

Crown Pastoral Land Tenure Review

Lease name: CLAYTON

Lease number: PT 011

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.

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5 AUG 1999

5 August 1999

Ray Ward-Smith 
Knight Frank
PO Box 564
TIMARU

Dear Sir,

TENURE REVIEW – CLAYTON STATION

Please find attached Central South Island Fish and Game's Tenure Review Report on Clayton Station.

Yours faithfully



Frank Scarr
Fish and Game Officer

Statutory managers of freshwater sports fish, game birds and their habitats

Central South Island Region

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TENURE REVIEW REPORT

PROPERTY Clayton

LOCATION Fairlie Basin

1. Brief Description of Property

Clayton Station, located about 21 km north of Fairlie takes in some 6500 ha of land between the North Branch Opuha and the Upper Orari River. Much of the steep mountainous lands in the headwaters of the Orari has been retired. The remainder of the property (approx 90%) ranges from flat to moderately steep land.

2. Rivers and Streams

Major rivers include the North Branch Opuha which bounds the south and west margins of the property. At Brays Rock about 1 km below the Clayton Road bridge the North Branch has a mean flow of about 3800 l/s. Low flow is estimated to be around 1100 l/s.

The Orari bounds the northern margin of the property. At the mouth of the Upper Gorge at the Meikleburn Hut, the mean flow is about 900 l/s. Low flow each year occurs generally in March-April and is about 300 l/s.

Of some significance is Clayton Stream which drains much of the flat lands near the Clayton homestead. This joins the North Branch just upstream from Brays Rock and has an estimated mean flow of 450 l/s and an average annual low flow of 150 l/s.

The Clayton wetland is a significant remnant high country wetland. This wetland comprising about 80 ha is located about 3 km upstream from the Fox's Peak Bridge across the North Opuha.

3. Sportsfish and Gamebird Species

3.1 Sportsfish

The North Opuha provides habitat for a small brown trout fishery. That fishery will likely improve once the water quality in Lake Opuha settles down following the recent completion of the Opuha Dam in Feb 1998. It is projected that the North Opuha together with other tributary streams to the lake will be utilised by resident lake trout for spawning and juvenile stock rearing. This will include springfed streams like Clayton Stream, which exhibits a more stable hydrology and habitat. Upstream from the Clayton Road bridge the North Opuha is quite steep with a bouldery substrate; not preferred habitat for brown trout.

Prior to construction of the Opuha Dam, quinnat salmon spawned in the North Opuha and Claytons Stream. The numbers using these areas varied from year to year dependant on flow conditions during the migration period March – May. Salmon redd counts for these waters were typically around 26 each year and

represented about 5.5 percent of total salmon spawning throughout the whole of the Opihi catchment. With the dam in place and no provision for fish pass, salmon migrating upto the lower weir immediately downstream of the dam, will in future spawn in this section of the Opuha River.

Electric fish surveys have been carried out in Claytons Stream and Stony Creek. Stony is a tributary of the North Opuha about 4 km upstream from the Clayton Road Bridge. A summary of results is shown in Appendix 1. In summary the results indicate a reasonable native fish presence but few juvenile brown trout.

Angler use of the area is generally confined to the area downstream from the Clayton Road Bridge. Fly fishing enthusiasts, interested more in the wilderness experience, are found occasionally in the section upstream to the mouth of the Stony. Those anglers also try the Orari around the Meikleburn Hut from time to time. Anglers to the area are predominantly local anglers but this will likely change with Lake Opuha providing added attraction to regional anglers.

Angler use will continue to be concentrated toward the latter part of the season, in March/April immediately prior to spawning.

3.2 Gamebirds

The rivers, streams and wetlands associated with Clayton Station are good habitat for mallard and grey ducks. Paradise shelduck frequent areas of developed pasturelands and other suitable high country wetlands habitat. All these species are targeted by local hunters.

Canada geese have been seen on the property from time to time, in the past. With the advent of Lake Opuha, numbers and consequent predation of pasture and greenfeed crops on the Clayton Flats will likely become more of a problem.

A few Californian quail frequent the river bed and other native tussock/matagouri areas.

4. Recommendations

4.1 Habitat

Because of its excellence and current pristine state, Fish and Game advocates that the Clayton Wetland (J37:375045) comprising about 70-100 ha should be reserved to the Crown. We further suggest that the area currently retired to the north of this wetland area should also be reserved.

Of rivers and streams legally qualifying for marginal strips, we submit that the North Opuha upto approximately J37:371047 and the Orari upto J37:416043 would fall into that category.

Streams such as Claytons Stream also provide good habitat and while not qualifying for marginal strip status, we would like to see the fencing of stock from access to that stream continued.

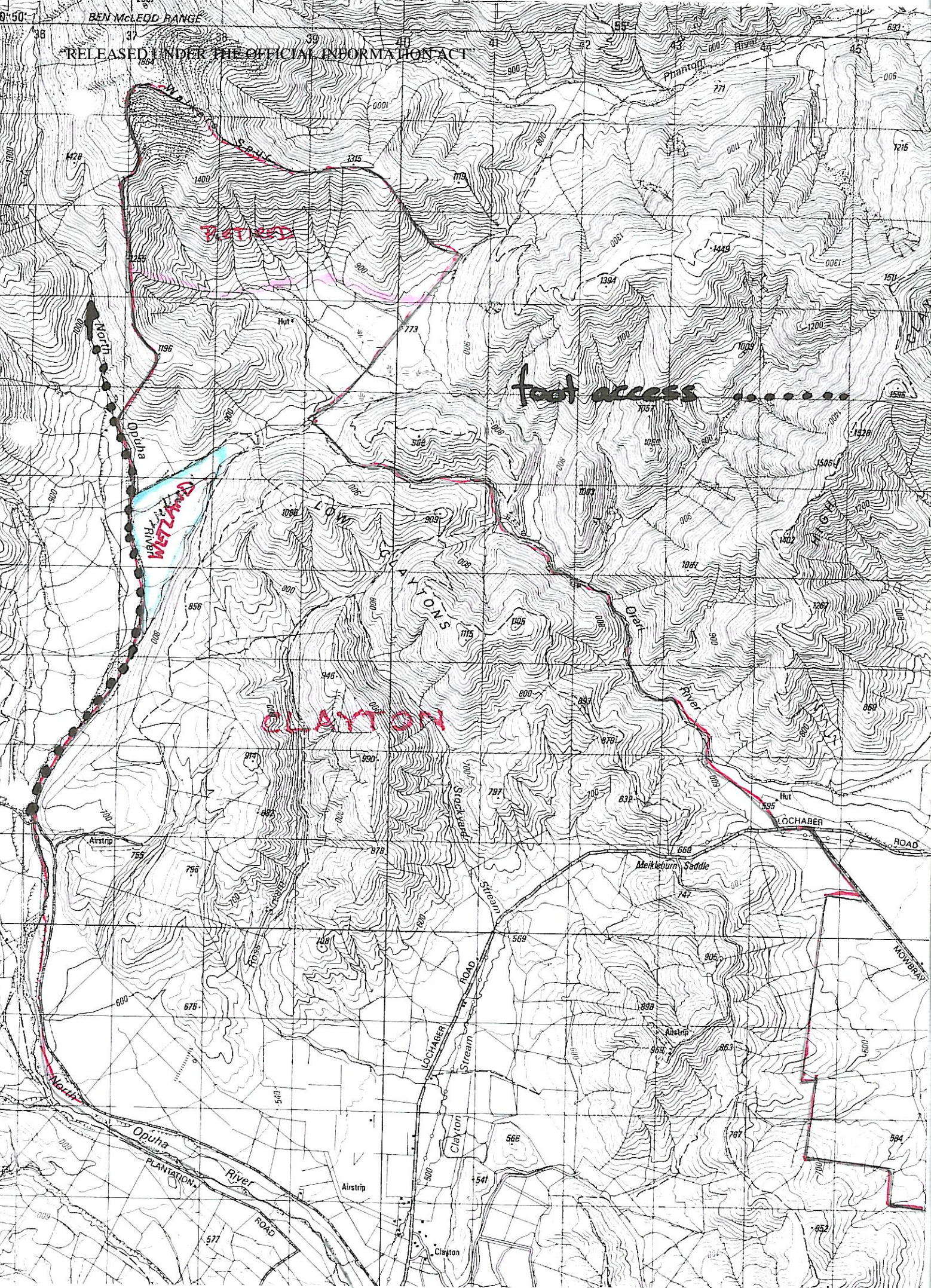
4.2 Access

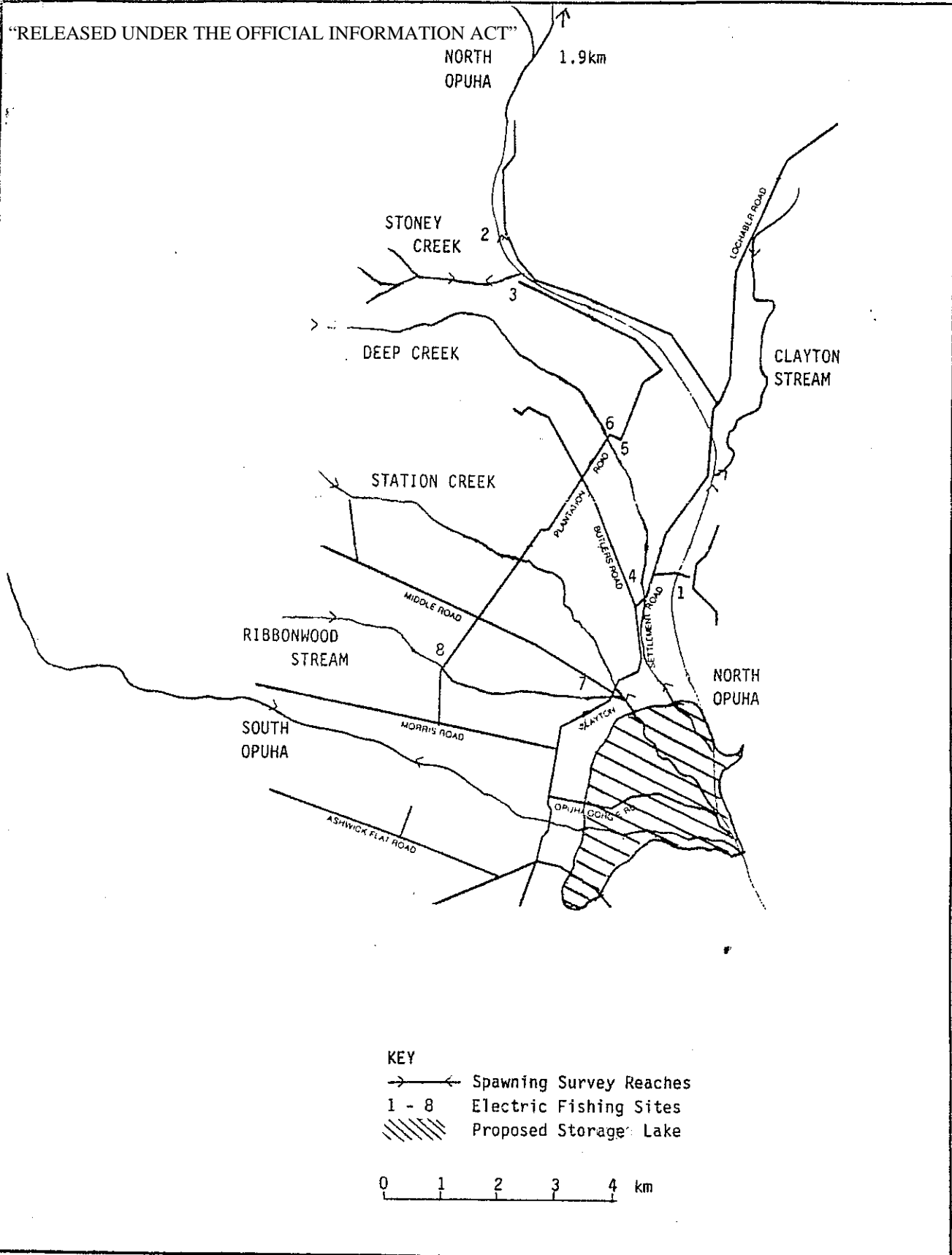
Except for provision for foot access from the Fox's Peak Bridge upstream along the North Opuha River to the Clayton Wetland and beyond, Fish and Game considers there is no other demands for additional foot or vehicle access on this property.

There may be a case for foot access along the Orari River upstream from the Meikleburn Hut but except for the odd angling enthusiast we believe demand for this access is minimal.

F Scarf
Fish and Game Officer

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The most productive redd sites in terms of egg survival to hatching, are those rated as preferred sites and these are expected to be used first by trout. Lesser rated sites are likely to have lower egg survival either through reduced aeration, scouring during floods or dehydration in reduced flows. Generally good and marginal sites will only be used if no preferred sites are present in the area through which a trout will migrate during spawning or if all preferred sites are in use and being defended by other trout.

A general description of the areas surveyed and their estimated spawning capacity and rating follows.

North Opuha

Distance from Storage Dam:	0 (will flow directly to lake)
Distance Surveyed:	9.8 km
Flow at Survey:	10 m ³ /s
Spawning Assessment:	Preferred: 0
	Good: 0
	Marginal: 5 sites per km

General Assessment:

This river was surveyed in 2 sections, these being the top 6.9 km upstream from the end of public access on Plantation Road, and a 2.9 km section centred on the Clayton Settlement Road bridge. The river is characterised by a loose boulder substrate, a uniformly steep gradient, swiftly flowing water with many rapids and prone to flooding. These conditions are not compatible with extensive or successful trout spawning.

Only in a 1.5 km reach of river upstream from the end of Plantation Road was there a significant change in the morphology of the river. In this section the river was often in 2 or 3 braids and these contained slower flowing water which although not classed as pools, would afford resting water to adult trout. The stream bed also contained a greater proportion of small boulders and cobble than elsewhere however these were insufficiently sorted to provide a stream bed where extensive spawning activity would be anticipated. Spawning conditions at best could be classed as marginal.

Chinook salmon spawning surveys conducted by Fish and Game Council staff over the last 15 years have detected spawning activity in the North Opuha River. These spawning sites have always appeared to be opportunistic in nature - occasionally the water flow and stream bed will combine to provide an area of sufficient size to allow a redd to be excavated. There has been no evidence of spawning beds where several fish may spawn and spawning locations vary from year to year as floods reshape the bed. At best salmon spawning has averaged 2 redds per kilometre.

Trout require similar physical conditions in which to spawn as chinook salmon. The main differences between the two species in the North Opuha River are likely to be the greater power of the larger salmon to excavate a redd in larger substrate and their ability to negotiate fast steep rapids.

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Provision of a lake at the upstream end of the Opuha Gorge should provide a substantial boost to the trout population of the North Opuha River. This may lead to increased use of the North Opuha by trout for spawning although it is not expected that more than 5 redds per km would be found on average and all of these would be rated as marginal.

Fish Fauna:

Two sites were electric fished, the lower site being approximately 2 km upstream from the proposed lake edge and the upper site being just above the junction of Stoney Creek (sites 1 and 2, Figure 1). The fauna at both sites contained only upland bullies (Gobiomorphus breviceps) and common river galaxias (Galaxias vulgaris) with the bully species being abundant at a density of approximately 1 fish per 1.6 square meters of stream bed and the galaxias being common at a density of approximately 1 fish per 5 square meters.

No trout were observed or captured.

Overall Assessment:

Apart from a small section of river 11 km upstream from the proposed lake edge this river may have negligible value in providing sustainable recruitment to the lake fishery. Harsh flow conditions between the lake and the upstream spawning area may also limit the ability of adult trout to reach this area.

Stoney Creek

Distance from Storage Dam:	10.1 km
Distance surveyed:	1.3 km
Flow at survey:	1 m ³ /s approximately
Spawning assessment:	Preferred: 0
	Good: 5 sites per km
	Marginal: 5 sites per km

General Assessment:

This stream had a similar gradient to that of the North Opuha River. A much lower flow and greater incidence of gravel in the substrate than the North Opuha provided conditions more suitable for trout spawning.

Instream habitat appeared typical of a high country stream with large boulders mixed with finer gravel and shingle. The bed appeared to be relatively stable with little evidence close to the main channel of damage caused by minor floods.

Throughout its length native tussock grassland and wetland terraces bordering the stream are likely to intercept run-off from the typically high occurrence of moderate rainfall events in this area therefore reducing damage to the streambed. The runoff caused by large rainfall events however, is not able to be buffered by the native grasslands and damage from this source was evident at the margins of the stream valley.

In ream cover suitable for contributing to adult trout habitat was restricted to shallow pools seperated by up to 200m of fast water, and occasional undercut banks associated with overhanging tussock or matagouri. Habitat suitable for juvenile trout, particularly rainbow trout, was abundant and this was matched by a rich and diverse bottom fauna.

Fish Fauna:

A 100m section of streambed immediately upstream from the junction with the North Opuha (Site 3, Figure 1) was surveyed by electric fishing. Only upland bullies were observed and in low numbers. Given the occurrence of the common river galaxias in all other surveyed sites it is also likely to be present in this stream although numbers appear to be low.

No trout were observed or captured.

Overall Assessment:

The severe demands placed on adult trout to negotiate the 10 km of the North Opuha River to reach this stream may limit its value as a source of recruitment to the lake fishery.

Stoney Creek has the potential to serve as a spawning and rearing area particularly as it may provide stable instream conditions in a drought and flood prone environment.

Clayton Stream

Distance from Storage Dam:	4 km via the North Opuha River
Distance Surveyed:	4.8km - being all the stream
Flow at Survey:	200 l/s approx
Spawning Assessment:	Preferred: 110 sites Good: 80 sites

General Assessment:

The lower 2.5 km is an unmodified stream heavily shaded by exotic vegetation with stable banks and bed. It contains short steep riffles easily negotiated by adult trout andood holding water for dult trout with pools and undercut banks up to 1.2m deep. A good food supply and habitat for rearing juvenile trout is present with mayfly and caddisfly larvae common. Lower reaches contain spawning gravel in large beds and these reduce to isolated pockets upstream. The predominant substrate in the top 1.5 km of stream (below Lochaber Rd bridge) comprises mud, sand, and shingle. It contains good holding water but no potential for spawning. Riparian vegetation has been largely removed and stock grazing occurs to the waters edge. Stream flow is approximately 50 l/s in the upper reaches.

Clayton station runholder (W.A Orbell) recalls sea run salmon spawning in this stream until the early 1980's.

Fish Fauna:

Not surveyed

Overall Assessment:

Clayton Stream is an excellent spawning and nursery stream in the lower 2.5 km. Access for trout from the storage reservoir would be available up the North Opuha River although this water is fast flowing and turbulent with minimal resting habitat. If a large population of trout develops in the storage reservoir and spawning streams closer to the lake become overpopulated with spawning trout this stream should develop a sustainable spawning run.

Deep Creek

Distance from Storage Dam:	0 (will flow directly to lake)
Distance Surveyed:	12.0 km - being all the stream to the proposed lake edge
Flow at Survey:	50 l/s approximately
Spawning Assessment:	Preferred: 60 sites Good: 75 sites Marginal: 40 sites

General Assessment:

Trout access would be limited to the lower 5.7 km of stream above the proposed lake edge by a 1.0m high waterfall immediately downstream of the ford on Plantation Road. The spawning assessment was based on the downstream area only.

The lower stream was characterised by stable willow lined banks and deep entrenchment which was natural in some places and man-made in others. Gravel and cobble compose 80% of the substrate in the lower section with small amounts of sand in quiet holding pools up to 1 m deep in the upper reaches of this section. The section showed increasing boulder content of substrate in the lower section with increasing gradient although overall this accounted for less than 10% of the bed.

Upstream of the Plantation Road ford a 2 km low gradient section was characterised by a braided shingle flood plain grazed to the waters edge and with no overhanging cover. Earth or clay banks were common and appeared erosion prone. Further upstream the gradient increased as the stream became more confined between hills. Boulder and bedrock dominated the stream bed while native vegetation with little sign of grazing was common on the banks. Many thousands of juvenile galaxidae (probably Galaxias vulgaris) were observed in quiet pools along the margins.

Throughout the stream mayfly and caddisfly dominated an abundant bottom fauna.

Fish Fauna:

Three sites were electric fished on this stream, these being upstream of Clayton Settlement Road, approximately 2 km above the proposed lake edge (Site 4, Figure 1) and on either side of a waterfall associated with the ford on Plantation Road approximately 5.7 km above the proposed lake edge (Sites 5 and 6, Figure 1).