

Community held values of rivers, lakes and streams in the Waikato and Waipa River catchments

Prepared by:
Sandra Barns
Jacqueline Henry
Emma Reed

For:
Waikato Regional Council
Private Bag 3038
Waikato Mail Centre
HAMILTON 3240

December 2013

Document #: 2746337

“The legacy that we want to leave for our kids and the unborn generation that is yet to come in 20 years, [is that] we want... our grandchildren to go up and down any part of the river and be able to take kai and swim in it.”

Tukoroirangi Morgan
Waikato Times
9 August 2013

Peer reviewed by:
Robin Britton

Date January 2014

Approved for release by:
Ruth Buckingham

Date January 2014

Disclaimer

This technical report has been prepared for the use of Waikato Regional Council as a reference document and as such does not constitute Council's policy.

Council requests that if excerpts or inferences are drawn from this document for further use by individuals or organisations, due care should be taken to ensure that the appropriate context has been preserved, and is accurately reflected and referenced in any subsequent spoken or written communication.

While Waikato Regional Council has exercised all reasonable skill and care in controlling the contents of this report, Council accepts no liability in contract, tort or otherwise, for any loss, damage, injury or expense (whether direct, indirect or consequential) arising out of the provision of this information or its use by you or any other party.

Acknowledgement

Thanks are due to the people of the Waikato regional community who have generously given their time to be part of this research. Thank you to the Waikato Regional Council staff who have contributed to this report, including Yvonne Phillips for providing text on her research into water quality, Sarah Mackay for her work on defining and interpreting the term, values, Justine Young for comments and suggestions on the final draft, and Ruth Buckingham for her involvement and advocacy of the process throughout. Thanks are due to Robin Britton for her careful and thoughtful peer review of this report.

Table of contents

Glossary of Māori terms	vi
Executive summary	viii
1 Introduction.....	1
1.1 Purpose.....	1
1.2 Legislative context.....	1
1.3 Interpretation of the term ‘values’	2
1.4 Methodology.....	3
2 Document review	5
2.1 Recreational values.....	5
2.2 Environmental values	5
2.3 Economic values	6
2.4 River iwi values	7
2.5 Summary of document review	8
3 Qualitative assessment of values.....	9
3.1 Summary of qualitative assessment	11
4 Quantitative assessment of values.....	12
4.1 Awareness and usage of rivers, lakes and streams.....	12
4.1.1 Awareness of rivers, lakes and streams	12
4.1.2 Activities on rivers, lakes and streams.....	14
4.1.3 Water quality of rivers, lakes and streams.....	16
4.1.4 The single most important aspect.....	18
4.2 Waterway attributes.....	19
4.2.1 Rivers, lakes and streams as a source of food	19
4.2.2 Rivers, lakes and streams for recreation	21
4.2.3 Rivers, lakes and streams in the environment.....	21
4.3 Values and beliefs.....	24
4.3.1 Community-culture values and beliefs.....	24
4.3.2 Economic-environmental values and beliefs.....	28
4.3.3 Social and recreational values and beliefs	31
4.4 Summary of quantitative assessment	34
5 Additional research: Recreational and cultural use internet survey.....	35
6 Summary	37
6.1 Environmental values	37
6.2 Community and individual values	37
6.3 Iwi and Māori values.....	38
6.4 Economic values	39
7 Conclusions	40
8 References	41

9	Appendices	43
9.1	Appendix 1: Map of the Waikato and Waipa River catchments.....	43
9.2	Appendix 2: List of provisions from the Proposed Waikato Regional Policy Statement (2010) and reviewed submissions.....	44
9.3	Appendix 3: Map showing location of survey respondents.....	45
9.4	Appendix 4: Achieved sample for quantitative survey	46
9.5	Appendix 5: Awareness and use of other water bodies in the Waikato region	47
9.6	Appendix 6: Activity groupings.....	48

List of tables

Table 1: Value/Use/Practice elements and examples of sub categories.....	7
Table 2: Demographic makeup of sample	12
Table 3: Assessment of water quality for rivers in the Waikato region (number of users)	17
Table 4: Achieved sample across the region	46
Table 5: Activity groupings	48

List of figures

Figure 1: Number of respondents indicating awareness of rivers, lakes and streams (n=1002).....	13
Figure 2: Number of respondents indicating use of rivers, lakes and streams (n=1002)	14
Figure 3: Activities on all rivers, lakes and streams in the Waikato region (n=665)	15
Figure 4: Users of rivers, lakes and streams by activity, by ethnicity (%).....	15
Figure 5: Users of rivers, lakes and streams by activity, by age (%)	16
Figure 6: Assessment of water quality by users, for rivers, lakes and streams in the Waikato region (n=639).....	17
Figure 7: Assessment of water quality by non users, for rivers, lakes and streams in the Waikato region (n=324).....	18
Figure 8: Responses to single most important aspect of regional rivers, lakes and streams (%)	19
Figure 9: Importance of rivers, lakes and streams as a source of food (n=1002)	20
Figure 10: Moderate/high importance responses for water bodies as a source of food, by ethnicity (%) ..	20
Figure 11: Importance of rivers, lakes and streams for recreation (n=1002).....	21
Figure 12: Importance of rivers, lakes and streams in the environment (n=1002)	22
Figure 13: Moderate/high importance responses for environmental attributes, by ethnicity (%).....	22
Figure 14: Importance of rivers, lakes and streams in the environment (n=1002)	23
Figure 15: Moderate/high importance responses on environmental attributes, by ethnicity (%).....	24
Figure 16: Agreement on values – Community and culture (n=1002)	25
Figure 17: Agree/strongly agree responses on community and culture values, by ethnicity (%)	26
Figure 18: Agreement on values - Community and wellbeing (n=1002).....	27
Figure 19: Agree/strongly agree responses on wellbeing statements, by ethnicity (%)	28
Figure 20: Agreement on values – Economic-environmental (n=1002)	29
Figure 21: Agree/strongly agree responses on economic-environmental values, by ethnicity (%)	29
Figure 22: Agreement on values - Environmental quality (n=1002)	30
Figure 23: Agree/strongly agree responses environmental quality values (%)	31
Figure 24: Agreement on values - Amenity and access (n=1002).....	31
Figure 25: Agree/strongly agree responses on amenity and access values (%).....	32
Figure 26: Agreement on values – Social and recreational (n=1002)	33
Figure 27: Agree/strongly agree responses on social and recreational values (%)	33
Figure 28: Intensity map of recreational and cultural uses- based on distance travelled and number of trips ..	36
Figure 29: Location of respondents for 2012 quantitative survey	45

Figure 30: Awareness of other rivers, lakes and streams in the Waikato region..... 47
Figure 31: Use of other rivers, lakes and streams in the Waikato region 47

Glossary of Māori terms

Te Reo Māori term	English term
A	
Awa	River, stream, creek
H	
Hapū	Sub-tribe
Harakeke	Flax
Hui	Assemble, assembly, meeting, gathering
I	
Īnanga	Whitebait
Iwi	Tribes, nation, people, society
K	
Kāeo	Freshwater mussel
Kāinga	Home, abode, dwelling
Kākahi	Freshwater mussel
Kānga pirau, kānga wai, kānga piro	Fermented corn
Kai	Eat, food,
Kaitiakitanga	Guardianship
Kanae	Mullet
Kereru	Native wood pigeon
Kiekie	Plant with climbing stems and long narrow flax-like leaves
Kīngitanga	The King Movement
Kōaro	Climbing galaxias (whitebait group)
Kōiwi	Bone(s)
Kōkopu	Galaxiids (whitebait group)
Kōtuku	White heron
Kōura	Freshwater crayfish
Koroneihana	Coronation
Kotero	Fermented potatoes
Kuta	Great spike rush, bamboo spike-sedge
M	
Mahinga kai	The process of cultivating food
Mairere	Catfish
Manu	Bird
Manuka	Tea tree
Marae	Community meeting place or surrounds
Mātauranga Māori	Traditional Māori knowledge - the body of knowledge originating from Māori ancestors, including the Māori world view and perspectives, Māori creativity and cultural practices.
Maunga	Mountain
Morihana	Native carp
N	
Ngāwhā	Great spike rush, bamboo spike-sedge
Ngāwhā	Geothermal hot pools, boiling spring, volcanic activity, boiling mud pool, fumarole, sulphur water, geyser
Ngeangea	Eel
P	
Pā	Traditional settlement
Pātiki	Flounder
Papakāinga	Ancient settlement, or a Māori settlement occupied in modern

	times but close to sites of ancient settlement
Paru	Dirty, muddy, soiled
Pepeha	Tribal saying, proverb (especially about a tribe)
Poaka	Pig
Pokotehe	Whitebait
Pōrohe	Adult whitebait
Pīharau	Lamprey
Puna	Spring (of water), well, pool
Pūhā	Sow thistle
Pūpū	winkle, cat's eye, univalve mollusc
R	
Raupō	Bullrush
Rīwai	Potato
Rohe	The geographical area closely linked to iwi or hapū
Rongoa	Remedy, medicine, drug, cure, medication, treatment, solution (to a problem), tonic.
Rori	sea slug
Ruru	Morepork
T	
Taniwha	A spiritual being, tribal guardian, usually found in or near a waterway that protected tribes or enforced tribal restrictions
Taonga	Treasures, or valuable items. Taonga is a broad concept and includes physical and metaphysical assets such as te reo, intellectual property, traditional knowledge and use, social organisations and the arts
Taewa	Potato
Tuna	Freshwater eel
U	
Urupā	Cemetery, burial place, graveyard.
W	
Wāhi tapu	Shrine, sanctuary, sacred area/place.
Wai	Water
Waiata	To sing, song, chant
Waka	Canoe
Waka ama	Outrigger canoe
Waka taua	War canoe, tank
Waka tīwai	Dugout canoe with attached sides
Whakapapa	Genealogy of all things
Whareniui	Meeting house

Executive summary

The Waikato Regional Council (the council) has a statutory role under the Resource Management Act 1991 to control the use of land for the purpose of maintaining and enhancing water quality. In order to meet more recent legislative requirements the council has decided to make changes to its Resource Management Act planning documents to improve the management of water quality in the Waikato and Waipa rivers. Therefore, an understanding of how the community values water quality in the Waikato and Waipa catchments is required. Existing regional research was reviewed and two further pieces of primary research were commissioned on community values in respect to water bodies in the Waikato region. Additional research, which was underway at the time of writing this report, has also been included for reference. Key themes have been summarised.

The purpose of this document is to collate and summarise information on the values people hold for the Waikato and Waipa rivers to inform the policy development process for the Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai project. Policy development operates within a legislative framework set up by the Resource Management Act 1991. The purpose of the Act is to promote sustainable management of natural and physical resources. This piece of legislation enables statutory policy documents and standards to be created by government, regional councils and territorial authorities.

Along with the Resource Management Act 1991 there are three main legislative drivers for the Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai project: the Vision and Strategy for the Waikato River/ Te Ture Whaimana o Te Awa o Waikato, the National Policy Statement for Freshwater Management 2011 and the Waikato Regional Policy Statement. This legislative context guides the approach to gathering information about values and the way they feed into the policy development process for any changes to the Waikato Regional Plan.

The National Policy Statement for Freshwater Management (2011) has introduced a more explicit focus on values as the starting point for writing objectives and setting limits. There are multiple interpretations of the terms 'value' and 'values' as concepts. Additionally, when people talk about what is important to them values are often expressed as valued attributes. These distinctions add complexity when investigating community values. It is worth exercising caution whenever interpreting documents discussing 'value', 'values' and 'valued attributes', bearing in mind there are variations in meaning.

Existing regional research was reviewed; most research had been commissioned by Waikato Regional Council or presented to the council as part of a resource consent application. Other research had been produced for the Waikato River Independent Scoping Study (NIWA, 2010). Submissions to relevant sections of the Proposed Waikato Regional Policy Statement 2010 were also analysed. Next, qualitative research was commissioned and involved the gathering and documentation of information on values from four focus groups representing broad demographic and geographic coverage of the Waikato and Waipa catchments (Key Research Ltd, 2012). A quantitative telephone survey was then conducted of a sample of 1002 residents in the Waikato Region, with coverage representative of the Waikato and Waipa River catchments. The survey questionnaire was developed and designed according to key value themes identified in the qualitative assessment, and included questions around awareness and activities on water bodies, perceptions of water quality and statements about attributes and values (Versus Research Ltd, 2013a). In addition, a recreational and cultural use internet survey was conducted of almost 2000 people, of whom 1500 had engaged in freshwater recreational or cultural activities in the Waikato region in the past 12 months (Phillips, forthcoming).

Water quality is important to people of the Waikato region and the strong values expressed in different studies have been generally consistent over time. Good water quality underpins the

range of values people hold towards water bodies in the region. It enhances enjoyment of recreational values, it ensures that food gathered from the river is safe, it contributes to the regional economy, it enhances New Zealand's image by supporting the 'clean, green' brand and it ensures that the river will be enjoyed by future generations (Levy et al., 1996; Stewart et al., 2000; Versus Research Ltd, 2013a).

Cleanliness was assessed as the single most important aspect of rivers in the region by people surveyed in 2012 (Versus Research Ltd, 2013a). Over the years when people have been asked to name the most important environmental issue for them, water pollution/quality has consistently been identified (Research Solutions, 1998; Key Research and Marketing Ltd & Eclectic Energy, 2001; Gravitas Research and Strategy Ltd, 2004; Gravitas Research and Strategy Ltd, 2007; Versus Research Ltd, 2013b).

People participating in the research viewed the region's water bodies as an essential part of the natural environment, and desired an environment that was clean and unpolluted to sustain native fish and wildlife, and accessible to people (Key Research Ltd, 2012). People judged water quality by its look, feel and taste. People look to indicators, including the clarity of the water, freedom from pests and weeds, the absence of rubbish, debris and odours and the absence of raw human sewage to inform their water quality assessments (Research Solutions, 1998; Key Research and Eclectic Energy Ltd, 2001; Gravitas Research and Strategy Ltd, 2004 and 2006; Versus Research Ltd, 2013a, 2013b).

The rivers, lakes and streams of the Waikato region are widely used by the community for activities including walking, power boating, swimming, fishing and cycling. Regardless of whether respondents used rivers, lakes and streams, all respondents expressed values (Versus Research Ltd, 2013a). It was important to many respondents that the river was there and able to be used, even if they personally did not use it. Similarly, most respondents thought it was important to look after rivers and streams for future generations (Versus Research Ltd, 2013a). Respondents tended to regard the water bodies with a general sense of community. Rivers, lakes and streams are seen as sustaining community wellbeing, as being the shared responsibility of the community and as providing opportunities for learning about the natural environment (Versus Research Ltd, 2013a). Other research noted individual, community and organisational responsibility where it was necessary that everyone worked together and played their part in taking care of the water bodies (Key Research Ltd, 2012).

The importance of the water bodies to iwi and Māori featured strongly in all the research. Key value themes for each of the river iwi were mahinga kai, significant sites, taonga species, recreation and wai (NIWA, 2010). The unique inter-relationship of these values for each iwi was connected to the cultural and spiritual relationship of iwi with the water bodies, as outlined in submissions to the Proposed Waikato Regional Policy Statement 2010 (Waikato Regional Council, 2012).

In the 2012 survey, Māori respondents expressed consistently strong responses regarding the river across almost all areas. Māori reported higher usage of rivers, lakes and streams than people of other ethnicities. Māori were more likely to go swimming, paddling and fishing. A higher proportion of Māori agreed or strongly agreed that the rivers, lakes and streams should provide places to enjoy recreational activities and to exercise and that the region's rivers, lakes and streams support an active lifestyle. The rivers, lakes and streams were also more likely to be viewed as a source of food by Māori in terms of gathering freshwater shellfish, fish and watercress (Versus Research Ltd, 2013a).

Māori respondents were more likely than other ethnicities to agree that water bodies promote a sense of identity and community pride. Māori were also more likely to agree or strongly agree that water bodies contribute to community, physical, mental and spiritual wellbeing, and that the

river plays a role in sustaining Māori cultural practices and knowledge (Versus Research Ltd, 2013a).

There was a high level of agreement amongst survey respondents regarding the importance of the contribution that rivers, lakes and streams make to the regional economy, particularly tourism and agriculture. While recognising this role, most respondents agreed or strongly agreed that rivers and streams should be protected from industrial and agricultural pollution (Versus Research Ltd, 2013a).

In submissions to the Proposed Waikato Regional Policy Statement 2010 support was given for balancing economic development with environmental protection (Waikato Regional Council, 2012). The most commonly expressed value in relation to the region's water bodies was their value to the monetary economy. A clear theme expressed was how the Waikato River, as well as other rivers in the region, provides economic opportunities and contributes to the economic and social development of the region (Waikato Regional Council, 2012). Conversely, in 2006 and 2013 studies, just over half the people surveyed expressed an unwillingness to trade off a loss in the agricultural sector for improvements in water quality (Gravitas Research and Strategy, 2006; Versus Research Ltd, 2013b).

In conclusion, people of the Waikato region value its rivers, lakes and streams. Recreational activities are the more visible aspect of appreciation, but the activities undertaken, the attributes appreciated and the values held are multiple, widespread and consistent over time.

This report has brought together results from a range of research on community held values for rivers, lakes and streams in the Waikato and Waipa River catchments. Summarising existing research has enabled the council to assess the breadth and depth of existing information held on community values and to identify gaps. Supplementary primary research was viewed as necessary and enabled the council to hear more from a wider range of respondents about what they value about water bodies in the Waikato and Waipa River catchments and where those values apply. The research has also ensured that information is up to date and has revealed that values held are reasonably consistent over time. This is important background information that can be drawn on when developing policy recommendations, such as objectives, limits and targets for the Waikato and Waipa river catchments, in the context of the Regional Plan review.

1 Introduction

The Waikato Regional Council (the council) has a statutory role under the Resource Management Act 1991 (RMA) to control the use of land for the purpose of maintaining and enhancing water quality. In order to meet more recent legislative requirements the council has decided to make changes to its RMA planning documents to improve the management of water quality in the Waikato and Waipa rivers. Therefore, an understanding of how the community values water quality in the Waikato and Waipa catchments is required. Existing regional research was reviewed and two further pieces of primary research were commissioned on community values in respect to water bodies in the Waikato region. Additional research which was underway at the time of writing of this report has also been included for reference.

1.1 Purpose

The purpose of this document is to collate and summarise information on the values people hold for the Waikato and Waipa rivers to inform the policy development process for the Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai project¹. National policy, which was introduced in 2011, requires a more explicit focus on identifying community held values as the first step in policy development for freshwater management.

1.2 Legislative context

Policy development operates within a legislative framework set up by the Resource Management Act 1991. The purpose of the Act is to promote sustainable management of natural and physical resources. This piece of legislation enables statutory policy documents and standards to be created by government, regional councils and territorial authorities.

The National Policy Statement for Freshwater Management 2011 (NPS) requires councils to manage water quality by setting objectives, limits and targets for all water bodies. The preamble of the NPS lists national values for freshwater (Ministry for the Environment, 2011a). Councils must give effect to this NPS through their statutory plans.

The values people and communities hold about freshwater is seen as baseline information for a policy development process. The NPS Implementation Guide notes that:

The setting of regional objectives and hence limits, must be made in the context of environmental, social, cultural and economic values. Councils are expected to engage with their communities, including iwi, about the way their water bodies are valued to set freshwater objectives and translate those objectives into limits, environmental flows or levels in their regional plans.

Ministry for the Environment, 2011b, pg 14

Amendments to the NPS are proposed, including changes to how fresh water values are referenced and described, as outlined in the November 2013 discussion document (Ministry for the Environment, 2013).

The Vision and Strategy for the Waikato River/Te Ture Whaimana o Te Awa o Waikato is contained within three pieces of legislation² and is the primary direction setting document for the Waikato and Waipa rivers. It applies to the rivers and to activities in the rivers'

¹ Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai will work with stakeholders to develop changes to the Waikato Regional Plan to help restore and protect the health of the Waikato and Waipa rivers. The plan change will help achieve a reduction, over time, of sediment, bacteria, nitrogen and phosphorus entering water bodies (including groundwater) in the Waikato and Waipa River catchments. For more information see www.waikatoregion.govt.nz/healthyivers

² Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010
Ngati Tūwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010
Nga Wai o Maniapoto (Waipa River) Act 2012

catchments and focuses on restoring and protecting the health and wellbeing of the rivers for current and future generations.

The Operative Waikato Regional Policy Statement (2000) provides over-arching direction for managing the region's waters. The purpose of a regional policy statement (RPS) is to achieve the purpose of the Resource Management Act 1991 by providing an overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources. Waikato Regional Council is currently in the process of reviewing and amending the Operative Waikato RPS (2000), with references to water body values contained in the Proposed Waikato RPS (2010).

In this context, a plan change will be made to the Waikato Regional Plan to give effect to the Vision and Strategy, along with the NPS and RPS. The project, Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai, aims to work with stakeholders to develop those changes to the Waikato Regional Plan, in relation to managing the waters of the Waikato and Waipa rivers.

This legislative context guides the approach to gathering values and the way they feed into the policy development process for any changes to the Waikato Regional Plan³.

1.3 Interpretation of the term 'values'

The NPS has introduced a more explicit focus on values as the starting point for writing objectives and setting limits. The terms 'value' and 'values' are widely used throughout the document and have been included in other policy documents such as regional policy statements and regional plans. There is no definition for the terms in the NPS and, although proposed amendments to the NPS contain a definition, it is only in relation to where values are included in the document. The discussion document offers the following definition to assist interpretation of the amendments (Ministry for the Environment, 2013, p.76):

Values – those intrinsic qualities, uses or potential uses that people and communities appreciate about water bodies and wish to see recognised in the on-going management of those water bodies.

The Oxford English Dictionary provides multiple definitions for potential uses of the word. Value as a noun can be defined as "the importance, worth, or usefulness of something", "the material or monetary worth of something" and "the worth of something compared to the price paid or asked for it". Values as a noun can be defined as the "principles or standards of behaviour" as well as "one's judgement of what is important in life". Value as a verb covers the ability to "estimate the monetary worth of", "consider (someone or something) to be important or beneficial" and to "have a high opinion of" (Oxford English Dictionary Online, 2013).

Due to the complexity of 'value' and 'values' as concepts, when people talk about what is important to them, values are often expressed as valued attributes. These are the important, beneficial or cherished (valued) features or qualities (attributes) that are characteristics of something (Oxford English Dictionary Online, 2013). An example of this is, 'expressing the value of being able to swim' by saying it is important that the water is 'clear and safe for swimming'. Clarity and low risk of faecal contamination are two attributes that are part of the water being swimmable. This distinction adds to the complexity of investigating and understanding community values.

Furthermore, expressing value, values or valued attributes can be difficult if it is unclear what the specific topic of discussion is (Sinner & Berkett, 2013, pp.1-2):

...research over the last decade has made it increasingly clear that value and values are often constructed in context. That is, how people value something depends on

³ For more detail on the legislative context see Waikato Regional Council, 2013.

when, how and by whom the questions is asked...people look for context because they actually need it to define meaning.

It is worth exercising caution whenever interpreting documents discussing 'value', 'values' and 'valued attributes', bearing in mind the variations in meaning. The council has undertaken research on values on water in two main areas: understanding what is important to individuals about rivers, lakes and streams; and the more physical attributes of water bodies that individuals enjoy seeing, or want to see, when they use rivers, lakes and streams for an activity. To a lesser extent the research considered where people use rivers, lakes and streams and the attributes of those locations that make the experience better or worse. The research considered in this report has not investigated the material or monetary value of rivers, lakes and streams.

1.4 Methodology

The council has undertaken background research on the values the community holds for water quality to inform the Healthy Rivers/Wai Ora project. Existing information was used to inform new research at a wider scale. While the main focus of the research is on the Waikato and Waipa rivers⁴ a regional perspective is also used to inform this research paper. The report is structured around three main areas of research: a document review, a qualitative assessment and a quantitative assessment. At the time of writing this report, a recreational and cultural use internet survey was underway and has been included for reference. The purpose, method, context and findings of the research are outlined in this report and commonalities and differences within community values for rivers, lakes and streams are discussed.

Document review

Existing research was reviewed to summarise key themes across the documents. The majority of the available research was commissioned by Waikato Regional Council or presented to the council as part of a resource consent application. Other research included was produced for the Waikato River Independent Scoping Study (NIWA, 2010). Submissions to relevant sections of the Proposed Waikato RPS (2010) were also examined for expressions of values.

The purpose of the document review was to ascertain what was already known about the values the regional communities hold for the rivers, lakes and streams (including groundwater) in the Waikato and Waipa catchments and in particular, water quality. The document review informed the focus group discussion and the telephone survey questionnaire.

Qualitative assessment of values through focus groups

Four focus group sessions were organised to gather and document qualitative information on how and why the regional community values water quality in the Waikato and Waipa catchments. The focus groups represented broad demographic and geographic coverage of the region. The values revealed in the focus groups provided a greater level of detail consistent with those identified in the document review. The key value themes that emerged from the focus groups informed the telephone survey questionnaire.

Quantitative assessment of values through a telephone survey

A quantitative survey of 1002 residents in the Waikato Region was conducted. The sample was quota controlled to be regionally representative and the demographic makeup of the sample was representative of the region by age, ethnicity and gender. The survey questionnaire, developed and designed according to key value themes identified in the document review and focus groups, included questions around awareness and activities on rivers, lakes and streams in the region, perceptions of water quality and statements about attributes and values.

⁴ See Appendix 1 for a catchment map

Recreational and cultural use internet survey

This research is an internet-based economic survey of recreational and cultural uses of rivers, lakes and streams. The choices that people make about which rivers, lakes and streams to visit, how often and what they do there, can reveal useful information about the demand for different types of sites and contribute to the understanding of the economic value of the attributes of a site.

An internet survey was conducted of almost 2000 people, of whom 1500 had engaged in freshwater recreational or cultural activities in the Waikato region in the past 12 months. The survey was targeted at recreational users and was not designed to be representative of the general population. Data was collected about trip origin and destination points, activities, site characteristics liked or disliked and socio-demographic information. The model developed from this information will allow the change in demand and welfare to be calculated resulting from a change in site characteristics, for example, how would a loss in water quality impact on the value people hold for visiting the site.

2 Document review

A range of documents were reviewed with the purpose of providing the Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai project with information on community values for water quality in the Waikato and Waipa river catchments. The document review comprised of secondary data analysis of information collated from research conducted in the last 15-plus years on community values, including a review of iwi values and 57 submissions made to 15 relevant sections of the Proposed Waikato RPS (2010) (refer appendix 2). The submissions were included as an indicator of the different values held towards the Waikato River and other water bodies in the region.

A total of 203 submissions were made to the Proposed Waikato RPS (2010); 50 were from individuals and the remaining 153 from organisations, companies or groups. The submissions reviewed related to water in the region and to three issues, five objectives and seven policies. It must be noted that submissions provide an opportunity for the community and stakeholders to influence the content of the RPS and are not a specific study on values associated with water bodies. Consequently, most statements made in submissions were general in nature.

2.1 Recreational values

Recreational activities are carried out on, in and near the water. The most common recreational activities cited across all studies are walking, picnicking, exercising, swimming and fishing (Levy et al., 1996; Stewart et al., 2000; Simmons et al., 2000). There is evidence that some locations were more preferred than others for different activities, for example Karapiro Lake is popular for rowing because it is a long narrow lake with little wave action, whereas Arapuni Lake is preferred for fishing because of its wilderness and remote location. The research indicates that near water activities, such as walking and cycling, are common in many districts of the Waikato region.

The water quality of the rivers has a strong correlation with its recreational value. In Taupō, the lake's water clarity is considered particularly important by recreationalists and commercial operators (Simmons et al., 2000) and is the most highly valued feature of the lake (Stewart et al., 2000). This sentiment extends to the southern areas of the Waikato River, where the cleanliness of the water is highly valued for how it looks, tastes and feels (Simmons et al., 2000).

Water quality is seen as important not just for activities on and in the river but also for activities around the water (Levy et al., 1996; Stewart et al., 2000). Poor water quality was frequently mentioned as negatively impacting on the enjoyment of these activities. Having safe and easy access to the water is important to many people (Stewart et al., 2000; Simmons et al., 2000; Levy et al., 1996). Fluctuations in flow are seen to reduce access as it can result in banks eroding, which was identified as a safety hazard. Excessive weed growth featured highly on the list of concerns for many people (Simmons et al., 2000).

Along with good water quality, the surroundings of the rivers contributed to the general experience of recreational users. The 2000 survey of Waikato River users found that for many people, being in and around nature positively influences their recreational experience (Simmons et al., 2000).

2.2 Environmental values

Clean and clear water is valued for both the Waikato River and Lake Taupō. Respondents to multiple studies classed good water quality as "very important" (Stewart et al., 2000; Marsh & Baskaran, 2009). The attributes of clear, swimmable and drinkable water were valued by more than 60 per cent of respondents across four surveys completed as part of the 2020 Taupō-nui-a-tia project (Sanders, 2001). This was supported by the findings in the NIWA baseline study for the Waikato River, where swimmable and fishable water were identified as aspirations for the river (Rutherford & Williamson, 2010).

Water pollution has consistently been identified as the most common and most important issue for the region's people (Research Solutions, 1998; Key Research Ltd & Eclectic Energy, 2001; Gravitas Research and Strategy Ltd, 2004; Gravitas Research and Strategy Ltd, 2006; Versus Research Ltd, 2013b). Since 2000, water pollution/quality has also consistently been cited as the most important issue likely to affect the region in the next five years (Key Research Ltd & Eclectic Energy, 2001; Gravitas Research and Strategy Ltd, 2004; Gravitas Research and Strategy Ltd, 2006; Versus Research Ltd, 2013b).

The focus of most of the research reviewed in this section was on how people use the rivers and consequently there is less information specifically about environmental values. In general, humanistic or utilitarian values were expressed, such as the water should be of a quality suitable for fishing. This represents underlying environmental values; the habitat should be suitable for fish to thrive.

In the reviewed submissions to the Proposed Waikato RPS (2010) there was strong support for maintaining and improving water quality. It was noted in numerous submissions to a range of provisions that fresh water bodies have social, cultural, ecological, amenity and economic values (Waikato Regional Council, 2012).

Submissions expressing environmental viewpoints generally referred to elements of freshwater ecosystems over and above water quality itself. Biodiversity, particularly indigenous biodiversity, was frequently stated as important and a contributor to the overall health of the ecosystem. Water habitats were seen to have life supporting capacities and water quality and quantity were viewed as fundamental to this. Wetlands were often mentioned as particularly important to the Waikato region, because of both the habitat they provide and as areas which need specific protection. This linked with the submissions that highlighted habitat protection and riparian areas as being important (Waikato Regional Council, 2012).

2.3 Economic values

Some studies canvassed economic values in relation to the region's water bodies. Since 2000 the majority of surveyed respondents (89-92 per cent) agreed that a healthy environment was necessary for a healthy economy (Key Research and Marketing Ltd & Eclectic Energy, 2001; Gravitas Research and Strategy Ltd, 2004; Gravitas Research and Strategy Ltd, 2007; Versus Research Ltd, 2013b). Although environmental concerns were expressed they were sometimes at odds with views held about the contribution of the agricultural sector to the region's economy; just over half of the respondents (56 per cent in 2006 and 53 per cent in 2013) did not want the farming economy to decline in order to improve the environment (Gravitas Research and Strategy, 2006; Versus Research Ltd, 2013b). This suggests a willingness by some respondents to trade off maintaining a productive agricultural sector with achieving water quality improvements.

Specific economic uses of water referred to in existing studies included municipal supply, drinking water, stock water, irrigation and the economic value of hydroelectricity and geothermal power to the regional and national economies (Rutherford & Williamson, 2010). The importance of maintaining New Zealand's clean, green image to attract international visitors and for agricultural exports was also identified (Rutherford & Williamson, 2010).

In submissions to the Proposed Waikato RPS (2010), economic values were the most commonly expressed value. A clear theme was the contribution of the Waikato River and other rivers in the region, to the economic and social development of the region. Many submitters expressed concern about provisions which may affect existing land uses by too stringent protection of water bodies (Waikato Regional Council, 2012).

Some submitters held the opinion that environmental and other values, such as economic values, should be balanced. Within this theme a common concern expressed was that economic impacts (as a result of tightening of environmental policy settings) resulted in negative social consequences for communities (Waikato Regional Council, 2012).

2.4 River iwi values

The summary of iwi values was produced predominantly from information in the Waikato River Independent Scoping Study (WRISS) conducted by NIWA (2010). The study was undertaken as part of co-management arrangements between the Crown, four Waikato River iwi (Waikato-Tainui, Raukawa, Tūwharetoa and Te Arawa River iwi) and the Waipa River iwi (Maniapoto). The use of hui with each river iwi was important to the process of gathering information. NIWA developed and provided a unique report for each iwi based on hui discussions.⁵

An overview of the Mātauranga Māori or Māori world view provides context for the hui held with each iwi (ERMA 2004, p.15, cited in Ministry for the Environment, 2010, p.265):

Each culture has values, traditions and experiences that shape their world views and the laws which govern their respective communities/nations. Mātauranga Māori, or Māori world views, are views based on the values, traditions and experiences of Māori over time.

The WRISS defined Mātauranga Māori “as the knowledge, comprehension or understanding of everything tangible or intangible [such as spiritual and metaphysical values] that exists across the universe from a Māori perspective” (NIWA, 2010, p.18). Although there is no single Māori world view due to iwi or hapū differences, there are commonalities. These include the “genealogical connections and relationships with the natural world” (Ministry for the Environment, 2010, p.265). This can be expressed through such means as waiata (song) and pepeha (proverbs).

Key value themes, consistent across iwi, were identified as mahinga kai, significant sites, taonga species, recreation and wai. It is the inter-relationship of these values that are unique for each iwi. For example, a specific lake (wai) may relate to kōura (kai species) and harakeke (taonga species) with a marae (significant site) located nearby. Table 1 provides examples of sub categories under each value theme:

Table 1: Value/Use/Practice elements and examples of sub categories

Value/Use/Practice themes	Examples of sub categories
Kai	Tuna, watercress, kōura, ducks, kōkopu, morihana, gardens, trout, kākahi
Wai	Geothermal waters, lagoon, awa characteristics (swamps, water quality, wetlands, puna)
Recreation	Swimming, waka ama, rowing, boating, picnics
Significant site	Wāhi tapu, urupā, marae, caves, taniwha, kāinga, maunga, islands
Taonga species	Kōtuku, kereru, harakeke, ngāwhā, raupō, rongoa, native vegetation
Access (legal & physical)	River crossing

Source: NIWA 2010

Across iwi, the declining quality of the water was consistently identified as contributing to the depletion of kai and taonga species identified in Table 1.

A number of iwi trust boards submitted to the Proposed Waikato RPS (2010) and to specific provisions relating to water quality. The submissions highlighted aspects of the Māori world view and the important cultural and spiritual relationship of tangata whenua with fresh water. The following are the main themes from submissions in relation to iwi values:

- water is a taonga of great importance
- there is a special relationship between water and iwi which connects to a sense of identity
- water forms the essence from which all life is derived
- the mauri of rivers, lakes, streams, springs and wetlands in an iwi’s rohe is integral to the wellbeing of tangata whenua

⁵ Maniapoto did not participate in this aspect of the study. Where possible, existing literature was used to reveal their values.

- water bodies are a whole living entity; the water in the channel is indivisible from the life within and around it

(Waikato Regional Council, 2012)

The health and wellbeing of water bodies and the continuous supply of fresh water are fundamental to the sustainable cultural, environmental, social and economic development of both iwi and the region as a whole. The relationship is specific and unique to iwi groups; different iwi have different connections with different water bodies (Waikato Regional Council, 2012).

2.5 Summary of document review

The document review comprised analysis of information collated from research conducted in the last 15-plus years on community values, including a review of iwi values and submissions made to relevant sections of the Proposed Waikato RPS (2010) (refer appendix 2). The submissions were included as an indicator of the different values held towards the Waikato River and other water bodies in the region.

The document review highlighted the recreational, environmental, economic and River iwi held values for rivers, lakes and streams the Waikato region, specifically the Waikato and Waipa River catchments. Recreational activities are enjoyed in, on and around the region's water bodies and preferences for different activities varies from place to place. The quality of the water and the surrounding environment affects the recreational experience.

Clean and clear water is an important environmental value and is consistent with the view that water should be free from rubbish and pollution. Ecological health and indigenous biodiversity was frequently stated in submissions to the Proposed Waikato RPS (2010) as being important.

Economic values were the most frequently expressed value in submissions to reviewed sections of the Proposed Waikato RPS (2010). These were, in the main, related to ensuring water bodies continue to provide economic opportunities and contribute to the economic and social development of the region. Survey responses and submissions revealed concerns that improvements in water quality might be at the expense of the regional economy (e.g. farming activities).

Key value themes for river iwi were identified as mahinga kai, significant sites, taonga species, recreation and wai; the inter-relationships of these values are unique for each iwi.

The findings of the document review contributed to the qualitative and quantitative phases of research by informing the discussion guide for the focus groups and informing the design of the questionnaire for the quantitative telephone survey.

3 Qualitative assessment of values

This research was commissioned in 2012⁶ with the purpose of gathering and documenting qualitative information about how and why the region's communities value the water quality of the Waikato and Waipa catchments. The focus groups represented broad demographic and geographic coverage of the Waikato region. The results were summarised into key themes and used to inform the questionnaire for the quantitative survey (refer section 4).

Four focus groups were convened in Hamilton, Te Awamutu, Putaruru and Huntly, each comprising 11 to 16 participants (total 56 participants). Telephone recruitment screening ensured geographic coverage (rural and urban) and a cross section of demographic subgroups (Māori/non-Māori, age, gender) within the focus groups.

In reference to this study, values refer to the beliefs held by individuals or groups about the desirability of water bodies. A range of values were identified by the focus groups including:

- Access
- Aesthetic/scenic
- Economic
- Educational
- Environmental/ecological
- Health
- Mātauranga Māori
- Recreational/amenity
- Social/community
- Whakapapa

The qualitative assessment of values revealed greater detail about values than the document review. The document review referred to the broad categories of recreational, environmental, iwi and economic values. Many, if not all, the values identified in the focus groups fit within these broad categories. For example, in describing recreational values in the review of existing documents there was mention of the 'naturalness' (environmental/ecological values), 'scenic landscapes' (aesthetic/scenic values), 'walkways/cycleways' (access/amenity values) and 'no litter and clean water' (health values).

Environmental/Ecological values

There was general consensus amongst focus group participants that the region's rivers, lakes and streams were an integral part of the natural environment. Participants acknowledged the importance of conserving native fish and wildlife to sustain biodiversity in and around water bodies (Key Research Ltd, 2012, p.22):

We need to be building up native fauna to help maintain the natural balance.

We want a clean, unpolluted environment which is open to people and the wild life and the plants that go with it...

Social/Community values

Participants commented that rivers, lakes and streams play an important role in family life and that water bodies often brought up nostalgic feelings and memories. Comments were made on individual, community and organisational responsibility and the necessity of everyone working together and playing their part in looking after the water bodies. Community pride in the rivers, lakes and streams of the region was also mentioned (Key Research Ltd, 2012, pp.14-15):

My kids go to the water spots quite often, for about 10 years we have spent a few months every summer camping, my kids used to love all the bush creeks and it was so clean and tidy there.

⁶ Key Research Limited was commissioned to undertake this research.

It isn't just about our life, it is about the future generations in terms of resources and how we use and treat them...

Whakapapa values and Mātauranga Māori

Māori participants in particular regarded rivers, lakes and streams as linked to genealogy, ancestry and cultural identity. Māori cultural traditions and knowledge pertaining to the water bodies were deemed important. A deeper perspective was also mentioned with the view that the water bodies were a source of life or life force (Mauri) (Key Research Ltd, 2012, pp.14-19):

When you meet someone in Māori culture you say 'ko wai koe' and what that means is 'who are you' but if you take the translation out of it and just translate word for word it is ko meaning who and wai meaning water, so it is actually 'which water source do you come from'

Māori always treasured the water as a lifeline, that's what they travelled on that's what they lived on.

Recreational values

All participants could recall or recite stories about recreational experiences in and around the region's water bodies; the quality of water was valued for allowing a range of recreational activities. Rivers, lakes and streams were often discussed in relation to social and family experiences and the importance of maintaining an active and healthy lifestyle. Activities enjoyed include swimming, fishing, camping, water skiing and waka ama (Key Research Ltd, 2012, pp.16-17):

We have our own internal spring, the kids from the marae come and swim in the summer and go eeling.

We would go camping every year and my kids used to love the bush creeks, they always felt clean and tidy.

Aesthetic/Scenic values

Participants valued the water bodies for visual and other sensory beauty and for the contribution to scenic landscapes. Concern was shared on the impacts of poor water quality on aesthetic/scenic values (Key Research Ltd, 2012, p.17):

The only place that looks any good is the Huka Falls. It is beautiful but by the time it gets here it is a dirty colour (Te Awamutu participant).

The aesthetic side, we want it to look good. The brown algae doesn't look good.

Educational values

Participants considered that learning about the natural environment and the impacts of land activities on water bodies was important. There was a perception that people are becoming more environmentally aware (Key Research Ltd, 2012, p.18):

I've put myself through... courses on effluent management and things like that so we're not polluting the waterways.

I think the communities mind set has turned around, in the past people would drive down the rivers, have lunch and throw their rubbish on the ground and not give a second thought to it. Now there seems to be more respect people aren't doing that anymore.

Health values

Participants associated water quality in the region's rivers, lakes and streams with physical health and recreational values in terms of the ability to maintain an active healthy lifestyle (Key Research Ltd, 2012, p.20):

Keeping us healthy with the walkways, families making use of them plus the water holes for swimming, great family interaction together.

Central to all values is health. Everything centralises around health. It is holistic, everything links through and health is the connector.

Economic values

The economic value of the region's rivers, lakes and streams was seen as relating to agriculture and tourism. Participants from the agricultural sector valued water bodies highly for contributing to their economic livelihood, particularly with regard to providing for livestock (consumption and health) (Key Research Ltd, 2012, pp.20-21):

The most important consideration is to keep the water quality for human and stock consumption at as high a level as possible in the most economic way as possible.

The water ways and water provide a lot of income to the community. The economic benefits are why we have a strong town (Putaruru participant in context of tourism).

Access values

Participants did not desire full access to water bodies, but did hold expectations of being able to gain reasonable access to certain parts of water bodies. Some participants expressed concerns about property rights regarding access (Key Research Ltd, 2012, p.21):

I would like to have more access onto farms with permission to fish.

The main thing that concerns me is walkers on farmlands. They think it is their property and can just walk through and they interfere with your farming property, but we have to give them access.

3.1 Summary of qualitative assessment

Four focus groups were convened in Hamilton, Te Awamutu, Putaruru and Huntly, each comprising 11 to 16 participants (total 56 participants). The qualitative assessment of values was used to reveal a greater level of detail about values than that gathered in the document review. The document review referred to the broad categories of recreational, environmental, iwi and economic values.

The qualitative assessment highlighted the following values: access, aesthetic and scenic, economic, educational, environment and ecological, health, Mātauranga Māori, recreational, social and community and whakapapa. These values were consistent with and added depth, to the values that emerged from the document review.

The results of the qualitative assessment and the findings from the document review informed design of the questionnaire for the quantitative survey.

4 Quantitative assessment of values

This section of the report summarises results from a telephone survey designed to better understand community awareness, use, perceptions and values for the rivers, lakes and streams in the Waikato region.⁷ The survey questionnaire was based on the findings from the document review and the qualitative assessment, as described in sections 2 and 3. The survey provides one of the strands of research that investigates and identifies community values for water quality in the Waikato and Waipa catchments and to assist the council's understanding of:

- Levels of awareness of rivers, lakes and streams
- How the region's rivers, lakes and streams are used and who uses them
- The values placed on rivers, lakes and streams
- Perceptions of water quality in the region's rivers, lakes and streams.

The summarised results focus on the six main rivers in the region - the Waikato, Waipa, Waihou, Piako, Mokau and Awakino rivers⁸ - although survey respondents referred to uses and values for other water bodies both inside and outside the Waikato region. The survey was undertaken in mid-2012 and gathered information from 1002 residents.⁹ The sample was designed to be regionally representative. The demographic breakdown is shown in Table 2. Weightings were applied to the age categories to ensure representativeness.¹⁰ The margin of error for the sample is +/- 3.09 per cent (95 per cent confidence interval).

Table 2: Demographic makeup of sample

Category	Gender		Ethnicity			Age grouping		
	Male	Female	NZ European	Māori	Other	18-24 yrs	25-54 yrs	55+ yrs
Number	458	545	869	108	75	118	408	476
Percentage	46%	54%	87%	11%	7%	12%	41%	47%

The summary provided in this report includes some independent analysis, but also relies on and is consistent with the full report prepared by Versus Research Limited (2013a).

4.1 Awareness and usage of rivers, lakes and streams

4.1.1 Awareness of rivers, lakes and streams

Survey participants were asked to name the rivers, lakes and streams in the region that they were aware of (unprompted awareness):

The Waikato region extends from the Bombay Hills to Ruapehu and includes the Coromandel Peninsula. Thinking about the rivers in the region, which rivers are you aware of?

All respondents were able to name at least one river or stream, with some people naming as many as 10. The Waikato River was the most frequently referred to, with 933 respondents (93 per cent) referring to it (Figure 1). The second most named was the Waipa River, with 389 (39 per cent) respondents reporting awareness. Relatively few people mentioned the Mokau and Awakino Rivers, but 254 (25 per cent) respondents named other water bodies in the region, including the Tongariro River (71 respondents), the Ohinemuri Stream (67 respondents), the Whanganui Stream (22 respondents) and the Waitoa River (16

⁷ Versus Research Limited was commissioned to undertake this research.

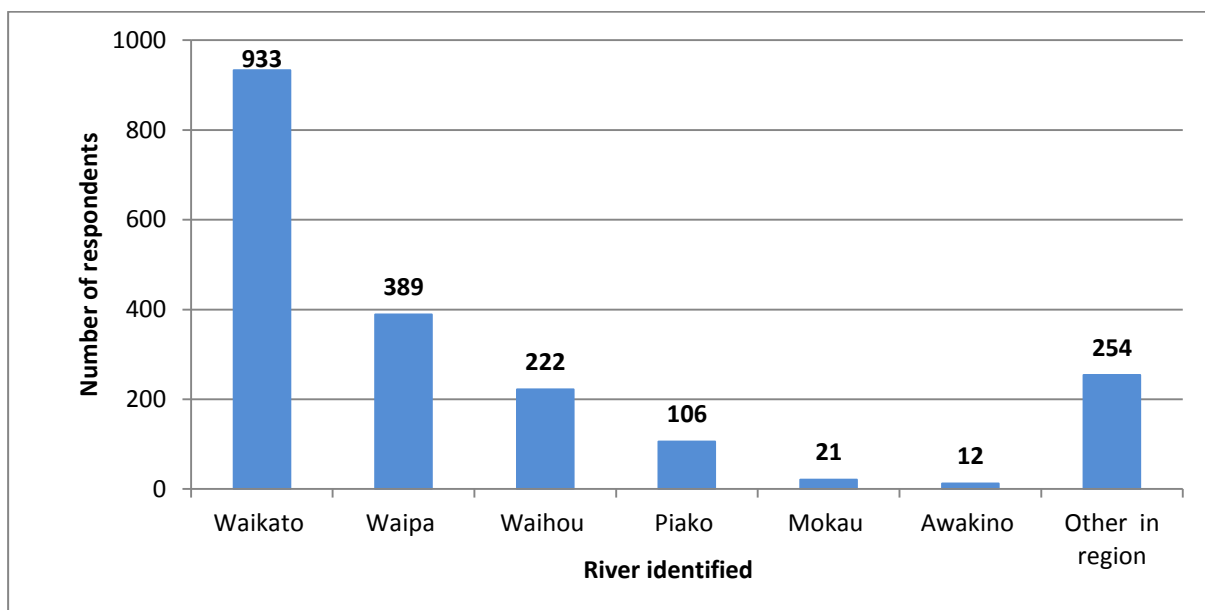
⁸ <http://www.waikatoregion.govt.nz/Environment/Natural-resources/Water/Rivers/Our-other-rivers/>

⁹ Appendix 3 provides a map showing the location of survey respondents.

¹⁰ Detail on the survey sample and weighting is provided in appendix 4.

respondents). For all other rivers, lakes and streams, reported awareness was relatively low.¹¹ A few respondents suggested rivers, lakes and streams outside the Waikato region.

Figure 1: Number of respondents indicating awareness of rivers, lakes and streams (n=1002)



Geographic location and proximity was a factor in awareness. Respondents living in the Waikato catchment tended to centre on the Waikato River, while residents in other catchments recalled a greater range of rivers, lakes and streams (Versus Research Ltd, 2013a).

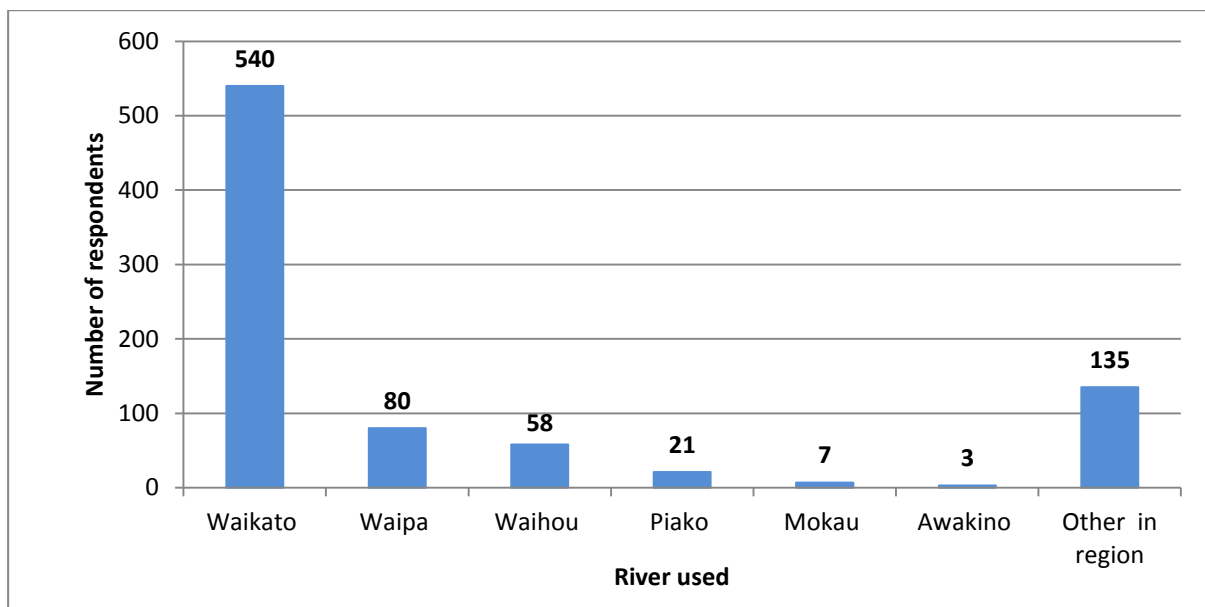
Survey participants were asked:

Now, thinking about the waterways and surrounding areas, which rivers or streams in the Waikato region do you mainly use? This could include the pathways, river banks, surrounding areas or the water itself.

Over two-thirds (69 per cent) of the people surveyed indicated that they used the region's rivers, lakes and streams in some way (Figure 2). As with awareness of rivers, the Waikato River dominated the results in terms of usage, with 540 respondents (54 per cent) stating that they used the Waikato River. Outside the six main rivers, other rivers used by respondents included the Ohinemuri River with 29 users, the Tongariro River with 19 users and the Mangaokewa River with 12 users. Four per cent of respondents indicated that they used more than one river or stream and some indicated as many as seven.

¹¹ Appendix 5 provides further information on the awareness and usage of other water bodies in the Waikato region.

Figure 2: Number of respondents indicating use of rivers, lakes and streams (n=1002)



One-third of survey respondents (337 respondents) reported that they did not use any rivers or streams in the region. The composition of the non-user group differed by age, ethnicity and household type. Around a quarter of 18-35 year olds and 40 per cent of over 55 year olds reported not using any rivers or streams. Approximately one third of NZ European and 'Other' ethnic respondents and 17 per cent of Māori reported not using rivers or streams. Forty-two percent of households with older couples or older singles reported not using rivers or streams. The proportions of non-users by gender were similar.

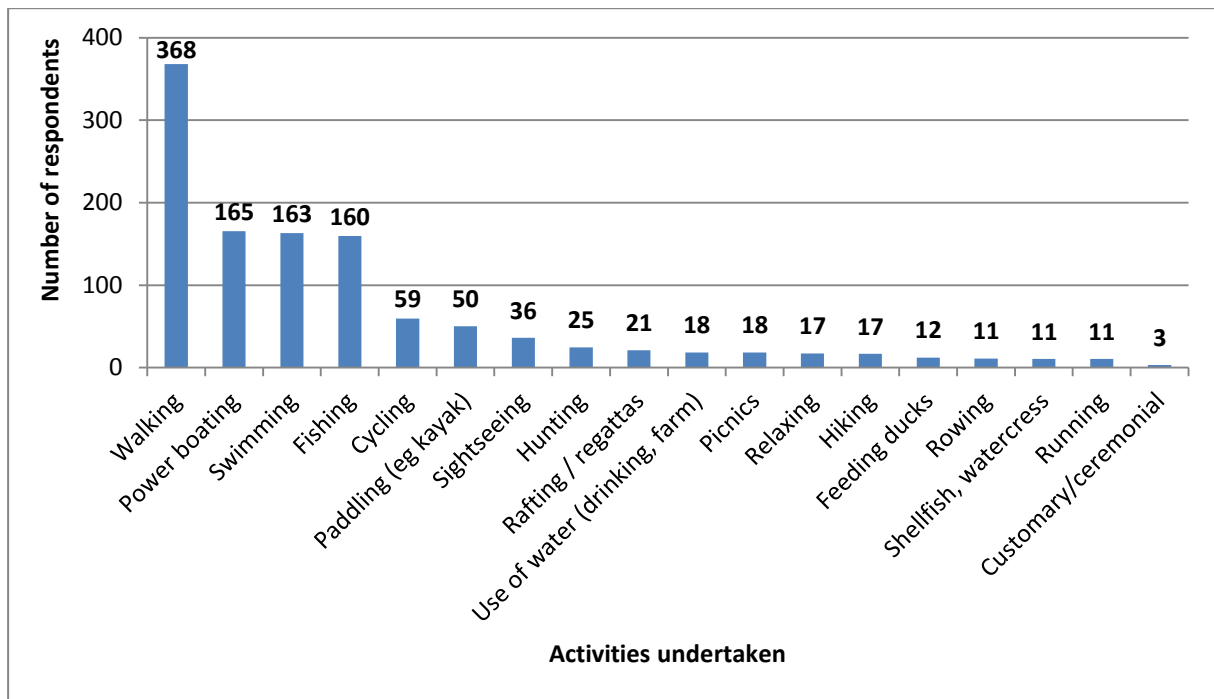
4.1.2 Activities on rivers, lakes and streams

The rivers, lakes and streams in the Waikato region contribute to the social and cultural activities of the regional community. Results in this section refer to the percentage of people who indicated that they *use* the rivers, rather than the total sample. Respondents who indicated they used rivers, lakes and streams were asked:

For what activities do you use the rivers and streams of the Waikato region generally?

Walking was the most popular activity undertaken, reported by 55 per cent (368) of river users (Figure 3). Fishing, boating and swimming were popular; around 21 per cent of users indicated doing each of these activities. Other activities included cycling, paddling, sightseeing and gathering food (such as shellfish and watercress). A small proportion of users indicated ceremonial and customary uses.

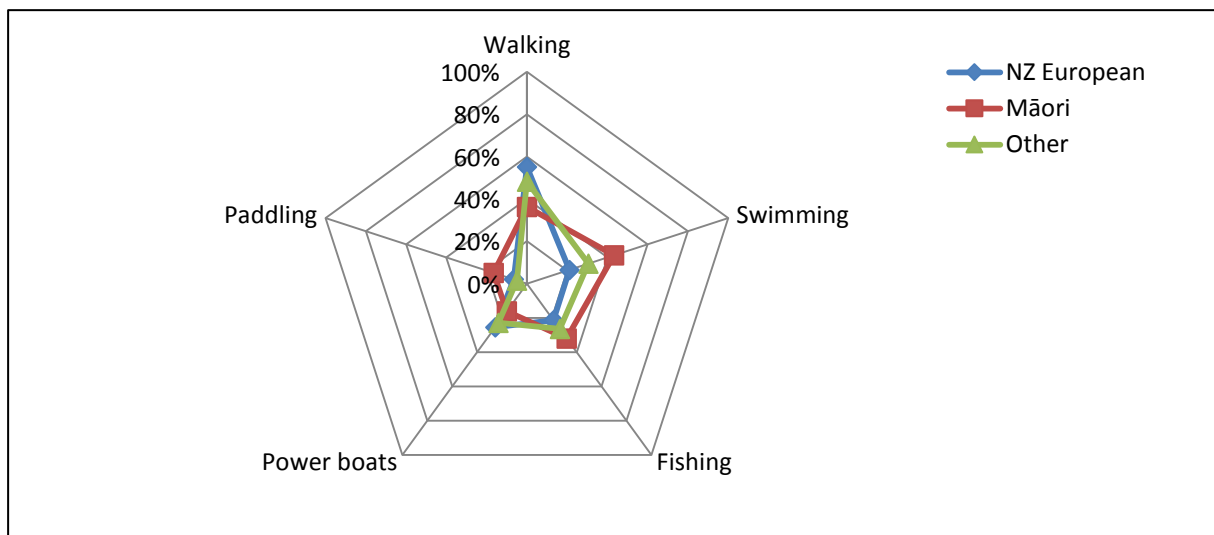
Figure 3: Activities on all rivers, lakes and streams in the Waikato region (n=665)¹²



The type of activities undertaken by respondents differed by ethnicity (Figure 4).

- Walking was reported by 55 per cent of NZ Europeans, 48 per cent of ‘Other’ and 26 per cent of Māori.
- Power boating was more frequently reported by NZ European and ‘Other’, (25 per cent and 22 per cent, respectively), than by Māori (16 per cent).
- Fishing was reported by 32 per cent of Māori, 26 per cent of ‘Other’ and 21 per cent of NZ European.
- Swimming was reported by 43 per cent Māori, 21 per cent NZ European and 30 per cent of ‘Other’.
- Gathering shellfish and watercress was reported by 10 per cent of Māori, but by less than one per cent of NZ European and ‘Other’ ethnicities.
- Paddling (e.g. waka ama, dragon boating, canoeing) was more frequently reported by Māori (17 per cent) than by NZ European and ‘Other’ (7 per cent and 5 per cent respectively).
- There was no reporting of customary usage by people of non-Māori ethnicity.

Figure 4: Users of rivers, lakes and streams by activity, by ethnicity (%)

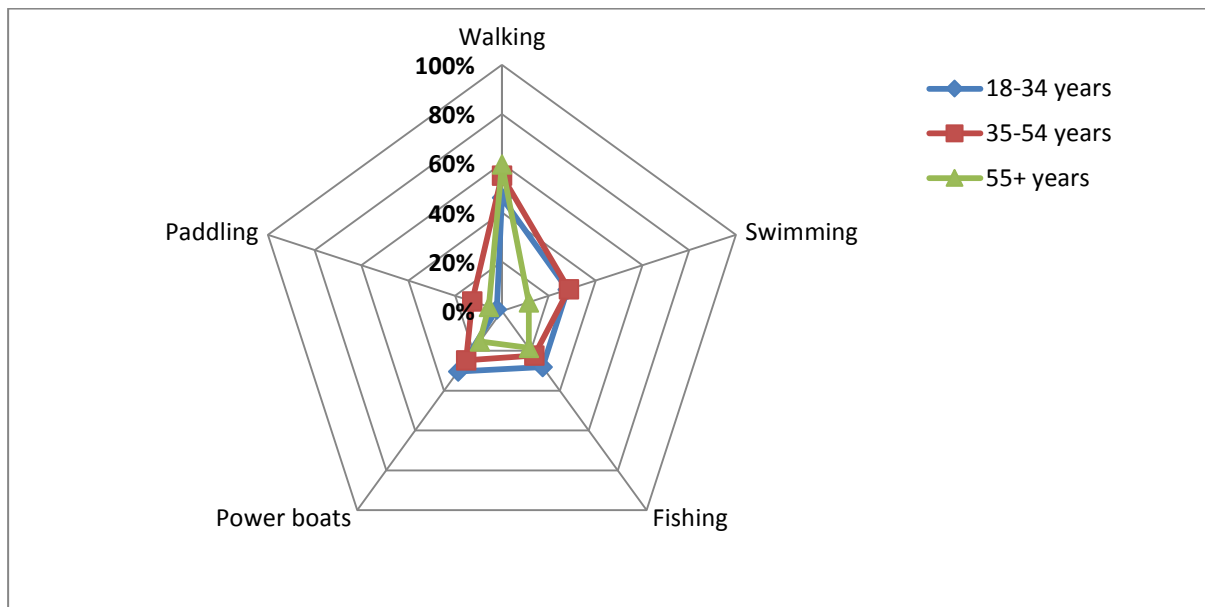


¹² Some activities have been grouped together for ease of reporting. See appendix 6.

Activities undertaken differed by age (Figure 5).

- In all age groups, relatively high proportions of river users reported walking, particularly the 55+ age group, where 60 per cent reported walking.
- Swimming was reported by 28 per cent of the 18-54 year olds, while for the 55+ age group the proportion was 11 per cent.
- Fishing and power-boating were more likely to be reported by river users in the 18-34 year olds (28 per cent and 30 per cent respectively) and least likely by 55+ (18 per cent and 15 per cent).
- Paddling was most frequently reported by 35-54 year group, at 13 per cent and least likely by 18-34 year olds, at 2 per cent.

Figure 5: Users of rivers, lakes and streams by activity, by age (%)



The type of activity differed by geographic location. Of river users living in Taupo, 56 per cent reported swimming and 44 per cent reported fishing. In the Rotorua district, 66 per cent reported boating and 51 per cent reported fishing. In the Otorohanga district, 68 per cent reported fishing. In Hamilton City, 76 per cent of users reported walking.

4.1.3 Water quality of rivers, lakes and streams

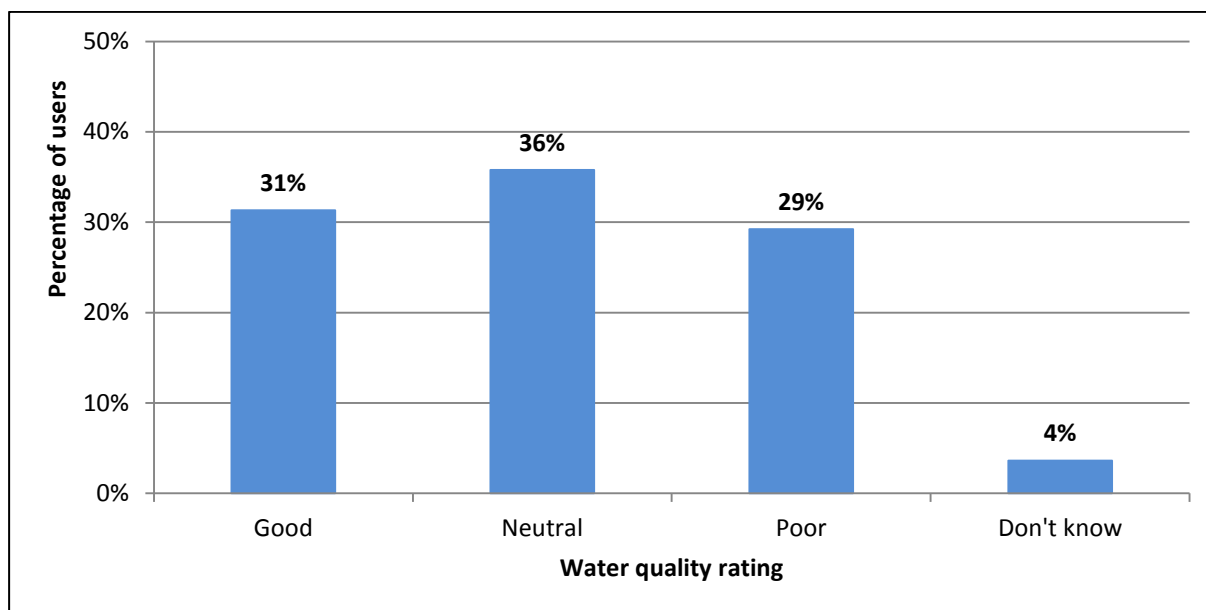
Perceptions of water quality by river users

River users were asked to rate the water quality of the river or stream they used:

Using a scale of 1-10, where 1 is very poor and 10 is excellent, how would you rate the water quality of the X River?

The combined results of all river users are shown in Figure 6. Around one-third of river users considered the water quality to be good, while a slightly smaller proportion considered the water quality to be poor. The balance of opinion was mostly in the neutral category.

Figure 6: Assessment of water quality by users, for rivers, lakes and streams in the Waikato region (n=639)



The water quality responses for individual rivers showed that the Waikato River, with 517 responses, had a relatively even spread of opinion regarding water quality (Table 3). Waikato river users who rated the water quality as good referred to the water as being clean and clear (42 per cent), clean in comparison with other rivers (7 per cent) and to the absence of rubbish and debris in the river (5 per cent). Waikato River users who gave the river a poor rating referred to dirty and brown water (66 per cent), pollution flowing into the water (34 per cent), the presence of algae and weeds (10 per cent) and the appearance of the river banks (3 per cent).¹³ Waipa River users gave similar reasons for their ratings of the Waipa River.

Table 3: Assessment of water quality for rivers in the Waikato region (number of users)

River	Poor	Neutral	Good	Don't know	Number of responses
Awakino	0	0	3	0	3
Mokau	1	1	3	0	5
Piako	11	5	5	0	21
Waihou	8	23	19	2	52
Waikato	165	181	156	15	517
Waipa	25	19	27	4	75

Source: Versus Research Ltd (2013a)

Perceptions of water quality by non-users

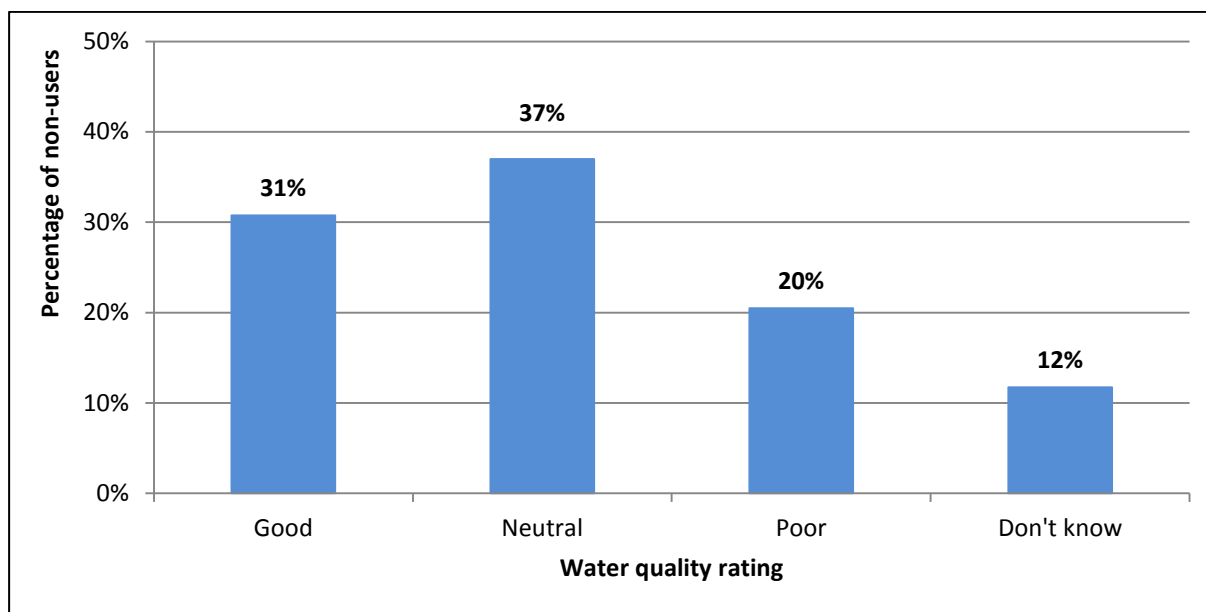
Respondents who indicated that they did not use rivers, lakes and streams were also asked about their perceptions of water quality:

Using a 1-10 scale where 1 is very poor and 10 is excellent, how would you rate the water quality of the rivers and streams in the Waikato region generally?

Similar proportions of users and non-users chose categories of good or neutral for water quality in the region. Non-users were less inclined than river users to think that water quality was poor and more likely to say they didn't know (Figure 7).

¹³ The results for the Waikato River are statistically significant at the 95 per cent confidence level. Results for other rivers are not statistically significant. For an analysis of comments on water quality refer to the full report by Versus Research Limited (2013a, p.34).

Figure 7: Assessment of water quality by non users, for rivers, lakes and streams in the Waikato region (n=324)



4.1.4 The single most important aspect

In an open question, survey respondents were asked:

Now thinking about [the river you use], what is the ONE thing that is most important to you?¹⁴

Cleanliness was the single most important thing for more than half the users of the Waikato, Waipa and Waihou Rivers (Figure 8). Comments on the cleanliness of rivers included the absence of plant and animal pests (e.g. willows, carp), the absence of pollution and the drinkability of the water.

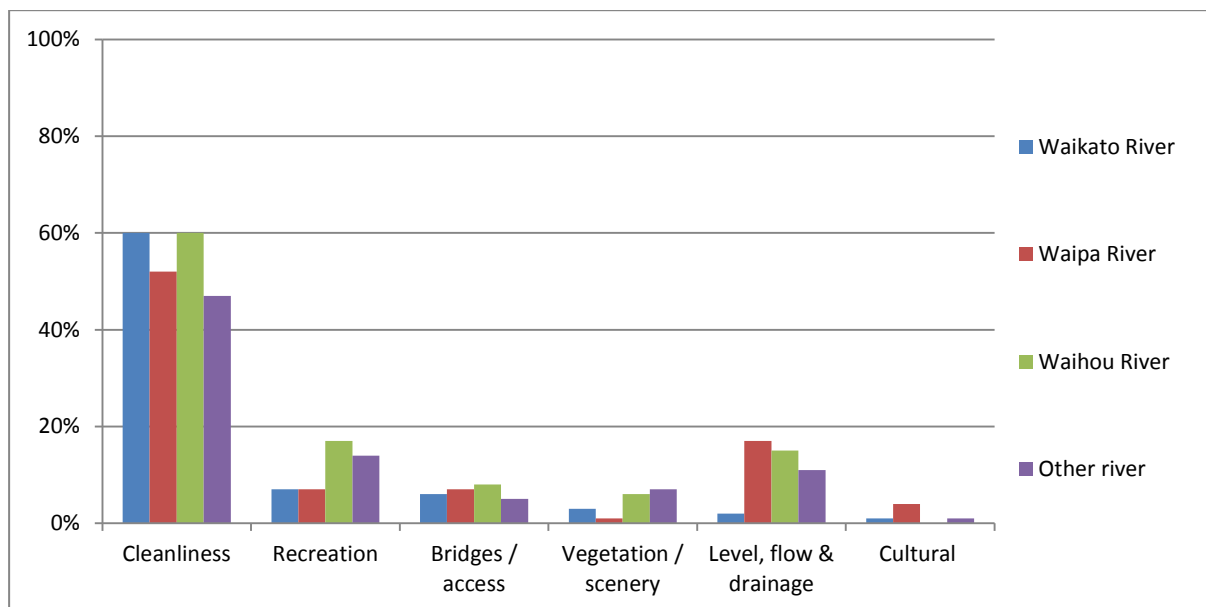
The importance of recreation was mentioned by some river users. Comments on recreation related to water quality and clarity for recreation, trout fishing and swimming.

Some respondents referred to the importance of level, flow and drainage, particularly in relation to the Waipa and Waihou Rivers. Comments included concerns about managing flooding to protect river banks and farmland and to prevent sediment washing down to the sea. Bridges and access related to the need to move across and along rivers, for example travelling to work and access to rivers.

Culture was an important aspect for a small proportion of respondents. Comments referred to spiritual and tribal connections with the river, collecting food and the river as being part of their heritage.

¹⁴ Non-users of rivers were asked a similar question referring to 'rivers and streams in the Waikato region generally'.

Figure 8: Responses to single most important aspect of regional rivers, lakes and streams (%)



4.2 Waterway attributes

This section of the survey focused on the attributes of water bodies in the Waikato region. As a general question, all respondents were asked:

Thinking of all aspects of your life, your work, home and spare time, what is the ONE thing that you value MOST about the region's rivers and streams?

Nearly a quarter of respondents considered that for them, access for all people was the most valued attribute. Recreation and cleanliness were rated as the most valued attribute by 22 per cent and 21 per cent of respondents respectively. Vegetation and scenery were most valued by 13 per cent of respondents.

Following the general question about the most valued aspect of the region's rivers, lakes and streams, a series of 15 statements were read to respondents to assess the importance of various attributes of rivers, lakes and streams. The statements were based on the availability and safety of food, the availability and quality of recreational areas and facilities, the cultural role of rivers, lakes and streams and the quality of the natural environment. Respondents were asked to assess statements on a scale of 1-10, where 1 was not important at all and 10 was very important. The results shown here have been grouped into five importance categories.¹⁵

4.2.1 Rivers, lakes and streams as a source of food

Four statements about gathering food from rivers, lakes and streams were read to survey participants to establish their importance rating:

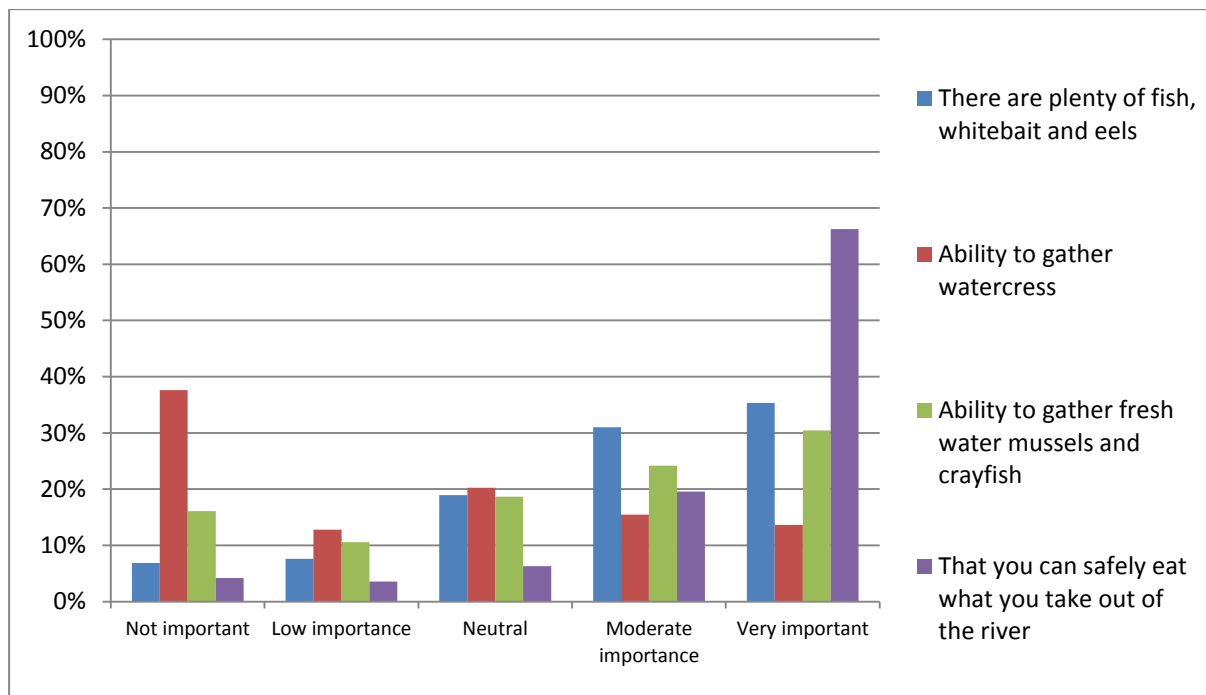
- *There are plenty of fish, whitebait and eel*
- *Ability to gather watercress*
- *Ability to gather freshwater mussels and crayfish*
- *That you can safely eat what you take out of the river*

Two-thirds (66 per cent) of respondents considered plentiful fish, eel and whitebait as moderately or very important; 15 percent assessed this of low or no importance. Twenty-nine per cent of respondents assessed the ability to gather watercress as moderately or very important, while around 50 per cent considered it of low or no importance (Figure 9).

¹⁵ Where 1-2 = not important; 3-4 = low importance; 5-6 = neutral; 7-8 = moderate importance; 9-10 = very important. This differs from the reporting style used by Versus Research Limited (2013a), where results were reported in three categories (not important; important; very important).

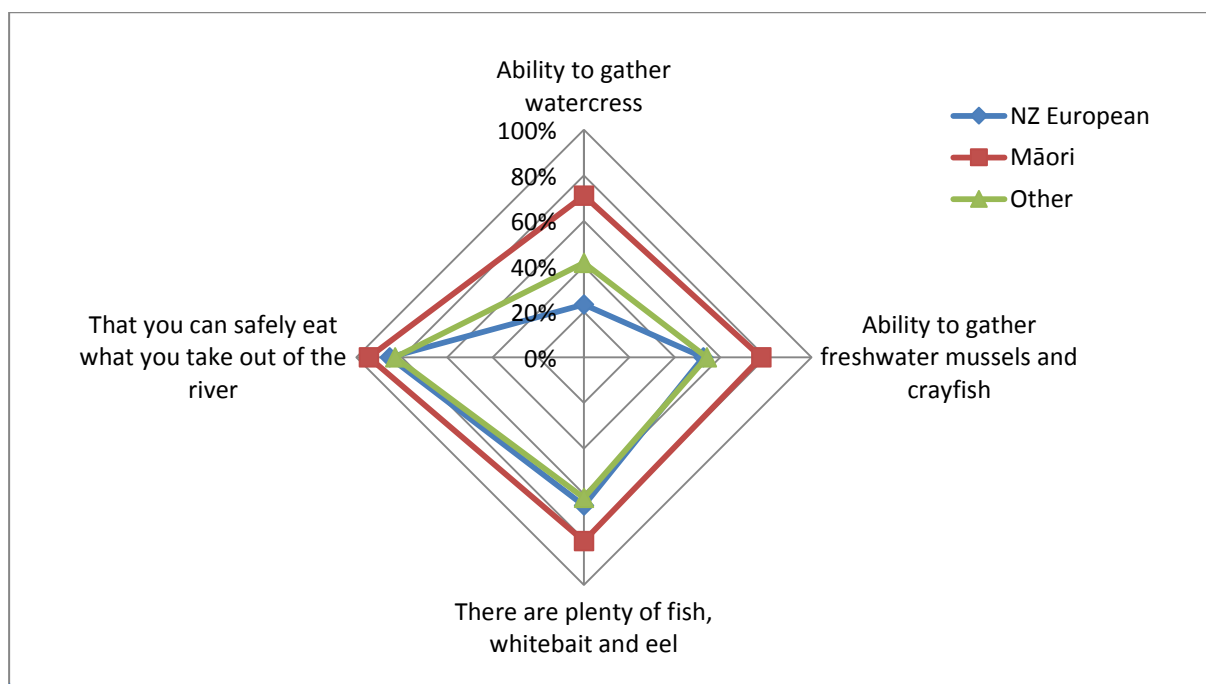
Despite diverse opinion regarding the importance of different types of food, there was a high level of agreement regarding the safety of eating food from rivers, lakes and streams, with 86 per cent of respondents assessing this as moderately or very important and just 8 per cent rating it as of low or no importance.

Figure 9: Importance of rivers, lakes and streams as a source of food (n=1002)



The responses by ethnicity differed for statements on individual foods. The presence of plenty of fish, whitebait and eels was assessed as moderately or very important by 81 per cent of Māori, by 66 per cent of NZ Europeans and by 62 per cent of 'Other' (Figure 10). The ability to gather watercress was assessed as moderately or very important by 71 per cent of Māori, 25 per cent of NZ European and 41 per cent of 'Other'. There was a high level of agreement across ethnicities for the food safety statement: 86 per cent of NZ Europeans, 95 per cent of Māori and 83 per cent of 'Other' ethnic groups assessed this as moderately or very important.

Figure 10: Moderate/high importance responses for water bodies as a source of food, by ethnicity (%)



4.2.2 Rivers, lakes and streams for recreation

Four statements about the recreational attributes of water bodies were read to survey participants to establish their importance rating:

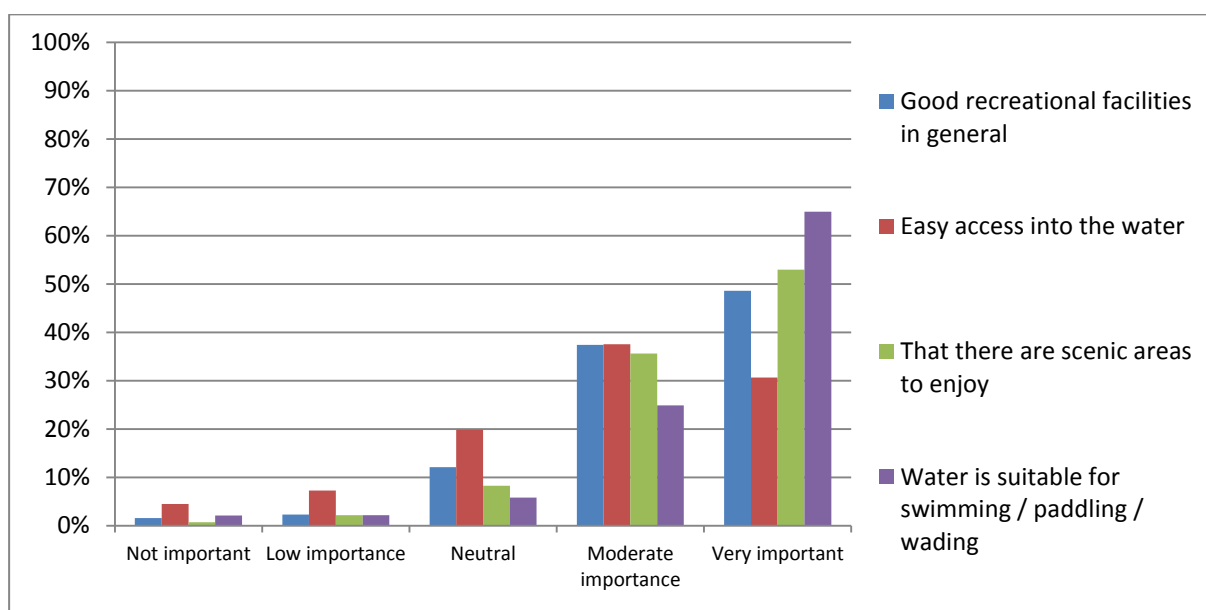
- *Good recreational facilities in general – for example boat ramps, toilets, walkways, no rubbish*
- *Easy access INTO the water*
- *That there are scenic areas to enjoy*
- *Water is suitable for swimming/paddling/wading*

For around 70-80 per cent of respondents, good recreational facilities, easy access into the water and scenic areas to enjoy were assessed as moderately or very important (Figure 11).

The suitability of the water for direct use (e.g. swimming, wading) drew a strong response, with 91 per cent assessing it as moderately or very important and of these, 71 per cent elected very important.

The pattern of responses across ethnic groups was similar in terms of the importance of the recreation attributes, although Māori rated the importance of the suitability of water for swimming/paddling/wading slightly higher than people of NZ European and 'Other'. This is consistent with a high level of this activity reported by Māori respondents.

Figure 11: Importance of rivers, lakes and streams for recreation (n=1002)



4.2.3 Rivers, lakes and streams in the environment

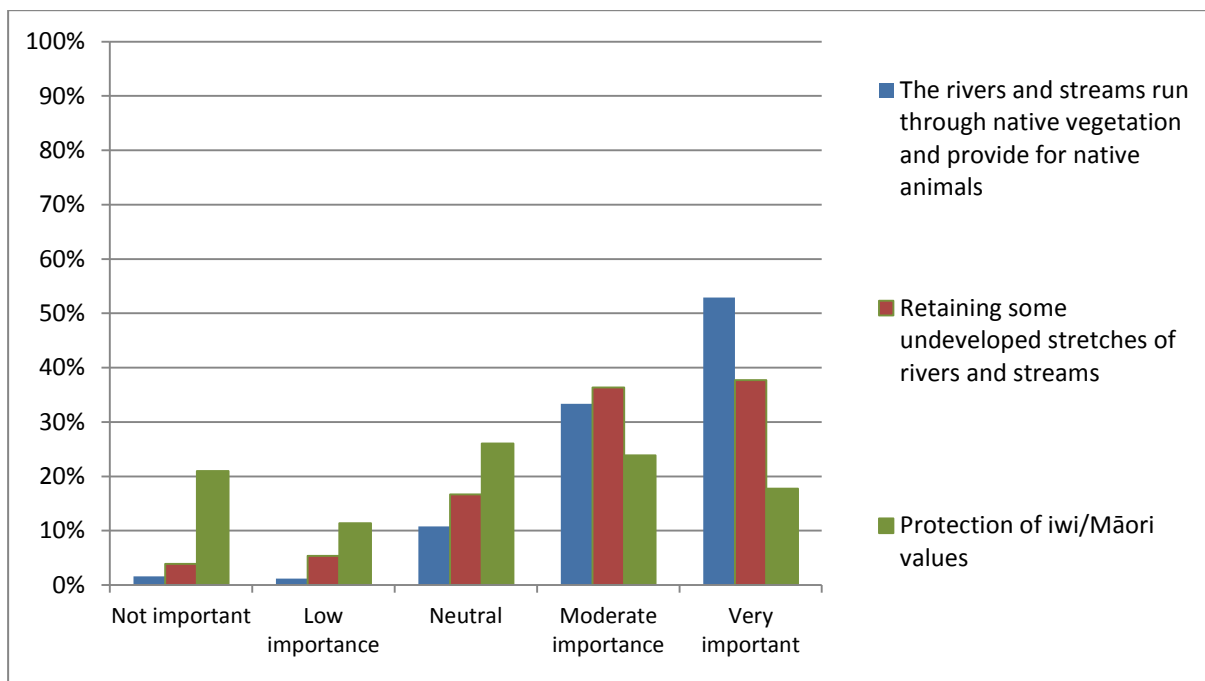
A series of statements about the environmental attributes of water bodies was read to survey participants to establish their importance rating. Three statements were:

- *The rivers and streams run through native vegetation and provide for native animals*
- *Retaining some undeveloped stretches of rivers and streams in the region*
- *Protection of iwi/Māori values*

That rivers run through natural vegetation and provide for native animals was assessed as moderate to high importance by 86 per cent of respondents (Figure 12). Retaining undeveloped stretches of rivers and streams was of moderate to high importance for 64 per cent of respondents and 9 per cent of respondents assessed it as of low or no importance.

The protection of iwi values was assessed as moderately or very important by 42 per cent of respondents and of low or no importance by 32 per cent of respondents. The balance of respondents (26 per cent) assessed the importance of this statement as neutral.

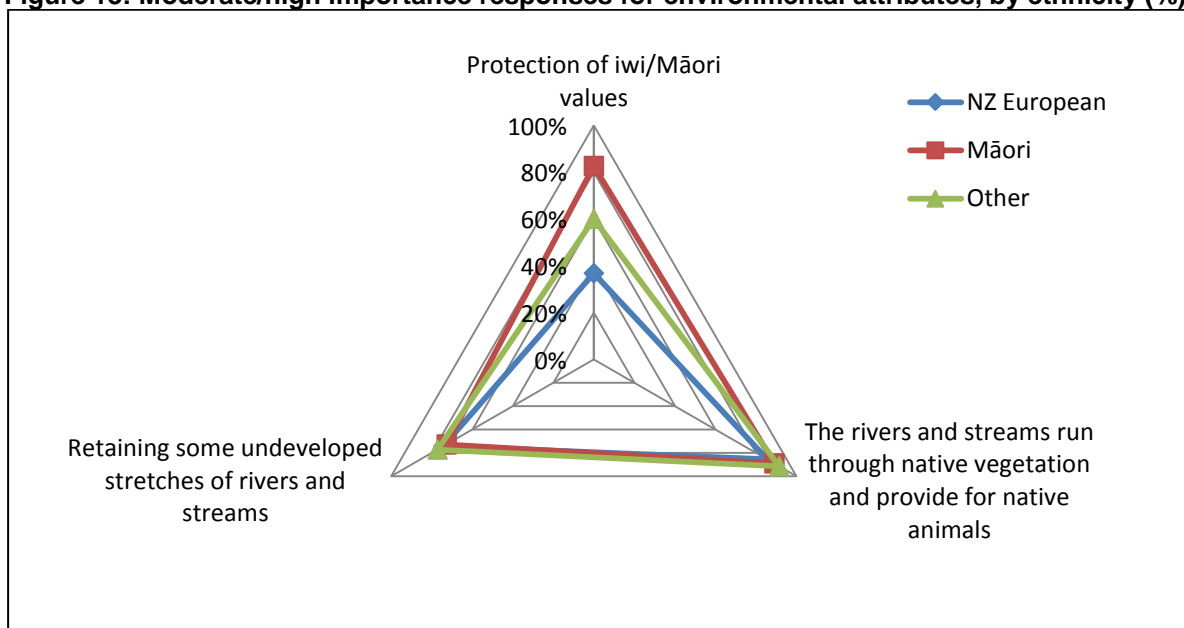
Figure 12: Importance of rivers, lakes and streams in the environment (n=1002)



The two statements regarding rivers running through native vegetation and the retention of undeveloped stretches were considered important across all ethnic groupings and were assessed similarly (Figure 13).

The opinion of respondents regarding protection of iwi/Māori values was spread across the importance spectrum. Eighty-three per cent of Māori respondents assessed the protection of iwi/Māori values as moderately or very important, with 8 per cent considering it of low or no importance. Of NZ Europeans and ‘Other’, 37 per cent and 60 per cent respectively assessed this statement of moderate or high importance. Thirty-five per cent of NZ European and 26 per cent of ‘Other’ assessed the statement as of low or no importance.

Figure 13: Moderate/high importance responses for environmental attributes, by ethnicity (%)



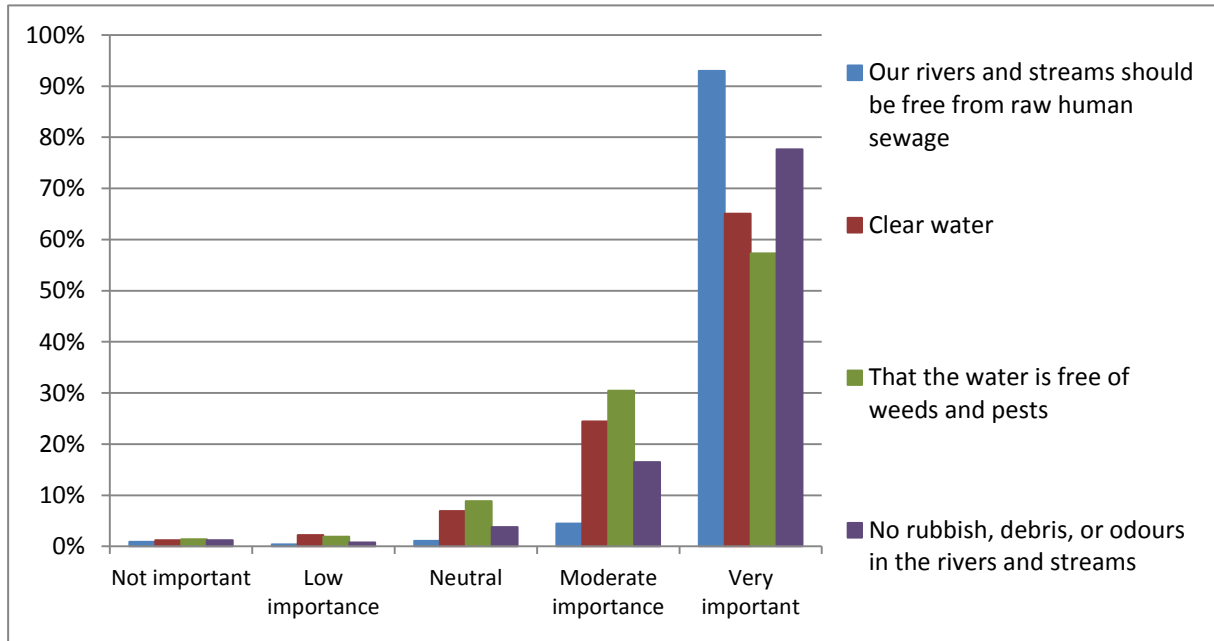
Four statements regarding the environmental attributes of water bodies were read to survey participants to establish their importance rating:

- *Our rivers and streams should be free of raw human sewage*
- *Clear water*
- *That the water is free of weeds and pests*

- *No rubbish, debris, or odours in the rivers and streams*

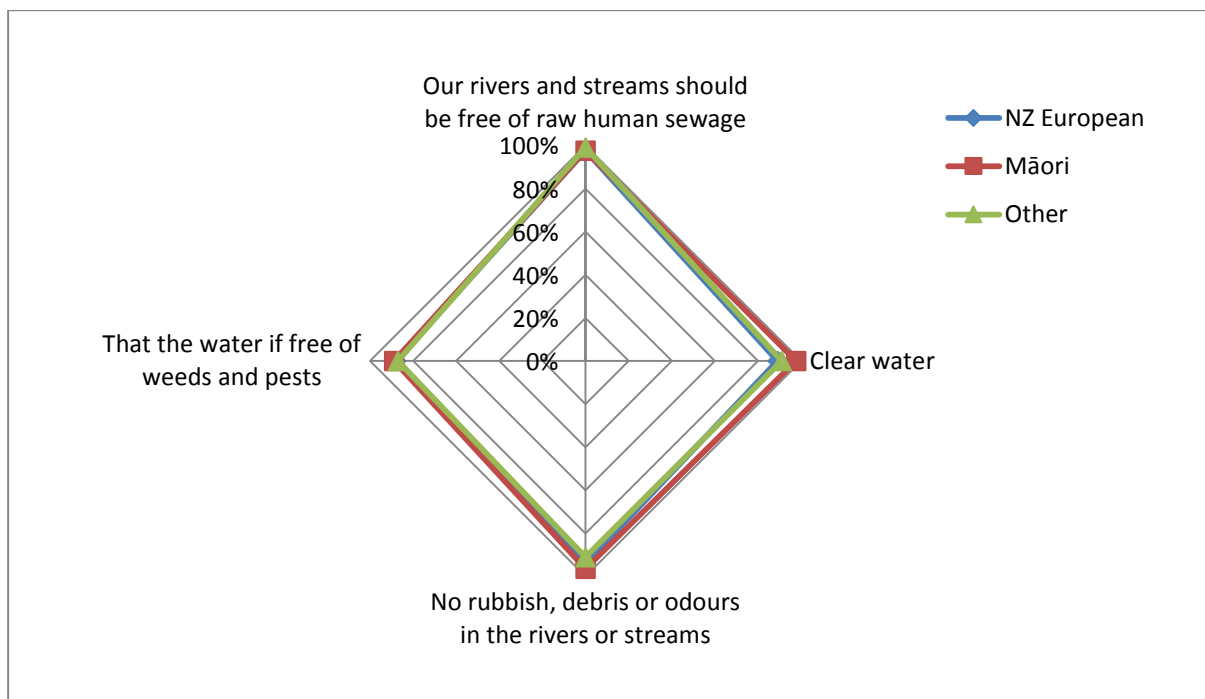
These four statements each received relatively high importance ratings. Survey respondents put a high value on the quality of water (Figure 14). The strongest response was for the absence of raw human sewage. Ninety-seven per cent of respondents assessed this as moderate to very important (93 per cent as very important). Just 1 per cent assessed it as of low or no importance. No rubbish, debris or odours was assessed as moderately or very important by 94 per cent of respondents.

Figure 14: Importance of rivers, lakes and streams in the environment (n=1002)



On the statements regarding raw sewage, clear water and the presence of weeds, the responses from Māori were towards higher levels of importance, possibly related to higher levels of direct use of the water bodies (e.g. food gathering, swimming) (Figure 15). People in all ethnic groups felt strongly about rubbish, debris and odours, with 93 per cent, 96 per cent and 88 per cent of NZ European, Māori and 'Other' respectively assessing its absence as moderately or very important.

Figure 15: Moderate/high importance responses on environmental attributes, by ethnicity (%)



4.3 Values and beliefs

This section of the survey focused on values and beliefs held by respondents. A series of 26 values statements were read to survey participants to establish the level of agreement. The statements were grouped into three broad areas:

- Community-culture
- Economic-environmental
- Recreation

Survey participants were asked to assess the statements on a scale of 1-10, where 1 was strongly disagree and 10 was strongly agree. The results shown here have been grouped into five agreement categories.¹⁶

4.3.1 Community-culture values and beliefs

Five statements about community, culture, values and beliefs were read to survey participants to establish the level of agreement:

- *The region’s rivers and streams promote a sense of community pride*
- *The region’s rivers and streams should provide opportunities for people to learn about the natural environment*
- *We should share in the responsibility for looking after the region’s rivers and streams*
- *It is important to look after the region’s rivers and streams for future generations*
- *The region’s rivers and streams provide a sense of identity*

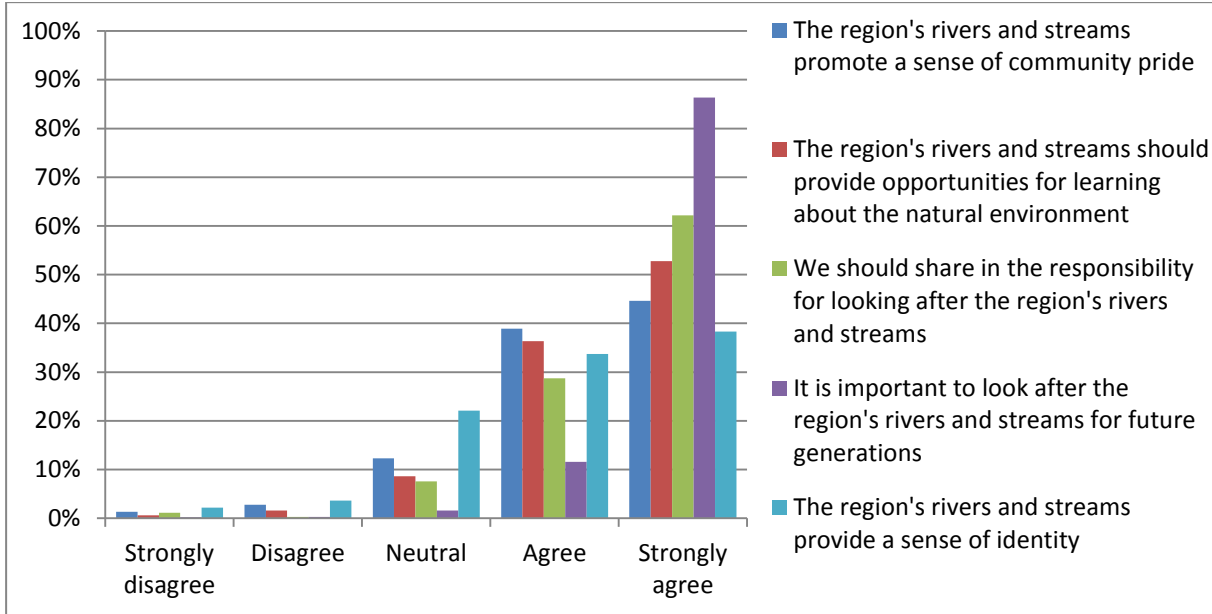
There was a high level of agreement with the statement about shared responsibility for looking after the region’s rivers and streams; 91 per cent of respondents agreed or strongly agreed (Figure 16). Just 1 per cent disagreed. The majority of respondents saw rivers and streams as providing opportunities for learning about the natural environment; 91 per cent of respondents agreed or strongly agreed. One per cent of respondents disagreed.

Three-quarters of respondents agreed or strongly agreed that rivers and streams provided a sense of identity; 22 per cent of respondents were neutral; and 6 per cent disagreed.

¹⁶ Agreement scale: 1-2 = strongly disagree; 3-4 = disagree; 5-6 = neutral; 7-8 = agree; 9-10 = strongly agree.

The statement, 'it is important to look after the region's rivers and streams for future generations' attracted a high level of strong agreement, with 98 per cent of respondents agreeing or strongly agreeing (92 per cent strongly agreeing), 2 per cent neutral and no respondents disagreeing.

Figure 16: Agreement on values – Community and culture (n=1002)

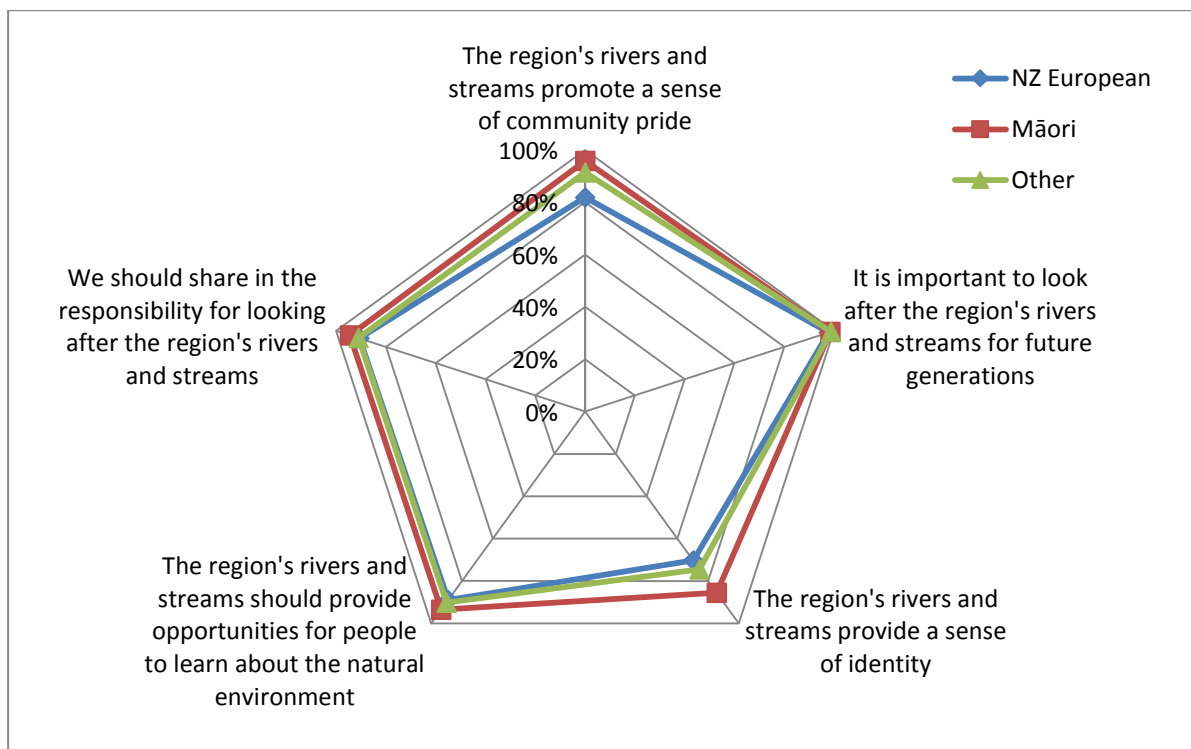


The statement regarding caring for our rivers and streams for future generations drew consistent and strong responses across ethnicities (Figure 17). Ninety-eight per cent of Māori respondents agreed or strongly agreed with this statement (94 per cent strongly agreed); 97 per cent of NZ European agreed or strongly agreed (86 per cent strongly agreed); and 99 per cent of 'Other' agreed or strongly agreed (86 per cent strongly agreed).

The statement about sharing responsibility elicited similar responses across ethnicities; 91 per cent of NZ European, 95 per cent of Māori and 91 per cent of 'Other' agreed or strongly agreed.

Māori respondents were more likely to agree or strongly agree with the statement that rivers and streams provide a sense of identity at 85 per cent, versus 70 per cent for NZ European and 74 per cent for 'Other'. Similarly, the statement that rivers and streams promote a sense of community pride was agreed or strongly agreed with by 96 per cent of Māori, versus 82 per cent of NZ European and 92 per cent of 'Other'.

Figure 17: Agree/strongly agree responses on community and culture values, by ethnicity (%)



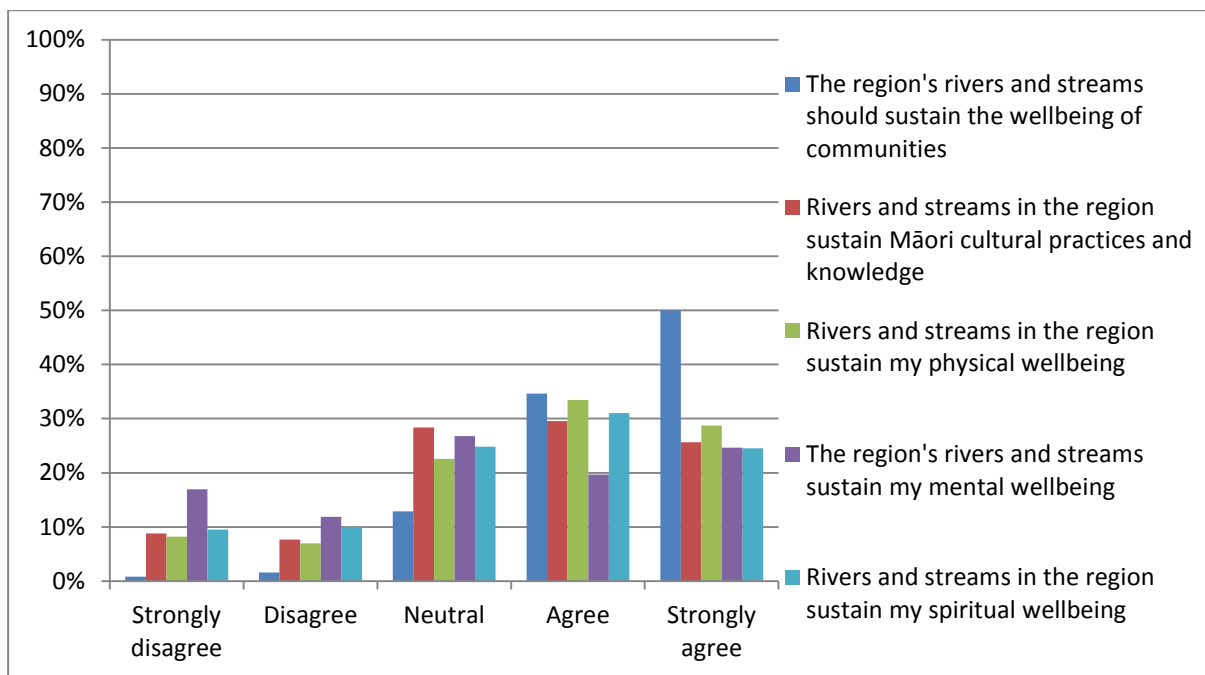
Five statements about the relationship of rivers and streams to wellbeing were read to survey participants to establish the level of agreement:

- *The region's rivers and streams should sustain the wellbeing of communities*
- *Rivers and streams in the region sustain Māori cultural practices and knowledge*
- *Rivers and streams in the region sustain my physical wellbeing*
- *The region's rivers and streams sustain my mental wellbeing*
- *Rivers and streams in the region sustain my spiritual wellbeing*

The level of agreement to the role of rivers and streams to community wellbeing was relatively strong and positive; 85 per cent of respondents agreed or strongly agreed with the statement that 'the region's rivers and streams should sustain the wellbeing of communities' (Figure 18). This contrasted with responses for the statements about the role of rivers and streams in individual physical, mental and spiritual wellbeing, with 62 per cent, 55 per cent and 56 per cent respectively agreeing or strongly agreeing.

Of the statement 'rivers and streams in the region sustain Māori cultural practices and wellbeing' 88 per cent of Māori agreed or strongly agreed, versus 52 per cent of NZ European and 61 per cent of 'Other'. Some respondents may have considered that they were not sufficiently well-informed to respond to this statement and there was not an option for 'don't know'.

Figure 18: Agreement on values - Community and wellbeing (n=1002)

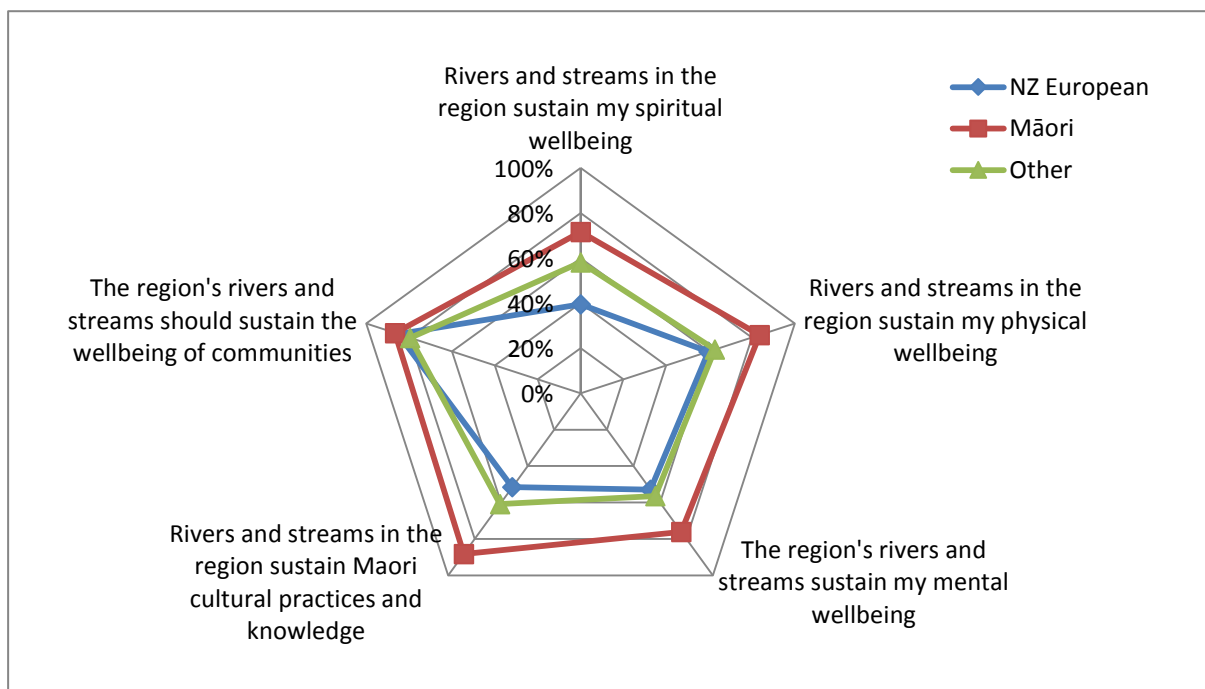


Māori were more likely than other ethnic groups to agree or strongly agree with the statements on the role of rivers in sustaining spiritual, mental and physical wellbeing (Figure 19). For these three statements, around 72, 76 and 84 per cent of Māori respondents agreed and strongly agreed. For people of NZ European and 'Other' ethnic groups, the level of agreement and strong agreement was generally in the 50-60 per cent range.

For the statement on the rivers and streams sustaining Māori cultural practices and knowledge, 88 per cent of Māori agreed or strongly agreed with this statement; 52 per cent of NZ European and 61 per cent of 'Other' agreed or strongly agreed.

While the pattern of responses for statements on individual wellbeing differed across ethnic groups, there was strong and consistent agreement when respondents considered the role of rivers and streams in sustaining the wellbeing of communities. For Māori, NZ European and 'Other', 87 per cent, 85 per cent and 80 per cent respectively agreed or strongly agreed (Figure 19).

Figure 19: Agree/strongly agree responses on wellbeing statements, by ethnicity (%)



4.3.2 Economic-environmental values and beliefs

A series of statements about economic-environmental values and beliefs were read to survey participants to establish the level of agreement:

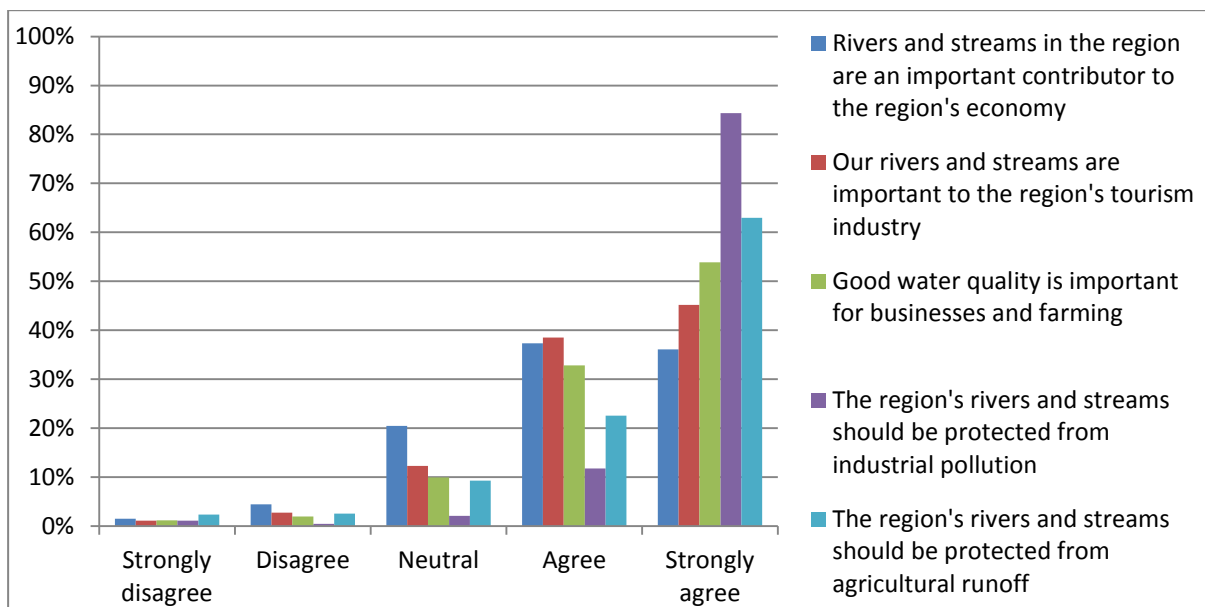
- *Rivers and streams in the region are an important contributor to the region's economy*
- *Our rivers and streams are important to the region's tourism industry*
- *Good water quality is important for businesses and farming*
- *The region's rivers and streams should be protected from industrial pollution*
- *The region's rivers and streams should be protected from agricultural run-off*

For the statement that rivers and streams are an important contributor to the regional economy, 73 per cent of respondents agreed or strongly agreed, 20 per cent of respondents were neutral and 5 per cent of respondents disagreed (Figure 20).

Around 84 per cent of respondents agreed or strongly agreed that the rivers and streams are important for the region's tourism. The importance of good water quality to business and farming was seen to be important, with 87 per cent of respondents agreeing or strongly agreeing with this.

While there was a high level of agreement about the importance of rivers and streams in the monetary economy, there was concern about protecting the region's rivers and streams from industrial and agricultural pollution, with 96 per cent of respondents agreeing or strongly agreeing that the region's rivers and streams should be protected from industrial pollution and agricultural runoff respectively.

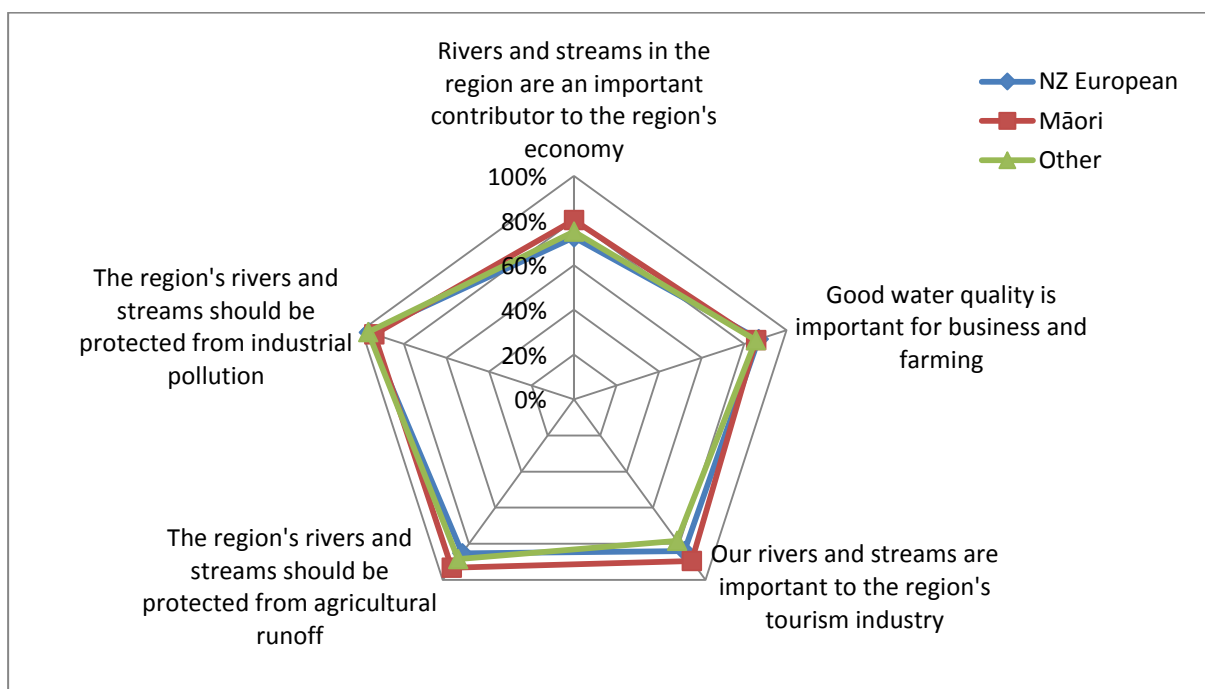
Figure 20: Agreement on values – Economic-environmental (n=1002)



The pattern of agreement for the environment-economy statements was similar across ethnicities (Figure 21). Approximately three-quarters of respondents from each ethnic group agreed or strongly agreed that the rivers and streams are an important contributor to the region’s economy. Around 85-90 per cent of respondents agreed or strongly agreed that good quality water is important for business and farming and rivers and streams are important to regional tourism.

In general, respondents felt strongly that rivers and streams should be protected from industrial pollution; around 95 per cent of respondents in each ethnic group agreed or strongly agreed with this statement. The level of agreement for protection from agricultural runoff was also high, at around 90 per cent for each group.

Figure 21: Agree/strongly agree responses on economic-environmental values, by ethnicity (%)

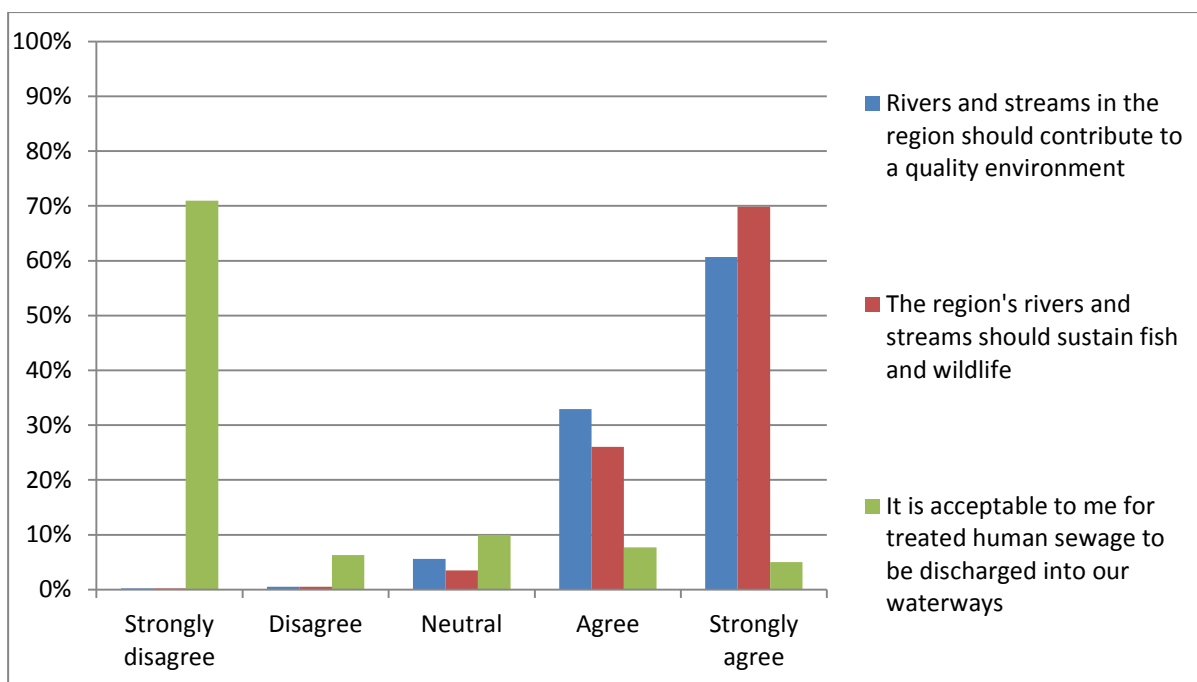


The following statements about environmental quality values and beliefs were read to survey participants to establish the level of agreement:

- *Rivers and streams in the region should contribute to a quality environment*
- *The region's rivers and streams should sustain native fish and wildlife*
- *It is acceptable to me for treated human sewage to be discharged into our waterways*

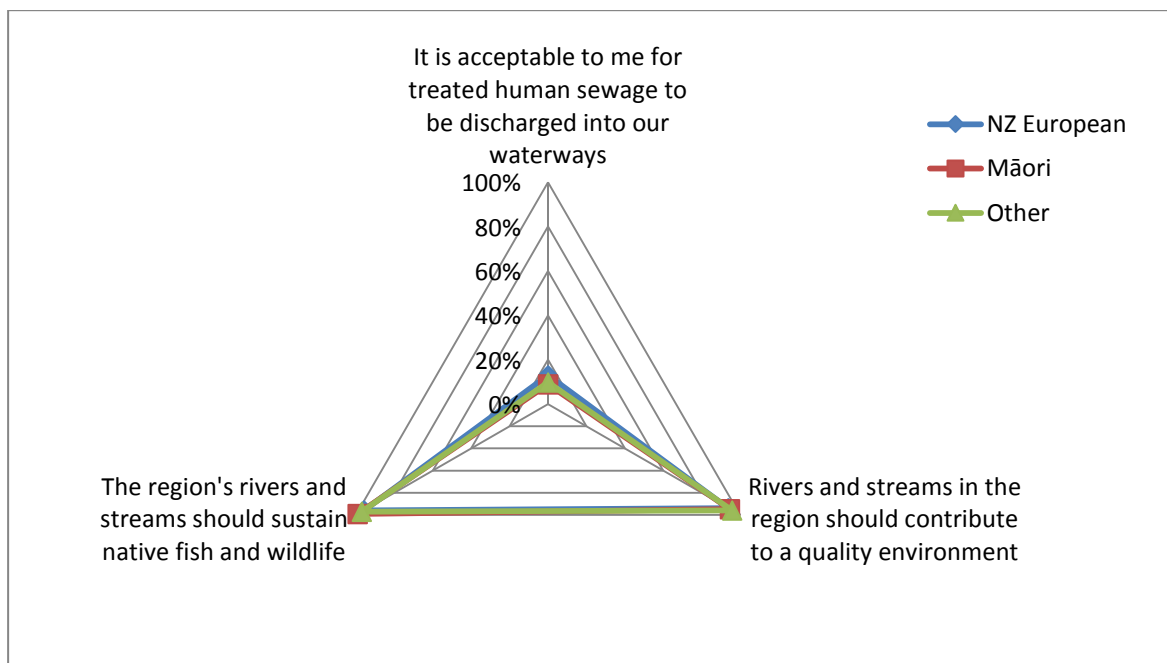
No respondents disagreed with the statement that rivers and streams should contribute to a quality environment; 94 per cent of respondents agreed or strongly agreed (Figure 22). The remaining 6 per cent were neutral. Similarly, no respondents disagreed that rivers and streams should sustain fish and wildlife; 97 per cent of respondents agreed or strongly agreed and the remaining 3 per cent were neutral. There was a high level of disagreement (78 per cent) with the statement regarding the acceptability of the discharge of treated human sewage into waterways.

Figure 22: Agreement on values - Environmental quality (n=1002)



The strength and pattern of agreement for the environmental quality statements was similar across ethnicities (Figure 21). Around 95 per cent of respondents of each ethnicity agreed or strongly agreed that rivers and streams should contribute to a quality environment and that rivers and streams should sustain native fish and wildlife. Approximately 10 per cent of respondents from each ethnic group agreed or strongly agreed that it was acceptable to them that treated human sewage be discharged into the waterways of the region.

Figure 23: Agree/strongly agree responses environmental quality values (%)



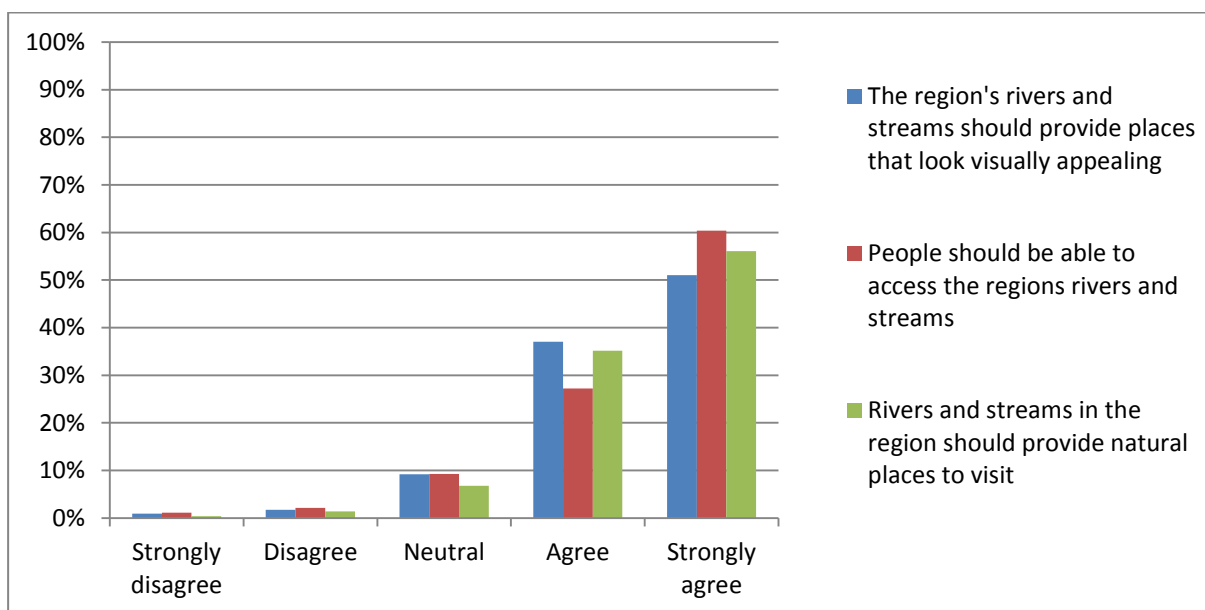
4.3.3 Social and recreational values and beliefs

Three statements about amenity values and access were read to participants to establish the level of agreement:

- *The region's rivers and streams should provide places that look visually appealing*
- *People should be able to access the region's rivers and streams*
- *Rivers and streams in the region should provide natural places to visit*

Overall there was a high level of agreement around the importance of visual appeal of rivers and streams, the provision of access and the role of rivers and streams as natural places to visit (Figure 24). Eighty-seven per cent of respondents agreed or strongly agreed that people should be able to access rivers and streams – the figure for strongly agree was 60 per cent. Nine per cent of respondents were neutral about this statement and four per cent disagreed.

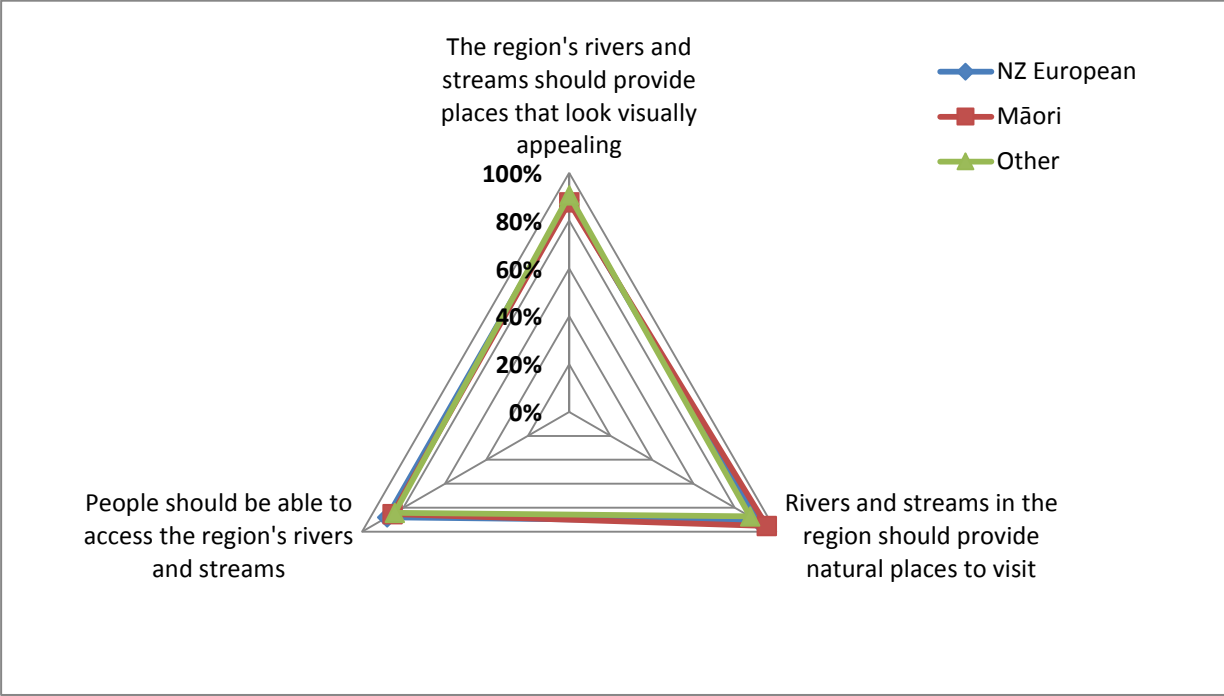
Figure 24: Agreement on values - Amenity and access (n=1002)



The strength and pattern of agreement for the amenity and access value statements was similar across ethnicities (Figure 25). Approximately 85-90 per cent of people in each ethnicity agreed or strongly agreed with each of the three statements. Māori respondents tended to be slightly stronger in their agreement with the statement that 'rivers and streams

in the region should provide natural places to visit', with 95 per cent of respondents agreeing or strongly agreeing.

Figure 25: Agree/strongly agree responses on amenity and access values (%)



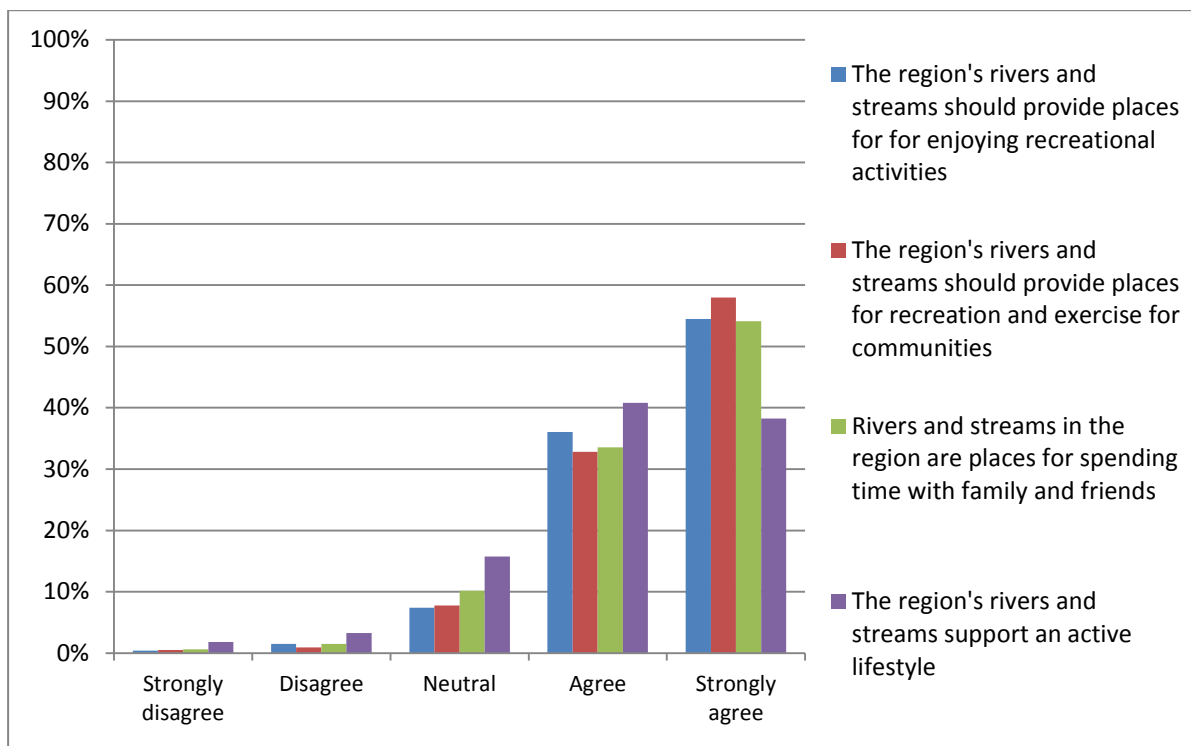
Four statements about social and recreational values and beliefs were read to survey participants to establish the level of agreement:

- *The region's rivers and streams should provide places for enjoying recreational activities*
- *The region's rivers and streams should provide places for recreation and exercise for communities*
- *Rivers and streams in the region are places for spending time with family and friends*
- *The region's rivers and streams support an active lifestyle*

The response patterns were similar for the three statements about rivers and streams providing places for community socialising, recreation and exercise, with around 90 per cent of respondents agreeing or strongly agreeing (Figure 26).

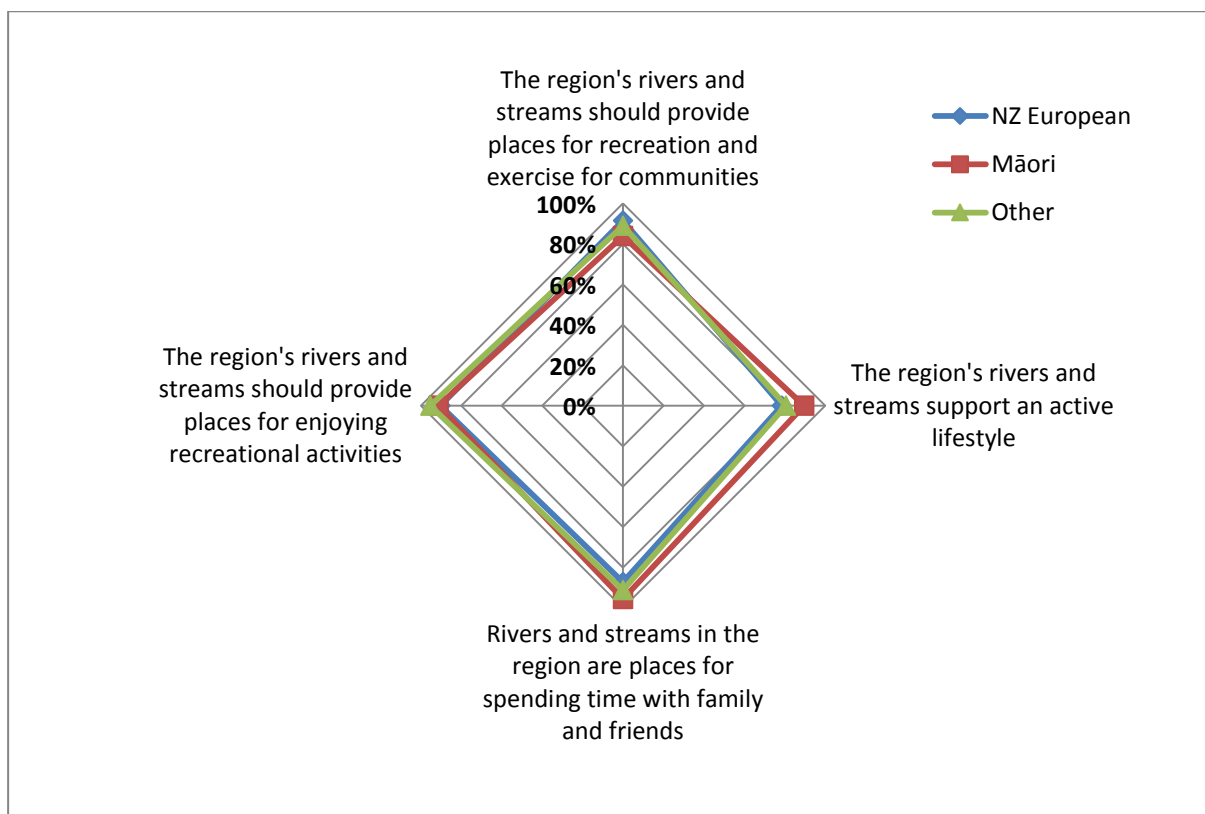
The response to the role of rivers and streams in supporting an active lifestyle was spread – 79 per cent of respondents agreed or strongly agreed, while agreement was spread fairly evenly between agree and strongly agree; 16 per cent of respondents felt neutral about this statement and 5 per cent disagreed.

Figure 26: Agreement on values – Social and recreational (n=1002)



The level of agreement for the social and recreational values statements was high across ethnicities (Figure 217). In general, respondents felt strongly that rivers and streams should provide places for enjoying recreational activities and for community recreation and exercise; round 90 per cent of respondents in each ethnic group agreed or strongly agreed with the two statements identifying recreation. Māori respondents felt more strongly than other respondents that rivers and streams support an active lifestyle – at 90% of Māori and around 80% of NZ Europeans and ‘Other’.

Figure 27: Agree/strongly agree responses on social and recreational values (%)



4.4 Summary of quantitative assessment

1002 residents of the Waikato region participated in a telephone survey in mid-2012 to better understand community awareness, use, perceptions and values for the rivers, lakes and streams in the Waikato region. The survey questionnaire was based on the findings from the document review and the qualitative assessment.

Firstly, respondents were asked questions about their awareness, usage and perception of water quality. All respondents were able to name at least one river or stream, with some people naming as many as 10. The Waikato River was the most frequently referred to, followed by the Waipa River. Geographic location and proximity was a factor in awareness. Respondents living in the Waikato catchment tended to centre on the Waikato River, while residents in other catchments recalled a greater range of rivers, lakes and streams.

Over two-thirds of the people surveyed indicated that they used the region's rivers, lakes and streams in some way. As with awareness of rivers, the Waikato River dominated the results in terms of usage. Of those who used rivers, lakes and streams walking was the most popular activity undertaken. Fishing, boating and swimming were also popular. Around one-third of river users considered the water quality to be good, while a slightly smaller proportion considered the water quality to be poor. The balance of opinion was mostly in the neutral category. Similar proportions of non-users chose categories of good or neutral for water quality in the region. Non-users were less inclined than river users to think that water quality was poor and more likely to say they didn't know. Cleanliness was the single most important thing for more than half the users of the Waikato, Waipa and Waihou Rivers. The importance of recreation was mentioned by some river users.

Next respondents were asked about the attributes of water bodies in the Waikato Region. In an unprompted question nearly a quarter of respondents considered that for them, access for all people was the most valued attribute. Recreation and cleanliness were the next most frequently mentioned valued attribute, followed by vegetation and scenery. Despite diverse opinion regarding the importance of different types of food, there was a high level of agreement regarding the safety of eating food from rivers, lakes and streams. Access to good recreational facilities, easy access to the water and scenic areas to enjoy were similarly rated highly. The suitability of the water for direct use (e.g. swimming, wading) drew a strong response. The strongest response was for the absence of raw human sewage. No rubbish, debris or odours was also assessed as important by most respondents.

Finally, respondents were read a series of statements which reflected a variety of values and beliefs about the region's rivers and streams. There was a high level of agreement from respondents that the region's rivers contribute to a sense of community, they provide a sense of identity, they provide learning opportunities and that responsibility should be shared for looking after them. Support was especially high for the statement that it is important to look after the region's rivers and streams for future generations. The level of agreement was relative strong for rivers and streams sustaining the wellbeing of communities, which contrasted with the responses to statements on the role of rivers and streams in sustaining physical, mental and spiritual wellbeing, which were rated lower. The exception to this were Māori respondents, who were more likely than other ethnicities to rate those statements higher.

There was general support from respondents that rivers and streams are an important contributor to tourism, the monetary economy and the regional economy. However, statements that rivers and streams should be protected from industrial and agricultural pollution were also highly agreed with. Overall there was a high level of agreement around the importance of visual appeal of rivers and streams, the provision of access, the role of rivers and streams as natural places to visit, rivers and streams providing places for community socialising, recreation and exercise.

5 Additional research: Recreational and cultural use internet survey

Another strand of research is a recreational and cultural use internet survey, which seeks to quantify (in monetary terms) the recreational and cultural values held for freshwater by Waikato residents (Phillips, forthcoming). This research focuses on the Waikato region and is not designed to be representative of the general population.

Rivers, lakes and streams provide a range of benefits to people that are not bought or sold and so are difficult to quantify in monetary terms. Economists call these non-market values and they can be further broken down into active use, passive use and non-use values. Active use includes recreational and cultural use values. Scenic or aesthetic value is a passive use. Non-use includes existence values (value from knowledge of continuous existence); option values (value of future use); and bequest values (the value of maintaining environmental integrity for future generations).

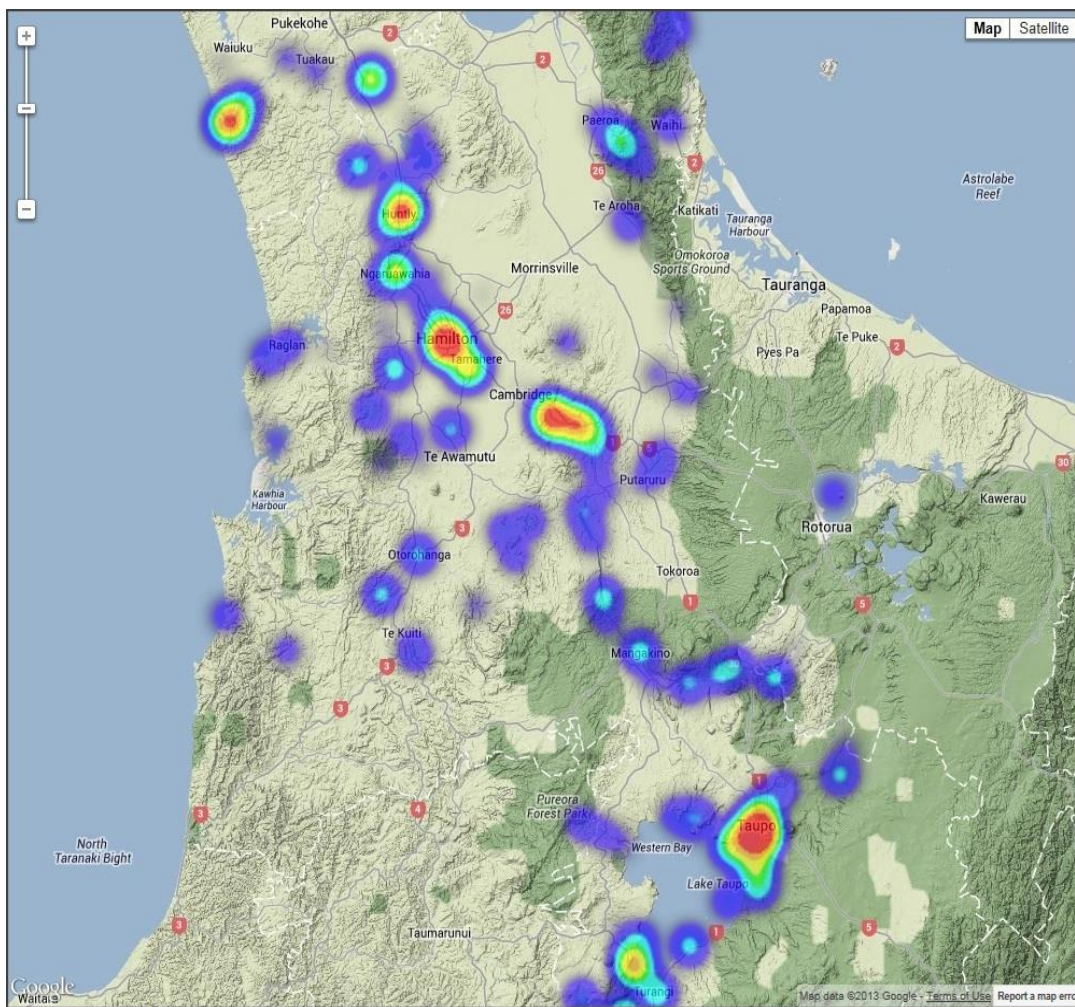
The choices that people make about which rivers, lakes and streams to visit, how often and what they do there, can reveal useful information about the demand for different types of sites and contribute to the understanding of the economic value of the attributes of a site. This type of research is known as a “revealed preference” analysis because people show what they like through the choices they make.

The recreational and cultural use internet survey is a non-market value study. Its purpose is to identify and determine the non-market values associated with fresh water in the Waikato region. The estimated cost of visiting a site includes the cost of travel, the opportunity cost of time (what they could be doing instead of visiting the site) and any other expenses associated with the trip. The internet-based recreational and cultural use survey used an innovative interactive mapping tool to collect spatially-referenced data about recreational and cultural uses of freshwater in the Waikato region, including sites visited, types of activities undertaken (e.g. swimming, boating), positive and negative features associated with each site and substitutes for the sites (e.g. where the person might go if this site wasn't available). The sample comprised almost 2000 people, of whom 1500 had engaged in freshwater recreational or cultural activities in the Waikato region in the past 12 months. Figure 28 shows the location of sites visited by survey respondents.¹⁷

The data will be used in combination with choice experiment data to estimate the economic impact of changes to water quality on recreational and cultural use values in the Waikato River Catchment (Phillips, forthcoming). This means estimating the effect on welfare of a change in quality from current levels. Using distance travelled as a proxy for use value we are able to identify hotspot areas for recreational and cultural uses. This research is in progress at the time of writing (December 2013), although some high level and preliminary results are available, such as changes in welfare associated with loss of water clarity, for example, a one metre increase in water clarity is associated with an increase in welfare ranging from \$3.80 to \$143 per user per year at different sites (Phillips, forthcoming). The results of this research will be published in 2014.

¹⁷ With colours moving from blue to aqua to yellow to red with increasing number of site visits and distances travelled.

Figure 28: Intensity map of recreational and cultural uses based on distance travelled and number of trips



6 Summary

As part of the phased approach to this research into community values held of rivers, lakes and streams, the document review and the qualitative and quantitative assessments have revealed a wealth of information. Overall, respondents hold strong values for the water bodies and water quality; these values have been found to be generally consistent over time. Further research, to be completed in 2014, will provide quantitative values that will add to the council's understanding of how, why and what the regional community values with respect to water quality in the Waikato region's rivers, lakes and streams.

6.1 Environmental values

Water quality is important to people of the Waikato region. Good water quality underpins the range of values that people hold towards the water bodies in the region. It enhances enjoyment of recreational values, it ensures that food gathered from the river is safe, it contributes to the regional economy, it enhances New Zealand's image by supporting the 'clean, green' brand and it ensures that the river will be enjoyed by future generations (Levy et al., 1996; Stewart et al., 2000; Versus Research Ltd, 2013a).

From an environmental/ecological perspective, research shows that the region's water bodies are viewed as an essential part of the natural environment and as an environment that was clean and unpolluted, to sustain native fish and wildlife in and around the water bodies (Key Research Ltd, 2012).

Cleanliness was assessed as the single most important aspect of rivers in the region by people surveyed in 2012 (Versus Research Ltd, 2013a). Over the years when people have been asked to name the most important environmental issue for them, water pollution/quality has consistently been identified (Research Solutions, 1998; Key Research Ltd and Eclectic Energy, 2001; Gravitas Research and Strategy Ltd, 2004 and 2006, Versus Research Ltd, 2013b).

People look to indicators, including the clarity of the water, freedom from pests and weeds, the absence of rubbish, debris and odours and the absence of raw human sewage to inform their water quality assessments (Research Solutions, 1998; Key Research and Eclectic Energy Ltd, 2001; Gravitas Research and Strategy Ltd, 2004 and 2006; Versus Research Ltd, 2013a, 2013b). In general terms, people judge water quality by how it looks, feels and tastes.

Water clarity is important for recreational use and has more influence on recreation demand than other, less visible indicators such as E. coli levels. Increased water clarity is associated with increased welfare.

6.2 Community and individual values

The rivers, lakes and streams of the Waikato region are widely used by the community. In a 2012 survey, around two-thirds of respondents indicated that they used rivers, lakes and streams in some way (Versus Research Ltd, 2013a). Geographic proximity, local facilities and the type of river influenced activities. Access and safety were important to river users (Versus Research Ltd, 2013a).

Rivers, lakes and streams provide for social, cultural and recreational needs of the community. They are seen as a place to spend time with family and friends, a place to gather food, a place to enjoy the natural environment and a place to play.

Regardless of whether respondents used rivers, lakes and streams, all survey respondents expressed values. Existence values – the value we put on knowing something is there, even though we may not use it (and may not intend to), are high. Similarly bequest values – the values we put on what we leave to our children and grandchildren, are important for people. For example (Versus Research Ltd, 2013a):

- Two-thirds of survey respondents reported fishing in rivers, lakes and streams, but 86 per cent of respondents considered it important that food from the river was safe to eat.
- One-third of survey respondents did not use rivers, lakes and streams in the region, but there was almost universal agreement about the need to look after rivers and streams for future generations.
- Sixteen per cent of survey respondents reported swimming, paddling or wading, but 91 per cent of respondents considered it was important that water quality was safe for swimming and paddling.

Results of the 2012 survey revealed high values for naturalness of the region's water bodies. Valued attributes included rivers running through natural vegetation, the provision of habitat for native animals and the retention of some undeveloped stretches of river (Versus Research Ltd, 2013a).

Respondents tended to regard the water bodies with a general sense of community. Rivers, lakes and streams are seen as sustaining community wellbeing, as being the shared responsibility of the community and as providing opportunities for learning about the natural environment (Versus Research Ltd, 2013a). Other research noted individual, community and organisational responsibility where it was necessary that everyone worked together and played their part in taking care of the water bodies (Key Research Ltd, 2012). Focus group participants stated that water bodies played an important part in family life and brought up nostalgic feelings and memories (Key Research Limited, 2012).

6.3 Iwi and Māori values

The importance of the water bodies to iwi and Māori featured strongly in all the research. Key value themes for each of the river iwi were mahinga kai, significant sites, taonga species, recreation and wai (NIWA, 2010). The unique inter-relationship of these values for each iwi was connected to the cultural and spiritual relationship of iwi with the water bodies, as outlined in submissions to the Proposed Waikato RPS (Waikato Regional Council, 2012). In a 2012 survey, 82 per cent of Māori respondents considered that the protection of iwi values was important or very important (Versus Research Ltd, 2013a).

Within the Versus Research report (2013a) Māori respondents had consistently strong responses regarding the river across almost all areas. Māori reported higher usage of rivers, lakes and streams than people of other ethnicities. Māori were more likely to go swimming paddling and fishing. A higher proportion of Māori agreed or strongly agreed that the rivers, lakes and streams should provide places to enjoy recreational activities and to exercise and that rivers and streams support an active lifestyle.

The rivers and streams were also more likely to be viewed as a source of food by Māori respondents in terms of gathering freshwater shellfish and watercress. It was noted in submissions to the Proposed Waikato RPS (2010) that for iwi, the quality of the water was identified as impacting on freshwater species such as tuna, kōura, kōkopu, morihana and other native species (Waikato Regional Council, 2012). Survey results suggested that for Māori, the ability to gather freshwater foods such as mussels, watercress and fish is important, while being able to safely eat what is taken out of the water generally is important to everyone (Versus Research Ltd, 2013a).

With regard to perceptions of the water bodies as promoting community pride and a sense of identity, Māori respondents were more likely to agree with these statements. Additionally with all the wellbeing statements (community, physical, mental and spiritual) Māori were more likely to agree and strongly agree, as they were for the role of the river in sustaining Māori cultural practices and knowledge (Versus Research Ltd, 2013a).

Iwi and Māori world views of the water bodies were highlighted in terms of cultural and spiritual significance. Examples were provided in submissions to the Proposed Waikato RPS (2010), such as that the water bodies were perceived as a 'whole living entity', 'the essence from which all life is derived' and where 'the mauri of rivers, lakes, streams, springs and

wetlands in an iwi's rohe' were described as 'integral to the wellbeing of tangata whenua' (Waikato Regional Council, 2012). The health and wellbeing of the water bodies and the continuous supply of fresh water, were therefore regarded as fundamental to the sustainable cultural, environmental, social and economic development of both iwi and the region as a whole (Waikato Regional Council, 2012).

6.4 Economic values

Survey respondents appreciate that rivers and streams are important to the monetary economy of the Waikato region, particularly tourism and agriculture. From an economic perspective a clean, green image was viewed as important for the tourism industry in attracting overseas visitors and for the agricultural sector for overseas export markets (Rutherford & Williamson, 2010; Versus Research Ltd, 2013a).

While recognising the role of the river in the economy, survey respondents were clear that the quality of the water should not be compromised by the economic activities it provides for (Versus Research Ltd, 2013a). This view contrasted studies where just over half the people surveyed expressed unwillingness to trade off a loss in the agricultural sector for some improvements in water quality (Gravitas Research and Strategy Ltd, 2006; Versus Research Ltd, 2013b). In submissions to the Proposed Waikato RPS (2010) support was shown with balancing economic development with environmental protection (Waikato Regional Council, 2012).

The most commonly expressed value in submissions to the Proposed Waikato RPS (2010) in relation to the region's water bodies, was their value to the monetary economy. A clear theme expressed was how the Waikato River, as well as other rivers in the region, provides economic opportunities and contributes to the economic and social development of the region. Many submitters conveyed concern about some provisions in the policy which might affect existing land uses by protecting water bodies too stringently. Within the economic theme a common concern expressed in submissions was that the link between economic impacts as a result of tightening of environmental policy settings resulted in social consequences for communities (Waikato Regional Council, 2012).

However, economic values are not restricted to the monetary economy (or market values). The recreational and cultural use internet survey (currently underway) is designed to elicit non-market values, such as those held for water clarity and quality, will provide a means of understanding and quantifying (in monetary terms) the value people Waikato residents place on changes in water quality.

7 Conclusions

People of the Waikato region value its rivers, streams and lakes. Recreational activities are a visible aspect of appreciation, but the activities undertaken, the attributes appreciated and the values held are multiple, widespread and consistent over time.

Based on the results of past research on water values, good water quality is important to people of the Waikato region. It underpins the value of the water bodies to the regional community. It enhances enjoyment of recreational values, ensures that food gathered from the river is safe, contributes to the regional economy, enhances New Zealand's image by supporting the 'clean, green' brand and it ensures that the river will be enjoyed by future generations (Levy et al., 1996; Stewart et al., 2000; Versus Research Ltd, 2013a).

Many people surveyed, whether or not they actively use the region's rivers, lakes and streams, hold common values with regard to the rivers, lakes and streams of the region. These common values include (Versus Research Ltd, 2013a):

- The role rivers, stream and lakes have in providing for the social, cultural, economic and environmental needs of communities
- The importance of maintaining naturalness of the environment
- The recognition of the economic importance of rivers, lakes and streams, but the need to find a balance between the impacts of economic activities (such as pollution from industry and agriculture) and the uses and values of the wider community
- The role of rivers, lakes and streams as a community good, with shared community responsibility in caring for them
- The importance of looking after rivers and streams for future generations
- That water quality in the rivers and streams is safe for swimming
- That food gathered from rivers and streams is safe to eat

This report has brought together results from a range of research on community held values for rivers, lakes and streams in the Waikato and Waipa River catchments. Summarising existing research has enabled the council to assess the breadth and depth of existing information held on community values and to identify gaps.

Additional primary research was viewed as necessary to address these gaps and has enabled the council to hear more from a wider range of respondents about what they value about water bodies in the Waikato and Waipa River catchments and where those values apply. The additional research has also ensured that information is up to date and has revealed that values held are reasonably consistent over time. This document should also be read in conjunction with the results of the recreational and cultural use web survey, which seeks to quantify the values people hold for water quality in the region's rivers, lakes and streams, based on the choices they make for recreational and cultural use.

The information provided in this document provides important background information that can be drawn on when developing policy recommendations, such as objectives, limits and targets for the Waikato and Waipa river catchments, in the context of the Regional Plan review.

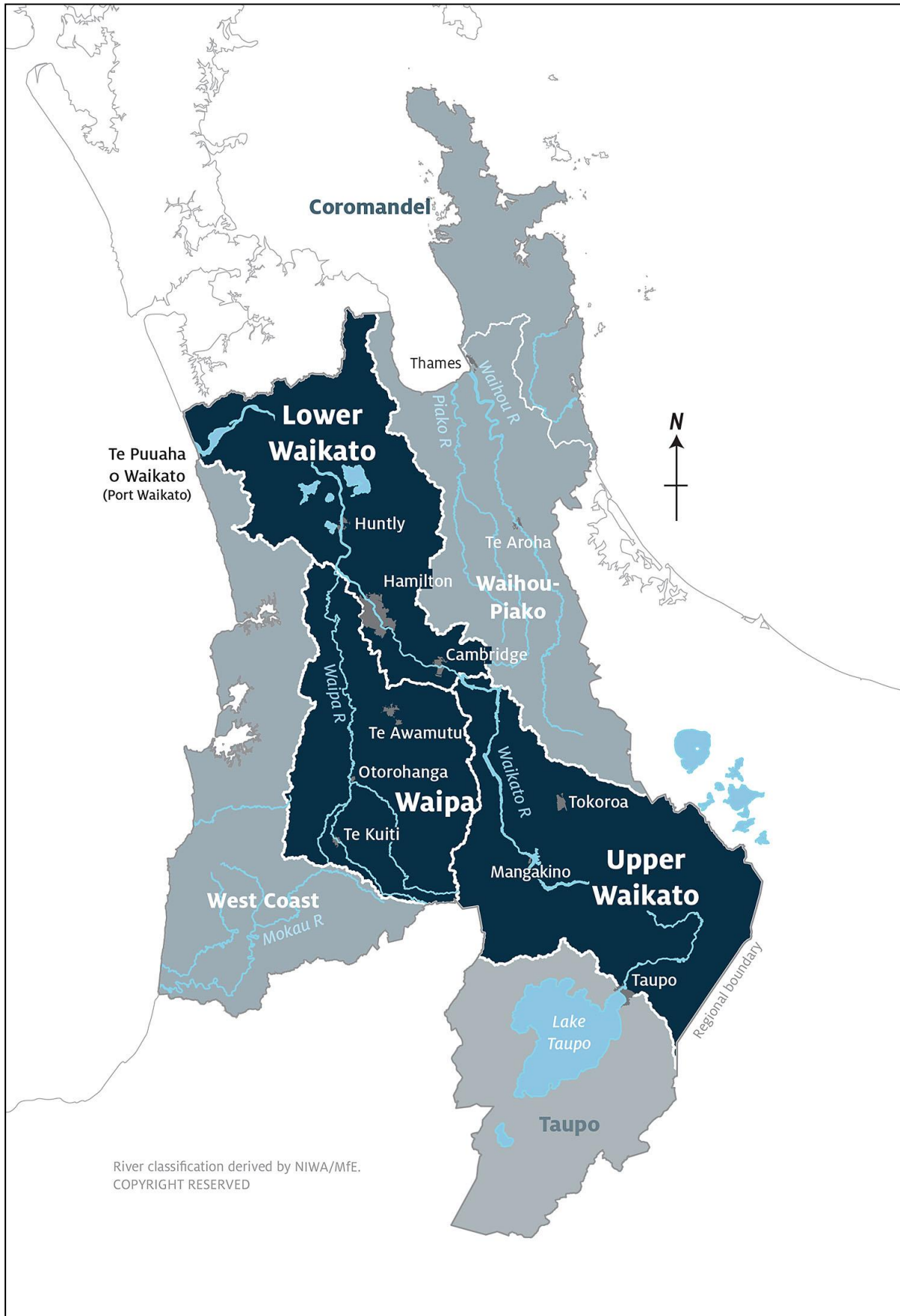
8 References

- Environmental Risk Management Authority 2004. Incorporating Māori perspectives in Part V decision making. ERMA Policy Series: Protocol 1. November 2004 – ER-PR-01-02 11/04. Wellington, Environmental Risk Management Authority.
- Gravitas Research and Strategy Ltd 2004. Environmental awareness, attitudes and actions: A survey of the people of the Waikato Region 2003. Environment Waikato Technical Report 2004/01. Hamilton, Waikato Regional Council (Environment Waikato).
- Gravitas Research and Strategy Ltd 2006. Environmental awareness, attitudes and actions: A survey of the people of the Waikato Region 2006. Environment Waikato Technical Report 2007/06. Hamilton, Waikato Regional Council (Environment Waikato).
- Key Research and Marketing Ltd, Eclectic Energy 2001. Environmental awareness, attitudes and actions: A survey of the people of the Waikato Region 2000. Environment Waikato Technical Report 2001/02. Hamilton, Waikato Regional Council (Environment Waikato).
- Key Research Ltd 2012. Waikato Regional Council qualitative assessment of water quality values. Internal Series Report 2012/18. Hamilton, Waikato Regional Council.
- Levy M, Hickling L, Neill B 1996. Recreational uses of the Waikato River corridor (Summer 1995/96). Hamilton, University of Waikato and Waikato Regional Council (Environment Waikato).
- Marsh D, Baskaran R 2009. Valuation of water quality improvements in the Karapiro catchment: A choice modelling approach using a Bayesian C-efficient design. 17th Annual Conference of the European Association of Environmental and Resource Economics. Amsterdam, Netherlands.
- Ministry for the Environment 2010. Māori values supplement: A supplement for the making good decisions workbook. Wellington, Ministry for the Environment.
- Ministry for the Environment 2011a. National Policy Statement for Freshwater Management 2011. Wellington, Ministry for the Environment.
- Ministry for the Environment 2011b. National Policy Statement for Freshwater Management 2011: Implementation Guide. Wellington, Ministry for the Environment.
- Ministry for the Environment 2013. Proposed amendments for the National Policy Statement for Freshwater Management 2011: A discussion document. Wellington, Ministry for the Environment.
- Nga Wai o Maniapoto (Waipa River) Act 2012. (No 29). Schedule 1.
- Ngati Tūwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010. (No 119). Schedule 1.
- NIWA 2010. Waikato River independent scoping study. NIWA Client Report: HAM2010-032. Hamilton, NIWA.
- Oxford English Dictionary Online 2013. Oxford, Oxford University Press. <http://www.oxforddictionaries.com/> [accessed 11 December 2013].
- Phillips Y 2014 in press. Non-market values for fresh water in the Waikato and Waipa catchments: a combined revealed and stated preference approach. Waikato Regional Council Technical Report 2014/17. Hamilton, Waikato Regional Council.

- Research Solutions 1998. Environmental awareness, attitudes and actions survey: A survey of the people of the Waikato Region 1998. Environment Waikato Technical Report 1998/16. Hamilton, Waikato Regional Council (Environment Waikato).
- Resource Management Act 1991. (No 69).
- Rutherford K, Williamson B 2010. The Waikato River: Current condition and a framework for restoration. Hamilton, NIWA.
- Sanders T 2001. 2020 Taupo-nui-a-Tia: Summary of community values. Taupo, Taupo District Council.
- Simmons D, Devlin P, Schellhorn M 2000. Lake Taupo/Waikato River recreation assessment. Canterbury, Tourism Recreation Research and Education Centre, Human Sciences Division, Lincoln University.
- Sinner J and Berkett N 2013. Collaborative freshwater management: The challenge of a new paradigm. Nelson, Cawthron Institute.
- Stewart C, Johnston D, Rosen M, Boyce W 2000. Public involvement in environmental management of Lake Taupo: Preliminary results of the 1999 survey. Lower Hutt, Institute of Geological & Nuclear Sciences Limited.
- Versus Research Ltd 2013a. Community held values of Waikato rivers, lakes and streams in the Waikato and Waipa catchments: survey report 2012. Waikato Regional Council Internal Series 2013/22. Hamilton, Waikato Regional Council.
- Versus Research Ltd 2013b. Environmental awareness, attitudes and actions and new ecological paradigm combined survey: A survey of residents of the Waikato Region. Waikato Regional Council Technical Report 2013/41. Hamilton, Waikato Regional Council.
- Waikato Regional Council 2000. Operative Waikato Regional Policy Statement (October 2000). Environment Waikato Policy Series 2000/30. Hamilton, Waikato Regional Council (Environment Waikato).
- Waikato Regional Council 2010. Proposed Waikato Regional Policy Statement (November 2010). Environment Waikato Policy Series 2010/13. Hamilton, Waikato Regional Council (Environment Waikato).
- Waikato Regional Council 2012. Values towards water quality in the Waikato and Waipa Rivers. Unpublished report. Docs [2174490](#).
- Waikato Regional Council 2013. Statutory/planning context for Plan Change 1 – Healthy Rivers. Unpublished report. Docs [2372369](#).
- Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010. (No 24). Schedule 2.

9 Appendices

9.1 Appendix 1: Map of the Waikato and Waipa River catchments



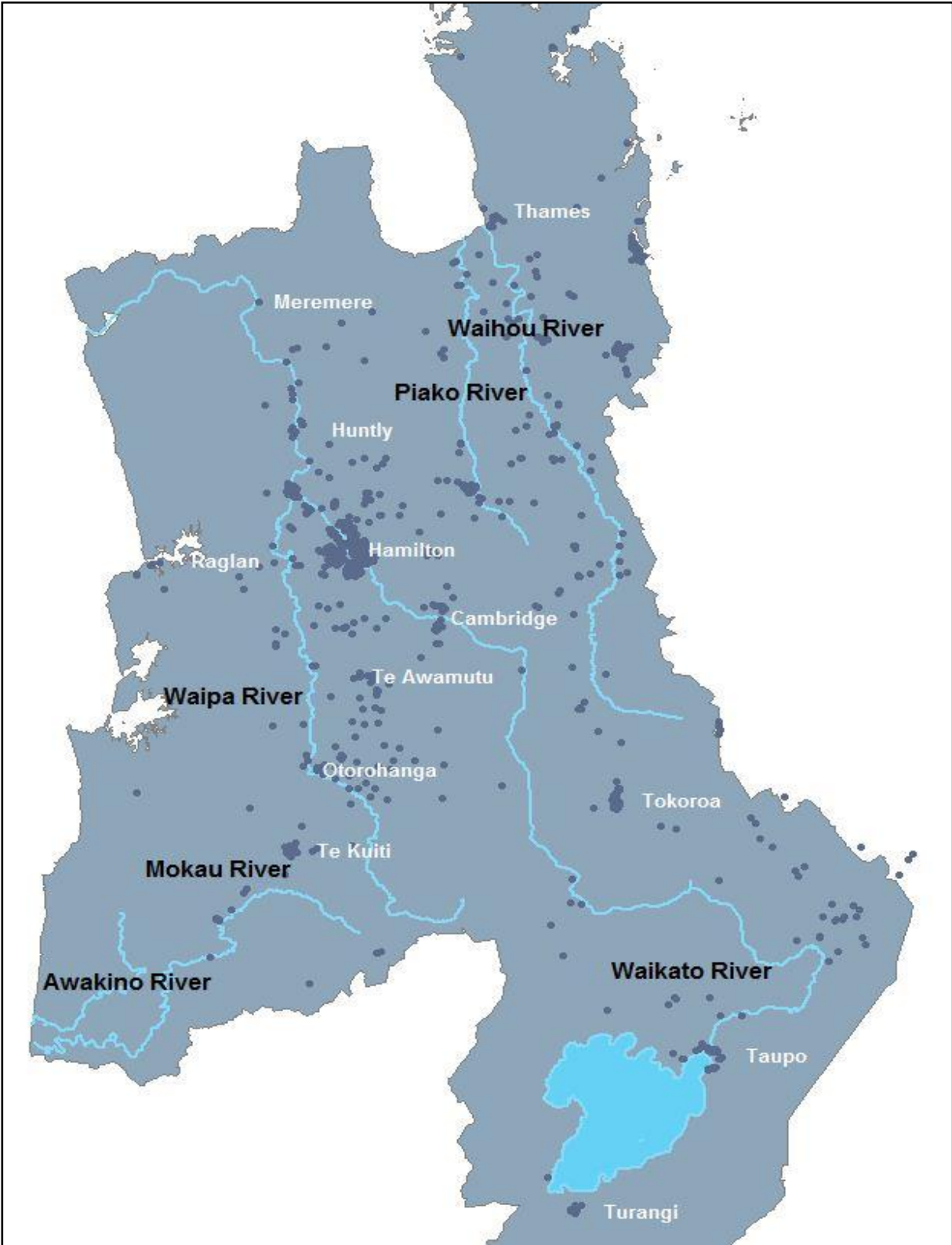
9.2 Appendix 2: List of provisions from the Proposed Waikato Regional Policy Statement (2010) and reviewed submissions

- Issue 1.1 State of Resources
- Issue 1.5 Relationship of tangata whenua with the environment (te taiao)
- Issue 1.6 Health and Wellbeing of the Waikato River
- Objective 3.3 Health and Wellbeing of the Waikato River
- Objective 3.13 Mauri and health of fresh water bodies
- Objective 3.14 Allocation and use of freshwater
- Objective 3.15 Riparian areas and wetlands
- Objective 3.22 Public access
- Policy 8.1 Approach to managing water bodies
- Policy 8.2 High value water bodies
- Policy 8.4 Catchment-based interventions
- Policy 8.5 Waikato River catchment
- Policy 8.6 Allocating fresh water
- Policy 8.7 Efficient allocation and use of water
- Section 8A High value water bodies

9.3 Appendix 3: Map showing location of survey respondents

The location of respondents is represented by the dark blue dots.

Figure 29: Location of respondents for 2012 quantitative survey



9.4 Appendix 4: Achieved sample for quantitative survey

Table 4: Achieved sample across the region

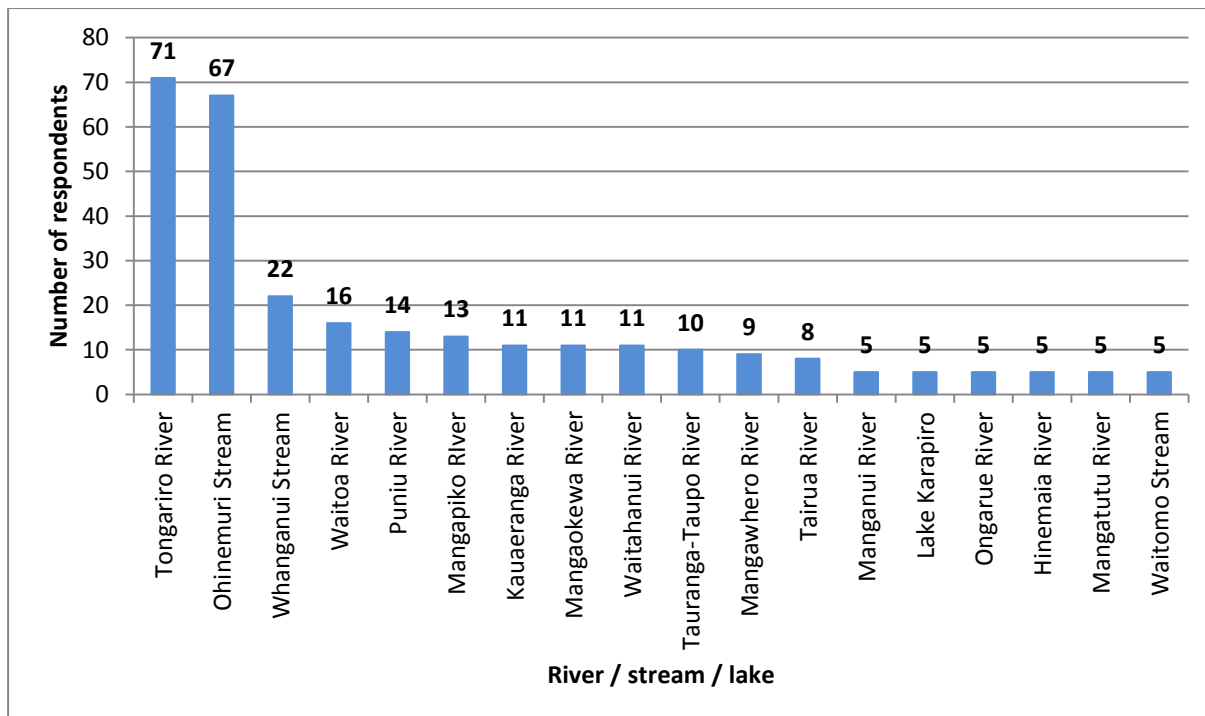
	Required sample	Required proportion	Achieved sample	Achieved proportion	Weight factor where applicable
TOTAL SAMPLE	1000	100 per cent	1002	100 per cent	
Waikato catchment	563	56 per cent	582	58 per cent	
Waipa catchment	162	16 per cent	172	17 per cent	
Other catchments	275	28 per cent	248	25 per cent	
Male 18 yrs or over	480	48 per cent	458	46 per cent	1.0480349
Female 18 yrs or over	520	52 per cent	545	54 per cent	0.9541284
18-34 yrs	300	30 per cent	118	12 per cent	2.5423728
35-54 yrs	380	38 per cent	408	41 per cent	0.9313725
55+ years	320	32 per cent	476	47 per cent	0.6755689
Hamilton City	320	32 per cent	323	32 per cent	
Hauraki District	60	6 per cent	61	6 per cent	
Matamata-Piako District	70	7 per cent	75	8 per cent	
Otorohanga District	50	5 per cent	52	5 per cent	
Rotorua District	40	4 per cent	40	4 per cent	
South Waikato District	50	5 per cent	53	5 per cent	
Taupo District	80	8 per cent	72	7 per cent	
Thames Coromandel District	60	6 per cent	61	6 per cent	
Waikato District	140	14 per cent	137	14 per cent	
Waipa District	90	9 per cent	90	9 per cent	
Waitomo District	40	4 per cent	39	4 per cent	

Source: Versus Research Limited (2013a)

9.5 Appendix 5: Awareness and use of other water bodies in the Waikato region

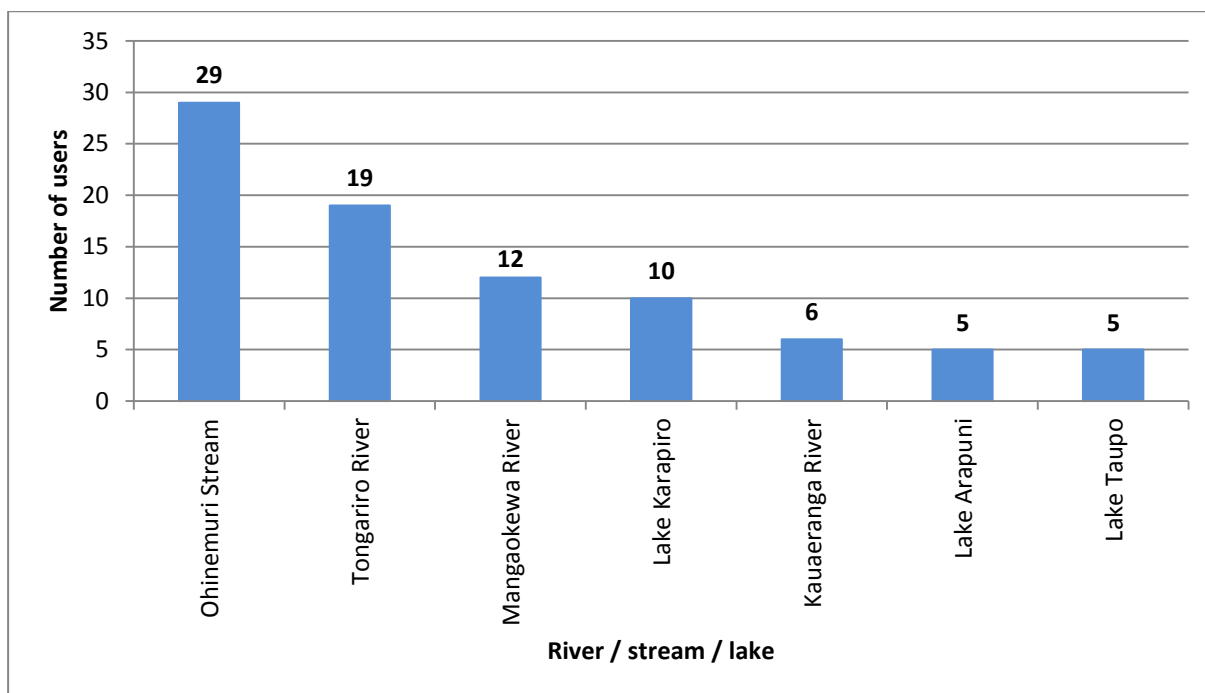
Respondents indicated awareness of around 70 rivers, streams and lakes in the Waikato region. The table below shows some of these. Excluded are 45 other rivers, lakes and streams which were mentioned by less than five respondents.

Figure 30: Awareness of other rivers, lakes and streams in the Waikato region



Respondents indicated use of around 60 rivers, streams and lakes in the Waikato region. The table below shows some of these. Excluded are 49 other rivers, lakes and streams which were mentioned by less than five respondents.

Figure 31: Use of other rivers, lakes and streams in the Waikato region



9.6 Appendix 6: Activity groupings

Activities are based on the survey results in the Versus Research (2013a) report. In this summary the activities have been grouped as follows:

Table 5: Activity groupings

Activity	Includes (from survey document)
Boating	Boating; powerboating; jetskiing; water skiing
Ceremonial	Ceremonial use e.g. baptism
Customary	Customary activities e.g. washing hands after visiting cemetery, waka taua, waka racing, visit before travelling overseas, healing
Cycling	Cycling; rail trail
Feeding ducks	Feeding the ducks
Fishing	Fishing; eeling; whitebait
Hiking	Hiking, tramping camping
Hunting	Hunting, duckshooting
Other	Crossing bridges; work related; golf; planting/gardening; cleaning it up; fixing the pier; it's the boundary line; collecting shingle; finding golf balls; run-off from farm/waste water; photography; painting
Paddling (boat)	Waka ama; dragonboating; kayaking; canoeing
Picnics	Picnicking
Rafting/regattas	Rafting; lilo; tyre tubes; biscuiting; regattas
Relaxing	Relaxing, sitting
Rowing	Rowing
Running	Running; triathlons
Shellfish, watercress	Collecting fresh water shellfish, watercress; kai
Sightseeing	Sightseeing
Swimming	Swimming, paddling, jumping in water
Use of water (drinking, farm)	Use of water in home or on farm
Walking	Walking, walking the dog