

**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 AS A SECTION 274 PARTY**

Environmental science / Mātauranga Māori

4 February 2022

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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. As an update to these matters, I am the co-author of the 'Draft Murihiku Southland Freshwater Objective' report (Bartlett et al. 2020). This report has been referred to in the Science JWS (26 November 2021). The Bartlett et al. 2020 report used the Cultural Indicators of Health report (attached to a memorandum of counsel on behalf of Ngā Rūnanga, dated 29 November 2019) as the foundation to develop the draft Freshwater Objectives based on hauora. I was the lead author of this report.

CODE OF CONDUCT

3. I refer 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.

SCOPE OF EVIDENCE

7. My evidence focuses on the evidence in chief of Dr Depree (on behalf of the Dairy Interest Parties) around hauora, as it is developed and applied in Southland/Murihiku.

HAUORA AS DEVELOPED AND APPLIED IN SOUTHLAND/MURIHIKU

Misunderstanding of hauora as being equivalent to MCI

8. Dr Depree has linked one index (MCI) as being consistent with hauora, in order to be holistic rather than reductionist. However, doing so ignores the fact that hauora (as developed in Southland/Murihiku) encompasses multiple indicators (numeric and narrative) and incorporates environmental science and mātauranga Māori (including Ngāi Tahu indicators of health). I refer Dr Depree to the Hauora Principle A:¹

A state of hauora will be the result of the interaction of a combination of attributes, including Ngāi Tahu Indicators of Health.

9. Dr Depree has used MCI as an 'overall' indicator of ecosystem health. However, there are scientific limitations of the use of MCI to encompass ecosystem health as a whole. The purpose of the Clapcott et al 2018 report cited in his statement, was to develop an ecosystem health framework to enable an overall assessment of ecosystem health rather than relying on indicators and indices that only represent components of freshwater ecosystem health.² Evidence to the Court has highlighted that MCI is a less sensitive index for macroinvertebrates than others such as QMCI and SQMCI.³

Use of hauora to indicate degraded water bodies

10. If a catchment is not considered degraded, it cannot be said to be in a state of hauora. There appears to be confusion in Dr Depree's statement on his concept of hauora, as MCI and *E. coli* and then providing maps on what is considered degraded or not. This issue has been explained in the Science JWS (26 November 2021), Question 6, where all the experts agreed that hauora and degraded are different concepts.

1 Bartlett et al 2020, and repeated in the Science JWS (26 November 2021). More detail is provided in both.
2 Clapcott J, Young R, Sinner J, Wilcox M, Storey R, Quinn J, Daughney C, Canning A, 2018 Freshwater biophysical ecosystem health framework. Prepared for Ministry for the Environment. Cawthron Report No. 3194.
3 Professor Death Statement of Evidence (15 February 2019) paragraphs [10.4] - [10.5].

11. I also refer Dr Depree to the Hauora Principle F: ⁴

Hauora is most likely to be provided for when waterbodies are closest to their natural condition, so an understanding of natural state or reference state is needed to help decision-makers.



Dr Jane Catherine Kitson

4 February 2022

4 Bartlett et al 2020, and repeated in the Science JWS 26 November 2021. More detail is provided in both.