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Report on Comments on Updated Economic Assessment of Hume Coal Project

Has R20 by the IPC been completed?

Prepared by Honorary Professor Andrew Stoeckel, Centre for Applied Macroeconomic Analysis, Australian National University

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Stoeckel Group Pty Ltd, "Majura Vale", 132 McKeahnie Lane, Sutton NSW 2620
Ph: 02 6241 7293 M: 0417 348 610   ABN 59 170 071 745

Background

Hume Coal Pty Ltd has proposed to develop, operate and rehabilitate an underground coalmine near Berrima, NSW. As part of the Environmental Impact Statement required for this development under NSW law, an economic assessment was undertaken by BAEconomics in 2016.

The economic assessment by BAEconomics has two parts; a state-wide Cost Benefit Analysis (CBA) as well as a Local Area Analysis (LEA) and followed a standard methodology laid down in the NSW Government (2015) *Guidelines for the economic assessment of mining and coal seam gas proposals* ("the Guidelines").

This economic assessment was independently peer reviewed by BIS Oxford Economics in 2017 (BISOE 2017). BISOxford was in general agreement with both parts of the economic assessment by BAEconomics, finding first on the cost benefit:

> This review finds that the CBA is well-researched and (with some exceptions) well presented. The work is obviously the product of considerable effort and much of the approach is reasonable (BISOE 2017 p1).

Similarly, for the LEA, BISOxford stated that:

> The LEA is likewise well-presented and researched, with considerable attention being paid to detail in areas such as the local housing market, tourism, agriculture, externalities and assessment of flow-on effects (BISOE 2017 p2).

But BISOxford economics had several concerns with the CBA and LEA and they made several recommendations detailed below. Hume Coal then requested BAEconomics update their economic assessment which they did in October 2018 (*Updated Economic Assessment of the Hume Coal Project*).

In December 2018 the Minister for Planning referred the Hume Coal Development and associated Berrima Rail Project (a related co-dependent piece of infrastructure – hence considered as one) to the Independent Planning Commission (IPC) for review (IPC2019). The IPC made various recommendations, the relevant one for the economic assessment being R20:

> **R20**
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> "The additional information provided by the Applicant, including the Updated Economic Impact Assessment prepared by BA Economics in October 2018, should be peer reviewed to determine:
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> i. whether the concerns and recommendations in the Economic Impact Assessment Review dated December 2017 prepared by BIS Oxford Economics

(BISOE 2017) have been adequately addressed, including concerns about transparency in relation to project costs, revenues and externalities; and

ii. the implications and reasonableness of changes/assumptions in the Updated Economic Impact Assessment including the change to the Project description from that in the Hume Coal Environmental Impact Statement and any cost implications.

Following the peer review, if the net economic benefit of the Project remains uncertain and there are outstanding concerns about the assumptions and/or information, a further Economic Impact Assessment should be prepared that is consistent with the recommendations in BISOE 2017 (as set out in pages 1-3 of the Executive summary of BISOE 2017) and any further recommendations of the peer review".(IPC May 2019 p.....)

The **purpose** of this independent **Assessment** is to undertake a peer review of the Updated Economic Impact Assessment October 2018 (the *Update*) prepared by BA Economics to see whether the "concerns and recommendations" of the BISOxford review have been "adequately addressed" and so report on whether the requirements of R20 by the IPC have been met.

Specific concerns and recommendations of BISOxford

The concerns about the BAEconomics' cost benefit assessment of the Hume Coal project listed by BISOXford were:

- *Employment benefits* - The inclusion (or, at least, the claimed magnitude) of employment benefits relies on questionable assumptions relating both to currently employed and unemployed/footloose labour.
- *Tax benefits* - The associated personal income tax, Medicare payments and payroll tax payments associated with the hiring of unemployed/footloose labour is, by extension, also questionable. In addition, the issue of a shadow price for unemployed labour is not addressed.
- *Transparency* - The description of project costs and revenues, and their role in the composition of Net Producer Surplus, does not appear to be as transparent as the approach suggested by the Guidelines.
- *Inclusion of flow on effects* – The inclusion of State-wide flow on ("multiplier") effects in the EIA Summary is at odds with NSW Treasury stipulations for CBA. (BISOE 2017 p1).

So BISOxford made the following recommendations:

- Employment benefits (and associated tax benefits) either be removed from the CBA or a better justification should be made for the existence (and claimed size) of such benefits. In addition, there should be an acknowledgement of the existence of shadow price of unemployed labour even if such costs cannot be quantified.

- Project costs and revenues and the composition of the Net Producer Surplus be more transparently indicated, along the lines suggested in the Guidelines (Table 3.5, p.11).
- The flow on effects at the State-wide level be removed from the EIA Summary, to be consistent with the stipulations of the CBA guidelines

For the local economic assessment, BISOxford commented that:

- Employment benefits - These would again appear to be overestimated for many of the same reasons as in the CBA. A re-estimate by BIS Oxford Economics, adhering more closely to the stipulations in the Guidelines, suggests the overestimation is in the order of 13 percent.
- Non-labour project expenditure - Against this, non-labour expenditures are not quantified, which means that one potentially important area of benefits is actually omitted. Though the reasons for this are discussed in the LEA, there may be scope to re-examine the issue.

Accordingly, BISOxford "...recommended that these issues be reviewed with an aim of adjusting the LEA findings, if feasible." (BISOE 2017 p3)

Context for assessing BISOxford's recommendations

To assess whether the comments and recommendations by BISOxford have been "adequately addressed" requires some context, in particular, what is the purpose of the economic impact assessment and why are there guidelines for making these assessments?

The purpose of the economic impact assessment is to help the Government decide between alternative development options. "It is intended to allow decision makers to consider trade-offs and decide whether the community as a whole is better or worse off as a result of the proposal" (NSW Government 2015). So, the implicit criteria for whether a change, explanation or an assumption 'adequately addresses' a comment or recommendation is whether it helps Government make a better decision on the merits or otherwise of a development proposal. In passing, it should be noted that the "economic assessment is just one part of the broader EIS" (NSW Government 2015 p3).

The guidelines are produced to give some rigor and commonality to economic assessments around a core technique – cost benefit analysis. As the Government states:

> CBA provides a technique that allows a systematic treatment of trade-offs and provides a basis on which the Government can assess the net public benefits of decisions. It allows for quantification and valuation of the full range of potential impacts, economic, social or environmental (including human health) that might arise from a project. (NSW Government 2015 p2).

The guidelines are not legal requirements but are "guidelines" and the Government clearly states that:

> Proponents may, at their discretion, present calculations based on alternative methodologies or assumptions. However, if this is done, these alternative results should be clearly presented as supplementary to the main results. Proponents should also present a detailed justification for why the alternative parameters should be considered, along with supporting research and analysis (NSW Government 2015 p6).

It may be noted however that BAEconomics' updated assessment adheres closely to the guidelines with one variation on the treatment of additional employment that is expanded at length later. The issue is whether this treatment of additional employment helps the Government make a better decision on the merits of the proposal.

Focus on NSW Community

Two other aspects of the guidelines warrant mention. The CBA is focussed on the net benefits to the NSW community. The focus is on the "collective public interest of households in NSW" which is adopted to avoid "double counting and other issues that would arise if businesses and other organisations were included. This is because gains or losses to NSW businesses ultimately either accrue to the NSW households that own them (either directly or indirectly) or flow out of the State" (NSW Government 2015 p1). That means if a worker (and possibly their family) migrate to NSW from interstate or overseas to take a job with the Hume Coal Project which has a 23 year timeframe they will become NSW residents and part of the NSW community. The opposite also holds; should there be limited opportunities for employment in NSW and labour migrates to other Sates, so the NSW 'community' will shrink along with economic activity in the State.

Appropriate discount rate

The second aspect concerns the rate at which the stream of earnings over the lifetime of the project are to be discounted to derive a Net Present Value. The guidelines stipulate a common real rate of interest is to be used, which is correct so there is commonality between comparing projects. But the real rate specified is 7% pa, with sensitivity at 4% pa and 10% pa. The reference to the setting of these rates by NSW Treasury is in 2007 and now looks ridiculous. Since the Global Financial Crisis real rates of interest around the world have been close to zero and most official statements by Central Bankers on low real rates is they will stay low for the foreseeable future[1].

BAEconomics has used the 7% pa rate as specified by the guidelines (with the sensitivity rates as well) but the effect is that the benefits to the NSW community from the Hume Coal Project and Berrima Rail Project (and all other development projects in NSW) may be understated by a factor of two or three! The lower the rate of interest for discounting, the more valuable the project. In the October 2018 Update, the NPV is estimated at $373m (A$ 2018 values) at a (real) 7% pa. At real 4% pa, the value is $540m. That is a difference of $167m.

The risk is that this project (and other worthwhile projects across the State) are wrongly rejected to the detriment of the NSW community. Yet this problem of the right discount rate to use is not even mentioned by BISOxford in their review and is not a formal part of this assessment of compliance with R20 by the IPC.

The 'right' discount rate is a vexed issue among economists and practitioners of CBA. It received a lot of debate post the release of the Stern Report on the economics of climate change - the first and seminal report on the economics of the issue (Stern 2006). Stern used 1.4% pa as the discount rate for costs and benefits. Had a rate of 7% been used the conclusions would have been radically different and Weitzman (2007) gives an extensive discussion of discount rates and their consequences in his review of Stern's report.

The suggestion here is not necessarily to change the discount rate that is used for this and all other NSW developments but note the following:

- Real interest rates in Australia and globally have fallen over the last decade and most projections by official bodies is for them to remain that way for the 'foreseeable future'.
- Using the lower bound of the sensitivity range indicated in the NSW guidelines would make as large an increase to the estimates of Net Present Value as any other variable affecting the net benefits from the Hume Coal and Berrima Rail Projects.
- The 'right' discount rate to use across the State should be revisited by the NSW Government.

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1 Capital is mobile and low real interest rates is a global phenomenon. The world's biggest capital market is the USA and President Williams of the New York Federal Reserve stated that interest rates would remain low for the 'foreseeable future' (Williams 2019).

Employment benefits

The labour benefits were the most substantive comments and recommendations by BISOxford. The Hume Coal and Berrima Rail Projects will generate significant employment over a 23 year timeframe, but what is the net benefit to the NSW community? In their original 2017 Economic Impact Assessment, BAEconomics estimated discounted employment benefits of $168 million. BISOxford claimed the NSW guidelines were not being followed and should not be included in the calculation. The difference of view surrounds the question of what is ***additional*** benefit from the Hume Coal and Berrima Rail Projects? The labour effects warrant detailed explanation to assess whether R20 has been completed.

When a new project such as Hume Coal and Berrima Rail is developed and operated, new workers are required. That expands labour value-added at the new project. But from the NSW community's point of view, what happens elsewhere in the economy and from whence the labour comes from at what wages that matters. If workers come from some other mine in NSW (at the same wage), value added at the 'other' mine will fall and the aggregate benefit for the NSW community (the focus of the CBA) will not change. There is no additional benefit from the new project.

The same is true if the workers come from other NSW industries (at the same wage). But what if workers come from the ranks of the unemployed or underemployed? What if the workers at the new project are attracted from interstate or even overseas? In these cases the extra employment expands the NSW workforce, the number of NSW residents and is a net additional benefit to the NSW community and should be included in the CBA. So the source of the numbers of new workers is important.

The NSW guidelines (2015) seem confusing on one aspect of where the extra workers come from. The guidelines state that:

> A CBA for NSW should include the economic benefit to workers already residing in NSW prior to the project (the base case). The economic benefit to workers migrating to NSW should not be included in the CBA for NSW. Therefore, the proponent should estimate the proportion of NSW resident and non-NSW resident workers expected to be employed by the project for the purposes of attribution. (NSW Government 2015 p14).

But if the extra workers migrate from interstate, it has the exact same net additional *economic* impact on the NSW community as if the extra workers came from the ranks of the unemployed (which under the guidelines are to be included). With interstate or overseas migration the NSW workforce is larger, the obligations on the NSW Government for health and education are larger, as are receipts from the payroll taxes, the NSW share of income taxes and so-on. Besides, the guidelines for the LEA makes a point of including these extra workers in the local economic assessment of benefits which appears contradictory.

The second source of potential employment benefit is in wages paid. If workers at the new Hume Coal and Berrima Rail Projects are paid higher wages than received before, that may or may not be an additional benefit depending on *why* any extra wages are paid. Higher wages could reflect one or more of several things. Higher wages may be necessary to induce people to move location, they could reflect different 'harder' work conditions, or they could reflect higher productivity and skilling.

If higher wages are necessary to attract workers into a new location, these higher wages reflect the cost of relocating and from the NSW Community's point of view, no net additional benefit. That might be the case if the mine's location was some remote area where ancillary services like education and health services were limited. But that hardly applies to Berrima in the Southern Highlands. If anything, the opposite is likely to be the case.

If higher wages are necessary to compensate for 'harder' or 'tougher' work at the new mine, that can be viewed as compensating for the 'disutility' by workers and again is of no net additional benefit to the NSW Community.

But if higher wages reflect that new workers at the new project are more productive, perhaps also requiring extra skills, this would be of net additional benefit. That makes intuitive sense; if the entire NSW workforce became more productive, the entire State would be better off.

The NSW Guidelines provide a useful illustration of the benefit to workers as "the difference between the wage paid in the mining project and the minimum (reservation) wage that the workers would accept for working elsewhere in the mining sector" (NSW 2015 p13) reproduced in Figure 1.

Figure 1 – Illustration of NSW Guidelines of Benefit to workers

Source: NSW (2015)

The difficult part is to estimate what the reservation wage is. It is something that cannot be observed. To estimate this gap in the *Update*, BAEconomics calculate a 'market rate' for the workforce composition from a 'bottoms up' exercise using the information provided by Hume Coal. They then take the alternative wage as the average employee income for the State of NSW (BAEconomics 2018 p19-20). BAEconomics do not assume any type of wage premium.

The approach taken in the *Update* is reasonable and a further step is required to estimate disposable income. Average gross wages were taken and deductions (superannuation, income taxes and Medicare) were deducted with a share being returned to NSW.

An estimate of the proportion of the workforce that would find alternative employment in NSW in the absence of the Hume Coal and Berrima Rail Projects is necessary to isolate the *additional* contribution that is due to the project. Were the project not to go ahead, a share of the projected workforce would likely be employed elsewhere in NSW. But how big a share? To calculate this share with precision would require detailed analysis of the NSW and Australian labour markets, especially the eastern States. This analysis would be a difficult task and demanding of information. The approach by BAEconomics is to assume 80 percent of the workforce projected by Hume Coal would in fact find alternative employment in NSW at the alternative wage and therefore do not make an additional benefit to the NSW community. This assumption looks sensible as the 'central case' for the CBA.

The above approach seems reasonable and well explained. To do better would require a full specification of the labour market in NSW and across Australia. There is a question of whether the marginal benefit of this extra analysis would be worth the extra cost, particularly in light of the comments above about the importance and appropriateness of the discount rate for this and all other projects in NSW as the potential source of the largest uncertainty in the CBA.

Table 1 below summarises the author's view of the benefits of different components of the employment benefits based on economic principles, the treatment recommended by the NSW Guidelines and the approach taken by BAEconomics. None of the areas of 'No Benefit' under the NSW guidelines have been included by BAEconomics in the *Update* except for the potential additional gain in interstate migration and the assessment of this author is that is the correct approach for the reasons spelt out earlier.

Table 1 Summary of Employment Benefits by source and treatment

Employment Effect	**Economic benefit to NSW community**	**Treatment recommended under NSW Guidelines for CBA**	**Treatment by BAEconomics in 2018 *Update***
More Employment from:			
Relocating workers from existing NSW industries	No Benefit	No Benefit	No Benefit*
Ranks of Unemployed or underemployment	Benefit	Benefit	Benefit*
Interstate migration	Benefit	No Benefit	Benefit*
Higher Wages due to:			
Relocation expenses	No Benefit	No Benefit	No Benefit
Compensation for 'harder' work	No Benefit	No Benefit	No Benefit
More productive workforce	Benefit	Benefit	Benefit*, none explicitly assumed for the *Update* but would be implicit in the 'markets rates' methodology

* See text for explanation of estimation

The end result of the refinements by BAEconomics in the 2018 *Update* is a NPV (A$ real 2018) an employment benefit of $156m, a share of income tax of $30m and share of Medicare of $2m. These values are discounted at 7% pa as per the guidelines. Sensitivity analysis around the proportion of workforce employed and the alternative wage gives a variation around the $156m of $170m and a low of $141m. The sensitivity range looks sensible.

With royalties to the State of $132m, company tax of $32m, payroll tax of $16m plus other minor tax receipts from rates and levies the total economic benefit from the 2018 *Update* is a central estimate of net benefit of $373m (BAEconomics 2018 p43).

Taxation benefits

BISOxford commented on the taxation benefits but these concerns were a result of their concerns over the employment benefit. These employment benefit effects have been addressed in the Update as described above and so the treatment of NSW share of taxation benefits looks correct.

It can be noted that while tax benefits to NSW are not a 'make-or-break' factor of the major benefits of the Hume Coal and Berrima Rail Projects, collectively, NSW's share of company tax, personal income and Medicare amounts to $64m and with additional State payroll tax and other rates of $24m (NPV) adds up to $88m.

Flow on effects and multipliers

BISOxford questioned the flow-on multipliers used by BAEconomics and remarked that they were "at odds with NSW Treasury stipulations for CBA". (BISOE 2017 p1).

Flow on effects are difficult to calculate at a local level and can be controversial. The starting point is to note that there are flow-on effects – both positive and negative – from any major project like the one proposed by Hume Coal. Short of use of detailed General Equilibrium analysis (for which models do exist), the approach by BAEconomics follows a standard methodology and fully explained in Appendix B of their *Update*.

The *Update* notes that a General Equilibrium analysis could more accurately reflect all price and volume effects in an economy but that the Hume Coal Project is relatively small relative to the NSW economy, depends on industry structure and trade at a local level and so further refinement may not substantially improve the accuracy of results. (BAEconomics 2018 p53). It is questionable whether further refinement of this aspect is warranted for the decision of whether to allow this project to proceed, especially when other issues, such as the right discount rate to use are ignored.

Summary

The 2018 *Update* of the Hume Coal Project and Berrima Rail Project by BAEconomics has satisfactorily addressed the concerns and recommendations of the review by BISOxford. The requirements of R20 have been met.

The refinements to the estimates of employment benefit, transparency of estimates and justification of flow-on effects look reasonable and justifiable. The estimate of Net Economic Benefit to the NSW community of $373m looks the best basis to form part of the decision of whether the project should be allowed to proceed.

It would be possible to quibble about further refinements to estimates but this is unlikely to materially affect the quality of the decision and would not be as important as addressing other issues such as the appropriate discount to use in the calculation of net present value. The NSW guidelines have been followed for the discount rate with specified sensitivity results and use of a lower discount rate reflecting economic developments could mean substantially higher net benefits to the NSW community.

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