

RESEARCH ARTICLE

River restoration as a sociocultural process: A case study from the Waimatā Catchment, Aotearoa New Zealand

Danielle Cairns | Gretel Boswijk  | Gary Brierley 

School of Environment Te Kura Mātai
Taiao, Waipapa Taumata Rau, The
University of Auckland, Auckland,
New Zealand

Correspondence

Gary Brierley, School of Environment Te
Kura Mātai Taiao, Waipapa Taumata Rau,
The University of Auckland, Private Bag
92019, Auckland 1142, New Zealand.
Email: g.brierley@auckland.ac.nz

Abstract

Surveys of sociocultural relations to rivers provide critical baseline information to appraise the effectiveness of restoration programmes. Findings from a mixed-methods case study (document analysis, catchment-wide questionnaire, semi-structured interviews) show how local relations to the Waimatā River vary in upper, middle and lower catchment areas, in part influenced by historical (family) connections. Personal interactions with the river, and implications for mental and physical well-being, decline with the perceived condition of the river. While respondents indicate the negative influence of governance arrangements upon river condition, they also highlight positive prospects that blue spaces can shape the co-design and implementation of restoration activities.

KEYWORDS

blue spaces, monitoring, place, river health, well-being

1 | INTRODUCTION

River restoration and its success are commonly guided by and measured through ecological, biogeochemical, geomorphological and engineering indicators (Eden & Tunstall, 2006). However, restoration extends beyond scientific and technical considerations, as sociocultural, economic and political processes formulate goals and objectives in efforts to meet community and institutional aspirations (de Bell et al., 2020; Guimarães et al., 2021; Johnson et al., 2018; Usher, 2023). Typically, emphasis upon human needs and aesthetic values include concerns for livability, safety and control (Dufour & Piégay, 2009; Eden & Tunstall, 2006; Junker & Buchecker, 2008).

Without knowledge of the relationship between people and rivers and the factors that influence public support for restoration, management efforts are unlikely to generate and

maintain sociocultural involvement, ultimately compromising prospects for success (Eden et al., 2000; Murphy, Russell, Stillwell, et al., 2022). Surveys of sociocultural relations to rivers, including uses, attitudes, values and aspirations provide critical data for evaluating engagement with the river (Mould, Fryirs, & Howitt, 2020; Murphy, Russell, Mould, et al., 2022; Petts, 2007). Without baseline data on such relations, it will not be possible to measure the effectiveness of restoration interventions in the future. On the one hand, restoration efforts need to take stock of relationships between people and rivers, yet on the other hand these relations provide an important indicator of the effectiveness of restoration practices. Beyond this, it can be contended that what needs to be restored is the relationship between people and rivers (i.e., the object of restoration is itself sociocultural-ecological).

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Perspectives of what constitutes a healthy river influence restoration practices and outcomes (Blue, 2018; Cross & Chappell, 2022; Tadaki et al., 2017). In Aotearoa New Zealand, traditional river management strategies are increasingly challenged as Māori ontologies and the role of mana whenua (indigenous people with rights over the land) as kaitiaki (guardians) become formally recognised and adopted into practice (Hikuroa et al., 2021; Te Aho, 2019). In Te Ao Māori (Māori worldview), water is the source of ora (well-being), and the water cycle is central to the constantly changing relationship between people and the land (Salmond et al., 2019). For Māori, river (awa) health is intrinsically connected to the mental, physical and spiritual well-being or ora of people (Hikuroa et al., 2021). Degradation of culturally significant waterways and the exclusion of Māori from their management isolates people and weakens ancestral connections (Harmsworth & Awatere, 2013).

Participating in restoration through community-based restoration projects can trigger positive feedback loops that enhance rivers ecologically and socially, contributing to shared values and greater interactions with the river (Anderson et al., 2019; Johnson et al., 2018; Usher, 2023), thereby exerting a positive influence upon mental health and well-being (Foley et al., 2019; McDougall et al., 2020). Here, we use a combination of document analysis, questionnaires and interviews to document sociocultural relations to the Waimatā River on the East Cape of the North Island of Aotearoa New Zealand.

2 | REGIONAL SETTING

The Waimatā River flows 20 km from the steep hill country in the North of Tairāwhiti into Gisborne City. Beyond its confluence with the Taruheru River, the 1.2 km section of the river that flows past the port into Poverty Bay is called the Tūrangānuī River (Figure 1). Recurrent tectonic disturbance, storm events and weak lithology create high sediment yields across the region (Fuller et al., 2023). Rapid sediment transfer from source to sink—from the mountains to the sea—is facilitated by the flume-like nature of the terrace-constrained river (Harvey et al., 2021).

While flat lands adjacent to the river mouth provided significant resources for gardening and provision of mahinga kai for Māori, steep topography and dense vegetation cover limited opportunities for crop cultivation and permanent settlement across much of the mid-upper catchment (Salmond et al., 2022). However, the river provided an important transport route, and Rongowhakaata (local iwi) histories report that the river provided an escape route upstream to Motukeo

(sacred mountain for Rongowhakaata) at times of conflict (Salmond et al., 2019). For Rongowhakaata, the Waimatā is an entity to be valued and respected, a taonga which is inseparable from themselves and their ancestors. The river provided a playground for children, and offered a self-sustaining source of water, fish, tuna (eel), inanga (whitebait), birds, shellfish, fruit and rongoā Māori (traditional medicine).

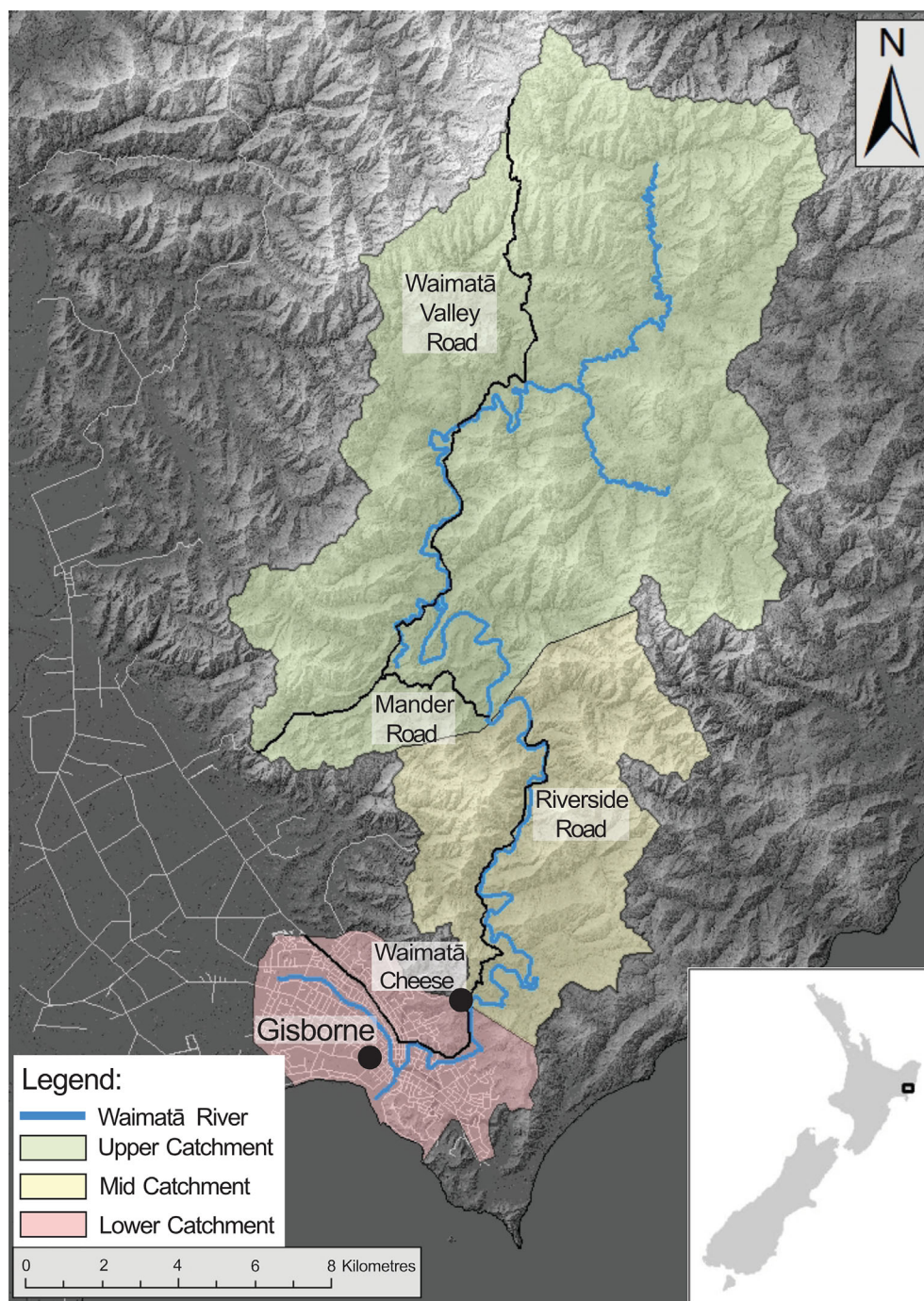
Table 1 presents a summary of significant events in the history of the Waimatā River. The river mouth was the landing place of Captain Cook in 1769, marking the first meeting place of Māori and Pākehā. Upon European settlement, accessibility, fertile soil and a good water supply prompted the sale of land blocks in the lower catchment (Salmond et al., 2022). Today, the middle-upper catchment comprises pine plantation forests and intensive sheep and beef farming country, with smaller blocks in the lower-middle reaches transitioning downstream to urban settlement and the port in Gisborne. The river currently experiences high sedimentation rates, elevated nutrient and *Escherichia coli* concentrations and low biodiversity. Recent flood events with highly turbid, sediment-charged flows have deposited significant volumes of forestry slash along the river course and coastline, impacting on adjacent properties and regional infrastructure, including roads and bridges. Additionally, overflow releases from wastewater and sewage treatment plants in urban areas result in water quality that is notably worse in the lower catchment than its upper reaches (GDC, 2020).

Land use history and management of the Waimatā River have disrupted iwi relations to the river, impacting upon their role as kaitiaki (Salmond et al., 2022). Kai is no longer collected from the river due to water quality. While stories continue to be passed on to children, opportunities to interact with the river as prior generations did have diminished. However, the river continues to remain a focal point for the community, especially for swimming, fishing, waka ama paddling and rowing. In an effort to mitigate historical and long-term damage and improve river condition, the Waimatā Catchment Restoration Project (WCRP) was established in 2020. This project works with landowners, farmers and the wider community to address concerns for water quality (pollutants) through riparian planting and pest management programmes and various education and citizen science initiatives.

3 | METHODS

This study uses a mixed-methods approach that combines quantitative (questionnaires) and qualitative methods

FIGURE 1 Gisborne lies at the mouth of Waimatā Catchment on the East Cape of Aotearoa New Zealand. Image prepared by Elliot Stevens. Catchment areas referred to in this study reflect differing access along Waimatā Valley Road (Upper catchment) relative to Riverside Road (Mid and Lower Catchment).



(semi-structured interviews) to assess sociocultural relations to the Waimatā River (Almeida, 2018; Johnson & Onwuegbuzie, 2004; See Cairns, 2021). Based on geographical boundaries and patterns of population density and land use, the catchment was divided into upper, mid and lower catchment zones, with other respondents being classed as ‘outside the catchment’ (Figure 1).

The questionnaire comprised five main themes: demographics, river interaction, river health, values and emotional connection and river restoration and aspirations (Table 2). The questions reflect a pressure-state-

impacts-response framework (Booth et al., 2022). Questions were predominantly closed and limited in number to facilitate better response and engagement. They comprised a mixture of tick box, Likert scale and open questions (Table 2). The questionnaires were sent to group leaders via email to distribute to their wider groups, targeting individuals that interact with the river (e.g., rowing, waka ama, kayaking clubs, iwi groups), the WCRP mailing list, as well as being advertised in the local newspaper (physical publishing, website and social media) and dropped in letter-boxes within the catchment. This allowed for responses

TABLE 1 Timeline of significant events in the history of the Waimatā River.

Arrival of Horouta and Takitimu waka from Polynesia and subsequent settling of Māori in Tairāwhiti	
1300s	
1769	Arrival of Captain James Cook and first greeting between pākehā and Māori at Tūranganui River mouth
1831	Establishment of trading station and subsequent arrival of other traders and missionaries
1868	Establishment of Gisborne town
1877	Destruction of Te Toka-ā-Taiau (sacred rock) in the Tūranganui River for port development
1880s	Large-scale clearance of native forest for agriculture
1960–1970s	Government-subsidised soil conservation initiative planting exotic pine plantations
1988	Widespread erosion and flooding induced by Cyclone Bola prompts further planting of pine forest for stability
1989	Gisborne District Council (GDC) created
1991	GDC given responsibility for monitoring and managing the region's rivers following introduction of the Resource Management Act (1991)
1990s	Sale of pine plantations to national and international companies and intensive logging operations begin in the area
2020	Creation of the Waimatā Catchment Restoration Project, aiming to improve river health while restoring local and cultural connections to the river

from both people that lived along the river and people who spent time on the river. Inevitably, issues of selection bias come to the surface in such work, as people who care about the river are more likely to complete the survey than people who do not.

Approximately 98% of the questionnaires were completed online and, when combined with 2% physical questionnaires, 102 responses were gathered from different demographic groups across the catchment (Table 3). The respondents were aged between 16 and over 65 years of age, with residence times varying from less than a year to more than 20 years. The majority of responses (92%) were from the lower and mid catchment areas. Only 6% of respondents resided within the upper catchment, in part reflecting the low population density of this area. A low number of respondents (2%) were from outside of the catchment. Quantitative data were grouped based on variables such as location within the catchment, length of residence, etc. Identification of common

TABLE 2 Structure of the questionnaire and questions asked.

Themes	Question
Demographics	Age group
	Gender
	Location within Waimatā Catchment
	Length of time residing near or interacting with the Waimatā River
Interactions/uses	How do you interact with the Waimatā River? (List—select all that apply)
	Which area(s) of the Waimatā River do you interact with? (List—select all that apply)
	Do you believe uses of the Waimatā River have changed over time? (Yes/No)
River state	How satisfied are you with the current state of the Waimatā River? (Likert scale)
	How healthy do you believe the river is? (Likert scale)
	What are your key concerns for the Waimatā River? (List—select all that apply)?
	Do you believe the health of the Waimatā River has changed over time? (Yes/No)
Values/connections	What do you value the Waimatā River for? (List—select all that apply)
	Has the way you value the Waimatā River changed over time? (Yes/No)
	Do you feel an emotional connection to the Waimatā River? If so, please describe it.
	Has this connection changed over time? (Yes/No)
Restoration/aspirations	Do you feel there is a relationship between the health of the river and societal well-being? (Yes/No)
	Do you feel restoration of the Waimatā River is necessary? (Likert scale)
	Are you aware of the Waimatā Catchment Restoration Project? (Yes/No)
	What are your aspirations for the Waimatā River? (List—select all that apply)
General	The Whanganui River has rights as a legal entity. Do you think the Waimatā should have a similar standing? (Yes/No)
	Any additional comments?

themes provided a basis for more detailed investigations in interviews (Kazi & Khalid, 2012; Krosnick & Presser, 2010).

Of those questionnaire respondents who expressed interest in participating in an interview, 10 participants

TABLE 3 Demographics of questionnaire respondents.

Data type	Overall
Sample (<i>n</i>)	102
Gender	
Female	47
Male	53
Prefer not to say	1
Age group	
16–24	2
25–34	9
35–44	9
45–54	16
55–64	27
65 and older	38
Location within the catchment	
Upper Waimatā—along and upstream of Waimatā Valley Road	6
Mid-Upper catchment—along and upstream of Riverside Road	18
Lower catchment—Gisborne urban area	81
Outside of the catchment	2
Length of residence	
Less than a year	5
1–5 years	18
5–10 years	13
10–20 years	22
More than 20 years	44

were selected based on their involvement in river-related organisations (waka ama, iwi and hapū relations, the WCRP, farming and restoration work) and location within the catchment (see Table 4). Due to the COVID-19 pandemic, interviews were mainly held over Zoom or by phone and lasted between 30 and 90 min dependent on the participant. Semi-structured interviews allowed for flexibility in questions and responses with interview categories shaped by existing questionnaire categories and responses. Clarification on complex themes and follow-up questions were guided by the participant as requested (Johnson & Onwuegbuzie, 2004; Newcomer et al., 2015).

Questionnaire responses were analysed using Qualtrics and Microsoft Excel. Interview transcripts were analysed using NVivo software to code responses and identify similarities and differences. In the text that follows, responses from interviews are indicated by participant number (1–10). Unattributed comments refer to anonymous quotes provided in questionnaires.

4 | RESULTS AND INTERPRETATIONS

4.1 | Sociocultural interactions and values

Interactions with the river shaped the way that residents valued it and their aspirations for it. This was mediated by their location within the catchment and associated perceptions of river health. In the upper catchment, interactions with the river were primarily work-related, framed around concerns for income and livelihood of farmers:

... [the river] has been an essential stock water and stuff like that. As far as stock water goes, it is valuable.

(participant 6)

[People] congregate around water ... same with our farms, we know for our stock, water is life.

(participant 4)

A different suite of sociocultural relations is played out down-river, where recreational spaces provide places of enjoyment and physical activity. Fishing was particularly common in respondents from the mid catchment. For those in the lower-mid catchment, interactions with the Waimatā River were recreational, including walking and paddle sports (kayaking, waka ama, etc.):

It is called the river of gold, because so many people train on [it] and have got gold medals in rowing and kayaking. It's our favourite playground. It's a massive part of Gisborne.

(participant 5)

In addition to use-values, interview comments across all areas of the catchment revealed the role of the Waimatā River as a historical landmark in respondents' lives, ever-present and rich in history. Some respondents identified it as the river of their ancestors, for both Māori and Pākehā. Generational connections create strong relations and associated place-attachment:

[My connection to the river] is just my family history ... every generation on our farm has done their bit to improve the farm. And [the WCRP] is our opportunity to be able to do that ... So each generation is just building on what the last one did.

(participant 9)

TABLE 4 Demographics of interview participants from within the Waimatā Catchment.

Participant no.	Gender	Age (years)	Location within catchment	Length of residence (years)
1	Male	65+	Mid catchment	20 +
2	Female	45–54	Mid catchment	1–5
3	Male	65+	Lower catchment	10–20
4	Female	25–34	Upper catchment	20+
5	Female	65+	Mid catchment	20+
6	Male	45–54	Upper catchment	20+
7	Female	45–54	Lower catchment	10–20
8	Male	55–64	Lower catchment	20+
9	Female	25–34	Upper catchment	20+
10	Male	35–44	Lower catchment	-

One respondent described the river as ‘my tūrangawaewae’, a powerful concept reflecting the places where Māori and other New Zealanders feel empowered through ancestral foundations and/or connections to home. Historical relations also reflect memories of youthful encounters with the river:

... we also spent a lot of time on the river, just playing. We would go down in boats and go to the island, with mullet jumping around there.

(participant 5)

For local Māori, the landing place of the Horouta and Tākitimu waka on the foreshore adjacent to the Waimatā River mouth creates strong cultural connections. Traditional use of the river as a key inland transport route for local iwi was complemented by mahinga kai (places for obtaining food) provided by streams (fish and shellfish), while floodplains provided space for gardens. Therefore, for iwi along the river, the Waimatā is a part of their story, flowing past the sacred maunga (mountain), Motukeo (Salmond et al., 2022). Values of mana (power), mauri (life force), whakapapa (genealogy, identity) and tapu (sacred sites/relations) define relationships with the river:

... places that have become alienated from them with landownership changes... There will be really strong benefits for the iwi to be able to reconnect with [places] that they haven't been connected to for a couple of generations.

(participant 7)

Māori depend on the river physically, emotionally and spiritually in both the past and present. This shapes

connections with the river and nature, seeing them as part of an indivisible whole:

... in Te Ao Māori ... I see the people, the plants, the animals, the water, the land as one. They are all part of the ecosystem, the living landscape. The people are part of it, not separate, so this whole conservation ethos that you exclude people and lock it up is very alien to the way I sort of think about it.

(participant 5)

4.2 | Values associated with the river

The average respondent in the survey questionnaire indicated six different values of the Waimatā River (Figure 2a). Recreational opportunities were the most common value (92%), alongside scenic attributes (89%). Spatial differences reflected respondents' interactions with the river. In addition to aesthetic value, respondents living in the upper catchment valued the river for its wilderness, whereas those in the mid and lower catchment commonly valued it for recreational and learning opportunities.

The survey asked respondents if they felt an emotional connection to the river. While 29% of survey respondents felt no such connection, others did, using expressions such as ‘home’, ‘calming’, part of my life’, ‘deep appreciation’ and ‘heritage’. Some described themselves as ‘kaitiaki’ (guardians). Recurrent use was made of the Māori proverb ‘*Ko au te awa, ko te awa ko au*’, meaning ‘I am the river, the river is me’, acknowledging the deep connection and responsibility felt by some respondents. Of those reporting an emotional connection

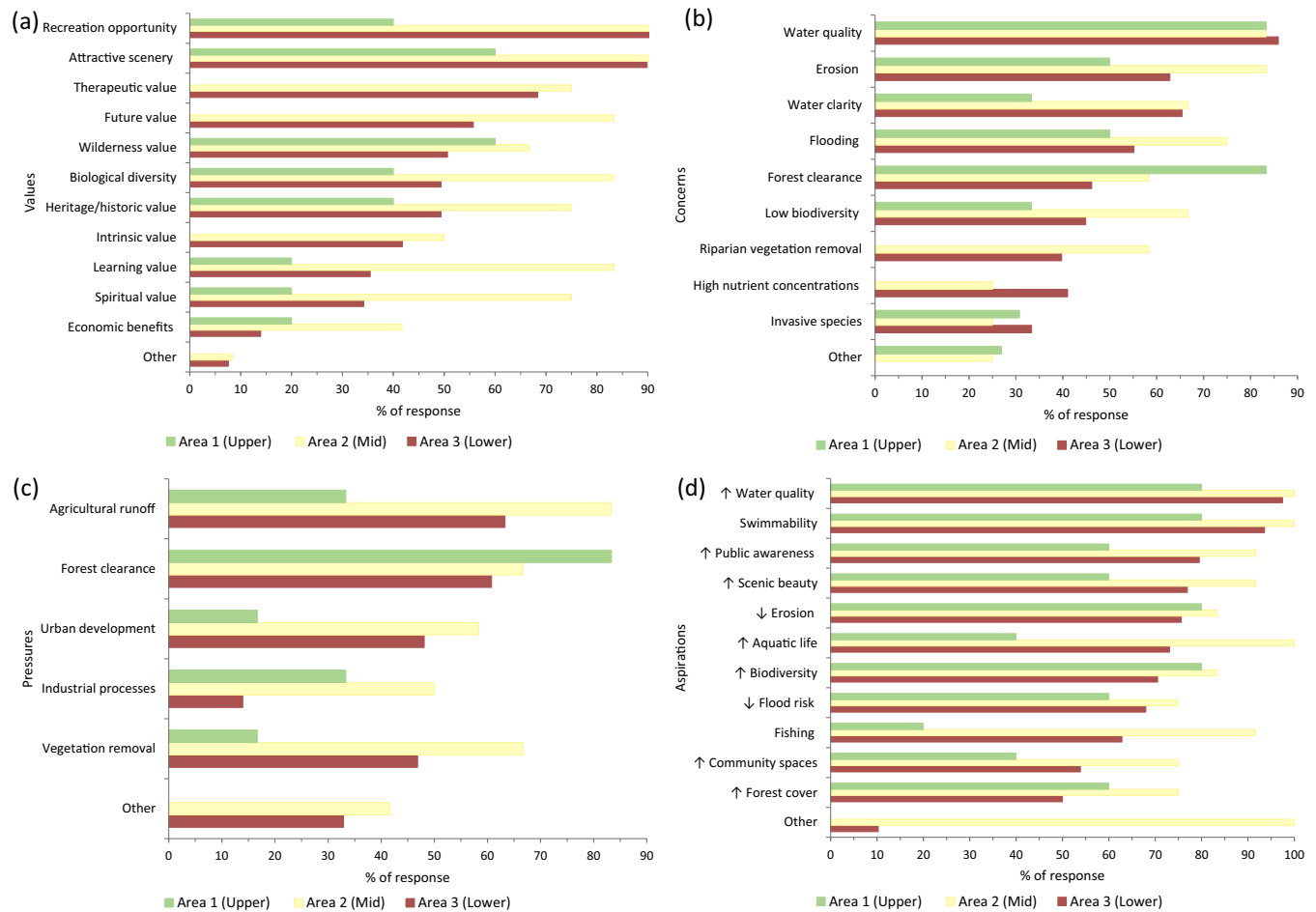


FIGURE 2 Residents and river users': (a) values of, (b) key concerns for, (c) perceived pressures on, (d) aspirations for the Waimatā River across the three areas of the catchment (Upper, Mid, Lower).

to the river, 72% felt the connection had strengthened over time. Approximately 83% of respondents who had lived in the catchment for more than 10 years felt an emotional connection to the river, whereas only 43% of those that lived in the catchment less than 5 years did.

Approximately 81% of respondents reported a connection between river health and sociocultural well-being, expressing connections between people and nature such as:

We are all connected. Healthy water, healthy people.

It makes me happy to see fish in the river, birds nesting nearby, swimming in it on days when the water is clear and warm is amazing and paddling to town is the best adventure one can have.

Being on and interacting with the Waimatā appears to strengthen locals' connections to the river, supporting

physical and mental well-being. In turn, this emphasises the key role of the river as a community space—a place of connection:

It is a good meeting place for a lot of people. The waka ama, the rowing. It is just a shame that the health of the river isn't the best.

(participant 9)

The river also acts as a place where families connect. For interviewee 10 the river was considered whānau (family). People who grew up on the river now bring their children and grandchildren to the river to participate in the same activities:

... it's great for our grandchildren because they have a wild time, and it's going to get better as they get older, and they've got their own kayaks and all those things.

(participant 3)

4.3 | River health and restoration prospects

When enquiring about respondents' level of satisfaction with the current condition of the Waimatā, the median response was 5 on a 1 to 10 scale (1 being unsatisfied), implying a neutral level of satisfaction. The most common response was 3 (26%). The median and mean response regarding perceived river health was 4, reflecting a common lower perception of health. Only 3% considered river health to be an 8 or above. Respondents in the upper catchment showed a slightly higher perception of river health compared to the lower and mid catchment.

Water quality was the primary concern held by 86% of all respondents, across the entire catchment (Figure 2b). Agricultural runoff and forest clearance were the most commonly noted pressures on the Waimatā, particularly by those in the upper catchment (Figure 2c). Erosion was the most common concern in the mid catchment, while water quality was the most common in the lower catchment. Compared to non-farming respondents, farmers perceived the water quality to be better and less of a concern. They also felt they were blamed disproportionately for the state of the river. Of 'other' concerns mentioned, 30% of respondents cited sewage release into the river via stormwater overflow. In addition, pollution, particularly from the port, and a lack of a clear role of mana whenua in river management were identified. Just one respondent stated they had no concerns.

Although 87% of respondents felt that river restoration was necessary, personal concerns and aspirations engendered different meanings of restoration and associated sense of priorities. When asked to rate the necessity of restoring the health of the Waimatā on a scale of 1 to 10 (1 being unnecessary), the median response was 9. The mid catchment area had the highest perceived need for restoration with a median of 10, compared to 7 and 8 in the upper and lower catchment areas, respectively.

All respondents selected the majority of options in a list of future restoration aspirations for the Waimatā (Figure 2d). Biophysical aspirations were most common, in particular water quality (97% overall) or related to relational attributes (e.g., swimmability, 94%). This indicates a shared concern for high nutrient levels and sedimentation along the river. In the upper catchment, decreased erosion was commonly cited due to concerns for loss of productive farmland, while increased aquatic life and fishing were more prevalent in the mid catchment. Although concerns for water quality were expressed throughout the catchment, these were particularly pronounced in the lower catchment, where recreational activities are impacted negatively and aspirations for

increased public awareness of health concerns related to the river are common. Some respondents stated that they were less likely to engage in recreational activities along or in the river due to its degraded state.

The interplay between the physical landscape and the residents' emotional connection provides evidence of the mental benefits of blue spaces in catchments. This highlights the therapeutic benefits of the river as a refuge, whether in physical, aesthetic or emotional (psychological) terms:

Without a doubt, it has to have a huge emotional part, if it's in good condition. Because you want to be there. Even on a dirty day, they [locals, paddlers] want to be there.

(participant 1)

Interviewee 2 described the Waimatā as a place where they could sit for hours and simply enjoy the peaceful environment as a place of rejuvenation.

The theme of responsibility was prominent in interviews. Recurrent emphasis was placed on the responsibilities of the Gisborne District Council (GDC), forestry companies and landowners in addressing concerns for the health and well-being of the river. Specifically, GDC was seen as responsible for discharging sewage and wastewater into the river and were described as 'not taking responsibility' and prioritising rates over the river:

... And yet, nobody in Council seems to think we should be doing a catchment plan or that you need to even understand what is going on (along) the river. And they do absolutely nothing with it, except using it as a repository for wastewater and sewage when it rains too hard. And they just don't have a clue about this beautiful waterway that is right at the heart of their community.

(participant 5)

Eroding riverbanks and forestry slash on beaches have strained relationships between landowners and forestry companies:

Everyone probably sounds like a broken record with the old forestry thing, but it has had a massive impact on our catchment.

(participant 9)

There was a huge divide between the farmers and the forestry, because farmers would have to clean up time and time again with these

massive landslides and all the debris that would come down with it.

(participant 9)

Disappointment in regulations set by the government surrounding forestry and its implementation was common across respondents:

You can hold to account ratepayers because they are an easy target, but you try hold these companies like logging companies to account you'd be pushing it uphill... If you've got the money, you can get out of anything you don't want to do.

(participant 1)

Other respondents highlight the critical role and responsibility of residents who live along the river:

The residents themselves are their own worst enemy. They treat it is as a rubbish dump.

(participant 1)

GDC has a legal requirement to protect the interests of local iwi in resource consent decision-making, including them in relevant regional plans and policy statements (GDC, 2020). While most respondents placed responsibility for the state of the river on local government and contributing industries (forestry and agriculture), when asked explicitly how their concerns should be addressed, an emphasis upon public responsibility emerged (i.e., a collective responsibility or duty of care approach to river systems; Salmond et al., 2014). Over half of the interviewees answered that river health is everyone's responsibility, no matter how they relate to the river:

Well, I think everybody is ... not just the landowners ... we collectively as New Zealanders are responsible for the health of all our rivers... there is a part to play by the Council and by the ratepayer.

(participant 7)

The sediment and stuff isn't just coming from the forestry, it is coming from the farming as well. So, everybody has to play their part.

(participant 9)

Almost all interviewees believed that everybody benefited from a healthy river. They acknowledged that improved river health would benefit all users, from those that jump off the bridge and swim in the river, or paddle on it, to those who just appreciate increased biodiversity and an

improved catchment, or who farm alongside it. And for the local iwi, it would facilitate reconnection with sacred places from which they were alienated by land ownership changes. Essentially:

Everybody profits from a healthy river. Everyone suffers if it is not useable.

(participant 3)

Extending beyond environmental and biodiversity values of restoration, some aspirations encourage enhanced interaction between residents and the river, including building of improved communal facilities for boat storage along the river (Participant 8).

A wide range of ideas and suggestions emerged in contemplating how to achieve aspirations:

We need to go back and look at the web of life ... at living landscapes and people as part of ecosystems and we need to not think that mathematics has all the answers... It's thinking in terms of whakapapa, as you do in Te ao Māori, the whole world, everything is interconnected, it is all one.

(participant 5)

Prospects for healthier river futures have been enhanced by the role of the WCRP as it brings residents and community members together to work on the river:

It was really nice to be working with people that are there because they wanted to and they care... they consciously said, "actually we are worried about the river, we really care about it and want to work with it".

(participant 7)

Prospectively, restoration activities will further strengthen connections, something that may only get stronger as work continues and the health of the river improves.

5 | DISCUSSION

5.1 | Furthering the social and environmental story of the Waimatā

Relational values incorporate a sense of place, well-being and identity, and vary in space and time, highlighting changing connections between people and the environment (Mould, Fryirs, & Howitt, 2020).

The stories and shared experiences revealed in this research show how the Waimatā River plays many roles within the lives of the people in Tūranganui-ā-Kiwa. It acts as a historical figure, a cultural space, a means of livelihood, a place of recreation, a communal space, a place of refuge, a place of contestation, a threatened landscape and currently it presents a restorative space for the future. The river acts as the 'lifeblood' for those who live near and interact with it. Interviewees discussed how their relations and interactions with the river evoked a sense of belonging and identity. The river was referred to as 'therapeutic' by residents. Connections between residents and the Waimatā appear to be closely linked to aesthetics and sensory experiences (de Bell et al., 2020). Degradation of the river threatens these values and relations.

The questionnaire and interview results indicate how sociocultural relations to the Waimatā River—the use of river and associated value-sets that underpin such actions—have changed over time. Residents that have lived in the area for longer periods of time (greater than 20 years) reflected on changes they had witnessed over their lives and often reported that their connection with and concern for the river had grown over time (Scannell & Gifford, 2017). Generational ties create a strong sense of history and legacy that builds and strengthens relationships between people and place (Liu, 2021). Reflections upon youthful interactions with the river shape perceptions of its health (past and present). This creates personal baselines that inform perceptions of the desired conditions to maintain or restore rivers to (Mould, Fryirs, & Howitt, 2020). In contrast, individuals who have spent less time in the catchment have no baseline comparison and often have higher perceptions of, and aspirations for, river health.

At least five different key Māori iwi and hapū continue to reside along the river, each with their own histories of interaction. Ancestral relations to the Waimatā River reflect its use as a highway that linked different parts of Tairāwhiti. Acting as an interstitial space, the river not only supported the generation of mahinga kai, it was also a place of kinship and exchange (Salmond et al., 2022). Colonial settlement profoundly disrupted these sociocultural relations. Resource extraction (forest removal) and improvement through development of lower reaches drastically changed the river. In 1877, the Marine Department blasted a sacred rock, Te Toka-ā-Taiau, to develop Gisborne Port, pushing aside concerns for its role as a traditional tribal boundary marker and its use for mooring waka, and as a popular fishing site. These changes, along with the declining physical state of the river, disconnected Māori relations to place, rupturing connections between tangata whenua and te taiao (the environment).

Despite past actions, the Waimatā and Tūranganui Rivers at the heart of Gisborne city continue to play a fundamental role as a central part of Tairāwhiti (Salmond et al., 2022). While the river is no longer used as a transport route, paddling activities such as waka ama provide a connection for Māori to their tīpuna (ancestors) (Liu, 2021). The description of respondents as being 'kaitiaki' reflects the responsibility people feel in protecting the awa in ways that build upon ancestral connections. Respondents referred to the Waimatā River as being 'part of the whānau', attributing their connection to the river to 'whakapapa' and as being 'in their DNA'. Prospectively, catchment restoration presents an opportunity to further restore relationships between people and place, enhancing ora. A river with a healthy mauri sustains healthy ecosystems, reinforcing the identity of the people in ways that support physical, mental and spiritual health (Panelli & Tipa, 2007).

5.2 | Longitudinal differences in sociocultural relations to rivers

Among various considerations, location within the catchment shapes connections to the Waimatā River. As the river changes from the steep, highly dissected, erodible landscapes of upper reaches to lowland environments near the sea, so do land use practices, sociocultural relations to the river and aspirations for river futures. Perceptions of river health often vary between rural and non-rural environments, influenced by socio-demographic factors such as lifestyle and occupation (Hu & Morton, 2011; Ranjan et al., 2019). Concerns for the Waimatā are heavily rooted in values respondents placed upon themselves and relations to others. Poor water quality, flooding and erosion were the most common concerns, but with a spatial bias. Residents in the upper catchment were primarily concerned for loss of productive farmland through erosion, of both hillsides and riverbanks, and in relation to forestry impacts immediately upstream. Concerns for fishing in the mid catchment underpinned aspirations for increased aquatic life. In the higher population density areas of the lower catchment, increased public awareness around river protection and environmental knowledge was desired.

Respondents from all parts of the catchment want improved water quality. However, respondents' perceptions of the underlying causes of degraded conditions, and associated responsibility for this, vary across the catchment. Urban respondents in the lower catchment cited agriculture as the source of declined quality, while similar to Church et al. (2020), farmers in the upper catchment felt that they were stewards of the land and

believed that forestry and urban development (especially sewage releases) were responsible for degrading the river. In actuality, summary measures of water quality indicate that river health is worse in the lower catchment (GDC, 2020; LAWA, 2022) because of the compounding effects of forestry harvests, erosion and pollutants.

A key concern in the lower catchment was the river's ability to provide a safe space for recreation and an aesthetically pleasing environment, with associated impacts on mental and physical well-being (Lankia et al., 2019; McCormick et al., 2015; McDougall et al., 2020; Nassauer, 1992). Numerous respondents emphasised negative impacts of poor water quality on recreational activities, such as health risks while swimming, while others expressed concern for impacts on the health of their children or neighbours that swim in the river. As one respondent stated: 'How can my soul feel good when the river is often filthy with lots of debris!!!'

5.3 | Support for restoration and management efforts

River restoration and management can often reflect dominant ideals of what a 'healthy' river should be (Blue, 2018). Pragmatic concerns for aesthetic or economic/productive values of the landscape must be viewed alongside environmental values in framing restoration practices that involve heterogeneous communities (Samuelson et al., 2023; Seymour et al., 2011). Complex assemblages of contemporary relations to the Waimatā River include interactions among mana whenua, residents, river users, farmers, forestry companies and local government (GDC). Alongside this, legacy effects and path dependencies of past actions and governance arrangements linger long, shaping the range and viability of future options (Fisher & Parsons, 2020).

Findings from this study indicated that historical arrangements have excluded mana whenua from discussions surrounding the Waimatā and its restoration. Disconnection from their land and ancestry impacts on well-being, limiting prospects for local iwi to enhance river ora, thereby fulfilling their role as kaitiaki (Salmond et al., 2019; Te Aho, 2019).

Integrated river management that is informed by local knowledge and directly involves mana whenua can regenerate cultural relations (Fisher & Parsons, 2020; Salmond et al., 2014). Envisaging an extended role of the Waimatā as a place of engagement and interaction, whether for physical activities or as a refuge, one respondent described their practice of meditating while

watching the river flow, referring to it as 'restorative'. Blue spaces can enhance well-being, improving physical and mental (psychological) health (de Bell et al., 2020; Grassini et al., 2019).

Sociocultural relations to the river play a key role in vision generation and enactment (Gregory & Brierley, 2010). Prospects for restoration success are improved if aspirations, and measures of success and practices applied to achieve them, incorporate the values and hopes of residents (Murphy, Russell, Stillwell, et al., 2022). Enhanced inclusion of residents in planning and management committees can support river champions in their efforts to drive and sustain successful restoration projects (Mould, Fryirs, Lovett, & Howitt, 2020; Seymour et al., 2011). The WCRP seeks to bridge gaps between stakeholders, working with GDC, farmers, lower catchment residents and inviting forestry into discussions and learnings on the future of the river and active management.

The background data and findings outlined in this study provide an important baseline assessment against which restoration success in the Waimatā catchment can be measured in the future, recognising that an ongoing commitment to monitoring is required to assess the effectiveness of such initiatives (Guimarães et al., 2021). In the words of a Waimatā resident, 'We are doing good, but we can do so much better'.

6 | CONCLUSION

Restoration is more than a scientific venture. This case study analysis of sociocultural relations to the Waimatā River shows how multiple factors influence complex interactions between people and river systems that vary in space and time. Restoration takes a village. It requires an understanding of catchment-wide changes in both biophysical and sociocultural environments, incorporating understandings of community aspirations for and connections to a given river system.

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ORCID

Gretel Boswijk  <https://orcid.org/0000-0003-3583-7575>

Gary Brierley  <https://orcid.org/0000-0002-1310-1105>

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