A **JOBS FOR NATURE** PROJECT

BIODIVERSITY ACTION ON THE GROUND

Ecological Survey
Dolamore Park, Gore

JOBS FOR NATURE | MAHI MŌ TE TAIAO

environment SOUTHLAND REGIONAL COUNCIL
Te Taiao Tonga

Ecological Survey
Dolamore Park, Gore

HKNI55

May 2025

Prepared by Wildlands Consultants Ltd for:

Environment Southland

Private Bag 90116

Invercargill 9840

Contract Report No. 6003lf

© Environment Southland

The copyright of this document is owned by Environment Southland. Unauthorised use of the information in this report or reproduction of the material contained herein, in any way, shape or form is prohibited. Requests for any use of the material contained in this report should be directed to Environment Southland - email service@es.govt.nz or phone 0800 768 845.

CONTENTS

1. Introduction 1

2. Site Overview 1
   2.1 General site description 1
   2.2 Landowner aspirations 1

3. Landscape Context and Ecological Setting 1
   3.1 Catchments 1
   3.2 Ecological district 1
   3.3 Adjacent/nearby protected areas 2

4. Existing Ecological Information 2

5. Methods 4
   5.1 Site visit and field assessment 4
   5.2 Significance assessment 4
   5.3 Condition and character assessment 5

6. Vegetation and Habitats 5
   6.1 Overview 5
   6.2 Vegetation and habitat type descriptions 6
      6.2.1 Terrestrial 6
      6.2.2 Wetland and Freshwater Habitats 10

7. Flora 11
   7.1 Overview 11
   7.2 Threatened, At Risk, and notable species 11
   7.3 Ecological weeds 11

8. Fauna 12
   8.1 Avifauna 12
   8.2 Lizards 12
   8.3 Bats 12
   8.4 Aquatic 13
   8.5 Pest animal presence 13

9. Ecological Values 13
   9.1 Ecological patterns/sequences/environmental gradients 13
   9.2 Size and shape 13
   9.3 Buffering/fencing/connectivity 14
   9.4 Threatened habitat types 14
   9.5 Indigenous fauna habitat 14
   9.6 Key ecological values 14
   9.7 Significance assessments 15

10. Condition Assessment 15

11. Management Issues and Threats 15
11.1 Fencing (existing and required) 15
11.2 Domestic stock effects 16
11.3 Pest plants 16
11.4 Pest animals 17
11.5 Summary of key management requirements 17

12. Conclusion/Summary 17

13. Acknowledgments 17

14. References 18
Appendix 1: Site details 22
Appendix 2: List of vascular plant species found on the property 23
Appendix 3: Site photographs 27
Appendix 4: Ecological significance assessment against Southland RPS criteria 31
Appendix 5: Ecological significance assessment against Southland NPS-IB criteria 33
Appendix 5: Ecological significance assessment against NPS-IB criteria xx

Reviewed and approved for release by:

_____

Justyna Giejsztowt
Senior Ecologist – Technical Specialist
Wildland Consultants Ltd

1. Introduction

Thank you for allowing us to undertake this ecological survey. The purpose of these surveys is to provide you, as a landowner, with factual information about plant species, animals, landforms, soils and climate on your land. This information pulls together to tell the story of the native biodiversity on your property in the form of an ecological report. We hope this report will assist you to make informed decisions about the management, preservation and protection of biodiversity on your property.

Ecological surveys make up one of the projects within the Jobs for Nature funded Biodiversity Action on the Ground programme run by Environment Southland. Following your ecological survey, you may want to undertake a management plan or apply for the Environmental Enhancement Fund through the same programme.

This report describes an assessment of vegetation covering one site on a property at Dolamore Park, which borders the Waimumu Stream, near Gore in Southland (Appendix 1).

2. Site Overview

2.1 General site description

Dolamore Park is a large recreational park near Gore containing areas of both exotic and indigenous forest and scrub with walking tracks, as well as a prominent arboretum treeland, picnic area and campground.

2.2 Landowner aspirations

Dolamore Park is the property of Gore District Council. Park manager Keith McRobie requested that this survey be undertaken in order to verify that the area meets the National Policy Statement for Indigenous Biodiversity (NPS-IB) criteria for a Significant Natural Area (SNA).

3. Landscape Context and Ecological Setting

3.1 Catchments

Dolamore Park lies within the catchment of the Mataura River.

3.2 Ecological district

Hokonui Ecological District extends from near Gore township in the east to the Ōreti River in the west, and incorporates the rolling Hokonui Hills which reach 757 metres above sea level. The climate is cool temperate, and humid to sub-humid, with rainfall of 800-1,200 millimetres per year (McEwen 1987). Geologically, the ecological district is part of the Southland Syncline of Mesozoic volcanic greywackes. On the rolling downlands in the east where there is moderate rainfall, soils are formed from deep to moderately deep loess that are moderately

leached. Some soils at higher altitudes are podzolised (McEwen 1987). Historically, the eastern parts of Hokonui Ecological District would have been mostly covered in podocarp-hardwood and podocarp forest, with red tussock (*Chionochloa rubra*) tussockland in the northern and western uplands. Today, high producing exotic grassland comprises approximately 45 per cent of the landcover, indigenous forest and scrub make up approximately one quarter of the landcover, and indigenous tall tussock grasslands comprises 16 per cent of the landcover (Landcover Database v2). Remaining forest in the east of the Hokonui Ecological District contains kahikatea (*Dacrycarpus dacrydioides*), mataī (*Prumnopitys taxifolia*), rimu (*Dacrydium cupressinum*), miro (*Pectinopitys ferruginea*), southern rātā (*Metrosideros umbellata*), tōtara (*Podocarpus totara*), and kāmahi (*Pterophylla racemosa*). There are also remnants of red tussock grassland, short tussock grassland, mixed scrub, mānuka (*Leptospermum scoparium*), and narrow-leaved snow tussock (*Chionochloa rigida*) grassland (McEwen 1987)

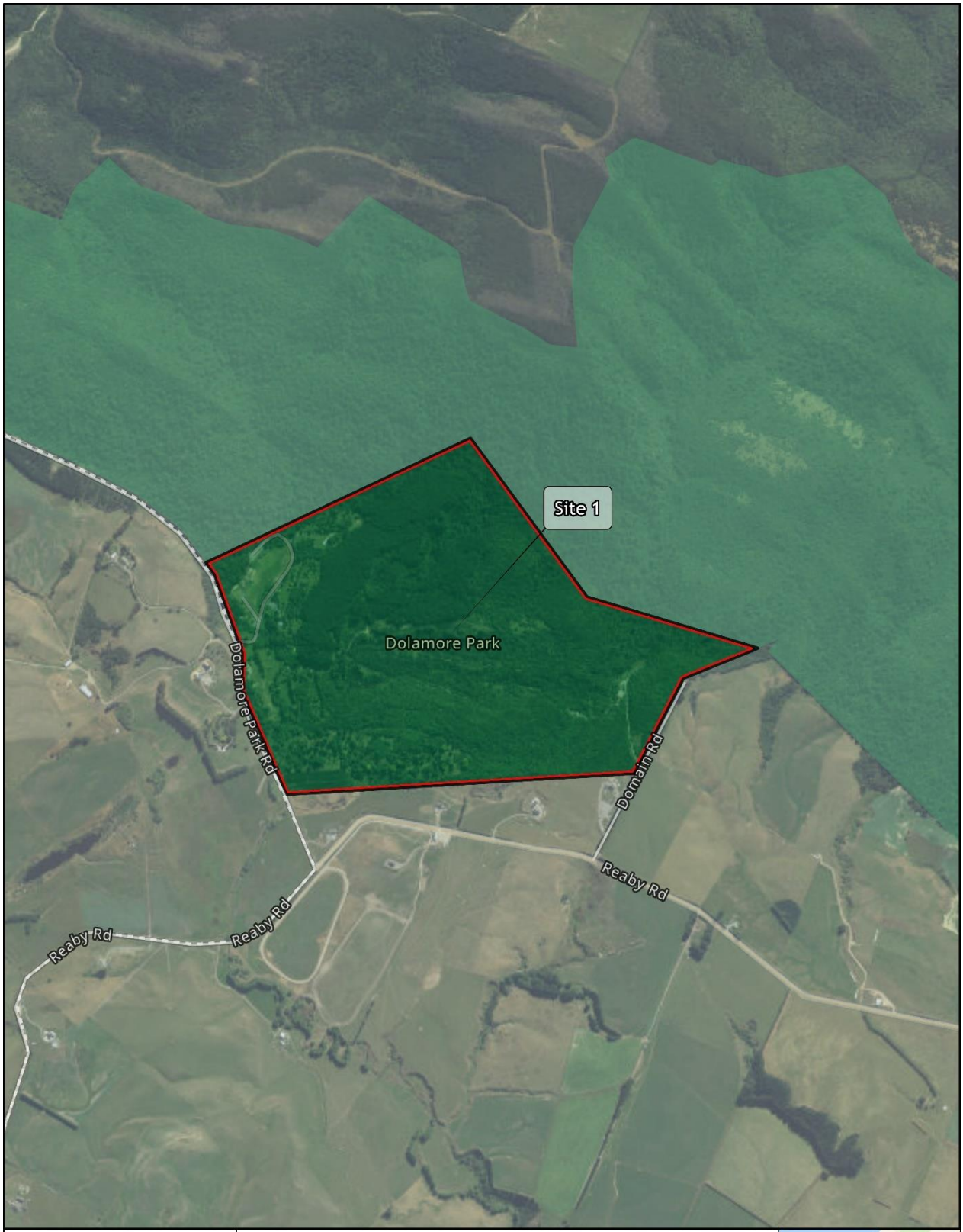
3.3 Adjacent/nearby protected areas

Dolamore Park is in eastern Southland close to the town of Gore, and is immediately contiguous with Croydon Bush Scenic Reserve (Figure 1). Other protected areas within ten kilometres include Mataura River Conservation Area, Otamita Stream Marginal Strip, Gore Cemetery, Gore Domain, Woolwich Street Recreation Reserve, Hamilton Park Recreation Reserve, Waikaka Stream Recreation Reserve, Gordon Terrace Recreation Reserve, Newman Park Recreation Reserve, and an assortment of small un-named recreation reserves, conservation reserves, and soil and river control reserves.

4. Existing Ecological Information

Extensive ecological information exists regarding Dolamore Park.

Dolamore Park is an important site of very high entomological (insect) value, as identified by historical work. It is notable for being the type locality for the indigenous aphid *Paradoxaphis aristoteliae* (Sunde, 1987), and being one of only two localities from which this aphid has been reported (Teulon *et al.*, 2003). As outlined by Teulon *et al.* (2003), *P. aristoteliae* appears to be a very rare species in Aotearoa New Zealand, and was only documented on four plants at Dolamore Park, and is classified as Threatened – Nationally Critical (Hitchmough *et al.*, 2007). Dolamore Park is also noted to have a highly genetically distinct population of the indigenous endemic aphid *Aphis healyi*, as noted by Podmore *et al.* (2018). Dolamore Park is also the type locality of the stonefly *Spaniocerca zwicki* (McLellan, 1987), a species now widely reported from the southern South Island (GBIF, 2024)). A paratype specimen (specimen used to describe the species which is not the main type specimen) of the indigenous endemic moth *Stigmella ilsea* (Donner and Wilkinson) was also collected from Dolamore Park. The undescribed weevil species *Catoptes "*cf. *robustus"* is also known from Dolamore Park (May, 1977).



© 2024 Wildlands
www.wildlands.co.nz, 0508 WILDNZ

N

Scale:	1:15,000
Date:	3/12/2024
Cartographer:	LW
Format:	A4P
Report:	6003lf
Ref:	11532
Client	Environment Southland
Project:	Southland_Workflow.aprx
Path:	E:\gis\Southland_HVA\Mapfiles\

Figure 1. Location of the site surveyed at Dolamore Park

0 500 1,000 m

Legend

Site area | Property | Protected Area

Contains data sourced from the LINZ Data Service licensed for reuse under CC BY 4.0

Ecological information around Dolamore Park's entomological values and diversity can be found at Donner and Wilkinson (1989), Hamilton and Morales (1992), Hitchmough *et al.* (2007), May (1977), McLellan (1987), Podmore *et al.* (2018), Sunde (1987), and Teulon *et al.* (2003). Further ecological Information for Dolamore Park and the immediately adjacent Croydon Bush can be found at Briggs (1966), Druce (2000), DSIR (n.d.), iNaturalist (2024), Jane and Donaghy (2008a; 2008b; 2008c), Rance (2000; 2004; 2007), Rance *et al.* (2000), Rebergen (n.d.), and Xyst Limited (2017). Xyst Limited (2017) mention, but no not cite, a 1978 DSIR report which they note provides an extensive ecological information of ecological information on Dolamore Park, which we have been unable to track down.

5. Methods

5.1 Site visit and field assessment

A walk-through survey of Dolamore Park was conducted on 12 November 2024 by two ecologists. All vascular plants observed during the site visit were recorded (Appendix 2), as were any incidental observations of fauna. Vegetation types were classified using the Atkinson system (Atkinson 1985) and ecosystem types were determined using the classification proposed by Singers and Rogers (2014). The abundances of any notable species, including species that are classed as Threatened or At Risk by de Lange *et al.* (2018), and plant species that are recognised as ecological weeds or pest plants in Southland, were assessed using the classes in Table 1.

Table 1: Categories of plant species abundance used in this report for notable flora, and ecological weeds and pest plants.

Abundance category	Abundance description
Abundant	Dominates a vegetation tier across most of the site
Frequent	Occurring widely across the site, but not dominant
Locally common	Common in particular habitats, but uncommon elsewhere
Occasional	Scattered occurrence across the site
Rare	Few individuals, not common anywhere within the site
Very rare	Only one individual found within site

5.2 Significance assessment

The ecological significance of vegetation and habitats was assessed based on ecological significance criteria in Appendix 1 of the National Policy Statement for Indigenous Biodiversity (NPS-IB; Ministry for the Environment 2023), and ecological significance criteria in the Southland Regional Policy Statement (Southland RPS; Environment Southland 2017). Assessments of specified highly mobile fauna habitat under the NPS-IB were beyond the scope of this report.

5.3 Condition and character assessment

The condition and character of each vegetation type were assigned a category using the criteria in Table 2. Condition scoring is based on canopy composition, expected recruitment, and invasion by exotic plant species, while character is assessed by the proportion of indigenous plant species in the canopy.

Table 2: Condition and character definitions used in this report

Category	Definition
Condition	
Intact	Indigenous canopy, expected recruitment of palatable indigenous plant species, no exotic plant species present, e.g. remote areas of conservation land with pest control programmes, highly intact bog wetlands.
Highly Functioning	Indigenous canopy, limited recruitment of palatable indigenous plant species and/or exotic plant species present at low abundance, e.g. conservation land with no control of ungulate browsing animals, slightly modified bog wetlands, fenced forest on private land with a low abundance of exotic plant species.
Functioning	Mostly indigenous canopy, mainly recruitment of unpalatable indigenous plant species and/or exotic plant species frequent, e.g. grazed forest on private land, swamp wetland with frequent exotic plant species.
At Risk	Mixed indigenous-exotic canopy and/or exotic plant species locally abundant, e.g. grazed forest on private land with hawthorn and elder in canopy.
Declining	Mostly exotic canopy, and/or exotic plant species abundant over most of the site, e.g. sparsely regenerating forest trees in gorse and/or broom scrub, swamp wetland dominated by willows, treeland of indigenous trees above pasture.
Character	
Indigenous	Indigenous species >50% canopy cover.
Mixed	Indigenous species 10-50% canopy cover.
Exotic	Indigenous species <10% canopy cover.
N/A	Non-vegetated areas, e.g. open water, bare soil.

6. Vegetation and Habitats

6.1 Overview

Vegetation and habitat types present at Dolamore Park are summarised in Table 3, and mapped in Figure 2. Type descriptions follow in Section 6.2.

Table 3: Vegetation and habitat types at Dolamore Park.

Vegetation and Habitat Type Name	Ecosystem Type	Area (ha)
Terrestrial Habitats		
1. Macrocarpa forest	Not Applicable - Exotic	15.52
2. Eucalyptus forest	Not Applicable – Exotic	1.00
3. Podocarp/kāmahi forest	CLF6: Kāmahi, southern rātā, podocarp forest	13.81
4. (Podocarp)-*Pittosporum*-mānuka scrub/forest	VS5: Broadleaved species scrub/forest	44.79
5. Mixed exotic treeland and grassland	Not Applicable - Exotic	19.30
6. Radiata pine/broom-gorse scrub	Not Applicable – Exotic	1.19
Wetland and Freshwater Habitats		
7. *Coprosma/Carex* pond/swamp	WL20: *Coprosma*, twiggy tree daisy scrub	0.10

6.2 Vegetation and habitat type descriptions

6.2.1 Terrestrial

1. Macrocarpa forest

This vegetation type covers two areas of exotic plantation forest located on steep to gentle slopes. These forests have a canopy of macrocarpa (*Hesperocayparis macrocarpa*) (Plate A3-1). Occasional Douglas fir (*Pseudotsuga menziesii*) and radiata pine (*Pinus radiata*) are also present in the canopy, particularly around the edges of the plantations. In some parts of these plantations, there is no sub-canopy. In other parts there is a patchy sub-canopy of gorse (*Ulex europaeus*), broom (*Cytisus scoparius*), elder (*Sambucus nigra*) mapou (*Myrsine australis*), kāpuka (*Griselinia littoralis*), kaikōmako (*Pennantia corymbosa*), and small-leaved *Coprosma* species. Groundcover mostly comprises leaflitter or bare soil, with scattered seedlings and small saplings of indigenous trees and shrubs, among which tōtara (*Podocarpus totara*) and kāmahi (*Pterophylla racemosa*) are occasional, and seedling of many of the same tree and shrub species present in Vegetation Type 4 ((Podocarp)-*Pittosporum*-mānuka scrub/forest) are rare. The indigenous ferns mouku/hen and chicken fern (*Asplenium bulbiferum*), kowaowao/hound's tongue (*Microsorum pustulatum*), pūniu/prickly shield fern (*Polystichum vestitum*), and mātukutuku (*Lycopodium scariosum*) are occasional, with the latter of these species forming small patches.

Grasses (exotic pasture species), sedges (hook sedge [*Carex uncinata*], forest sedge [*Carex dissita*], Solander's sedge [*Carex solandri*]), and soft rush (*Juncus effusus*) are present along dirt roads running through the plantation, and an assortment of indigenous shrubs are present around the edges of the plantations. The eastern plantation includes a gully running east-west that has a more open canopy, and a subcanopy of indigenous broadleaved trees and shrubs similar to what is found in the (podocarp)-*Pittosporum*-mānuka scrub forest.

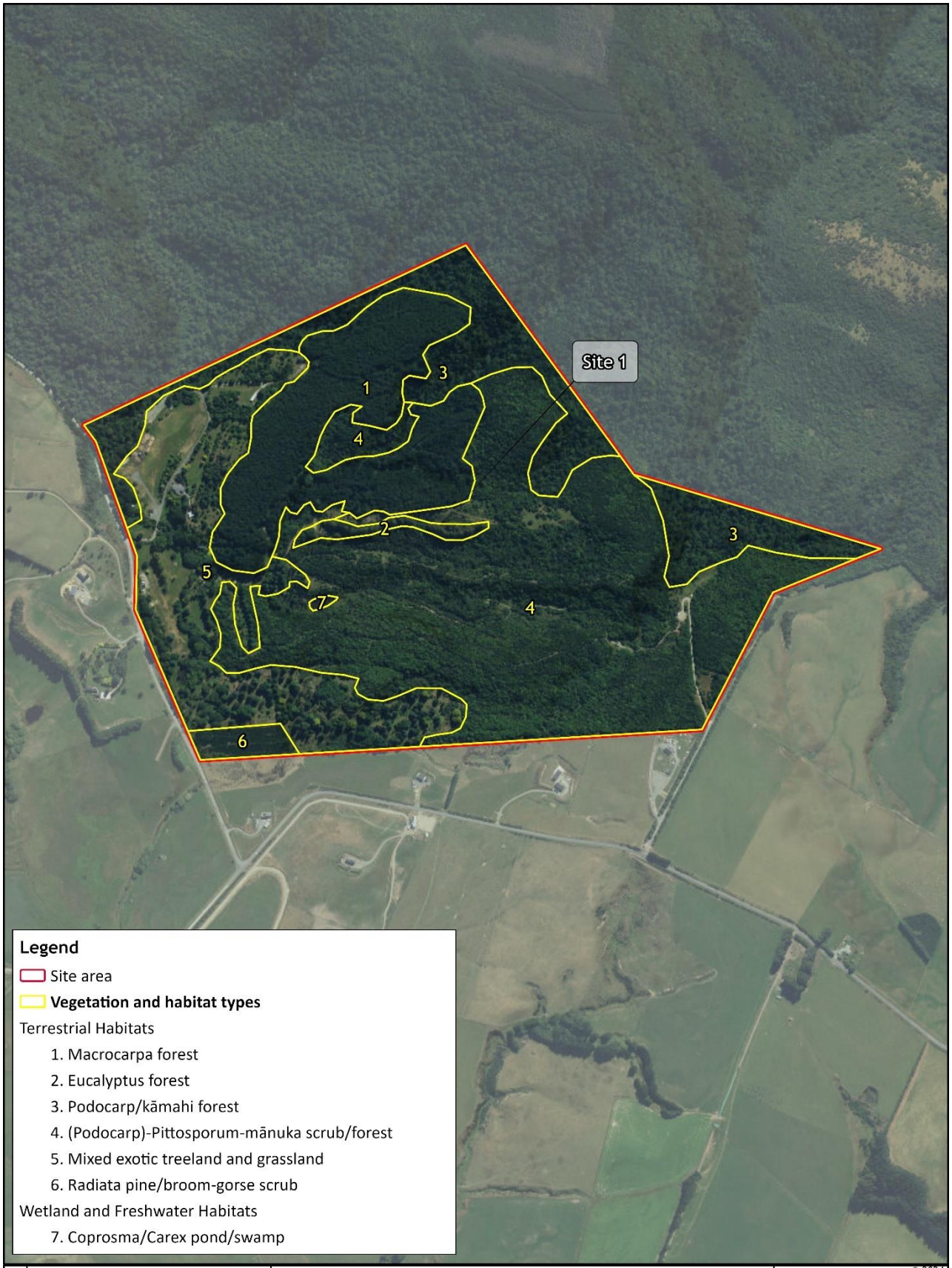


Figure 2. Vegetation and habitat types at Dolamore Park

2. *Eucalyptus* forest

A row of tall exotic gum trees (*Eucalyptus* spp.) (Plate A3-2), comprising several species with dominant mountain ash (*Eucalyptus regnans*) as the dominant species. Ground cover is mostly bracken (*Pteridium esculentum*), as well as a variety of native shrubs (broadleaved species and mānuka), and occasional Douglas fir saplings (*Pseudotsuga menziesii*).

3. Podocarp/kāmahi forest

Mature indigenous forest, dominated by large mataī /black pine (*Prumnopitys taxifolia*) (Plate 1), kahikatea (*Dacrycarpus dacrydioides*), rimu (*Dacrydium cupressinum*), miro (*Pectinopitys ferruginea*), and kāmahi, with occasional Hall's tōtara (*Podocarpus laetus*). Also present are a wide variety of indigenous broadleaved trees in the canopy, notably tarata/lemonwood (*Pittosporum eugenioides*), kāpuka/broadleaf (*Griselinia littoralis*), and kōtukutuku/tree fuchsia (*Fuchsia excorticata*). The mature kāmahi trees are intermediate in height between the emergent podocarps and the other broadleaved canopy species. Below the canopy are numerous small-leaved *Coprosma* species, tree ferns, and crown ferns (*Blechnum discolor*), which dominate much of the forest's ground cover.

Plate 1. View of a canopy with large emergent mataī trees in the podocarp/kāmahi forest.

This vegetation type represents primary forest that has not been historically cleared. Many of the mature podocarp and kāmahi trees are very large. There is a sharp boundary between this vegetation type and the (podocarp)-*Pittosporum*-mānuka scrub forest.

4. (Podocarp)-*Pittosporum*-mānuka scrub/forest

Dense scrub and forest, containing a diverse canopy of indigenous broadleaved trees and shrubs. Mānuka (*Leptospermum scoparium*) kōhūhū (*Pittosporum tenuifolium*) and tarata are

the most abundant species (Plate 2). Māpou (*Myrsine australis*), kāpuka, three-finger/orihau (*Pseudopanax colensoi*), wineberry/makomako (*Aristotelia serrata*), horopito/peppertree (*Pseudowintera colorata*), horoeka/lancewood (*Pseudopanax crassifolius*), and various species of small-leaved *Coprosma* are frequent to locally common. Mānuka is the most abundant canopy species along the ridge crests, elsewhere the canopy is dominated by a more diverse mix of broadleaved trees and shrubs.

Podocarps such as kahikatea (*Dacrycarpus dacrydioides*), miro (*Pectinopitys ferruginea*), mataī (*Prumnopitys taxifolia*, rimu (*Dacrydium cupressinum*), and Hall's tōtara (*Podocarpus laetus*) are occasional throughout the canopy to subcanopy, ranging in size from seedlings to small trees of the same height as the manuka-broadleaved species-dominated canopy. Dense stands of the exotic tree sycamore (*Acer pseudoplatanus*) are locally common (Plate A3-3) around waterways such as along the northern bank of Whiskey Creek and near the southern boundary of the site. Occasional trees and saplings of Douglas fir (*Pseudotsuga menziesii*) are present throughout this vegetation type, particularly along the hillslopes east of the pond/swamp. Occasional larger trees of tawhai raurani/red beech (*Fuscospora fusca*) and tawhai rauriki/mountain beech (*Fuscospora cliffortioides*) are present at the eastern end of the site.

Plate 2. View of a mānuka-dominated section of the (podocarp)-*Pittosporum*-mānuka scrub/forest.

Rarauhe/bracken (*Pteridium esculentum*) is locally common, particularly in the gully and hillslope directly south and south-east of the *Eucalyptus* treeland, where it makes up the dominant groundcover. Groundcover elsewhere is much the same as in the podocarp/kāmahi forest.

5. Mixed exotic treeland and grassland

An extensive area of lawns, gardens, and planted arboretum treeland (Plate A3-4). This area includes the Ian Gilchrist pinetum, which contains a wide variety of non-native conifers, as well as native conifers not present in Southland such as kauri (*Agathis australis*) and tānekaha (*Phyllocladus trichomanoides*). Indigenous scrub similar to the (podocarp)-*Pittosporum*-mānuka scrub forest is found on some steep banks. Small clusters of pūniu are present throughout the arboretum, as well as several larger areas of dense rarauhe. Gorse and broom are also present along the southern boundary of this vegetation type, adjacent to the radiata pine/gorse-broom scrub.

6. Radiata pine/broom-gorse scrub

An area of dense exotic gorse (*Ulex europaeus*) and broom (*Cytisus scoparius*) scrub, with abundant young radiata pines growing above the gorse and broom (Plate 3). This vegetation type is located at the south-western corner of the site, and was previously a plantation of radiata pines which were cleared in 2018. The current pines are likely naturally regenerating.

Plate 3. Abundant gorse with several emergent radiata pine saplings within the exotic scrub (Vegetation Type 6).

6.2.2 Wetland and Freshwater Habitats

7. *Coprosma/Carex* spp. pond/swamp

A small man-made pond (Plate A3-5) with wetland fringing the pond and directly upstream. The are shrubs of small-leaved *Coprosma*, particularly mikimiki *Coprosma propinqua* and *C. dumosa*). Copper tussock (*Chionochloa rubra* subsp. *cuprea*) and pūkio (*Carex secta*) are the dominant species.

7. Flora

7.1 Overview

Ninety-two indigenous and 82 exotic plant species were recorded at the site (listed in Appendix 2).

7.2 Threatened, At Risk, and notable species

Three Threatened, At Risk, and notable plant species were observed at Dolamore Park (Table 4).

Table 4. Threatened, At Risk, and notable plant species observed at Dolamore Park.

Common Name (Species)	Abundance	Threat Status
Carex uncifolia	Rare	At Risk – Declining
Coprosma rubra	Rare	At Risk – Declining
Melycytus flexuosus	Rare	Threatened – Nationally Vulnerable

Kauri (*Agathis australis*) (At Risk – Declining) is one of many tree species planted in the arboretum, but is present outside of its indigenous range and not present naturally on the site, nor is it naturalised.

7.3 Ecological weeds

Sixteen ecological weed species are present on the property (Table 5). Of these exotic species, four are listed as Pest species by the Southland RPMP, while seven are listed as Organisms of Interest.

Two species, radiata pine and Douglas fir, are wilding conifers and are only considered pests where they have not been intentionally planted.

Table 5: Ecological weed species and their abundance recorded at the site.

Common Name (Species)	Abundance	Southland RPMP Status
Sycamore (*Acer pseudoplatanus*)	Locally Common	Organism of Interest
Himalayan giant lily (*Cardiocrinum giganteum*)	Rare	Not Listed – Ecological Weed
California thistle (*Cirsium arvense*)	Locally common	Organism of Interest
Scotch thistle (*Cirsium vulgare*)	Locally common	Organism of Interest
Hemlock (*Conium maculatum*)	Locally common	Organism of Interest
Silverleaf cotoneaster (*Cotoneaster pannosus*)	Locally common	Not Listed – Ecological Weed
Hawthorn (*Crataegus monogyna*)	Rare	Organism of Interest
Monkey musk (*Erythranthe guttata*)	Locally common	Not Listed – Ecological Weed
Ragwort (*Jacobaea vulgaris*)	Locally common	Pest – Sustained Control
Himalayan honeysuckle (*Leycesteria formosa*)	Rare	Organism of Interest
Radiata pine (*Pinus radiata*)	Locally common	Pest - Containment
Douglas fir (*Pseudotsuga menziesii*)	Locally common	Pest – Containment
Blackberry (*Rubus fruticosus*)	Locally common	Organism of Interest
Crack willow (*Salix ×fragilis*)	Locally common	Organism of Interest
Chilean flame creeper (*Tropaeolum speciosum*)	Rare	Ecological Weed

Common Name (Species)	Abundance	Southland RPMP Status
Gorse (*Ulex europaeus*)	Locally common	Pest – Sustained Control

8. Fauna

8.1 Avifauna

Four indigenous bird species and two exotic bird species were recorded on the property (Table 6). Threat status is taken from Robertson *et al.* (2021).

Table 6: Bird species recorded on the property.

Species	Common Name	Status
Anthornis melanura	Korimako, bellbird	Not threatened
Fringilla coelebs	Chaffinch	Introduced
Pavo cristatus	Peafowl	Introduced
Prosthemadera novaeseelandiae	Tuī	Not threatened
Rhipidura fuliginosa	Pīwakawaka, fantail	Not threatened
Zosterops lateralis	Tauhou, silvereye	Not threatened

8.2 Lizards

No lizards were observed during field work. Species known from the wider region include tussock skink (*Oligosoma chionochloescens*), herbfield skink (*Oligosoma murihiku*), green skink (*Oligosoma chloronoton*), kōrero gecko (*Woodworthia* "Otago/Southland large") and Tautuku gecko (*Mokopirirakau* “southern forest”). These species may be found in grassland, shrubland, wetland margins, rocky areas, scrub and forest. Under the New Zealand threat classification system, green skink is classified as ‘Threatened – Nationally Critical’, while herbfield skink, kōrero gecko and Tautuku gecko are classified as ‘At Risk – Declining’ (Hitchmough *et al.* 2021). As a recently described species, tussock skink (Jewell 2022) is not currently classified but is likely to be classified as ‘At Risk – Declining’ within the next threat classification assessment.

The mixed grassland and treeland is expected to provide suitable habitat for indigenous skinks, while forests on-site may support indigenous geckos, though a targeted survey is required to confirm the presence and diversity of lizards on the site.

8.3 Bats

Long-tailed bats (*Chalinolobus tuberculatus*; Threatened–Nationally Critical, following O’Donnell *et al.* 2023) are known to forage on forest edges and along riparian margins of both indigenous and exotic forest types (Griffiths 2007, Rockell 2017), and also over farmland and urban areas (Griffiths 2007, O’Donnell and Borkin 2021). They have adapted to roosting in exotic tree species such as pine and macrocarpa (*Hesperocyparis macrocarpa*).

The southern lesser short-tailed bat (*Mystacina tuberculata tuberculata*) is classified as At Risk–Recovering by O'Donnell *et al.* (2023). Short-tailed bats are only found in large areas of indigenous forest, although they will forage and commute outside of these areas (Parsons and Toth 2021).

Dolamore Park provides suitable habitat for both species, especially due to its immediate adjacency to a large area of indigenous forest, though no records of bats are present in the area. Targeted surveying is necessary to confirm the presence or absence of bats at the site.

8.4 Aquatic

The pond on-site is expected to suit a wide array of indigenous invertebrate fauna, and were observed to support both species of damselfly (red damselfly [*Xanthocnemis zealandica*] and blue damselfly [*Austrolestes colensonis*]) present in the South Island.

8.5 Pest animal presence

Two pest animal species were observed by surveyors on the property (Table 7). In addition to these, it is almost certain that the typical array of pest mammal species are present on the property, including rats (*Rattus* spp.), mice (*Mus musculus*), possums (*Trichosurus vulpecula*), and possibly mustelids (*Mustela* spp.), hedgehogs (*Erinaceus europaeus*) and rabbits (*Oryctolagus cuniculus*).

Table 7: Pest animal species recorded on the property.

Common Name	Species	Comment
Domestic sheep	*Ovis aries*	Stock observed in arboretum.
Deer (Red deer and/or fallow deer)	*Cervus elaphus* and/or *Dama dama*	Deer tracks observed in (podocarp)-Pittosporum-mānuka scrub/forest habitat (Plate A3-6).

9. Ecological Values

9.1 Ecological patterns/sequences/environmental gradients

A successional sequence exists on the site, with broadleaved scrub transitioning into forest throughout vegetation type 4, which itself is being succeeded by more mature podocarp/kāmahi forest. No notable patterns, sequences, or gradients exist outside of indigenous habitats, as all sites of exotic vegetation are planted and/or heavily modified.

9.2 Size and shape

The site is a medium-sized, compact-shaped patch of indigenous forest interfingered by planted exotic habitats. Because of these planted habitats, and the site's long southern and western borders with agricultural land, it is expected that edge effects on vegetation communities are locally significant. The northern part of the site functions as part of a much larger forest ecosystem as it is part of the same forest as the immediately adjacent Croydon Bush.

9.3 Buffering/fencing/connectivity

Forest and scrub habitats on the site are connected to a much larger area of indigenous forest in the immediately adjacent Croydon Bush, and provide a valuable stepping-stone habitat for fauna entering and leaving that forest. The habitats at the site are currently incompletely fenced, with both livestock and deer sign observed in indigenous habitats at the site.

9.4 Threatened habitat types

Regionally threatened habitat types are listed in Schedule 2 of the Southland RPS. The site contains one Threatened and two At-Risk habitat types, as outlined in Table 8. While swamps are also a Threatened habitat type in Southland, the *Coprosma*/*Carex* pond/swamp habitat is artificial in origin, and therefore is not a Threatened habitat type on the property.

Table 8. Threatened, At Risk, and Rare habitat types present at Dolamore Park.

Habitat Type	Threat Status	Examples on the property
Rimu-mataī-kahikatea-miro-totara/kāmahi-Southern rata forest	Threatened	Podocarp/kāmahi forest
Broadleaf forest and scrub	At Risk	(Podocarp)-*Pittosporum*-mānuka scrub/forest

9.5 Indigenous fauna habitat

Indigenous forest and scrub habitats on the property are expected to provide valuable habitat for indigenous forest avifauna, and are documented to provide a highly-valuable habitat for indigenous invertebrates, including the Threatened – Nationally Critical aphid *Paradoxaphis aristoteliae*. The pond on the property is also expected to provide habitat for a wide array of aquatic invertebrates, and the presence of two species of predatory damselflies indicates that a healthy and stable invertebrate food web is present in this area, which may provide a valuable food source for indigenous avifauna.

The site may also provide suitable habitat for both bat species present in Southland, as well as suitable habitats for both indigenous skinks (in the mixed exotic treeland and grassland habitat) and geckos (in the indigenous forest habitats). Targeted surveying is required to confirm this.

9.6 Key ecological values

The shrub and forest habitats at the site have high ecological values relative to their size due to the site's proximity to Croydon bush. Its location benefits both Croydon Bush (which the site buffers) and the site itself (by increasing both the diversity and function of the ecology at the site). Key ecological values of the site include the presence of one Threatened and one At Risk forest habitat type (expected to provide suitable habitat for a wide range of indigenous forest avifauna, two At-Risk and one Threatened plant species, as well as possibly bats which are nationally Threatened [though a targeted survey would be necessary to confirm this]). The site is also important to New Zealand entomology, being the Type Locality for two

indigenous Endemic insect species, and a Paratype Locality for a third. A healthy aquatic ecosystem is likely present in the pond. The site may further provide suitable habitats for indigenous lizards, though targeted surveying is needed to confirm their presence.

9.7 Significance assessments

Detailed significance assessments are provided in Appendices 4 and 5, for the Southland RPS and NPS-IB criteria respectively. The site as a whole is not significant, because large parts of it are dominated by exotic vegetation which does not meet any of the criteria. However, the areas of indigenous forest/scrub vegetation and habitat (podocarp/kāmahi forest and (podocarp)-*Pittosporum*-mānuka scrub/forest; Vegetation Types 3 and 4) meet several criteria, and are significant under both assessment frameworks. The small pond and surrounding vegetation (Type 7 in Table 3) is included within this wider area of significant vegetation and habitat. These areas of indigenous vegetation and habitat are representative examples of their types, and are regionally Threatened habitat types within Southland. They also support populations of three Threatened or At Risk plant species, and are the type locality of a Threatened-Nationally Critical invertebrate.

10. Condition Assessment

The condition and character of each vegetation type were assessed and can be seen in Table 9.

Table 9: Condition and character assessment of each vegetation type.

Vegetation Type	Condition	Character
1. Macrocarpa forest	Declining	Exotic
2. Eucalyptus forest	Declining	Exotic
3. Podocarp/kāmahi forest	Highly Functioning	Indigenous
4. (Podocarp)-*Pittosporum*-mānuka scrub/forest	Highly Functioning	Indigenous
5. Mixed exotic treeland and grassland	Declining	Exotic
6. Radiata pine/broom-gorse scrub	Declining	Exotic
7. *Coprosma*/*Carex* pond/swamp	Functioning	Indigenous

11. Management Issues and Threats

11.1 Fencing (existing and required)

Indigenous habitats at the site are currently incompletely fenced. A deer fence around the entire site would greatly benefit indigenous biodiversity. However, this is unlikely to be feasible. A stock fence separating the mixed exotic treeland and grassland habitats from indigenous vegetation could be added to prevent sheep from accessing indigenous vegetation.

While artificial, the pond and swamp habitats could be fenced as they hold freshwater habitat value, particularly for invertebrates, which may provide a food source for a wide variety of avifauna. Fencing these habitats to prevent browsing animal access would contribute to higher water quality, which would positively impact both this habitat and other freshwater habitats in the wider catchment.

11.2 Domestic stock effects

Sheep from nearby flocks are (or were at the time of the survey) present on the property, and feed on grass and palatable herbs in the mixed exotic treeland and grassland habitat. It is possible that they may further invade into indigenous habitats and damage shrub layer and ground cover vegetation.

11.3 Pest plants

Threats

Sycamore trees form dense monospecific stands in the (podocarp)/*Pittosporum*-mānuka scrub/forest habitat. This is of great concern because this exotic tree is fast-growing and produces large volumes of seed, allowing it to quickly outcompete and replace indigenous forest, especially in areas with relatively short canopies such as in the (podocarp)/*Pittosporum*-mānuka scrub/forest on the site (see McAlpine 2014).

Radiata pine may be naturalising in the radiata pine/broom-gorse scrub. Wilding pines are a significant problem in Aotearoa New Zealand. Wilding species grow rapidly and can overtake low stature or regenerating indigenous vegetation, altering soil conditions, and contributing to greater wildfire risk. Exotic coniferous forests do not provide resources and habitat for many indigenous fauna. Wilding pines on the property are likely to contribute to the spread of these pest species across the wider landscape.

Ragwort requires sustained control under the Southland RPMP, particularly to prevent its spread to other properties, where it can become problematic on agricultural land. We recommend, at a minimum, observing ragwort on the property for signs of spread.

Gorse is also identified as a pest species under the Southland RPMP, and control is required if the species is at risk of spreading to neighbouring properties. While gorse can be problematic for indigenous vegetation, it provides a valuable nursery habitat for the growth of indigenous trees, and at this site the species likely facilitates indigenous forest regeneration. For these reasons we do not recommend widespread control.

Past/Present Control (existing and requirements)

While evidence for pest plant control was not observed, clearance of any naturalised exotic trees, with particular emphasis placed on sycamore and radiata pine and douglas fir could protect the diversity and ecological values of indigenous forest habitats on the property. Periodic assessments of indigenous forests to ensure that other exotic tree species planted in

the arboretum do not become established in indigenous forest habitat is also highly recommended.

11.4 Pest animals

Deer and pigs are often present on the property, and pose a significant threat to the shrub layer, as well as seedling trees and palatable indigenous herbs. Control of these and other exotic mammals to prevent degradation of forest habitats are recommended.

It is likely that the full suite of mammalian predators are present on the property. However, these are being controlled – traps are present on the site and were being cleared during the survey, in order to protect the habitat from possums, rodents, and mustelids.

11.5 Summary of key management requirements

Key requirements on the site include: clearance of exotic trees (in particular sycamore and wilding conifers) from indigenous scrub and forest habitats to prevent the establishment of an exotic forest and exclusion of habitat from indigenous fauna on the site. Fencing exotic arboretum from indigenous forest habitats could limit access to indigenous forests by sheep. Fencing of the pond on the site could prevent its water quality from being degraded by sheep and deer, supporting the invertebrate diversity and the water quality of the broader catchment.

12. Conclusion/Summary

Dolamore Park supports areas of indigenous forest and scrub vegetation and habitat with a variety of ecological values. It is the type locality of two indigenous insect species, one of which (*Paradoxaphis aristoteliae*) is Threatened-Nationally Critical. The site supports two Threatened indigenous forest habitat types, and much of it reflects a succession towards indigenous podocarp/kāmahi forest if allowed to continue. These forests are part of, and provide buffering to, a much larger area of forest at the adjacent Croydon Bush. However, forest succession is threatened by large stands of the invasive tree sycamore, which threaten to remove valuable habitat for indigenous avifauna and invertebrates. Clearance of sycamore should be prioritised in forest management efforts. Stock effects can be limited by excluding stock from indigenous forest and scrub habitats and freshwater at the site.

13. Acknowledgments

Caretaker E.J. Brandish is thanked for his guidance and helpful comments during the site survey. Park manager Keith McRobie is thanked for requesting the survey, for his interest in the site's ecological values, and for participating in the Southland Biodiversity Action on the Ground programme.

14. References

Atkinson I.E. 1985: Derivation of vegetation mapping units for an ecological survey of Tongariro National Park, North Island, New Zealand. *New Zealand Journal of Botany* 23: 361-378.

Briggs, K.B. 1966: *The Vegetation of the Eastern Hokonui Hills: Interpretation and Implications of the Contemporary Vegetation Pattern*. MSc. University Of Otago, Dunedin.

Cieraad E., Walker S., Price R., and Barringer J. 2015: An updated assessment of indigenous cover remaining and legal protection in New Zealand's land environments. *New Zealand Journal of Ecology 39*: 309-315.

de Lange P.J., Rolfe J.R., Barkla J.W., Courtney S.P., Champion P.D., Perrie L.R., Beadel S.M., Ford K.A., Breitwiser I., Schönberger I., Hindmarsh-Walls R., Heenan P.B., and Ladley K. 2018: Conservation status of New Zealand indigenous vascular plants, 2017. *New Zealand Threat Classification Series 22*. Department of Conservation, Wellington. 82 pp.

Donner, H., and Wilkinson, C. 1989. Nepticulidae (Insecta: Lepidoptera). *Fauna of New Zealand* 16. DSIR Publishing, Wellington. 92 p.

Druce, A.P. 2000: *Croydon Bush - East Peak Track (CRBD)*. New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/croydon-bush-east-peak-track-crbd/ Accessed 5 December 2024.

DSIR, n.d. Croydon Bush (237B). New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/croydon-bush-237b/ Accessed 5 December 2024.

Environment Southland 2017: Southland Regional Policy Statement 2017: *Environment Southland Regional Council*, Invercargill. 288 pp.

Environment Southland 2019: Southland Regional Pest Management Plan 2019-2029. *Environment Southland Regional Council*, Invercargill. 199 pp.

GBIF. 2024: *Spaniocerca zwicki McLellan, 1987*. Global Biodiversity Information Facility. https://www.gbif.org/species/2002608 Accessed 5 December, 2024.

Griffiths R.W. 2007: Activity patterns of long-tailed bats (*Chalinolobus tuberculatus*) in a rural landscape, South Canterbury, New Zealand. *New Zealand Journal of Zoology*, *34*: pp.247-258.

Hamilton, K.G.A., and Morales, C.F. 1992: Cercopidae (Insecta: Homoptera). *Fauna of New Zealand Ko te Aitanga Pepeke o Aotearoa* 25. DSIR Plant Protection/Te Wāhanga Manaaki Tupu, Auckland. 40 p

Hitchmough R., Barr B., Knox, C., Lettink M., Monks J., Patterson G., Reardon J., van Winkel D., Rolfe J., and Pascele M. 2021: Conservation status of New Zealand reptiles. 2021. *New Zealand Threat Classification Series 35*. Department of Conservation, Wellington.

Hitchmough, R., Bull, L, and Cromarty. 2007: *New Zealand Threat Classification Lists 2007*. Department of Conservation, Wellington. 134 p.

iNaturalist. 2024: *Observations – Custom Boundary: Dolamore Park*. iNaturalist. https://www.inaturalist.org/observations?nelat=-46.05259091035072&nelng=168.84701172182614&subview=map&swlat=-46.06816544858803&swlng=168.8206471008301 Accessed 5 December, 2024.

Jane, G., and Donaghy, G. 2008a: *Whiskey Ck Track to Domain Rd (DOLW)*. New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/whiskey-ck-track-to-domain-rd-dolw/ Accessed 5 December 2024.

Jane, G., and Donaghy, G. 2008b: *Croydon Bush - Dolamore Track (DOLI)*. New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/croydon-bush-dolamore-track-doli/ Accessed 5 December 2024.

Jane, G., and Donaghy, G. 2008c: *Croydon Bush – Waterfall Track Dolamore Park (DOLA).* New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/croydon-bush-waterfall-track-dolamore-park-dola/ Accessed 5 December 2024.

Jane, G., and Donaghy, G. 2009: *Croydon Bush - Popelwell lookout track (POPE)*. New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/croydon-bush-popelwell-lookout-track-pope/ Accessed 5 December 2024.

Jewell, T. 2022: Discovery of an abrupt contact zone supports recognition of a new species of grass skink in southern New Zealand. *Jewell Publications, Occasional Publication* #2022B.

Johnson P.N. and Gerbeaux P. 2004: Wetland types in New Zealand. Department of Conservation, Wellington. 184 pp.

Leathwick J. 2019: Indigenous biodiversity rankings for the Southland Region. Report prepared for Environment Southland. 73 pp.

May, B.M. 1977: Immature stages of Curculionidae: Larvae of the soil-dwelling weevils of New Zealand. *Journal of the Royal Society of New Zealand,* 7(2): 189-228. https://doi.org/10.1080/03036758.1977.10427160

McAlpine, K.G. 2014: *Seedling establishment of the invasive tree Acer pseudoplatanus (sycamore)*. Nineteenth Australasian Weeds Conference, Hobart.

McEwen W.M. 1987: *Ecological Regions and Districts of New Zealand*. Third revised edition in four 1:500,000 maps. Publication No. 5 (in four parts). Part 3. New Zealand Biological Resources Centre, Department of Conservation, Wellington. 137 pp.

McLellan, I.D. 1987: A revision of *Spaniocerca* Tillyard (Plecoptera: Notonemouridae) and descriptions of new species. *New Zealand Journal of Zoology,* 14: 257-268. https://doi.org/10.1080/03014223.1987.10422996

Ministry for the Environment 2023: National Policy Statement for Indigenous Biodiversity. 48 Ministry for the Environment. 45 pp.

O'Donnell C.F.J., Borkin K.M., Christie J.E., Davidson-Watts I., Dennis G., Pryde M., Pascale M. 2023: Conservation status of bats in Aotearoa New Zealand, 2022. *New Zealand Threat Classification Series* 41. Department of Conservation, Wellington. 18 pp.

O'Donnell C. and Borkin K. 2021: *Chalinolobus tuberculatus*. In *The Handbook of New Zealand Mammals.* 3rd Edition (Eds C.M. King and D.M. Forsyth), pp. 96-107. CSIRO Publishing, Melbourne.

Parsons S. and Toth C., 2021: *Mystacina tuberculata. In The Handbook of New Zealand Mammals*. 3rd Edition (Eds C.M. King and D.M. Forsyth), pp. 108-122. CSIRO Publishing, Melbourne.

Podmore, C., Hogg, I.D., Drayton, G.M., Barratt B.I.P., Scott, I.A.W., Foottit, R.G., Trulon, D.A.J., and Bulman, S.R. 2018: Study of the COI sequences from endemic New Zealand aphids highlights high mitochondrial DNA diversity in *Rhopalosiphina* (Hemiptera: Aphididae). *New Zealand Journal of Zoology,* 46(2): 107-123. https://doi.org/10.1080/03014223.2018.1510843

Rance, B.D. 2000: *Croydon Bush (235B)*. New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/croydon-bush-235b/ Accessed 5 December 2024.

Rance, B.D. 2004: *Croydon Bush - Middle Ridge/Grants Ridge loop Track (238B).* New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/croydon-bush-middle-ridge-grants-ridge-loop-track-238b/ Accessed 5 December 2024.

Rance, B.D. 2007: *Croydon Bush - Whiskey Gully Hidden Valley area (239B).* New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/croydon-bush-whiskey-gully-hidden-valley-area-239b/ Accessed 5 November 2024.

Rance, B.D., Stowe, C., and Pullen, K. 2000: Waimumu land - Sections 921 and 922, Lora River area (275B). New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/waimumu-land-sections-921-and-922-lora-river-area-275b/ Accessed 5 December 2024.

Rebergen, A. n.d.: *Croydon Bush (236B).* New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/publications/plant-lists/plant-lists-by-region/croydon-bush-236b/ Accessed 5 December 2024.

Robertson H.A., Baird K., Elliott G.P., Hitchmough R.A., McArthur N.J, Makan T., Miskelly C.M., O'Donnell C.J., Sagar P.M., Scofield R.P., Taylor G.A., and Michel P. 2021: Conservation status of New Zealand birds, 2021. New Zealand Threat Classification Series 36. Department of Conservation, Wellington. 43 pp.

Rockell G., Littlemore J. and Scrimgeour J. 2017: *Habitat Preferences of Long-tailed Bats Chalinolobus Tuberculatus Along Forested Riparian Corridors in the Pikiariki Ecological Area, Pureora Forest Park*. Publishing Team, Department of Conservation.

Singers N.J.D. and Rogers G.M. 2014: A classification of New Zealand's terrestrial ecosystems. *Science for Conservation 325*. Department of Conservation, Wellington. 91 pp.

Sunde, R.G. 1987: A new indigenous aphid from New Zealand (Homoptera: Aphididae). *New Zealand Journal of Zoology*, 14(4): 587-592. https://doi.org/10.1080/03014223.1987.10423031

Teulon, D.A.J., Stufkens, M.A.W., von Dohlen, C.D., and Kean, J. 2003: Status of New Zealand indigenous aphids, 2002. *DOC Science Internal series* 106. Department of Conservation, Wellington. 31 p.

Xyst Limited. 2017: *Gore District Council Reserve Management Plan Volume 4: Dolamore Park Scenic Reserve*. Gore: Gore District Council. 29 p.

Appendix 1: Site details

Property Details	
Location	70 Dolamore Park Road, Gore Rural
Report name	6003lf HKNI55 Dolamore Park FINAL 19-12-24
Legal Description	SL11A/187
Easting (NZTM)	1277806
Northing (NZTM)	4890405
Site Details	
Site 1	
General Physical Description (Topography)	Mix of rolling and flat terrain.
Access	Open to the public, easily accessed by car park.
Site Altitude	~150-260 metres above sea level
Elevation Zone	Lowland
Protection Status	Protected (Scenic Reserve)
Adjacent Land Use	Scenic Reserve (indigenous forest), agricultural/farmland

Appendix 2: List of vascular plant species found on the property

Key: * = exotic species

Species	Common Name	Plant Type
Abies sp*	Fir tree	Tree
*Acacia pravissima**	Paramatta green wattle	Tree
Acaena novae-zelandiae	Bidibidi	Forb
*Acer palmatum**	Japanese maple	Tree
*Acer pseudoplatanus**	Sycamore	Tree
*Acer rubrum**	Red maple	Tree
*Achillea millefolium**	Yarrow	Forb
*Aesculus hippocastanum**	Horse chestnut	Tree
Agathis australis	Kauri	Tree
*Agrostis stolonifera**	Creeping bent	Graminoid
*Anthoxanthum odoratum**	Sweet vernal	Graminoid
*Araucaria araucanca**	Monkey puzzle tree	Tree
Aristotelia serrata	Makomako; wineberry	Tree
Asplenium bulbiferum	Mouku; hen and chicken fern	Fern
Asplenium flaccidum	Makawe, hanging spleenwort	Fern
Astelia fragrans	Kakaha; bush lily	Graminoid
Astelia nervosa	Mountain astelia	Graminoid
Austroderia richardii	Toetoe	Graminoid
*Bellis perennis**	Lawn daisy	Forb
*Betula pendula**	Silver birch	Tree
Blechnum chambersii	Rereti; lance fern	Fern
Blechnum discolor	Piupiu; crown fern	Fern
Blechnum fluviatile	Kiwakiwa	Fern
Blechnum minus	Swamp kiokio	Fern
Blechnum novae-zelandiae	Kiokio	Fern
Blechnum penna-marina	Little hard fern	Fern
Blechnum procerum	Kiokio	Fern
Brachyglottis sp.	Hybrid brachyglottis cultivar	Shrub
*Bromus diandrus**	Ripgut brome	Graminoid
*Calocedrus decurrens**	Intense cedar	Tree
*Cardiocrinum giganteum**	Himalayan giant lily	Graminoid
*Carex demissa**	Yellow sedge	Graminoid
Carex dissita	Forest sedge	Graminoid
Carex geminata	Rautahi	Graminoid
Carex secta	Pūkio	Graminoid
Carex sinclairii	Sinclair's sedge	Graminoid
Carex solandri	Solander's sedge	Graminoid
Carex uncifolia		Graminoid
Carex uncinata	Hooked sedge	Graminoid
Carpodetus serratus	Piripiriwhata; marbleleaf	Tree
*Cedrus atlantica**	Atlas cedar	Tree
*Cedrus deodara**	Himalayan cedar	Tree
*Cerastium fontanum**	Mouse-ear chickweed	Forb
Chionochloa rubra subsp. *cuprea*	Haumata; copper tussock	Graminoid

Species	Common Name	Plant Type
*Cirsium arvense**	Californian thistle	Forb
*Cirsium vulgare**	Scotch thistle	Forb
*Claytonia perfoliate**	Miner's lettuce	Forb
Clematis sp.		Vine
*Conium maculatum**	Hemlock	Forb
Coprosma areolata	Thin-leaved coprosma	Tree
Coprosma colensoi		Shrub
Coprosma dumosa	Mikimiki	Tree
Coprosma foetidissima	Hūpiro; stinkwood	Tree
Coprosma linariifolia	Yellow wood	Tree
Coprosma propinqua	Mikimiki	Tree
Coprosma rhamnoides		Shrub
Coprosma rigida		Shrub
Coprosma robusta	Karamū	Tree
Coprosma rotundifolia	Round-leaved coprosma	Shrub
Coprosma rubra		Shrub
Coprosma rugosa		Shrub
Cordyline australis	Tī kōuka; cabbage tree	Grass tree
*Cotoneaster pannosus**	Silverleaf cotoneaster	Shrub
*Crataegus monogyna**	Hawthorn	Tree
*Cryptomeria japonica**	Japanese cedar	Tree
*Cupressus cashmeriana**	Kashmir cypress	Tree
Cyathea smithii	Kātote; soft tree fern	Tree fern
*Cytisus scoparius**	Broom; Scotch broom	Shrub
Dacrycarpus dacrydioides	Kahikatea	Tree
Dacrydium cupressinum	Rimu	Tree
*Dactylis glomerata**	Cocksfoot	Graminoid
Dicksonia fibrosa	Whekī-ponga	Tree fern
Elaeocarpus hookerianus	Pōkākā	Tree
Epilobium ciliatum	Tall willowherb	Forb
*Erythranthe guttata**	Monkey musk	Forb
*Eucalyptus cinerea**	Argyle apple	Tree
*Eucalyptus globulus**	Blue gum	Tree
*Eucalyptus regnans**	Mountain ash	Tree
Euchiton sp.	Cudweed	Mixed
Fuchsia excorticata	Kotukutuku; tree fuchsia	Tree
Fuscospora cliffortioides	Tawhairaurik; mountain beech	Tree
Fuscospora fusca	Tawhairaunui; red beech	Tree
*Galium aparine**	Cleavers	Forb
Gaultheria macrostigma	Prostrate snowberry	Shrub
Griselinia littoralis	Kāpuka	Tree
*Hesperocyparis arizonica**	Arizona cypress	Tree
*Hesperocyparis macrocarpa**	Macrocarpa; Monterey cypress	Tree
Histiopteris incisa	Mātātā; water fern	Fern
Hoheria sexstylosa	Houhere; lacebark	Tree
*Holcus lanatus**	Yorkshire fog	Graminoid
*Hypochaeris radicata**	Catsear	Forb
Hypolepis ambigua	Pigfern	Fern

Species	Common Name	Plant Type
*Jacobaea vulgaris**	Ragwort	Forb
Juncus australis	Wīwī	Graminoid
*Juncus effusus**	Soft rush	Graminoid
*Larix decidua**	European larch	Tree
Leptolepia novae-zelandiae	Lace fern	Fern
Leptospermum scoparium	Mānuka	Tree
*Leycesteria formosa**	Himalayan honeysuckle	Sub shrub
*Lolium arundinaceum**	Tall fescue	Graminoid
Lophozonia menziesii	Tawhai; silver beech	Tree
*Lotus pedunculatus**	Lotus	Forb
Luzula sp.	Woodrush	Graminoid
Lycopodium scariosum	Mātukutuku	Fern
Melicope simplex	Poataniwha	Tree
Melicytus flexuosus		Shrub
Melicytus lanceolatus	Māhoe wao, narrow-leaved māhoe	Tree
*Metasequoia glyptostroboides**	Dawn redwood	Tree
Microlaena avenacea	Bush rice grass	Graminoid
Microsorum pustulatum	Kōwaowao; pāraharaha; hound's tongue fern	Fern
Muehlenbeckia complexa	Pōhuehue	Vine
*Mycelis muralis**	Wall lettuce	Forb
Myrsine australis	Māpou	Tree
Myrsine divaricata	Weeping māpou	Tree
Notogrammitis billardierei	Common strap fern	Fern
Ozothamnus vauvilliersii	Mountain tauhinu	Shrub
Parsonsia heterophylla	Akakaikiore	Vine
Pectinopitys ferruginea	Miro; brown pine	Tree
Pennantia corymbosa	Kaikōmako	Tree
Phormium tenax	Harakeke; lowland flax	Graminoid
Phyllocladus trichomanoides	Tānekaha	Tree
*Picesa smithii**	Himalayan spruce	Tree
*Pinus halepensis**	Aleppo pine; Jerusalem pine	Tree
*Pinus montezumae**	Montezuma pine	Tree
*Pinus ponderosa**	Ponderosa pine	Tree
*Pinus radiata**	Radiata pine	Tree
*Pinus sylvestris**	Scots pine	Tree
*Pinus wallachiana**	Bhutan pine	Tree
Pittosporum eugenioides	Tarata, lemonwood	Tree
Pittosporum tenuifolium	Kōhūhū	Tree
*Plantago major**	Broad-leaved plantain	Forb
*Poa annua**	Annual poa	Graminoid
Poa cita	Wi; silver tussock	Graminoid
Podocarpus laetus	Hall's tōtara	Tree
Podocarpus totara	Tōtara	Tree
Polystichum vestitum	Pūniu; prickly shield fern	Fern
*Populus nigra**	Lombardy poplar	Tree
Prumnopitys taxifolia	Matai; black pine	Tree
*Prunella vulgaris**	Selfheal	Forb

Species	Common Name	Plant Type
Prunus sp.*	Ornamental cherry	Tree
Pseudopanax colensoi	Orihou; mountain five finger	Tree
Pseudopanax crassifolius	Horoeka; lancewood	Tree
*Pseudotsuga menziesii**	Douglas fir	Tree
Pseudowintera colorata	Horopito; peppertree	Tree
Pteridium esculentum	Rarauhe; rārahu; bracken	Fern
Pterophylla racemosa	Kāmahi	Tree
*Quercus coccinea**	Scarlet oak	Tree
*Quercus palustris**	Pin oak	Tree
*Quercus rubra**	Red oak	Tree
*Ranunculus repens**	Creeping buttercup	Forb
Rhododendron sp.*	Rhododendron	Tree
Rubus cissoides	Tātarāmoa, bush lawyer	Vine
*Rubus fruticosus**	Blackberry	Sub shrub
Rubus schmidelioides	Tātarāmoa; white-leaved bush lawyer	Vine
Rumex crispus	Curled dock	Forb
*Salix ×fragilis**	Crack willow	Tree
*Sambucus nigra**	Elder	Shrub
Schefflera digitata	Patē; seven finger	Tree
*Sequoia sempervirens**	Coast redwood	Tree
*Sequoiadendron giganteum**	Giant sequoia	Tree
Solanum laciniatum	Poroporo	Shrub
*Sonchus asper**	Prickly puha; prickly sowthistle	Forb
Sophora microphylla	Kōwhai	Tree
*Stellaria media**	Chickweed	Forb
*Taraxacum officinale**	Dandelion	Forb
*Taxus baccata**	Yew	Tree
*Thuja plicata**	Western red cedar	Tree
*Trifolium dubium**	Suckling clover	Forb
*Tropaeolum speciosum**	Chilean flame creeper	Forb
*Tsuga heterophylla**	Western hemlock	Tree
*Ulex europaeus**	Gorse	Shrub
Ulmus sp.*	Elm	Tree
Veronica salicifolia	Koromiko	Shrub
Viola filicaulis	Forest violet	Forb
*Wollemia nobilis**	Wollemi pine	Tree

Appendix 3: Site photographs

Plate A3-1: View of ground cover and trees in the macrocarpa forest habitat.

Plate A3-2: View of trees in the *Eucalyptus* forest habitat.

Plate A3-3: View of a dense sycamore stand in the (podocarp)-*Pittosporum*-mānuka scrub/forest habitat.

Plate A3-4: Planted arboretum treeland in the mixed exotic treeland and grassland habitat.

Plate A3-5: Pond surrounded by indigenous plant species at Dolamore Park.

Plate A3-6: A deer print in the (podocarp)/*Pittosporum*-mānuka scrub/forest habitat.

Appendix 4: Ecological significance assessment against Southland RPS criteria

Criteria	Evaluation
Representativeness (i) Indigenous vegetation or habitat of indigenous fauna that is representative, typical or characteristic of the natural diversity of the relevant ecological district or coastal biogeographic region. This can include degraded examples where they are some of the best remaining examples of their type, or represent all that remains of indigenous biodiversity in some areas.	Criterion met for areas of the site containing podocarp/kāmahi forest and (podocarp)-*Pittosporum*-mānuka scrub/forest. Other areas of the site contain exotic-dominant vegetation.
Representativeness (ii) Indigenous vegetation or habitat of indigenous fauna that is a relatively large example of its type within the relevant ecological district or coastal biogeographic region.	Criterion met for areas of the site containing podocarp/kāmahi forest and (podocarp)-*Pittosporum*-mānuka scrub/forest. These cover a relatively large area of indigenous forest vegetation for the ecological district.
Rarity (i) Indigenous vegetation or habitat of indigenous fauna that has been reduced to less than 20% of its former extent in the Region, or relevant land environment, ecological district, freshwater environment, or coastal biogeographic region.	Criterion met for podocarp/kāmahi forest only.
Rarity (ii) Indigenous vegetation or habitat of indigenous fauna that supports an indigenous species that is threatened, at risk, or uncommon, nationally or within the relevant ecological district or coastal biogeographic region.	Criterion met for areas of the site containing podocarp/kāmahi forest and (podocarp)-*Pittosporum*-mānuka scrub/forest. These areas of indigenous vegetation support two At Risk-Declining (*Carex uncifolia, Coprosma rubra*) and one Threatened-Nationally Vulnerable (*Melicytus flexuosus*) plant species, and are the type locality for the aphid *Paradoxaphis aristoteliae* (Threatened-Nationally Critical). Threatened and At-Risk species of bat, lizard and bird may additionally occur at the site.
Rarity (iii) The site contains indigenous vegetation or an indigenous species at its distribution limit within Southland Region or nationally.	Criterion not met.
Rarity (iv) Indigenous vegetation or an association of indigenous species that is distinctive, of restricted occurrence, occurs within an originally rare ecosystem, or has developed as a result of an unusual environmental factor or combinations of factors.	Criterion not met.
Diversity and Pattern. Indigenous vegetation or habitat of indigenous fauna that contains a high diversity of indigenous ecosystem or habitat types, indigenous taxa, or has changes in species composition reflecting the existence of diverse natural features or ecological gradients.	Criterion not met.

Criteria	Evaluation
Ecological Context (i) Vegetation or habitat of indigenous fauna that provides or contributes to an ecological linkage, ecological corridor or network, buffering function, or ecosystem service.	Criterion met for areas of the site containing podocarp/kāmahi forest and (podocarp)-*Pittosporum*-mānuka scrub/forest, which provide a buffer to the much larger forest at Croydon Bush Reserve.
Ecological Context (ii) A wetland which plays an important hydrological, biological or ecological role in the natural functioning of a water body, including a river or coastal system, or springs, lakes and streams.	Criterion not met.
Ecological Context (iii) Indigenous vegetation or habitat of indigenous fauna that provides important habitat (including, but not limited to, refuges from predation, or key habitat for feeding, breeding, or resting) for indigenous species, either seasonally or permanently.	Criterion met for areas of the site containing podocarp/kāmahi forest and (podocarp)-*Pittosporum*-mānuka scrub/forest. These are likely to provide a valuable permanent and stepping-stone habitat for indigenous avifauna and bat species (if present).
Is Site significant?	The site as a whole is not significant, because large parts of it are dominated by exotic vegetation which does not meet any of the criteria. However, the areas of indigenous forest/scrub vegetation and habitat (podocarp/kāmahi forest and (podocarp)-*Pittosporum*-mānuka scrub/forest; Vegetation Types 3 and 4) meet several criteria, and these areas of the site are significant.
Criteria met for significance	Representativeness (I, ii), Rarity (i,ii), Ecological Context (i, iii)

Appendix 5: Ecological significance assessment against Southland NPS-IB criteria

Criteria	Evaluation
Representativeness is the extent to which the indigenous vegetation or habitat of indigenous fauna in an area is typical or characteristic of the indigenous biodiversity of the relevant ecological district.	
(a) Indigenous vegetation that has ecological integrity that is typical of the character of the ecological district:	Criterion met for areas of the site containing podocarp/kāmahi forest and (podocarp)-Pittosporum-mānuka scrub/forest. Other areas of the site contain exotic-dominant vegetation.
(b) Habitat that supports a typical suite of indigenous fauna that is characteristic of the habitat type in the ecological district and retains at least a moderate range of species expected for that habitat type in the ecological district.	Criterion likely met for the areas of the site containing podocarp/kāmahi forest and (podocarp)-Pittosporum-mānuka scrub/forest, which support several typical forest bird species and is expected to support typical forest invertebrate fauna. The flora comprises a typical suite of indigenous species. Other areas of the site contain exotic-dominant vegetation and do not meet this criterion.
Diversity and pattern is the extent to which the expected range of diversity and pattern of biological and physical components within the relevant ecological district is present in an area.	
(a) at least a moderate diversity of indigenous species, vegetation, habitats of indigenous fauna or communities in the context of the ecological district.	Criterion met for areas of the site containing podocarp/kāmahi forest and (podocarp)-Pittosporum-mānuka scrub/forest. These areas have relatively high diversity of indigenous plants.
(b) presence of indigenous ecotones, complete or partial gradients or sequences.	Criterion not met
Rarity and distinctiveness is the presence of rare or distinctive indigenous taxa, habitats of indigenous fauna, indigenous vegetation or ecosystems.	
(a) provides habitat for an indigenous species that is listed as Threatened or At Risk (declining) in the New Zealand Threat Classification System lists.	Criterion met for areas of the site containing podocarp/kāmahi forest and (podocarp)-Pittosporum-mānuka scrub/forest. These areas support the plants *Carex uncifolia* (At Risk – Declining), *Coprosma rubra* (At Risk – Declining), and *Melicytus flexuosus* (Threatened – Nationally Vulnerable), and provide habitat for the indigenous aphid *Paradoxaphis aristoteliae* (Threatened – Nationally Critical).
(b) an indigenous vegetation type or an indigenous species that is uncommon within the region or ecological district:	Criterion not met.
(c) an indigenous species or plant community at or near its natural distributional limit	Criterion not met.
(d) indigenous vegetation that has been reduced to less than 20% of its pre-human extent in the ecological district, region, or land environment	Criterion met for podocarp/kāmahi forest.
(e) indigenous vegetation or habitat of indigenous fauna occurring on naturally uncommon ecosystems	Criterion not met.
(f) the type locality of an indigenous species	Criterion met for areas of the site containing podocarp/kāmahi forest and (podocarp)-Pittosporum-mānuka scrub/forest. These indigenous habitats at Dolamore Park are the type locality for *Paradoxaphis aristoteliae,* and *Spaniocerca zwicki*.
(g) the presence of a distinctive assemblage or community of indigenous species	Criterion not met.
(h) the presence of a special ecological or scientific feature.	Criterion not met.

Criteria	Evaluation
Ecological context is the extent to which the size, shape, and configuration of an area within the wider surrounding landscape contributes to its ability to maintain indigenous biodiversity or affects the ability of the surrounding landscape to maintain its indigenous biodiversity.	
(a) at least moderate size and a compact shape, in the context of the relevant ecological district	Criterion not met: Site is relatively small and forest is part of a much larger size.
(b) well-buffered relative to remaining habitats in the relevant ecological district	Criterion met for areas of the site containing podocarp/kāmahi forest and (podocarp)-Pittosporum-mānuka scrub/forest. These indigenous communities are buffered by adjacent indigenous forest habitats within Croydon Bush Reserve.
(c) provides an important full or partial buffer to, or link between, one or more important habitats of indigenous fauna or significant natural areas	Criterion not met.
(d) important for the natural functioning of an ecosystem relative to remaining habitats in the ecological district	Criterion not met.
Is vegetation and/or habitat Significant?	The site as a whole is not significant, because large parts of it are dominated by exotic vegetation which does not meet any of the criteria. However, the areas of indigenous forest/scrub vegetation and habitat (podocarp/kāmahi forest and (podocarp)-Pittosporum-mānuka scrub/forest; Vegetation Types 3 and 4) meet several criteria, and these areas of the site are significant.
Criteria met for Significance	Representativeness (a,b), Diversity and pattern (a), Rarity and distinctiveness (a,d,f), Ecological context (b)

Wildlands

Providing outstanding ecological services to sustain and improve environments

Call Free: 0508 WILDNZ
Phone: +64 7 3439017
Fax: +64 7 343 9018
Email: ecology@wildlands.co.nz

99 Sala Street
PO Box 7137, Te Ngae
Rotorua 3042
New Zealand

www.wildlands.co.nz

ECOLOGY | RESTORATION | BIODIVERSITY | SUSTAINABILITY

Regional Offices located in
Northland, Auckland, Hamilton, Tauranga, Rotorua, Whakatane, Wellington, Christchurch, Dunedin, Invercargill