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A local oral history of environmental change in Pelorus / Te Hoiere, Marlborough

**Preliminary report for the Department of
Conservation**

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LEAP

Cover photo: Looking towards the mouth of Pelorus River from Havelock. Photo: G. Coutts, January 2020.

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Summary

The Pelorus/Te Hoiere was announced as an 'Exemplar catchment' for the purposes of restoration, by the Minister of Conservation in late 2019. The catchment restoration project is to be managed by the Kotahitanga mō te Taiao Alliance (the 'Kotahitanga Alliance') as a partnership with the local community. The Kotahitanga Alliance was formed to collaboratively address issues of environmental concern across the top of the South Island/Te Tau Ihu. Ngāti Kuia, Marlborough District Council (MDC), and the Department of Conservation (DoC), have come together to achieve environmental, social, cultural and economic improvements for Pelorus/Te Hoiere, by involving communities and building partnerships across the catchment.

As part of the overarching project, the Kotahitanga Alliance wants to start to understand people's memories of environmental change – acknowledging and recording these stories will aid the Kotahitanga Alliance in developing a collaborative landscape catchment program. Biophysical science along with local histories have identified significant changes to terrestrial and estuarine ecosystems since European settlement. However, it is not known whether those changes, particularly in more recent years, are evident in lived experiences. The socio-ecological 'shifting baselines' phenomenon occurs where gradual environmental degradation gets progressively accepted as each generation experiences their place. This is important to understand, so as to help inform community discussions about the need for restoration goals.

This research is a pilot study of 10 interviewees from the wider Pelorus/Te Hoiere catchment conducted in January 2020, to get insights into the nature of shifting baselines. The purpose of this preliminary report is to describe the catchment setting, outline the methodology and provide some initial insights from the interviews, which suggest that there are contrasting beliefs about the health of the river and estuary. A detailed analysis of the interviews is planned as part of a Master of Applied Science thesis at Lincoln University in 2021, and additional interviews may be undertaken over the next 12 months to achieve that goal.



Plate 1: Looking down Rai Valley from the Mt Richmond ranges, behind Pelorus Bridge café. Photo G. Coutts, January 2020.



Plate 2: Looking upstream the Pelorus/Te Hoiere River emerges from the Mt Richmond range, behind Pelorus Bridge café. Photo G. Coutts, January 2020.

Chapter 1.

Introduction

In 2019 the New Zealand government published *Environment Aotearoa*, a report that is required under the Environment Reporting Act 2015 to establish the current state of the environment in Aotearoa New Zealand (Ministry for the Environment and Stats NZ, 2019)¹. The 2019 report uses five main themes to identify nine priority environmental issues; including biodiversity loss, land use, pollution, marine and freshwater use and climate change.

One of the issues identified in the report is unsustainable land use practices, which are causing adverse effects on waterways and coastal ecosystems. Clearing native vegetation for farming or forestry blocks can increase the chances of erosion and sedimentation being deposited into the coastal marine area, while expanding towns and cities and draining wetlands can also increase erosion and soil loss. These activities can negatively affect native species and their habitats, which can also reduce cultural values.

Effects from land cover changes have also been identified as an environmental issue of concern in the Marlborough region (MDC 2015). The natural climate and geology in combination with suboptimal land management practices, can result in adverse effects on the freshwater and estuary receiving environments. MDC has identified the following adverse effects: increased chances of steep-slope erosion; debris flows, fine silt and clay sediments degrading freshwater quality, and smothering intertidal and subtidal habitats in the Marlborough Sounds ('Sounds').

These cumulative effects have also had a negative impact on cultural values for local iwi to observe mahinga kai and other tikanga (Waitangi Tribunal, 2008). The Kotahitanga mō te Taiao Alliance ('Kotahitanga Alliance') was established to address increasing environmental issues across the top of the South Island region. In 2019, the Kotahitanga Alliance released their strategy and vision, which aims to achieve significant cultural, social, environmental and economic gains, as well as specific outcomes for each region (Kotahitanga Alliance, 2019).

The Kotahitanga Alliance members directly concerned with the Pelorus River/Te Hoiere in Marlborough – Ngāti Kuia, Marlborough District Council and the Department of Conservation, stated in the Kotahitanga mō te Taiao Strategy that one of their aims is to restore the mauri ('life essence') to the Pelorus River/Te Hoiere and other tributaries. This is to be achieved by managing *ki uta ki tai* – from the mountains to the sea. This means considering the catchment as an interconnected system, rather than focusing on separate components.

The Government also recognised this in the draft National Policy Statement for Freshwater Management (NPS-FW), issued for consultation in September 2019 (Ministry for the Environment (MfE), 2019). The draft NPS-FW states that integrated management must "recognise the interactions *ki uta ki tai* between freshwater, land, waterbodies, freshwater ecosystems, other ecosystems and sensitive receiving environments, including the coastal environment" (MfE, 2019).

¹ The last full report on the state of the environment was released in 2015, and before that, different versions were released in 2007 and 1997. By using available data, these reports are only intended to establish the current state of the environment, rather than provide comments on how to address those issues. This style of reporting aims to encourage discussion around Aotearoa environmental issues.

Due to the state of the Pelorus/Te Hoiere River and estuary environment from excessive sediment deposition derived from the surrounding land, the Minister of Conservation announced Pelorus/Te Hoiere is to be an 'Exemplar catchment' (RNZ, 2019; Stuff, 2019). The 'Exemplar catchment' project is part of the Government's 'At Risk' catchment programme – where catchments across New Zealand are identified as vulnerable under the Government's Essential Freshwater work programme². This announcement allows for specific allocation of government funding to the Pelorus/Te Hoiere catchment, to implement a bottom-up, collaborative strategy to help improve the health of the river and estuary (MfE, 2018).

However, due to possible "shifting baseline syndrome" (Pauly, 1995) – where the next generation assume the degraded environment is normal, and therefore it's diminished state is accepted – some in the community may find this announcement difficult to acknowledge and understand (Robertson et al. 2000; Soga & Gaston, 2018; Williams & Riley 2018). Conducting historical social research can help to contextualise the shifting baseline concept for local communities, but it also creates a human dimension to an ecological history (Lane, 1997; Williams & Riley, 2018). Interviewing local residents, who have a personal, long-standing connection to the area, is one way to explore a human dimension to the environmental history. Scientific data and personal interviews, in addition to historical documents and photographs can help contribute to a history of the region – which in turn, could also aid in lifting baselines by supporting restoration efforts (Robertson et al. 2000).

In this regard, this research aims to capture some of those personal stories by interviewing some local residents in the Pelorus/Te Hoiere catchment. This is a pilot project, done as a summer research scholarship supported by Lincoln University and the Kotahitanga Alliance. It informs part of the Kotahitanga Alliance's plan for community engagement associated with the development of an overall restoration management plan for the catchment. As part of the 'Exemplar catchment' status, the Kotahitanga Alliance aims to help achieve cultural, social, environmental, and economic outcomes that benefit all communities in the catchment. This will be accomplished by developing an integrated catchment management plan for the Pelorus/Te Hoiere catchment – one that involves the community from the outset.

² The Essential Freshwater work programme is the Government's plan to restore and protect Aotearoa New Zealand's freshwater. This programme includes: introducing a new National Environmental Standard and amended National Policy Statement for Freshwater; catchment-level action; an independent review on nutrient tracking technology; and establishing advisory groups for the Essential Freshwater programme (MfE, 2020).

Chapter 2. Methods

2.1. Study area

The Pelorus/Te Hoiere catchment lies between Blenheim and Nelson, in the northern part of Marlborough (Figure 1). The catchment extends over approximately 889 km² or 88,959 hectares (ha) and includes the Rai and Whakamarino (previously Wakamarina) catchments. The Pelorus/Te Hoiere discharges into the Havelock estuary and Pelorus Sound/Te Hoiere. Both rivers drain the northern side of the Richmond Ranges.



Figure 1: Map of Rai, Pelorus/Te Hoiere, Kaituna and Cullen catchments. The Pelorus/Te Hoiere includes the Rai and Whakamarino (Wakamarina) catchments. Image courtesy of Marlborough District Council.

The Rai River covers over 211 km (21,127 ha) as it drains the eastern side of the Whangamoia Range, and the southern side of the dividing hills which separate Croisilles Harbour and Tennyson Inlet. The many creeks and streams flowing from these hills and valleys combine to form the Brown, Tunakino, Ronga, and Opouri rivers, which progressively merge to form the Rai just to the north of Rai township.

There are a few small towns situated throughout these catchments – Havelock, which sits right on the mouth of the river, Canvastown, Wakamarina Valley and Rai Valley. The Kaituna River catchment also discharges into the Havelock estuary (Figure 2). It encompasses 146.9 km² (14,690 ha). On the true left, it drains the north-eastern side of Mt Riley in the Richmond Range; on the true right, it is fed by waterways from a range running south to north which gradually steepen to the high point of Mt Cullen. Although also not included in this study, the 20.7 km² (2068 ha) Cullen Creek catchment also influences the inflow of silt and nutrients into the Havelock estuary complex, which includes the Mahakipaoa and Kaiuma estuaries.

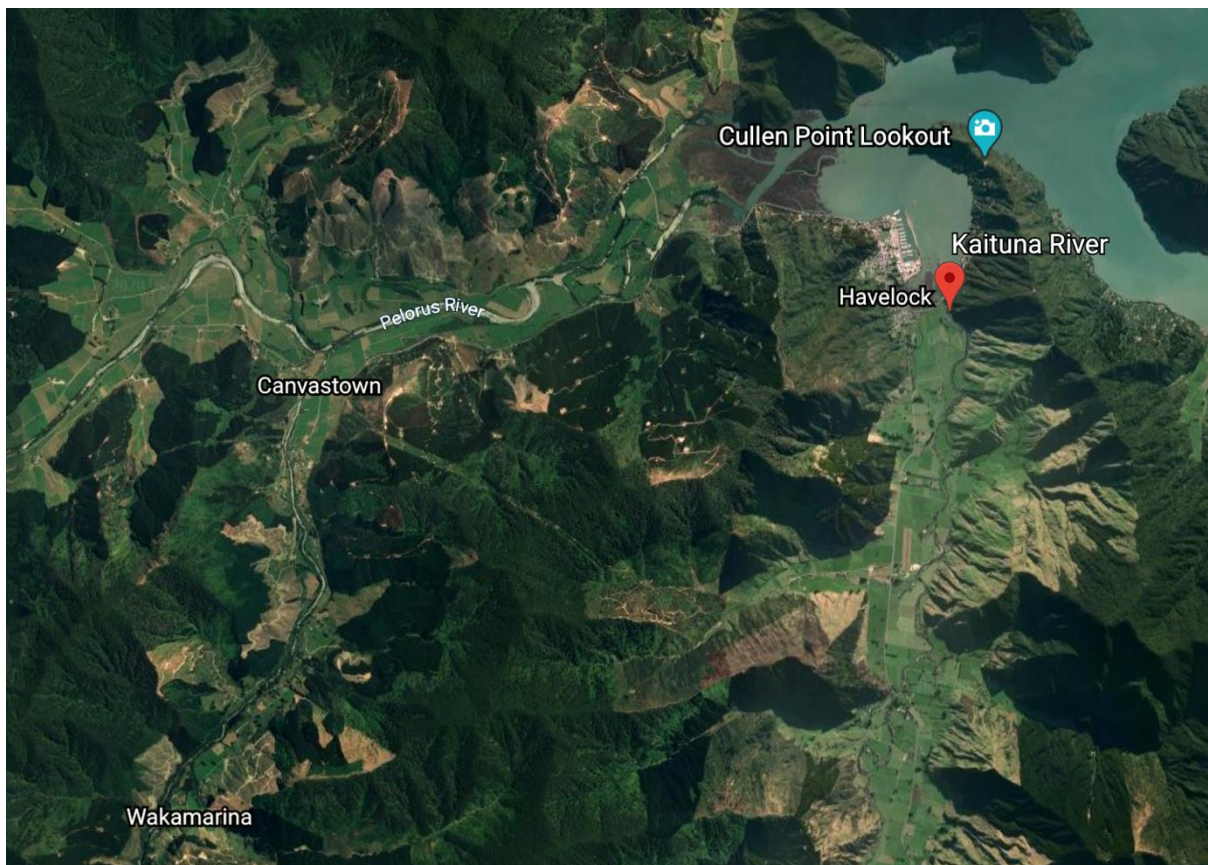


Figure 2: Image of the Kaituna catchment as well as Canvastown (the Whakamarino (Wakamarina) catchment is behind Canvastown) which discharges into the Havelock estuary. Image sourced from Google Earth, February 2020.

Indigenous forests dominated by beech (*Lophozia menziesii* and *Fuscospora* spp.) extend over much of the steeplands and montane areas of Pelorus/Te Hoiere (Table 1). Exotic forest mostly comprised of radiata pine (*Pinus radiata*) is the next largest single land use, followed by dairy pasture on the relatively fertile valley floors (Figure 3).

One of the iconic sites in the Pelorus/Te Hoiere catchment is the Pelorus Bridge Scenic Reserve. It features 856 ha of unlogged old-growth lowland alluvial and gentle slope forest and is one of the last remaining forests of its type in Marlborough. The reserve contains a variety of beech, podocarp and broadleaf tree species. Black and hard beech can be found on drier spurs, ridges and older terrace surfaces; while rimu, miro, mataī, tōtara and

kahikatea trees tower over broadleaf, tawa, kamahi and hīnau on more fertile, recent terraces and wetter gully systems. On the lower parts of the forest floor is a mixture of liverworts, mosses, shrubs, saplings and ferns (Department of Conservation, n.d.; Ward, 1987).

Table 1: Present-day catchment land use

Land use	Pelorus (Area, km²)
Indigenous Forest	639.6
Broadleaved Indigenous Hardwoods	29.3
Manuka and/or Kanuka	11.2
Exotic Forest	91.4
Forest - Harvested	15.7
High-producing exotic grassland	75.7
Low-producing exotic grassland	4.2
Gorse and/or Broom	8.3
Fernland	0.8
Orchard/perennial crops	<0.1

Source: LCDB5 (2018) with top 10 land uses by area shown (courtesy MDC).



Figure 3: *This photo was taken on the Te Araroa trail, looking down the Pelorus/Te Hoiere river (facing east).*

*The river sits behind the poplar trees. Notice a combination of high-producing grassland (foreground), pine plantations (middle left) and native bush (towards the left). Cleared pine plantations and newly planted pines are evident, while native bush covers the top of the hill.
Photo: G. Coutts, January 2020.*

2.2. Climate and Rainfall

Annual average rainfall varies in a north-south gradient (Figure 4). In the northern parts of D'Urville Island and outer Pelorus Sound/Te Hoiere it ranges from 1000-1200 mm. Rainfall in excess of 2000 mm occurs in the Bryant Range northeast of Rai Valley, and on the Richmond Ranges to the south of Rai Valley and Canvastown (Tait, 2017) (Figure 4).

MDC have records of high intensity rainfall events since 1979 in the Pelorus catchment. There are also historical records that describe the Pelorus River/Te Hoiere flooding, and washing out the Pelorus Bridge. A major flood washed out the Pelorus Bridge in 1904 (Marlborough Express, 1904; Ward, 1987).

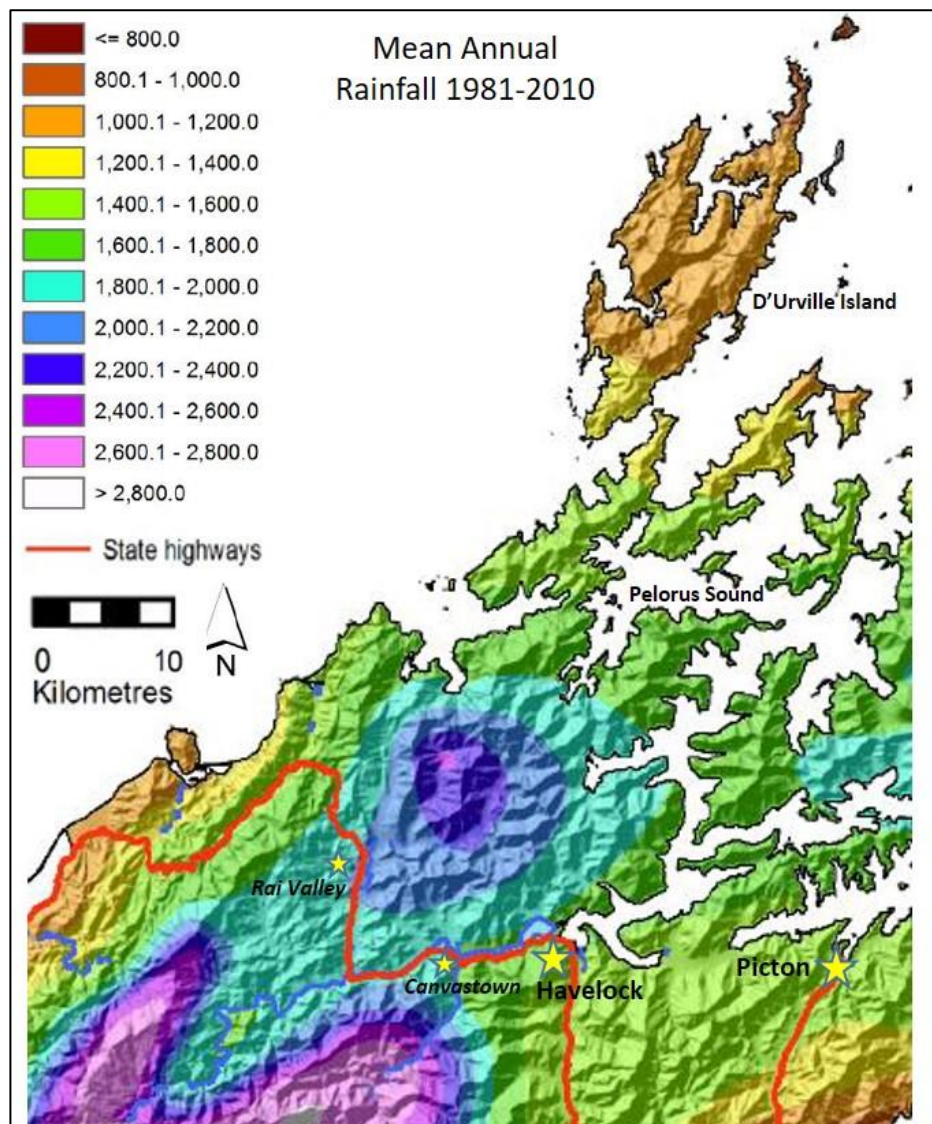


Figure 4: Mean annual rainfall for the period 1981-2010. Modified from Figure 3 in Tait 2017.

2.3. Geology and soils

The parent rocks that comprise the headwaters of the rivers are predominantly composed of Mesozoic siliceous greywackes and schists, with bands of serpentinite greywacke (Walls & Laffan, 1986). The rock type has been described as the Haast or Marlborough Schist Group, which are aligned in bands to the northeast. Weathering of weaker mineral bands in the schist produces planes of weakness prone to deep and surficial slippage with sediment detritus of characteristically flat (platy) form. Overlying the schist is a layer of hardened sandstones and siltstones as greywacke and argillite atop the Pelorus Group (Lauder, 1987).

Within the Pelorus/Te Hoiere catchment, soils are broadly classified into four main soil families: Ronga, Rai, Pelorus and Opouri series (NZ Soil Bureau, 1968; Gray, 2012). The Ronga, Rai, and Pelorus lowland soils are found on river terraces and lower undulating slopes, and are under pasture with dairying the predominant land use (Gray, 2012). These relatively productive soils have sustained pastoralism for over a century following clearance of river terrace and hillslope forests (Paton, 1982; Walls & Laffan, 1986) (Table 1). Soil mapping in the catchments is generally at a coarse scale (1:250,000) from the 1960s (NZ Soil Bureau, 1968). MDC have been undertaking more fine-scale soil mapping in the Pelorus/Te Hoiere (Gray, 2012; Matt Oliver, MDC, personal communication, 2019).

2.4. Semi-structured interviews

A semi-structured interview process, (characterised by guiding questions but not yes or no questions), was chosen as it allows for conversations to organically develop and information is not 'sought out' by the interviewer (Maxwell & MacDiarmid, 2016). The interviews were directed by four set questions (shown in Appendix 1). As the conversation developed this still permitted the interviewer to ask more specific questions that related to the particular participant they were interviewing.

Twenty-four participants were nominated by the Kotahitanga Alliance, or suggested by interviewees on a 'snowball' basis. Some have long-standing generational connections in the area, while others have first- or second-generation connections to Pelorus/Te Hoiere. The list of possible participants came from a range of backgrounds and industries – including farming, forestry, conservation, and tourism. Eleven of the 24 nominees are Ngāti Kuia members. Contact was kept with Ngāti Kuia throughout the research to date; however, members were unable to be interviewed before this report was prepared, because of different schedules in January and planned interviews in April were unable to be conducted due to COVID-19. Ngāti Kuia members will be interviewed in the next phase, circumstances permitting.

Ethics approval was granted by Lincoln University on 16 December 2019, under application number 2019-89. Participants were then contacted either through phone or email, depending on what details were provided by the Kotahitanga Alliance. A list of twenty-four possible participants were provided, and three more participants were added to the list, through recommendations from other participants. Of the twenty-seven participants, six people were not able to participate, in addition to the 11 iwi members. The researcher was able to interview ten people, both in person and through an emailed questionnaire format, which was provided when participants were not available to be interviewed in person. Further interviews are planned to be conducted over the coming summer months.

The researcher asked four main questions (detailed in Appendix 1). The first question was to establish the participant's connection to Pelorus/Te Hoiere, and why the area is special to them. Question 2 was about environmental changes they had noticed over time, learning and understanding local ecological knowledge. The third question focused on what aspects of Te Hoiere/ Pelorus were special to them to either maintain or improve. Question 4 was asked to discuss interviewee aspirations for the area, and what ideas they had for Pelorus/Te Hoiere to make it a more healthy and thriving catchment.

The participant's interviews were recorded by the researcher and transcribed into a Microsoft Word document. However due to time constraints, the accounts were not transcribed verbatim, but listened back to by the researcher and the main points extracted, with direct quotes and time stamps added as references and for accuracy.. General themes were drawn from the transcripts, analysed, and some are discussed in the following sections. The recorded interviews are stored at Lincoln University as per the Human Ethics Committee guidelines.

Chapter 3.

Historical Context

3.1. Māori settlement

Due to their longstanding history to the area, as well as their whakapapa lineage to Maui, Kupe and Matua Hautere, Ngāti Kuia are the tangata whenua of Te Hoiere, and are also one of the oldest iwi in the Te Tau Ihu rohe (Ngāti Kuia, 2015). Matua Hautere was guided to Te Hoiere by the taniwha Kaikaiāwaro and his successors settled the land. Eventually they migrated to Te Hoiere, which they named after his waka (Ngāti Kuia, 2015).

Māori tended to live in kainga or fortified pā, settling in areas that were abundant in food and water supply – like rivers, estuaries, lakes, forests or coastal areas. Estuaries, wetlands and forests provided plants and birds for food, medicines and weaving, while waterbodies provided an array of kai ika, tuna and kaimoana (Mitchell & Mitchell, 2007; Waitangi Tribunal, 2008). In particular, Ngāti Kuia utilised the Kaituna and Pelorus/Te Hoiere to gather and provide food – especially kaimoana, tuna and seabirds (Ngāti Kuia, 2015).

Archaeological discoveries of food-storage pits, middens, ovens, cultivated areas and artefacts reflect long-term indigenous settlements throughout Pelorus Sound/Te Hoiere (Waitangi Tribunal, 2008). Māori also cleared small areas of land for animal farming to cultivate and harvest vegetables (Waitangi Tribunal, 2008).

3.2. European settlement

Following the European settlement of Nelson starting in 1842, European settlers made their way over to Pelorus/Te Hoiere via the Māori-formed route over the Maungatapu Saddle. This route was eventually developed into a bridle track and travellers going between Blenheim and Nelson used the route extensively (Hale, 1960). Some of the first European settlers constructed accommodation houses that allowed tired travellers to stay overnight in the Pelorus, as it took two days to travel between Nelson and Blenheim (Hale, 1960; Ward, 1987).

The discovery of gold in 1864 resulted in floods of prospective miners flocking to the Pelorus Valley who set up tents in the Wakamarina Valley, Canvastown and Havelock (Stephens, 2009). The frenzy in the Whakamarino Valley lasted a year, before people moved onto the next mining region, which left the valley in degraded state, as reported in the Havelock Mail, 1865 (Brayshaw, 1964, p. 21): *“It cannot be concealed that the thousands who visited us in the last eight months have left the province altogether... A great deal of damage has been done to the flumes, sluice boxes and other gear required by miners, which may be seen going down the Pelorus in flood waters.”*

Figure 5 illustrates that native timber milling was another economic activity in the late nineteenth century. William and Christina Brownlee arrived in Marlborough in 1864 with their family, bringing sawmilling machinery from Scotland, and very likely planning to provide the goldminers with timber (Stephens, 2008). From 1864 to 1915, Brownlee and Co. milled and exported an estimated 189 million feet of native timber – mainly from the Pelorus and Rai valley floors (Hale, 1960; Stephens, 2008). Land clearance utilising uncontrolled burning

was also a common practice at this time to make open spaces for agriculture (Bowie, 1963). The native forest still found today at Pelorus Bridge was spared from clear felling and burning during this time, as the land was put aside for a township. However, in 1906 that idea was abandoned, and in 1912, the lowland forest was announced as a scenic reserve (Ward, 1987).



Figure 5: Native timber clearing in Pelorus – note the hills have been cleared as well. The small cottage looks south across the Pelorus River. Image taken circa 1900-1910. Image courtesy of the Couper family.

Farming in the Pelorus, Rai and Wakamarina valleys soon followed timber milling, with European settlers obtaining land soon after it had been cleared of native timber. European land ownership began as early as the 1880s, with families purchasing land on which to establish dairy, beef and sheep farms. In 1913 the Marlborough Express reported: "...in no district has this growth been more rapid than the Rai Valley. Here the fast disappearing bush is giving place to fertile grazing areas..." (Marlborough Express, 1913; Stephens, 2013)

However, in the early twentieth century, Marlborough was suffering from a timber shortage – indigenous timber prices rose, and people could not afford to build. It was widely encouraged for local people to plant radiata pine on their 'waste' land (Marlborough Express, 1920a, 1920b). The first commercial radiata plantation was planted in 1940 in the Pelorus catchment and harvesting began in the late 1970s/early 1980s. Many of the current plantations in the area are into their second rotation (Ulrich & Handley, 2020). For a history of radiata pine forestry, see Ulrich and Handley (2020).

Chapter 4.

The stories

Question 1: Tell me about your connection to Pelorus/Te Hoiere

This first question established the interviewee's connection to Pelorus/Te Hoiere. Prompts that the researcher asked included: Where are you from? What are some of your earliest memories? Why is this place important to you? Asking these questions also helped to establish a relationship between the researcher and the participant as well as determining the participant's personal attachment towards Pelorus/Te Hoiere.

Essentially, all participants answered in the same way. Some spoke about their long-standing family connections to the land, where others spoke of the resources the river and Sounds have – *"It has everything."*

Interviewees who have long-standing ties to the catchment, discussed their family history and what their predecessors had achieved in the area. Some incredible physical feats were achieved in those times. As one participant mentioned:

"Those days [late 1800s] were hard times, people had to work to make a living... You had animals but you couldn't afford to kill them to eat them."

Many of the anecdotal stories were told with fondness and sentiment, demonstrating that above all else, the interviewees see Pelorus/Te Hoiere as a beautiful catchment that provides its residents with everything that they need:

"I remember as a kid we would always come out to Pelorus almost every weekend, with my parents in the summer. It's really nostalgic for me... I just love it here. Never gets old."

All of the participants spoke about the recreational activities available in the area – swimming, hunting, fishing, walking, kayaking, sailing, as well as the community support from other locals in times when support is needed. It is clear from the participant's answers that the area is special to them, in many different ways. Connections to Pelorus/Te Hoiere are for some, primarily through a generational connection, while others connect to the landscape and the therapeutic attributes of the area. *"This is home."*

Question 2: What are some of the most significant environmental changes that you've noticed in Te Hoiere/ Pelorus river and estuary?

The objective to asking this question was to gain an understanding into the participant's personal knowledge of the catchment. Some complementary questions were; What do you think has caused those changes?; What effects have they had to the river and estuary?; and on a scale of 1 to 10, where would you rank the Pelorus River/Te Hoiere and estuary?

When discussing these environmental changes with participants, similar topics presented themselves. Seven of the participants noted that forestry and farming has changed since they have been living in the region – especially how both activities have increased and how land has been converted:

"Stocking rates have increased on the average farm... Even though mitigation is happening, stocking rates have increased so there's more pressure now on the land and the environment."

“When we first moved here [Wakamarina], the hills were just sheep-farmed – I liked it like that. There were no pine trees, not like now.”

“Back in those days people farmed everything – cows, pigs, sheep, chooks... Now we have a monoculture of farming, where people farm one thing on a larger scale.”

These participants also showed concern for the estuary and the Sounds, because of these increased activities in forestry and farming. One participant remembers the Wakamarina Valley when the area would get a heavy rainfall:

“They’re [forestry] doing it better now, but living up the valley all the forestry roads made what we called rivers. When we had heavy rains, it would just pour off the hills and you could tell from the colour of the flood if it was from forestry or further away and from the bush.”

Another comment made by another participant – *“Sedimentation flows out, forestry slash flows out, I see it where I live. It flows right out into the Sounds.”*

“I don’t agree with trees being planted in the Sounds. I don’t think radiata pine should be planted in the Sounds. When it comes to logging, all the stuff goes into the sea. It just makes a real mess. At the end of the day, those pines are weeds,” another participant stated.

Regardless of environmental impacts, participants acknowledged that forestry and farming are important to the area in an economic sense:

“Locals love the area and find it hard when strangers criticise dairying and forestry, which are important to the area.”

“It is an income for people, but it just started by people wanting to plant a few pine trees and then plant some more... But people do have to work and do have to make money.”

“We wouldn’t have what we have now if it wasn’t for that [forestry]... A lot of us stayed in our ways and worked in the same place.”

Loss of biodiversity in the catchment was also a concern for eight participants, who expressed concerns over loss of bird species in the area, which also opened up the conversation to an increase of predator pest species:

“Up on the top of the valley [Wakamarina], [I] used to see parakeets. They look like wee parrots. About 4-5-6 years ago, where I used to see the kakas, we were walking along the main ridge, looking down to Havelock, and I looked up and saw a kaka. That was the first one I’ve seen in about 20 years. Was amazing to see it there in the bush. And we have bush robins here too... Bird life isn’t the same, not like when we moved here. We don’t even see the sparrows here anymore. I love my birds though... Up the Foster River. Blue ducks up here, probably haven’t seen one in about 20 years. Blue ducks were so tame, and they would just come up to you. You’d see them in the Wakamarina too.”

Another participant recalls, *“I remember when I was first up there [Wakamarina Valley], and I know other people have seen this too, but there was blue duck still around. I saw one up Deep Creek... I think they’re gone now.”*

Participants also talked about the rivers – how the geology is different between the Pelorus and the Rai rivers, and five participants noticed how the rivers appear to be either *“drying up”* or *“building up from gravel,”* in sections.

“Pelorus River is rocky, only a couple of farms that border it. Those rivers have always been clean – up the Pelorus, the Tinline, you can see way down into the pools, the fish are large. Whereas the Rai is dirt banks, and when you get a flood and it washes the banks. You get runoff from paddocks and walk tracks. That river is dirty anyway. Once it stops raining it clears. The Rai River floods really high – always has whenever there is heavy rainfall.”

“The Pelorus river seems much lower than it used to be. You used to be able to jump off that Pelorus Bridge because the water was so high, but you can’t now. There are parts of the river that are dry, not so much on the main part of the river, but even the waterfalls don’t flow like they used to.”

“Sedimentation is coming from the rivers and the banks. Yes, you’ll get some off logging, but I remember when this forested land was gorse and trees and the river was still dirty.”

Three participants also touched on how tourism in the area has increased in the last twenty years or so, and how that is causing adverse effects to the environment and to local facilities:

“Some days you struggle to find a park on the main street [Havelock],” and “...over the summer locals struggle to use the river because of the increase of the tourists.”

When participants were asked what rating out of 10, they would give the Pelorus River/Te Hoiere and estuary, answers were varied. Four of the participants believed the catchment to be in relatively good health – *“It’s absolutely pristine, it’s beautiful.”* Those who perceived the river and estuary to be in good health gave the rating of either a 7 or 8 out of 10.

Two participants perceived the environment as unhealthy gave the catchment a rating of 1 or 5 out of 10 – *“Down the Pelorus river, it has deteriorated... You used to be able to see about 20 fish at Dalton’s Bridge, you wouldn’t see that now,”* while two other participants rated the river above the Pelorus Bridge a 9 out of 10, and below the bridge, a 5 out of 10. *“Even though it looks scenic and beautiful, I think there are some environmental problems in terms of biodiversity... I wouldn’t rate it very high.”*

“The sedimentation in the Havelock Estuary and Mahau Sound is simply an ecological disaster... politicians to a large degree are to blame as the Resource Management Act is simply not policed enough to prevent general pollution.”

One common theme that came through while participants were talking about environmental changes, was that things are looking better – 9 out of the 10 participants discussed how people’s attitudes to conservation have changed:

“I think we’re on a timeline of improvement that we should be positive about.”

Three participants spoke of the positive changes that occurred in the Rai Valley after the major river clean-up project – *“...a few years ago the Rai was one of the most improved rivers. It has come a long way. It’s not perfect – the riparian planting needs time to grow.”* Three participants spoke of the conservation efforts – *“There’s been some big steps in conservation to keep things right.”*

“Things are pretty good. You can’t stop the rain, the floods, the dirt and runoff...”

Despite locals identifying relatively negative changes to the environment, it was interesting and encouraging to hear the residents talk about the environment, and its future, in a positive way.

Question 3: Imagine Te Hoiere/ Pelorus river and estuary being a healthier area – what do you think that would look like?

This question was asked in order to discover what values participants wanted to have either maintained or improved. These values relate back to the Kotahitanga Alliance Strategy, where the Alliance aims to achieve positive environmental, social, cultural and economic outcomes that enrich and benefit the catchment and the communities.

Most of the participants discussed about balancing environmental values and economic values. People still need to thrive and have an income, but the environment should not come at a cost to that. One participant said:

“There are economic values in environmental values. Comes down to carefully managed tourism... if large-scale forestry and fishing were pulled back, then the environment could bounce back.”

“Farming and forestry have been the economic base of the community... Keep the right balance between economic and social well-being. Catch the locals when they are doing the good stuff – create community pride.”

“The GDP [Gross Domestic Product] shouldn’t be a way of measuring a country’s success – especially in terms of social well-being.”

Some participants also discussed maintaining the recreational values of the area – retaining the ability for people to go swimming, kayaking, fishing, sailing and hunting:

“If it became so unsafe for our kids to not be able to use it and swim in it that would also be horrible too. It’s one of the reasons why I love it here.”

One participant mentioned the preservation for cultural values as well. Māori consider water to have a mauri – that it has its own life essence and has intrinsic value:

“I think waterways are a natural system and they have a strong mauri life force... We shouldn’t have stock in them.”

Question 4: How do you think a healthy and thriving area could come about and be maintained?

This question sought to discover what aspirations and ideas the participant has for the Pelorus/Te Hoiere catchment. Similar to the other questions, main themes emerged in this section as well.

One participants suggested catching the sediment somewhere in the river, as a way to determine where it had come from, or to dredge the sediment out of the estuary and reclaim land with it. Another suggested taking gravel out of the rivers to prevent build-up and help mitigate flooding. A couple of participants also mentioned the change in how native timber milling was done, compared to current forestry practices:

“They would do selective logging, now it’s just clear felled in blocks.”

Some participants mentioned that the willows and poplars that line the Rai and Pelorus rivers should be removed, as they are not native trees and can break off in heavy floods:

“Native species would hold the banks in place and reduce erosion happening along the banks. I can see the whole valley being replanted with natives along the river [Rai].”

“Take out the willows and poplars, and replant with native plants – clear out ‘old man’s beard’ and other weeds.”

All of the participants also recognised that what had been done so far was admirable – activities like riparian planting, wetland restoration and fencing stock have already made some improvements and continuing to do those activities will make more improvements. Two participants also mentioned that it would be great to see Māori history shared more:

“...would be nice to hear the Māori history side of it all... We hear about the European history a lot.”

The main comment participants made was that this should be a community effort – everyone needs to be helping everyone else out to achieve the objectives. This means working together and putting the past and blaming aside:

“We need to take a holistic approach and work together to achieve a better environmental outcome.”

The participants also mentioned that they would like to be involved in future projects – all of them mentioned they are looking forward to working with the Kotahitanga Alliance and being involved in the future of Pelorus/Te Hoiere:

“I look forward to the future and seeing what we can all achieve... I’m onboard with this project and have always been onboard with acknowledging mistakes and learning from them.”

“You have to get involved if you really want to preserve the environment. It doesn’t mean it has to stand still – we just have to be smart... There are ways that people and the environment can thrive side-by-side...”

Chapter 5.

Shifting baselines

As mentioned previously, shifting baselines occur when a generation³ perceives a degraded environment as a healthy environment – ultimately accepting the degraded state as ‘the norm.’ This acceptance occurs when there are local knowledge gaps, hence the current generation has nothing to upon which to base their perception of environmental standards (Soga & Gaston, 2018; Guerrero-Gatica, Aliste & Simonetti 2019). Providing education and the opportunity to be part of research can fill local ecological knowledge gaps, and may also help people to agree to take action to ‘lift’ the environmental baseline by working together.

This pilot study will be extended in a Masters of Applied Science thesis to establish evidence of shifting baselines, and to explore the nature and characteristics of any identified shifting baselines. A comprehensive catchment history of the Pelorus/Te Hoiere catchment is being prepared by one of the authors (SCU), which will also contribute to deepening the understanding of environmental change. What is clear is that to the interviewees the fundamental nature of the estuary has not obviously changed within their lifetimes:

The estuary “*has always been muddy,*” and that “*it’s never smelt like a ‘clean’ estuary.*” As one participant mentioned: “*I wouldn’t know that the estuary has gotten muddier and muddier... I know some people talked about how the estuary used to be sandy, now it’s just soft, fine sediment. It’s been pretty muddy for my lifetime.*”

³ The participants’ ages ranged between 30-80 years of age – this range shows that there are most likely two different generations (in terms of birth years), however they were selected by the Kotahitanga Alliance due to their connection and knowledge of Pelorus/Te Hoiere. For this report, the term ‘generation’ refers to Karl Mannheim’s definition, where he states there are three elements to forming a generation: “a shared temporal location (i.e. generational site or birth cohort); shared historical location (i.e. ... exposure to a common period); and finally a shared socio-cultural location” (Gilleard & Higgs, 2002). For this report in particular, this definition relates to how the participants share a common physical connection to Pelorus/Te Hoiere.

Chapter 6.

Looking to the future

During the interviews, it became quickly evident that the area is important to all of the interviewees, and the well-being of the environment was particularly emphasised. The Pelorus/Te Hoiere catchment provides for social and economic stability, while also providing in some places a scenic environmental backdrop for recreational activities.

Based on the responses to date, there is a support for planting throughout the catchment, and for exotic species to be removed, especially from the banks of the rivers. There is also major potential for lowland indigenous forest to be regenerated, which would allow for native bird and bat species to flourish. This would also likely mean some form of ongoing predator control. These desires reflect a concern for the preservation of native flora and fauna in the catchment, but not on specific aspirations for the estuary.

Learning from the past could provide a platform for discussions about restoration and adaption to climate change as well. In particular, the Rai River clean-up mentioned by one of the interviewees was seen as a good example of collaboration between by Outward Bound and local Rai Valley farmers. Despite this, it is apparent that from the interviews conducted, there is a general feeling of uncertainty and confusion from the community – particularly about what is being planned for the catchment by the Kotahitanga Alliance, how it will happen, and what it means for the community.

This suggests the need for ongoing dialogue about what the future could look like for the catchment, and perhaps going further than discussing pest control and riparian planting. As discussed in *Environment Aotearoa*, there are knowledge gaps in how land is utilised. The Kotahitanga Alliance is in the position of helping to reduce these gaps by the reciprocal and respectful exchange of ideas and knowledge. The aim being to help improve ecological resilience, which underpins the rural economy, by adapting land-use practices to reduce runoff of sediments, bacteria, and nutrients. This should also help to improve biodiversity.

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Appendix

Question sheet detailing the questions that participants were asked, including prompts and the aim/s for each section.

Questions

1. Tell me about yourself, and your connection to Te Hoiere/ Pelorus river and estuary.

(prompts)

- *Where are you from?*
- *How long have you been associated with this area?*
- *Do you still live, work or undertake activities in the area?*
- *What was it like growing up in Te Hoiere/ Pelorus?*
- *What are your earliest memories of the river/ estuary/ forest?*
- *Why is Te Hoiere/ Pelorus important to you?*

Aim: To get a sense of the person's connection to the place, history of the area, values/ feelings of the place/s.

2. What are some of the most significant environmental changes that you've noticed in Te Hoiere/ Pelorus river and estuary?

(prompts)

- *What do you think has caused those environmental changes? – to the river and estuary specifically*
- *What effects have these changes had?*
- *What effects have these changes had to the way you feel about Te Hoiere/ Pelorus river and estuary?*
- *On a scale of 1-10, with 1 being degraded and 10 being pristine, where would you rank Te Hoiere/ Pelorus river and estuary?*

Aim: To gather local ecological knowledge, to inform a broader understanding of environmental changes.

3. Imagine Te Hoiere/ Pelorus river and estuary being a healthier area – what do you think that would look like?

(prompts)

- *What spiritual/ cultural values are important to maintain and/or to thrive?*
- *What social values are important to maintain and/or to thrive?*
- *What economical values are important to maintain and/or thrive?*
- *What environmental values are important to you to maintain and/or to thrive?*

Aim: To get a sense of holistic values around the four pillars of sustainability (cultural, social, economic, environmental). By asking these questions we are conveying to the interviewee that their values and views are important.

4. How do you think a healthy and thriving area could come about and be maintained?

(prompts)

- *What ideas do you have for Te Hoiere/ Pelorus river and estuary?*
- *What could be improved?*
- *How would you like to be involved in the future of Te Hoiere/ Pelorus river and estuary?*
- *What ways could we work together to bring this about?*

Aim: To get a sense of the community's aspirations and willingness to bring these changes about.

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