APPENDIX I - SITES OF NATURAL SIGNIFICANCE: MACKENZIE DISTRICT

The following sites of known natural significance have been currently identified within Mackenzie District. They represent plant and animal communities and habitats which are representative, rare or unique within the District, or otherwise considered to be significant in terms of section 6(c) of the Resource Management Act. A range of geological and geomorphic sites have also been identified which are considered to be outstanding natural features in terms of section 6(b) of the Act. Those habitats, communities and natural features which adjoin or encompass lakes, streams, rivers and wetlands also contribute to the natural character and functioning of these water bodies in terms of section 6(a).

Significant sites of indigenous vegetation and fauna habitat have principally been identified from the following information sources (**Note**: A number of sites were reassessed in 1995/ 96, and current boundaries reflect the results of this assessment).

1) **Recommended Areas for Protection (RAP)** identified in the Mackenzie Ecological Region Protected Natural Area Programme (PNAP) Survey Report, 1984 and the Heron Ecological District PNAP report, 1986. Some of the RAP's identified within the Mackenzie Ecological Region have been enlarged on the basis of recommendations from the Protected Areas Scientific Review Committee (PASAC), or as a result of consultation with the Forest Research Institute (FRI) (now Landcare NZ Ltd), or invertebrate surveys in the area. This was to provide better representation of communities and improved management boundaries.

2) **Special Sites of Wildlife Interest (SSWI)** identified in "Wildlife and sites of Special Wildlife Interest in the Upper Waitaki and Adjacent Areas" by Liz Jarman (1987), and the SSWI habitat database.

3) **`Wetlands of ecological and representative importance' (WERI)**. The WERI database is an inventory of all types of wetlands in New Zealand. It focuses on those wetlands which are ecologically important or significant and which are representative of the natural diversity of the country. The database is administered by the Department of Conservation.

4) **Invertebrate habitat areas**. These sites have been identified by Mr B H Patrick, Conservancy Advisory Scientist, Otago Conservancy, Department of Conservation.

5) **Threatened plants sites** identified in the DSIR threatened plants database, or information held by the Department of Conservation

Geopreservation sites are those identified in the Geopreservation Inventory held by the Science and Research Division of the Department of Conservation, and published in Kenny, J.A., and Hayward, B.W., 1993; Inventory of important geological sites and landforms in the Canterbury Region...' Geological Society of New Zealand Miscellaneous Publications.

The schedule is cross-referenced by the site number to the Maps. Where the site includes RAP(s), SSWI, or a WERI, the reference names for these is given. RAP's are identified by Ecological District as follows: B = Benmore, BO = Ben Ohau, G = Grampians, P = Pukaki, T = Tekapo, TT = Two Thumbs

Site	Name	Map Reference	Data Source/Description
1	Dobson/Hopkins	H38 22587 56764	SSWI (Dobson River), (Stony Stream Lagoon), (Terrace Wetland), (Glen Lyon Lagoons), (Hopkins Rivers/Lake Ohau Delta), (Hopkins river); WERI. Open braided riverbed with adjacent wetlands and streams. Lagoons and carex swampland near Dobson/Hopkins confluence provide important water fowl and wader habitat, including black stilt feeding and wintering area and banded dotterel breeding area.
2	Irishman Stream	H38 22659 56792	RAP BO-2 (Irishman Stream Beech remnant): Good regenerating mountain beech community, probably the largest in Mackenzie Region outside of Maitland Stream Valley. Forest birds and insects which do not occur elsewhere in the district are present.
3	Duncan Stream	H37 22741 56821	RAP BO-1 (Upper Duncan Stream); P-1 (Lower Duncan Stream): RAP extended based on PASAC recommendations, now part conservation area. The upper Duncan contains an example of high altitude glacially derived tarns and cirques typical of the upper 1000m of the Ben Ohau Range. Fescue tussock intergrades with *C. rigida* and at higher altitudes are some excellent *C. macra* stands. Boulder fields support *Podocarpus nivalis, Senecio cassinoides*, and *Olearia* scrub communities. Terrestrial insects are highly varied. The lower Duncan supports a good example of *C. rigida,* which shows morphological affinities with red tussock, suggesting a hybrid population.
4	Gladstone	H38 22711 56720	RAP BO-3 (Upper Gladstone Valley), P-3 (Gladstone Flats): An altitudinal sequence of tussock grasslands from the piedmont floor to the second highest peak in the Mackenzie region. Includes an important area of red tussock and bog pine. Re-assessed in 1996.
5	MacMillan Stream	H38 22725 56720	RAP P-2: The only montane mountain beech stand on fan head trench in the district. An open stand confined to the stream bed, with some regeneration. Endemic forest birds and insects present. A population of the threatened plant *Hebe cupressoides* occurs here.
6	Fraser Stream Basin	H38 22665 56672	RAP BO-4 (Fraser Stream Headwaters): Example of *C. macra* grassland grading into *Poa colensoi* then to alpine herbfield scattered amongst scree. Common skink present in large numbers. Terrestrial insects numerous and diverse. RAP boundary extended in 1996 following a site inspection so as to accord with original PASAC recommendation to include lower slopes with *C. rigida* grassland and beech forest remnant.

Site	Name	Map Reference	Data Source/Description
7	Dorcy Stream	H38 22612 56622	RAP BO-5: Small riparian strip of mountain beech in a stream valley. Well buffered by a 50 metre wide strip of scrub including lacebark and many Coprosma species.
8	Darts Bush	H38 22663 56627	RAP BO-6: Remnant mountain beech stand in hill gorge, confined to sides and floor.
9	Gretas Stream	H38 22631 56568	RAP BO-7 (Upper Gretas Stream), BO-8 (Lower Gretas Steam), BO-9 (Mount Ben Ohau Hall's totara): Upper Gretas Stream has a good example of high altitude C. rigida grasslands with extensive patches of *Dracophyllum pronum* and scattered *Festuca matthewsii* occupying the sideslopes of southerly aspects. The mountain beech remnant of Lower Gretas is a good riparian beech strip occupying gorge sideslopes and valley floor. Manuka/matagouri scrub borders to the south. The lower slopes of Mount Ben Ohau support the best example of a regenerating stand of Hall's totara in the district, and represent some of the driest forests in New Zealand. May be an example of the original dry woodland forest of the area. RAPs 7,8 and 9 are linked, with 8 and 9 extended and new administered by DOC via land allocation.
10	Ohau Downs Ponds	H38 22669 56556	SSWI; WERI: Three small artificial ponds. Black stilt feeding area.
11	Ohau River	H38 22720 56555	RAP P-15 (Tekapo, Pukaki, Ohau riverbeds); SSWI (Lake Ruataniwha), (Ruataniwha Springs), (Ohau River); WERI: Ruataniwha area includes an artificial lake with shallow margins planted with shrubs for common bird species and a springfed stream. Parts of lake heavily used for recreation. Both areas used for cross-fostering of black stilt chicks. Springs provide excellent waterfowl habitat, with Australasian bittern, black stilt and other waders breeding. The Ohau is a braided river of gravel flats and islands. Wrybill breeding area and black stilt feeding and wintering area.
12	Halls Block	H38 22706 56604	RAP-7: The only manuka community represented in the district. A low open stand intermingled with large *C. rigida* tussocks. The original RAP was reduced in area following an inspection in 1996.
13	Ben Ohau Wetlands	H38 22740 56607	RAP P-6 (Ben Ohau Swamp); SSWI (Ben Ohau Station Swamp); (Fraser Stream); (Ben Ohau Station Wetland): Wetland area with streams, lagoons, and swampy areas surrounded by tussock grassland. Australian bittern and black stilt breeding areas. Marsh crake, pukeko, waterfowl and waders also present. Site re-assessed in 1996.

Site	Name	Map Reference	Data Source/Description
14	Lake Merino	H3822746 56618	SSWI (Lake Merino and Wetland): Small steep-sided lake with spring-fed streamlets and wet soakages. Black stilt breeding area. Site re-assessed and boundaries amended in 1996.
15	Lake Poaka	H38 22786 56626	SSWI (Lake Poaka and wetlands): Small artificial lake with shallow margins, adjacent to semi braided river system. Several small islands and ponds have been created. Black stilt breeding and area used for cross fostering of black stilt chicks.
16	Pukaki Flats	H38 22825 56595	RAP P-8 (Pukaki Flats above airstrip): Fescue tussock grassland, formerly the most extensive association in the district. Common tussock fauna abundant. Site is part of an invertebrate study area.RAP extended to include a proposed covenant.
17	Southern Pukaki	H38 22840 56658	RAP T-6 (Southern Lake Pukaki Scrub): Native broom and prostrate kowhai on terminal moraine. Threatened plant site containing *Coprosma intertexta* and *Crassula multicaulis.* Dry north facing slopes provide good habitat for a large number of shrubland species in a fescue sward. Skink, gecko and insect populations observed. Habitat of three moth species endemic to Mackenzie Basin - *Gelechia lenis, Cremnogenes honesta* and *Ericotenes pukakiense*. Conservation area.
18	Lake Pukaki	H37 22828 56832	RAP T-3; SSWI: Large deep glacial moraine dammed lake with numerous wildlife habitats. Drawdown for hydroelectric power generation during winter exposes Tasman River delta at north end and lake margins which provide overwintering areas for black stilt. Feeding and breeding area for blackstilt and other waterfowl and waders. Habitat for three endemic moth species.
19	Western Pukaki	H38 22797 56715	RAP T-5 (Western Lake Pukaki Scrub); One of the only stands of montane scrub of its type on this landform left in the district. Also a good example of tarns and tarn edge vegetation. Black stilt feeding area with an abundance of aquatic and terrestrial insects. *Hebe cupressoides* present and the uncommon Ruaparaha's copper butterfly *(Lycaena ruaparaha)* collected here. Part proposed Scientific Reserve.
20	Big Rock/Little Rhoboro	H38 22793 56731	SSWI (Big Rock Wetland), (Little Rhoboro Hills Tarns): Area containing a wetland and group of tarns surrounded by grazed tussock grassland. Feeding area for black stilt. Important during drought, as it retains water longer than similar wetlands in the area.

Site	Name	Map Reference	Data Source/Description
21	Boundary Stream	H37 22799 56800	RAP T-4; SSWI (Boundary Stream Bush): Part DOC estate. Small stream deeply incised into lateral moraine, surrounded by mountain beech forest remnant. Streambed and sides covered with thick matagouri/*Coprosma* scrub, providing habitat for birds, insects and lizards.
22	Braemar	H37 22880 56860	SSWI (Braemar Station kettleholes), (Bolton's Gully Lagoon), (The Black Hole): Montane lakes and *Carex* spp swamps. Valuable wildlife habitats when considered in conjunction with other wetlands in the area.
23	Tasman River	H37 22807 56987	SSWI (Tasman Riverbed), (Murchison Riverbed), (Birch Hill Stream), (Lagoon Stream Wetland), (Glentanner Swamp), (Tasman River Swamp), (Ackland Lagoon/Wetland), (Jollie River Delta), (Terrace Wetland): Wide braided river system with gravel channels and shingle and vegetated islands. Associated lagoons and *Carex* sp swamps provide very valuable habitat for waders and waterfowl including breeding area for wrybill, blackstilt, black fronted tern and banded dotterel. The threatened plants *Carmichaelia kirkii* (vulnerable), *Luzula celata, Coprosma intertexta* (vulnerable), and *Triglochin palustre* are found in this area.
23(a)	Bush Stream	H37 22770 57010	SSWI: Mountain beech forest. A remnant of a once extensive vegetation type. Birds present include rifleman, fantail and grey warbler. The scarcity of bush cover has made these uncommon in the area.
24	Mount Cook Wetland	H37 22841 57019	RAP T-1 (Mount Cook Station Swamp): Re-assessed in 1996 and the original area significantly reduced. Remaining area is one of the best *Carex secta* swamps in the district. Spotless crake present.
25	Irishman Creek	I37 22930 56985	RAP T-2 (Landslip Creek); T-17 (Head of Irishman Creek); SSWI (Heart Lagoon): Original RAP's extended to include an altitudinal gradient from alpine tall tussock to montane red tussock following FRI recommendations. The resulting complex of red tussockland here is the largest in the Ecological Region. An area of matagouri/*Coprosma/Olearia* subalpine scrub is the only example in the district.
26	Irishman Creek Swamp	I37 22940 56950	SSWI (Irishman Creek Wetland): Rolling tussock grasslands (predominantly red tussock) with meandering boggy streams.
27	Trig `G' Swamp	I37 22974 56913	SSWI: Stream-fed Carex swamp with pools of open water.

Site	Name	Map Reference	Data Source/Description
28	Balmoral Lateral Moraine	I37 22982 56920	RAP T-14 (Defence Area Balmoral Station): Healthy red tussock mixed with fescue on relatively well drained site. Aquatic insects and native bullies abundant in small streams and bogs. RAP enlarged to increase buffer zone of fescue grassland around red tussock following an FRI recommendation.
29	Target Tarns	I37 22997 56927	RAP T-15 (Target Tarns in Defence Area); SSWI: Largely solitary tarn surrounded by tussock grassland. Feeding area for large numbers of waterfowl and waders, including the southern crested grebe. Area contains a threatened plant site.
30	Forks River	I37 23015 56941	RAP T-16 (Forks River - Mt John Station): A collection of boulderfields surrounded by fescue grasslands with scattered matagouri. Common gecko and skink particularly numerous. Area contains a threatened plant site. Proposed covenant with NZDF.
31	Forks Wetland	I37 23014 56904	RAP T-13 (Forks Stream Swamp); SSWI (Forks Stream Swamp); WERI A short *Carex/Schoenus pauciflorus* swamp surrounded by a good, wet fescue association and includes a portion of the Forks floodplain. Feeding and breeding area for waders. Threatened grasshopper *Brachaspis robustus* recorded here. Boundaries amended following re-inspection in 1996. Includes proposed covenant area with NZDF.
32	Alexandrina Rills	I37 23040 56890	Proposed Ministry of Defence covenant to cover rill formation area.
33	Tekapo Flat	I37 23047 56845	Proposed Ministry of Defence covenant - short tussock grassland and *Brachaspis robustus* site.
34	Old Man Range	I37 23000 568600	RAP T-10 (Old Man Range Swampland); T-11 (Tekapo Military Camp Tussock); (Old Man Range Wetland); WERI: Area of red tussock in an unbroken continuum from the poorly drained valley floor to well drained slopes. Fescue tussock grassland to the north. Also contains two shallow tarns that are part of a complex of important wetlands. Old Man Range Wetland is a swampy valley 3km long with several small pools bisected by a stream. These sites provide a breeding, loafing and feeding area for wading birds, including the black stilt.
35	Balmoral Boulderfield	I37 23000 56899	RAP T-12 (Balmoral Relic Boulderfield): Small area of boulders and cobbles formed by poorly understood geological processes, surrounded by fescue grasslands. The rocks support a good moss and lichen successional community.
36	*Number Not Used*		
37	*Number Not Used*		

Site	Name	Map Reference	Data Source/Description
38	Wolds Stream	I38 22948 56752	RAP T-8 (Mt Mary, eastside); SSWI (Wolds Station Swamp): Mt Mary contains a large wetland area dominated by sedges and rushes. Wolds Station Swamp has pockets of open water dissected by Mary Burn Stream. Area supports waterfowl and tern species, and may be suitable as a black stilt cross-fostering area. Threatened plant site nearby contains the local and rare *Helichrysum plumeum.*
39	Mount Mary	I38 22918 56739	RAP P-13 (North East Face): One of the best dryland scrub associations in the district. Large populations of the common gecko and skink are present.
40	*Number Not Used*		
41a 41b 41c	Mary Burn Mary Burn Woolshed Simons Hill	I38 22960 56664	SSWI (Woolshed Wetland), (Maryburn Station Swamp), (Simons Hill Wetland Swamps): Areas of *Carex* swamp and wetland dissected by meandering stream. Used by waterfowl and waders, including black stilt. Sites re-assessed in 1996 and boundaries amended.
42	Simons Hill	I38 22946 56596	RAP P-10: Probably the best hill crest stand of fescue and silver tussock grassland in the region. Also a good example of dryland scrub on hillslopes. Terrestrial insects abound and the numerous rocks provide shelter for large numbers of spiders, ground beetles and the common gecko.
43	Lower Tekapo	I38 22965 56574	Invert: *Brachaspis robustus* habitat on outwash.
44	*Number Not Used*		
45	Tekapo/Pukaki Rivers	H38 22891 56507	RAP P-15 (Tekapo/Pukaki and Ohau Riverbeds); SSWI (Tekapo River); (Pukaki River Ponds); WERI: Wide, braided alluvial riverbeds providing important habitat for waterfowl, waders, passerines and aquatic and terrestial insect fauna. Breeding areas for black stilts, banded dotterels, black fronted terns, black backed gulls and wrybills. Native and introduced fish species occur in high numbers. A series of artificial ponds on margin of Pukaki River also provide a habitat for waterfowl and waders.
46	Lake Benmore	H39 22899 56413	RAP B-2; SSWI; WERI: Largest artificial lake in New Zealand. Deltas of Ohau, Twizel, Pukaki and Tekapo Rivers provide important wildlife habitat. The shallow margins, mudflats and willows are also important to waterbirds. The area is important as an overwintering and feeding area for black stilt and heavily utilised by many other waterbird species. Some islands are habitats for threatened lizards and plants.
47	Grampians	I38 23162 56527	RAP G-5 (Mt Dalgety South-East faces); 6 (Black Rocks - Grampian Range); Original RAPS extended to increase area and improve the representativeness of communities, provide aspect

Site	Name	Map Reference	Data Source/Description
			variations and link isolated RAPS on the Grampian Range in accordance with an FRI recommendation. One of two key major sites in the Grampians Ecological district. Contains the only known area of extensive relatively unmodified *C. rigida* on valley fill terraces in the region. Scattered matagouri/fescue tussock communities occur on gully floors and footslopes, grading to good fescue/*C. rigida.* Good examples of *Dracophyllum uniflorum* scrub and slim snow tussock grasslands are found at higher altitudes on shaded faces. Black Rocks contains one of the best examples of alpine fellfield in the district. *Phyllachne, Poa, Raoulia* and *Pygmea* are abundant. Only known occurrence of *Celmisia ramulosa* in the Grampians. *Aciphylla dobsonii* plentiful.
48	Lockhart's Stream	I38 23213 56601	RAP G-4 (Lochart's Stream, Mt Dalgety): The only stand of *Podocarpus hallii* in the district. Fescue/snow tussock grassland above.
49	Grays River	I38 23013 56607	RAP G-12; SSWI (Grays River Lower), (Grays River Wetland): Remnant of the previously extensive Grays Swamp. Oringinal RAP considerably reduced in area by PASAC. Two small areas retained for *Carex secta* swampland and a peat swamp. Area has high habitat values for waterfowl and waders.
50	Maryburn Flats	I38 23007 56700	RAP P-14: A representative sequence extending from shingle bed communities, through dryland matagouri, to fescue tussock grasslands characteristic of dry, well drained soils. Area encompasses key habitat conservation site for *Lepidoptera.*
51	Rollesby and Dalgety Ranges	I38 23095 56655	RAP G-1 (Rollesby Range above Rollesby Station), G-2 (Rollesby Range above Bauchops Hill Station), G-3 (Mackenzie Pass): One of two key major sites in the Ecological District. Sites on the Rollesby Range contain excellent examples of alpine *Dracophyllum uniflorum/C. macra* associations and true alpine fellfield plants typical of higher altitudes on tors and bluff faces. The threatened plant *Helichrysum plumeum* is abundant here. The site provides for important altitudinal sequences, such as Mackenzie Pass where a Matagouri/*Olearia* scrub community grades into fescue/silver tussock grassland, then to dense *C. rigida* grasslands and finally thick *C. macra* grassland. Mackenzie Pass also contains a large boulderfield supporting an excellent example of *Senecio cassinoides/Hebe* scrub.
51(a)	Sawdon Stream	I38 23118 56737	Part RAP P-18; Invert: Habitat for the threatened grasshopper *Brachaspis robustus*. RAP boundaries altered to reflect detailed grasshopper distribution data obtained from a subsequent survey.

Site	Name	Map Reference	Data Source/Description
51(b)	Snow River - Mackenzie District	I38 231085625 I38 2312256665	Part P-19 (Hakataramea Pass Fan), Invert: Two sites providing important habitat for the threatened grasshopper *Brachaspis robustus* which is endemic to the Mackenzie Ecological Region. The Snow river fan includes part of RAP P-19 which was originally identified for fescue tussock grassland.
51(c)	Haldon Rd Wetland	I38 23120 56685	Invert: Type locality and only known occurrence of the moth *Orocrambus fugitivellus*. Also present are eight other species of the same genus. The wetland contains a range of indigenous communities including *Carex coriacea, C. secta* and *Schoenus pauciflorus* sedgelands, and associated grasslands and shrublands. A network of streams, meanders and seepage areas provide habitat for waterfowl and indigenous fish. Site reassessed and boundaries amended by Landcare Research in 1996.
52	Tekapo Terrace	I38 23056 56790	RAP P-16 (Tekapo River Terrace, Sawdon Station). Vast numbers of terrestrial insects present. Representative habitat for endemic grasshopper *Sigaus minutus* and the threatened *Brachaspis robustus*.
52a	Tekapo Scientific Reserve	I37 23080 56830	Reserve area which is currently the subject of research into nature conservation of dry tussock grasslands and intermittent wetlands in the eastern South Island high country. A range of glacial landforms on moraine and outwash surfaces are represented. Outwash surfaces and moraine support derivatives of short/fescue tussock grasslands, and limited shrub communities exist on terrace risers, moraine and alluvial floodplain. Mixed river floodplain communities are characterised by mat-forming species, grasses, herbs and lichens on localised boulderfields. Invertebrates associated with the kettleholes and floodplain communities are particularly abundant, and overall there is good diversity, including several threatened moth species. Lizards are associated with the terrace risers, and waders and waterfowl make occasional use of the kettleholes.
53	Edwards Stream	I37 23117 56826	SSWI (Atratus Tarn, (Edwards Stream and Tarn): Small gravel riverbed with fluctuating flows. Bisects small tarn with shallow edges, surrounded by tussock grassland. Scree skink found on hillsides above stream. Tarns used by a range of waterbirds. Riverbed supports a typical floodplain community and a diversity of invertebrates and riverbed birds.

Site	Name	Map Reference	Data Source/Description
54	High Tarns/ Tekapo Tarns	I37 23130 56886	RAP T-29, part TT3, RAP T-28 (Mt Hay Station Tarns); SSWI (Big Lagoon), (Mt Hay Tarns); WERI: Tarns with tarn edge and emergent vegetation (including raupo). Important waterfowl and wader habitat with black stilt and Australasian bittern present. Native bullies and aquatic insects abundant.
55	*Number Not Used*		
56	Lake Tekapo	I37 23114 56933	RAP T-26; T-27 (Small island adjacent to Motuariki Island); T-25 (Raupo Lagoon - Godley Peaks); SSWI; WERI: Large deep glacial lake with steep shoreline and mudflats. native fish occur in low numbers. Drawdown by Tekapo Power Station in winter exposes shoreline bays and deltas which are particularly important for waterfowl breeding (blackstilt, banded dotterel, grey teal and shoveler) and feeding. Rare scree skink observed here, and large numbers of aquatic and terrestrial insects. Raupo Lagoon contains an excellent example of raupo and associated vegetation. Good shelter and feeding site for waders and waterfowl. White-winged black tern sighted here. One of the islands contains a remnant scrub community that includes weeping mapou and the rare sympatric occurrence of two mistletoe species.
57	Trig `N' Tarns	I37 23070 56920	SSWI: Small tarn surrounded by tussock grassland. Paradise shelduck and banded dotterel present.
58 58a	Lake Alexandrina Lake McGregor	I37 23060 56937	RAP T-18 (Lakes Alexandrina and McGregor), SSWI (Lake Alexandrina), (Lake McGregor); WERI: Includes covenant area with Ministry of Defence. Wildlife refuge. Montane lakes, mainly open water, partly bordered by rush and sedge swamp. Breeding area for one of New Zealand's largest populations of southern crested grebe and New Zealand Scaup. Little shags also nesting. Other waterfowl present, include marsh crake, black stilt and Australian coot. High numbers of native galaxids, bullies and eels occur in lakes. Colony of protected skink *L. lineocellatum*, and sympatric populations of skinks and geckos occur in the area.

Site	Name	Map Reference	Data Source/Description
59	Glenmore Tarns	I37 23039 56991	RAP T-21, SSWI (Tui Tarn and Swamp), (Stony Tarn), (Hartley Tarn), (Glenmore Station Tarns), (Cluster Tarns), (Trig `I' Tarns), (Sunday tarn), (Grebe Tarn); WERI: Most outstanding area of kettles in the South Island with many small and large tarns in morainic hollows, surrounded by swamp. Vegetation ranges from submerged associations to fescue grasslands. Wader and waterfowl breeding habitat, including southern crested grebe, Australasian bittern, wrybill, banded dotterel, black faced tern and black stilt. Aquatic and terrestrial insects and native bullies are abundant. The threatened plants *Crassula peduncularis, Iphigenia novae-zelandiae* and *Isolepis basilaris* found on and around this site.
60	Lake Murray	I37 23068 56972	RAP T-19; SSWI: Large pond with swampy and stony edges set in fescue tussock grassland. Waterfowl and wader feeding area including black stilt and southern crested grebe.
61	Mailbox Exclosure	I37 23081 569700	RAP T-20: Lagoon with exclosure built to protect breeding black stilts. Also inhabited by many other waterfowl and waders. Re-assessed in 1996 and boundaries amended.
62	Mt Hay/Edwards	I37 23210 56940	RAP TT-2 (Edwards North Branch), TT-3 (Mt Dobson),: Valley systems of Edwards north branch contain typical plant communities in good altitudinal sequence. Slim snow/blue tussock and cushion plants grade down to snow tussock and *Celmisia lyalli* on upper hill slopes and fescue tussockland lower down. Matatouri/*Coprosma* scrub occurs on valley floor. Damper seepage areas contain rush and sedge swamp. Rare skink *Leiolpisma otagense* form *waimatense* recorded on lower north-west facing slopes of Two Thumb Range. Mount Dobson contains a range of vegetation, landforms altitudes and aspects representative of the South East end of Two Thumb Range. The area contains three threatened plant sites, including *Carex allanii* and *Helichrysum plumenum*. Part Conservation Area. RAP TT2 has been extended slightly to include low altttude snow tussock on river terraces.
63	Lower South Opuha	I37 23274 56922	RAP TT-4: Remnant and seral stands of manuka and mountain totara/hardwood forests represented on a range of aspects, altitudes and landforms.
64	*Number Not Used*		
65	Micks Lagoon	I37 23084 57015	RAP T-24; SSWI; WERI: Montane lake and *Carex* spp swamp surrounded by tussock grassland. Black stilt, marsh crake, grey teal and New Zealand Scaup breeding and Australasian bittern present. Part Wildlife Management Reserve. Re-assessed in 1996 and boundaries amended.

Site	Name	Map Reference	Data Source/Description
66	Cass River	I37 23023 57055	RAP T-23 (Lower Cass River); SSWI (Cass River and Delta); WERI: Open braided gravel riverbed with floodplains, swamplands and semi-stable delta. Breeding and feeding area for many wading birds including black stilt, wrybill, and caspian tern. Large breeding populations of banded dotterel and black-fronted tern. Marsh crake also present. Aquatic and terrestrial insects and native fish abundant. The uncommon *Muehlenbeckia ephedroides* found in the area. Area extended to include key area of *Lepidoptera* habitat.
67	Godley River	I36 23123 57185	SSWI (Godley River and Delta), (Macauley River), (Macauley River Swamp), (Lilybank Swamp), (Godley River Wetland), (Mt Gerald Station), WERI: Braided river systems, delta and associated wetland areas providing important habitat for waterfowl and waders. Black stilt, wrybill, banded dotterel, black-fronted tern breeding, marsh crake also present.
68	Stone Hut Moraine	I36 23218 57237	RAP TT-1: Representative altitudinal sequence of west facing moraines in the north-west of the district. *Celmisia lyalli*/slim snow tussocklands grade into snow tussocklands at lower altitudes. Blue tussock, *Drapetes* sp and *Dracophyllum pronum* occur on exposed ridgetops. Damp hollows and seepage zones contain red tussock/*Oreobolous pectinatus* communities. Gullies contain thin barked totara and shrubland. Snow and blue tussock and bluff and scree communities found at higher altitudes.
69	Coal River	I37 23185 57076	RAP T-30: An altitudinal sequence starting with *Olearia*/matagouri scrub on the valley floor, and moderate fescue tussock in the mid-altitudinal range merging into good *C. rigida* at higher altitudes.
70	North Opuha Red Tussock	J37 23367 57079	RAP TT-5: Red tussock stand, uncommon in this district, surrounded by a range of tussockland communities such as *C. rigida* and *C. macra* snow tussock.
71	North Opuha/Clayton Station Wetland	J37 23380 57050	SSWI; WERI: River wetland complex of rush and sedge swamp, succulent herb swamp, restiad bog and tussockland. Red tussock and alpine cushion log a rare plant community. Trout spawning area. Re-assessed in 1996 and boundaries amended.
72	*Number Not Used*		
73	Bernard Stream	J37 23538 57019	WERI: Fast single-channel river. Blue duck present.

Site	Name	Map Reference	Data Source/Description
74	Lynn Creek Bush	J37 23665 57048	SSWI; WERI (Lynn Stream): Diverse podocarp/hardened forest habitat. Vegetation includes kanuka, mahoe, hoheria, tree fuchsia, *Griselinia litteralis*, wineberry, kahikatea, totara, ribbonwood, kowhai and poroporo. Bellbird, rifleman, South Island pied tit have been recorded from the area. Blue duck are present (and have bred) in the stream.
75	Scotsburn Bush	J37 23667 56975	SSWI; WERI (Scotsburn Stream): An area of approximately 200 hectare adjacent to Mt Peel forest. Vegetation includes podocarp species (kahikatea, totara, matai) rata, kanuka, and a range of other secondary species. Birds recorded include New Zealand pigeon, South Island Pied tit, refleman and bellbird. Blue duck have been reported on the river.
76	Coopers Stream Bush	J37 23632 57014	SSWI: Black beech forest. Bush birds present include rifleman. Blue duck reported in stream.
77	Pick Axe Bush	J37 23623 57017	SSWI: Black beech forest. Blue duck habitat. Bush birds present include rifleman and blue duck reported in stream.
78	Pioneer Park	J38 23459 56714	SSWI: Forest remnant with bush birds present, including high numbers of bellbirds and riflemen.
79	Opihi River	J38 23373 56762	SSWI (Opihi Gorge Bush); WERI: Fast single-channel braided river. Breeding area for black-fronted dotterel and on site where white-winged black tern have attempted to breed. Long-tailed bats recorded from area adjacent to river. Gorge bush consists of regenerating lowland bush with remnant totara.
80	Tramway Bush	J38 23317 56697	SSWI: Forest Habitat. Regenerating broadleaf forest with remnant Hall's totara. The forest contains an almost complete altitudinal sequence and some uncommon plant species including the nationally threatened plant, the coral broom (*Carmichaelia Crassicaule*). In additional the forest provides habitat for several native bird species including the nationally threatened New Zealand Falcon.
81	Pareora Scenic Reserve	J39 23372 56482	SSWI: Small area of lowland regenerating mixed broadleaved forest, with small-leaved shrubland. Botanically interesting low rainfall limestone vegetation present. Bush birds present include South Island tit and brown creeper.

GEOPRESERVATION SITES

Site	Name	Map Reference	Data Source/Description

Site	Name	Map Reference	Data Source/Description
G1	Ostler Fault - Ohau River faulted terraces	H38 22744 56557	Example of progressive displacement of late Quaternary terraces. Up to 21m vertical offset (north-west side up) on surfaces 20,000 years old. Youngest terraces disturbed and some inundated by Lake Ruataniwha. This site monitored for precise strain measurements by the Earth Deformation Section, Institute of Geological and Nuclear Sciences Ltd (New Zealand Geological Survey).
G2	*Number Not Used*		
G3	Ostler Fault Zone - Ben Ohau Range Foothills	H38 22725 56703	Faulted terraces, where scarps of Ostler Fault are adjacent to bedrock. Up to 15m displacement on surfaces c. 20,000 years old.
G4	Mt Glenmary Debris Covered Glacier	H37 22594 56869	A debris covered glacier. Classified as a moderately well defined landform of scientific/educational value.
G5	Glentanner Syncline	H37 22767 57001	Plio-Pleistocene rock infolded into schists and greywackes, an example of late deformation of the Alpine Schists.
G6	Bush Stream Stilpnomelane	H37 22745 57009	One of the region's best occurrences of stilpnomelane-bearing schist.
G7	Tasman River Outwash Plain	H37 22805 57051	One of the biggest fluvio-glacial outwash plains in New Zealand. Classified as an extremely well defined landform of scientific/educational value.
G8	Landslip Creek Lateral Moraine	I37 22907 57008	Superb example of lateral moraine, the best in New Zealand. Classified as an extremely well defined landform of scientific/educational value.
G9	Mt Joseph Cirque	I37 22944 57017	Classified as an extremely well defined landform of scientific/educational value.
G10	Joseph Stream Meanders	I37 23026 57010	Random walk meander. Classified as extremely well defined landform of scientific/educational value.
G11	Glenmore Station Kame	I37 23036 56983	A very large example of kame - the best in new Zealand. Classified as an extremely well defined landform of scientific/educational value.
G12	Lake Alexandrina Moraine Features	I37 23036 56964	Ablation moraine. Moraine kettle.
G13	Alexandrina Eskers	I37 23018 56950	An example of a feature rate to New Zealand. Classified as extremely well defined landforms of scientific/educational value.
G14	Braemer Road Rock Glacier	I37 22988 56898	Good example of a feature rate to New Zealand. Classified as extremely well defined landforms of scientific/educational value.

Site	Name	Map Reference	Data Source/Description
G15	Lake Pukaki Lateral Moraine	H37 22899 56843	A classic example because of the scale of moraine. Classified as an extremely well defined landform of scientific/educational value.
G16	Mount John	I37 23066 56883	Excellent example of a roche moutonee and an outstanding landmark within the Lake Tekapo area. Observatory site.
G17	Mt Hay Axinite	I37 23138 56916	One of the most accessible and well exposed known occurrences of axinite.
G18	Fox's Peak Fault, Dobson Skifield to Firewood Stream	I37 23258 56849	Example of progressive vertical displacement of late Quaternary terraces on the south part of the Fox's Peak Fault. Maximum displacement of 8m (west side up) and youngest terrace offset at 0.5m. Terraces generally younger than 16,000 years. Regarded as a reverse fault with traces distributed across a c.2km wide zone.
G19	Upper Tengawai River Oligocene Fauna	I38 23271 56646	Diverse Waitakian molluscan fauna.
G20	Kings Cave	J38 23402 56511	Fossil bird borne deposits in Oligocene limestone.
G21	Mt Edith Patterned Ground	J37 23549 56999	An area patterned ground covered in tussock and this easily discernable. Classified as an extremely well defined landform on scientific/education value.
G22	Fox's Peak Fault, Tasman Ski Club	J37 23353 57020	Example of active traces in basement, and range front "scalloped" nature of the Fox's Peak reverse fault in the north.
G23	Godley River Delta	I36 23116 57112	A good example of the filling in of a glacial lake by lacustrine deposits. Classified as an extremely well defined landform of scientific/educational value.
G24	Macaulay Scree Fault	I3623212 57281	Fault trace that has displaced active scree surface. Rock avalanche occurs nearby, and house sized boulders have fallen in the general Macaulay catchment within the last few years.
G25	Godley River Debris Covered Glacier	I36 23125 57350	a debris covered glacier classified as an extremely well defined landform of scientific/educational value.
G26	Haeckel Fold, Murchison Valley	I36 22953 57365	An example of macroscopic folding.