**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

**Environmental science / Mātauranga Māori**

**20 December 2021**

---

Simpson Grierson
Barristers & Solicitors
Simpson Grierson
J G A Winchester/S K Lennon
Telephone: +64-4-924 3503
Facsimile: +64-4-472 6986
Email: james.winchester@simpsongrierson.com
DX SX11174 PO Box 2402
SOLICITORS
WELLINGTON 6140

## 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. As an update to those matters, I am now a co-lead in the Biological Heritage National Science Challenge for the Empowering Kaitiakitanga and Environmental Stewardship programme (SO2), and the Ministry of Business, Innovation and Employment (**MBIE**) funded *Fish futures: preparing for novel freshwater ecosystems*. I have also been appointed to the Our Water and Land National Science Challenge Science and Stakeholder Advisory Panel and I am co-chair for the Rakiura Tītī Island Administering Body.

**3.** I have been asked by Ngāi Tahu to provide a will-say statement, participate in expert conferencing and provide this evidence in relation to water quality and freshwater ecosystem health with respect to the Topic B provisions of the Proposed Southland Water and Land Plan (**pSWLP**).

## CODE OF CONDUCT

**4.** 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.

**5.** 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.

**6.** 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.

**7.** 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.

## SCOPE OF EVIDENCE

**8.** As part of Topic A, the parties and witnesses agreed that the pSWLP "embodies ki uta ki tai and upholds Te Mana o Te Wai and they are at the forefront of all discussions and decisions about water and land."[1]

**9.** The Environment Court summarised its understanding of Te Mana o te Wai as:[2]

> When we speak about Te Mana o te Wai we are referring to the integrated and holistic wellbeing of a freshwater body. Upholding Te Mana o te Wai acknowledges and protects the mauri of water. While mauri is not defined under the NPS-FM…the mauri of water sustains hauora (health): the health of the environment, the health of the waterbody and the health of the people. As a matter of national significance the NPS-FM requires users of water to provide for hauora and in so doing, acknowledge and protect the mauri of water.

**10.** My evidence covers the following themes:

(a) The connections between Topic B and the Topic A decisions around the foundational elements of ki uta ki tai/Te Mana o te Wai and the requirement for movement towards hauora for Southland waterways.

(b) To identify hauora requires consideration of the resilience of waterbodies. Consideration and management towards hauora are separate from the identification of degraded water bodies. If a site is identified as not being degraded it cannot be automatically categorised as being in a state of hauora.

(c) The Ngā Rūnanga appeal points, in relation to

(i) wetlands; and

1 pSWLP Interpretation Statement; *Aratiatia Livestock Limited and Ors v Southland Regional Council* [2020] NZEnvC 93 at [9].

2 *Aratiatia Livestock Limited and Ors v Southland Regional Council* [2019] NZEnvC 208 at [17].

(ii) taonga species protection and habitat.

**11.** In relation to the themes that my evidence will address, as outlined in the preceding paragraph, it is my opinion that, for the matters in Topic B that Ngā Rūnanga has an interest in, the connections between those matters and the Topic A decisions regarding the foundational elements of ki uta ki tai/Te Mana o te Wai and the requirement for movement towards hauora for Southland waterways, need to be clarified and strengthened to ensure that the Topic B provisions achieve the intentions of the Court's Topic A decisions.

**HAUORA**

**12.** It is clear that many waterways in Southland are in a degraded state and require significant improvements such that they move towards a state of hauora. For example, total net load reductions of 70% for Total N and Total P have been modelled by Snelder 2021 (provided in Table 1 of the Science/water quality Joint Witness Statement (**JWS**) – 26 November 2021).

**13.** The necessary progression towards the state of hauora requires an appropriate set of Topic B provisions that properly reflect the foundational concepts of Te Mana o Te Wai and ki uta ki tai.

**14.** The inclusion of Ngāi Tahu indicators of health in Topic B provisions is required to implement Te Mana o te Wai and monitor the progress towards the state of hauora.

**15.** Te Mana o te Wai puts the mauri and the needs of the waterbody first. Te Mana o te Wai then moves to provide for Te Hauora o te Taiao, Te Hauora o te Wai, and Te Hauora o te Tangata. As stated in the Water Quality and Ecology JWS (Rivers and Lakes) - 3-4 September 2019:

> 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.

**16.** To achieve hauora requires an understanding of the resilience of a waterbody, using environmental science and Ngāi Tahu indicators of health. Achieving the

state of hauora requires moving beyond technical discussions on what is degraded or not, to discussions about what are healthy and resilient waterbodies. To assess hauora requires consideration of many attributes together and understanding the natural characteristics of that particular water body.[3] Bartlett et al 2020 provides a description of attributes required to consider hauora holistically.

**17.** The experts agreed in the Science/water quality JWS - 26 November 2021 that: [4]

> …defining degraded (as has been done in previous JWSs) does not define hauora. Hauora is closer to a natural state whereas a degraded state, by definition, is not natural.

**WETLANDS**

**18.** Wetlands are culturally and ecologically important.[5] A large proportion of wetlands have been lost (90% between about 1840 to 2010) and wetland extent has continued to decrease since 2007.[6] Wetland loss is considered an indicator of cultural degradation.[7]

**19.** The predominant cause for decreases in wetland extent has been attributed to the development of pasture for agricultural production.[8] In the Rate and Lloyd (2019) memorandum on the causes of wetland loss, the following was observed:

> Ground-truthing of the causes of wetland loss largely confirmed the desktop results, with the effects of drainage observed to cause significant modification to wetland vegetation, and cultivation and inundation resulting in complete loss of wetland vegetation, and some of these effects having occurred subsequent to 2012. Ground truthing also revealed the effects of grazing, trampling, and nutrient inputs at one wetland. These effects are likely to be occurring at most wetlands that are not fenced to exclude adjacent cattle or deer.

**20.** In the Ecology JWS -1 December 2021 the experts agreed:

> …that risks of adverse effects on natural wetlands should be avoided wherever possible and where you cannot avoid, carefully managed through the plan provisions.

---

3 Bartlett et al 2020.
4 Page 11.
5 Statement of Evidence of Michael Skerrett (15 February 2019) at [68)] ; Statement of Evidence of Dr Jane Kitson (15 February 2019) at [43]; Statement of Evidence of Ailsa Cain(15 February 2019) at [45], [68] and Appendix B; Statement of Evidence of Dr Kelvin Lloyd (14 December 2018); Ecology JWS – 1 December 2021.
6 Statement of Evidence of Dr Jane Kitson at [103] – [107]; Memorandum of Counsel for Ngā Rūnanga regarding Cultural Indicators of Health (29 November 2019) at [48] – [50] and references cited within.
7 Memorandum of Counsel for Ngā Rūnanga regarding Cultural Indicators of Health (29 November 2019) at [49] and Appendix 1.
8 Robertson et al 2019; Ledgard 2013, Statement of Evidence of Dr Kelvin Lloyd (14 December 2018).

**21.** With such a high loss of wetlands, those that remain become more significant – ecologically and culturally. Wetlands as water filters, high biodiversity values and habitat for taonga species contribute to the hauora of the connected ecosystems. Permissive rules that do not prioritise the protection of wetlands will not achieve or enable movement towards hauora and thereby Te Mana o te Wai.

**DRAIN MAINTENANCE**

**22.** The current mitigation outlined in Rule 78 will not meet Objective 15 or Policy 3 provisions (recognising, providing for and avoiding adverse effects on taonga species). As stated by Michael Greer in his memo for mediation (attachment 1 to the Ecology JWS – 1 December 2021):

> Put simply, drain clearance is an intentionally destructive activity; it is not possible to fully mitigate the effects of using an excavator in a stream. Accordingly, the best method of minimising the effects of drain clearing is to reduce the frequency at which it is conducted.

**23.** The Ecology JWS - 1 December 2021 provides a range of effects on aquatic life that are not mitigated by Rule 78. The current possible mitigations (listed in Table 1 JWS Ecology) are also unable to prevent adverse impacts on taonga species. Modified waterbodies where drain maintenance occurs overlap with numerous areas where aquatic taonga species have been located.[9] Although the waterways are described as 'modified' they constitute a large proportion of Southland's rivers, streams and creeks.[10]

**24.** Many mitigations rely on species' mobility to avoid capture or to move back into the waterway after the 'maintenance' has occurred. However, the high disturbance of habitat and suspension of sediment may impact their subsequent survival.

**25.** There are a number of less mobile and sensitive taonga species, such as sediment-dwelling kanakana/pouched lamprey (threatened – nationally vulnerable), benthic dwelling waikākahi (at risk- declining), and koura (at risk – declining) that are at higher risk from sediment, and from weed removal activities.

9 Ecology JWS – 1 December 2021, Attachment One – Memorandum to Environment Southland from Michael Greet (23 April 2021).

10 See maps in Appendix 1 of the Memorandum from Dr Nicholas Dunn (18 June 2021), attached to Will-Say Statement of Ms Emily Funnel (29 October 2021).

**26.** These species are often not recorded in the commonly used NZ Freshwater Fish Database, which generally relies on electro-fishing records; a technique that is less effective, or entirely ineffective, at detecting the presence of these species. This makes mapping distribution problematic, as does spatially variable sampling effort. Therefore, reliance solely on the known distribution of species is inadequate as it does not protect areas where surveys have not occurred. It also fails to recognise that the impacts of regular drain maintenance are likely to have displaced species. If the pSWLP is to achieve its Objectives that effectively require improvements in degraded waterways, then the significance of the damage that drain maintenance causes to taonga species needs to be appropriately reflected in the rule framework.

**27.** I have witnessed a large number of waikākahi being removed by drain clearance of sediment and macrophytes. In a 515m stretch of the West branch of the Waikawa River, 205 waikākahi (median size 91 mm; range 68 to 110mm) were removed and deposited onto the adjoining paddock, where they will die. This stretch of the Waikawa River is upstream of the Waikawa/Tumu Mātaitai and the nohoanga site (Ngāi Tahu Claims Settlement Act 1998 entitlement). See figure 1 below.

**Figure 1:** Waikakahi observed in drain maintenance spoils of clearing 515m of the Waikawa River West Branch

**28.** The Ecology JWS – 1 December 2021 highlights the negative impacts on taonga species from clearing weed and sediment from modified waterways. In the pSWLP process, alternative mechanisms are required to alleviate the need for drain clearance i.e. ensuring sufficient reduction of sediment and nutrients entering our habitats to ensure weed and sediment accumulation does not become problematic. This would be necessary to provide for taonga species and hauora.

**29.** The general permissive nature of the rules in the pSWP does not take into account Te Mana o te Wai, which puts the mauri and needs of the waterbody first. Rather, as they stand, the rules prioritise use over the protection of taonga species in relation to drain maintenance and use over the protection of natural wetlands. The permissive nature of the current rule structure will not achieve or enable movement towards hauora, protection of taonga species and thereby Te Mana o te Wai.

**Dr Jane Catherine Kitson**

**20 December 2021**

## References

Bartlett, M.; Kitson, J.; Norton, N.; Wilson, K. Draft Murihiku Southland Freshwater Objectives: Providing for Hauora, the Health and Well-Being of Waterbodies in Murihiku Southland; Environment Southland and Te Ao Marama Inc: Invercargill, New Zealand, 2020.

Ledgard, G., 2013. Land use change in the Southland region. Environment Southland Technical Report, 13

Robertson, H.A., Ausseil, A.G., Rance, B., Betts, H. and Pomeroy, E., 2019. Loss of wetlands since 1990 in Southland, New Zealand. New Zealand Journal of Ecology, 43(1), pp.1-9.