
in the matter of: the Resource Management Act 1991

and

in the matter of: a number of applications to take and use water from
the Upper Waitaki catchment

Brief of evidence of Donna Lee Sutherland on individual applications

Dated: 30 November 2009

REFERENCE: JM Appleyard (jo.appleyard@chapmantripp.com)
BG Williams (ben.williams@chapmantripp.com)

Chapman Tripp
T: +64 3 353 4130
F: +64 3 365 4587

119 Armagh Street
PO Box 2510, Christchurch 8140
New Zealand

www.chapmantripp.com
Auckland, Wellington,
Christchurch



BRIEF OF EVIDENCE OF DONNA LEE SUTHERLAND ON INDIVIDUAL APPLICATIONS

INTRODUCTION

- 1 My full name is Donna Lee Sutherland.
- 2 My qualifications and experience are set out in my brief of evidence dated the 16 September 2009.
- 3 I have been engaged by Meridian Energy Limited (Meridian) to provide 'individual evidence' in relation to resource consent applications by Southdown Holdings Limited, Five Rivers Limited and Killermont Station Limited to take and use water in the Upper Waitaki Catchment.
- 4 I confirm that I have read the Environment Court's Code of Conduct for expert witnesses and this evidence has been prepared in accordance with that code. I agree to comply with the code's terms. In that regard, I confirm that the statements made in this evidence are within my area of expertise (unless I state otherwise) and I also confirm that I have not omitted to consider material facts which might alter the opinions stated in this evidence.
- 5 In preparing this evidence I have reviewed:
 - 5.1 the statements of evidence of **Dr Bright, Dr Ryder** and **Dr Robson** on behalf of Southdown Holdings Limited, Five Rivers Limited and Killermont Station Limited; and
 - 5.2 the supplementary statement of Individual Evidence of **Mr Callander** for Meridian Energy Limited.

SCOPE OF EVIDENCE

- 6 In this evidence I outline my:
 - 6.1 comments on the evidence of **Dr Bright**, dated the 12th of October 2009; and
 - 6.2 comments on the evidence of **Dr Robson**, dated the 8th of October 2009; and
 - 6.3 comments on the evidence of **Dr Ryder**, dated October 2009.

EVIDENCE OF DR BRIGHT

- 7 In Section 9 of his evidence, **Dr Bright** discusses a number of scenarios relating to the potential for increased nutrient concentrations in the Ohau B-C Canal in response to the concerns raised by Meridian. **Dr Bright** states in paragraph 9.3 that GHD (2009) and related reports assume that increased nutrient inputs to the Lake Ruataniwha node, which are primarily transported via groundwater, bypass Lake Ruataniwha and are transported to Lake Benmore via the Lower Ohau River groundwater.
- 8 In addition, at paragraph 4.1 in **Dr Bright's** evidence on behalf of Southdown Holdings Limited, Five Rivers Limited and Killermont Station Limited, he states that for Ohau Downs the bulk of irrigated areas lies within the Wairepo groundwater sub-catchment. While at paragraph 5.1 **Dr Bright** states that approximately 60% of the proposed irrigated area for Glen Eyrie Downs lies within the Wairepo sub-catchment. This groundwater discharges into the Wairepo Arm.
- 9 However as stated in Mr Callander's evidence there is a large degree of uncertainty with how that partitioning of water into each sub-catchment has been carried out. Despite this uncertainty, it needs to be acknowledged that landuse changes in the Wairepo catchment will impact on the water quality in Wairepo Arm.
- 10 In this respect the evidence in chief of **Dr Bright** and **Dr Robson** for MWRL discusses that the increase in groundwater nutrient concentrations in the Wairepo subcatchment are predicted to impact on the water quality of the Wairepo Arm. This is the waterbody most directly of concern to the Ohau B-C Canal with the outflow of the Wairepo Arm directly entering into the Ohau B-C Canal as shown in Figure 1. As discussed in my evidence in chief increased nutrients in the Wairepo Arm will stimulate didymo biomass development in the Ohau B-C Canals.

EVIDENCE OF DR ROBSON

- 11 In paragraph 31 of her evidence, Dr Robson describes a simple 'root cause analysis' process for when monitoring triggers are exceeded. Section C of the analysis asks if there have been abnormal conditions at the time of the trigger breach.
- 12 In my opinion, in order to confidently assess section C of the 'root cause analysis' at the node thresholds, it is important to understand the natural perturbations of the ecosystem, particularly periphyton, at the nodes prior to the commencement of further land-use intensification. This is discussed in the evidence in chief of Dr Snelder. Dr Robson does not describe what she would consider to be

abnormal conditions at the time of the trigger breach. Given that there is no long term dataset for any of these node points, with respect to periphyton biomass, it would be difficult and at this stage inappropriate to assign any breach of trigger values to natural conditions. The dynamics of the system must be fully understood before any attempts to ascribe any monitored breaches to natural events.

- 13 It also needs to be acknowledged that in ascribing any monitored breach to a natural event, it will be in circumstances where the upper Waitaki Environment already has a reduced assimilative capacity through the effects of further irrigation. Equally, this also suggests that there will be a reduced capacity to assimilate these natural events. This could result in prolonged periods of periphyton biomass above a threshold level in response to a natural event
- 14 In paragraph 153 of Dr Robson’s evidence on behalf of Southdown Holdings Limited, Five Rivers Limited and Killermont Station Limited, she states that further sampling should be conducted to verify the current state of the Wairepo Arm. I support this statement and consider that this is an important step to take prior to consenting to ensure that proposed threshold targets for the Wairepo Arm are realistic for the development proposed thus ensuring adequate protection of the health of the Wairepo Arm and subsequent hydro-power canals.

EVIDENCE OF DR RYDER

- 15 In paragraphs 22.10 – 22.15 of his evidence, **Dr Ryder** discusses Meridian Energy’s concerns regarding potential effects of increased nutrients on nuisance algae in the Ohau B-C Canals. Dr Ryder points out that assessing the hydro canals against relevant guidelines is difficult. As discussed by **Dr Snelder**, the Biggs model for periphyton guidelines were developed for a specific set of river types. The hydro-canals, with their stable flows, do not fit the criteria of the Biggs model, and indeed, the community types within the hydro-canals are lake-like and do not follow a growth pattern typical of a river environment.
- 16 While the Biggs model isn’t appropriate for assessing the potential effects of increased nutrients on didymo in the hydro-canals, there are other means of assessment, such as bioassay growth experiments and field trial experiments. Dr Ryder has not attempted to assess the implications of landuse intensification on any of the biota in the hydro-canals.

CONCLUSION

- 17 In my opinion, the individual applications by Southdown Holdings Limited, Five Rivers Limited and Killermont Station Limited to take and use water in the Upper Waitaki Catchment, have not adequately assessed the implications of their landuse intensification on the Wairepo Arm and associated Ohau B-C Canals. The evidence of Dr Bright appears to contradict that of the MWRL water quality assessment with respect to the terminal point of groundwater nutrients derived from this proposed development.
- 18 In addition to this, and as I have discussed in my own addendum evidence, **Mr Turner**, discusses the movement of groundwater into the Ohau B-C Canals via non-return valves located in the canal floor. This further highlights the need to better understand the groundwater movements through the Upper Waitaki and the implications of that groundwater to the Ohau B-C Canals.
- 19 It remains my view that due to the implications of deteriorated water quality in the Wairepo Arm and didymo proliferation in the Ohau B-C Canal it is important that groundwater issues are resolved prior to consenting.

Dated: 30 November 2009

Donna Lee Sutherland

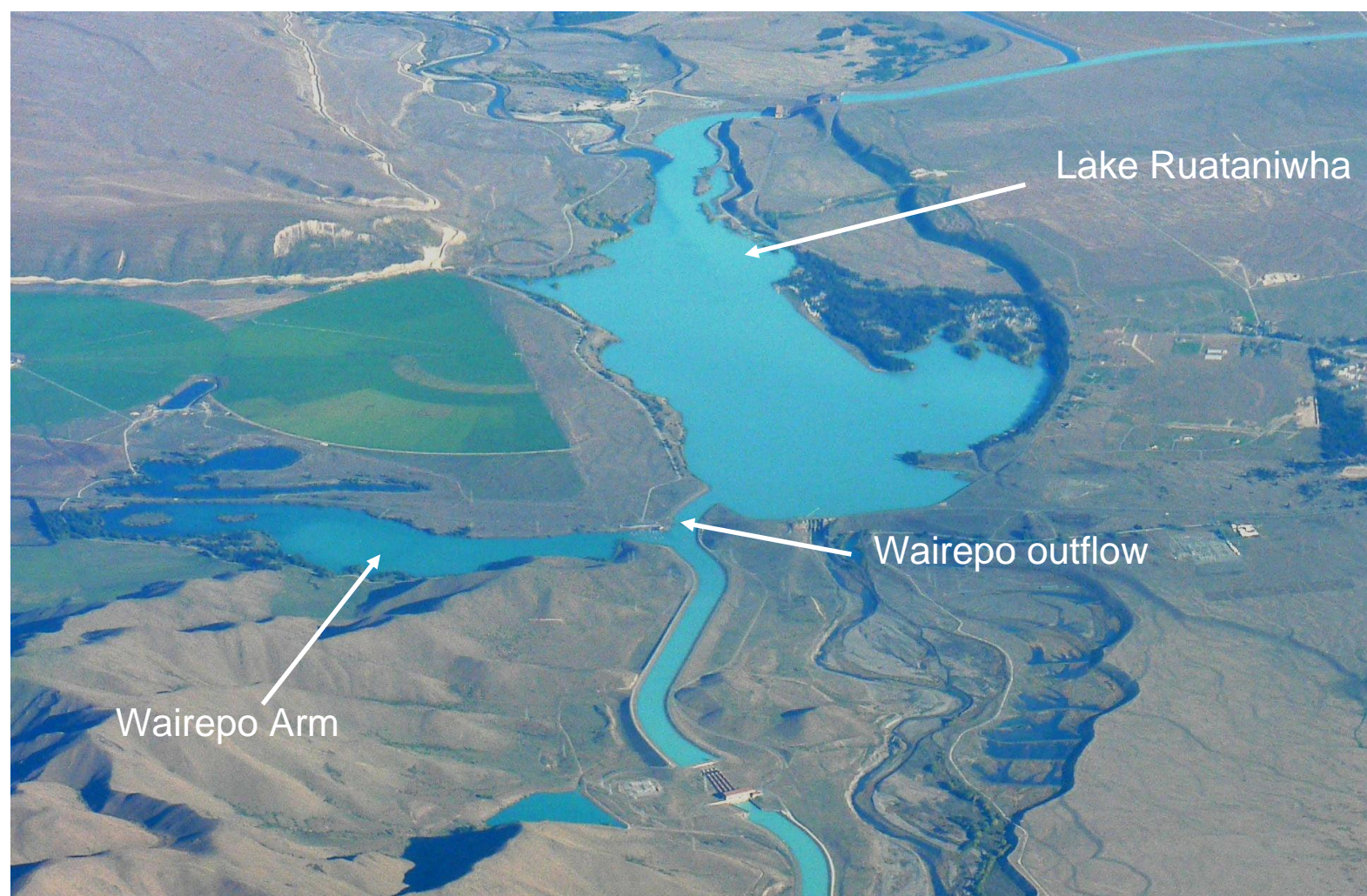


Figure 1 - Aerial photo showing the Wairepo Arm at its outflow point entering the Ohau B-C Canal. Outflow from the Wairepo Arm does not enter Lake Ruataniwha.