

**IN THE MATTER OF** the Resource Management Act 1991

**AND**

**IN THE MATTER OF** resource consent applications lodged for the water take consents in relation to the Waitaki Basin under section 120 of the Resource Management Act 1991

## **EVIDENCE IN REPLY OF GEOFFREY VERNON BUTCHER**

### **Scope of this evidence**

1. I have been asked by MWRL to prepare and present evidence in reply regarding the economic impacts of the proposed irrigation scheme in the Mackenzie Basin. I presented evidence to this hearing in November, but have been asked to address a number of economic issues raised by commissioners and other parties to the hearing. These include:
  - Why no overall cost-benefit analysis was carried out for the project;
  - A lack of evidence regarding the proposed costs of mitigation;
  - Differences in the estimated profit per Ha for intensively farmed sheep and beef between Mr Copeland on behalf of one of the applicants (\$458 / Ha) and myself on behalf of MWRL (\$48 / Ha);
  - A lack of sensitivity analysis with regard to potential water costs;
  - The relevance of the assessed impact on the economy and the amount spent on the MWRL Water Quality Study.<sup>1</sup>

### **Overall Cost Benefit Analysis**

2. A cost benefit analysis will generally have two major parts to it. The first concerns the market values faced by those implementing the irrigation project and developing their farms to make use of the additional water, and the second concerns non market values which affect the wider public. The costs and benefits related to market values can be debated at length, and the uncertainty is reflected in the different profitability for intensive

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<sup>1</sup> I understand that Commissioner Cooke asked a question implying that given that irrigation is going to add \$140 million to the economy, shouldn't more than \$1 million be spent on the water Quality study.

sheep and beef farming assumed by Mr Copeland and me. But in the final analysis there is a commercial decision to be made on the basis of best estimates of likely outcomes. The applicant's view is that those who are investing their money have the greatest incentive to undertake the best possible financial analysis of market costs and benefits, and provided that they wish to undertake the investment then this is the best possible evidence that commercial benefits exceed commercial costs. To the extent that there may need to be mitigation measures taken which have a financial cost, then provided these costs are met by the investors, it can still be assumed that benefits exceed costs if the applicants proceed with construction.

3. There are likely to be financial and non-financial costs which are not reflected in the market decisions by investors. An example of the former is the cost of lost power generation, and an example of the latter is landscape and water quality effects. I understand that it is the applicants' view that the decision by the Waitaki Allocation Board to allocate water to irrigation provides a prima facie case that use of water for irrigation is an efficient use of resources from a comprehensive (market and non-market) perspective, presumably subject to an RMA hearing determining that any net negative non-market effects are either minor or can be mitigated.
4. As an economist I would be concerned at approving a use and leaving commercial efficiency analysis, and hence probability of actual use, to be determined at a later date if either:
  - (a) There was a potential alternative user of the water, such as another irrigator, who would be prevented from using the water; or
  - (b) If other groups would be significantly affected by the uncertainty associated with the development, as in the Central Plains case where various residents may have unwanted canals put through their property and where the saleability of properties is affected until a decision on construction is made.
5. I am informed that in the case of the Mackenzie Basin there are not other potential users and that there are no obvious parties which will be affected by uncertainty. The one proviso to this is that 8/25<sup>th</sup> of the water allocated to irrigation is not subject to this current hearing process. I am informed that provision has been made for these future applicants. Of course Meridian will be affected if and when they lose water to irrigation, but the mere possibility that it will happen probably has little cost to them.

### **Lack of Evidence on costs of Mitigation**

6. As I have outlined above, provided that costs of mitigation are met by the applicants, then they will be reflected in the final decision of the applicants and do not need to be established at this stage. They would of course need to be established if a full cost benefit analysis was to be done, but for the reasons outlined above it is the applicants' view that this is not necessary.

### **Lack of Sensitivity Analysis**

7. Mr Harris noted that Mr Copeland and I did not undertake sensitivity analysis over the whole range of economic variables, and with regard to the impact on net benefits. In my earlier evidence (para 8) I did comment on the sensitivity of economic impacts to changes in the costs of irrigation itself, but I did not look at the sensitivity to a range of other parameter values. While I could have done so, the primary objective of my analysis was to provide indicative values of economic impacts. For the reasons outlined above, the applicants did not require me to estimate net benefits, let alone undertake sensitivity testing.

### **Variation in Financial Performance**

8. In his evidence Mr Copeland reported a farm consultant's<sup>2</sup> estimate of Net Profit per Ha of \$458 for intensive sheep and beef farming on two specific properties, whereas I used a different farm consultant's<sup>3</sup> figure of \$48. One implication is that my figures are extremely conservative, and a second is that the figures are highly uncertain. However, a major reason for the difference in figures appears to be that Mr Copeland's figures exclude a cost of management (which I have included at \$260 / ha), so adjusting for that gives comparative figures of \$308 to \$458. Further differences presumably arise because of differing assumptions about appropriate depreciation rates, physical productivity, product prices and input costs.
9. This significant variation explains in part the reluctance of MWRL to undertake a full cost benefit analysis, and their preference for leaving commercial efficiency to be defined by investors, and focussing on an examination of social and environmental impacts only. I consider that the MWRL approach to estimating impacts is appropriately conservative.

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<sup>2</sup> Ogle Consulting

<sup>3</sup> Mr Hugh Eaton

### **Cost of Water Quality Analysis compared to Net Benefits of Project**

10. Commissioner Cooke has queried whether more should not have been spent on the Water Quality Survey (WQS), given the very large sums involved (I understand that he referred to \$140 million<sup>4</sup>). I can not comment on whether the WQS was limited in any way, and if so whether this was due to a lack of funding or a lack of time. What I can comment on from an economist's perspective is whether \$140 million is the relevant comparison.
11. The relevant consideration for investors is not the total economic impacts on the community, which may be what Commissioner Cooke is referring to, but the expected net benefits to the investors compared to the costs involved. I estimated that on-farm value added would rise by \$41 million per year, but the net benefits would obviously be a much smaller number than that because of the need to deduct the opportunity costs of capital and labour to get net benefit. Obviously the net benefit per year has to then be summed over future years and discounted to a net Present Value to get total investor benefits, then multiplied by the probability of success in applying for the resource consents and adjusted for risk preference. If the net present value of investor benefits was, say, \$50 million and the probability of success in getting a resource consents is, say, 30 %, then the investors would not be prepared to spend more than \$17 million in trying to get resource consents. In fact if the investors are, like most people, risk averse, then they would not be prepared to spend nearly as much as this. In this context, investing more than \$1 million on WQS, which is only part of the costs of obtaining resource consents, is a moderately significant sum.

Geoff Butcher

19 April 2010

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<sup>4</sup> My estimate of the total impact on output is \$100 million in the Mackenzie Basin and \$160 million in the combined Waimate, Waitaki and Mackenzie districts