

BEFORE THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER OF the Resource Management Act 1991

AND

IN THE MATTER OF applications for resource consent by various applicants to take and use water from the upper Waitaki River catchment

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EVIDENCE OF GRAEME HUGHES ON BEHALF OF  
CENTRAL SOUTH ISLAND FISH AND GAME COUNCIL

3 December 2009

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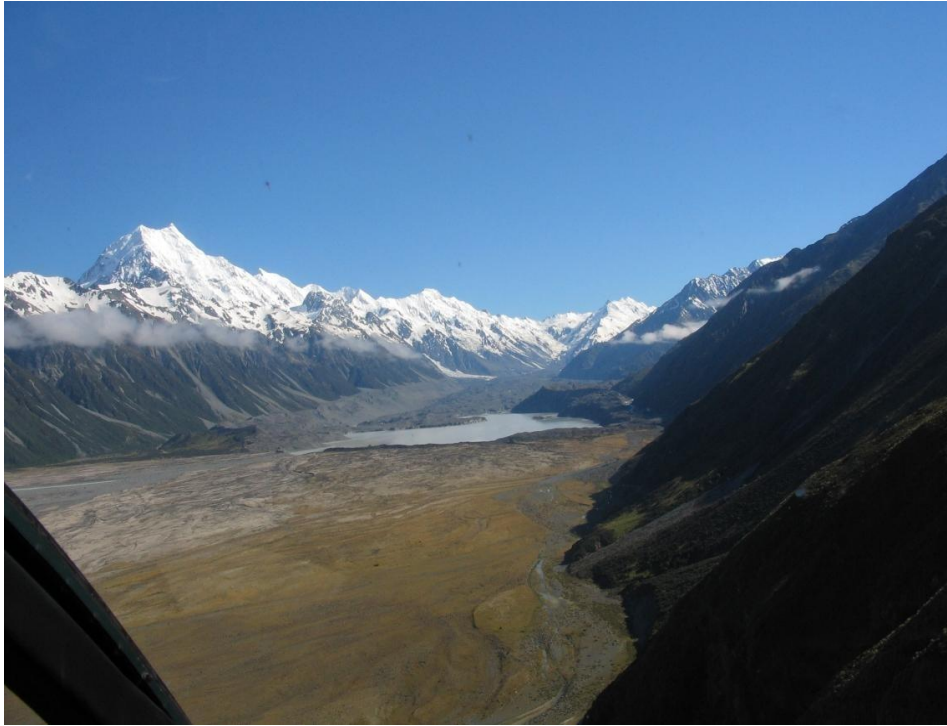
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## **Introduction**

1. My name is Graeme Hughes. I am employed as a Fish and Game Officer; from 1966 to 1976 in Canterbury for the North Canterbury Acclimatisation Society, from 1976 to 1990 as the Senior Field Officer for the Waitaki Valley Acclimatisation Society based in Kurow, north Otago. In 1990 Acclimatisation Societies were abolished and Fish and Game Councils were formed. I remained in Kurow as a Fish and Game Officer for the Central South Island Fish and Game Council. As of February of this year I have completed 43 years of service in freshwater fisheries and game bird management.
2. In 1980 I was elected President of the Waitaki Rod and Gun Club, a position I still hold today. The Rod and Gun Club, formed in 1954, has assisted Fish and Game authorities over the years and presented submissions on matters which affect the region's natural resources with emphasis on the Waitaki Valley, the Waitaki River and its tributaries.
3. I am an elected committee member of the Lower Waitaki River Enhancement Society. I am a financial member of the International Game Fishing Association (USA). I am a financial member of Ducks Unlimited (USA).
4. As a Fish and Game Officer based in Kurow a large proportion of my work time has involved the Waitaki River and its tributaries. As an angler and hunter I spend a portion of my recreation time fishing and hunting in the Waitaki River catchment.
5. The evidence I present is primarily a commentary on the fisheries values of the Waitaki Catchment from an anglers' perspective over a 33-year period, supported by professional observations I make as an experienced Fish and Game Officer.

## **The Central South Island Sports Fish Resource**

6. The Central South Island Region encompasses the Waitaki River catchment; at just over one million hectares it is one of the most extensive, exceeded only by the Waikato and Clutha River catchments. The Upper Waitaki Catchment comprises four major tributary basins, namely the Tekapo, Pukaki, Ohau and Ahuriri. Historically, flows from each of these basins converged at downstream junctions to become the Waitaki River.



Aoraki Mt Cook, Tasman Glacier and Tasman Lake, a major source of the Waitaki River.  
G.Hughes, December 2008.

### **Creating Paradise in “Britain of the South”**

7. Early European explorers to this part of the South Island were pastoralists interested in finding grasslands suitable for sheep and cattle grazing. The existence of a large inland plain had been indicated by Maori. A sketch map showing Lakes Tekapo, Pukaki and Ohau resulted in the discovery of the basin and plains known today as the Mackenzie Country.
8. The settlers were disappointed to find their new land was devoid of mammals and game birds, and the rivers empty of sports fish. In a land where the climate and conditions represented the best features of the “Old Country” left behind, they proceeded to transform the new colony into a paradise.
9. The pristine lake and river systems provided great opportunity and optimism for successful importations of salmon, trout and other fish species *“to remedy the oversight of nature”*. Individual attempts and private importations were followed by the formation of Acclimatisation Societies with the Otago and Canterbury Acclimatisation Societies formed in 1864 leading the way. So began a period of introduction and propagation of animals, birds, plants, insects and fish considered to be beneficial to the new colony.  
*“...the sportsman and lover of nature might then enjoy the same sports and studies that make remembrance of their former homes so dear, the country rendered more enjoyable, our tables better supplied and new industry fostered.”* Otago Acclimatisation Society’s First Annual Report.

## Salmon and Trout Releases in the Waitaki River Catchment

10. The Waitaki River and its many tributaries featured prominently in early attempts to establish salmon and trout populations in New Zealand. Beginning in 1868 Atlantic salmon were released into the Waitaki River and tributary, the Hakataramea River. In 1869 brown trout were released into the region, in 1875 Chinook salmon, American brook char in 1888, and in 1895 rainbow trout.
11. Despite the apparent ideal conditions not all introductions met with success. Of the Atlantic salmon released none were ever seen again. Brook char retreated to the headwaters of coastal streams, rainbow trout shared a similar fate to Atlantic salmon, and although the first “true salmon” thought to be a Quinnat was caught in the Waitaki River in 1895, this was a “one off” event and the species was never officially identified.
12. Brown trout however were the exception. From 1869 to 1877 brown trout fry were released into the Ahuriri, Lake Ohau, Omarama Stream, Otematata River, Quail Burn and the Maitland Stream. By 1881 further liberations of brown trout had been made into Lake Ohau, Avon Burn, Quail Burn; Ahuriri, Hopkins, Longslip, Otematata rivers; and the Omarama Stream.



*Hatchery staff collect adult brown trout from a barrier trap constructed on the Hakataramea River in 1918.*

13. Acclimatisation of brown trout within the region and throughout the South Island was an instant success; the growth rate they attained was quite extraordinary.
14. The size and abundance of trout resulted in several publications promoting the fishing in New Zealand. In 1892 Spackman’s “Trout in New Zealand – Where to go and how to Catch Them” was published to attract the British tourist angler. Spackman wrote “*The whole of the Waitaki, one of the great snow rivers and its branches yielded good fishing, the Ahuriri being the beau ideal of an angler’s stream either for fly or minnow, and being out of reach of the ordinary traveller is very heavily stocked.*” In 1904 G.D. Hamilton in his book “Trout Fishing and Sport in Maori land” extolled the Ahuriri, Omarama, Ohau, Hopkins, Dobson and Twizel rivers and Lakes Ohau and Middleton for their brown trout populations.

## Quinnat Salmon Become Established

15. In 1901 as a result of Acclimatisation Societies unsuccessful attempts to introduce Quinnat salmon, the New Zealand government imported salmon ova from California and successfully hatched and reared these at a purpose built hatchery located on a Waitaki River tributary, the Hakataramea River. The following year juvenile salmon were released into the Waitaki River and tributaries and in Lake Ohau and its tributaries. In the same year and in the same waters, a smaller consignment of Canadian sockeye salmon was released. In 1906 the first Quinnat salmon were caught in the Waitaki River and in the sea near Oamaru indicating that a self perpetuating population of salmon had been established. During the following year salmon were observed spawning in the Waitaki River side streams from "Station Peak" to "some distance above Kurow", in the upper Ahuriri and Ohau rivers, in Haldane and Grays Hills creeks and in the Mary Burn. Sockeye salmon failed to establish and the species was soon to diminish in number. Its demise received minimal interest perhaps due to the unprecedented success of the larger Quinnat salmon.
16. As the Quinnat salmon population grew so did their range. By 1915 returning salmon were migrating into snow fed rivers north of the Waitaki with anglers catching them at the mouths of the Rangitata and Rakaia rivers.



*Migrating salmon trapped for stripping by Hakataramea hatchery staff during the early 1900's.*

## Rainbow Trout

17. After 20 years rainbow trout had not prospered as their promoters had envisaged. In 1916, speaking of rainbow trout, Mr Wilfred Howell of South Canterbury said, *"In the rivers they are not doing much good, as they seem to go down to the sea after being turned in, and no big fish ever come into the rivers from the sea. In the lakes, however, especially Lake Alexandrina in the MacKenzie Country, they are doing very well indeed. Some were put in there 5 years ago as yearlings, and last month three were caught, the largest 17 lbs the smallest 14 lbs"*.
18. Fortune changed in 1921 when rainbow fry reared at the government's Hakataramea salmon hatchery were successfully introduced into tributary streams of Lake Ohau. By 1926 rainbow trout were being caught in the Lake and in the Dobson and Hopkins rivers, the lakes major inflows. A fishing party from Balclutha trolling on Lake Ohau during a three-hour period caught three salmon and two rainbow trout with an average weight of 16 lb. The party fished the lake and the Dobson River for several days before

returning to Balclutha. Their best day's bag consisted of 5 salmon and 2 rainbow trout with a total weight of 89.5 lb. A written account of the historic 1928 fishing trip reported: "They tell of "big fish" and many of them, safely creel'd and of still bigger ones that got away carrying good portions of the angler's tackle with them. Some of these leviathans were estimated on the word of a man who scorns the ordinary "fish story" to weigh at least 40 lb or 50 lb".



*Historic trout and salmon liberation waters. The head of Lake Ohau on a rare, wind-free day. The Hopkins River valley enters from the left, the Dobson River valley from the right. G.Hughes, January 2005.*

### **Quinnat Salmon Migration Blocked**

19. Quinnat salmon were travelling long distances in search of favourable spawning grounds. Spawning salmon were observed in the upper Ahuriri River, in the Dobson and Hopkins rivers which flow into Lake Ohau, in the Tasman River at the head of Lake Pukaki, and the Godley River which flows into the head of Lake Tekapo.
  
20. During the winter of 1934 the fishery of the Central South Island Region was changed forever. When the spillway gates were lowered on the newly constructed Waitaki Dam, trout and salmon passage ceased. The Chinook salmon migration into the alpine lakes and their tributaries, estimated to be in the order of 100,000 fish, was no longer possible. Although a fish ladder was constructed around the dam into the newly formed Lake Waitaki, it was more ornamental than practical. It would have been a most athletic and determined fish to have ever made a successful ascent and none did. The fish ladder could have served a useful purpose for indigenous species, elvers and galaxids, however with minimal interest in species other than sports fish, the ladder was later decommissioned when the upper section was removed to accommodate dam modifications.



*The remnants of the Waitaki Dam fish ladder. The design of the structure was poor and successful fish passage was never achieved.*

*G.Hughes, February 2009.*

21. The Waitaki Dam, the first impediment to an exceptional fishery was the beginning of mans quest for hydro electric power in the Waitaki Valley. The continuing demand for electricity during the next 50 years would ensure the fishery of the Waitaki Catchment would undergo modification and loss of habitat unequalled elsewhere in the country.

#### **Hydro Power Production on a Grand Scale**

22. In the years that followed the Waitaki Dam construction, hydro electricity development gained momentum.
23. In 1955 Tekapo “A” was commissioned.  
1965: Benmore Dam the largest earth dam in the southern hemisphere was commissioned.  
1968 Aviemore Dam was commissioned.  
1977 Tekapo B was commissioned.  
1980 to 1985 Ohau A, B and C were commissioned.
24. The upper Waitaki River and many of its tributaries were now dammed and transformed into hydro storage lakes. The 60 kilometres of unmodified lower Waitaki River remained a reputable fishery for brown and rainbow trout and in season arguably the best salmon river in the South Island. As a result of hydro construction in the 1980’s, many kilometres upstream, this large river fishery suffered a further setback, one that had not been fully addressed and for which there was no solution.

#### **Canal Construction and Downstream Effects**

26. During the latter period of dam construction substantial canals linking the new stations were excavated. On completion and filling, the silt loads transported downstream created conditions that affected lake and river substrates from Lake Tekapo to the Pacific Ocean. The Waitaki Valley lakes and the Waitaki River ran brown. The accumulated silt destroyed the habitat for aquatic invertebrates decimating the food stocks for trout. Trout numbers dwindled and those fish that were caught were in very

poor condition. The Waitaki River fishery which attracted anglers from many regions and from overseas was almost eliminated. Tourist fishing parties were advised to reschedule their visits until the turbid waters cleared, however the damage had been done and many fishing tours and visits from individual tourist anglers never eventuated. When the water clarity improved the devastating effects of canal construction continued to flow on for several seasons. The prolific evening hatch of caddis and the surface feeding of large brown and rainbow trout was never to be experienced in such profusion again.

27. Almost 30 years on, the fishery has since recovered but in my opinion and the opinion of the many anglers who fished the Waitaki River prior to this event, the trout population has failed to reach a level anywhere near pre-hydro construction times. The caddis "hatch" in the upper river below Waitaki Dam is only a fraction of the population experienced in the 1970's.

#### **Fish Passage and Habitats Lost**

28. Before the construction of the Waitaki Dam, salmon and trout had unimpeded access to the whole of the Waitaki Catchment, free running named rivers and streams totalling some 600 kilometres. In the process of harnessing water for electricity, rivers have been diverted, shortened, partially dewatered or completely eliminated.
29. Fish passage for indigenous species (eels, bullies, galaxiids), salmon and trout is impeded at each dam and power house. The upstream passage of long-finned and short-finned eels is now dependent on manual trapping and transportation around the Waitaki Dam during the elver migration period.
30. The list of modified high country waters is significant: the Tekapo River is now diverted into a hydro canal. The Tekapo River only exists due to the combined flows of three small tributaries, the Mary Burn, the Forks and Grays Rivers.
31. The Pukaki River, dewatered, diverted into a canal. The upper Ohau River diverted into a canal. (Negotiations with the power producers has since resulted in a combined recreational and irrigation flow of 12 cumecs.) The lower Ohau River, dewatered, diverted into a canal. The lower Pukaki River, inundated by Lake Benmore, Lower Ahuriri River inundated by Lake Benmore. Upper Waitaki River inundated by Lake Aviemore, Mid Waitaki River inundated by Lake Waitaki. No other South Island catchment has been so modified.

#### **Hydro Construction Provides Alternative Angling Opportunities**

32. Three commercial salmon farms have been constructed on hydro canals. Salmon farms attract trout. Feeding on salmon farm waste, they grow to world record weights with brown and rainbow trout attaining weights of up to 17kg. Escaped farmed salmon, often in large numbers, provide a further attraction. Aesthetically, fishing in a man-made canal is not for everyone however the lure of catching a world record trout has appeal and there are increasing numbers of anglers who visit the region just to fish the hydro canals.

33. The Waitaki hydro lakes over the years have become very productive fisheries and popular water recreation areas attracting many thousands of people annually. Lake fishing provides shoreline and boat fishing and is popular family recreation. The hydro lakes, more especially Benmore and Aviemore, are huge producers of trout and more recently salmon. Excepting for the turbid water period during early canal operation, the catch rate has remained above average since the lakes were filled 40 years ago.

### **The Ahuriri River**

34. Arguably the region's "jewel in the crown" is the Ahuriri River. The upper Ahuriri River provides good catch rates, opportunities for trophy trout, complimented by scenic and wilderness features which combined provide the ultimate angling experience.
35. The Ahuriri River is the least modified of the rivers that remain. 15 kilometres of the lower reaches were flooded by the construction of the Benmore Dam creating hydro storage known as the Ahuriri Arm of Lake Benmore. While the lake is the best known and most fished lake in the Region and second only to Lake Taupo, nationally, the river itself is arguably the most revered river of the region. It is well known to New Zealand anglers and to a significant number of overseas anglers who travel here especially to fish the Ahuriri River.



*The upper Ahuriri River near Birchwood Station.  
G.Hughes, November 2009.*

36. In 1972 the Waitaki Electric Power Board's proposal to dam the upper reaches of the Ahuriri River was met with strong opposition from the Waitaki Valley Acclimatisation Society and the many anglers who fished it. The New Zealand Wildlife Service supported the Society's opposition. Realising that the future of such a river would be challenged by further developers the Waitaki Valley Acclimatisation Society, The Council of New Zealand Acclimatisation Societies, the National Executive of New Zealand Acclimatisation Societies in 1983 jointly applied for the first National Water conservation Order. An order protecting the Ahuriri River was granted in 1990.

37. Despite its location, the Ahuriri River is easily accessible by public road. It is a large river and can accommodate many anglers without becoming “overcrowded”. It is possible to fish the Ahuriri River all day without sighting another angler, a valued perception of isolation so important to many experienced anglers the character of the river changes over its length. It is braided over much of its route, constricted by gorges, provides rapids and drops through rocky sections and slow moving glides through large “oxbows”. Adjacent to the upper river at Ben Avon Station are several lagoons, some of which provide an alternative fishing spot to anglers should the river be affected by high flows and turbidity. Tourist and angler traffic has increased and especially noticeable after the property through which the upper reaches flow, was purchased by the Department of Conservation and the upper valley given Conservation Park status. To preserve angling quality one popular area of the river where permission to cross grazing land is required is now limited by the landowner to two parties per day. This has provided the experience sought and has been well received by anglers.
38. The Ahuriri River known for its plentiful population of both brown and rainbow trout has a reputation for providing very large fish in the upper reaches. These are difficult to catch but the challenge of hooking and possibly landing one of these trophy fish continues to attract anglers.
39. The Ahuriri River is augmented by several tributaries most of which are small but all are important, providing inflows, spawning grounds and nursery waters for newly hatched fry and aquatic invertebrate emigration. The Ahuriri River is home to both brown and rainbow trout. Rainbow trout may spend their life in a large river but will seek out smaller tributaries in which to spawn. Rainbow trout will ascend great distances in very small streams to excavate redds and lay their eggs. Brown trout spawn in the main stem and in braids where water velocity is suitable and the substrate consists of optimum sized gravel; however they will also share smaller flows when options are limited.
40. The Ahuriri River provides habitat for water dependent bird species which include the world rarest wader, the black stilt and other threatened species, the black fronted tern, wrybill and black billed gull. Evidence submitted during the Water Conservation Order described the birdlife on the Ahuriri River as “outstanding”.
41. The invasive diatom, *Didymosphenia geminata*, is prevalent in the Ahuriri River. The frequency of floods and freshes, to some extent, suppresses its growth, keeping it at a low nuisance factor to anglers.

#### **Ahuriri River Tributaries**

42. The tributaries include the Omarama Stream, the Quail Burn, Hen Burn, Avon Burn, Longslip Creek and the Ahuriri East Branch. Of the named tributaries only part of the Omarama Stream is protected by the Water Conservation Order. All the tributary streams play an important part in maintaining a productive sports fishery, as spawning grounds, nursery waters, invertebrate production and water augmentation.

#### The Omarama Stream

43. The Omarama Stream features often in fishery history and became known as a brown trout fishery during the early colonisation of the species in the catchment. It has gained increased popularity in recent years and is fished. Often public access is limited with most anglers relying on the good will of landowners to gain access to much of Omarama Stream.

#### The East Branch of the Ahuriri River

44. The East Branch is a small boulder-strewn stream with spawning rainbow trout observed 10 kilometres upstream from the confluence with the Ahuriri River. Although small it is possible to fish it in places; however it is not recognised as a popular fishing water.

#### The Quaiburn

45. A small but lengthy tributary, the lower reaches, approximately one or two kilometres, cease to flow during dry summer periods. In the upper reaches there is limited anecdotal evidence that suggests that at times there are fish to catch, most often in the early season when spawning adults remain for a period before returning to the Ahuriri River. Indications are it is not well known and is seldom fished.

#### The Hen Burn

46. Smaller than the Quail Burn, opportunities for angling are limited by its small size. The catch of juvenile trout while electrofishing indicates that like other tributaries described, it too accommodates spawning trout during the spawning period.

#### The Otamatapaio River

47. The Otamatapaio River was a tributary of the Ahuriri River. Due to the inundation of the lower Ahuriri River when Benmore Dam was built it now flows into Lake Benmore but retains its importance as a spawning water for lake trout. Both species, brown and rainbow trout, ascend the river during their spawning periods. Although the river is small, as in other tributaries, a number of post-spawning adults will stay in the river where they are available to anglers. In most years, during the height of summer the lower 3 or 4 kilometres will dry due to naturally occurring low flows, exacerbated by irrigation abstractions. Downstream migration of juvenile trout is stopped and many perish amongst the substrate as the water recedes.

#### **The Tekapo River**

48. Highly modified, the Tekapo River provides a catch rate unequalled by any other river of the Central South Island Region. It has gained an enviable reputation and is often referred to as "The Fish Factory". Although the Tekapo River has been diverted into a canal, the tributaries, the Mary Burn and the Grays and the Forks rivers continue to flow forming the Tekapo River. The formed roads and tracks which run alongside the Tekapo River provide anglers with good 4WD vehicular access from Lake Tekapo downstream to Lake Benmore a distance of just over 40 kilometres. Tekapo River users experience a vista of the main divide including Aoraki Mount Cook, but they do so from a riverbed which has obvious signs of flood protection work, heavy machinery operation and exotic tree plantings. The Tekapo is an important spawning water for brown and rainbow trout from the Haldon Arm of Lake Benmore. More recently sockeye salmon have migrated into the Tekapo and ascend as far as the Forks River confluence 35 kilometres upstream from Lake Benmore.



*Anglers fishing the Tekapo River claim consistently good results while experiencing a distant panorama of the Southern Alps dominated by Aoraki Mt Cook.  
G. Warren November 2009*

### **The Tekapo River Tributaries**

#### The Grays River

49. The Grays River is a spring fed tributary of the Tekapo located 12 kilometres above Lake Benmore. The character of the Grays River is quite different to the Tekapo or any other tributaries. The river meanders through stands of willows and is quite incised in places with deep pools at each bend. The trees and overhanging grassy banks provide the trout with shade and overhead cover which is also of benefit to anglers attempting an approach to a feeding trout.



*Willows and grassy banks provide shaded cover for the trout population of the Grays River.  
G McClintock, 1990.*

50. The Grays River has been a well known and productive fishery to South Canterbury anglers, however in recent years it has been “discovered” by an increasing number of visiting anglers. It is a fishery “well off the beaten track” and it is still possible to fish here without encounters with other anglers. During their spawning period, sockeye salmon have been observed throughout the length of the Grays River.

The Twizel River

51. Modified in its mid reaches where it is channelled through a culvert underneath the Pukaki-Ohau hydro canal, the impoundment has created Lake Poaka. This small lake holds a population of trout, some large, and is a popular fishing location. The upper river is small and braided with a good population of trout ascending from Lake Benmore to spawn. After spawning a number of the mature adult fish remain and in the confines of a small river are easy to see and therefore easy targets for experienced fly casters. The Twizel River annually receives considerable fishing pressure due to its location, close to the town that bears its name. Crossed by State Highway 8, a major inland tourist route, campervans and other anglers’ vehicles are a common sight at this bridge. Lake Benmore sockeye salmon migrate into the Twizel River during their February March spawning season.



*An angler wades across the upper Twizel River.  
H Stevens, November 2008*

### The Mary Burn

52. A small but very productive fishery the Mary Burn's reputation is well known. Rising from wetlands to the west, with waters shaded by overhanging tussock; its small size belies the quantity and quality of the trout which live here. Small streams do not appeal to everyone however Mary Burn adherents speak very highly of it. Sockeye salmon move into the lower reaches to spawn in February and March.



*The Mary Burn wends a convoluted course through Mackenzie Basin tussock lands.  
G.McClintock, 1990.*

### **Lake Pukaki Tributaries**

53. There are several small tributaries which flow into Lake Pukaki. In the clear water inflow areas, anglers target fish that are attracted by the flows and the food items which wash into the lake. The glaciers of the Aoraki Mount Cook area form the Tasman River. The glacial till transported by the river creates the unique Lake Pukaki colour. While the Tasman River provides minimal habitat for trout, the clear streams on the right and left of the Tasman River, the unnamed stream on the true right, sometimes referred to as Acland Stream and the lower reaches of the Jollie River on the true left, provide clear water habitats for trout. Acland Stream which flows for about 14 kilometres to Lake Pukaki holds good numbers of brown and rainbow trout. Natural recruitment by mature spawning trout from Lake Pukaki attracts a surprisingly high number of anglers considering it has an average width of about 3 metres.



*The un-named clear flowing stream which flows into Lake Pukaki unlike the glacial flows of the Tasman River (right top of image) is a popular and productive fishery.  
G.Hughes, 2005.*

### **The Otematata River**

54. The Otematata River once a large tributary of the Waitaki River, as a result of hydro storage now flows into Lake Aviemore near the town of Otematata. It rises from small high country streams some 35 kilometres to the south flowing in a convoluted course through steep but spectacular rocky gorges to the lake.



*An angler searches for feeding trout in the clear waters of the upper Otematata River.  
G.Hughes 2007.*

55. The Otematata River and its largest tributary Clear Stream hold good numbers of trout, both brown and rainbow, and has long been regarded as a reputable fishery. Access is difficult and controlled by adjacent landowners. Locked gates prevent unauthorised vehicular entry. Access along its banks via a “Queens Chain” is possible however due to the rugged nature of the country, progress is slow and few anglers venture far past the lower gorge. With the formation of the newly opened Otiake Conservation Park there is now vehicular access to the head waters of the Otematata River accessed from the Ranfurly area. This will result in increased use by the public and will be of extreme interest to trout anglers.
56. The Otematata River is a vital component of the Lake Aviemore fishery. It is the largest spawning water for the Lake Aviemore trout fishery. Without the Otematata River Lake Aviemore could not provide the numbers of fish the anglers catch, especially during the recognised holiday period when the population numbers several thousand. An unknown but significant number of the holiday makers who live temporarily in Otematata town or camp on several serviced camping areas around the lake are anglers. The angler harvest is considered above average and Aviemore adherents return year after year.
57. Deep Stream enters the lake on the northern shoreline and while it provides some spawning for trout it is very small and often fish access to the lake is prevented by a build up of lake gravels a result of the prevailing nor westerly winds.
58. Other streams, Parsons Rock and Waitangi streams are smaller again. Due to their small catchment and irrigation abstraction their use by spawning salmonids is severely limited.

### **The Fishery and the Future**

59. The river fisheries of the upper Waitaki catchment are renowned among anglers. New Zealand’s clear running rivers are a major attraction and catching fish in clear flowing rivers for a large majority of anglers is the ultimate fishing experience. Being able to see fish in clear flowing water is why so many overseas anglers travel to New Zealand and why the Central South Island fishery has been called an anglers paradise.
60. The degradation of many waterways in Canterbury illustrates that past management practices have failed to combat effects of changes in land use, irrigation and water abstraction. Anglers have a real fear that the increase in irrigated land has the potential to adversely affect high country fisheries.

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Graeme Hughes  
3 December 2009