

**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 OF GEOFFREY VERNON BUTCHER**

### **Qualifications and Experience**

1. My name is Geoffrey Vernon Butcher and I am a director of Butcher Partners Ltd, an economic consultancy in Christchurch.
2. I hold an MA (Hons) in Economics from Canterbury University. I worked at the Institute of Economic Research from 1979-1984 and since then have been a consulting economist in the private sector, apart from two years in the Tongan Ministry of Finance and a year lecturing at Lincoln University in the areas of business economics, cost benefit analysis and economic impact analysis. I have appeared in a number of hearings before councils, commissioners and the Environment Court on Resource Management Act-related matters. With respect to irrigation matters I have undertaken economic impact assessments on numerous schemes including several in Central Otago, Downlands, Rangitata, Opuha, Hunter Downs and a generic assessment of the economic impacts of the Central Plains scheme in 2000 for Central Plains Water. I also prepared for MAF in 2002 a report entitled "Role of Central Government in Community Water Projects in which I reviewed the relevant economic efficiency arguments related to irrigation, and on behalf of Selwyn District Council I reviewed the application for Central Plains Irrigation Company.

### **Scope of my evidence**

3. I have been asked by MWRL to prepare and present rebuttal evidence regarding the economic impacts of the proposed irrigation scheme in the Mackenzie Basin. I am the author of the report "Upper Waitaki-Mackenzie Irrigation Economic Impact Assessment" dated April 2009. The impacts were based on farm budgets prepared by Hugh Eaton. Mr Harris has questioned the impacts on the grounds that:

- (a) The dairy prices used were not based on a 7 year average, and although the impacts on the results of using a 7 year average were footnoted, the executive summary tables did not reflect the 7 year average;
  - (b) The land use mix I used was only loosely based on the land uses revealed in a GHD survey of potential irrigators<sup>1</sup>, and while I presented results on the basis of a more intensive land use than my base case, I should also have presented results on the basis of a less intensive land use which was more consistent with the final results of the GHD survey; and
  - (c) I had irrigation costs which were less than he would have expected to see in the Mackenzie basin
4. I present here economic impacts which use the 7 average price of milk, which use a land use mix which is more consistent with the GHD survey results<sup>2</sup>, and which show results not simply for Mackenzie Basin, but for the combined Mackenzie / Waimate / Waitaki Districts to be consistent with Waitaki Catchment Water Allocation Regional Plan requirements<sup>3</sup>. The means that associated meat processing impacts which take place within Waitaki District are also included in the analysis. Multipliers for this expanded geographic area are significantly higher than in my original report because the combined districts have a much greater degree of self-sufficiency than does the Mackenzie District alone. I have also taken the opportunity to update a couple of data entry and minor computational errors identified in the original report, but these do not materially alter the conclusions of my original analysis.
5. I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice note and that I have complied with it in the preparation of my statement of evidence. I agree to comply with it when presenting this evidence before this Committee. I confirm that the evidence I present is within my area of expertise and I am not aware of any material facts that may alter or detract from the opinions I express.

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<sup>1</sup> This was because at the time my report was written, the survey results had not been finalized. In any case it was a sample survey and was only of intentions regarding land use.

<sup>2</sup> I am unable to use identical land uses to GHD, because Mr Eaton has not produced budgets for exactly the land uses revealed by the survey, and specifically has not modeled stabled dairying.

<sup>3</sup> The Waitaki Catchment Water Allocation Regional Plan policy 11 (c) states that local effects refer to those that arise in the Mackenzie District, the Waimate District and the Waitaki District.

## Summary of Analysis

6. Recalculation of the impacts for the Mackenzie Basin using the revised land mix and the 7-year average price of milk results, as expected, in lower total economic impacts. On the revised basis I estimate that there will be an \$86 m / year increase in total Basin production, 220 FTE jobs and \$33 million per year additional household income (see Summary Table 1). Detailed impacts by land use per 00 Ha are contained in an Appendix.

**Summary Table 1 Net Total Economic Impacts over 25,000 Ha: Land use Mix GHD**

	Partially Irrigated Farm	Irrigated Dairy Support	Irrigated Dairy Prod'n	All (rounded)	
				GHD survey	Original Butcher Report
<b>Ha Irrigated</b>	17,500	3,000	4,500	<b>25,000</b>	<b>25,000</b>
<b>Net Total Impacts</b>					
Production (\$m / yr)	46.3	7.2	32.5	<b>86</b>	<b>100</b>
Employment (FTE*)	107	16	96	<b>220</b>	<b>240</b>
Value Added** (\$m / yr)	16.2	3.0	14.2	<b>33</b>	<b>40</b>
Household Income (\$m / yr)	3.3	0.9	5.5	<b>10</b>	<b>13</b>

7. Extension of the analysis to the broader geographic area of Waimate, Waitaki and Mackenzie Districts yields considerably larger off-farm impacts. This is partly because multipliers are larger (see Table 3) and partly because meat processing<sup>4</sup> in Waitaki District generates further impacts. At this wider geographic level I estimate that the irrigation of 25,000 Ha in the Mackenzie Basin will increase total value added in the Waimate, Waitaki and Mackenzie districts by \$53 million per year. Associated with this will be an additional \$24 million per year in gross household income and an additional 470 jobs.

**Summary Table 1 Net Total Economic Impacts over 25,000 Ha: Land use Mix GHD**

	Partially Irrigated Farm	Irrigated Dairy Support	Irrigated Dairy Prod'n	Total Farm-Dependent	Total Process Dependent	Total (rounded)
<b>Ha Irrigated</b>	17,500	3,000	4,500			
<b>Net Total Impacts</b>						
Production (\$m / yr)	60	9.1	37	106	<b>50</b>	<b>160</b>
Employment (FTE*)	145	20	113	278	<b>190</b>	<b>470</b>
Value Added** (\$m / yr)	21	3.7	16	41	<b>12</b>	<b>53</b>
Household Inc.(\$m / yr)	6.9	1.3	6.6	15	<b>9</b>	<b>24</b>

<sup>4</sup> Assuming 50 % of meat is processed in the region

8. Mr Harris has suggested that it might be appropriate to have undertaken sensitivity testing using a higher irrigation cost per Ha, and has suggested using a figure as high as \$500 / Ha, which is \$300 higher than has been assumed in Mr Eaton's budgets. I have considered the effects of this very high figure, and can report that value added on farm would decline by \$7.5 million, with consequential impacts on farm profitability but no change to on-farm employment or household income. Value added off-farm would rise, as would employment and household income for those employed in scheme operation and maintenance. Calculations suggest that the net off-farm impacts of a \$7.5 million increase in operating costs, with half of the increase being electricity and half being scheme maintenance<sup>5</sup> would be an increase of \$4.6 million in value added, including \$2.0 million in household income, and 40 jobs.

**Table 3: Comparison of Multipliers for Mackenzie Basin with those for the combined Mackenzie, Waimate and Waitaki Districts.**

	Dryland Merino	Irrigated Crop & Finish	Irrigated Dairy Support	Irrigated Dairy Prod'n	Partially Irrigated Farming
<b>Mackenzie Basin Only</b>					
Output	1.24	1.38	1.31	1.16	1.30
Employment	1.34	1.73	1.53	1.34	1.92
Value Added	1.33	1.67	1.32	1.18	1.37
Household Income	1.24	1.45	1.35	1.18	1.50
<b>Mackenzie, Waimate &amp; Waitaki Districts</b>					
Output	1.70	1.81	1.68	1.35	1.70
Employment	1.97	2.40	2.06	1.62	2.67
Value Added	1.81	2.38	1.66	1.35	1.83
Household Income	1.84	2.13	1.89	1.45	2.75

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<sup>5</sup> Proxied by the construction industry

**APPENDIX. Detail of Calculations of Economic Impacts**

**Table A.1 Direct Gross Impacts per 1,000 Ha of Irrigable Land in Mackenzie Basin**

	Dryland Merino	Irrigated Crop & Finishing	Irrigated Dairy Support	Irrigated Dairy Prod'n	Partially Irrigated*
Production (sales less stock purchases) (\$000 / yr)	410	2,200	2,200	6,660	2,400
Employment (FTE**)	2.1	5.3	5.3	18	4.7
Value Added*** (\$000 / yr)	170	530	920	2,900	840
Household Income (\$000 / yr)	110	330	330	1,100	210
Profit (after drawings & depreciation, but before tax and interest)	56	60	450	1,500	510

**Table A.2: Total Gross Economic Impacts in Mackenzie Basin per 1,000 Ha of Irrigable Land**

	Dryland Merino	Irrigated Crop & Finish	Irrigated Dairy Support	Irrigated Dairy Prod'n	Partially Irrigated Farming
<b>Multipliers</b>					
Output	1.24	1.38	1.31	1.16	1.30
Employment	1.34	1.73	1.53	1.34	1.92
Value Added	1.33	1.67	1.32	1.18	1.37
Household Income	1.24	1.45	1.35	1.18	1.50
<b>Impacts</b>					
Production (sales less stock purchases) (\$000 / yr)	510	3,000	2,900	7,700	3,160
Employment (FTE*)	2.8	9.2	8.1	24	9
Value Added** (\$000 / yr)	230	880	1,200	3,400	1,150
Household Income (\$000 / yr)	130	470	440	1,350	320

**Table A.3: Net Total Economic Impacts in Mackenzie Basin per 1,000 Ha of Land Converted to Irrigation**

	Irrigated Crop & Finish	Irrigated Dairy Support	Irrigated Dairy Prod'n	Partially Irrigated
<b>Net Total Impacts</b>				
Production (sales less stock purchases) (\$000 / yr)	2,500	2,400	7,200	2,600
Employment (FTE*)	6.4	5.3	21	6.1
Value Added** (\$000 / yr)	650	1,000	3,100	900
Household Income (\$000 / yr)	340	310	1,200	190

Source: Table A.2. minus equivalent entry in Table A.1