

**BEFORE THE HEARING COMMISSIONERS**

**UNDER** the Resource Management Act of  
1991

**IN THE MATTER** of "Proposed Plan Change 5A  
(Lindis: Integrated Water  
Management)" to the Regional  
Plan: Water

**BETWEEN** **OTAGO FISH and GAME  
COUNCIL**

**AND** **OTAGO REGIONAL COUNCIL**

**SUPPLEMENTARY CLOSING LEGAL SUBMISSIONS ON BEHALF OF  
OTAGO FISH and GAME COUNCIL**

**29 April 2016**

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1. These supplementary submissions address matters that were left outstanding at the hearing in Wanaka, namely:
  - (a) Interpretation of *Environmental Defence Society v New Zealand King Salmon Limited* [2014] NZSC 38
  - (b) Scope and transitional framework
  - (c) Matters of detail in respect of which witnesses undertook to provide a response.

#### **NPSFM and Part 2 RMA**

2. The Panel sought clarification from counsel in respect of the effect of the Supreme Court's ruling in *Environmental Defence Society v New Zealand King Salmon Limited* [2014] NZSC 38. In particular, if it is found that the NPSFM does not have any of the 3 exemptions (incomplete, invalid or uncertain), the Panel enquired whether the Supreme Court stated that the decision maker **must not** refer to Part 2 of the RMA, or that a decision maker is **not required to** refer to Part 2. In other words, if it is found that the NPSFM is a complete, certain and valid expression of the relevant parts of Part 2, can a decision maker undertake a subsequent balancing exercise under Part 2 (the consequence of which might "read down" the implementation of the NPSFM), or is a decision maker restricted or prevented from doing so.
3. It is submitted that the former is the case. The NPSFM constrains a decision makers' otherwise wider discretion under part 2 of the Act in that the NPSFM must be given effect to. Paragraph 91 states:

*[91] We acknowledge that the scheme of the RMA does give subordinate decision-makers considerable flexibility and scope for choice. This is reflected in the NZCPS, which is formulated in a way that allows regional councils flexibility in implementing its objectives and policies in their regional coastal policy statements and plans. Many of the policies are framed in terms that provide flexibility and, apart from that, the specific methods and rules to implement the objectives and policies of the NZCPS in particular regions must be determined by regional councils. But the fact that the RMA and the NZCPS allow regional and district councils scope for choice does not mean, of course, that the scope is infinite. **The requirement to "give effect to" the NZCPS is intended to constrain decision-makers.***

4. The Supreme Court was asked to determine whether or not the Board of Inquiry was wrong to adopt the "overall judgement" approach. It concluded (see highlighted sentence):

*[129] When dealing with a plan change application, the decision-maker must first identify those policies that are relevant, paying careful attention to the way in which they are expressed. Those expressed in more directive terms will carry greater weight than those expressed in less directive terms. Moreover, it may be that a policy is stated in such directive terms that the decision-maker has no option but to implement it. So, "avoid" is a stronger direction than "take account of". That said however, we accept that there may be instances where particular policies in the NZCPS "pull in different directions". But we consider that this is likely to occur infrequently, given the way that the various policies are expressed and the conclusions that can be drawn from those differences in wording. It may be that an apparent conflict between particular policies will dissolve if close attention is paid to the way in which the policies are expressed.*

*[130] Only if the conflict remains after this analysis has been undertaken is there any justification for reaching a determination which has one policy prevailing over another. The area of conflict should be kept as narrow as possible. The necessary analysis should be undertaken on the basis of the NZCPS, albeit informed by s 5. **As we have said, s 5 should not be treated as the primary operative decision-making provision.***

5. The Supreme Court's final finding relevant to this point (paragraph 174) was that it was an error for the Board of Inquiry to not give effect to the relevant directive NZCPS policies (in that it read them down by applying the overall judgement approach and applied Part 2.) What this means for this Plan Change is that your decision is constrained. Plan Change 5A is required to give effect to the NPSFM. Part 2 of the Act cannot be relied upon as a justification for not giving effect to the directive provisions of the NPSFM (but can be referred to if it does not interfere with that requirement).

#### **Transitional Framework**

6. Fish and Game is not advocating for a transitional framework to be expressed in plan provisions. Nor is it seeking any plan provisions that reference a different flow regime during drought periods. Those matters are beyond the scope of the relief sought in Fish and Game's submission.
7. Fish and Game's position is that the transition to a flow regime that gives effect to the NPSFM and that protects flows that support trout habitat of trout should be implemented. The timeframe for that implementation will be a combination of both the provisions of the Plan Change, and the manner in which those provisions are applied to the consents that are subsequently granted.

8. As a bottom line, Fish and Game submit that plan provisions should apply the following:
- (a) The summer minimum flow of 1000 litres per second for 1 October to 30 April (to ensure habitat and fish passage sustained throughout the river)
  - (b) The winter minimum flow of 1600 litres per second (l/s);
  - (c) The primary allocation limit of 1000 l/s;
  - (d) The first block supplementary minimum flows of 2200 l/s (winter and spring);
  - (e) The first block supplementary minimum flow of 1600 l/s (summer and autumn);
  - (f) The first second block supplementary minimum flow of 2700 l/s (winter and spring);
  - (g) The second block supplementary minimum flow of 2100 l/s (summer and autumn);
  - (h) The supplementary block size of 500 l/s;
  - (i) The treatment of connected groundwater as surface water;
  - (j) Setting maximum allocation limits for specified aquifers within the Bendigo-Tarras Basin (the Ardour Valley, Bendigo, and Lower Tarras aquifers);
  - (k) Mapping the boundaries of the catchment for the purposes of the minimum flow;
9. Fish and Game is not seeking alternative relief to the above. However it is noted that if imposed, the plan provisions above can still be applied on a case by case basis under the Discretionary activity status in a manner that allows a transition over time, to achievement of the new regime.

### **Correction**

10. The Panel sought clarification of paragraph 6.3 of Counsel's legal submissions. That section of Submissions should have read:

6.3 The Water Plan's core objective relevant to achieving objectives ~~B4~~ A1 and B1 of the NPS FM is as follows;

*"to retain flows in rivers sufficient to maintain their life-supporting capacity for aquatic ecosystems and their natural character"<sup>1</sup>.*

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<sup>1</sup> Policy 6.3.1 of the Regional Plan: Water for Otago (2004)

## Evidence

11. **Watson – Sports Fish and Game Management Plan – Sports Fisheries Criteria.** The Panel requested provision of the criteria referred to in paragraph of Mr Watson's paragraph 33 and in relation to Mr Wilson's evidence. The relevant extracts are attached as **Appendix 1**. These establish that the Lindis is a 'Rural' setting in terms of Fish and Game's recreational opportunity spectrum (Remote, backcountry, natural, rural, urban) and confirm it is not pristine (the Lindis sits in a modified rural landscape). The river channel has natural character being formed by riverine processes apart from the lack of water.
12. On the basis of those criteria, Fish and Game submit that the Lindis River is a locally important sports fishery in its own right and is also nationally important as essential components (spawning and rearing grounds) of the nationally important Lake Dunstan and Upper Clutha fisheries.
13. **Watson – awareness of upper drying reach** - Commissioners asked Mr Watson when the Lindis River's upper drying reach first came apparent to Fish and Game. He replied it was as a result of Clutha Fisheries Trust's first aerial photo survey but couldn't recall the date. That first survey was undertaken on 15 March 2014.
14. **Trotter – general.** The research undertaken by Mr Trotter has been completed and Mr Trotter's MSc thesis has been submitted, and is currently under external review. An abstract summarising the research (see attached **appendix B**) was presented by Mr Gabrielsson at the 11<sup>th</sup> International Symposium on Ecohydraulics in Australia in February 2016. This was reviewed by two independent scientists and the research was well received at the meeting. Please note the graphs presented in this paper show how the survival probability of juvenile trout changes between survey intervals. The graphs displayed in Mr Gabrielsson's Lindis hearing evidence showed the total cumulative survival probability of juvenile trout over time. In addition, Mr Trotter presented the preliminary results of his research at the New Zealand Freshwater Sciences Society in Blenheim in 2014. This presentation was similarly well received and was awarded a student prize.
15. **Trotter – paragraph 35.** The (Hay et al. 2006) reference in paragraph 35 of Mr Trotter's evidence is incorrect and should read (Hay, Hayes and Young 2006). The full citation is: Hay J. Hayes J, Young R 2006. Water quality

guidelines to maintain trout fishery values. Prepared for Horizons Regional Council. Cawthron Report No. 1205. 17 p.

16. The paper concludes that the productivity of a trout population (especially brown trout) will suffer as water temperature approaches and exceeds 19°C and recommends that water temperatures be maintained below 24°C to avoid the lethal effects of high temperature.
17. For further clarification, this paper also defines what is meant by the incipient lethal temperature: the temperature which 50% of a sample population can tolerate for a prolonged period (7 days). This temperature increases with acclimation to 24.7°C for brown trout. The ultimate lethal temperature (that which fish cannot tolerate for even a short period i.e. 10 mins) is around 30°C.
18. **Trotter – Figure 5.** In response to a question, in respect of Mr Trotter's figure 5 the location is confirmed as the lower Lindis River approximately 1km above the SH8 Lindis Crossing bridge (around E1313217 N5024050). This point is downstream of the Ardour Road Flow recorder site. The mean daily flow on this day was 302 l/s, although flows in the preceding period may be more relevant. The average mean daily flow for the first two weeks of January was 509 l/s.
19. **Wilson - Hydrology – analysis of inflows.** Mr Wilson presented figures after paragraph 120 of his evidence on the yearly minimum inflows, monthly minimum inflows and monthly average flows. On reconsideration of these figures and paragraphs 120 – 125, Mr Wilson seeks to remove that part of his evidence because the reproduction of the hydrographic record as a graph was unclear.
20. In terms of Fish and Game's position, it is not affected by the removal of those parts of Mr Wilson's evidence. The relief being sought by Fish and Game does not rely on that part of the evidence presented.
21. **Maps** Fish and Game had two large maps as an interpretive aid. As it eventuated they did not need to be referred to in detail so they have not been converted to a form that can be transferred electronically. However, if it would assist the panel the two maps will be provided.

Dated this 29<sup>th</sup> day of April 2016

A handwritten signature in black ink, appearing to read 'Maree Baker-Galloway', written in a cursive style.

Maree Baker-Galloway  
Counsel for Otago Fish and Game Council

## **Appendix 1 – Extracts of Significance criteria from the Otago Sports Fish and Gamebird Management Plan**

The Otago Sports Fish and Gamebird Management Plan is a statutory document prepared under sections 17L and 17M of the Conservation Act 1987. These plans are approved by the Minister of Conservation, and are a matter for consideration under section 66(2)(c)(i) of the Resource Management Act 1991.

### **4.1 Sports Fish and Game Resources in Otago**

Sports fish and game resources is the overall term used to describe the combination of populations of sports fish and game bird species and the habitats that they live in. The sports fish and game bird habitats of Otago are listed in Appendix 4. Assessments of the significance of fish and game resources need to cover habitat values, fish and game population characteristics, and fishing and hunting amenity and attributes (usually managed within a recreational opportunity spectrum). Significance may change over time in light of things like increasing user participation, changes in the distribution of Otago's human population, changes in attitudes towards angling, hunting, and wild harvest, and changes in recreational settings or fish/game habitat values. Habitat values and settings may improve or deteriorate due to external impacts from resource use activities, such as the intensification of agriculture, hydroelectric development and adjacent subdivision.

The following components have been incorporated into this significance assessment:

- Existing published reports or articles.
- Recognition of the fishery or game bird resource in law (such as water conservation orders), regional plans, or other statutory documents
- Angler use, as reported in the 7-yearly national angler survey, conducted by NIWA on behalf of the New Zealand Fish and Game Council.
- The recreational opportunity spectrum for the fishery or game bird resource
- Surveyed angler perceptions of the attributes of the fishery, such as the 1979 and 2013 angler attribute surveys.
- Geographical location.
- Underlying land status and recreational opportunity setting of the resource.

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Appendix 5 contains further detail about the methodology used to assess significance.

#### 4.6 Angling and Hunting Recreational Opportunity Spectrum for Otago

To assist planning and management a recreational opportunity spectrum (ROS) has been developed for angling and hunting in Otago. This draws on ROS theory outlined in the Otago Conservation Management Strategy (2003) and recreation planning literature (e.g. Clark & Stankey, 1982, Taylor, P.C. DOC 1993, DOC 2003). The ROS recognises the diversity of recreational angling and hunting opportunities within the region and classifies them within a spectrum based on key characteristics, primarily recreational settings:

Key Characteristics:

a) **Settings** - the combination of social physical, biological and managerial conditions that give value to a place. Six setting attributes have been identified namely:

1. access into and within the area
2. other non-recreational resource uses and their compatibility
3. on-site management
4. social interaction (user density);
5. level of regimentation (regulations)
6. acceptable level of visitor impacts.

b) **Activities** – the specific things people do: fly fish, hunt upland game, troll from a boat etc. It is important to identify potential users, their expectations and the style of activity in which they participate.

c) **Experiences** - the combination of activities (chosen by users) and the settings (managed as far as possible) result in experiences including challenge, risk, solitude, and companionship.

A recreational opportunity is defined as... 'a chance for a person to participate in a specific recreational activity in a specific setting in order to realise a predictable recreational experience'.

The Council's long term aim is to maintain (or enhance) the range, quality and extent of angling and hunting opportunity in Otago to meet the preferences of individual users and provide the widest achievement of desired experiences. To achieve this aim the Council requires in some cases a better understanding of recreational user preferences and needs to actively manage settings for user experiences.

The following represents an opportunity spectrum based on five broad categories: Urban, Rural, Natural, Backcountry and Remote.

#### Urban

Setting is within or adjacent to urban area

Duration of activity is relatively short

Access is easy by road and travel is short

User encounter rates are relatively high

Water is man-made or highly modified

Fishery may be stocked

Experience is characterised by open space but within a built or modified environment.

#### Rural

Setting is rural and modified by farming activity

Duration of activity may be short or long

Access is relatively easy by road and duration of activity is commonly up to a day

User levels can be high and encounter rates are moderate

Fishable water area is extensive

Hunting opportunity for waterfowl is extensive.

Experience is characterised by feelings of being away from urban areas

Experience is associated with companionship or family recreation activities, such as swimming.

A variety of fishing methods are employed

Catch rates and size of fish are average.

### Natural

Setting is not greatly modified and unmodified remnants are common

Duration of activity is usually longer and commonly over 4 hours

Access is easy by road, track or boat and travel distance is relatively long

Location is usually distant from centres of population

Use is commonly associated with camping, swimming, and the use of huts or holiday houses

User encounter rates are moderate

Water is little modified and catch rates/size of fish are average or better

Fishable water area is extensive

Game-bird hunting opportunity is less extensive but more diverse (including upland game )

Experience is characterised by scenic beauty and is commonly associated with family activities such as boating, picnicking, and walking.

### Backcountry

Setting is largely unmodified natural landscape and human intrusion is limited

Duration of activity is usually longer and commonly over 4 hours

Access is by gravel road, walking track, boat or aircraft and travel distance is relatively long

Location is usually distant from centres of population

Use is commonly associated with camping, swimming, and the use of huts or holiday houses

User encounter rates are low

Water is little modified and catch rates/size of fish are average or better and can include trophy trout

Fishable water area is limited

Game-bird hunting opportunity is very limited

Experience is characterised by scenic beauty and feelings of solitude and is commonly associated with activities such as tramping and camping

Access methods can impact on the experience of others.

### Remote

Setting is natural landscape with very little human intrusion

Duration of activity is usually long and involves more than a day

Access is by foot, aircraft or jet boat and travel distance is long

Location is remote from centres of population

Use is commonly associated with camping, tramping and hunting

User encounter rates are low

Water is clear and size of fish is larger than average

Fishable water area is limited and pressure sensitive

Experience is characterised by scenic beauty and feelings of peace and solitude

Access methods can impact on the experience of others.

#### 4.7 Significance Grading

The following criteria have been considered in determining the significance of fish and game habitats, fisheries and hunting areas within Otago as outlined in Sections 5.6 and 5.7.

The significance of a fishery or game resource is not the same as the quality or value of that resource. For example a locally significant fishery can be high, medium or low quality or value depending on its condition, character or specific fishery characteristics or attributes.

A habitat, fishery or hunting population/area needs to meet one or more of the criteria to be graded as nationally regionally or locally significant.

##### 4.7.1 Nationally significant

- Habitat, fishery or hunting area is recognised as outstanding in a Water Conservation Order; or of high significance in a decision from a public process or in a published technical report or statutory plan.
- Backcountry fishery in an area designated as an outstanding natural landscape in a district plan or within public conservation land and recognised as outstanding in national terms.
- Fishery sustaining 5,000 or more angler visits/year
- Hunting area sustaining more than 500 hunter visits per year
- Habitat, fishery or hunting area with more than one exceptional attributes as determined by formal angler or hunter surveys.
- Wetland habitat of 400 hectares in area or more.
- High level of use by international anglers
- High level of use by resident anglers from outside Otago
- Fishery or hunting area has significant attributes identified by survey or community consultation.
- Habitat that provides spawning, breeding, rearing areas for a nationally significant fishery or game habitat.
- Habitat that provides a migratory pathway or corridor for a nationally significant fishery or game habitat.

##### 4.7.2 Regionally significant

- Habitat, fishery or hunting area is recognised as regionally important in a decision from a public process or in a published technical report or statutory plan.
- Backcountry fishery in an area designated as an outstanding natural landscape in a district plan or within 'public conservation land'
- Fishery sustaining between 2000-5000 angler visits per year

- Hunting area sustaining between 150 to 500 hunter visits per year
- Habitat, fishery or hunting area with at least one exceptional attribute as determined by formal angler or hunter surveys.
- Wetland habitat over 40 to 400 hectares in area
- Noticeable level of use by international anglers
- Noticeable level of use by resident anglers from outside Otago
- Degraded habitat with potential for restoration to meet one or more of the above criteria
- Fishery or hunting area has significant attributes identified by survey or community consultation.
- Habitats that provide spawning, breeding, rearing areas for a regionally significant fishery or game habitat
- Habitat that provides a migratory pathway or corridor for a regionally significant fishery or game habitat.

#### 4.7.3 Locally significant

- Habitat, fishery or hunting area is recognised in surveys including NIWA National Anglers' Survey, in a decision from a public process or in a published technical report or statutory plan
- Fishery sustaining up to 2000 angler visits/year
- Hunting area sustaining up to 150 hunter visits per year
- Habitat fishery or hunting area that is close to a centre of population (within 45 minutes drive)
- Degraded habitat with potential for restoration to meet one or more of the above criteria
- Fishery or hunting area has significant attributes identified by survey or community consultation.
- Habitats that provide spawning, breeding, rearing areas for a locally significant fishery or game habitat
- Habitat that provides a migratory pathway or corridor for a locally significant fishery or game habitat.

#### 4.7.4 Review of significance

Habitat significance may be reviewed or amended in the light of new information and any changes that results will be incorporated into the plan by way of section 17M (3) of the Conservation Act 1987.

### APPENDIX 5. SPORTS FISH AND GAMEBIRD RESOURCE SIGNIFICANCE

Multiple information sources are used to determine the significance of sports fish or gamebird resources. The highest significance rating determined in one source of information is the significance that applies to the fishery. These include:

#### Existing published reports or articles.

The primary source of published reports and articles on the significance of fisheries was published reports by Acclimatisation Societies or the Ministry of Fisheries Research Division in the 1980s. These reports contained detailed assessments of the significance of rivers, lakes and wetlands and their catchments.

#### Recognition of the fishery or gamebird resource in law

Law includes statutory instruments (formerly referred to as “regulations” such as national water conservation orders, former local water conservation notices (which have been since amalgamated with regional water plans), references to fishery and gamebird values within subordinate legislation such as regional policy and plans (in Otago, the regional policy statement and the regional water plan are the most important source of information), district plans, and also other documents such as Department of Conservation conservation management strategies and plans. Resource consents, particularly ‘global’ consents that deal with whole catchments or sub-catchments, may also contain reference to fishery and gamebird values.

#### Angler and hunter use

Angler use, as reported in the 7-yearly national angler survey, conducted by NIWA on behalf of the New Zealand Fish and Game Council. This survey has a dataset dating back to the mid 1990s.

Hunter use is reported primarily through the hunter diary scheme.

### Angling and hunting recreational opportunity spectrum

The Otago Fish and Game region has an operative recreational opportunity spectrum which classifies fisheries and gamebird resources based on setting, type of activity, and type of user. Recreational opportunity spectra are used as a conservation management tool when there is a diverse range of recreational experiences within a region.

### Angler perceptions

Anger perception surveys have been undertaken in New Zealand in 1978 and 2013 Unwin (2009, 2013; New Zealand Acclimatisation Societies, 1978). These are large-scale exercises which require participants to rank their experiences, perceptions and values of fishing in different rivers.

The following criteria have been used:

- *Close to home* – ('close to where you normally live')  
This relates to travel distance to a fishery
- *Close to holiday location* – ('close to where you live while on holiday')  
This also relates to travel distance
- *Ease of access*
- *Large areas of fishable water*
- *Scenic beauty*
- *Wilderness character*
- *Anticipation of a good catch rate*
- *Anticipation of landing large fish*

Anglers are also asked to identify the "overall" value of a fishery on a 1-5 scale, based on the following criteria:

1. *This fishery can provide enjoyable angling, but is not exceptional;*
2. *This fishery often provides enjoyable angling, but is not exceptional;*
3. *This fishery consistently provides enjoyable angling;*
4. *This fishery provides a very enjoyable angling experience, and is one of my personal favourites;*
5. *This fishery provides an exceptional angling experience, and has few peers.*

### Degraded Habitats and Populations

Where a fishery or hunting area or population has been degraded or has deteriorated over time because of identified or unidentified external factors its former significance status and potential for restoration deserve recognition. No fishery or game hunting area/population should be removed from a former status of nationally or regionally importance due to a human-induced decline in water quality or physical habitat. Instead, the appropriate response is to note the change and the reasons for the change in status and suggest remediation.

### Habitat components of significance

Significance of fish or game habitats will include the following habitat considerations:

- the size or value of the fish or game population supported including for game, the proportion of a national population
- the importance to the life cycle requirements of a fishery or game population including spawning or breeding areas, areas for juvenile rearing
- role as migratory pathways or habitat corridors
- special characteristics of the habitats.

RECREATIONAL OPPORTUNITY SPECTRUM

(pg 75, Sports Fish and Gamebird Management Plan for Otago)

**Classification of Angling and Hunting Opportunities in Otago within a Recreational Opportunity Spectrum**

Categories	Waters:	Setting:	Activity:	Users:
	upper (U) middle (M) lower (L)	Urban	Fly (F),	Local (L)
		Rural	Spin (S),	Regional (R)
		Natural	Troll (T)	National (N)
			Hunt	
		Backcountry	waterfowl(H)	International (I)
		Remote		Commercial (C)
				Juniors (J)

**Rain-fed Rivers**

Arrow	Rural	F,S,B	L,R,J
Catlins River	Rural/Natural	F,S,B, H	L,R,J
Deep Creek	Rural	F,S,B, H	L,J
Hawea	Rural	F,S,B	L,R,J,C
Kaihiku	Rural	F,S,B, H	L,R,J
Lee Stream	Rural	F,S,B, H	L,J
<b>Lindis River</b>	<b>Rural</b>	<b>F,S,B</b>	<b>L,J</b>

Logan Burn	Rural	F,S,B,	L,J
Maclennan River	Natural	F,S,B	L,J
Manuherikia	Rural	F,S,B, H	L,R,J,C
Owaka River	Rural	F,S,B, H	L,J
Pomahaka (below Glenken)	Rural	F,S,B, H	L,R,J,C
Shag	Rural	F,S,B,H	L,R,J
Tahakopa River	Rural/Natural	F,S,B, H	L,J
Tokomariro River	Rural	F,S,B, H	L,J
Waikouaiti River	Rural	F,S,B, H	L,J
Waipahi River	Rural	F,S,B, H	L,R,N,J
Waitati River	Rural	F,S,B, H	L,J
Waiwera River	Rural	F,S,B, H	L,J

### Major

<b>Rivers</b>	Clutha (Above Clyde Dam)	Rural/Natural	F,S,B, H	L,R,N,J,C
	Clutha (below Clyde Dam)	Rural	F,S,B, H	L,R,N,J,C
	Taieri	Rural	F,S,B, H	L,R,N,J,C

### Participation / angler use

#### Participation

<u>Fishery</u>	<u>2002 Angler</u>	<u>2007 Angler</u>	<u>2015 Angler</u>	<u>Change</u>
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	<u>Survey</u>	<u>Survey</u>	<u>Survey</u>	
Shag River	1698	802		-896
Waikouaiti River	1357	1236		-121
Waitati River	130	1012		882
Tokomariro River	4089	519		-3570
Waipahi River	1815	919		-896
Catlins River	913	1492		579
Owaka River	191	1085		894
Tahakopa River	720	55		-665
Teviot River	325	160		-165
Waiwera River	315	119		-196
Logan Burn Reservoir	4276	2868		-1408
Lindis River	147	332		185