RELATIVE CONSERVATION VALUES

OF THE

SILNA LANDS

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A Report Prepared for the Department of Conservation
June 1999

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Mike Harding, Blenheim, June 1999

1.0 INTRODUCTION

This report outlines the relative conservation values of four blocks of land set aside under the South Island Landless Natives Act 1906 (the 'SILNA' lands) in Southland and Otago. The report also includes a brief assessment of other SILNA lands.

The main part of this report (section 3) describes the location, conservation values, and significance of four of the SILNA blocks:

- Waitutu (two unprotected sections)
- West Rowallan
- Rakiura/Stewart Island
- Tautuku-Waikawa

Other SILNA lands are described briefly in section 4.

An assessment of the relative conservation values of the four blocks, and of areas (sub-blocks) within each block, is undertaken in section 5. The conclusion of this assessment, and comments on the other SILNA lands, are presented in section 6.

2.0 METHODOLOGY

This report was researched and compiled over a three week period in May and June 1999. The report must, therefore, be regarded as a rapid assessment of conservation values based on readily available information.

The information contained in this report is based entirely on published documents, aerial photographs, and contributions from specialists. No field survey work was undertaken, due to the reporting deadline. These somewhat limited sources of information are referenced throughout the text, and full references listed in section 7. The assistance of Department of Conservation staff and other specialists was very important for the compilation of this report.

Assessments of the extent of intact (unlogged) or logged forest contained in this report were made primarily from forest type maps compiled by Landcare Research Ltd (Christchurch), aerial photographs, and topographical maps. National Forest Survey forest types are used to describe the vegetation of the blocks, except for Stewart Island where the vegetation descriptions of Wilson (1987) are used.

Assessment of the relative conservation values of the four main blocks is undertaken using criteria similar to those outlined in the recently compiled Southland Protection Strategy[1]. A copy of these criteria is included in Appendix 2.

Descriptions and assessments of the other SILNA lands (those lying outside the four blocks assessed in section 3) are constrained significantly by the lack of available information on the extent and conservation values of these lands.

[1] *Southland Protection Strategy, Nature Heritage Fund, Wellington, May 1999 (unpublished document)*

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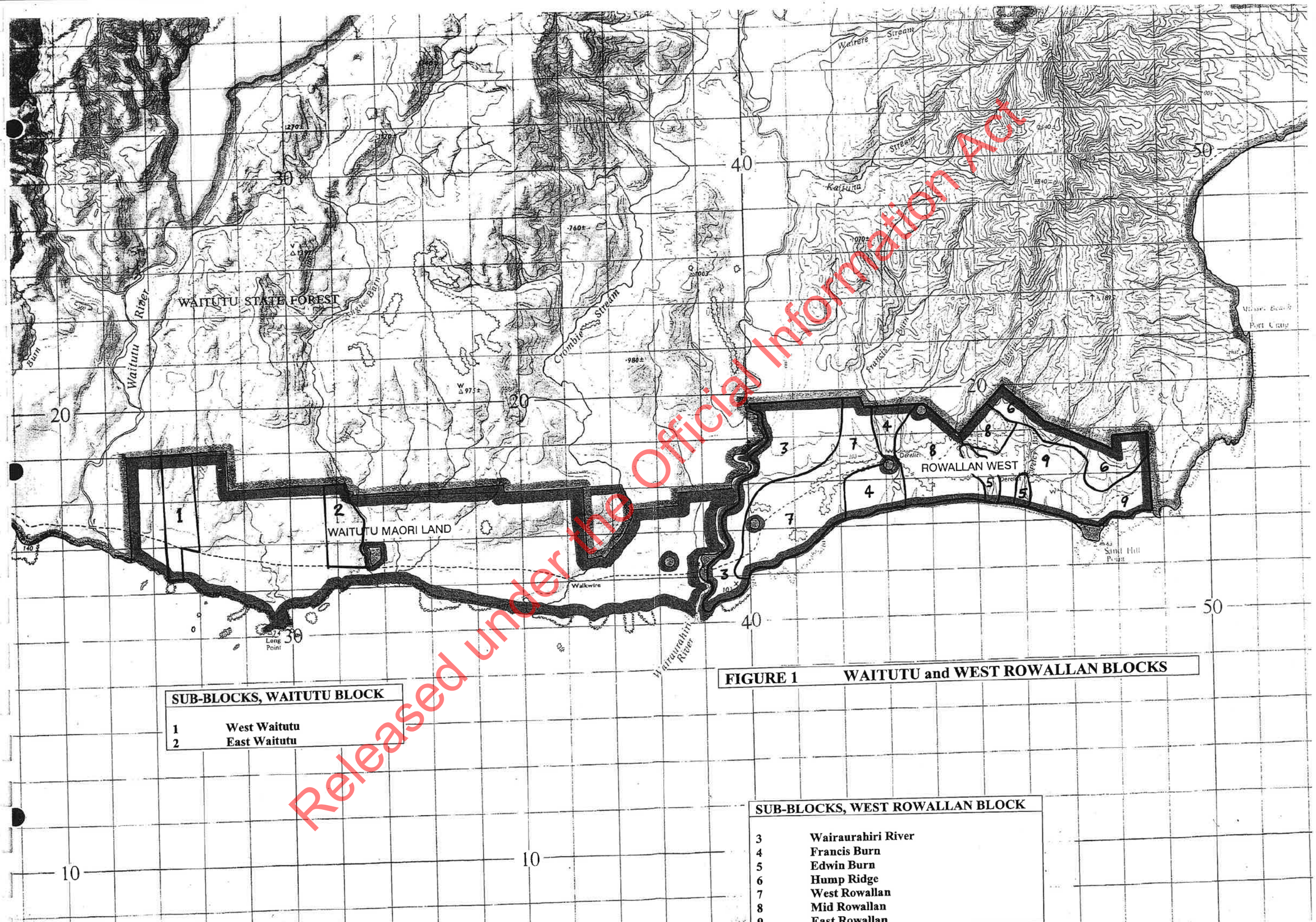
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SUB-BLOCKS, WAITUTU BLOCK

1	West Waitutu
2	East Waitutu

SUB-BLOCKS, WEST ROWALLAN BLOCK

3	Wairaurahiri River
4	Francis Burn
5	Edwin Burn
6	Hump Ridge
7	West Rowallan
8	Mid Rowallan
9	East Rowallan

FIGURE 1 WAITUTU and WEST ROWALLAN BLOCKS

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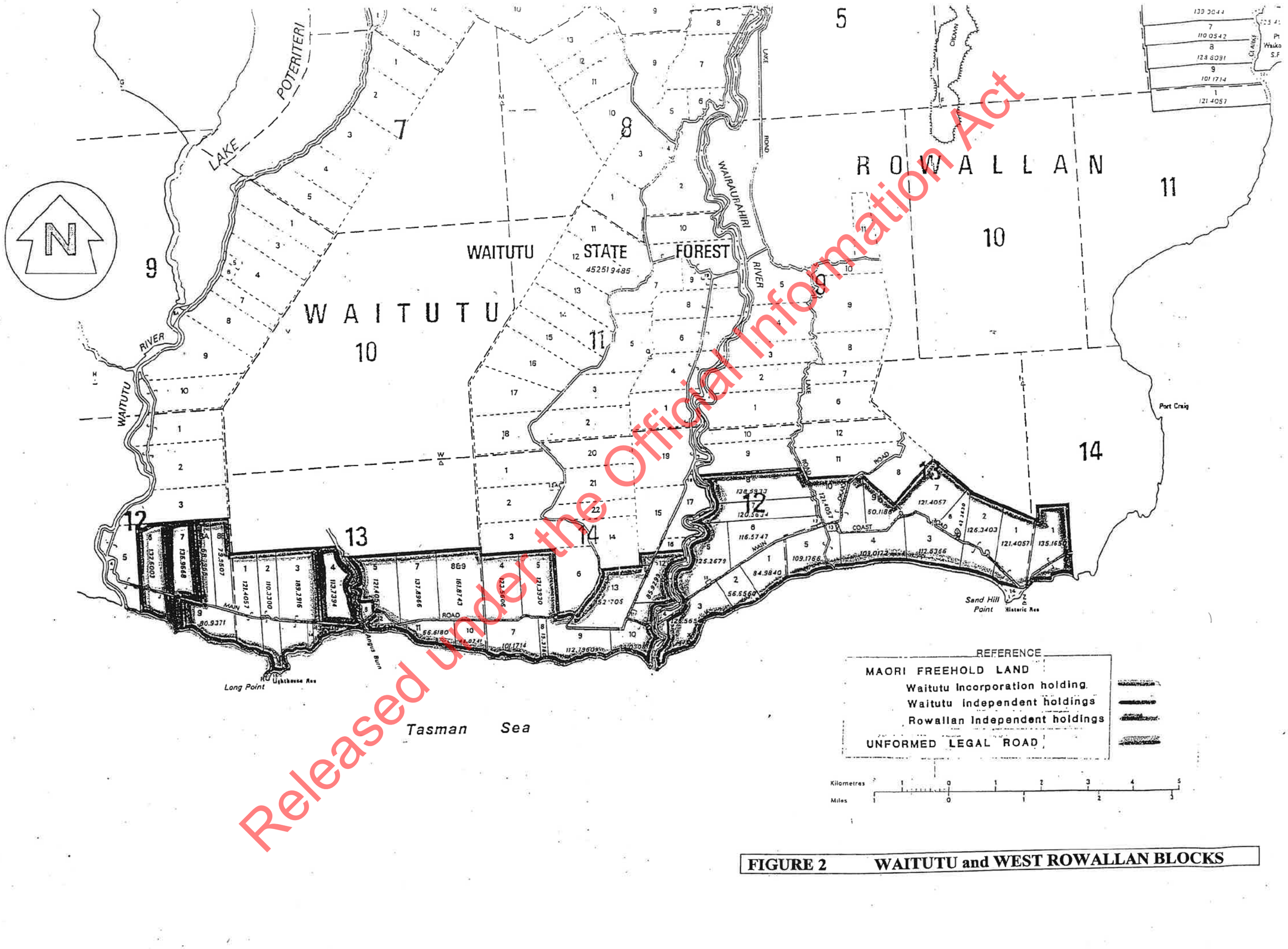


FIGURE 2 WAITUTU and WEST ROWALLAN BLOCKS

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3.2 West Rowallan

Location and Legal Description:

The West Rowallan Block lies in western Southland on the south coast between Te Waewae Bay and Fiordland. It is bordered to the north and east by Waitutu Forest Conservation Area, to the west by the Wairaurahiri River and Waitutu Block of Maori land, and to the south by the Tasman Sea. A small Conservation Area (18 ha) adjoins the Block to the west alongside the Wairaurahiri River, and Sand Hill Point Historic Reserve (13 ha) adjoins the Block to the south on the coast.

The West Rowallan Block covers an area of approximately 1,820 ha, comprising seventeen separate sections. Seven sections lie within Block 12 of the Rowallan Survey District (SD), nine lie within Block 13 of the Rowallan SD, and one lies within Block 14 of the Rowallan SD. Within these sections of Maori land there are three small sections administered by the Department of Conservation under s.62 Conservation Act 1987. An unformed legal road, along which parts of the South Coast track are located, bisects the Block. A strip of Crown land lies between the West Rowallan Block and the sea.

The Block covers relatively gentle terrain comprised of uplifted marine terraces lying mostly below 150m altitude. The Block rises to a maximum height of approximately 300m at its northeastern corner on the Hump Ridge. The extensive terraces are dissected by several incised streams flowing south from the steeper slopes of the Hump Ridge, including the Francis Burn, Edwin Burn, and Percy Burn. A steep terrace scarp forms the coastal boundary of the Block.

Forest Types:

The West Rowallan Block supports a mosaic of logged and unlogged podocarp and beech forest. Formerly dense podocarp forest (NFS Types P1 and P2) dominated the terraces, and dense silver beech forest with occasional podocarps (NFS Type BO) was present in incised gullies. Minor areas of podocarp-beech forest (NFS Type PB) were present at higher altitudes in the northern part of the Block. Podocarp-rata forest (NFS Type PR) and coastal forest (NFS Type C) were present in a narrow strip along the coast.

Large areas of podocarp forest were logged earlier this century and milled at a substantial sawmill located nearby at Port Craig. It is estimated that forest was logged from approximately 1000 ha of Maori land in the area between 1916 and 1932 (Nicholls, 1976). There has been significant native forest regeneration since logging ceased. Many logged areas now support a low and dense forest dominated by hardwood species, especially kamahi, and pole stands of rimu. Forest regeneration has been less successful at other sites, and there are still large areas dominated by low fern and shrub cover (National Forest Survey *data*, Landcare Research; Nicholls, 1976).

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These forest types, and the areas they occupy, are described in more detail below.

Podocarp forest (NFS types **P1 and P2**) comprises dense to moderately dense rimu with locally abundant miro and Hall's totara. Rata and kamahi are present as understorey species. These two similar forest types formerly covered all of the West Rowallan Block, except for the coastal strip, the incised gullies, and minor areas at higher altitudes. Significant areas of intact dense podocarp forest remain in the northwest corner of the West Rowallan Block (on parts of Sections 7 and 8, Block 12), in the centre of the West Rowallan Block just west of the lower Francis Burn (on Section 5, Block 13), and in the northeast corner of the West Rowallan Block inland from Sand Hill Point (on parts of Section 1, Block 13, and Section 1, Block 14).

Podocarp-beech forest (NFS type **BO**) comprises dense uneven-aged silver beech with occasional to locally frequent rimu, miro, and Hall's totara. Kamahi is present in the understorey. This forest type occupies the slopes of incised gullies or terrace edges. The original extent of this forest type appears largely intact, and is present along the Wairaurahiri River (on parts of Sections 3, 5, 7, and 8, Block 12), alongside the lower Francis Burn (on Section 5, Block 13), and alongside the lower Edwin Burn and Percy Burn (on Section 3, Block 13).

Podocarp-beech forest (NFS type **PB**) comprises dense rimu, with some miro and Hall's totara, and abundant silver beech. This forest type occupies remnant gravel terraces in the northeastern part of the West Rowallan Block, east of the Edwin Burn (on parts of Sections 2, 6, and 7, Block 13).

Coastal forest (NFS type **C**) is a low forest dominated by tree daisy and ferns at its seaward edge, and grading inland to rata-kamahi forest with wheki/tree fern, and occasional Hall's totara and mountain beech (Mark *et al*, 1988; Nicholls, 1976). This forest type occupies a coastal strip on the boundary of the West Rowallan Block, and is more or less modified depending upon the extent of logging of the adjoining forests.

Podocarp-rata forest (NFS type **PR**) is a variant of type P, and comprises dense rimu with rata. It occupied a strip along the coast between the low coastal forest (Type C) and dense podocarp forest (Type P). It appears to have been entirely logged from the West Rowallan Block.

The forests of the West Rowallan Block formed an extensive area of lowland podocarp and podocarp-beech forest occupying the raised marine terraces between Sand Hill Point and the Wairaurahiri River.

Approximately one quarter of the West Rowallan Block supports unlogged forest. The remainder of the block supports native vegetation in varying stages of regeneration depending upon past disturbance and substrate. The most significant tracts of unlogged forest within the West Rowallan Block are listed below (*estimates derived from:* National Forest Survey *data*, Landcare Research).

- *part* Section 7 and part Section 8, Block 12: c.180 ha dense podocarp (P1 and P2) and silver beech (BO) forest;
- Section 5, Block 13: c.110 ha dense podocarp (P1) and silver beech (BO) forest;

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- *part* Section 1, Block 13, and part Section 1, Block 14: c.110 ha dense podocarp (P2) forest;
- *part* Section 3 and part Section 5, Block 12: c.100 ha podocarp-beech (PB2) and silver beech (BO) forest;
- *part* Section 10, Block 13: c.60 ha dense podocarp (P1) and podocarp-beech (PB) forest;
- *part* Section 7 and part Section 2, Block 13: c.60 ha podocarp-beech (PB) forest;
- *part* Section 3, Block 13: c.30 ha silver beech (BO) forest.

Species Habitat:

There has been little detailed fauna survey work undertaken in the West Rowallan Block during recent years. The most comprehensive published data appear to be records in a Wildlife Service report (Elliot and Ogle, 1985), and summaries contained in the Mainland Southland – West Otago Conservation Management Strategy (Department of Conservation, 1998).

The West Rowallan Block supports significant areas of high quality habitat for indigenous forest birds, notably unlogged forests that adjoin larger areas of forest in the Waitutu Forest Conservation Area and the Waitutu Block of Maori land. While the areas of unlogged forest within the West Rowallan Block are discontinuous, they are linked by areas of strongly regenerating indigenous forest that also provide important forest bird habitat. Furthermore, there are intact corridors of unlogged forest within the Block, notably along the incised gullies of the major rivers and streams.

Native bird species recorded in the vicinity of the two sections during Wildlife Service surveys of the area in 1984 include kereru, kaka, kakariki, robin, long-tailed cuckoo, tui, bellbird, brown creeper, grey warbler, fantail, tit, and silvereye (Elliot and Ogle, 1985).

The following *threatened* indigenous species are recorded as present, or are believed to be present by Department of Conservation staff, in forests and streams within the West Rowallan Block. The threatened species categories (A, B, or C) listed are those currently used by the Department of Conservation for setting priorities for conservation management (Molloy and Davis, 1994).

Long-tailed bat (B) ..... probably present
Kaka (B) ..... present
Kea (B) ..... probably present
Kereru (B)..... present
Karearea/NZ Falcon (B) ..... probably present
Yellow-crowned kakariki (C)..... present
Mohoua (B) (yellowhead) ..... possibly present
Short-jawed kokopu (A)..... probably present
Giant kokopu (B)..... probably present
Banded kokopu (C)..... probably present
Koaro (C)..... probably present
Peraxilla tetrapetala (B) (pirita/red mistletoe)..... possibly present
Peraxilla colensoi (B) (pirita/scarlet mistletoe) ... probably present
Alepis flavida (B) (pirita/yellow mistletoe) ..... probably present

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In addition to the threatened species listed above, it is likely that the following threatened species are present in rivers, or along the coast, adjacent to the West Rowallan Block.

Whio (B) (blue duck)	possibly present
Fiordland crested penguin (B)	possibly present
Variable oystercatcher (C)	present
White-fronted tern (C)	probably present

The West Rowallan Block supports substantial areas of intact, or regenerating, lowland and coastal forest. It forms part of the extensive lowland forests of the Waitutu area that support the largest remaining population of kaka in mainland New Zealand (Department of Conservation, 1998) and provide extensive habitat for forest bird populations.

Invertebrate populations do not appear to have been sampled in recent years, though the area is regarded as an important area for indigenous land snails with over 30 species recorded (McEwen, 1987).

Important Sites:

The most significant natural feature of the West Rowallan Block is its location on the lower of a series of uplifted marine terraces that extend inland from the coastline to the summit of the Hump Ridge. Thirteen distinct marine terraces have been mapped from Sand Hill Point on the coast to over 1,000m above sea level and 12 kilometres inland, representing surfaces uplifted over a period of over 900,000 years. Most of the West Rowallan Block lies on a marine terrace uplifted approximately 80,000 years ago. Inland parts of the Block lie on earlier terrace surfaces, uplifted approximately 100,000 or 120,000 years ago (Ward, 1988).

This terrace sequence is a nationally important landform and a significant component of the justification for inclusion of the adjoining Waitutu Forest Conservation Area into Fiordland National Park and the South-West New Zealand (Te Wahipounamu) World Heritage Area (Department of Conservation, 1989). The terrace sequence is listed as "*one of the most well preserved sequences of uplifted marine terraces in New Zealand giving detailed Quaternary uplift history of southern Fiordland*" in the draft Geopreservation Inventory for the Southern Region (Geological Society of New Zealand, *unpublished document*).

The South Coast track that follows the approximate line of the unformed legal road through the West Rowallan Block has some historic significance. It was constructed in 1896 to provide access to the gold fields at Preservation Inlet. It later served as the route for a telephone line, erected in 1908, between Orepuki and the Puysegur Point lighthouse (Begg, 1973).

Viaducts spanning the Francis Burn, Edwin Burn, and Percy Burn, were constructed early this century to support the bush tramway used during the logging of West Rowallan forest. The Percy Burn Viaduct is largest wooden structure of this type in the Southern Hemisphere and is regarded as an important historic site (Department of Conservation, 1998). It is also recognized as a significant example of engineering work by the Institute of Professional Engineers of New Zealand. The viaducts appear to lie within the West Rowallan Block, rather than on legal road.

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Recreational use of the South Coast track through the West Rowallan Block is moderate, with approximately 200 trampers per month during summer (Department of Conservation, 1998). The South Coast track between the Wairaurahiri River and Te Waewae Bay forms part of the route of an annual multi sport event, the Wild Challenge. The proposed Hump Track will also traverse the West Rowallan Block, along part of the South Coast track.

The West Rowallan Block lies adjacent to the proposed Preservation-Waitutu Wilderness Area (Molloy, 1983). It provides important opportunities for remote experience recreation.

Landscape Values:

The West Rowallan Block is a part of an ecological and landform sequence extending from sea level to the mountains of southeastern Fiordland. Although modified by the extraction of timber earlier this century, the West Rowallan Block still supports a complete cover of indigenous vegetation. Regeneration of former forest communities has been rapid, and is sufficiently advanced to provide important habitat for native species and form an effective link between areas of intact forest on and adjoining the West Rowallan Block. Collectively these intact and regenerating forest communities, and the surrounding unlogged forests of the Waitutu Forest Conservation Area and the Waitutu Block of Maori land, form an ecological and landscape sequence of national significance.

The West Rowallan Block is effectively an enclave of unprotected land within a protected landscape. Its proximity to the extensive protected ecosystems of Fiordland National Park, and the important actual and potential lowland habitat it supports, means that the Block has great significance for nature conservation. As an unprotected area, future use of the West Rowallan Block may compromise conservation management activities on adjoining protected lands, including wild animal control and species recovery programmes. Future recreational access along the South Coast track and to the viaducts may also be hindered.

Summary of Significant Values:

The significant values of the complete West Rowallan Block are summarized as follows:

- extensive and contiguous area of intact or strongly regenerating native forest surrounded by protected forests;
- significant areas of unlogged lowland podocarp and podocarp-beech forest;
- supports good native bird populations and provides important low altitude habitat;
- supports threatened species, including kaka and kereru;
- forms part of a spectacular sequence of uplifted marine terraces;
- contains an important historic and engineering site (the Percy Burn viaduct);
- adjoins Fiordland National Park and the South West NZ World Heritage Area;
- provides important recreation opportunities, and foot access routes to other protected lands.

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Subdivision of the Block based on conservation values:

To assist with the assessment of the relative conservation values of different parts of the West Rowallan Block, the block is subdivided into units of similar conservation value below. The subdivision proposed here is based on the extent of modification, the extent to which areas are linked with protected areas, and the presence of significant species or important sites. These sub-blocks are used for the assessment of relative conservation values in section 5.2 of this report.

Wairaurahiri River: (unlogged parts of Sections 3, 5, 7, and 8, Block 12)

- substantial area of unlogged dense podocarp, podocarp-beech, and silver beech forest;
- adjoins Waitutu Forest Conservation Area;
- adjoins and buffers protected lands alongside Wairaurahiri River and the Waitutu Block across the Wairaurahiri River.

Francis Burn: (Section 5 and unlogged parts of Section 10, Block 13)

- substantial area of unlogged dense podocarp forest, podocarp-beech forest, and silver beech forest;
- only sizeable remnant of intact forest on the West Rowallan coastline;
- provides corridor of unlogged forest between the coast and the Waitutu Forest Conservation Area;
- adjoins and buffers the Francis Burn.

Edwin Burn: (unlogged parts of Section 3, Block 13)

- significant area of unlogged silver beech forest;
- buffers lower Edwin Burn and lower Percy Burn;
- appears to include the Percy Burn Viaduct.

Hump Ridge: (unlogged parts of Sections 1, 2, and 7, Block 13; and Section 1, Block 14)

- substantial area of unlogged dense podocarp forest;
- adjoins Waitutu Forest Conservation Area.

West Rowallan: (logged parts of Sections 1, 2, 3, 5, 6, 7, and 8, Block 12)

- substantial area of regenerating forest;
- potential link between Areas 1 and 3 above;
- includes or adjoins a significant part of South Coast track.

Mid Rowallan: (logged parts of Sections 4, 7, 9 and 10, Block 13)

- substantial area of regenerating forest;
- potential link between Areas 3 and 4 above;
- includes or adjoins a significant part of South Coast track.

East Rowallan: (logged parts of Sections 1, 2, 3, and 6, Block 13; and Section 1, Block 14)

- substantial area of regenerating forest;
- potential link between Areas 4 and 5 above;
- significant area of regenerating forest, linking intact forest with the Sand Hill Point Historic Reserve and the coast;
- includes or adjoins a significant part of South Coast track;
- appears to include the Percy Burn Viaduct.

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5.0 RELATIVE CONSERVATION VALUES OF THE BLOCKS

To determine the relative conservation values of the four blocks described in Section 3, the attributes of each block were assessed against criteria similar to those set out in the recently prepared Southland Protection Strategy (*see* Appendix 2). In this assessment each block is given a value for each of six criteria:

- Depletion/Representativeness (extent to which the ecosystem is depleted in the ecological district)
- Distinctiveness (threatened species habitat)
- Sustainability (size, shape, linkages, buffering)
- Condition (extent of modification)
- Landscape Integrity (place of the remnant within the landscape)
- Amenity (presence of important sites)

5.1 Assessment of the complete Blocks

In this assessment each block is considered as one unit, included logged areas, and assessed according to the highest values present in the block.

Criterion	Waitutu	West Rowallan	Rakiura/ Stewart Is.	Tautuku-Waikawa
Depletion	Low	Low	Low	Very High
Distinctiveness	High	High	High	High
Sustainability	Very High	High	Very High	High
Condition	Very High	High	Very High	Moderate
Landscape Integrity	Very High	Very High	Very High	High
Amenity	High	High	High	High

Discussion:

All Blocks have a high or very high value for distinctiveness (threatened species habitat), sustainability, landscape integrity, and amenity attributes. Three Blocks have a high or very high value for condition. The Tautuku-Waikawa Block has a moderate value for condition because significant parts of the Block have been recently logged. The Waitutu, West Rowallan, and Rakiura Blocks have a low value for depletion/representativeness, as the ecosystems within the blocks are well protected elsewhere in the Waitutu or Mt Allen Ecological Districts. Conversely the Tautuku-Waikawa Block has a very high value, as it represents one of the few significant areas of lowland coastal podocarp forest in the Tahakopa Ecological District.

This assessment indicates that, while the blocks have slightly different values for some attributes, their overall value for conservation is uniformly high. Based on the criteria above, the Waitutu and Rakiura Blocks can be considered to have a slightly higher relative conservation value than the Tautuku-Waikawa Block which, in turn, has a slightly higher value than the West Rowallan Block.

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This difference is largely due to:

- The excellent condition of the forests in the Waitutu and Rakiura Blocks, notably the absence of any logging and the lower populations of introduced species;
- The intact and extensive ecological and landscape sequences represented in the Waitutu and Rakiura Blocks, and the diversity of habitat in the Rakiura Block;
- the greater extent of depletion of the original ecosystems of the Tahakopa Ecological District than in the Waitutu or Mt Allen Ecological Districts (and therefore the greater importance of the remnants within the Tautuku-Waikawa Block);
- the extent of modification (early logging) of the West Rowallan Block, and recent logging of the Tautuku-Waikawa Block.

However, it should be noted that all four blocks are of very high conservation value and that the relative priorities determined by this analysis are based on the most important parts of each Block. This limitation is addressed in section 5.2 (below) where the Blocks have been divided into sub-blocks for the assessment of relative conservation values, to provide a more detailed comparison between areas within each Block and between different Blocks.

To differentiate further within or between the blocks, the criteria would need to be weighted according to the particular values for which protection is sought. For example, criteria such as the size of each block, the number of threatened species present, scenic value, or the presence of archaeological or historic sites, could be given greater weighting. Furthermore, the extent to which each block is threatened, and the present opportunities for further protection, may be more important immediate considerations than relative conservation value.

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5.2 Assessment of Sub-Blocks

In this assessment, the four blocks have been divided into twenty sub-blocks based on areas of similar conservation value. The purpose of this subdivision is to provide a more detailed assessment of protection priorities based on the relative values of areas within each block. This subdivision is based largely on the extent of modification (notably unlogged or logged forest), the extent to which areas are linked with protected areas, and the presence of important sites.

The extent of unlogged and logged areas has been determined from forest type maps (National Forest Survey *data,* Landcare Research), recent aerial photographs, and personal communication with specialists.

The twenty sub-blocks are described in section 3 of this report, illustrated on the Figures in section 3 of this report, and listed below.

out of scope

7. West Rowallan: .....logged parts of Sections 1, 2, 3, 5, 6, 7, and 8, Block 12, Rowallan SD
8. Mid Rowallan: .....logged parts of Sections 4, 7, 9, and 10, Block 13, Rowallan SD
9. East Rowallan: .....logged parts of Sections 1, 2, 3, and 6, Block 13, and Section 1, Block 14, Rowallan SD

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Assessment of the twenty sub-blocks against the criteria listed in section 5.1 above indicates that the relative conservation values of the twenty sub-blocks are as follows (from highest to lowest value):

Sub-block	*Block*
out of scope	
Francis Burn	West Rowallan
Hump Ridge	West Rowallan
Edwin Burn	West Rowallan
out of scope	
Mid Rowallan*	West Rowallan
East Rowallan*	West Rowallan
West Rowallan*	West Rowallan
out of scope	

* = *logged or cleared land*

Discussion:

out of scope

Of intermediate conservation value, when assessed against these criteria, are the remaining unlogged parts of the Tautuku-Waikawa Block and the unlogged parts of the West Rowallan Block. These six sub-blocks have a slightly lower value because they are smaller areas, frequently adjoin areas of previously logged forest, and are not part of an intact ecological or landscape sequence. The Tautuku-Waikawa sub-blocks support forests under represented elsewhere in the ecological district. The West Rowallan sub-blocks adjoin protected areas.

Of slightly lower conservation value, when assessed against these criteria, are the logged parts of the West Rowallan Block. These three sub-blocks link the unlogged areas, are in an advanced stage of regeneration, and provide good habitat for species typical of the ecological district. They also have excellent restoration potential.

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The sub-blocks with the lowest relative conservation value, when assessed against these criteria, are the logged parts of the Tautuku-Waikawa Block. These four sub-blocks have been logged more recently and in some areas been completely cleared. They are smaller than the logged areas within the West Rowallan Block, and have comparatively lower value for species habitat.

As with any assessment of this nature, the relative values are to some extent subjective and certainly dependent upon the information available for each area. Further research or field survey work would almost certainly provide additional information that may in turn provide a different assessment of the relative conservation values of each sub-block.

The assessment of sub-blocks undertaken above has separated blocks and sections based on the condition of the ecosystems present (logged or unlogged). The relative extent of unlogged and logged forest should be considered as part of any protection proposal that is based on Section or Block boundaries. Furthermore, the extent to which the unlogged forests are threatened, and the present opportunities for their protection, may be important factors for consideration as part of any protection proposal.

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6.0 CONCLUSION

The SILNA lands assessed in this report are all of high conservation value. The Waitutu, West Rowallan, Rakiura, and Tautuku-Waikawa Blocks represent the most extensive unprotected areas of lowland and coastal forest in Southland and Otago. They probably represent the best opportunities for the further protection of intact lowland indigenous ecosystems in the country.

When compared with one another, the Waitutu and Rakiura Blocks are of slightly higher conservation value than the Tautuku-Waikawa and West Rowallan Blocks. This is largely because the former blocks represent, or are part of, extensive areas of intact forest that provide important threatened species habitat and form significant ecological and landscape sequences.

out of scope

Of slightly lower value are sub-blocks supporting unlogged forest in the West Rowallan Block and the sub-blocks supporting the remaining areas of unlogged forest in the Tautuku-Waikawa Block. Then, of slightly lower conservation value again, are the areas of logged forest in the West Rowallan Block and, finally, the areas of logged forest in the Tautuku-Waikawa Block.

However, it must be stressed that these assessments are based on limited information about the condition of the Blocks or the presence and health of populations of threatened species within the Blocks. Additional information may alter these assessed values. Furthermore, the assessments are somewhat subjective and influenced by the relative emphasis placed on different criteria. Other assessments, using different criteria or placing different emphasis on the same criteria, are likely to produce a slightly different conclusion about the relative conservation values of the SILNA blocks.

out of scope

Any final assessment of relative conservation values, and priorities for protection, should be based on the purposes for which protection is sought, the extent to which the areas are threatened, and the opportunities for protection at that time.

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APPENDIX ONE

SCIENTIFIC NAMES OF SPECIES CITED BY COMMON NAME IN THE TEXT

Plants:

broadleaf	*Griselinia littoralis*
carpet clubmoss	*Lycopodium ramulosum*
gahnia	*Gahnia procera*
Hall's totara	*Podocarpus hallii*
haumakoroa	*Pseudopanax simplex*
inaka	*Dracophyllum longifolium*
kahikatea	*Dacrycarpus dacrydioides*
kamahi	*Weinmannia racemosa*
kiokio fern	*Blechnum* sp.
mahoe	*Melicytus ramiflorus*
manuka	*Leptospermum scoparium*
matai	*Prumnopitys spicatus*
matipou	*Myrsine australis*
miro	*Prumnopitys ferruginea*
mountain beech	*Nothofagus solandri* var. *cliffortioides*
pink pine	*Halocarpus biformis*
pokaka	*Elaeocarpus hookerianus*
prickly mingimingi	*Cyathodes juniperina*
rata/southern rata	*Metrosideros umbellata*
red mistletoe/pirita	*Peraxilla tetrapetala*
red tussock	*Chionochloa rubra*
rimu	*Dacrydium cupressinum*
scarlet mistletoe/pirita	*Peraxilla colensoi*
silver beech	*Nothofagus menziesii*
stinkwood	*Coprosma foetidissima*
sundew	*Drosera* sp.
tangle fern	*Gleichena dicarpa*
teteaweka	*Olearia oporina*
totara	*Podocarpus totara*
tree daisy/puheretaiko	*Brachyglottis rotundifolia*
tupare/leatherwood	*Olearia colensoi*
veined sun orchid	*Thelymitra venosa*
wheki/tree fern	*Dicksonia squarrosa*
wire rush	*Empodisma minus*
yellow mistletoe/pirita	*Alepis flavida*
yellow-silver pine	*Lepidothamnus intermedius*

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Animals:

banded kokopu	*Galaxias fasciatus*
black-backed gull	*Larus dominicanus*
black-billed gull	*Larus bulleri*
black shag	*Phalacrocorax carbo*
bellbird/korimako	*Anthornis melanura*
brown creeper/pipipi	*Finschia novaeseelandiae*
fantail	*Rhipidura fuliginosa*
fernbird	*Bowdleria punctata punctata*
Fiordland crested penguin/tawaki	*Eudyptes pachyrhynchus*
giant kokopu	*Galaxias argenteus*
grey warbler	*Gerygone igata*
harlequin gecko	*Hoplodactylus rakiurae*
hoiho/yellow-eyed penguin	*Megadyptes antipodes*
kaka (South Island)	*Nestor meridionalis meridionalis*
kakapo	*Strigops habroptilus*
kakariki/parakeet	*Cyanoramphus spp.*
karearea/NZ falcon	*Falco novaeseelandiae*
kea	*Nestor notabilis*
kereru/NZ pigeon	*Hemiphaga novaeseelandiae*
koaro	*Galaxias brevipinnis*
kotare/kingfisher	*Halcyon sancta vagans*
long-tailed bat	*Chalinolobus tuberculatus*
long-tailed cuckoo	*Eudynamys taitensis*
mohoua/yellowhead	*Mohoua ochrocephala*
New Zealand dotterel	*Charadrius obscurus* "southern"
New Zealand sea lion	*Phocarctos hookeri*
pied stilt	*Himantopus himantopus leucocephalus*
pipit/NZ pipit	*Anthus novaeseelandiae*
red-billed gull	*Larus novaehollandiae scopulinus*
red-crowned kakariki/parakeet	*Cyanoramphus novaezelandiae*
rifleman	*Acanthisitta chloris*
robin/toutouwai	*Petroica australis*
ruru/morepork	*Ninox novaeseelandiae novaeseelandiae*
shining cuckoo	*Chrysocooyx lucidus lucidus*
short-jawed kokopu	*Galaxias postvectis*
silvereye	*Zosterops lateralis lateralis*
South Island pied oystercatcher	*Haematopus ostralegus finschi*
Stewart Island fernbird/matata	*Bowdleria punctata stewartiana*
Stewart Island kiwi	*Apteryx australis lawryi*
Stewart Island robin	*Petroica australis rakiura*
Stewart Island shag	*Leucocarbo chalconotus*
tit/piropiro	*Petroica macrocephala*
tui	*Prosthemadera novaeseelandiae*
variable oystercatcher/torea-pango	*Haematopus unicolor*
weka	*Gallirallus australis*
welcome swallow	*Hirundo tahitica neoxena*
white-faced heron	*Ardea novaehollandiae*
white-fronted tern	*Sterna striata*
whio/blue duck	*Hymenolaimus malacorhynchos*
yellow-crowned kakariki/parakeet	*Cyanoramphus auriceps*

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APPENDIX TWO

CRITERIA FOR THE ASSESSMENT OF RELATIVE CONSERVATION VALUES

Adapted from the recently compiled Southland Protection Strategy
(Nature Heritage Fund, Wellington, 1999, unpublished document)

Depletion/Representation

Depletion is the estimated proportion of the original extent of the ecosystem that is formally protected within the ecological district in which the protection proposal is located. Suggested levels of depletion for ranking purposes are:

- Less than or equal to 1% of the original extent protected;
- More than 1% and less than or equal to 5% of the original extent protected;
- More than 5% and less than or equal to 20% of the original extent protected;
- More than 20% and less than or equal to 50% of the original extent protected;
- More than 50% of the original extent protected;
- Original ecosystems substantially modified.

Distinctiveness

Distinctiveness is the importance of the habitat for which protection or restoration is proposed, based on the priorities for the conservation of threatened plants and animals proposed by Molloy and Davis (1994). Suggested levels of importance of habitat for refining priorities based on the primary criterion are:

- Contains important habitat for a Category A threatened species; ***or***, important habitat of excellent quality for several Category B threatened species;
- Contains important habitat for a Category B threatened species; ***or***, minor/potential habitat for a Category A threatened species;
- Contains important habitat for a Category C threatened species; ***or***, minor/potential habitat for a Category B threatened species; ***or***, extensive good quality habitat for animal species representative of the ecological district;
- Contains suitable habitat for species representative of the ecological district;
- Habitat values low or insignificant.

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Sustainability

Sustainability is the extent to which the area proposed for protection or restoration is sustainable (viable) based on its size and shape, and whether it links or buffers existing protected areas. Suggested levels of sustainability for ranking purposes are:

- The area is an enclave of unprotected land surrounded by protected land; ***or***, a very large area *(> 1,000 ha. for intact forest or alpine ecosystems, and >100 ha. for intact lowland or montane non-forest ecosystems)*;
- The area adjoins protected land along >50% of its terrestrial boundary; ***or***, links two or more protected areas, or a protected area with the sea, river or lake, and the linkage is wide enough to be viable; ***or*** is very large (as above) but modified over part of its area;
- The area adjoins protected land along <50% of its terrestrial boundary; ***or***, does not adjoin a protected area but is large enough to sustain the ecosystem with certainty (including resilience to natural disturbance);
- The area does not adjoin a protected area but is large enough, of suitable shape, and sufficiently buffered to sustain the ecosystem;
- The area does not adjoin a protected area and is not large enough, of suitable shape, or sufficiently buffered to sustain the ecosystem, but budgeted management action will sustain key ecosystem processes and components;
- The area does not adjoin a protected area and is not large enough, of suitable shape, or sufficiently buffered to sustain the ecosystem, and management action to sustain key ecosystem processes and components is too costly.

Condition

Condition is the extent to which the area proposed for protection is modified by direct human action, such as logging, tree planting, or grazing of domestic stock, or by introduced species. Suggested levels of condition for refining priorities based on the primary criterion are:

- Ecosystem unmodified by humans, and introduced species absent or having an insignificant impact on key ecosystem processes or components;
- Ecosystem unmodified by humans, and introduced species present but having a minor impact on key ecosystem processes or components;
- Ecosystem partly modified by humans (e.g. selective logging or grazing) but restoration occurring without assistance; ***or***, ecosystem unmodified by humans but introduced species having a significant impact on key ecosystem processes or components;
- Ecosystem substantially modified by humans (e.g. clear felled) but restoration of ecosystem occurring without assistance or within budgeted management action;
- Ecosystem substantially modified by humans and/or introduced species, and management action to protect ecosystem is too costly.

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Landscape Integrity

Landscape Integrity is the position and place of the area proposed for protection or restoration in the wider landscape. Suggested levels of landscape integrity for ranking purposes are:

- The area forms a significant part of a nationally important landscape or uninterrupted ecological sequence (altitudinal, soil, vegetation); ***or***, is an unprotected enclave within a nationally important protected area;
- The area forms a significant part of a regionally important landscape or uninterrupted ecological sequence (altitudinal, soil, vegetation); ***or***, a minor part of a nationally important landscape or sequence; ***or***, is an unprotected enclave within a regionally important protected area;
- The area forms a significant part of a locally important landscape or uninterrupted ecological sequence (altitudinal, soil, vegetation); ***or***, a minor part of a regionally important landscape or sequence; ***or***, is an unprotected enclave within a locally important protected area;
- The area forms a minor part of a locally important landscape or uninterrupted ecological sequence (altitudinal, soil, vegetation);
- The area forms an insignificant part of a locally important landscape or uninterrupted ecological sequence (altitudinal, soil, vegetation).

Amenity

Amenity is the significance of sites within the area proposed for protection or restoration, including geopreservation sites, archaeological sites, historic/cultural sites, scientific/research sites, and recreation sites. Suggested levels of significance for refining priorities based on the primary criterion are:

- The area contains a nationally important site;
- The area contains a regionally important site, or part of a nationally important site;
- The area contains a locally important site, or part of a regionally important site;
- The area contains a site, or part of a locally important site;
- The area contains no sites.

Application of Criteria:

In this report on the relative conservation values of SILNA lands these criteria have been applied as follows. Each block (in section 5.1) or sub-block (in section 5.2) was given a value (*very high; high; moderate; low;* or, *very low*) for each of the six criteria above. The six values for each block or sub-block were then added to give a total value for the block or sub-block.

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