



## **Crown Pastoral Land Tenure Review**

**Lease name : Glenthorne**

**Lease number : Pc 049**

### **Fish & Game report**

As part of the process of tenure review Fish & Game councils may provide advice on significant inherent values within the pastoral lease, and the information may be incorporated in the conservation resources report. The advice is part of the information gathered and assessed for the development of a preliminary consultation document.

The report attached is released under the Official Information Act 1982.

**Copied March 2003**

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## **Fish and Game Resources of Glenthorne Pastoral Lease, North Canterbury**

*Prepared by the North Canterbury Fish and Game Council as a Contribution to the Drafting of a Preliminary Proposal for a Tenure Review Project Plan.*

March 2002

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### **Preamble**

This report has been prepared under the provisions of the Crown Pastoral Lands Act (1998); Part II, Tenure Review, for the Crown by the North Canterbury Fish and Game Council.

### **Part 1 - Background**

#### **1.2 Glenthorne Pastoral Lease - Overview**

The Glenthorne pastoral lease, in the headwaters of the Rakaia catchment, comprises a number of significant habitat and recreational areas for sports fish and game birds. The lease borders portions of the Harper, Avoca and Wilberforce rivers, and includes land that surrounds Lake Lillian.

Forming part of the Rakaia river catchment, a waterway recognised as nationally significant by virtue of a national conservation order, the lease incorporates some important access routes to the upper portion of this river's catchment. From a habitat perspective these waters include spawning grounds for both chinook salmon, and brown and rainbow trout.

Portions of the lease harbour game birds that provide both a recreational resource for hunters as well as a management issue for the lease holder. This latter effect is dominated by the predation problems caused by Canada geese, and to a lesser extent paradise shelduck.

#### **1.3 Physical Characteristics**

The lease lies on the leeward side of the Birdwood Range, with a lithology dominated by late Pleistocene-recent fluvioglacial outwash, and post-glacial alluvium in the lower altitude portions of the run. Above this, Triassic sandstone/mudstone assemblages, with minor conglomerate and interbedded volcanic rock dominate. The Harper fault runs along the eastern boundary of the lease.

Soil wise the lease is dominated by a combination of recent soils along the river margins and upland high country yellow-brown earths. Vegetation in the area is dominated by developed tussock lands, and small assemblages of snow tussock and matagouri scrub

lands. Well developed pasture lands between the Oakden and Harper canals provide more intensive grazing opportunities for the lease. Small pockets of beech forest exist in remoter portions of the run.

The Wilberforce, Harper and Avoca rivers are braided in nature, lying on beds of shingle outwash gravels. However, smaller tributary waterways such as Triangle Creek, Ross Springs, Gargarus Stream and the Mossburn provide more stable spring-fed conditions in which brown and rainbow trout are able to spawn.

#### **Harper River & Avoca Rivers**

The Harper and Avoca rivers are braided water bodies that hold moderate populations of brown and rainbow trout, while the tributaries to these waterways provide spawning grounds for both species. A number of these tributaries lie on the lease and are sources of juvenile fish, which subsequently provide the bulk of new entrants into the reaches of the Rakaia River above the Gorge Bridge.

Tributaries of note include the stream draining Lake Lilian, in particular the section from the confluence with the Avoca River to the forestry camp area beneath the lake.

#### *Significant Inherent Values Requiring Recognition in the Crown's Proposal*

- \* Public access to the Harper and Avoca rivers



**Photo 1:** Avoca River looking towards Mt Fitzwilliam.  
Suggested camping area is marked with red arrow.

#### **Lilian Creek**

A small spring fed stream emerges from the Gargarus wetland, this waterway flows into lake Lilian and supplies spawning habitat for this lake's trout population. Present stocking practices do not appear to have a detrimental impact on this waterway..

#### *Significant Inherent Values Requiring Recognition in the Crown's Proposal*

- \* Protection of spawning stream from the deleterious impacts of livestock.

### **Lake Lilian**

The lake is removed from the other Rakaia lakes, being located on the western side of the Harper River, beneath Mt Fitzwilliam on the north-east side of the lease. The lake, in fact a large tarn, covers little more than 0.03km<sup>2</sup> with a maximum length of 0.6km and maximum width of 0.2km. The lake is fed by Lilian Creek, which flows through a wetland at the head of the lake. The lake drains into the Avoca River. Records of water quality suggest that the lake is oligotrophic, although the presence of Canada geese may have resulted in faecal inputs that could have moved the lake to a oligo-mesotrophic state.

While angler usage of Lilian is thought to be low, it would probably increase if legal access to the lake was provided. The wilderness qualities of the lake and its limited supply of (primarily) rainbow trout suggest that the exploitation of this fishery could best be controlled through the limiting of access to foot and mountain bike.

It should be noted that the lake appears in the book *South Island Trout Guide* (Kent, 1998), in which it receives a favourable review and is featured in a photograph. Such recognition is likely to have increased interest in the water body in recent times. Meanwhile, the opportunity to incorporate it into an angling trip that features fishing of both the adjacent rivers and the lake itself would allow those venturing to the area to have a multiple fishing experience in an outstanding alpine environment.

A raupo portion of the lake (see photo 4.) is likely to provide cover for gamebirds as well as favourable insect habitat for trout.

### *Significant Inherent Values Requiring Recognition in the Crown's Proposal*

- \* Legal public access to Lake Lilian.
- \* Protection of fish and game values of the lake, raupo wetland and inflowing spawning stream



**Photo 2:** View of Lake Lilian and beyond to the Harper River

### **Wilberforce River**

At times a sedate waterway of numerous braided channels, at others a roaring torrent of grey alpine water, the Wilberforce is the archtypical mountain braided river. As a fish and game resource it is known to harbour numerous trout as well as a small run of chinook salmon. These fish are subject to moderate effort by anglers. Of perhaps more importance is the presence of a number of small spring-fed streams that run into the river and are located on the lease. These provide sources of juvenile trout to the upper system and maintain an alpine spring-water fishery for anglers.

### *Significant Inherent Values Requiring Recognition in the Crown's Proposal*

\* Public access to and along the Wilberforce and to the spring-fed fisheries that lead into this river.

### **Wetlands**

Two wetlands of significance inherent value arise on the lease. The first is the wetland on the south-western side of Lake Lilian. Integrating in with the wider lake environment of Lilian, this wetland provides good habitat for game and other bird species (see above).

Toward the centre of the lease, the Gargarus wetland lies at around 990 metres and serves as habitat for wetland species at this altitude. It also serves to filter out silt and other contaminants that might otherwise find their way into Gargarus Stream and Lilian Creek.

### *Significant Inherent Values Requiring Recognition in the Crown's Proposal*

\* Public access for to the Lake Lilian and Gargarus wetlands (including game bird hunters)



**Photo 3:** Centre of the Gargarus wetland looking towards the Wilberforce catchment.

## **Part II**

### **Recommendations**

#### **Harper and Avoca Rivers and Tributaries**

- (a) Provide legal public vehicle access to point a(i) on the lease along the existing formed road (map 1). From a(i) access should be restricted to foot and bike to the old forestry camp and then up the existing walking track (a(ii)) or fence line (a(iii)) to Lake Lilian (see map 2).
- (b) Legal public access along the Avoca and the Harper rivers, and along the lower Lilian Creek from its outlet to the Avoca River.
- (c) Legal public walking access via poled route from Lake Lilian to the Gargarus wetland saddle for anglers and game bird hunters (including the right to carry shot guns) (poled route) (see photo 5).
- (d) Legal public walking access from the Avoca River, along the Gargarus Stream to the Gargarus wetland (see photo 5).
- (e) Access for vehicles to Avoca River along existing tracks for Fish and Game designated personnel and vehicles (contact to be made with landowners prior to any trips to ensure that entry does not interfere with farm operations).
- (f) Legal poled route from Avoca River, around the lee of Mt Fitzwilliam, linking to Lake Lillian and to the proposed Gargarus poled route (route shown as blue bullet line) (see photo 5).
- (g) Legal public access to spawning streams in the Avoca Flats. These are marked in blue on map 2 (see red arrow, photo 7).

#### *Rationale for Recommendations*

The Harper and Avoca rivers, Lake Lilian and Lilian Creek all provide what Fish and Game consider to be good angling opportunities in an area of outstanding amenity value. This latter feature is based on the wilderness qualities of Glenthorne, which are nevertheless still relatively accessible from Christchurch.

#### **Wilberforce River**

- (a) Legal public access for anglers and hunters along the Wilberforce River.
- (b) Legal public access to the tributaries of the Wilberforce marked on recommendation map 1 (pink).

(c) Legal vehicle access along the formed track (marked in blue) to Boundary Stream. Beyond this point legal, access for walkers and mountain bikes. Fish and Game vehicle access to be allowed up to the Fanghill Hut (map 1).

(d) Protection of spring-fed tributaries (pink, map 1) from cattle damage.

#### *Rational for Recommendation*

The Wilberforce River is a salmon and trout fishery of moderate importance, although its wilderness setting makes its amenity value very high. The spring-fed tributaries flowing into the river have a higher value as trout fisheries (rainbow and trout), and also provide spawning areas for salmon and trout. Again, the wilderness setting of these waterways contribute to their high amenity value.

#### **Lake Lilian**

(a) Legal public walking access around Lake Lilian, minimum of 20 metres for the legal right of way.

(b) Access to Lake Lilian (a(ii) and a(iii) recommendation map 1) from Harper River bed.

(c) Protect the wetland portions of Lake Lilian (shaded area, photo 4) from significant adverse effects of agricultural activities.

#### *Rationale for Recommendation*

Lake Lilian offers a lake fishing experience in an outstanding wilderness area, of which there are limited opportunities of in the North Canterbury region. The proximity of the Avoca and Harper rivers allows the fishing of the lake to be combined with river fishing opportunities.



**Photo 4:** Lake Lilian. Legal access to and around the lake is requested by the Fish and Game Council. The yellow shaded area represents a wetland area that the Council requests be protected from damage by livestock.

### **Mt Fitzwilliam Spawning Stream**

This is a small spawning stream that receives its water, primarily, from the yellow shaded wetland. The area is a recognised rainbow trout spawning area (see appendix 1) and is thought to make a significant contribution of juvenile fish to the Avoca and Harper river systems.



**Photo 5:** Recommended legal poled route from the Avoca River (and the proposed camping site [red arrow] ). Yellow shaded area is wetland for which protection is sought.

### **Wetlands**

(a) Legal public walking access within the Gargarus wetland area for hunters with shot guns during the relevant game bird hunting season(s). Hunters should consult with landowner before accessing this area to ensure that their presence does not interfere with other operations on the property.

(b) The protection of the Gargarus wetland from the effects of cattle and domestic deer if present (eg. by fencing).



**Photo 6:** Centre of the Gargarus wetland, with view towards the Wilberforce catchment. Circled area should be protected from impacts of domestic stock.



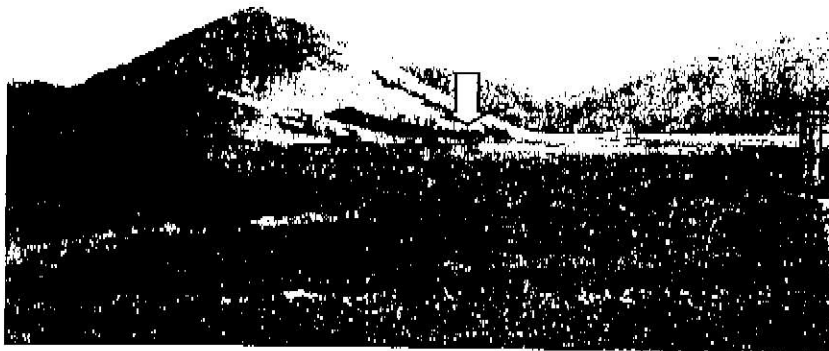
(c) Protection of the wetland area in photo 5 (circle, yellow) from damaging effects of cattle and domestic deer grazing, if present.

#### *Rationale for Recommendation*

The Gregarus wetland represents the largest wetland on the property. Few wetlands of this size or character appear to exist within the immediate proximity of the Glenthorne lease. A field survey by fish and game staff of the area indicated a dominance of tussock species, including red tussock (see photo 3 and 6). Although many of these plants appear to be in healthy condition, a section in the middle of the wetland seems to have experienced the impact of either domestic or wild animals and showed signs of damage (see photo 6).

Stocking practices that comprise only sheep seem unlikely to be detrimental to the area and could be retained. However, stocking of the area with cattle or domestic deer would be inconsistent with the protection of the significantly inherent values of the area and should not be permitted in this wetland area.

Protection of the yellow shaded wetland is recommended because of its link to the Mt Fitzwilliam spawning stream. The presence of cattle in this area would be anticipated to dislodge and generate silt, which would damage the quality of the spawning gravels in the stream.



**Photo 7:** View towards Mt Fitzwilliam and the 'Lake Lillian Retreat'. Recommended camping area is shown with yellow arrow (outside the free hold portion of the village). The spawning stream that the Council wishes to be protected from stock and made available to the public is marked with a red arrow.

#### **Camping Areas**

(a) The provision of a public camping (over-night, non-permanent) area on the flats between the Avoca River and Lake Lillian. This should be in association with access to water, say from the Lillian Stream (map 2).

(b) provision of a camping area (50 square metres) on the western side of Mt Fitzwilliam, map 2.

*Rationale for Recommendation*

The limited number of public sites for camping in the area and the proximity of the area to the Avoca and Harper river fisheries means that there would be significant benefit in the establishment of a public camping area in the area marked on map 2. It would also compensate for the non-vehicle nature of access to the area, which will make one day trips to fish there difficult.

The second camping area would allow people using the suggested pole route to overnight in the upper catchment before walking further up the Avoca River valley, or as part of a return trip, via either the Avoca River or Lake Lilian routes.

**Glenthorne Swamp Stream**

- (a) Protection of the stream (marked in pink, map 1) from cattle and domestic deer.
- (b) The setting aside of legal public access along the stream for anglers.

*Rationale for Recommendation*

This stream runs from the Glenthorne swamp and is a recognised trout (mainly rainbow, but also some brown) and chinook salmon spawning waterway. Fish emerging from this stream add to stocks in the lower Harper River and Lake Coleridge systems.

Recommendation Map 1



- Legal access for game bird hunters (Lillian to Gargarus wetland)
- Marginal strips - Harper and Avoca Rivers
- Legal access for game bird hunters along this route (Avoca River to Gargarus wetland).
- Poled legal route for game bird hunters and anglers (Avoca River - Lake Lillian)
- Marginal strip legal access along Wilberforce River for anglers and game bird hunters
- Marginal strip legal access to Wilberforce tributaries for anglers and fish and game staff.
- Legal vehicle access along the formed track to Boundary Stream.
- Legal foot and mountain bike access for anglers and hunters, Fish and Game vehicle access to Fang Hill Hut.
- Alternative legal access routes to Lake Lillian from the Avoca Flats; a (ii) and a(iii).
- Legal vehicle access (a (i) ), mountain bike and walking access to foot of Mt Fitzwilliam ( ), linking to Lake Lillian access tracks. Legal vehicle access for Fish and Game designated vehicles on to the Harper River ford ( ).

Recommendation Map 2



Proposed  
legal camping  
areas on the  
lease

a(iv)

a(i)

○ Protection of Lake Lilian wetland from damaging effects of livestock. Present grazing strategy is not detrimental to the wetland's well-being.



Protection of spawning stream from impacts of livestock (current stocking practices are satisfactory). Legal access for anglers along the stream connected to the Avoca River.

Protection of the Gargarus wetland from the effects of cattle and domestic deer if these animals are stocked in this area.



Legal public access and protection of these spawning streams in the Avoca Flats.



Legal public vehicle access (a (i) ), beyond here mountain bike and walking access (only) to foot of Mt Fitzwilliam ( \* \* \* ), linking to Lake Lilian access tracks and recommended camping area. Legal vehicle access for Fish and Game designated vehicles from a (i) to the Harper River ford (a (iv)).

# Appendix 1.

## Spawning Data for Waterways in Proximity or On the Glenthorne Lease

Harper River And Avoca Streams	Redds			Live Trout		
	2000	1999	1998	2000	1999	1998
Avoca River	ND*	ND	4	ND	ND	1
FitzWilliam Stream	ND	15	4	ND	8	2
Ross Springs	ND	34	35	ND	22	23
Triangle Creek	ND	11	5	ND	12	5
Waterfall Creek	0	4	4	0	4	0
Matipo Creek	6	45	29	8	15	18
Corner Creek	ND	18	22	ND	15	33
Long Plank Creek	4	49	26	2	36	22
Lilian Stream	18	53	119	9	40	60
Gargarus Stream	12	32	26	2	7	33
Harper River	ND	8	ND	ND	12	ND
Mossburn	ND	12	13	ND	1	7
Totals	40	281	287	21	172	204