protection of the waterways and aquatic features within the site could provide positive ecological outcomes for the stream on-site and downstream.

## 5. CONCLUSION

Overall, this ecological review has not highlighted any significant ecological restraints of the site in relation to the proposed zoning plan change. Standard fauna management at the subdivision and building stage can be incorporated into concept planning stages for the site to ensure indigenous fauna are not affected. Industry-standard erosion and sediment control and infrastructure engineering (e.g. stormwater design) can be incorporated at the subdivision stage to manage the effects of aquatic values. The aquatic setbacks under the zones ensure that direct effects on aquatic values can be minimised. Several ecological opportunities could be utilised to increase indigenous biodiversity due to the overall zone change and land development.

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<sup>12</sup> Rule MRZ-S11 (a). Permitted status applies where any building is setback a minimum of 20m from any wetland or river – river given the definition in the Waikato District Plan as the same definition provided in Section 2 of the Resource Management Act 1991 – River means a continually or intermittently flowing body of fresh water, and includes a stream and modified watercourse; but does not include any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal).

# Appendix A

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