

**BEFORE THE ENVIRONMENT COURT
I MUA I TE KOOTI TAIAO O AOTEAROA**

ENV-2018-CHC-26 to 50

IN THE MATTER of the Resource
Management Act 1991

AND

IN THE MATTER of appeals under clause
14 of Schedule 1 to the
Act relating to the
proposed Southland
Water and Land Plan

BETWEEN **WAIHOPAI RŪNAKA,
HOKONUI RŪNAKA,
TE RŪNANGA O
AWARUA, TE
RŪNANGA O ORAKA
APARIMA, and TE
RŪNANGA O NGĀI
TAHU (collectively
NGĀ RŪNANGA)**

**Appellants in ENV-
2018-CHC-47**

AND **SOUTHLAND
REGIONAL COUNCIL**

Respondent

**STATEMENT OF EVIDENCE OF DR JANE CATHERINE KITSON
ON BEHALF OF NGĀ RŪNANGA – TRANCHE 3**

Environmental science / Mātauranga Māori

1 August 2022

Solicitor acting

 **Simpson Grierson**
Barristers & Solicitors

Simpson Grierson
S K Lennon
Telephone: +64-4-924 3509
Facsimile: +64-4-472 6986
Email: sal.lennon@simpsongrierson.com
DX SX11174 PO Box 2402
SOLICITORS
WELLINGTON 6140

Counsel acting

James Winchester
Telephone: 06 883 0080
E-mail: jw@jameswinchester.co.nz
The Office
Level 1, 15 Joll Road
PO Box 8161
Havelock North

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INTRODUCTION

1. My full name is Dr Jane Catherine Kitson.
2. My whakapapa, qualifications and experience are set out in my statement of evidence (Topic A), dated 15 February 2019, and updated in my statement of evidence (Topic B) dated 21 December 2021. I further updated these matters in my statement of evidence dated 4 February 2022.

CODE OF CONDUCT

3. I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and I agree to comply with it. I confirm that the issues addressed in this statement of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed. The data, information, facts and assumptions I have considered in forming my opinions are set down below and in my evidence to follow.
4. As a member of the New Zealand Freshwater Sciences Society, a constituent organisation of the Royal Society of New Zealand - Te Apārangi, I also agree to be bound by the Royal Society of New Zealand Code of Professional Standards and Ethics in Science, Technology, and the Humanities.
5. I am a member of Te Rūnanga o Ōraka-Aparima and also whakapapa to Te Rūnanga o Awarua and Waihōpai Rūnaka. My expertise is partially derived from those cultural associations. I note that whilst I am of Ngāi Tahu descent, I am required to be impartial and unbiased in my professional opinions expressed.
6. For the avoidance of any perceived conflicts, I advise that my husband, Zane Moss, is the manager of Fish and Game New Zealand - Southland Region.
7. In June 2022, I was newly appointed for a five-year term as the Ngāi Tahu representative on the Guardians of Lakes Manapōuri, Te Anau and Monowai.

SCOPE OF EVIDENCE

8. My evidence focuses on the Waiau and its cultural health which is connected to its state, in relation to water quality, water quantity and ecosystem health.
9. In my evidence, I have referred to:
 - (a) Final report on cultural indicators of health (29 November 2019);¹
 - (b) Draft Murihiku Southland Freshwater Objectives: Providing for hauora, the health and well-being of waterbodies in Murihiku Southland, 2020;
 - (c) Ngāi Tahu ki Murihiku cultural impact assessments for the Waiau;
 - (d) Statement of evidence of Ms Ailsa Cain (1 August 2022); and
 - (e) Statement of evidence of Ms Treena Davidson (1 August 2022).

TE MANA O TE WAI AND HAUORA

10. In the River and Lakes Joint Witness Statement (4 September 2019), Ms Cain provided the following meanings for Ki Uta ki Tai and Te Mana o te Wai in the Southland context:²

The pSWLP seeks to manage water and land resources in a way that encompasses the Ngāi Tahu philosophy of Ki Uta Ki Tai. This approach recognises that water is important in a variety of ways and that Environment Southland is committed to managing the connections between land and all water, particularly the effects of water quality and quantity changes on the health and function of estuaries and coastal lagoons.³

Ki Uta Ki Tai is commonly referred to as 'mountains to the sea' and is about standing on the land and knowing the effects, both positive and negative, in every direction. This ethos reflects the mātauranga (knowledge) that all environmental elements are interconnected and must be managed as such.

At a framework level, Ki Uta Ki Tai is similar to the RMA term 'integrated management'.

1 The report was Appendix A to a memorandum of counsel for Ngā Rūnanga, filed on 29 November 2019.
2 Joint Witness Statement (4 September 2019) - Water Quality and Ecology (Rivers and Lakes) at [12]. For ease of reference, the Joint Witness Statement was filed, attached to the Memorandum of Counsel for Southland Regional Council in relation to Directions from the Court as to a programme of work for development of Ecological and Cultural Indicators of Health (6 September 2019).
3 pSWLP Appeals Version, p. 5.

The pSWLP also recognises that Te Mana o te Wai is fundamental to the integrated framework for freshwater management in Southland.⁴ Te Mana o te Wai was formally introduced to freshwater management in 2014 through the NPSFM, which states that it is nationally significant. Upholding Te Mana o te Wai acknowledges and protects the mauri of the water.⁵

Another way of saying this is that the needs of the waterbody are put first. Te Mana o te Wai puts a korowai (cloak) over water to recognise its significance in its own right and provides an overarching principle of protection in freshwater management.

Te Mana o te Wai then moves to providing for Te Hauora o te Taiao (the health of the environment), Te Hauora o te Wai (the health of the waterbody) and Te Hauora o te Tangata (the health of the people). Hauora is not just a reference to one's health but to a state of health. Hauora is defined in English as meaning 'fit, well, healthy, vigorous, robust.' A human analogy for hauora is that you can take a knock, such as have a cold, and have the resilience to bounce back to a healthy and vigorous state.

Therefore, at a principle level, Te Mana o te Wai puts the needs of the waterbody first and provides for healthy and robust waterbodies, people and environment – not one over the other but the hauora of all three elements. Te Mana o te Wai is encompassed in the pSWLP by Ki Uta Ki Tai that holistically integrates the application of Te Mana o te Wai from the estuaries to the headwaters and everything in-between.

11. Protecting mauri is key to freshwater management. It therefore needs to be acknowledged that the 'mauri of the Waiau River exists ki uta ki tai (from mountains to the sea), this includes the lakes, river and sea'.⁶ Although not within the Waiau Freshwater Management Unit (**FMU**), a ki uta ki tai approach will also include consideration of the artificial discharge to Deep Cove from the Manapōuri Power Scheme.
12. Hauora is a fundamental concept that can be used to set the appropriate baseline for freshwater management, to meet the requirement to provide for Te Mana o te Wai. Hauora is akin to a state of healthy resilience and is most likely to be provided for when waterbodies are closest to their natural condition, with mauri intact. It does not necessarily mean pristine or untouched by humans, but it does mean that waterbodies support natural processes, populations of species, or human activities and uses that were once associated with the waterbody (i.e. cultural). Therefore, an understanding of natural state or reference state is needed to help decision-makers.
13. No single attribute can provide certainty that a state of hauora is achieved. Understanding the state of hauora requires assessment of a series of attributes,

4 pSWLP Appeals Version, p. 6.

5 National Policy Statement for Freshwater Management 2020, p. 7.

6 Te Ao Mārama Inc. 2008.

and to be achieved these thresholds must be within a range that reflects healthy resilience.⁷ This mix of attributes must include Ngāi Tahu Indicators of Health.

IMPACTS ON MAHINGA KAI FROM POOR WATER QUALITY AND WATER QUANTITY

14. In my statement of evidence for Topic A (15 February 2019), I provided evidence on the connection of Ngāi Tahu values and the state of the environment (paragraphs [38] to [55]) that need to be considered in freshwater management decisions. I used mahinga kai to illustrate this point. Mahinga kai has many environmental and water related dependencies. The text quoted below highlights the range of environmental related dependencies that can impact on mahinga kai species and the activity of mahinga kai.⁸

[50] Impacts on the abundance and condition of mahinga kai populations include:

- (a) sedimentation.
- (b) reduction in habitat quality/quantity (caused by land-use change, water abstraction, or drain clearance).
- (c) river modifications (e.g. channelisation, flood control, hydrogeneration schemes and other infrastructure).
- (d) water quality deterioration and eutrophication.
- (e) harvest, and removal of vegetation providing shade and shelter.
- (f) barriers to fish passage.
- (g) pollution events.
- (h) parasites and disease; and
- (i) pest fish and plants.

[...]

[52] The activity of mahinga kai relies on the harvested species being present, abundant, in good condition, physically accessible, desirable to harvest and safe to consume and gather (refer to Mr Skerrett's evidence, particularly at paragraphs 61 and 88). Physical and legal conditions must also enable access and the ability to use preferred sites and methods (Figure 3, Appendix B).

[53] Impacts from land-use activities on the practice of mahinga kai include high pathogen load in the waterways and/or toxic algae (which makes it unsafe for harvesters); bank stability and excess sediment (which can impact the ability to use a preferred harvest method safely, e.g. netting or spearing); and

⁷ Science/water quality Joint Witness Statement (26 November 2021), question 6.

⁸ Statement of evidence of Dr Jane Kitson (15 February 2019) at [50], [52] and [53].

excessive pest plants and algae (which can foul nets, make rocks slippery and decrease visibility).

15. My statement of evidence for Topic A (15 February 2019) and the final report on cultural indicators of health (29 November 2019);⁹ provide clear evidence that the state of cultural use, associations and values are dependent on water quality, water quantity, flows, habitat and associated ecosystem health.
16. Hydro-electric generation and dams impact on ecosystem health, fish movements, habitat and connections of habitat and ecosystem health of a catchment as a whole.¹⁰
17. The Manapōuri Power Scheme involves the largest water take in Southland and in all of New Zealand. The Manapōuri Power Scheme consent accounts for 98.5% of all water¹¹ allocation in Southland and approximately 41% of the total water allocated in New Zealand.¹²
18. Prior to the Manapōuri Power Scheme, the Waiau was the second largest river in terms of discharge.¹³ The river was named for its large volume of swirling and turbulent waters. The majority of the flow is now diverted through Manapōuri Power Station at Deep Cove.¹⁴ The Waiau River's minimum flow allocation is now 16 cumecs downstream of the Manapōuri Lake Control structure. The Manapōuri Power Scheme impacts the mauri of the whole catchment.
19. Cultural value and impact reports for the Manapōuri Power Scheme have noted cultural degradation. The impacts included:¹⁵
 - a) Wahi ingoa/place names: The Waiau River was named for its turbulent, swirling waters and its great volume of water, which has been greatly altered;
 - b) Mauri: "For tangata whenua, the Waiau River is not a healthy river";
 - c) Kaitiakitanga: in particular the inability to help protect the river;
 - d) Awa/Nga wai: With the loss of the water to the Waiau river and the impacts of this to the river ecology and ability to cleanse itself;

9 The report was Appendix A to a memorandum of counsel for Ngā Rūnanga, filed on 29 November 2019.

10 Statement of evidence of Dr Jane Kitson (15 February 2019) at [141] - [144].

11 Surface water and groundwater. Rajanayaka et al.2010.

12 Rajanayaka et al.2010.

13 Second to Te Mata-au/Clutha River. ES and TAMI 2011, <https://www.lawa.org.nz/explore-data/southland-region/water-quantity/surface-water-zones/waiiau-surface-water-zone/>.

14 Approximately 500 cumecs is diverted. ES and TAMI 2011, <https://www.lawa.org.nz/explore-data/southland-region/water-quantity/surface-water-zones/waiiau-surface-water-zone/>.

15 Statement of evidence of Dr Jane Kitson (15 February 2019) at [144].

- e) Mahinga kai: Impacts on mahinga kai species due to passage issues and changes in river and lake levels; and
- f) Cumulative effects: the health and cumulative effects on the Waiau River.

CULTURAL HEALTH OF THE WAIU CATCHMENT

- 20.** In the Minute of the Court (dated 5 August 2019), there was a request that work be completed on cultural indicators of health, which can then be used to describe what is “degraded”, as opposed to what is not in hauora, in relation to waterbodies in Southland.
- 21.** The subsequent 2019 report¹⁶ used cultural indicators of health to enable the assessment and monitoring of cultural thresholds and deterioration at a regional scale. It should be noted that the cultural indicators of health implemented in the outcome of this work programme will not be a complete set of “Ngāi Tahu indicators of health”, as they will apply in the context of Policies 40 and 47 of the proposed Plan. This body of work does not replace Kaitiaki specific cultural indicators and frameworks to assess their specific cultural uses, values and associations.¹⁷
- 22.** Monitoring of cultural uses, such Nohoanga and Wai Tuna, has been completed by Kaitiaki, within the Waiau catchment, and other parts of Southland. These assessments were rigorously developed, tested and validated in wananga and in the field by Ngāi Tahu ki Murihiku and the methodology used adaptations of the cultural health Index methodology, in addition to other whanau measures and thresholds for cultural use. This methodology was based on the Murihiku Cultural Water Classification System framework.¹⁸
- 23.** The cultural indicators and thresholds used in the 2019 report¹⁹ were based on the attributes (with thresholds) of Te Ara Tawhito (traditional travel routes), Mahinga Kai, and Mauri. These are pillars of Ngāi Tahu culture and identity.
- 24.** The 2019 cultural indicators were limited to available and accessible Southland Regional Council data. There was not data to assess all the potential indicators listed in that report [Table 1, pages 22 – 36]. The assessment did not include the application of ki uta ki tai, nor cumulative and intergenerational aspects,

¹⁶ The report was Appendix A to a memorandum of counsel for Ngā Rūnanga, filed on 29 November 2019.

¹⁷ As applied in Te Tangi a Taura (Ngāi Tahu ki Murihiku 2008), p.42.

¹⁸ Kitson et al 2018.

¹⁹ The report was Appendix A to a memorandum of counsel for Ngā Rūnanga, filed on 29 November 2019.

therefore the overall analysis underestimates the scale of degradation. Nonetheless, the regional scale indicators demonstrate the significant cultural degradation of the Waiau.

25. The assessments indicate that the scale of degradation, with respect to the aforementioned values, is such that it impacts on Ngāi Tahu cultural identity and wellbeing.
26. The Waiau catchment is significantly degraded from a cultural perspective (as well as ecosystem health). Improving towards a state of hauora, to move towards restoring the mauri of the Waiau is culturally important as the restoration of Southland's waterbodies is a key expectation of Ngā Rūnanga Papatipu ki Murikihu.²⁰ As stated in the Ngāi Tahu Claims Settlement Act 1998:²¹

The mauri of the Waiau represents the essence that binds the physical and spiritual elements of all things together, generating and upholding all life. All elements of the natural environment possess a life force, and all forms of life are related. Mauri is a critical element of the spiritual relationship of Ngāi Tahu Whānui with the river.

Dr Jane Catherine Kitson

1 August 2022



20 Statement of Evidence of Ailsa Cain (15 February 2019), Appendix B - Ngā Rūnanga Papatipu ki Murikihu's Aspirations for Freshwater.

21 Ngāi Tahu Claims Settlement Act 1998, Schedule 69 (Statutory acknowledgement for Waiau River).

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