In the Environment Court
at Christchurch

---

under: the Resource Management Act 1991

in the matter of: an appeal under section 120 of the Act

between: **West Coast Environmental Network Incorporated**
(ENV-2011-CHC-095)
Appellant

and: **Royal Forest and Bird Society of New Zealand Incorporated**
(ENV-2011-CHC-097)
Appellant

and: **West Coast Regional Council and Buller District Council**
Respondents

and: **Buller Coal Limited**
Applicant

introduction

1 This joint witness statement relates to the conferencing topic of **Economics**

2 Conferencing meeting(s) were held on **25 Sept 2012 in Wellington**.

3 Attendees at the meetings were:

- **Peter Clough Economist engaged by Forest and Bird**
- Geoffrey Butcher Economist engaged by Buller Coal.
- John Mills Commissioner

4 This joint witness statement identifies the issues in which the experts are in agreement and/or disagreement. This set out in **Table 1**.

5 In producing this statement, the experts have complied with the Environment Court Code of Conduct for Expert Witnesses.

Date: 25 September 2012

PWJ Clough

[Peter Clough]

GV Butcher

[Geoff Butcher]

[John Mills]

#	Question	Agree	Dis-agree	Response [with cross reference to paragraphs in primary evidence]
	Economics, well-being and the Escarpment Mine			
1	What is the relevant scope of economic impacts for a hearing under the RMA (i.e. in the context of an application for consent for the Escarpment Mine, what matters should an economic evaluation consider? Is it an evaluation of the commercial/financial impacts of the activity or are there other considerations. If so, what are these considerations)?	PWJC 9/17		Critical matters for the RMA are the contribution to economic well-being (s5) and the efficient use and development of resources (s7(b)). Well-being is synonymous with the technical term economic welfare and economic efficiency requires comparison of outputs with inputs used [PC p20-21]. Economic evaluation needs to consider all changes to well-being arising from the proposal seeking consent, including those arising from effects that are borne by third parties and users of the environment affected by the proposal. It is not just an evaluation of commercial or financial impacts: applicants themselves will assess these before they decide to proceed, and the purpose of consenting is to also take into account "externality" matters outside of such private assessments. *(Butcher para 5, 35, 39, 43. Clough numerous)*
a	What methods are available for evaluating the contribution to economic well-being of a proposal such as the Escarpment Mine? (e.g. cost benefit analysis, economic impact analysis, non-market evaluation etc)?	PWJC 9/17		Economic well-being from the project proceeding, if consented, consists of the sum of gains in producer surplus + consumer surplus + positive externality - negative externality over time, compared to if it does not proceed [PC:p65-66]. The appropriate appraisal technique for assessing well-being is social cost benefit analysis (also known as applied welfare analysis) [PC:p46-49]. Non-market valuation refers to a suite of techniques used to infer value of effects that are not observed in market prices, which may be used to assign value to various non-market effects within a cost benefit analysis. Economic impact analysis assesses the stimulation of the wider economy and flow-on effects arising from a project's expenditures.
b	What are the advantages and disadvantages of these methods for measuring economic well-being?			The advantage of cost benefit analysis is that it provides a logical framework for ordering effects: it enables all effects to be identified and taken into account, measures the economic surpluses (and hence net value) arising from those effects and enables value gained to be related to cost incurred to assess the efficiency of the proposal [PC: p46-49]. Non-market valuation has limitations in that some methods are experimental

		PWJC GVB		with a range of well-documented biases that need to be controlled for, and some rely on hypothetical questioning which may give unrealistic answers. See GB para 34 and footnotes; PC paras 53, 64 and 162
		PWJC GVB		PC's view is that Economic impact analysis (EIA) provides estimates of output, value added and employment that are related to familiar national level economic indicators like Gross Domestic Product, but these are well recognised as poor indicators of economic well-being [PC: p44-45]. EIA is also unable to account for externality effects and provides only partial indication of economic surpluses arising from a project, so it is not informative about economic efficiency [PC: p 50-52]. GB is of the view that EIA is a useful adjunct to CBA because it provides information about potential outcomes that in principle could be, but in practice are typically not, addressed by CBA (e.g. a typical CBA at market prices, and the CBA undertaken for this project, assumes that there is no benefit from providing employment in the project). Typically EIA will greatly overstate impacts at a national level and is inappropriate at that level.
c	What is the most appropriate method for evaluating of the extent to which the Escarpment Mine will provide for economic well-being?	PWJC GVB		Cost benefit analysis. EIA is a useful adjunct.
2	What is the appropriate scale of evaluation (national, regional, local or some combination thereof)?	PWJC GVB		In view of the Act's requirements set out in response to question 1 above, a national perspective is appropriate, as it avoids complications of inter-regional relocations and transfer effects that do not raise total well-being [PC: p42-45]. A local or regional impact analysis is of interest to local councils and residents but is not indicative of either net well-being or efficiency of resource use at the national level (except see 2d). GB's view is that additional employment in one region may generate benefits to that region which exceed the costs to another region (see 2d) but it depends where that labour comes from. E.g. if the labour comes from some other small region such as Southland, then there may be no net benefit from the national perspective

a	Can the economists agree on a likely scale of Buller, West Coast net impact; or on a net national impact? In the latter context, would any use of a CGE model, in which the model is closed with respect to real wages (rather than employment) be helpful?	GVR	PWJC	There could be an increase in employment at the West Coast / Buller level, but the economists are not able to agree on how great this will be. PC thinks that the number will be much less than GB has estimated because miners are skilled and will be either imports to the region or will transfer from existing skilled jobs. GB thinks it will be significant because of his presumption that there is significant unemployment and underemployment as well as economically enforced migration in search of work.
		GVR PWJC		There could also be an increase in employment at the national level. The economists agree that it will be much less than at the regional level because of inward migration of labour, and PC thinks it will be less than minor. GB thinks it will be considerably greater than PC, but still much less than at the regional level.
		GVR PWJC		To agree on the net impact at national or local scale depends on concurrence on assumptions such as the coal price in Mr Butcher's current estimates. A CGE model could be used to estimate offsetting effects from price changes, but how it is done depends on how EMP is expected to fit within the economy. Closing a CGE with respect to wages (rather than employment) would imply there is no constraint on available labour which can therefore expand in the industry. Closing a CGE with respect to employment and allowing wages to adjust implies labour constraint and gives a different result. In the context of a national CGE the impact of the proposed EMP is unlikely to be substantial.
b	Do economists agree that the consumer surplus effects of EMP that need to be taken into account are principally for amenity, recreation, tourism, and conservation interests, and as such are not confined to the local and regional economies?	GVR PWJC		As EMP's coal is destined for export, consumer surplus effects are primarily from other current uses of the Denniston site that would be affected by EMP, including those from general amenity, recreation, tourism and conservation interest in the Plateau. These non-market interests are not confined to the West Coast region, so a national perspective is appropriate. The other effect on consumer surplus is via a more vibrant West Coast economy in which consumer choice is wider because of the larger scale of the economy.
c	Could there also be additional employment impacts via increased social services if the population rises (health, police, education – see Butcher 18).	GVR PWJC		These are additional to the effects calculated by the multiplier analysis because of the way that the model is structured.

d	If it were assumed there is no net national impact on employment, is there still some net benefit of providing more employment in Buller, even if it is at the expense of some other place in the country?	PWJC GVB		Employment creation in Buller could create a national benefit if it solved chronic unemployment or other suppression of productivity caused by some market failure special to Buller's labour market. The evidence of Mr Butcher (p 10) and Mr Baines suggests there is no substantial pool of unemployed in Buller to be mopped up by such job creation (Statistics New Zealand data show the region's unemployment rate has been less than the national rate over the last two years). Recent news reports about potential mine lay-offs make the pool slightly bigger, but simply reflect normal cycles in price and profitability of mining, not systemic market failure. There is unlikely to be a net benefit from stimulating Buller at the expense of other regions unless the inward labour flows comes from larger regions which will not fall below critical mass.
3	What is the relevance of labour reallocation (Butcher acknowledges that there could be reallocation para 39)	PWJC		Answered above
4	How should the labour economic surplus be accounted for?	PWJC GVB		In a cost benefit analysis labour inputs should be valued at their opportunity cost or value in next best alternative use. If labour is paid more than its opportunity cost it earns a surplus, and because labour resides (if only temporarily) in the region that surplus is a portion of producer surplus that accrues to New Zealand. The project's benefit to well-being is not the total wage but that part which is surplus to the opportunity cost. This surplus can be estimated as the wage earned at EMP less the wage earned by the same category of workers where they would otherwise be employed. [PC: p81-82]. PC & GB agree that this is the correct conceptual approach. PC has estimated the value of this benefit to be $33m per year. Upon review the economists have corrected the initial calculation to $46 million in total over five years assuming that a comparison of mine wages to the average wage is appropriate. The range might be of the order of $30 – 50 million. GB to look for better data and address in rebuttal.
5	Has Butcher's calculation of indirect and induced effects allowed for leakage associated with mine labour not residing in the region?	GVB PWJC		Yes. It is based on 85% locally resident workers and leakage of 15% of wages. See above for debate on whether 15 % is the correct number.
6	Is there significant unemployment or under-employment in Buller and the West Coast at			Statistics New Zealand shows the unemployment rate in Nelson, Tasman and the West Coast to be about 2/3 the national average. Planned contractions or

	present? What are the implications of mine closure? Is this likely to continue in the medium term?	GVB PWJC		closures of mines in the region increase the potential pool of unemployed available for rehiring. GB to seek data on registered unemployed. This will not inform us about underemployment, discouraged workers, forced migration in search of work etc.
	Cost benefit analysis of the Escarpment Mine			
7	What is an appropriate coal price to use? How should this be determined? How should the costs of extracting the coal be considered?	PWJC GVB		The appropriate coal price is the expected value of coal delivered free on board to the export port over the operation period of the EMP. The price which will be realised over the mine life is highly uncertain. The fact that the company proceeds with the project will be evidence that their best guess is that the price will yield a significant profit. We are not able to advise on a most likely price. For the purposes of the CBA, the question is not so much the coal price as the profit it implies. The project breaks even at a coal price of US$165, and the company is unlikely to proceed if it is only expecting to break even, so a minimum expected price for the project to proceed is perhaps $190. The company current view of the medium term price is $240, but PC suggests in his evidence a more likely price in the range of $165 – 200. GB to provide more detailed sensitivity in CBA, focussing on a mid point of $190 and showing returns to various factors. Costs depend on inputs priced at their opportunity cost in the local market and are best determined by mining specialists familiar with the requirements for extracting from the site. Costs were provided by Marston Mining to Buller Coal and these were used in the CBA.
8	How should one treat that uncertainty?	GVB PWJC		As indicated above
9	How does one treat returns to foreigners?	GVB PWJC		Returns to foreigners need to be deducted from the estimated net benefits.
10	How should one treat the DOC funding? Is it preferable to monetise any benefit and not try to modify the cost by some equivalent amount?	GVB PWJC		The $9 million funding to DOC for off-site pest control is some compensation for unavoidable damage to conservation interests at the mine site. It provides no guidance to the actual value of environmental loss. As compensation it does not add to well-being relative to the situation without the mine, but restores some that would be lost [p79].
11	When is the relevant resource likely to run out	GVB		The resource in question is the coal under Denniston Plateau that EMP would

	and hence what figure should be used in the El Serafy equation?	PWJC		extract, so the relevant figure in the equation depends on the planned mine life in years (n=6) [p85].Witnesses will confer later.
12	Question deleted	GVD PWJC		
13	Is the economic analysis undertaken by the applicant appropriate? If not, in what way?	PWJC GVB		PC's view is that the applicant's analysis is incomplete in failing to take into account externalities such as the ecosystem services at risk from EMP, and in presenting estimates of commercial value based on an optimistic coal price and insufficient examination of the robustness of assumptions. [PC p 122] GB considers his evidence draws the courts attention (paras 32 – 35, 43) to the need to consider externalities in the environmental area, and agrees that he has not tried to value them from an economic perspective. The economists disagree as to whether GB should have tried to say more about the evidence of non-economist experts, and to put that in an economic perspective.
14	Have any relevant economic effects been omitted from the applicants consideration – should they have been accounted for (and if so how?)	PWJC GVB		PC argues that relevant effects omitted include the value of recreation displacement from the Denniston Plateau and risks to biodiversity and of other environmental damage. [PC p110-121] . GB is of the view that this has been addressed by the relevant experts and he is not able to estimate useful values. He has noted the need for the court to address this evidence (para 35 and 43). The experts disagree on what is appropriate to include in economic evidence.
15	Which assumptions used to undertake the economic analysis are sensitive to variation? What might be the predicted range of variation and how does that impact on the economic analysis?	PWJC GVB		The most sensitive variable is the f.o.b coal price, which is affected by various factors including demand, the exchange rate and the international shipping price. All are volatile and all affect the project bottom line and hence the NPV significantly. Operating costs are expected to be less uncertain. All these uncertainties affect the net profit, and are to be addressed in the sensitivity analysis to be undertaken by GB.
16	Should (and if so, how should) the depletion of natural capital be accounted for?	PWJC GVB		Conversion of a non-renewable natural resource is not solely income generation because of the reduction of a stock of value that could be retained for future use. The opportunity cost on the future caused by extraction now should be taken into account in assessing net benefits [PC: p 55-60].
17	How do you determine whether an activity is an efficient use of resources?	PWJC GVB		An activity is an efficient use of resources if it creates value greater than the opportunity cost of resources used in obtaining it .

18	Is the Escarpment Mine an Efficient Use of Resources.	PWJC GVB		PC: The mine would cause irreversible loss of some rare components of biodiversity and environmental features suggests that its current configuration may not be efficient. GB considers that the economics evidence is that the project generates commercial benefits and is efficient from a commercial perspective. It will generate a producer benefit to those working there, and will generate significant positive regional economic impacts. This information is an input to the efficiency decision, and it is the decision of the court as to whether the project is, overall, an efficient use of resources.
		PWJC GVB		PC: The evidence provides no guidance on the viability or efficiency of other configurations that would lessen those environmental losses. GB does not consider it practical to consider all feasible possibilities as to how the mine could be structured and operated. He understands that the applicant's experts have provided a range of measures to mitigate various environmental effects.
19	To what extent will the Escarpment Mine contribute to economic well-being?	PWJC GVB		The EMP would contribute to well-being by providing returns to New Zealand shareholders, taxes to government, and some labour productivity gain [PC p127-130] But the extent and value of these depends on the mine's operating success and would be reduced by the environmental losses incurred.

MINISTRY OF JUSTICE
Tāhū o te Ture

Witness Caucusing
Attendance Register

FILE REF:	ENV-
DATE:	25/9/12
COMMISSIONER:	J R Mills
LOCATION:	Wellington

NAME	POSITION/ROLE	CONTACT DETAILS Telephone & Email
Peter Clough	Senior Economist NZIER	04-4701803
	Witness for Forest & Bird.	peter.clough@nzier.org.nz
Geoff Butcher	Economist.	
	Witness for Buller Coal	