



13 April 2015

Mr Daniel Sullivan
Senior Environmental Scientist
Hansen Bailey Pty Ltd
6/127-129 John Street
Singleton NSW 2330

**Drayton Mine Extension Project
Economic Impact Assessment Peer Review**

Dear Mr Sullivan,

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

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

Yours sincerely,

DREW COLLINS
Managing Director

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Drayton South Coal Project Economic Impact Assessment Peer Review

BDA Group was engaged to provide a peer review of the Economic Impact Assessment (EIA) of the Drayton South Coal Project undertaken by Gillespie Economics, and presented in a final report dated April 2015.

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.

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_6875) 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' counterfactual 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.

Specific comments

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.

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.

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.

As the project is an extension of an existing operation rather than a new 'greenfield' development, capital costs as well as broader environmental and social impacts are relatively modest. The estimated economic viability of the project is dominated by the assumed coal revenues and operating costs, of which there will always be some uncertainty. Before considering how these parameters have been handled, comment on some of the other, albeit minor, parameters is needed:

- Greenhouse gas valuation - Gillespie Economics has used the value of the (now discontinued) carbon tax as a shadow price of the global damage cost of CO₂ 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 basis for its apportionment are contestable.

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. The order-of-magnitude of such costs by marginal projects is probably also around the \$23/t mark. This implies the \$6m cost attributable at the global level by Gillespie Economics should also be attributable at the national level.

- Non-market value of employment - Gillespie Economics has, correctly, presented the notion of existence values as they may relate to employment. However the estimated value of ~\$25,000 per employee per year over and above their wages is again 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.
- Opportunity cost of water - Gillespie Economics uses a capitalised opportunity cost of regulated water of \$2,000/ML. This appears consistent with broader water entitlement values in the State, but no reference is given to support the assumption. Moreover, the small losses in unregulated surface and groundwater are dismissed as not material. Due to the effect of cumulative development impacts on the environment, further consideration could have been given to this issue. For example, a shadow price for these environmental

losses based on government buyback or infrastructure investments for environmental flows may have been more instructive. It is noted however, that such a valuation on the small losses involved is unlikely to have significantly effected the overall estimated project costs.

Returning to the estimation of the net project revenues, the key parameters are the assumed coal price and operating costs. Gillespie Economics has used a US/AUD exchange rate higher than is currently the case, and coal prices much higher than reflected in current spot prices. The impact of using the current exchange rate and coal price would however have an offsetting effect when calculating prices in Australian dollar terms. While this scenario or other exchange rate / coal price combinations were not specifically explored, Gillespie Economics did investigate the impact of a $\pm 20\%$ change in the assumed coal price in Australian dollars, which was not found to undermine the viability of the project.

Information on project operating costs - assumed to average some \$286m per year over the life of the project - was provided by the proponent. No breakdown of operating costs is presented, presumably as this information is commercial-in-confidence. Nonetheless, as illustrated in the sensitivity analysis, even a 20% increase in annual operating costs would not undermine the viability of the project.

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. 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, the capital costs include a 15% contingency and zero residual value for equipment *and* land, 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 impact under-valuations (eg: residual noise, visual amenity, water) are likely to be small.

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).

Conclusion

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
13 April 2015