Boffa Miskell

Welhom Developments - Masterton

Plan Change Ecological Assessment
Prepared for Welhom Developments Ltd

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CONTENTS

1.0 Introduction

Welhom Developments Limited ('Welhom') are proposing the development of an area of land adjacent to Cashmere Oaks Drive, Masterton. The land is currently zoned Rural (Primary Production) and Welhom is seeking to rezone the site to a residential zoning, including provision for a retirement village. Boffa Miskell Ltd. has been engaged by Welhom to assess the potential ecological impact of land use change relating to the proposed re-zoning and subsequent development. The purpose of this report is to provide an ecological assessment that will be submitted as part of Welhom's plan change application.

This assessment of ecological values and effects incorporates the findings of a preliminary ecological survey of the site undertaken by Boffa Miskell in Spring 2021. The site assessment incorporates the terrestrial vegetation and any (relevant) adjacent features.

1.1 Scope

The following is the scope of this assessment of ecological effects for the proposed land use change via a plan change:

- Assess the ecological values present on the site
- Assess the existing ecological values in relation to relevant regional and district plan provisions
- Undertake an ecological impact assessment for the potential land use change (relevant to the plan change)

2.0 Methods

The assessment follows the Environment Institute of Australia and New Zealand's (EIANZ) Ecological Impact Assessment (EIA) methodological process (2018). To assess the potential effects of the proposed land use change on the site information was gathered from relevant published and unpublished sources through a desktop investigation and field surveys as described below.

2.1 Desktop investigation

The desktop investigation included a review of scientific literature (published and unpublished), the Combined Wairarapa District Plan (WCDP) (2011) and Greater Wellington Regional Council's Proposed Natural Resources Plan (PNRP) and Regional Policy Statement (RPS) (Greater Wellington Regional Council, 2013, 2019) and associated site information provided by Welhom Developments Ltd. Ecological databases were also accessed, including: the New Zealand Plant Conservation Network (accessed 2021/2022, 2019) and "Retrolens" historic aerial photography.

2.2 Field investigations

A field survey was conducted on 23rd September 2021 by a suitably qualified Boffa Miskell ecologist. The site was visited and the relevant ecological features described (Figure 1). We note that the site survey focused on the two fields of pasture. The strip of land east of the two fields within the lot designation (also encompassed by the site in blue - Figure 1) was observed from the pasture area. We are confident that given the clear similarities between the pasture fields and the strip of land containing the existing house the following assessment covers the lot in its entirety.

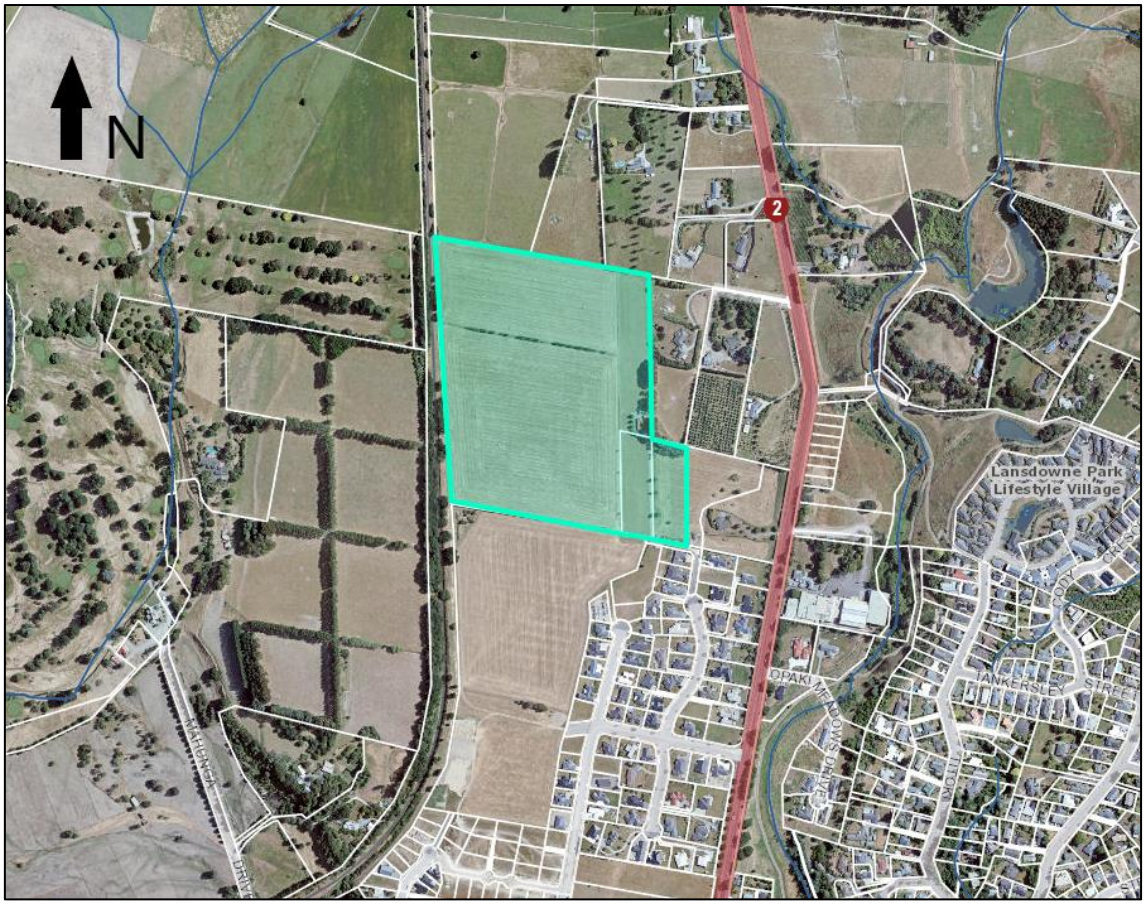

Figure 1. Aerial photograph of the site (blue), (supplied Welhom Ltd.)

2.3 Assessing ecological significance

2.3.1 Terrestrial environment

A requirement of an ecological impact assessment is to carry out an assessment of significance under Section 6(c) of the Resource Management Act (RMA) (1991). The aquatic and terrestrial values on site have been assessed against the criteria in Policy 23 of the RPS (2013). Table 1 outlines those criteria. Under Policy 23, indigenous aquatic biota and habitats of indigenous biota are considered significant if they meet one or more of the criteria.

Table 1. Policy 23 of the RPS – Identifying indigenous ecosystems and habitats with significant indigenous biodiversity values – district and regional plans (Greater Wellington Regional Council, 2013).

Significance Criterion:	**Explanation:**
Representativeness	The ecosystems or habitats that are typical and characteristic examples of the full range of the original or current natural diversity of ecosystems and habitat types in a district or in the region, and: Are no longer commonplace (less than about 30% remaining); or Are poorly represented in existing protected areas (less than about 20% legally protected).
Rarity	The ecosystem or habitat has biological or physical features that are scarce or threatened in a local, regional, or national context. This can include individual species, rare and distinctive biological communities and physical features that are unusual or rare.
Diversity	The ecosystem or habitat has a natural diversity of ecological units, ecosystems, species, and physical features within an area.
Ecological context of an area	The ecosystem or habitat: Enhances connectivity or otherwise buffers representative, rare, or diverse indigenous ecosystems and habitats; or Provides seasonal or core habitat for protected or threatened indigenous species.
Tangata whenua values	The ecosystem or habitat contains characteristics of special spiritual, historical or cultural significance to tangata whenua, identified in accordance with tikanga Māori.

Note that we have not assessed tangata whenua values as they are not an ecological criterion.

2.4 Evaluation of the Level of Ecological Vales and Effects

The methodology for assessing the level of the ecological effects associated with the proposed land use change and development follows that outlined in the EIANZ Ecological Impact Assessment Guidelines (Roper-Lindsay et al., 2018). This is considered to represent the best practice approach in New Zealand. In summary this evaluation method requires:

- An assessment of the values of the communities, habitats and ecosystems (Table 2 and Table 3) and species (Table 4 and Table 5);
- An assessment of the magnitude of the effects on these values based on criteria listed in Table 5;
- The application of a matrix (
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- Table 6) which determines the level of effect based on the ecological value of the site or species assessed.

2.4.1 Assigning Value

For terrestrial communities, shown below in Table 2, we have applied the four criteria (representativeness, rarity/distinctiveness, diversity and pattern, ecological context) as described in the EIANZ guidelines. Each of the five criteria are subjectively scored “High”, “Moderate”, “Low” or “Nil”, based on the assessor’s experience and knowledge of the site. The four scores are then combined to provide a single site score which ranges from “Very High” to “Negligible” (Table 3).

Table 2. Attributes to consider when assigning ecological value or importance to a terrestrial site (adapted from Roper Lindsay et al., 2018

Matter:	Attributes to be Considered:
Representativeness	Typical structure and composition Indigenous species dominate Expected species and tiers are present Species assemblages that are typical of the habitat Indigenous species that occur in most of the guilds expected for the habitat type
Rarity/Distinctiveness	Naturally uncommon, or induced scarcity Amount of habitat or vegetation remaining Distinctive ecological features Supporting nationally or locally threatened, At Risk or uncommon species National distribution limits Endemism
Diversity and Pattern	Level of natural diversity Diversity metrics Complexity of community Biogeographical considerations – pattern, complexity, size, shape
Ecological Context	Site integrity, form, functioning and resilience Size shape and buffering Condition and sensitivity to change Local environmental conditions and influences, site history and development Intactness, health and resilience of populations and communities Contribution to ecological networks, linkages, pathways Role in ecosystem functioning – high level proxies

Table 3. Scoring for sites or areas combining values for the four matters in Table 2 (Roper-Lindsay et al., 2018).

Matter:	Attributes to be Considered:
Very High	Area rates High for 3 or all of the four assessment matters listed in Table 2. Likely to be nationally important and recognised as such.
High	Area rates High for 2 of the assessment matters, Moderate and Low for the remainder, or Area rates High for 1 of the assessment maters, Moderate for the remainder. Likely to be regionally important and recognised as such.
Moderate	Area rates High for one matter, Moderate and Low for the remainder, or Area rates Moderate for 2 or more assessment matters Low or Very Low for the remainder Likely to be important at the level of the Ecological District.
Low	Area rates Low or Very Low for majority of assessment matters and Moderate for one. Limited ecological value other than as local habitat for tolerant native species.
Negligible	Area rates Very Low for 3 matters and Moderate, Low or Very Low for remainder.

New Zealand biota have been assessed by the Department of Conservation (DOC) for their threat from extinction against a standard set of criteria, which is described in Townsend et al.

(2008), and its associated list published for each taxonomic group[1]. This provides a consistent basis to assign ecological value to individual species (Table 4).

Table 4. Factors to consider when assigning value to terrestrial and freshwater species (Roper-Lindsay et al., 2018).

Ecological Value:	Determining Factors:
Very High	Nationally Threatened species found in the ZOI (zone of influence) either permanently or seasonally.
High	Species listed as At Risk – Declining, found in the ZOI, either permanently or seasonally.
Moderate	Locally (Ecological District) uncommon or distinctive species; or Species listed as any other category of At Risk, found in the ZOI either permanently or seasonally.
Low	Nationally and locally common indigenous species.
Negligible	Exotic species, including pests, species having recreational value.

2.4.2 Assessing the Magnitude of Impact

Once the value of the ecosystem components has been determined, the magnitude of the impact is assessed. Magnitude of Effect is a measure of the extent or scale of the impact, its duration, and the degree of change that it will cause. A typical scale of magnitude ranges from very high to negligible as outlined in Table 5. It is critical to the assessment to establish the base scale for the assessment, which is typically at a catchment scale up to the ecological district scale. The scale is typically dependant on the feature types being assessed and their contextual function in the landscape.

Table 5. Criteria for describing magnitude of effect (Roper-Lindsay et al., 2018).

Magnitude of Effect:	Description:
Very High	Total loss of, or very major alteration to, key elements/ features of the baseline conditions, such that the post development character, composition and/or attributes will be fundamentally changed and may be lost from the site altogether; AND/OR loss of a very high proportion of the known population or range of the element/feature.
High	Major loss or major alteration to key elements/ features of the baseline conditions such that post development character, composition and/or attributes will be fundamentally changed; AND/OR loss of a high proportion of the known population or range of the element/feature.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character, composition and/or attributes of the existing baseline will be partially changed; AND/OR loss of a moderate proportion of the known population or range of the element/feature.
Low	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character, composition and/or attributes of existing baseline condition will be similar to predevelopment circumstances/patterns; AND/OR having a minor effect on the known population or range of the element/feature.
Negligible	Very slight change from baseline condition. Change barely distinguishable, approximating to the “no change” situation; AND/OR having negligible effect on the known population or range of the element/feature.

[1] Classifications as listed in: (Dunn et al., 2018) for freshwater fish; (Robertson et al., 2017) for birds; (de Lange et al., 2018) for vascular plants; (Hitchmough et al., 2016) for lizards; and (Grainger et al., 2018) for freshwater invertebrates.

2.4.3 Assessing Level of Impact

The overall level of the effect is determined by applying the following matrix, outlined in Table 6, which combines the ecological value (Table 2 and Table 3) and the magnitude of the effect (Table 5).

Table 6. Criteria for describing the level of effect (Roper-Lindsay et al., 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

3.0 Results – Existing Environment

This section combines the results of the desktop and field investigations to describe the existing environment within the site. Given the absence of any aquatic elements at the site and the site's general homogeneity of composition (pasture fields), the assessment focuses on the terrestrial vegetation and omits aquatic (including natural wetland) and terrestrial fauna assessments.

3.1 Site context

The site (**Error! Reference source not found.**) is located off State Highway 2, approximately 2km north of Masterton's town centre. The land is currently zoned under the WCDP (2011) as 'Rural – Primary Production'. The site covers approximately 14.6 ha.

The site falls within the Wairarapa Plains Ecological District (36.01), which is characterised by low lying Pleistocene and Holocene alluvial terraces and plains. Soils in the district include stony and shallow drought soils, siltier subsoils and are friable with even moisture. Vegetation communities through the ecological district include a few remaining areas of indigenous forest, large areas of scrub and extensive wetlands around Lake Wairarapa (McEwen, 1987).

According to the Threatened Environments Classification (Landcare Research Ltd, 2012), any indigenous vegetation communities on this landform fall within an environment which has less than 10% cover remaining, and is therefore considered to be threatened.

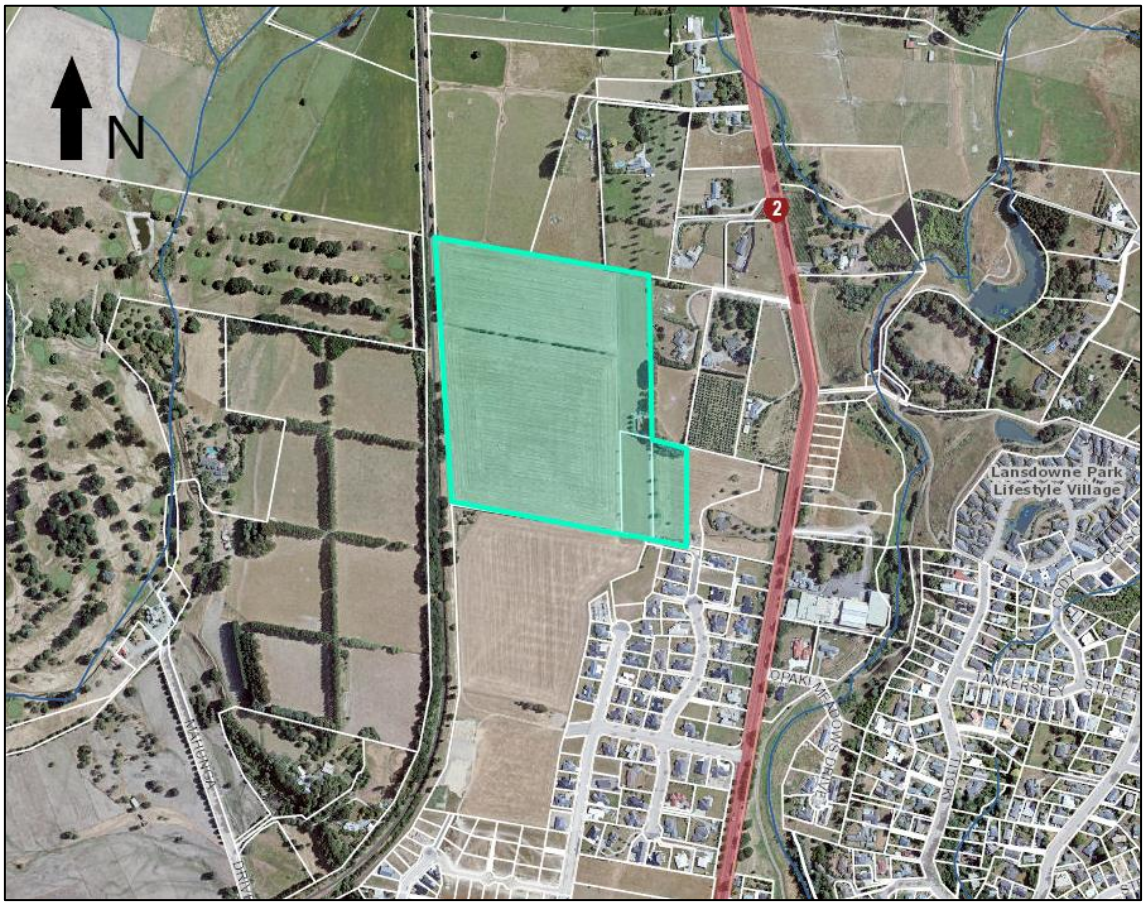

Figure 2. Aerial photograph of the site shaded in blue (supplied Welhom Ltd.)

There are no parts of the site that are identified in the WCDP as being in or adjacent to Significant Natural Areas, Outstanding Natural Features or Notable Trees.

Historical imagery (Figure 3**Error! Reference source not found.**) from 1961 shows the site without any distinctive ecological features and appears to be pasture fields for agriculture purposes. Historic imagery as seen in Figure 3 also suggests that there were no aquatic features at the site in 1961, with the site situated (as it currently is) between the railway tracks and road/state highway. The site survey confirmed the absence of aquatic features and evidence of only agricultural practices.

Figure 3. Aerial image from 1961 show partial site extent in red (source: Retrolense)

3.2 Site assessment

The survey found that the area comprised of well-drained fields (north and south of dividing middle boundary) dominated by exotic pasture species apart from tree lines at the north, east, south, west and middle boundaries.

3.2.1 Pasture fields

The fields were found to be generally flat with limited undulations (<0.5 meters) and no depressions. There was no standing water in any part of the field. There were no channelised drains present. The fields were dominated by the exotic pasture species Perennial Ryegrass and Yorkshire Fog, interspersed with exotic weed species associated to pasture including dock, clover, plantain and chickweed (Figure 4 and 5). The Client reported that the pasture is used for sheep grazing and hay cropping, both activities were evident at the site.

Figure 4: Collection of site photos showing pasture and tree lines at the site

3.2.2 Planted treelines

The following summarises the general composition of the planted boundary treelines on site. The treelines are comprised of planted exotic species with no understory owing to grazing pressures. Figure 6 shows the locations and extent of the treelines as described below. Site photos of the treelines can be found in Appendix 1: Site photos. The northern treeline is comprised of planted monoculture treeline (approximately 50 meters in length) consisting of *Pittosporum tenuifolium* (Kōhūhū) in the age range of 10-15 years old. The eastern treeline consists of highly dispersed planted exotic poplar species which are in the age range of 5-10 years old. The southern treeline is a planted windbreak of mixed vegetation dominated by exotic species in the age range of 15-20 years. The western treeline which runs adjacent to the railways tracks is comprised of mature oak species with approximately half of the treeline covered in English Ivy into the upper branches. The middle treeline is comprised of a mixture of exotic species for amenity purposes 10-15 years old.

3.2.3 Freshwater

There is no aquatic habitat and no natural wetlands on site.

Figure 6: Aerial image showing treelines (red)

4.0 Ecological Significance

4.1 Terrestrial environment

In the absence of any indigenous habitat recorded the obvious conclusion is there is no significant habitat or vegetation at the site. Nevertheless, we test the features recorded against the criteria of Policy 23 of the RPS (Table 7). Table 7 addresses the significance criteria of Policy 23 in relation to the site as a whole.

Table 7. Summary of the sites' values assessed against the significance criteria of Policy 23 of the RPS

Significance Criterion	Explanation
Representativeness	The site is representative of terrestrial vegetation in a constructed farmland landscape within the ecological district not an indigenous community. It can not therefore trigger the representative criteria.

Significance Criterion	Explanation
Rarity	The community present at the site does not trigger the Rarity criteria as the site does not contain biological or physical feature that are scarce or threatened at either a local, regional or national context.
Diversity	The community on site does not trigger the Diversity criteria as the species present have been introduced and are activity managed (for farming proposes) and thus do not hold natural diversity within the site area.
Ecological context of an area	Given the highly modified pasture and highly fracture treelines, the site does not enhance connectivity or buffering, or offer rare or diverse indigenous systems, nor provide core habitat for protect/threated indigenous species. As such the site does not trigger the ecological context criterion.

5.0 Ecological Value

The following section assess and determines the ecological values of the survey site area using the criteria outlined in the EIANZ guidelines (Roper-Lindsay et al., 2018). Following the EIANZ guidelines described in Section 2.4, an ecological value has been assigned to the site as a whole, given its small scale and limited ecological heterogeneity.

5.1 Pasture fields and treelines

The overall ecological value of the site presented in table form below. As Table 8 shows the overall ecological value of the site is assessed to be **Negligible**.

Table 8. Summary of overall ecological value for the site

Criteria	Assessment	Value
Representativeness	The site holds the typical structure of a planted and manged pasture field with surrounds planted amenity/windbreak treelines. The pasture and treelines are dominated by exotic species providing limited habitat for indigenous species given the non-native nature and high level of fragmentation of treelines within the surrounding area.	Negligible
Rarity and distinctiveness	The site holds no naturally uncommon or scarce vegetation, has no distinctive ecological features and covers a relatively small area within the ecological district.	Negligible
Diversity and pattern	There is a very low level of natural diversity owing to the planted and managed nature of the pasture and planted nature of the treelines. Given the presence of grazing animals, natural understory have been suppressed and limited. The community remains uncomplex in its composition. The habitat provides limited opportunity for indigenous terrestrial species.	Negligible
Ecological context	The site has been part of ongoing farm practices since at least 1961, most likely longer. The site is subject to land management and grazing pressures for the purpose of farming activities. The site has a limited	Negligible

Criteria	Assessment	Value
	ability to interact with wider ecological network given its fragment treelines and lack of aquatic elements. The site maintains its current composition through a level of management.	
OVERALL ECOLOGICAL VALUE		**Negligible**

6.0 Assessment of Ecological Effects

There are no real potential effects to any valued ecology onsite.

Nevertheless, for completeness we will formally address the process of assessing ecological effects below. The scale of effects have been assessed at the ecological district scale.

As there is no aquatic element at the site or adjacent to the site, there is no risk of adverse effect to aquatic systems on site or adjacent to the site as a result of earthworks, stormwater discharge, changes to impermeable surfaces and stormwater discharge, release of water borne contaminants or any other operational aspect of the proposed development.

6.1 Terrestrial environment

As part of a change in zoning from 'Rural-Primary Production' to 'Residential', the current site is then proposed to be developed into residential housing. This involves the site as it stands changing from pasture to residential dwellings and associated infrastructure. The primary direct impact to the site would be the clearance of the existing vegetation features.

6.1.1 Vegetation clearance

In determining the Magnitude of Effect the EIANZ methodology outlined in Section 2 was followed. While there will be a near total vegetation clearance at the site, the surrounds and indeed the ecological district at large has an abundance of pasture and pasture communities. The local change (the sub-catchment) in the amount of pasture available is very small, thus while the site is fully cleared, the amount of pasture habitat between SH2 and the railway line (as a local resource quantity) is around 105 hectares. The loss of approximately 15 hectares results in a local change of 14.2%. We consider this to be a Low Magnitude of Effect (a minor alteration).

Following the EIANZ methodology a site with Negligible Ecological Value facing a Low Magnitude of Effect results in a Very Low Overall Level of Effect.

6.2 Summary of ecological effects

Vegetation clearance at the site resulting from a land use change would result in a **Very Low Overall Level of Ecological Effect**. There is no requirement to avoid any effect, or remedy or mitigate any ecological effect.

7.0 Conclusion

Overall, the proposed plan change from ‘Rural – Primary Production’ to ‘Residential’ and potential associated land use changes in relation to the development proposed by Welhom are **not expected to have an adverse ecological effect either in the short or long-term**. The Negligible Ecological Value of the site results in a **Very Low Overall Level of Ecological Effec**t, and such low levels of effect do not typically warrant avoidance, remedy or mitigation.

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Appendix 1: Site photos

Figure 7: Northern treeline

Figure 8: One of the interspersed poplars from the eastern treeline

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Figure 9: Southern treeline

Figure 10: Western treeline

Figure 11: Middle treeline

About Boffa Miskell

Boffa Miskell is a leading New Zealand professional services consultancy with offices in Auckland, Hamilton, Tauranga, Wellington, Christchurch, Dunedin and Queenstown. We work with a wide range of local and international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, cultural heritage, graphics and mapping. Over the past four decades we have built a reputation for professionalism, innovation and excellence. During this time, we have been associated with a significant number of projects that have shaped New Zealand's environment.