AF

Economic Peer Review

BYLONG COAL PROJECT
Environmental Impact Statement

Hansen Bailey
ENVIRONMENTAL CONSULTANTS

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ECONOMICS & ENVIRONMENT

16 June 2015

Mr Nathan Cooper
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Bylong Coal Project

Economic Impact Assessment Peer Review

Dear Mr Cooper,

BDA Group was engaged to provide a peer review of the Economic Impact Assessment of the Bylong Coal Project being undertaken by Gillespie Economics.

Please find attached our review of the final report (dated June 2015). If you have any questions in relation to our review, please do not hesitate to contact me.

Yours sincerely,

DREW COLLINS

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Bylong Coal Project
Economic Impact Assessment Peer Review

BDA Group was engaged to provide a peer review of the Economic Impact Assessment (EIA) of the Bylong Coal Project undertaken by Gillespie Economics. Our comments are limited to a 'desk-top' review based on the information presented in the EIA. No attempt has been made to check the data used, or to review the computational accuracy of the spreadsheet based economic model.

Accordingly, the focus of the review has been on:

- the appropriateness of the assumptions, methods and results presented;
- their consistency with the NSW Government (2012) *Guideline for the use of CBA in mining and coal seam gas proposals* (the Guidelines); and
- the overall efficacy of the analysis and conclusions.

In response to a draft EIA, BDA Group provided a number of comments, including for example in relation to the valuation of water resource impacts, biodiversity, historical heritage, and employment. It is noted that most of these have been addressed in the final report, through the provision of supporting references and / or clarification to assumptions made. Our comments provided below are in relation to the final EIA presented in a revised report dated June 2015.

Overview

Gillespie Economics has prepared a sound report, employing methods and an approach to the presentation of results consistent with best practice economic assessment principles.

I believe the requirements of the Secretary's Environmental Assessment Requirements (application SSD 14_6367) in relation to the economic analysis have been adequately addressed.

I have also found the analysis and its documentation to be consistent with the NSW Government Guidelines:

- The base case or 'without project' counter factual has been appropriately defined and described;
- The scope of the analysis and timeframe employed is appropriate; project costs and production benefits are identified; recommended discount rates have been employed; threshold analysis with respect to non-production impacts has been undertaken;
- Non-production impacts and associated mitigation or offset measures have been identified, and where residual impacts found to be material and supporting information available, valuations have been prepared;
- Risk / sensitivity analysis has been conducted;
- Distributional analysis at the national, state and local levels is presented; and
- The financial impacts of the project on governments at the national, state and local levels is presented.

Approach to economic assessment

Impacts at the global level were identified in physical and then monetary terms, and then factored down to national, state and regional levels. Derivation of net economic benefits at the national level has appropriately been adjusted to reflect foreign ownership. Consideration of benefits at the state level largely considers the distribution of taxation and royalty revenues.

Some care is necessary however in considering Table 4.4. The net production benefits realised offshore by KEPCO - and therefore not included in the estimation of national net economic benefits - could erroneously be interpreted as a measure of private profit, which would appear inconsistent with the scale of company tax estimated to be payable. However the financial and accounting principles applicable to the estimation of taxable income and profit are different to those employed in social benefit cost analysis. Footnote 1 to this table provides important clarification, and the issue is probably worthy of specific discussion in the methodology section of future reports.

The consideration of regional economic benefits, contrary to assessment at the global or national level, requires consideration of second round benefits. Gillespie Economics has done this through drawing on an Input-Output (I/O) analysis (subsequently presented in the report for an examination of regional impacts). This is a useful extension of the economic analysis, although by necessity it is 'assumptions driven' (such as in relation to employment levels and labour mobility). Nonetheless, the model of the regional economy has been built using appropriate datasets, and the 'order-of-magnitude' results provides confidence to support the conclusion that regional economic benefits are substantial.

Cost and benefit parameters

The estimation of key benefits, namely the net economic value of coal extracted, was estimated using firstly, data from the proponent on extraction volumes, capital and operating costs, and secondly, an appropriate forecast of the US/AUD exchange rate and of market prices for coal.

Gillespie Economics has used a US/AUD exchange rate higher than is currently the case. In addition, the thermal coal prices used for the project period, derived by WoodMacKenzie (2014) are stated to be higher than those currently prevailing, although the exact prices assumed are not stated. Given inevitable uncertainty over future exchange rates and prices, this begs the question of what impact would continuation of the current exchange rate and coal price have on estimated net project benefits.

This question is not specifically explored. The impact of using the current exchange rate and coal price would to a degree have an offsetting effect when calculating prices in Australian dollar terms, and hence moderate the overall impact. Gillespie Economics has however investigated the impact of a ± 20% change in the assumed coal price in Australian dollars (which combines these parameter values), which was not found to undermine the viability of the project.

Information on project capital development and operating costs were provided by the proponent. A summary breakdown of the $1.3b capital costs is provided. No breakdown of the $2.26b (in present value terms) operating costs is presented, presumably as this information is commercial-in-confidence. Nonetheless, as illustrated in the sensitivity analysis, even a 20% increase in either capital costs or annual operating costs would not undermine the viability of the project.

The mine is estimated to either directly or indirectly impact around 4,300ha of Strategic Agricultural Land or Equine Critical Industry Cluster land. Gillespie Economics states (pg 34) that the capital value of the land, as indicated by prevailing land prices, is a measure of the opportunity cost of forgone agricultural production. Gillespie Economics states that in a properly functioning land market, the maximum willingness to pay (WTP) of buyers to purchase the land will reflect their estimation of potential future agricultural production benefits.

However this measure does not take into account any values held by the incumbent owners over and above this valuation. For example, owners may hold values associated with a 'sense of belonging' to the properties, the value of community connections, or value associated with a particular use of the land which will may not be realised by incoming owners. In relation to this latter point, a property included in the KEPCO land purchases has been the subject of recent media attention in relation to an alternative farming approach. It has been argued that the educational value of this work may be lost, despite the land not being in the direct mining disturbance area.

There is a large body of research that has found that the minimum monetary amount required to relinquish a good (willingness to accept or WTA) frequently exceeds WTP for reasons such as those cited above. In these cases, the true opportunity cost of the land would be the WTA. And in fact this is what has been used by Gillespie Economics in relation to purchased properties in the benefit cost analysis. An acquisition cost (WTA) of $98m has been used to identify the opportunity cost of the land to the current owners. As noted by Gillespie Economics (pg32), this value includes both the agricultural value of the land and any consumer surplus held by the owners. When the land is returned to agricultural use post-mining, the 'residual' value realised for the rehabilitated land ($47m) is based solely on its agricultural value to new owners (a measure of WTP).

In relation to greenhouse gases, Gillespie Economics has used the value of the (now discontinued) carbon tax as a shadow price for the global damage cost of CO_2 emissions ($23/t) and then apportioned a national damage value (23¢/t) based on Australia's share of global GDP. Clearly the assumptions regarding the shadow price and the basis for its apportionment are contestable; including the implicit assumption that the tax would be set equal to a tenuous valuation of global damages rather than domestic factors, including political.

Moreover, if it is reasonable to assume that Australia will act to meet an agreed greenhouse gas reduction target, the with / without difference for the project is not a change in global greenhouse gas emissions and damages, but rather the cost of attaining the target. In this case, the emissions generated by the project will have to be offset by some other activity. In this sense, a greenhouse gas offset is conceptually no different from a biodiversity offset, with the associated cost or benefit pertinent to a partial equilibrium analysis of net economic benefits.

If the order-of-magnitude of costs by marginal offset projects was also around the $23/t mark, the $38m cost attributable at the global level by Gillespie Economics should also be attributable at the national level. It is recognised however, that the cost differential between the damage cost and replacement cost approaches would not have a material impact on the overall economic viability of the project.

In relation to non-market values of employment, Gillespie Economics has, correctly, presented the notion of existence values as they may relate to employment. However the estimated public

good value of ~$25,000 per employee per year is contestable. Nevertheless, the transferred values are from studies undertaken in a similar context and populations, and Gillespie Economics has presented results with and without these values.

Risk analysis

Gillespie Economics has provided comment on the key areas of project risk and through sensitivity analysis, canvassed the robustness of the central estimates to changes in key parameter values.

In relation to biodiversity offsets, Gillespie Economics notes that the offsetting process is overseen by the NSW Office of Environment and Heritage, under guidelines to ensure the efficacy of the offsets. It is noted that risks in the offsetting process are in-part managed through offsetting a larger area than that which is to be cleared, although the specific offset ratio is not cited. Based on the reported 753 ha of native vegetation to be cleared and proposed biodiversity offsets of some 3,684 ha, this implies an offset ratio of 3.3:1. While this does not negate all risks, the offset ratio is consistent with broader Australian and international practice.

As recommended in the NSW Government Guidelines, the central analysis should reflect a risk neutral position. Gillespie Economics has however, in the face of data uncertainties, generally adopted a more conservative position. For example, a zero residual value is assumed for plant and equipment, and no agricultural production benefits from project land over the project life are included, despite the intention to utilize most of it for this purpose. Conversely, the extent of negative non-production impacts has been based on the maximum annual coal production (6.5 Mtpa compared to an average of 5.4 Mtpa assumed in the production analysis), which given the available resource, could not be sustained for the assumed 23 years.

Distributional analysis

The distributional analysis of impacts on the state and regional communities has been well canvassed through application of the I/O model. As noted above, key assumptions may be contestable at the margin, and Gillespie Economics has appropriately discussed the more pertinent assumptions (eg: crowding out, wages pressure, etc).

Of note, is that the significant flow-on benefits, particularly to regional employment, during the operational phase are dependent on the assumption of all mine employees living in the region (in contrast, Figure 5.6 indicates that 14% of the current regional coal mining workforce lives outside of the area). The veracity of the assumption will depend upon the application of KEPCO's stated policy that they expect the operational workforce to reside within one hour's drive of the mine (see footnote 32).

Conclusion

Gillespie Economics has prepared a sound report. Given the breadth of potential impacts examined in the analysis, some assumptions will remain contestable. However the scale of these uncertainties is at the margin of the analysis, such that even significant changes to relevant parameter valuations would not impact the conclusions of the analysis.

Therefore overall, and based on the assumptions, data and analyses presented, Gillespie Economics appropriately concludes that firstly, the project offers net economic benefits to the

region, State and more broadly to Australia, and is therefore desirable from an economic efficiency perspective; and secondly, that the region and governments will be significant beneficiaries through the levels of regional employment and activity, and royalty and taxation collections respectively.

Drew Collins

Managing Director, BDA Group

16 June 2015