



Fox Heliport

Assessment of Ecological Effects

October 2017





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7th November 2017

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Contents

1	Introduction.....	1
2	Scope.....	1
3	Existing Environment and Proposed Activities.....	2
	3.1 Proposed Activity	2
	3.2 Existing Environment	2
4	Methodology	4
	4.1 Vegetation	4
	4.2 Birds	4
	4.3 Lizards.....	4
5	Ecological Values	4
	5.1 Vegetation	4
	5.2 Birdlife.....	7
	5.3 Lizards.....	8
6	Assessment of Ecological Values and Significance.....	9
	6.1 Threat Classification at Species Level for Plants, Birds and Lizards	9
	6.2 Assessment of the Significance of the Vegetation and Habitat	10
7	Assessment of the Level of Effects	12
	7.1 Effects and Magnitude of Vegetation Removal.....	12
	7.2 Effects on Birdlife.....	14
8	Level of Effects Summary	15
9	Summary of Avoidance, Remediation and Mitigation Recommendations	16
10	Conclusions.....	16
11	References	16

1 Introduction

Opus International Consultants (Opus) was engaged by Westland District Properties Ltd to undertake an Assessment of Ecological Effects for a proposed heliport development approximately 1km south-west of Fox Glacier township. Westland District Properties Ltd seeks to develop an area on Department of Conservation (DOC) land closer to the Fox Glacier, thereby reducing the noise disturbance experienced by residents and visitors to the township. The area proposed for development is largely forested conservation land, some of which is currently under a grazing concession, plus a small area presently being used as a green waste dump. The 1.6ha Project Area would need to be cleared of all vegetation, and the site developed to include an operational area, a parking/turnaround area and a small shelter provided for visitors awaiting a flight. The ticketing/booking office would remain in the Fox Glacier township.

2 Scope

This assessment included an on-site investigation of values, a desk-top exercise compiling additional relevant ecological information and an assessment of the anticipated effects from the proposed vegetation clearance from approximately 1.6ha of Department of Conservation (DOC) land for the purpose of development of a heliport by Westland District Properties Ltd. It is proposed that the land within the Project Area would be leased from DOC and developed for the proposed activity for a defined period.

The scope of this report includes:

- A description of the vegetation and flora found within the Project Area; including special attention given to species listed as At Risk or otherwise Threatened, as well as species at their distributional limit.
- A compilation of all bird species noted whilst on site and a literature search to determine whether species additional to those seen may be present.
- A walk-through survey with attention given to the presence of any snail species or lizards observed or the suitability of habitat for this fauna.
- An outline of the nature and significance of potential adverse effects from the removal of vegetation and an assessment of the anticipated effects of this work.
- Consideration of measures to avoid, remedy and/or mitigate the anticipated adverse effects.
- Proposed options for compensation/offsetting the loss of indigenous vegetation and habitat from the Conservation Estate.

A site visit was undertaken by Richard Nichol (Opus Senior Ecologist) on 22nd September 2017.

3 Existing Environment and Proposed Activities

3.1 Proposed Activity

Westland District Properties Ltd proposes to establish a heliport on a 1.6ha site on DOC Conservation land, thereby moving noise and flight activity away from the Fox Glacier township, whilst still retaining ready access for visitors wishing to take a glacier flight. The heliport will be accessed from SH 6 via an upgraded existing access road, while the site itself will be cleared of existing vegetation to establish an operational area, and a vehicle parking/turning area.

3.2 Existing Environment

The site is presently dominated by a low stature podocarp-hardwood forest on a gently-sloping terrace at about 180m above sea level on the true right bank of the Fox River (approximately 1km south-west of Fox Glacier township). A short gravel road, less than 100m in length, enters the site from SH6, opposite the Fox Glacier access road (Fig. 1). The Project Area occupies land administered by DOC. Westland National Park borders the proposed Operational and Park/turn areas to the north-east and a concession licence, including a licence to graze, forms the other boundaries, with the exception of approximately 130m along the northern boundary where it abuts private freehold land¹. A fence-line runs in a south-east to north-west orientation through the middle of the Project Area, thereby bisecting the Project Area into two halves (Fig.1).

¹ Owned by R. Sullivan (Lot 9 DP1433)

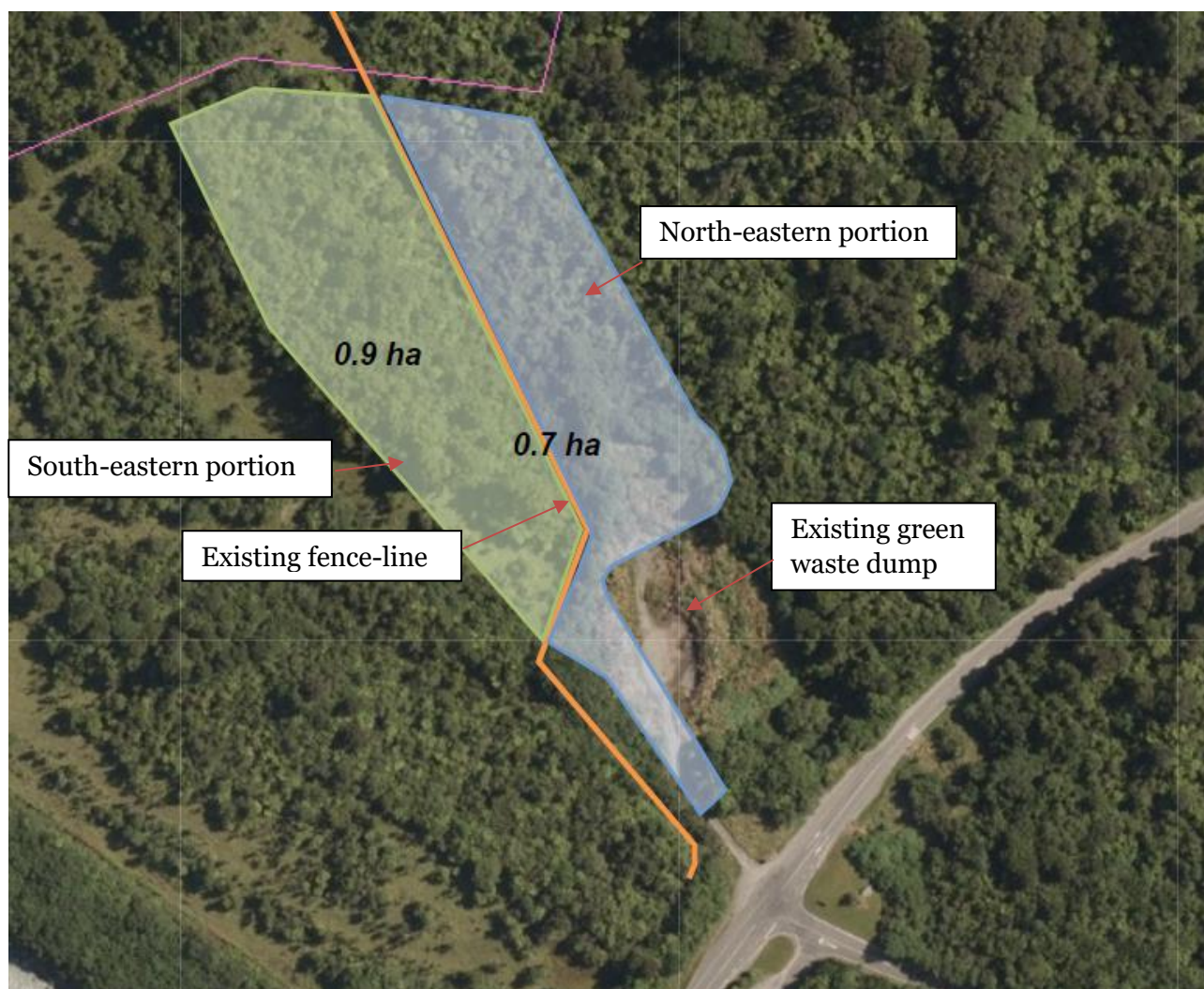


Figure 1. Project Area showing regenerating forest (south-east portion) and more mature forest (north-eastern portion) straddling the existing fence-line; green waste dump, and overall context with Fox River at bottom left (flowing right to left), SH6 and Glacier access road opposite entrance road to site.

The Project Area lies within Glaciers Ecological District (McEwen, 1987), but close to the boundary of the Waiho Ecological District. Glaciers Ecological District is typified by high rainfall, metamorphic geology and landforms characterised by the influence of glaciation. The vegetation is characterised by mixed podocarp-broadleaf forest on lower elevation areas of the district, in the absence of beech forest.

The Project Area has been designated as Category 6 under the Threatened Environment Classification (<http://ourenvironment.scinfo.org.nz/home>). Category 6 is defined as environments where indigenous biodiversity is less reduced and better protected, this includes environments in which indigenous vegetation cover has been less reduced (greater than 30% remains) and a relatively greater proportion of the land area (greater than 20%) is protected for the purpose of maintaining its natural heritage.

4 Methodology

4.1 Vegetation

A field investigation was undertaken on 22nd September 2017 to establish the vegetation types present in the Project Area. A walk-through survey of the site, including examination of the wider area beyond the immediate Project Area boundary, was carried out in order to gain an understanding of context. All vegetation noted on site was identified to species level, a descriptive vegetation type name was assigned to distinctive associations, and tier height and stature of dominant species was noted. The degree of naturalness, and physical, biotic and human impacts or influences were noted where these were considered relevant.

4.2 Birds

Birds observed during the site visit were recorded as point observations and the general abundance of species was noted. Past records were examined from several resources to determine the bird species likely to be using the Project Area, including New Zealand Birds Online (<http://www.nzbirdsonline.org.nz>) and Birding New Zealand (<http://www.birdingnz.net/>).

4.3 Lizards

A desktop assessment was undertaken to establish the lizard species potentially using the Project Area. The desktop assessment included searching the Atlas of the Amphibians and Reptiles of New Zealand (DOC, 2017, Lyall and Whitaker, 2004) to identify lizard species that have, or may be found within the Project Area. The potential for lizard habitat within the Project Area was then assessed based on observations made during the site visit.

5 Ecological Values

5.1 Vegetation

The site is presently dominated by a low stature podocarp-hardwood forest on a gently-sloping terrace on the true right bank of the Fox River (approximately 1km south-west of Fox Glacier township). Low intensity grazing currently occurs throughout the south-western portion of the forested area, while no stock appear to have encroached further to the adjacent north-eastern area. There is a contrast in forest condition as a result of the different management regimes, with the forest to the south-west being lower stature (up to about 6 or 7m) and showing less structural complexity while the forest to the north-east is denser, and has a greater canopy height. The latter is contiguous with the National Park and includes some larger specimens, i.e. kamahi (*Weinmannia racemosa*) up to 80cm in diameter.

The south-west forest area, comprising about 0.9ha in area is dominated by a mix of needle-leaved totara (*Podocarpus acutifolius*), hard tree fern (*Dicksonia squarrosa*), and a mix of smaller tree and shrub species. Shrubs include *Coprosma robusta* and *C. propinqua*, *Pennantia corymbosa*, wineberry (*Aristotelia serrata*), pate (*Schefflera digitata*) and marbleleaf (*Carpodetus serratus*).

*Coprosma wallii*² was seen growing alongside the access road to the site and at least one shrub was noted from along the grass strip between the south-western and north-eastern areas.

Kamaha, needle-leaved totara and pigeonwood (*Hedycarya arboreus*) emerge above the shrubby understory and form an uneven low canopy to about 6 or 8m, with occasional specimens reaching perhaps 10-12m in height. Groundcover species include bush rice grass (*Microlaena avenacea*), shield fern (*Polystichum vestitum*), *Blechnum chambersii*, *B. fluviatile*, hen and chicken fern (*Asplenium bulbiferum*), *Carex uncinata* and *Nertera villosa*. Filmy ferns were abundant in places, both on the ground (such as *Hymenophyllum demissum*, *H. dilatatum* and *H. flexuosum*) and as epiphytes (such as *H. ferruginea* and *H. flabellatum*) (Fig 2). Supplejack (*Ripogonium scandens*) vines sprawl throughout the understorey, while the native climbing clematis (*Clematis paniculata*) sprawls over trees and shrubs, especially along the bush edge. Epiphytes include the orchids *Earina autumnalis*, *E. mucronata* and *Winika cunninghamii*, also *Asplenium flaciddum*, kidney fern (*Cardiomanes reniforme*), *Microsorium pustulatum*, *Tmesipteris oblongatus* and the climbing ratas *Metrosideros diffusa* and *Metrosideros perforata*. Kahikatea (*Dacrycarpus dacrydioides*) was seen in relatively few places in the south-western portion.



Figure 2. Forest within the south-western portion, showing abundant filmy ferns and mosses on the forest floor and as epiphytes, as well as small stature seral vegetation.

The north-eastern portion, comprises about 0.7ha and is dominated by taller stature forest, about 12m in height. This forest comprises some of the oldest forest in the Lower Cook River Management Unit. This association typically includes a greater proportion of mahoe (*Melicytus ramiflorus*) and supplejack than the area to the south-west, and vegetative litter occurs on the ground rather than mosses and filmy ferns. Soft tree fern (*Cyathea smithii*) were seen in this portion, while needle-leaved totara was less conspicuous. Fuchsia (*Fuchsia excorticata*) and pate, by contrast, were more abundant than in the south-western portion and reached a diameter of up to 30cm. The differences in forest condition reflect historical management as well as their current exposure to grazing by domestic stock. The greater stature on the north-western side, therefore,

² Listed as At Risk : Declining.

likely reflects the amount of time elapsed since this area was fenced off, while the abundance of palatable species such as *Astelia nervosa*, hen and chicken fern, pate and fuchsia reflect these species being able to establish and thrive (Fig 3).



Figure 3. Forest within the north-western portion showing denser vegetation, including supplejack vines and abundant hen and chicken fern on the forest floor and soft tree ferns (*Cyathea smithii*) in the understory.

Palatable broadleaf seedlings were noted in the south-western portion also but these failed to grow more than a few centimetres before being removed by browsing while less palatable species such as needle-leaved totara are more prevalent in that same area.

Much of the area of land designated as a proposed area for parking/turning is contiguous with the taller less modified north-east area, but this appears to have been cleared or modified by dumping of spoil and vegetation in recent times (Fig. 4). A mix of native species and exotic species, including invasive weeds, have established on uneven ground adjacent to an area that is currently receiving green waste. Rank grasses such as Yorkshire fog (*Holcus lanatus*) dominate this area with low growing vegetation. Cabbage tree (*Cordyline australis*), korimiko (*Hebe salicifolia*) are present as well as weeds including tar weed (*Madia sativa*), montbretia (*Crocsmia x cocrosmifolia*), hypericum (*Hypericum androsaemum*), foxglove (*Digitalis purpurea*), water fern (*Histiopteris incisa*), velvety nightshade (*Solanum chenopodioides*), buttercup (*Ranunculus*

repens), tutu (*Coriaria arborescens*), Magellan fuchsia (*Fuchsia magellanica*), scotch thistle (*Cirsium vulgare*) hybrid flax (*Phormium* hybrid), and blackberry (*Rubus fruticosus*).



Figure 4. Green waste dump area occupying the proposed car-park/turnaround area. Koromiko and montbretia are visible amongst Yorkshire fog. The area receiving most recent waste is in the middle distance.

Of interest was a small sapling of silver beech (*Lophozonia menziesii*) within the green waste dump, but just beyond the area of proposed development. This is outside the natural distributional range for this species and is therefore considered to have come from dumped garden waste.

5.2 Birdlife

The Project Area vegetation is likely to provide cover, nesting, and feeding areas for a range of native and non-native species. A relatively small number of commonly encountered forest species were observed during the field visit; comprising seven native species and four introduced species. None of the native species present is currently listed as Threatened or At Risk (according to Robertson *et al*, 2016). Nor did any particular species stand out as being noticeably abundant, though bellbird were the most conspicuous, perhaps attracted by fuchsia flowering in the area. Food resources provided by this habitat include fruit, nectar, and foliage bearing vegetation and a mixture of invertebrate species.

Table 1: Bird species recorded within the Project Area.

Scientific name	Common name	Conservation status (Robertson et al. 2016)
<i>Anthornis melanura</i>	Bellbird	Not Threatened
<i>Rhipidura fuliginosa</i>	Fantail	Not Threatened
<i>Gerygone igata</i>	Grey Warbler	Not Threatened
<i>Hemiphaga novaeseelandiae</i>	Kereru	Not Threatened
<i>Zosterops lateralis</i>	Silver Eye	Not Threatened
<i>Petroica macrocephala</i>	Tomtit	Not Threatened
<i>Prothemadera novaeseelandiae</i>	Tui	Not Threatened
<i>Fringilla coelebs</i>	Chaffinch	Introduced and Naturalised
<i>Carduelis flammea</i>	Common Redpoll	Introduced and Naturalised
<i>Turdus philomelos</i>	Song thrush	Introduced and Naturalised
<i>Turdus merula</i>	Eurasian Blackbird	Introduced and Naturalised

In addition to the species noted on site, consideration is given to bird species listed as Threatened or At Risk, and which *may* utilise the area, as follows:

- Kea (*Nestor notabilis*, Nationally Endangered) may occasionally be present in the Project Area, though they are more frequently seen in the mid to upper valleys rather than the lowland forest.
- Kaka (*Nestor meridionalis*, Nationally Vulnerable) records within the Westland beech gap are sparse (see <http://www.nzbirdsonline.org.nz>) and the Project Area is unlikely to be utilised by kaka except perhaps only very occasionally. The lack of large trees in the area would make it unsuitable nesting habitat though some feeding opportunities do exist.
- The Project Area is beyond the known range of any brown kiwi (either tokoeka (*Apteryx australis*) or Okarito brown (*Apteryx rowi*)).
- Long-tailed cuckoo (*Eudynamis taitensis*, Naturally Uncommon) may utilise the forest area on an infrequent basis. The preferred host for this species is brown creeper (*Mohoua novaeseelandiae*) and mohua (*Mohoua ochrocephala*). Mohua are absent from this area, preferring beech forest habitat. Brown creeper may be present in low to moderate numbers within the Project Area but were not observed during the site visit. While it is possible that the long-tailed cuckoo breeds in the area, it is more likely that birds are moving through the area to where there is a greater concentration of host birds.

5.3 Lizards

Native lizards are protected under the Wildlife Act 1953 and their habitats are protected under the Resource Management Act 1991. The desktop assessment (DOC, 2017, Lyall and Whitaker, 2004) considered three lizard species that have some, but very low to negligible, likelihood of occurrence within the Project Area (Table 6). The West Coast Green gecko (*Naultinus tuberculatus*) occurs only as far south as North Westland and is most unlikely to occur within the Project Area. The Forest Gecko (*Mokopirirakau granulatus*) is noted as a sparse and cryptic species occurring only

as far south as about Okarito Lagoon while the Okarito Forest gecko (*Mokopirirakau* 'Okarito') is known from only two specimens, one from Okarito and the other from Paringa.

Table 2: Lizard species potentially present within the Project Area.

Scientific name	Common name	Likelihood of occurrence	Conservation status (Hitchmough et al. 2015)
<i>Naultinus tuberculatus</i>	West Coast Green Gecko	Very low	Threatened – Nationally Vulnerable
<i>Mokopirirakau granulatus</i>	Forest gecko	Very low	At Risk – Declining
<i>Mokopirirakau</i> 'Okarito'	Okarito Forest Gecko	Negligible	Data deficient

Overall, the likelihood of there being any lizards within the Project Area, and therefore impacts on herpetofauna from vegetation removal, are considered negligible.

6 Assessment of Ecological Values and Significance

The assessment of the ecological values and their significance was based on:

- Threat classifications for birds (Robertson et al. 2016), reptiles (Hitchmough et al. 2015) and plants (de Lange et al. 2013) to aid in assessing ecological value at species level.
- Section 4 of the Westland District Plan (WDP), in regards to assessing significance of vegetation and habitat.

6.1 Threat Classification at Species Level for Plants, Birds and Lizards

Current threat classification lists include the following Threatened or At Risk species occurring within the Project Area:

- *Coprosma wallii*: At Risk – Declining (de Lange et al. 2013). This species is assigned a 'high value rating' based on EIANZ 2015 criteria.³

In addition, there is the possibility that the following bird species utilise the Project Area for a part of the year or occasionally:

- Long-tailed cuckoo. A migratory species for which there is a possibility that it may breed, laying its eggs in the nest of its host, the brown creeper. More likely to be an occasional visitor. Assigned a value rating of moderate (after EIANZ, 2015).
- Kea and kaka. Very unlikely to nest in the Project Area. May occasionally feed or visit the area.

Lizards are not considered likely to inhabit the area. Native *Powelliphanta* snails are not considered to be extant within the area. *Powelliphanta rossiana* 'Fox' occurs on subalpine areas but not within lowland forest.

³ A high value rating is assigned to a species that is listed as Nationally 'At Risk'

6.2 Assessment of the Significance of the Vegetation and Habitat

Table 7 presents an assessment of the ecological values of the Project Area against the criteria outlined in Identifying Significant Indigenous Vegetation and Habitats Westland District.⁴

Table 3: Ecological values assessed against the criteria outlined in Identifying Significant Indigenous Vegetation and Habitats Westland District.

Criteria	Project Area Assessment
<p>(i) Intactness</p> <p>The area is unmodified by human activity, comprises a predominantly intact indigenous system and is not affected in a major way by weed or pest species; AND</p> <p>Size</p> <p>The area of indigenous vegetation has a predominant cover of 5 hectares or more.</p>	<p>Significant: Medium rating over the two criteria</p> <p>The area was “felled and grassed in 1925”⁵, though the existing vegetation shows a high degree of naturalness over the north-east portion (part of which may have escaped this clearance) and a moderate degree of naturalness over the south-west portion. No major weeds or pests were detected in the larger forested areas, though several medium and low priority weeds⁶ i.e. buttercup, montbretia, <i>Fuchsia magellanica</i>, foxglove and Scotch thistle present in the proposed parking/turnaround area associated with the green waste dump.</p> <p>The area is approximately 1.6 ha in size and less than half the 5ha threshold.</p>
<p>(ii) Representativeness</p> <p>The area is one of the best examples of an association of species which is typical of its ecological district.</p>	<p>Significant: Medium rating</p> <p>The Project Area is a typical and representative mixed hardwood-podocarp forest in an advanced stage of regeneration on a river terrace. It is not known whether it is one of the best examples of this association in the (Waiho) district but rather, is likely to be at least comparable to similar forest in the lower Fox catchment.</p>
<p>(iii) Distinctiveness</p> <p>The area has indigenous species or an association of indigenous species which is unusual or rare in the ecological district, or endemic or reaches a distribution limit in the ecological district. The area may be distinctive because of the influences of factors such as altitude, water table, soil type or geothermal activity.</p>	<p>Significant: Medium rating</p> <p>The Project Area includes at least a few shrubs of the ‘At Risk – Declining’ species <i>Coprosma wallii</i>.</p> <p><i>Olearia lineata</i> (At Risk – Declining) has been recorded nearby (NZPCN records) but was not noted within the Project Area.</p> <p>The habitat is not considered suitable for <i>Carmichaelia juncea</i> (Threatened – Nationally Vulnerable) which occurs in more open shrubland alongside the Fox River.</p>

⁴ From Westland District Plan

⁵ Survey plan of the area (SO2474) from 1925

⁶ According to the Department of Conservation CMS 2010-2020

Criteria	Project Area Assessment
<p>(iv) Protected Status</p> <p>The area has been set aside by New Zealand Statute or Covenant for protection and preservation or is a recognised wilderness area.</p>	<p>Significant: Medium rating</p> <p>The Project Area is entirely within Conservation land administered by DOC. Approximately half of the land (the south-western portion) has been managed for low intensity grazing under a DOC concession.</p>
<p>(v) Connectivity</p> <p>The area is connected to one or more other significant areas in a way, (including through ecological processes) which makes a major contribution to the overall value or natural functioning of those areas.</p>	<p>Significant: Medium rating</p> <p>The Project Area is connected to the adjacent National Park along its north-eastern boundary, and the conservation area on the south-eastern boundary. The vegetation clearance will result in a loss of physical connectivity with the mature forest and seral shrubland in these respective areas. The clearance of vegetation will also result in a new edge along the National Park and Lower Cook River Ecological Management Unit (Fig.5). The disturbance brought about by aircraft activity will have an adverse effect on birdlife in the vicinity.</p>
<p>(vi) Threat</p> <p>The area supports an indigenous species or community of species which is threatened within the ecological district or threatened nationally.</p>	<p>Significant: Medium-High rating</p> <p>The Project Area does provide habitat for <i>Coprosma wallii</i>, (though these are growing on sites of past disturbance). In addition, <i>Carmichaelii juncea</i> occurs on the adjacent Fox River flats.</p>
<p>(vii) Migratory Species:</p> <p>An intertidal area or area of forest, wetland, lake, estuary or other natural habitat that is important for migratory species or for breeding, feeding or other vulnerable stages of indigenous species.</p>	<p>May be significant: Medium rating</p> <p>The Project Area does not support any freshwater migratory species since no streams traverse the area.</p> <p>The area may provide temporary habitat for the migratory long-tailed cuckoo (<i>Eudynamys taitensis</i>, At Risk – Naturally Uncommon).</p>
<p>(viii) Scientific or Other Cultural Value:</p> <p>The area is a type, locality or other scientific reference area, is listed as a geopreservation site, or has a distinctive amenity value (e.g. it contributes to a distinctive and outstanding landscape of the district, has other significant cultural value or is of international importance).</p>	<p>No particular scientific or other cultural value known.</p>

The Project Area triggers six, and possibly seven, of the criteria for significance, as outlined in the WDP. The ratings for these are generally medium but a medium-high rating was assigned for the '(vi) Threat' category, due to the presence of the At Risk species *Coprosma wallii*, and due to the anticipated removal of some of the oldest vegetation within the Lower Cook River Ecological Management Unit. Management here includes both pest control and weed control.



Figure 5 showing conservation land (yellow = National Park and green = stewardship area). The overlaid brown = the Lower Cook River Management Unit (below SH6) and the Fox River Management Unit on the upstream side of the highway.

A medium rating was assigned for intactness, representativeness, distinctiveness, protected status and connectivity. Based on this, the Ecological Value of the vegetation and habitat for the Project Area is considered high since it ‘rates high for at least one of the assessment matters and moderate for the majority of others’ (EIANZ, 2015).

7 Assessment of the Level of Effects

7.1 Effects and Magnitude of Vegetation Removal

Table 8 gives guidance to assessing the level of effect from the proposed development. The Project Area includes two main vegetation types or areas plus low stature shrubland along the tracks and forest edges. While some of the oldest forest in the Lower Cook Management Unit does occur within the Project Area, this forest is not considered as ‘old-growth’ forest since relatively few trees of great stature or age exist and the overall complexity of the forest is not as great as might be expected within an unmodified forest association. The Ecological Value of the vegetation in the Project Area is however ranked as high, since it contains *Coprosma wallii* and this species is assigned high value at the species level (refer Table 7).

The magnitude of the effect of the proposal, based on the EIANZ (2015) assessment methodology, is moderate given that the clearance will be a small proportion of vegetation relative to remaining available habitat. Therefore, using Table 8 to combine ecological value and magnitude, the loss of 1.6 ha of largely forested habitat on the north bank of the Fox River is predicted to have a high level of effect. This level of effect will continue for as long as DOC grants the concession activity as a heliport and the duration of the heliport at the site.

A high scoring “warrants avoidance and/or extremely high intensity mitigation and remediation actions. Biodiversity offsetting should be considered where these adverse effects cannot be avoided” (EIANZ, 2015).

Table 8: Criteria for describing the level of effects (EIANZ, 2015), showing highlighted level of effect (high) for a combination of high ecological value with a moderate magnitude rating.

Ecological Value →	Very High	High	Moderate	Low
Magnitude ↓				
Very High	Very High	Very High	High	Moderate
High	Very High	Very High	Moderate	Low
Moderate	Very High	High	Low	Very Low
Low	Moderate	Low	Low	Very Low
Negligible	Low	Very Low	Very Low	Very Low

7.1.1 Proposed avoidance and mitigation for loss of vegetation

It is recommended that, to reduce the amount of intact vegetation to be cleared by the currently proposal, the green waste dump be relocated and this area be utilised for the heliport. This would provide approximately 0.25ha of the 1.6ha that is currently required for the Project Area. Furthermore, and consistent with this argument, it is considered inappropriate to have a green waste dump immediately adjacent to the National Park, especially when weed control is such a pressing need for DOC.

In developing the green waste site as part of the heliport development, invasive weed removal/control could be undertaken and the threat of weed invasion to the adjacent National Park and the Lower Cook Management Units would thereby be removed or significantly reduced.

It is also recommended that by extending the footprint south-westward, to utilise areas already cleared of lower stature, partially modified vegetation, this would reduce the amount of tall stature vegetation to be cleared along the National Park boundary. Buffering of the National Park boundaries is important and should not be compromised where practicable. The 10m buffer strip proposed could be widened a further 15m (to 25m total) if the green waste area was made available for inclusion within the design layout.

It is recommended that all machinery be cleaned down prior to arrival on site and that any gravel or other fill material come from a site that is known to be free from invasive weeds.

The loss of several shrubs of *Coprosma wallii*, an At Risk species with limited distribution, will need to be mitigated for. This shrub is easily propagated from seed (hence its growing on disturbed road and track margins) and it is recommended that a programme of propagation for this species be a condition of granting any consents. It is recommended that a *Coprosma wallii* management plan be prepared, and that DOC should oversee a project where eco-sourced seed would be used to raise seedlings and that plants raised would be established where deemed appropriate by DOC. The costs for this would be covered by the applicant.

Other mitigation/compensation for forest loss may be considered necessary by DOC and might include preparation of a weed management plan for areas covered by the Project Area, or covenanting and/or purchasing forested land elsewhere for protection. It is considered that with the adoption of the recommended mitigation/management, the level of effect may be reduced to low, primarily through the propagation and replanting of *Coprosma wallii*, with no resultant net loss of individuals of this species, as well as undertaking the recommended reduction of the vegetation clearance.

7.2 Effects on Birdlife

The effects on birdlife from the project proposal are twofold, including habitat loss from preparation of the site and disturbance from heliport activities (i.e. noise, visual and rotor-wash disturbance) once the site is operational.

7.2.1 Effect on birds due to habitat loss

The clearance of 1.6ha of regenerating forest will result in the loss of habitat for a range of forest birds. While most species are relatively common and none of the species observed during the time on site are listed as Threatened, consideration has been given to the likely use of the forest habitat by Threatened or At Risk species.

Kea are frequently heard in the vicinity of the glaciers and are attracted to sites at which tourists encourage them for photo opportunities. Kea are a species that favour montane, subalpine and alpine areas. The habitat within the Project Area does not fit this description and kea are therefore unlikely to utilise the area except perhaps on rare occasions.

While kaka are a forest-dwelling species, they tend to be less common in central Westland than further south and prefer older growth forests where there are better nesting opportunities. The forest within the Project Area contains few trees that would be suitable for providing nesting opportunities due to their inadequate stature.

As mentioned earlier, long-tailed cuckoo may be occasional visitors to the proposed heliport site and are the only migratory animal species likely to utilise the Project Area. The loss of a small proportion of their available habitat would result from the proposed heliport development. The presence of a species At Risk – Naturally Uncommon would normally be assigned a moderate-high rating for species (EIANZ, 2015). A moderate rating for species was assigned in this instance after consideration of the small area affected, relative to the available habitat overall, and an assumption that this species and its host occur within the Project Area, at least occasionally.

7.2.2 The effects on birdlife from aircraft

The effects of increased noise, visual and rotor-wash disturbance associated with the development of a heliport is likely to have a significant effect on birdlife remaining in areas of forest and riverine habitat immediately adjacent to the heliport once this is operating. Helicopters will come in to the heliport from one direction, descending over the National Park as they do so, with their initial ascent being over freehold land as they take off again.

An assessment of noise effects (Malcolm Hunt Associates, 2017) undertaken as part of the consent application for this project discussed only the anticipated noise effects on domestic animals (which it considered would not be adversely affected). While bird life will acclimatise to some degree of

disturbance it is difficult to determine the overall impact of this increased activity without having greater certainty around flight information, including potential cumulative effects as a result of neighbouring flight activity⁷. Aircraft noise disrupts birdsong and may impact on courtship and other bird behaviours as a result. It is anticipated that indigenous birdlife would be displaced as a result of increased aircraft activity.

It was not within the scope of this study to assess the effects of the aircraft activity, beyond the immediate area of the proposed heliport.

7.2.3 Proposed avoidance and mitigation for loss of bird habitat

The avoidance of forest clearance, by shifting the heliport footprint slightly, to utilise the green waste area, would significantly reduce the loss of avifaunal habitat available for feeding, roosting and breeding. This offers the most feasible option for reducing the level of effects from moderate to low.

It is proposed that an adaptive management plan be prepared for birds within the vicinity of the heliport. This plan would include a pre-construction nesting survey and appropriate contingencies in the event of nesting birds being found within the Project Area.

It is recommended that Westland District Properties Ltd would make a contribution to avifaunal conservation work in the area and that this be for the duration of the concession. Options might include contributing to kea or rowi (Okarito brown kiwi) conservation.

The overall effects rating would be reduced to low by undertaking appropriate compensation and mitigation.

8 Level of Effects Summary

The level of effects of the heliport development proposal are shown in Table 9, including the anticipated level of effects after adoption of recommended avoidance, mitigation and compensation. The level of effects would be reduced, for both the vegetation/habitat and bird species to low effects rating after the adoption of recommended mitigation.

Table 4: Overall levels of ecological effects of the Project

Vegetation/Habitat/Species	Ecological Value	Magnitude of Effect	Level of Effect	Level of Effect after Mitigation
Vegetation/Habitat	High	Moderate	High	Low
Bird Species	Moderate	Low	Moderate	Low

⁷ Totally Tourism Ltd have a granted WDC resource consent for a heliport on a neighbouring property.

9 Summary of Avoidance, Remediation and Mitigation Recommendations

The following are recommendations to better avoid, remedy or mitigate the potential effects of the development of a new heliport approximately 1km south-west of Fox Glacier township.

- The green waste area could be utilised thereby reducing the required indigenous vegetation clearance as currently proposed, including allowance of a greater buffer strip between the proposed heliport and the adjacent National Park.
- Other boundaries should be reassessed to further reduce the clearance of vegetation of greatest conservation value.
- The above measures would remediate the current threat posed to adjacent conservation land from low to medium priority invasive weeds.
- All machinery should be cleaned down prior to arrival on site.
- All gravel or other fill should come from a site that is known to be free from invasive weeds.
- A *Coprosma wallii* management plan should be prepared and with the focus on propagation to be overseen by DOC.
- Consider other compensation/mitigation as deemed necessary by DOC.
- An adaptive bird management plan should be prepared prior to construction of the heliport.
- The applicant should contribute to avifaunal conservation work as deemed appropriate by DOC.

10 Conclusions

The proposed heliport development will have a high level of effect on vegetation/habitat as a result of vegetation clearance on DOC land. The level of effect of vegetation clearance on indigenous birdlife is considered to be moderate, due to the likely presence of Long-tailed cuckoo (At Risk – Naturally Uncommon), though the effect on other common species is unlikely to be significant. Avoidance, mitigation and compensation measures are recommended which Opus considers are required for the application to be supported from an ecological perspective and these would reduce the overall level of effects to a low rating.

11 References

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