BEFORE THE INDEPENDENT COMMISSIONERS

IN THE MATTER	of the Resource Management Act 1991
AND	
IN THE MATTER	of the Proposed Canterbury Land and Water Plan

REBUTTAL EVIDENCE OF RUSSELL GEORGE DEATH ON BEHALF OF NORTH CANTERBURY, NELSON/MARLBOROUGH AND CENTRAL SOUTH ISLAND FISH AND GAME COUNCILS

10 APRIL 2013

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QUALIFICATIONS AND EXPERIENCE

1. My name is Russell George Death. My qualifications and evidence were set out in my Evidence in Chief ("EiC"), dated 2 April 2013.

2. In preparing this rebuttal evidence I have reviewed:

   a. The reports and statements of evidence of other experts giving evidence relevant to my area of expertise, including:

      i. Gerard Willis for Fonterra and Dairy NZ; and

      ii. Mathew Cullen for Fonterra and Dairy NZ.

      iii. Shirley Hayward for Fonterra and Dairy NZ

   b. Proposed Canterbury Land and Water Regional Plan (pCLWRP) Section 42A

3. I have again prepared this evidence in compliance with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2011.

4. The particular points that I consider it is useful for me to rebut are set out below and relate to Mr Willis and Mr Cullen's evidence, and the section 42A report.

STOCK EXCLUSION FROM WATERBODIES

5. Mr Willis (6.1 – 6.25) and Mr Cullen (7.1 - 7.5) in their EiC for Hearing group 2 both raise issues of stock exclusion from Canterbury waterbodies as addressed in the pCLWRP.

Ephemeral streams

6. Mr Willis proposes that the rule prohibiting outdoor intensively farmed livestock be confined to the 'active bed' of a lake, river or wetland (6.14). Mr Cullen supports this (7.5). Mr Willis then defines (6.18)

‘active bed’ at point (a) by excluding ephemeral streams. Clause (a) of his definition relates only to the bed area permanently covered by water. In my opinion failure to account for ephemeral water bodies will not control the adverse effects of stock access to waterways, as ephemeral streams do have important biological values, and are a potential contaminant source for the waterbodies into which they flow.

7. My hearing group 1 EiC (81-84) discusses the importance of managing small permanent and ephemeral streams to reduce or prevent discharges of sediment, nutrients, and faecal contaminants. This will protect their life supporting capacity, but also reduce the input of contaminants further downstream.

8. The Canterbury region also contains a number of large rivers that periodically cease flowing on the surface and thus appear ephemeral (Larned et al. 2007, Larned et al. 2008, Gray and Harding 2010). These are important ecosystems that link upstream and downstream via the hyporheic zone (area between surface water and ground water) and provide habitat for a range of native invertebrate and fish species. Furthermore, they also serve to transport sediment, nutrients and faecal contaminants that may be discharged from land. Thus to protect both these ecosystems and the more permanent waterways to which they are intimately linked large ephemeral rivers also require stock exclusion.

9. He further defines 'active bed' in 6.18.c as excluding river beds with exotic plants and only including “vegetation cover that is naturally occurring and dominated by indigenous species”. However, as almost all New Zealand river beds have been invaded by exotic plant species this would effectively exclude all rivers and streams. An example is the prominence of lupin and broom, which are early colonisers of river beds.

10. A more ecologically appropriate definition of active bed would be one that incorporates ephemeral water bodies and which captures the

areas of river beds that are either unvegetated or are vegetated with early successional plant species (indigenous or exotic).

Stream size

11. Mr Willis at point 6.25 also introduces a size restriction on streams to be protected at > 1m width or 100 mm deep. To the best of my knowledge there is no ecological justification for these thresholds and in fact my EiC highlights the importance of streams below this size threshold for protection of biodiversity, sediment, nutrient and faecal contaminants.

12. In my Hearing group 1 and 2 EiC I outline the importance of small streams for the protection of biodiversity and sustainable Salmonid fisheries. Several Fish and Game officers have provided further evidence on the value of small springfed Canterbury streams as significant spawning sites. They act as refugia for trout and native fish during periods of high temperature and low flows. They can also act as a recolonisation source of invertebrates (food for fish) for downstream rivers and streams following floods or drying. Many small streams that support these habitat values will be less than 1m wide and less than 100 mm deep. I also note that in many cases quite wide stretches of a river might be less than 100mm deep, particularly in riffle areas on gravel bed rivers.

Definition of stock

13. The section 42a report outlines the definition of "Outdoor Intensive Stock"[1] as those farm animals to be excluded from waterways. However, this definition excludes deer, and cattle that are not break fed, which are then allowed some limited access to waterways in accordance with the proposed rules 5.134 – 5.137. There are a number of studies conducted in New Zealand and elsewhere that have demonstrated that the effects of deer and all cattle on stream ecological health can be as severe as for other stock listed in the

[1] Section 42A Report Volume 2 page 61

"Outdoor Intensive Stock" definition (Herbst et al., 2012; Matthaei et al., 2006).

CONCLUSION

Thus from a life supporting capacity perspective all permanently flowing streams irrespective of size, should have large stock (i.e., cattle, dairy stock, deer, pigs) excluded for the reasons presented above and in my EIC. Furthermore, ephemeral streams that have an 'active bed' should also have large stock excluded for similar reasons.

Associate Professor Russell George Death

10 April 2013

References

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