



Co-creating a thriving ecosystem

Flat Bush Primary School Notice of Requirement

Ecological Impact Assessment

Final

Prepared for The Ministry of Education



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Executive Summary

Morphum Environmental Limited (Morphum) was engaged by the Ministry of Education (The Ministry) to prepare an Ecological Impact Assessment to support a Notice of Requirement for the construction and operation of a school at 121 Murphys Road, Flat Bush, Auckland.

Historically the 3.06 ha site was part of a larger property and used for agricultural purposes. The site can be categorised into three primary ecological areas: high producing exotic grassland (72% of the site), derelict house and surrounding garden, and stream and supporting riparian habitat. The site is zoned Residential – Mixed Housing Urban Zone under the Auckland Unitary Plan (AUP) and has four Significant Ecological Areas within two kilometres of the site.

Current ecological values of the site, the magnitude of impact associated with the Notice of Requirement, and the overall level of effect on the ecological components were assessed utilising the Environment Institute of Australia and New Zealand Ecological Impact Assessment Guidelines (2018).

A site visit was conducted by Morphum Environmental on the 16th of August to assess the current ecological values of the site. The current ecological values of the site are summarised as:

- Vegetation was ascribed an ecological value of **Low** due, in part, to the prevalence of pest species.
- Bats have been recorded within two kilometres of the site. Though unlikely, there is potential intermittent use of the established riparian margin by long-tailed bats. Consequently, their presence cannot be categorically ruled out and bats therefore have a **High** ecological value for the site.
- At risk – declining herpetofauna species are present in the vicinity, and suitable habitat is present on site. The current ecological value of herpetofauna species has been assessed as **High**.
- All the bird species recorded in the vicinity of the subject site are common native (not threatened) or introduced species and reflective of the subject site's urbanising catchment. The current ecological value of avifauna species has been assessed as **Low**.
- An unnamed stream runs along the southern and western borders of the subject site consists of a high-quality hydraulically heterogeneous stream environment. Several native species have been recorded in the nearby Ōtara Creek and tributaries; subsequently freshwater habitat was attributed a current ecological value of **High**.

The types of activities considered to likely be required in the construction and operation of a school and subject to the Notice of Requirement include:

- Construction of school buildings and facilities. i.e. classrooms, hall, library, gymnasium, and sports fields.
- Construction of infrastructure services. i.e. water, wastewater, stormwater, and telecommunications.
- Earthworks and vegetation clearance to facilitate site development.
- Vehicular, pedestrian and cycle traffic, including effects of noise.

It is acknowledged that the construction and operation of a school has potential adverse ecological effects. The redevelopment of the subject site would likely require demolition and construction activities involving land disturbance, vegetation clearance and associated noise and vibrations. The operational activities of the school are envisioned to include traffic movements, noise generating activities, and onsite stormwater treatment and disposal. Stormwater infrastructure is subject to the Notice of

Requirement; however, stormwater discharge consents are not as they are covered under regional consent. The development of the site also has the potential to improve ecological values.

The magnitude of any effect from any vegetation clearance has been assessed as **Low**. There is potential for redevelopment landscaping to include native vegetation and increase the proportion of native vegetation present, such that the actual overall level of effect could be negligible or a net positive.

No suitable native bat roosting sites were identified within the subject site and the site provides limited foraging opportunities; it is considered unlikely that native bats are present on more than an infrequent transient basis. The clearance of site vegetation and construction of a school is limited to the fragmented derelict house garden with the more established/moderately continuous, vegetation in the riparian zone to remain. Therefore, the magnitude of impact is negligible, and the level of effect is considered **Low** on native bats.

The highest potential level of effect within the scope of the assessment undertaken relates to herpetofauna, where the level of effect is described conservatively as **High** without mitigation. This assessment assumes the highest possible impact, that the site supports populations of threatened native lizard fauna and that suitable lizard habitat is cleared. The Wildlife Act 1953 would require that any such vegetation clearance would require lizard search and salvage be performed, to relocate any lizards present within the impact area. As such, following mitigation, it is considered that the level of effect would be reduced to **Low** and that no conditions need to be placed on the designation to address this potential effect.

Effects on avifauna have been considered as **Low** with the removal of some nesting and foraging habitat around the derelict house having a low magnitude of impact. Enhancement of the riparian margin could increase the habitat values for avifauna near the unnamed stream.

The overall level of effect on freshwater habitat is **Very Low** on the assumption that Auckland Council's Guidance Document 2016/005 for erosion and sediment control is implemented to mitigate/reduce potential sediment discharges associated with earthworks.

Redevelopment of the site provides the opportunity to bring the site's stormwater management approach in-line with current industry best practice water sensitive urban design. Agricultural runoff will also be reduced with the change in land use. As such the overall changes to the stormwater discharge are expected to be **Negligible** compared to the current baseline.

It is considered that if best practice stormwater management guidelines are implemented, then the impacts of these activities on site water quality and freshwater values will not be discernible, and the level of effect has been assessed as **Very Low**.

Overall, the level of effect on the site's ecological values from the proposed activities has been assessed as **Low – Very Low**. The Environmental Institute of Australia and New Zealand Ecological Impact Assessment Guidelines provides a description of Low-level effects as "not normally of concern", although normal design, construction and operational care should be exercised to minimise adverse effects. Thus, it is not considered that any ecological specific recommendations are necessary to address any of the potential impacts.

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1. Introduction

1.1. Purpose and Scope

Morphum Environmental Limited (Morphum) were engaged by the Ministry of Education (The Ministry) to prepare an Ecological Impact Assessment (EclA) to support a Notice of Requirement (NoR) for the construction and operation of a school at 121 Murphys Road, Flat Bush (herein the subject site).

These new facilities will be used by The Ministry to accommodate the predicted increase in student population associated with the development and population growth of Flat Bush.

Morphum understands that an EclA is required to identify the ecological values of the site, describe the potential impacts that the construction and operation of a school on the site may have on those values and recommend measures to address, including possible designation conditions.

1.2. Site Overview

Historically the 3.06 ha site was part of a larger property and used for agricultural purposes. The site can be categorized into three primary ecological areas (Figure 1):

1. High producing exotic grasslands no longer grazed by stock (2.2 ha) (herein 'exotic grassland').
2. Derelict house and surrounding garden which has been abandoned and has become overgrown (0.39 ha), (herein 'derelict house garden').
3. Stream and supporting riparian margin. Along the southern and eastern boundaries (0.47 ha) (herein, 'riparian margin').

The site is zoned Residential – Mixed Housing Urban Zone under the Auckland Unitary Plan (AUP).

There are four Significant Ecological Areas (SEA) within two kilometres of the site. The site is located near the Murphys Bush Reserve which has been scheduled as SEA_T_5282 and SEA_T_5282a for representativeness and rarity. The area is historically representative of the kahikatea forest (MF4, Singers *et al.* 2017).

SEA_T_1191 is located 250 m away and has been scheduled for being representative of the historically present pūriri forest (WF7, Singers *et al.* 2017) and provides a migration buffer. SEA-T_1189B is located 500 m away and has been scheduled for the at-risk declining fern species *ptisana salicina*.



Figure 1: Site map showing the three primary habit types referred to throughout this EclA.



Figure 2: Exotic grassland looking east with the upper extent of the riparian margin on the right.

2. Current Ecological Values

A site walkover was undertaken on the 16th of August 2022. The site visit was undertaken by a suitably qualified and experienced environmental scientist. During this survey, all vegetation types within the subject site were surveyed and all fauna observations were recorded.

2.1. Ecological Context

The subject site is within the Tāmaki Ecological District. The Tāmaki Ecological District is highly modified, with only 7% of indigenous cover remaining in the district (Lindsay *et al.*, 2009). While this district historically supported extensive lowland kauri, pūriri, and coastal pōhutukawa forests (Singers *et al.* 2017), these have largely been cleared to make way for urban development and agricultural land use. The largest proportion of land now is urban areas which is fringed by agricultural areas and limited pockets of remaining native vegetation.

Landcare Research Land Cover Database (LCDB) version 5 (Landcare Research 2020) describes the land cover of the subject site as “High Producing Exotic Grassland”. High producing exotic grasslands are described by the Ministry for the Environment (2010) as exotic grasslands with highly productive vegetation likely to be predominantly used for agricultural grazing that cover 22% of New Zealand’s land area. The LCDB description provides a generally accurate description of the subject site.

The surrounding area has been converted from largely agricultural to primarily residential use over the past two decades. Further residential development is in progress on the true right bank of the Ōtara Stream, opposite the subject site.

2.2. Catchment and Receiving Environment

The Ōtara Creek is the primary receiving environment for the unnamed stream. LAWA data indicates the Ōtara Creek health is improving after severe degradation over the past two decades due to mass land use changes in the catchment. The unnamed stream has a contributing catchment of 23.5 ha, which contains SEA_T_1191. The catchment drains into the Tāmaki River arm of the Hauraki Gulf.

2.3. Terrestrial Ecology

2.3.1. Vegetation

As with other areas in the Tāmaki Ecological District, farming activities have cleared much of the site’s original vegetation. There are three distinct ecological areas within the site boundary, which are highlighted in Section 1.2 above.

The derelict house has an unkept garden area that consists of several native specimen trees, exotic ornamental specimens, and exotic pest plants (Table 1). The exotic grassland primarily consisted of ryegrass (*Lolium spp.*), gorse (*Ulex spp.*), kikuyu (*Cenchrus clandestinus*), and buttercup (*Ranunculus repens*) and had not been grazed in the recent past.

Table 1: Vegetation recorded on site (non-exhaustive). Colours refer to the area the species are present in **dark green** is across all three areas, **light blue** is the riparian margin and **light green** is the derelict house garden.

Common Name	Scientific Name	Status*
Brush wattle	<i>Paraserianthes lophantha</i>	Pest – Sustained Control
Woolly night shade	<i>Solanum mauritianum</i>	Pest – Sustained Control
Kōhūhū	<i>Pittosporum tenuifolium</i>	Native – Not Threatened
Pūriri	<i>Vitex lucens</i>	Native – Not Threatened
Japanese Honey suckle	<i>Lonicera japonica</i>	Pest – Sustained Control
Agapanthus	<i>Agapanthus praecox</i>	Pest – Sustained Control
Nasturtium	<i>Tropaeolum majus</i>	Exotic
Magnolia	<i>Magnolia spp.</i>	Exotic Ornamental
Walnut tree	<i>Juglans spp.</i>	Exotic Ornamental
Totara	<i>Podocarpus totara</i>	Native – Not Threatened
Arum lily	<i>Zantedeschia aethiopica</i>	Pest – Sustained Control
Banana leaf	<i>Musa spp.</i>	Exotic
Olive tree	<i>Olea spp.</i>	Exotic Ornamental
Karamu	<i>Coprosma robusta</i>	Native – Not Threatened
Buttercup	<i>Ranunculus repens</i>	Exotic
Gorse	<i>Ulex spp.</i>	Pest – Sustained Control
Rye Grass	<i>Lolium spp.</i>	Exotic
Cutty Grass	<i>Cyperus ustulatus</i>	Native – Not Threatened
Mahoe	<i>Meliccytus ramiflorus</i>	Native – Not Threatened
Juncus	<i>Juncus spp.</i>	Native – Not Threatened
Ruatahi	<i>Carex geminata</i>	Native – Not Threatened
Swamp sedge	<i>Carex virgata</i>	Native – Not Threatened
Gum tree	<i>Eucalyptus spp.</i>	Exotic - Ornamental
Kikuyu	<i>Cenchrus clandestinus</i>	Exotic
Silver Fern	<i>Cyathea dealbata</i>	Native – Not Threatened

*Status as per the Auckland Regional Pest Management Plan 2020-2030

None of the species present on site are classified as threatened or at-risk (de Lange *et al*, 2012) which produces a low rarity and distinctiveness value. While some of the specimen natives present would have been historically present, most of the site is highly modified exotic grassland comprised of exotic species. Regarding the ecological context, the riparian vegetation (less than 20% of the site coverage) does provide high shading values and a substantial section of continuous habitat, linking to the riparian vegetation of the Ōtara Stream. Therefore, a moderate value was assigned for the ecological context (Table 2).

Table 2: Assessment of current terrestrial vegetation values.

Assessment Matter	Ecological Value (EIANZ, 2018)	Reasoning
Representativeness	Low	The current vegetation community is not representative of the historical Pūriri forest habitat type. Exotic species dominate, and the current vegetation is not consistent with the natural range of tiers and guilds.
Rarity/distinctiveness	Low	No nationally or locally threatened or uncommon plant species were identified during the site survey.
Diversity and pattern	Low	The subject area is dominated by exotic pasture grasses and pest species. The current site species diversity is below the expected level of natural diversity for the habitat that would have been present prior to human modification.
Ecological context	Moderate	The site has experienced a high level of modification and provides limited ecological functions. The pasture grasslands present decrease ecological linkages and pathways and have limited contributions to ecosystem services such as food provision, pollination and seed sources, as well as, native genetic diversity. The riparian vegetation does provide high shading values and a substantial section of continuous habitat, linking to the riparian vegetation along the Ōtara Stream and Totara Park.

Overall, the current vegetation has been ascribed an ecological value of **Low**.

2.3.2. Bats

A detailed bat survey was not undertaken given the habitat present. Auckland Council's BioInfo database has previous records of long tail bats (*Chalinolobus tubercaltus*) recorded nearby in 2014. Since 2014, there has been a significant change in land use of the Flat Bush area. The mature eucalyptus trees in the riparian margin provide some low-quality roosting habitat, although vegetated, the riparian margins provide only limited connectivity given the surrounding urban land use and lack of connectivity. The noise and light associated with the urbanisation of the catchment further reduces the habitat quality for long-tailed bats therefore, their presence onsite is considered unlikely.

Short-tailed bats prefer deep-forest habitats and are associated with old-growth indigenous forests. The only known population of short-tailed bats known to the Auckland region is found on Little Barrier Island. As such their presence within the subject site is considered extremely unlikely.

Bats are a nationally critical species and have been recorded in the area over the past decade. There is a lack of suitable habitat present and urban land uses have likely impacted any remnant bat communities present, however as the presence of the long-tail bat on site cannot be categorically ruled out. Bats are considered to have **High** ecological value in this context.

2.3.3. Herpetofauna

The copper skink (*Oligosoma aeneum*) is recorded as present in the area in Auckland's BioInfo database. The copper skink species have a threat status of at-risk-declining (Hitchmough *et al.*, 2021), and subsequently have a **High** ecological value (EIANZ, 2018). There is suitable lizard habitat across the site with high levels of ground cover. The derelict house garden has suitable vegetation on offer including agapanthus and nasturtium, as well as, woody debris and rank, unkept grasses. The exotic grasslands have not been grazed and have grown rank. The vegetation in the riparian margin also provides canopy coverage and refugia for native skinks. Riparian vegetation does not appear to be regularly inundated by flood flows due to the gradient of the riparian margin and incised nature of the stream.

No gecko species have been recorded within two-kilometres of the site, however, their presence in the established riparian margin cannot be ruled out.

Due to the threat status of the species that are present in the area, the current herpetofauna ecological value of the subject area was determined to be **High**.



Figure 3: Examples of suitable herpetofauna habitat present around the derelict house garden.

2.3.4. Avifauna

Incidental avifauna observations were recorded during the site visit on 16 August 2022. Bird counts were not conducted given the proposed activity and habitat present. Approximately one third of the site is in native or exotic woody vegetation (~1 ha), with most of the site being previously used for agricultural activities. This is reflected in the species of birds recorded from the site, which are typical assemblages of species that can comfortably travel distances over open fields between forested patches, or make use of fields, farmland, and shelter belt vegetation in rural settings. The birdlife that was observed from the subject area was largely associated with the existing vegetation in the riparian margin and derelict house garden area (mixed exotic and native trees). No threatened or risk species (Robertson *et al.* 2016) were recorded. It is likely that other common garden species will be present on site, however, only those recorded in Table 2 were observed.

One native species, not observed, but which may be transiently present within the subject site is the paradise shelduck (*Tadorna variegata*). Paradise shelduck are not classified as Threatened or At Risk (Robertson *et al.*, 2016). The citizen science platforms eBird and iNaturalist were searched for more detailed records. No observations were recorded on the subject site.

Overall, the current avifauna has been ascribed an ecological value of **Low**.

Table 3: Incidental avifauna observations.

Common name	Scientific name	Threat Status (Robertson <i>et al.</i> 2017)
Mallard	<i>Anas platyrhynchos</i>	Introduced and naturalised
Australian magpie	<i>Gymnorhina tibicen</i>	Introduced and naturalised
Welcome Swallow	<i>Hirundo neoxena</i>	Not Threatened
Common pheasant	<i>Phasianus colchicus</i>	Introduced and naturalised
Pukeko	<i>Porphyrio melanotus</i>	Not Threatened
Common Myna	<i>Acridotheres tristis</i>	Introduced and naturalised
Spur Winged Plover	<i>Vanellus miles</i>	Not Threatened
House Sparrow	<i>Passer domesticus</i>	Introduced and naturalised

2.4. Freshwater Ecology

Freshwater Habitat

The only permanent or intermittent watercourse present is the permanent unnamed stream running along the southern border which discharges into the Ōtara Creek. No other watercourses (including potential wetlands) are present throughout the site.

The unnamed stream runs along the southern, and then the western boundary of the site for approximately 280 m before discharging into the Ōtara Creek. The stream, during the site visit, was approximately 0.25 m deep and 0.5 m wide with a substrate comprised of 90% sand/silt and 10% gravels and cobbles (Figure 4). The stream is heavily incised, and in conjunction with the riparian vegetation is highly shaded. No barriers to fish passage were noted. Hydraulic heterogeneity is high with natural pools, riffles, and runs present throughout, therefore a diversity and pattern value of high is ascribed (Table 4). The upstream catchment which discharges into the unnamed watercourse via culvert beneath Murphys Road is highly modified via agricultural practices.

Native Freshwater Fish

A search of the New Zealand Freshwater Fish Database Confirmed three native species present within the immediate streams reaches surrounding the subject site: Crans bully (*Gobiomorphus basalis*); shortfin eel (*Anguilla australis*) and banded kokopu (*Galaxias fasciatus*). None of these species are threatened. The connectivity to Ōtara Creek and its tributaries indicates there are potentially more native species present or transient in the stream.



Figure 4: Example of natural pool present and close up of the substrate of the unnamed stream.

Table 4: Assessment of current freshwater ecological.

Assessment matter	Ecological value (EIANZ, 2018)	Reasoning
Representativeness	Moderate	The permanent stream is subject to wider anthropogenic influences; the watercourse itself does not have distinctive ecological features; however, does have some natural complexity of hydraulic diversity.
Rarity/distinctiveness	Moderate	The species that are confirmed as present in banded kokopu, crans bully and shortfin eel are not threatened species. However, it is likely that a wider range of species, including threatened species, are present.
Diversity and pattern	High	Hydraulic heterogeneity and complexity is high; therefore, habitat is high with natural pools, riffles and runs present with natural erosive processes occurring.
Ecological context	High	The subject site is near an SEA, and the fish passage connectivity to the Ōtara Stream. The riparian habitat does have exotic contents but provides high shading and is primarily intact throughout the reach and links into the wider riparian vegetation in the Ōtara Creek catchment and Flat Bush Precincts

Overall, the current freshwater habitat has been given an ecological value of **High**.

2.5. Summary of Ecological Values

The current ecological values of the site have been described based on in-field observations in conjunction with a review of the available literature and databases. A summary of this information is presented in Table 5 based on the EIANZ 2018 Ecological Impact Assessment guidelines set out in Appendix 2.

Table 5: Summary of current ecological values.

Impact	Ecological Value (EIANZ, 2018)	Reasoning
Vegetation	Low	Area rates Low for three assessment matters (Representativeness, Rarity/distinctiveness, Diversity and pattern) and moderate for ecological context given the shading. Vegetation is comprised primarily of exotic pasture grass and exotic herbaceous weeds. The areas of woody vegetation consists largely of mixed mature exotic and native tree species.
Bats	High	Actual species presence is unlikely, although potential intermittent use by long-tailed bats have been recorded in the past and their presence cannot be categorically ruled out.
Herpetofauna	High	The presence of at risk – declining species in the area, and vast suitable habitat present on site.
Avifauna	Low	All of the bird species recorded in the vicinity of the subject site are common native (not threatened) or introduced species and reflective of the subject site’s urban location.
Freshwater Values	High	Freshwater stream habitat runs along the southern and western borders of the subject site consists of a high-quality hydraulically heterogeneous stream environment. Several native species have been recorded in the nearby Ōtara Creek and tributaries.

3. Proposed Activities and Potential Effects

This EclA has been prepared to support the lodgement of a NoR for the construction and operation of a school at 121 Murphys Road, Flat Bush.

The types of activities considered to likely be required in the construction and operation of a school and subject to the Notice of Requirement include:

- Construction of school buildings and facilities. i.e. classrooms, hall, library, gymnasium, and sports fields.
- Construction of infrastructure services. i.e. water, wastewater, stormwater, and telecommunications.
- Earthworks and vegetation clearance to facilitate site development.
- Vehicular, pedestrian and cycle traffic.

The hours when classes will be held on site are expected to be similar to most other schools, core teaching hours being weekdays between approximately 8:30am - 3:30pm. Some activities, such as community education (night classes), and school sporting or cultural events may occur outside of core school hours.

3.1. Construction Activities

3.1.1. Land Disturbance

The current topography (rolling hills with minimal flat area) of the site means that earthworks are anticipated to prepare the building platforms, outdoor play areas, and parking areas. Earthworks and construction activities would involve the use of machinery and traffic that will generate dust, noise, and vibrations for the duration of construction. Dust, noise, and vibrations may reduce the habitat quality for any species present and lead to their avoidance of the area.

For all land disturbance activities, there is a risk of uncontrolled sediment discharge to the receiving environment. Sediment is a contaminant as defined in the Resource Management Act (RMA) and has the potential to cause a range of adverse effects in the receiving environment including smothering of benthic habitat, direct mortality of native freshwater fish through asphyxiation from clogged gills, and changes to water quality, including physio-chemical indicators pH and clarity.

Sediment related effects would not only occur within the subject site but could accumulate in the wider receiving environment.

3.1.2. Vegetation Clearance

While no detailed designs are available currently, the vegetation clearance will likely be limited to the derelict house garden and sections of the exotic grassland as this is the lowest gradient available on site. It is possible that some specimen trees may be kept from the derelict house garden. No vegetation clearance is proposed in the riparian margin, and such vegetation clearance is considered unlikely given the underlying topography and proposed development of the site for educational purposes. Future connections for civil infrastructure may be required in this area.

Vegetation removal may affect the fauna that potentially utilise this area as foraging and habitat. Vegetation clearance could result in the direct mortality of individuals, displacement of nesting/roosting sites and reduced habitat connectivity.

3.2. Operational Activities

3.2.1. Traffic and Noise

Traffic can create a range of anthropogenic disturbances such as movement, noise, and light disturbance. The ongoing operation of the school may generate noise disturbance. Anthropogenic disturbances may reduce the quality of any retained vegetation as habitat for any native species, reducing habitat quality through the determent of nesting sites and foraging, potentially impacting reproductive success. The level of effect of such anthropogenic disturbances will depend on the habitat retained and the landscaping of the site during construction, notwithstanding the existing habitat values of the site and the large extent of similar habitat in the surrounding catchment.

3.2.2. Increase in Impervious Surfaces

The redevelopment of the subject site for educational purposes would result in an increase in impervious surfaces. As a positive effect, this is likely to lead to the prevention of further agricultural runoff (nutrients and sediment) from the site. However, an increase in impervious coverage, unmitigated, has the potential to alter hydrology resulting in increased peak flow discharges and adversely impact water quality. Changes in hydrology can have adverse effects on streams within the catchment, including accelerating in stream erosion and bank instability, which generate sediment that can accumulate in the receiving environment.

The site is within Flat Bush Sub-Precinct C and the East Tamaki Network Discharge Consent. Hydrology mitigation through both retention and detention for all impervious surfaces is proposed and is required under the Flat Bush Sub-Precinct C. A range of possible options are available to meet the stormwater quantity and quality objectives that also provide the maintenance of watercourse hydrology.

Auckland Council provides guidance on applying Water Sensitive Urban Design (WSUD), a stormwater management approach that seeks to promote stormwater management practices that balance land development with the ecosystem services necessary to support it, in Auckland Council Guideline Document 2015/004 Water Sensitive Design for Stormwater (GD04). A WSUD approach reduces the potential for adverse effects from point-source stormwater discharges and those associated with a change in land use to occur. Auckland Council Guideline Document 2017/001 Stormwater Management Devices in the Auckland Region (GD01) also provides design standards for a range of stormwater management devices to achieve stormwater objectives.

3.2.3. Potential Positive Effects

The development of the site has the potential to improve ecological values. Riparian planting to a width of 10 m is required under the Flat Bush Sub-Precinct C, and envisioned through the East Tamaki Network Discharge Consent, combined with the removal of pest species such as brush wattle and woolly nightshade could be utilised to improve habitat provision, and connectivity for native species, as well as, improving the ecological functions.

3.3. Summary of Proposed Activities

It is acknowledged that the construction and operation of a school have potential adverse ecological effects. The redevelopment of the subject site would likely require demolition and construction activities involving land disturbance and minor vegetation clearance and associated noise and vibrations. The operational activities of the school are envisioned to include traffic movements, noise generating activities. The development of the site has the potential to improve ecological values overall.

4. Ecological Impact Assessment

The current ecological values of the site have been described based on in-field observations in conjunction with a review of the available literature and databases as set out in Section 2 of this report. The likely activities have been described and set out in Section 3. This section utilises the findings of Sections 2 and 3 to provide an assessment of the overall level of ecological effects based on the EIANZ guidelines, set out in Appendix 2.

As part of this assessment, it is important to highlight to the reader that this EclA has been prepared to support The Ministry for the NoR to enable the construction and operation of a new school. Should the Ministry be successful, the provisions of the National Environmental Standard for Freshwater 2020 (NES:FW), the regional provisions of the AUP and the requirements of the Wildlife Act (1953) will still apply. Further details on these relevant matters have been provided below.

4.1. The Wildlife Act 1953

The Wildlife Act (1953) absolutely protects all native lizards, bats, and birds (unless listed as in Schedule 5). Consequently, a permit under the Wildlife Act would be required for any (potential) harm to these species.

4.2. Relevant Planning Provisions

The existing regional provisions of the AUP that would apply to the likely activities that would be undertaken in the construction and operation of a school would remain in effect. Should any resource consent be required for any of the activities identified, then Auckland Council would have the ability, through the usual resource consenting process, to place conditions on the consent to mitigate any identified effects.

Given the values identified in this report it is not considered that any specific conditions are required on the designation in relation to vegetation clearance.

For land disturbance, standard E11.6.2(2) would require that industry best practice erosion and sediment controls (Auckland Council Guideline Document GD2016/005) are in place to address the effects from potential sediment discharges to the receiving environment.

4.2.1. The Flat Bush Sub-Precinct C

The site is located within the AUP Flat Bush Sub-Precinct C¹ which is designated as a stormwater management and conservation area. Within the sub-precinct, there are specific directives pertaining to the enhancement of the gullies and waterways in the area requiring riparian planting and allowing native bush to regenerate. More detail on the riparian margin is covered by Rule 5.5 of the sub-precinct, which will remain in effect:

Rule 5.5 Riparian Margin:

1. *Riparian margins must be planted either side to a minimum width of 10m measured from the bank of the stream. This rule does not apply to road crossings over streams.*

¹<https://unitaryplan.aucklandcouncil.govt.nz/Images/Auckland%20Unitary%20Plan%20Operative/Chapter%20I%20Precincts/7.%20SH%20A/Flat%20Bush%20sub%20precinct%20C.pdf>

2. *Any planting required will be implemented in accordance with a council approved landscape plan and must use eco-sourced native vegetation, be consistent with local biodiversity and planted at a density of 10,000 plants per hectare.*
3. *Riparian margins must be offered to council for vesting.*
4. *For the avoidance of doubt, planting required by Rule 11.5.5.1 cannot be utilised as part of any environmental compensation requirements associated with works and/or structures in a stream.*

4.3. Summary of Ecological Impacts

The current ecological values of the areas that would be impacted by the likely activities are summarised and assessed in Table 6 below. Table 6 provides an interpretation of effects, assuming ecologically threatened species are temporarily present on site, although the actual likelihood or their presence is low. Magnitude is determined by a combination of scale (temporal and spatial) of the effect and degree of change that will be caused in or to, the ecological component and is assessed here with the relevant planning provisions forming a baseline.

Table 6: Level of Effect of the proposed activities.

Ecological component	Ecological value	Magnitude of effect and reasoning relative to baseline conditions.	Level of effect
Terrestrial Vegetation	Low	Moderate – any vegetation clearance would cause shift away from the current baseline. Any vegetation to be cleared would likely be around the derelict house or otherwise grassland. Redevelopment landscaping could potentially increase native vegetation present, such that actual overall level of effect could be negligible.	Very Low
Bats	High	Low – it is unlikely that bats are present in the proposed works area or utilise the works area transiently for roosting or foraging due to the disjunct nature of the vegetation. The effect of the proposed works is unlikely to be discernible for bats given the low potential to be present within the works area.	Low
Herpetofauna	High	Low – The likely presence of at-risk declining species and the vegetation/habitat removal required would result in loss or harm to of individuals without appropriate herpetofauna management. Any changes would be subject to the provisions of the Wildlife Act, therefore it can be taken that appropriate lizard salvage will take place.	Low
Avifauna	Low	Moderate – Construction effects will be temporary, the species utilising the works area are tolerant of noise and vibration associated with urban areas, and there are alternative nearby areas of vegetation available. Therefore, the magnitude of effect is considered to be Low. At a species level, any disturbance would likely be to common species and be subject to the provisions of the Wildlife Act.	Very Low
Freshwater Habitat	Moderate	Negligible - The development of the site will need to comply with WSUD principles, employ best practice erosion and sediment control measures, and manage the hydrological and water quality effects of stormwater and wastewater discharges; such that any changes to the freshwater values is likely to be negligible compared to the current baseline. The development of the site provides an opportunity to enhance the riparian margin under the requirements of the Flat Bush Sub-Precinct-CC, such that actual ecological effects could be a net-gain.	Very Low

The current site vegetation consists primarily of pasture grassland and an area of mixed exotic vegetation. The current ecological value of the subject site vegetation has been assessed as low. The magnitude of any effect from any vegetation clearance has been assessed as **Low**, commensurate with the likely future vegetation removal. There is potential for redevelopment landscaping to include native vegetation and increase the proportion of native vegetation present, such that the actual overall level of effect could be negligible.

No suitable native bat roosting sites were identified within the subject site and the site provides limited feeding opportunities, so it is considered unlikely that native bats are present on more than an infrequent transient basis. The clearance of site vegetation and construction of a school is limited to the fragmented derelict house garden with the more established/moderately continuous, vegetation in the riparian zone to remain. Therefore, the magnitude of impact is negligible, and considered to produce a **Low** level of effect on native bats.

The highest potential level of effect within the scope of the assessment undertaken relates to herpetofauna, where the level of effect is described as a conservative **High without mitigation**. This assessment assumes the highest possible impact, that the site supports populations of threatened native lizard fauna and that suitable lizard habitat is cleared. The Wildlife Act 1953 would require that any such vegetation clearance would require lizard search and salvage be performed, to relocate any lizards present within the subject site. As such it is considered that the level of effect would be **reduced to Low** and that no conditions need to be placed on the designation to address this potential effect.

Effects on avifauna have been considered as **Low** with the removal of some nesting and foraging habitat around the derelict house required which will have a low magnitude of impact. Enhancement of the riparian margin could increase the habitat values for avifauna near the unnamed stream.

There is a risk of uncontrolled sediment discharge to the receiving environment during all land disturbance activities. GD05 provides guidance on reducing the potential for erosion to occur and measures to minimise sediment discharged offsite and reduce the magnitude of impact on the freshwater habitat. The overall level of effect on freshwater habitat is **Very Low** on the assumption that GD05 for erosion and sediment control is implemented to mitigate/reduce potential sediment discharges associated with earthworks.

Redevelopment of the site provides the opportunity to bring the site's stormwater management approach in-line with current industry best practices (WSUD). Agricultural runoff will also be reduced with the change in land use. As such the overall changes to the stormwater discharge (which are addressed under regional consent) are expected to be **Negligible** compared to the current baseline.

It is considered that if best practice stormwater management guidelines are implemented, then the impacts of these activities on site water quality and freshwater values will not be discernible, and the level of effect has been assessed as **Very Low**.

Overall, the level of effect on the site's ecological values from the proposed activities has been assessed as **Low – Very Low** (Table 6); EIANZ provides a description of Low-level effects: potentially noticeable but that will not cause any significant adverse impacts.

5. Summary and Recommendations

It is acknowledged that the construction and operation of a school has the potential to have adverse ecological effects. The magnitude of these effects is considered to be **Moderate** to **Negligible** using the Ecological Impact Assessment guidelines (Appendix 2). Considering both the ecological values and the magnitude of impacts, the overall level of effect ranges from **Low** to **Very Low**. Ecological Impact Assessment guidelines describe Low to Very Low-level effects as “not normally of concern”. Best practice design, construction and operational care should be exercised to minimise adverse effects.

Farming activities have cleared much of the site’s original vegetation, the current land cover present is typical and consistent with the past and current agricultural use of the site. The largest extents of vegetation are pasture grasslands (72%) and a smaller area around the derelict house of mixed mature exotic and native trees/garden (13%) and the riparian margin (15%) comprised of regenerating native species, exotic specimen trees and pest plants. Exotic pest plants such as woolly nightshade, brush wattle, gorse, and agapanthus are also common.

Although the site has been heavily modified, it retains some ecological value. Ecological features of note include the streams riparian margin and the identified herpetofauna habitat. Vegetation, where present contributes to ecosystem services such as habitat provision for native fauna adapted to moving across agricultural landscapes. The paucity of quality habitat values and areas is reflected in the native species of birds considered likely to utilise the site. Avifauna species present are consistent with those that can comfortably travel distances over open fields between forested patches, or make use of fields, farmland, and established riparian margin as habitat. Suitable lizard habitat is present. Lizard populations are likely limited to Copper Skinks based on records in the surrounding area. The mature eucalyptus trees in the riparian margin provide some low-quality bat roosting habitat, although vegetated, the riparian margins provide only limited connectivity given the surrounding urban land use and lack of connectivity. The noise and light associated with the urbanisation of the catchment further reduces the habitat quality for long-tailed bats therefore, their presence onsite is considered unlikely. Given the fish habitat present around the margin of the site, the site is expected to support native freshwater fish populations. Whilst onsite fauna observations were limited to common species, the use of this area by threatened species such as long-tailed bats, whilst considered unlikely, cannot categorically be ruled out.

The redevelopment of the subject site would likely require demolition and construction activities involving land disturbance, vegetation clearance and associated dust, noise, vibrations, and traffic movements. Given the values associated with the vegetation identified in this report the level of effect for any vegetation clearance would be **Low**. The provisions of the Wildlife Act will also remain in effect to ensure that any loss of habitat for native avifauna, lizards and bats is appropriately managed. For all land disturbance activities, such as building demolition and construction, there is the potential for sediment to be discharged from the site to the receiving environment; this would be addressed through the existing requirement for industry best practice erosion and sediment controls during any land disturbance. The redevelopment of the site for educational purposes could result in increase in impervious coverage. The potential effects of changes to the quantity and quality of stormwater discharged (which is addressed under regional consent) from the site would be addressed through the stormwater management approach developed for the site. The potential effects of changes to site hydrology from stormwater discharges disposal will be addressed by implementing Auckland Council best practice guidelines (GD01 and GD05).

Overall, the effects of the proposed activities are considered here as **Low - Very Low**. As such it is not considered necessary to recommend any ecology-specific conditions to address any of the identified effects.

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Appendix 1 Site Map




121 MURPHYS ROAD - SITE OVERVIEW



Z:\Projects\Government\Ministry for Education\PO3761 Murphys Road School\GIS\ArcPro\Murphys Road Layout_Site Map

Eagle Technology, Land Information New Zealand, GEBCO, Community maps contributors

-  NZFFD Database
-  Significant Ecological Areas
-  Exotic Grassland
-  Derelict House
-  Riparian Margin

- Stream Class**
-  Permanent
 -  Intermittent
 -  Ephemeral

MINISTRY FOR EDUCATION
Project **121 MURPHY RD**



Project no. P03761
Date 23 Aug 2022
Drawn RA
Approved CU

This plan may contain errors or omissions or may not have the spatial accuracy required for some purposes. There may be other information relating to the area shown on this map which is unknown to Morphem Environmental Ltd. This map may contain Crown copyright data. Please consult Morphem Environmental Ltd if you have any queries.

Appendix 2 EIANZ Guidelines

Table 7: Assigning value to species, vegetation and habitats (Summarised from EIANZ, 2018).

Value	Species Values	Vegetation/Habitat Values
Very High	Nationally threatened species found in the (Zone of Influence) ZOI ² either permanently or seasonally	Area rates High for 3 or four attributes (Representativeness, Rarity/distinctiveness, Diversity and pattern, Ecological context). Likely to be national important and recognised as such
High	Species listed as At Risk – Declining, found in the ZOI either permanently or seasonally	Area rates High for 2 of the attributes, Moderate and Low for the remainder, or Area rates High for 1 assessment matters, Moderate for the remainder Likely to be regionally important and recognised as such
Moderate	Species listed as any other category of At Risk, found in the ZOI either permanently or seasonally, or Locally (ED) uncommon or distinctive species	Area rates High for 1 assessment matters, Moderate and Low for the remainder, or Area rates Moderate for 2 or more of the attributes, Low or Very Low for the remainder Likely to be important at the level of the Ecological District
Low	Nationally and locally common indigenous species	Area rates Low or Very Low for majority of assessment matters and Moderate for 1 Limited ecological value other than as for habitat for tolerant native species
Negligible	Exotic species, including pest species having recreational value	Area rates Very Low for 3 matters and Moderate, Low or Very Low for remainder

² The Zone of Influence (ZOI) refers to all land, water bodies and receiving environments that could be potentially impacted by the project.

Table 8: Criteria for describing magnitude of effect (summarised from EIANZ, 2018)

Magnitude	Description
Very High	Total loss of or major alteration to key features of the baseline condition causing a fundamental change or complete loss of the character, composition, or attributes of the site.
High	Major loss or major alteration to key features of the baseline condition causing a fundamental change of the character, composition, or attributes of the site.
Moderate	Loss or alteration of one or more key features of the baseline condition causing a partial change to the character, composition, or attributes of the site.
Low	Minor shift away from baseline conditions. Change may be discernible, but underlying character, composition, or attributes of the site will be similar to pre-development.
Negligible	Very slight change from existing baseline condition. Change barely distinguishable.

Table 9: Criteria for describing level of effects (from EIANZ, 2018)

Ecological Value	Very High	High	Moderate	Low	Negligible
Magnitude					
Very High	Very High	Very High	High	Moderate	Low
High	Very High	Very High	Moderate	Low	Very Low
Moderate	High	High	Moderate	Low	Very Low
Low	Moderate	Low	Low	Very Low	Very Low
Negligible	Low	Very Low	Very Low	Very Low	Very Low
Positive	Net gain	Net gain	Net gain	Net gain	Net gain

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