Salmonid Angling in the Gisborne District:
Application of the River Values Assessment System (RiVAS)

Prepared by:
Kay Booth
Sandy Bull
Jo Callis
Frank Murphy
Rob Pitkethley

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Executive Summary

The River Values Assessment System (RiVAS) was applied by a River Expert Panel to ten resource and user attributes to assess 13 rivers in the Gisborne District for their salmonid angling value. The method was applied to differentiate rivers of national significance (n=4: Ruakituri River, Koranga River, Motu River, Opato Stream), regional significance (n=5: Waitahaia River, Waingakia Stream, Raukokore River, Takaputahi River, Hangaroa River) and local significance (n=2: Wharekopae River, Mangapoike River). The data available from the National Angling Survey were debated by the Expert Panel (low survey responses), so the Expert Panel relied on their own assessments for most attributes. The Panel undertook an independent assessment and three rivers on the cusp of significance thresholds were adjusted with reference to the Panel assessments.

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Chapter 1
Introduction

1.1   Purpose

This report presents the results from an application of the River Values Assessment System (RiVAS) for salmonid angling in the Gisborne District. A River Expert Panel (see Appendix 1) met on 3 November 2011 to apply the method to Gisborne rivers.

1.2   River Values Assessment System (RiVAS)

Hughey and Baker (2010) describe the RiVAS method including its application to salmonid angling. Table 1 provides a summary of the method.

Table 1
Summary of the River Values Assessment System method

	Step	Purpose
1	Define river value categories and river segments	The river value may be subdivided into categories to ensure the method is applied at a meaningful level of detail. Rivers are listed and may be subdivided into segments or aggregated into clusters to ensure that the rivers/segments being scored and ranked are appropriate for the value being assessed. A preliminary scan of rivers in the region is undertaken to remove those rivers considered to be of 'no' or less-than-local level significance for the value being considered.
2	Identify attributes	All attributes are listed to ensure that decision-makers are cognisant of the various aspects that characterise the river value.
3	Select and describe the primary attributes	A subset of attributes (called primary attributes) is selected and described.
4	Identify indicators	An indicator is identified for each primary attribute using SMARTA criteria. Quantitative criteria are used where possible.
5	Determine indicator thresholds	Thresholds are identified for each indicator to convert indicator raw data to 'not present', 'low', 'medium', 'high' (scores 0-3).
6	Apply indicators and indicator thresholds	Indicators are populated with data (or data estimates from an expert panel) for each river. A threshold score is assigned for each indicator for each river.
7	Weight the primary attributes	Primary attributes are weighted. Weights reflect the relative contribution of each primary attribute to the river value. The default is that all primary attributes are weighted equally.
8	Determine river	Indicator threshold scores are summed to give a significance score (weightings applied where relevant).

	Step	Purpose
	significance	Rivers are ordered by their significance scores to provide a list of rivers ranked by their significance for the river value under examination. Significance (national, regional, local) is assigned based on a set of criteria or cut off points.
9	Outline other relevant factors	Factors which cannot be quantified but influence significance are recorded to inform decision-making.
10 - 13	Apply to potential river scenarios (called RiVAS+)	Optional stage (RiVAS+). Relevant steps are repeated for potential future river conditions. Not undertaken for this assessment.
14	Identify information requirements	Data desirable for assessment purposes (but not currently available) are listed to inform a river value research strategy.

Chapter 2
Application of the RiVAS method

Step 1: Define the river value, river sites and levels of significance

This assessment focused on trout angling, as there is no salmon angling in Gisborne rivers.
In advance of the meeting, data from the National Angling Surveys were collated. The survey records where people fish and aspects of their experience. Using these data and local knowledge of the Expert Panel, a list of 13 rivers was compiled for the assessment (rivers are mapped in Appendix 2 and listed in Appendix 3).

Rivers within the Gisborne District that were not listed either hold negligible value for salmonid angling (survey data did not identify any angling use; the Expert Panel considered they had no known angling value) or were considered to be of local significance by the Expert Panel and robust data were not available owing to small survey sample size (i.e. few anglers).

Step 2: Identify attributes

Attributes to describe salmonid angling are presented in Appendix 4. These were adopted from the most recent application of RiVAS for salmonid angling (Tasman District – Booth et al. 2010).

Step 3: Select and describe primary attributes

Primary attributes are those attributes selected to represent salmonid angling within the RiVAS method. These were adopted from the most recent application of RiVAS for salmonid angling (Tasman District – Booth et al. 2010). Appendix 4 describes the ten primary attributes (in bold).

Steps 4 & 5: Identify indicators and determine indicator thresholds

The indicators adopted to measure each primary attribute are presented in Appendix 4, together with their thresholds, and indicators are assessed against SMARTA[1] criteria in Appendix 5. Indicators and thresholds were adopted from the most recent application of RiVAS for salmonid angling (Tasman District – Booth et al. 2010).

Discussion of the indicators and their thresholds included the comment for *'perception of fish size'* that the score of '3' would apply to a fish over 5-6 pounds.

Step 6: Apply indicators and indicator thresholds

Initially, data from the National Angling Surveys were entered into Appendix 3; however some members of the Expert Panel lacked confidence in many of the data, in part because of low survey responses. For this reason, it was decided to use Expert Panel estimates for all indicators (Appendix 3).

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1   Specific, measurable, achievable, relevant, timely, and may be already in use

Step 7: Weight the primary attributes

The decision was made to keep weights equal (Appendix 3).

Step 8: Determine river site significance

The spreadsheet was used to sum the indicator threshold scores for each river (Appendix 3). The significance criteria for salmonid angling (see Booth et al. 2010) were then applied to identify rivers of national, regional and local significance for salmonid angling (Appendix 3). The criteria are:

> *National significance:*
> > Criterion 1: *% overseas anglers* = 3, plus 25% or more of the other attributes = 3; or
> > Criterion 2: 50% or more of the attributes = 3.
> *Regional significance:* Those rivers in the table not defined as nationally or locally significant.
> *Local significance:* Sole criterion: *% overseas anglers* < 3, plus maximum of one other attribute = 3.

The Expert Panel reviewed the results and decided to independently rank the rivers. Each member did this and results were collated (see 'Expert independent assessments' part of the spreadsheet in Appendix 3).

These assessments were then used to revise the significance rating for three rivers. All affected rivers fell on the threshold between significance categories (e.g., rated regional significance but very close to triggering national significance). As noted in other RiVAS assessments, sites very close to thresholds need to be treated with some 'give and take'. The adjustments were therefore minor, albeit that significance categories were altered, and applied to the following rivers:

Opato River: The Panel felt the RiVAS assessment under-valued the Waioeka river. The reason appears to be related to the division of the river into two parts – the Koranga River and Opato Stream. If it had been assessed as a 'whole' river, it would have achieved national significance. The Koranga River was rated as national significance in the RiVAS method, with which the Panel agreed; however, the Opato River received a regional significance rating (the Panel felt this should be national). The Opato was very close to reaching national significance under the RiVAS approach. For these reasons, the Opato River was raised to national significance. It was noted that most of the Opato River is within the Bay of Plenty region.

Hangaroa River: The Panel felt the RiVAS assessment under-valued the Hangaroa river. It was noted that the National Angling Survey indicated it was in the top three rivers for usage, but was primarily fished by New Zealanders. All three Experts rated it in the top five rivers in the District and believed it was of regional significance – the RiVAS assessment rated it as having local significance. The significance criterion associated with international use appears to influence this result – that is, regional significance cannot be obtained unless the river attracts considerable international use. The Hangaroa River was adjusted from local to regional significance because of its high usage and the Panel's opinion of its high value.

Waitahaia River: The Panel felt the RiVAS assessment over-valued the Waitahaia River. RiVAS rated it as nationally significant – the Panel felt it was regionally significant (similar to the Hangaroa, it was rated in the top 5 rivers by the Panel). It is likely that the value attributed to the Waitahaia was influenced by its division into two parts: Waingakia and

Waitahaia Rivers are tributaries of the Mata River. The National Angling Survey data record that no respondents said they had fished the river.

Following these adjustments, 4 rivers were identified as nationally significant for salmonid angling, 5 as regionally significant, and 2 as locally significant. Two rivers that had restricted access (no free public access) were also assessed: one as nationally significant and one as locally significant.

Step 9: Outline other factors relevant to the assessment of significance

No discussion on other factors took place.

Step 10: Review assessment process and identify future information requirements

Data from the National Angling Surveys were not accepted as an adequate database for decision-making by all members of the Expert Panel.

The refinement of the initial RiVAS results by the Expert Panel suggests two considerations for the RiVAS salmonid angling method:
1. That the significance criterion '% overseas anglers' might not fully explain significance in regions such as Gisborne which attract relatively few international anglers compared with other regions where RiVAS has been applied to date.
2. That the division of rivers requires careful attention. It is best to 'start big' and then subdivide into smaller areas as required.

These two considerations do not require modification to the method – the Expert Panel discussion and refinements, carefully recorded, adequately dealt with the issues.

References

Booth, K., Deans, N., Unwin, M., Baker, M-A. (2010). Salmonid Angling in Tasman District: Application of the River Values Assessment System (RiVAS), in Hughey, K.F.D., Baker, M-A. (eds). (2010). *The River Values Assessment System: Volume 2: Application to cultural, production and environmental values.* LEaP Report No.24B, Lincoln University, New Zealand. Chapter 5: p1-26.

Hughey, K.F.D., Baker, M-A. (eds). (2010). *The River Values Assessment System: Volume 1: Overview of the Method, Guidelines for Use and Application to Recreational Values.* LEaP Report No.24A, Lincoln University, New Zealand.

Appendix 1
Credentials of the River Expert Panel members and advisors

The River Expert Panel comprised three members. Their credentials are:

1. **Sandy Bull** is with the Federation of Freshwater Anglers.
2. **Frank Murphy** is the President and Chairman of the New Zealand Professional Fishing Guides Association.
3. **Rob Pitkethley** is the Manager of the Eastern Region of Fish & Game New Zealand.

Advisors:

1. **Kay Booth** is a researcher and planner, and the Director of Lindis Consulting. Kay has been involved in developing the RiVAS tool since its inception in 2007, and has applied RiVAS to various river values for several regional councils.
2. **Jo Callis** is a Planner with the Gisborne District Council.

Appendix 2
Map of salmonid angling rivers

N

Raukokore River

Waingakia Stream

Takaputahi River

Waitahaia River

Waitangirua Stream

Opato Stream

Motu River

Koranga River

Wharekopae River

Ruakituri River

Hangaroa River

Mangapoike River

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Scale 1:500,000
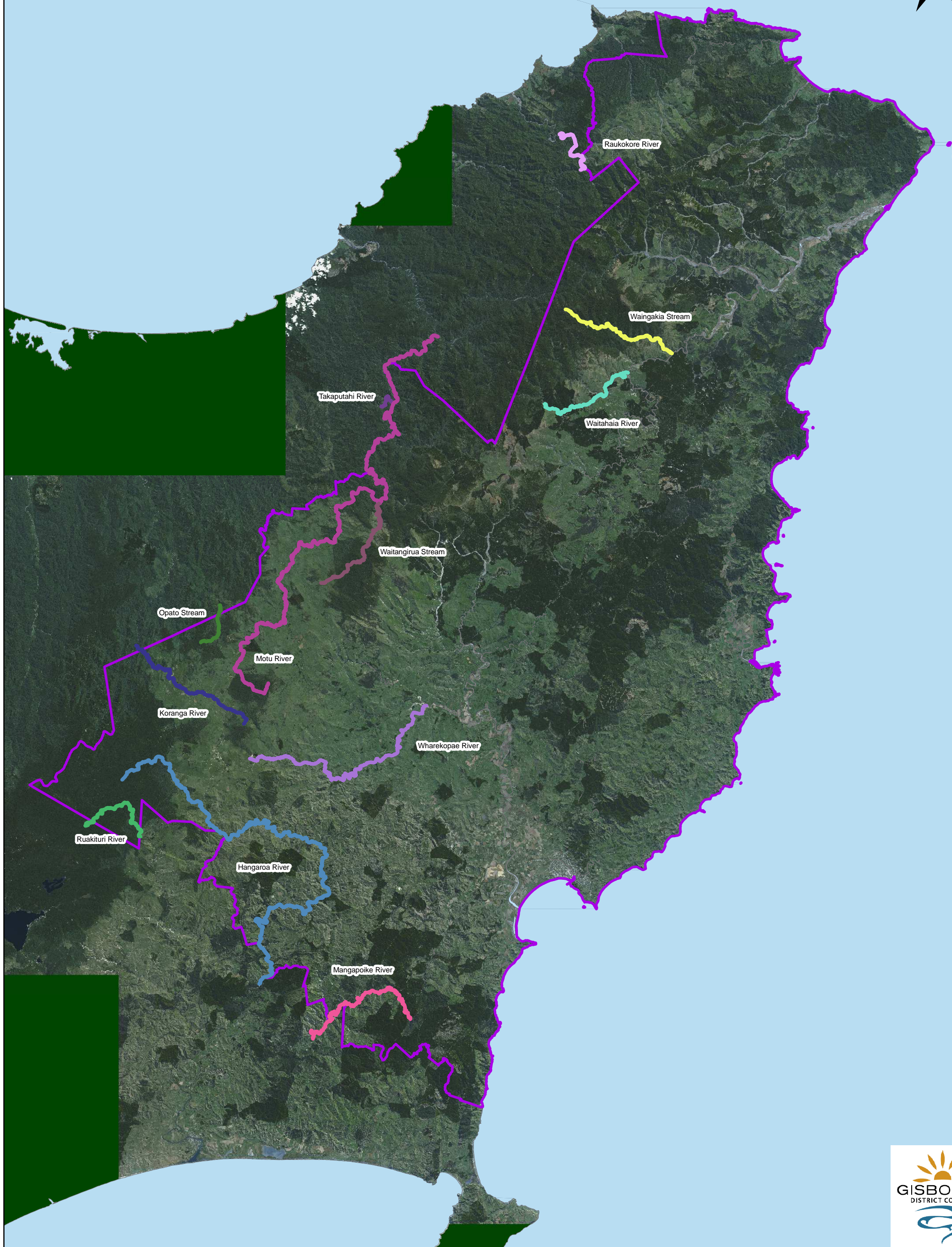
Appendix 3
Significance assessment calculations for natural character, Gisborne (Steps 1 and 5-8)

River	Tributary of	Attributes and indicators										Conversion to indicator threshold scores										Sum	River significance	Comparison with Panel's independent assessmt
		1. Angler days (n) (NAS 2007/8,2001/2,1994/6)	2. Intensity of use (mean free reach) (NAS 2007/8)	3. Travel distance (km) (Median NAS 2007/08)	4. Overseas anglers (%) (NAS 2007/8)	5. Perception catch rate (1-5)	6. Perception fish size (1-5)	7. Water quality (0.0-1.0)	8. Percpt scenic attractness (1-5)	9. Perception wilderness (1-5)	10. Perception importance (1-5) (NAS 1979)	1. Angler days score	2. Intensity of use score	3. Travel distance score	4. Overseas score	5. Percptn catch rate score	6. Percptn fish size score	7. Water qlty score	8. Percptn scenic score	9. Percptn wilderness score	10. Percptn importance score			
Ruakituri River	Wairoa River	1994.5	3.3	89.6	0.2	3.7	3.8	0.9	4.7	4.6	4.5	2	3	3	3	2	3	2	2	2	3	25	National	Agreement - in Experts' top 3 rivers
Koranga River	Waioeka River	10.2	44.6	189.4	0.0	nd	nd	0.9	nd	nd	nd	1	1	3	2	3	2	3	3	3	3	24	National	Agreement - in Experts' top 3 rivers
Waitahaia River	Mata River	nd	nd	nd	nd	3.5	2.5	0.6	4.0	3.5	4.5	1	1	3	3	2	3	3	2	3	3	24	Regional	RiVAS rating was national - in Experts' top 5 rivers - was lowered to regional
Waingakia Stream	Mata River	3.4	1790.0	253.3	0.0	3.0	3.0	0.6	3.0	4.0	3.5	1	1	3	2	2	3	3	3	3	2	23	Regional	Broad agreement
Opato Stream	Waioeka River	25.1	108.8	nd	nd	2.4	2.7	0.9	4.0	3.0	3.3	1	1	2	2	3	2	3	3	2	3	22	National	RiVAS rating was regional but on cusp of national - in Experts' top 3 rivers - was raised to national
Raukokore River	Raukokore River	41.9	357.5	212.2	0.0	2.0	3.0	0.9	4.0	3.0	3.0	1	1	3	0	1	2	3	3	3	3	20	Regional	Broad agreement
Takaputahi River	Motu River	24.8	260.7	nd	nd	2.0	2.5	0.6	5.0	5.0	5.0	1	1	3	1	1	3	3	2	2	2	19	Regional	Broad agreement
Motu River	Motu River	679.4	58.0	116.8	0.6	2.9	3.1	0.9	4.2	4.5	3.6	1	2	3	3	1	2	1	1	1	3	18	National	Agreement - in Experts' top 3 rivers
Hangaroa River	Wairoa River	622.6	35.5	88.2	0.0	3.1	3.2	0.6	3.8	3.8	3.6	1	1	2	1	3	2	1	1	2	2	16	Regional	RiVAS rating was local - in Experts' top 5 rivers - was raised to regional
Wharekopae River	Waipaoa River	36.3	270.0	377.9	0.0	nd	nd	0.6	nd	nd	nd	1	1	3	0	1	1	2	2	2	2	15	Local	Broad agreement
Mangapoike River	Wairoa River	14.0	622.1	nd	0.0	4.5	3.0	0.9	3.5	4.0	3.0	1	1	2	0	1	2	2	2	2	1	14	Local	Broad agreement

No public access alters significance assessment for these rivers:

Kopuawhara Stream	Kopuawhara Stream	81.64	54.39	99.80		0	3	2	0.88	3	3.5	3.5	1	1	2	0	1	1	2	2	2	1	13	Local
Waitangirua	Motu River												1	1	3	3	3	2	3	3	3	3	25	National

Private access, no free public access (Local — yellow)

Private access, no free public access (National — green)

Colour Code Key

Significance thresholds (highlighted columns)

Green	High = National
Blue	Medium = Regional
Yellow	Low = Local

Misc (highlighted rivers)

Pink	Rivers overlap with neighbouring council

Data reliability (font colour)

Blue/Purple	Less reliable data
Red	Data checked by Expert Panel and has been adjusted

Appendix 4
Assessment criteria for salmonid angling (Steps 2-4)

ATTRIBUTE CLUSTERS	ATTRIBUTE (primary attributes in bold)	DESCRIPTION OF PRIMARY ATTRIBUTES	INDICATORS	INDICATOR SIGNIFICANCE THRESHOLDS	DATA SOURCES (AND RELIABILITY)
Step 2: Identify attributes Step 3: Select and describe primary attributes		Step 3: Select and describe primary attributes	Step 4: Identify indicators	Step 5: Determine significance thresholds	
ATTRIBUTES ASSOCIATED WITH EXISTING USE					
Users	**Level of use**	High use implies high value. However, this assumption will under-value special and remote places for several reasons, including: **Activity specialisation.** Resources suitable for highly specialised participants (high skill levels) will attract low numbers of users but may be highly valued and/or rare opportunities. **Access.** Restrictions upon access will reduce use and/or make it available only to some potential users due to cost, availability of time, specialised equipment or transport, physical capability, etc. **Wilderness and remote areas**. Areas that offer few encounters with other people may be highly valued for this attribute (amongst other things). This is particularly so	Number of angler days p.a. Notes: Ideally should be number of angler days per season, as some rivers are open to angling all year while others only for the main 7 month fishing season. Considered but dismissed an alternative indicator (angler days per km).	National: >5,000 angler days p.a. (**score: 3**) Regional: 1,000 - 5,000 angler days p.a. (**score: 2**) Local: <1,000 angler days p.a. (**score: 1**)	National Angling Survey: mean from 3 surveys (good)

ATTRIBUTE CLUSTERS	ATTRIBUTE (primary attributes in bold)	DESCRIPTION OF PRIMARY ATTRIBUTES	INDICATORS	INDICATOR SIGNIFICANCE THRESHOLDS	DATA SOURCES (AND RELIABILITY)
		for anglers, as other anglers represent not only a potential disturbance to wilderness values, but also a competitor for a fishing opportunity which is affected by the presence of others.			
		In NZ, evaluation of the significance of freshwater fisheries has gone further than most other forms of water-based recreation. A review of the first national angling survey undertaken in 1980 (Teirney and Richardson, 1992: 693-702, our emphasis) summarised this issue as follows:			
		The total number of fishing visits made to each river provided a measure of its relative importance. [However] the relative importance (and presumably therefore the absolute value) cannot be evaluated solely by reference to measures of angler use. A list of seven other factors believed to be important determinants of high-quality river fishing experiences in New Zealand was compiled... For each river, anglers were asked to assign a rating between 1 (lowest) and 5 (highest) for distance from home, ease of access, area of fishable water (defined as the area of river bed or bank from which to fish),			

ATTRIBUTE CLUSTERS	ATTRIBUTE (primary attributes in bold)	DESCRIPTION OF PRIMARY ATTRIBUTES	INDICATORS	INDICATOR SIGNIFICANCE THRESHOLDS	DATA SOURCES (AND RELIABILITY)
		scenic beauty, peace and solitude, catch rate and size of fish. The overall importance of each river fished was also evaluated with the same rating scale… *For trout rivers, our results suggest <u>angler use alone should not be used as an absolute measure of a river's value</u>; none of our three measures of angler use were correlated with anglers' perceptions of overall importance. The rivers used most in New Zealand tended to be close to home and have easy access, whereas <u>the most highly valued rivers were characterised by good catch rates of large fish, extensive areas of fishable water, and scenically attractive and peaceful surroundings…</u>* *It seems that the hope, even if unrealistic for many anglers, of landing a fish or having an occasional success weighs particularly heavily in the perception of a New Zealand river's value.*			
	Intensity of use	Intensity of use is measured by the Mean Free Reach (MFR), which is the length of the reach divided by the number of angler days. The smaller the MFR, the more crowded the river, i.e., low values imply high	Mean free reach (MFR) = average distance (in km) an angler would have to travel on an average day before encountering another	National: MFR <5km (**score: 3**) Regional: MFR 5-20 km (**score: 2**)	National Angling Survey: 2007/8 (good)

ATTRIBUTE CLUSTERS	ATTRIBUTE (primary attributes in bold)	DESCRIPTION OF PRIMARY ATTRIBUTES	INDICATORS	INDICATOR SIGNIFICANCE THRESHOLDS	DATA SOURCES (AND RELIABILITY)
		density. It is an idealisation, based on the assumption that anglers are evenly distributed along the length of each river, but NIWA suggests the measure gives credible results. High density is taken as an indicator of high value.	angler	Local: MFR >20 km (**score: 1**)	
	Level of commercial use				
	Origin of New Zealand users	Origin of users is suggested as an indicator of quality of the recreational experience, based on the assumption that the higher the expected quality of the experience, the greater the distance users will be prepared to travel.	Mean no. km travelled from home by NZ anglers Note: Actual metric is mean log travel distance in km from home address to river mid-point	National: >100 km (**score: 3**) Regional: 50-100 km (**score: 2**) Local: <50 km (**score: 1**)	National Angling Survey: mean from 3 surveys (good)
	Level of international use	Same as above.	% overseas anglers (of total number angler days)	National: >20% overseas angler visits (**score: 3**) Regional: 10-20% overseas angler visits (**score: 2**) Local: <10% overseas angler visits (**score: 1**) None: No use by overseas anglers (**score: 0**)	National Angling Survey: mean from 3 surveys (good)
	User demographics				
	Behaviour of users				

ATTRIBUTE CLUSTERS	ATTRIBUTE (primary attributes in bold)	DESCRIPTION OF PRIMARY ATTRIBUTES	INDICATORS	INDICATOR SIGNIFICANCE THRESHOLDS	DATA SOURCES (AND RELIABILITY)
Activity	Activity specialisation (degree of skill required)				
Environmental setting: Fishery	**Anticipated catch rate**	Data (from the National Angling Survey 1979/80 and the 2008 FGNZ pilot survey) indicate that the attributes: perceptions of "catch rate" and "chance of catching a large fish": are important components of the angling experience. Both attributes could be assessed as *actual* or *anticipated* measures. The choice of users' perceptions (*anticipated* measure) for both attributes relates to the greater influence that users' perceptions have on their recreational behaviour (c.f. actual rates and chances).	User's perception of catch rate	National: >0.5 (**score: 3**) Regional: 0.2-0.5 (**score: 2**) Local: <0.2 (**score: 1**) Data result from the following calculation: Respondents to the 2008 FGNZ Pilot Survey were asked to identify the 3 most important attributes (from 8 possible candidates) which characterised each river they fished. Scores for each attribute were derived by expressing the number of respondents who listed that attribute as a proportion of the total responses for each river.	2008 pilot survey (good)
	Anticipated chance of catching a large fish		User's perception of chance of catching a large fish	National: >0.5 (**score: 3**) Regional: 0.2-0.5 (**score: 2**) Local: <0.2 (**score: 1**) Data result from the following calculation: See *Anticipated catch rate*	2008 pilot survey (good)

ATTRIBUTE CLUSTERS	ATTRIBUTE (primary attributes in bold)	DESCRIPTION OF PRIMARY ATTRIBUTES	INDICATORS	INDICATOR SIGNIFICANCE THRESHOLDS	DATA SOURCES (AND RELIABILITY)
	Angling methods permissible				
	Area of fishable water				
	Species present				
	Species population				
Environmental setting: River features	Water characteristics (e.g. pool/riffle/run sequences)	Given that river features are usually the focus of the decision-making process for which this method will be implemented, ideally all attributes would be selected as primary attributes. However, this is not practical. Water quality was chosen because the water quality requirements of salmonids are well known and most rivers of interest have relevant water quality data			
	Flow (% river segment's length with water deeper than 1 metre, at summer low flow)				
	Water quality	In July 2010, the faecal coliform standard used in calculations of the water quality index was changed. The 2009 report used the 'alert standard' (260); in July 2010 the 'action standard' (550) was adopted. See Appendix 5 (worksheet labelled *Water quality*	Combination of 5 components: water temperature, oxygenation, faecal coliforms, clarity and macro-invertebrate community index	National: >0.8 (**score: 3**) Regional: 0.5-0.8 (**score: 2**) Local: <0.5 (**score: 1**) Data result from the calculations shown in Appendix 5 (worksheet labelled *Water quality*	Tasman District Council & some Fish and Game data. Expert Panel estimates (fair).

ATTRIBUTE CLUSTERS	ATTRIBUTE (primary attributes in bold)	DESCRIPTION OF PRIMARY ATTRIBUTES	INDICATORS	INDICATOR SIGNIFICANCE THRESHOLDS	DATA SOURCES (AND RELIABILITY)
		calculations)		*calculations)*	
Environmental setting: Landscape	Degree of naturalness natural character				
	Scenic attractiveness	Identified in all of the (few) attempts to rate river recreation (National Angling Survey 1979/80 and the 2008 FGNZ pilot survey). As with wilderness character (see next), the measure is based on users' perceptions rather than professional judgment, as users' perception will influence behaviour and satisfaction. Generally, it is expected that there is a positive correlation between perceived scenic attractiveness and angling amenity.	Anglers' perceptions of scenic attractiveness	National: >0.5 (**score: 3**) Regional: 0.2-0.5 (**score: 2**) Local: <0.2 (**score: 1**) Data result from the following calculation: See *Anticipated catch rate*, above	2008 pilot survey (good)
	Wilderness character	This setting attribute has a positive relationship with wilderness angling – the higher the perceived wilderness character, the higher the angling value (National Angling Survey 1979/80 and the 2008 FGNZ pilot survey). Tierney and Richardson (1992) found that angling attributes directly associated with fishing (such as catch rate or fish size) accounted for less than 30% of perceived	Anglers' perceptions of wilderness character	National: >0.5 (**score: 3**) Regional: 0.2-0.5 (**score: 2**) Local: <0.2 (**score: 1**) Data result from the following calculation: See *Anticipated catch rate*, above	2008 pilot survey (good)

ATTRIBUTE CLUSTERS	ATTRIBUTE (primary attributes in bold)	DESCRIPTION OF PRIMARY ATTRIBUTES	INDICATORS	INDICATOR SIGNIFICANCE THRESHOLDS	DATA SOURCES (AND RELIABILITY)
		fishery value.			
Social setting	Encounters with other anglers				
	Encounters with other users (not anglers)				
Managerial setting	Facility and services provision and regulation (e.g. bridges; air services)				
	Access: Provision of unrestricted public access; Access charges; Degree of difficulty (e.g. walk in)	See Step 9.			
Experiences	**Perceptions of the importance of the river**	Currently the National Angling Survey does not collect this information. A question could be added asking anglers to rate rivers in terms of its overall importance. This differs to the contextual value 'perception of the river's status' in that it is specific to users' perceptions – the latter value relates to the status by which the river is held by the recreational community (users and non-users). For example, the Tongariro River is	Anglers' perception of the overall importance of the river	National: >4 on question scale (**score: 3**) Regional: 3-4 on question scale (**score: 2**) Local: <3 on question scale (**score: 1**)	1979 National Angling Survey (fair, owing to age of data) While there were more recent data for Otago and Nelson Marlborough, rankings were mostly similar but older data was more robust and a full national dataset

ATTRIBUTE CLUSTERS	ATTRIBUTE (primary attributes in bold)	DESCRIPTION OF PRIMARY ATTRIBUTES	INDICATORS	INDICATOR SIGNIFICANCE THRESHOLDS	DATA SOURCES (AND RELIABILITY)
		an iconic New Zealand rainbow trout fishery. It also differs to the angler's perception of the quality of their experience (see next attribute), as that is usually measured based on a single visit. This parameter refers to perception of the river in a general sense (long-term view).			
	Perceptions of the quality of the experience				
Other outcomes	Economic benefits: To local area, region, nation				
	Non-economic benefits, including existence value				
CONTEXTUAL ATTRIBUTES					
Opportunity *spectrum*	Degree of scarcity of the experience	See Step 9.			
	Contribution to a collective value	See Step 9.			
	Users' perceptions of the river's 'status'	See Step 9.			
ATTRIBUTES ASSOCIATED WITH FUTURE AND PAST USE					
Recreation	Potential future	See Step 9.			

ATTRIBUTE CLUSTERS	ATTRIBUTE (primary attributes in bold)	DESCRIPTION OF PRIMARY ATTRIBUTES	INDICATORS	INDICATOR SIGNIFICANCE THRESHOLDS	DATA SOURCES (AND RELIABILITY)
opportunity	angling use (option value) - avoid precluding future uses				
	Past use (former glory)	See Step 9.			

Appendix 5
Assessment of indicators by SMARTA criteria

Indicator	Specific	Measurable	Achievable	Relevant	Timely	Already in use
No. angler days p.a.	Yes	No. days	Survey data available	Use implies valued by user	Data available	Yes
Mean free reach	Yes	Fishable reach / angler days p.a.	Survey data available	High intensity implies high value	Data available	Yes
Mean no. km travelled from home by NZ anglers	Yes	No. km	Survey data available	Travel distance = indicator of quality of experience	Data available	Yes
% overseas anglers (of total number angler days)	Yes	%	Survey data available	Same as above (international travel)	Data available	Yes
User's perception of catch rate	Yes	Response to rating scale question	Survey data available	Known to influence choice of angling site	Data available	Yes
User's perception of chance of catching a large fish	Yes	Response to rating scale question	Survey data available	Known to influence choice of angling site	Data available	Yes
Combination of 5 components: water temperature, oxygenation, faecal coliforms, clarity and MCI	Yes	Combination of relevant components	Data available	Influences both fishery and quality of angling experience	Data available + some estimates	Yes
Anglers' perceptions of scenic attractiveness	Yes	Response to rating scale question	Survey data available	Known to influence choice of angling site	Data available	Yes
Anglers' perceptions of wilderness character	Yes	Response to rating scale question	Survey data available	Known to influence choice of angling site	Data available	Yes

Indicator	Specific	Measurable	Achievable	Relevant	Timely	Already in use
Anglers' perception of the overall importance of the river	Yes	Response to rating scale question	Survey data available	Known to influence choice of angling site	Data available	Yes