

***APPENDIX K***  
***Economics Peer Review***



5 May 2016

Mr Andrew Wu  
Environmental Engineer  
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**Wallarrah 2 Coal Project**  
**Economic Impact Assessment Peer Review**

Dear Mr Wu,

BDA Group was engaged to provide a peer review of the Economic Impact Assessment of the Wallarrah 2 Coal Project undertaken by Gillespie Economics.

Please find attached our review of the final report (dated May 2016). 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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## Wallarah 2 Coal Project

### Economic Impact Assessment Peer Review

BDA Group was engaged to provide a peer review of the Economic Impact Assessment (EIA) of the Wallarah 2 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 (2015) *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 4974) 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 (2015) *Guidelines*:

- A Cost Benefit Analysis, reporting impacts at the global, national and state levels, has been conducted, along with a Local Effects Analysis;
- 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; and
- Distributional analysis at the 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 and state levels has appropriately been adjusted to reflect foreign ownership.

Consideration of benefits at the national and state levels largely considers the distribution of taxation and royalty revenues, relative to social and environmental impacts created by the project, and remaining following a range of measures by the proponent to minimise and mitigate these impacts.

Consistent with the 2015 *Guidelines*, a Local Effects Analysis (LEA) has been undertaken focussing on local employment impacts, non-labour project expenditure and second round flow-on effects. For the latter, Gillespie Economics has drawn on an Input-Output (I/O) analysis (subsequently presented in a supplementary local effects analysis). The I/O model of the regional economy has been built using appropriate datasets, key modelling assumptions are reported and results appropriately presented.

Following this, the supplementary local effects analysis, through I/O modelling, presents an analysis of broader regional benefits. Both the LEA and Supplementary I/O analysis are premised on a number of assumptions. The LEA, consistent with the *Guidelines*, considers the wage impact on people employed by the project who are resident in the region at the time of the proposal; it assumes that these people were already locally employed; it ignores any employment effect in relation to the backfilling of their previous positions; and ignores the income spending of others who migrate into the region and are employed by the project. Collectively, these assumptions will result in the LEA understating actual impacts.

On the other hand, the I/O analysis relaxes the 'full employment' assumptions and better captures the impact of project employment on broader employment in the region and the effect of expenditures by those entering the region. However, by ignoring potential crowding out of economic activity in other sectors in the region, the I/O analysis will typically overstate actual impacts.

In short, the LEA and I/O analyses (presented in the supplementary local effects analysis) provide lower and upper estimates of local impacts, and this has been noted by Gillespie Economics.

### **Cost and benefit parameters**

Information on project capital development and operating costs were provided by the proponent. A breakdown of these costs is not provided. Notably however, as the project proponent - the Wyong Areas Coal Joint Venture - is 100% foreign owned, capital invested in developing the project does not represent a cost to Australia or NSW. Similarly, the project operating costs will only impact benefits to the extent that company tax payments are affected.

Indeed, the key project benefit to the state will be realised through the royalties generated. These are a function of project revenues and are unaffected by assumptions about land opportunity costs, development costs, operating costs, mitigation, offset and compensation costs or effective company tax rates. Royalty payments will depend on production volumes and coal prices. Notwithstanding some potential variation in production levels, the critical parameter will be the coal prices received in \$AU.

In estimating coal prices in \$AU, Gillespie Economics has used a US/AUD exchange rate of 0.72 which was applicable at the time of the analysis. The current exchange rate is now slightly higher, and for example, forecast by the Australian Government to remain around 0.77 over the budget forward estimates period (Budget 2016-17, Budget Paper No 1, Statement 2: Economic

Outlook). The pertinent exchange rate however is that which will apply over the 28-year project period. Clearly this is open to speculation. The citing of independent and credible projections, to the extent these are available, would have provided support for the assumed exchange rate. Nevertheless, the impact of significant exchange rate movements is allowed for in the  $\pm 30\%$  sensitivity testing of coal prices.

The \$US thermal coal prices assumed over the project period have been based on WoodMacKenzie benchmark price forecasts. In support of the assumed prices, Gillespie Economics provides a review of thermal coal price forecasts from a number of respected sources, which indicates that the Wood Mackenzie prices are at the lower end of those anticipated. To this extent, the coal prices assumed by Gillespie Economics are conservative.

In relation to non-production costs and benefits, Gillespie Economics provides a sound summary in Section 2 of the EIA of the predicted physical impacts (drawn from the EIS), and in Section 4 a comprehensive valuation of residual impacts, once measures to mitigate, offset or compensate impacts has been accounted for. As shown in Table 4.4, the collective scale of these impact valuations is minor relative to the project benefits at the global or national level, and indeed at the state level as shown in Table 4.5. Therefore, whilst some parameter valuations may be contestable at the margin, the adoption of alternative valuations is unlikely to have a material impact on the estimated net benefits of the project.

Nevertheless, the following issues have been noted:

- The extent of particulate emissions due to the project will be small, and have been dismissed as they are '*unlikely to result in any additional exceedances of relevant impact assessment criteria*'. Nevertheless, there is no safe minimum threshold for ambient levels of particulates, and this is recognised to the extent that supporting EIS studies indicate negligible, but nonetheless positive, statistical increases in adverse health outcomes. Benefit transfer techniques could provide a valuation for these emissions;
- Gillespie Economics has estimated greenhouse gas impacts with reference to valuations recommended in the *Guidelines*. These sources provide alternative shadow prices, and reflect valuations derived in the US, Australian and European contexts. The resulting range of impacts derived with reference to these valuations has appropriately been reported. In addition, impacts have been scaled to the national and state level consistent with recommendations in the *Guidelines*. However contrary to the *Guidelines*, I believe a more appropriate basis for valuation would be based on the replacement cost approach, as the emissions generated by the project will have to be offset by some other activity for Australia to meet its international commitments. This will lead to a higher valuation than that used by Gillespie Economics, but it would not materially affect the results of the economic assessment.
- 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, as noted by Gillespie Economics, the reported values reflect empathy values '*because of the workers being unemployed and increased crime and community dislocation*', and therefore in the context of a fully employed economy may not be as pertinent. As the CBA results have been reported 'with and without' this parameter,

and the conclusions unaffected, the valuation of the parameter is therefore not consequential.

## **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, such as coal prices received.

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 75 ha of native vegetation to be cleared (10.5 ha of Endangered Ecological Communities) and proposed biodiversity offsets of 207 ha of native vegetation (82.8 ha of Endangered Ecological Communities), this implies a significant offset ratio to manage associated risks. While this does not negate all risks, the offset ratio is consistent with broader Australian and international practice.

## **Distributional analysis**

The distributional analysis of impacts on the state and regional communities has been well canvassed through application of the I/O model and identification of the incidence of individual cost and benefit parameters across stakeholders at the local and state levels.

## **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, and based on the assumptions, data and analyses presented, Gillespie Economics appropriately concludes that the project offers net economic benefits to the local community, State and more broadly to Australia, and therefore relative to the no project scenario, is desirable from an economic efficiency perspective.

Drew Collins

Managing Director, BDA Group

5 May 2016