Joint Expert Report to the Land Court by Jonathan Stanford and Roderick Duncan

1. Experts Details

1.1 Names

This joint expert report has been prepared by Jonathan Geoffrey Stanford and Roderick Duncan for the Land Court in accordance with paragraphs 8 and 9 of the Order dated 27 May 2013.

1.2 Previous Expert Reports

This joint expert report is supported by, and relies upon, the following expert reports:

(a) Expert Report of Jonathan Geoffrey Stanford, dated 30 May 2013; and

(b) Expert Report of Roderick Duncan, dated 26 June 2013, to the extent relevant to climate change policy and climate change economics only.

1.3 Dates of Meetings of Experts

The experts met on 16 July 2013 by telephone.

2. Key issues of Agreement

Rod Duncan and Jon Stanford agree on the following issues:

- That emissions of greenhouse gases such as carbon dioxide represent a ‘public bad’, or negative externality, and that ideally they should be taxed on a global basis
- That the Alpha mine faces both climate change-related threats and an opportunity in the future. The threats relate (a) to the possible imposition of increasing carbon levies in the markets for its coal and (b) to the future development of cheaper low emissions sources of base load power, such as renewables and nuclear energy. The opportunity relates to the possible future development of a commercially viable carbon capture and storage process that would enable coal generation to continue to be profitable in the face of an escalating carbon price.

3. Key issues of Disagreement

Rod Duncan and Jon Stanford disagree in the following areas.

3.1 Treatment of Scope Three emissions from the Alpha mine

Jon Stanford's view

Jon Stanford disagrees with Rod Duncan's view that "to allow an Australian company to export coal to a customer country to burn without a tax is a public subsidy" (paragraph 5.22 of Duncan's expert report). Duncan is referring here to the Scope Three emissions from the mine which, as Duncan correctly infers, will occur in another country. As Stanford has pointed out in his expert report (page 11), the protocol under the UN Framework Convention on Climate Change is to ascribe to individual countries the GHG emissions that occur within that jurisdiction. As noted by the UN's Intergovernmental Panel on Climate Change (IPCC), each country is required regularly to prepare a national greenhouse gas inventory on the following basis:

> National inventories should include greenhouse gas emissions and removals taking place within national (including administered) territories and offshore areas over which the country has jurisdiction.[1]

It follows, therefore, that the Scope Three emissions resulting from the combustion of coal from the Alpha mine are the responsibility of the jurisdiction within which the emissions are released. The coal from the Alpha mine will all be exported to non-Australian jurisdictions. A failure to tax the negative externality resulting from the combustion of Alpha coal is the responsibility of the jurisdiction in which the combustion takes place. It does not, in Stanford's opinion, represent a "public subsidy" provided by the Australian community.

Stanford also believes there is a need to clarify a further view expressed in para 5.22 of Duncan's report which states that "the economic costs of carbon emissions should be included in any analysis which estimates the value of a coal project today". Stanford would agree with this statement insofar as it refers to the GHG emissions that occur in the jurisdiction that plays host to the coal mine concerned. He does not agree, however, that such analysis should include the Scope Three emissions arising from the combustion of the mine's coal in another jurisdiction. The reason for this is that, in Stanford's view, those emissions would occur even in the absence of the particular mine being evaluated. There is a certain level of demand for coal around the world at any time and, on the supply side, a resource that is, in the medium term at least, virtually boundless. As shown in Stanford's expert report (page 21), a number of countries, including Indonesia, the United States, Mongolia and South Africa, compete with Australia in international coal markets. Therefore, if the mine in question did not go ahead, the coal required to satisfy demand would be acquired from somewhere else so that the emissions would still occur. In Stanford's opinion, therefore, the global emissions arising from the

[1] Intergovernmental Panel on Climate Change, *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reporting Instructions*, Overview, page 4, http://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/overri.pdf

combustion of thermal coal are a consequence of the demand for coal worldwide and not a result of the commissioning of one particular coal mine.

In the context of the cost-benefit framework canvassed by Duncan, Stanford also notes that banning an Australian coal mine on the basis of its GHG emissions would be likely to cause a net cost to the Australian community. There would be no net environmental benefit to Queenslanders or Australians generally from lower GHG emissions because, in Stanford's opinion, the same amount of coal would still be combusted but supplied from somewhere else. At the same time, the community would enjoy none of the economic benefits associated with the development of a new major project. This would be a classic example of the carbon leakage that governments strive to avoid.

Rod Duncan's view

While Duncan agrees with Jon Stanford that there will inevitably be some sort of international climate change framework agreed to in the future, Duncan disagrees that developing countries such as India and China will be held to account for past emissions in the same way as developed countries, such as Australia, the United States or the European Union. It seems more likely, in Duncan's opinion, there will be an agreement in the future which splits the remaining "carbon budget" (in the sense used by Prof. Roger Jones) available at that time between the countries involved in the agreement with little regard for levels of past emissions.

How this future allocation of the "rights to pollute" will be accomplished and the actual allocation decided is impossible to predict at this point, as the allocation will depend on political and economic factors of importance at that time. Jon Stanford is assuming that this future allocation will take into account the emissions of India and China at the time those countries were burning the coal from the Alpha mine. However Rod Duncan believes that if the United States and the European Union were to argue at the time that a fair allocation should account for the (past) level of Scope 3 emissions under the Alpha mine, India and China could argue in reply that the calculations for the United States and the European Union should include all of the (past) emissions of those countries since the Industrial Revolution. To include past levels of pollution would ensure that developed countries would have no right to pollute in any "fair" allocation of rights, and it seems very unlikely that the developed countries would agree to this result. After all, developed countries have already emitted, up to the present, far more carbon pollution than they would be allocated under any reasonable split of pollution rights.

It seems more likely then that a future allocation of the right to carbon pollution will ignore the past history of pollution levels up to that time. Given this, Duncan believes that the distinction between Scope 1-2 and Scope 3 pollution will have no basis in determining the allocation of carbon pollution rights when an international agreement is finally reached in the future. What is likely to matter at that point is simply the amount of the carbon budget remaining. In this sense, Duncan believes that emissions of carbon anywhere today is limiting the ability of future generations of Australians to use fossil fuels in the future and harming their welfare, and that we should consider emissions of coal no matter where that coal is burnt.

3.2 Future direction of climate change policy

Jon Stanford's view

Jon Stanford disagrees with Rod Duncan's view that, in assessing whether the Alpha mine should go ahead, we should assume that the world will undertake the drastic policies required to limit the rise in temperatures to two degrees Celsius (the International Energy Agency's 2DS scenario). Stanford also considers that while there may be risks to the Alpha mine associated with the possibility of such policies being implemented, these are overwhelmingly private or commercial risks to be borne by the proponents of the Alpha project. Stanford does not consider these to be public risks.

Restricting the global temperature rise to two degrees Celsius

Many national governments have agreed on the desirability of restricting the global temperature rise as a consequence of climate change to two degrees Celsius. In order to achieve this, however, a substantial decline in emissions would be required. The IEA states that in order to achieve 2DS, CO_2 emitted from coal-fired electricity generators around the world would need to begin to decline from 2015, with a fall of around 93 per cent from 2011 levels by 2050 (quoted in para 5.31 of Duncan's expert report). According to Duncan, "this is the market the mine will be selling in to".

Stanford does not consider that the evidence supports the conclusion that Duncan has reached regarding the market for Alpha coal. Although many of the world's leaders have endorsed 2DS as a desirable objective, the absence of policy action in support of it means the target remains aspirational. While some countries, including Australia, are taking significant action to address climate change, the net effect of those measures remains a drop in the bucket in terms of their global impact. There is no sign that the world as a whole is ready to take the drastic actions required to meet the target. Indeed, the same IEA report that Duncan quotes acknowledges the clear disconnect between aspiration and action:

> Global coal deployment has risen steeply over the past two decades. Coal met the lion's share of incremental growth in electricity generation between 2000 and 2010, with coal-fired electricity generation increasing by almost 2 700 TWh, or 45%, to 8 700 TWh in 2010. The growth of coal-fired electricity generation has far outpaced the significant increase in generation from all other non-fossil energy sources … In 2010, coal's share of electricity generation reached 42%, up from 39% in 2000, compared with a 33% share for non-fossil electricity (down from over 35% in 2000).
>
> The current trajectory for coal is fundamentally inconsistent with a low-carbon future. Global coal demand is set to increase from an estimated 155EJ in 2011 to 180EJ in 2017 (+2.6% per annum), still driven predominantly by emerging economies, in particular China and India. Chinese coal demand alone is projected to increase from an estimated 75EJ in 2011 to 93EJ in 2017 (3.7% per annum). It is currently difficult to envisage a future in which coal is not used to meet growing power demand — not only in non-OECD regions, but also in many OECD countries.[2]

In summary, Stanford contends that while significant global policy action on climate change remains a possibility, nobody can safely assume that governments will indeed take the drastic action that would threaten the viability of the Alpha mine. The global community has been promising to take action on climate change for over twenty years, particularly at the conference of

[2] International Energy Agency, *Tracking Clean Energy Progress, 2013*, page 49, http://www.iea.org/etp/tracking/

the parties at Kyoto in 1997, and yet, as the IEA states above, the demand for thermal coal has not only grown in absolute terms, but its share of electricity generation has grown as well. If we are to meet the 2DS target, as Duncan assumes, emissions from coal fired generation need to peak in 2015, which is less than two years away. This seems unlikely. They key conclusion made by the International Energy Agency above is that "it is currently difficult to envisage a future in which coal is not used to meet growing power demand — not only in non-OECD regions, but also in many OECD countries".

Rod Duncan's view

It is the opinion of the International Energy Agency that there will be an international agreement at some point in the future about how to share the remaining rights to pollute while still keeping world emissions within a limit that will achieve a temperature increase of 2 degrees C. Duncan agrees with Stanford that current political realities make the 2DS scenario assumptions unlikely, however what this inaction today means is that future (past 2020) climate change policies will have to be more severe in order to keep the same limit on the future temperature increase. At present the least cost means to reduce emissions is to switch from the use of coal to generate electricity to the use of gas, so, in the opinion of Duncan, a delay in enacting climate change policies today makes cuts in coal consumption in the near future even more likely.

In the opinion of Duncan, it is good practice in project evaluation to model the impact of future scenarios which has some non-zero probability of occurring. The current analysis by Hancock assumes that coal markets in the future are exactly the same as coal markets today – that there is no climate change policy. In the current situation, Duncan believes that it is reasonable that Hancock produce an analysis of the results of some future, likely climate change policies on the profitability of the Alpha mine.

Public and private risks

Jon Stanford's view

Rod Duncan suggests on page 12 of his expert report that policy action on climate change could force the decommissioning of coal mines well within the thirty year life of the Alpha mine. The implication is that this should be a consideration in the Land Court's judgement as to whether to allow the mine to proceed.

While Stanford remains skeptical on the basis of past performance that the world's policy makers will take drastic action to avert climate change, he accepts that this is one plausible scenario whose impact needs to be assessed. But Stanford believes that the risks involved should be regarded as being overwhelmingly commercial risks to be borne by the Alpha mine's proponents. While there would be some social costs, mainly in terms of unemployment, that would arise from the forced premature closure of the mine, these would be relatively small. In addition, Stanford considers that the attachment of any probability estimate to such an outcome would be highly speculative and would not represent an adequate basis on which to prohibit the development of the mine.

Rod Duncan's view

As stated before, in the opinion of Duncan, it is good practice to produce an analysis of the outcome of likely future scenarios for the Alpha mine. While Duncan believes that Hancock is free

to lose as much money as it wishes on the Alpha mine, there will be considerable dislocation in the Queensland economy, and loss to Queensland residents, if the Alpha mine is opened only to be closed well before the end of its expected lifespan due to a change in world coal markets. Given that the IEA believes that world coal markets will undergo large changes in the near future, Duncan believes the fall in coal prices and early closure of the Alpha mine should be considered as one possible future for the mine.

4. Expert's Statement

We confirm the following:

(a) the factual matters stated in this report are, as far as the experts know, true;

(b) the experts have made all enquiries that they consider appropriate;

(c) the opinions stated in this report are genuinely held by all experts;

(d) the report contains reference to all matters the experts consider significant; and

(e) the experts understand their duty to the court and have complied with the duty.

Jonathan Geoffrey Stanford

27 July 2013

Roderick Duncan

25/07/13