



REPORT

Wallerah 2 Coal Project Economic Assessment

Response to Submissions

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NSW Department of Planning and Environment
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CANBERRA

Centre for International Economics
Ground Floor, 11 Lancaster Place
Majura Park
Canberra ACT 2609

GPO Box 2203
Canberra ACT Australia 2601

Telephone +61 2 6245 7800
Facsimile +61 2 6245 7888
Email cic@TheCIE.com.au
Website www.TheCIE.com.au

SYDNEY

Centre for International Economics
Suite 1, Level 16, 1 York Street
Sydney NSW 2000

GPO Box 397
Sydney NSW Australia 2001

Telephone +61 2 9250 0800
Facsimile +61 2 9250 0888
Email ciesyd@TheCIE.com.au
Website www.TheCIE.com.au

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Introduction

Overview of review process

The Wyong Areas Coal Joint Venture (WACJV, the Proponent) is seeking development consent under Division 4.1 of Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) for the Wallarah 2 Coal Project (the Project). The Project is located north-west of Wyong in the Central Coast Local Government Area (LGA) in NSW. On 7 February 2017, the Minister for Planning requested the Planning Assessment Commission (the PAC) to review the amended Wallarah 2 Coal Project.

On 1 March 2017, the Department of Planning and Environment (DPE) referred its Addendum Report on the Wallarah 2 Coal Project to the PAC for its review in accordance to the Minister's request.

The PAC has now released its Review Report and made additional recommendations on potential noise impacts, closure of Tooheys Road, community engagement, bushfire management, potential future mining area and the need for an integrated environmental monitoring and public reporting management plan that should be consent authority.

In making its recommendations the PAC noted that,

....the effective resolution of potential impacts on water supply within the catchment remains one of the most significant determinants of the merit of the project.

The PAC also noted

....the ongoing contention about the estimated net economic benefits of the project among the experts and the concern in the community

In response to the PAC's Report, on 30 June 2017 NSW DPE wrote to the Proponent seeking additional information on:

- compensatory water supply system
- noise impacts and further details on approaches to manage these impacts at the site
- access and longer term management issues related to Nikko Road
- economic data, particularly in relation to relevant capital investment value data.

In June 2017 the Proponent responded to the PAC's report and the recommendations which included providing a response to the CIE's June 2016 review of the economic assessment conducted by the Proponent.

NSW DPE has requested the CIE consider the Proponent's response and advise on whether any changes to the CIE's original advice is required.

Review of the CBA

CIE Review June 2016

In June 2016 the CIE prepared a report that considered the Cost Benefit Analysis (CBA) and local effects analysis conducted by Gillespie Economics for the Proponent. In this section we provide an overview of the CIE's key findings and the rationale for this.

What is a CBA?

In determining a development application, a consent authority must take into consideration the public interest and the likely impacts of a development. This is done through a Cost Benefit Analysis (CBA) to estimate the present value of the net benefits of the project to the NSW community, and through the local effects analysis to assess the likely impacts of the development in the locality.

1 A CBA to assist decision making

A CBA framework is a widely used tool for deciding *ex-ante* between alternative options (policies or projects). It allows decision makers to consider trade-offs arising from different options in order to assist decisions of whether the community as a whole is better off or worse off by adopting an option.

A CBA framework is focused on the aggregate welfare of the community, rather than the welfare of individual groups. It should take account of the full range of potential benefits and costs of the options, including environmental, health and other social impacts as well as the economic impacts. Where benefits exceed costs, the options are deemed to deliver a net benefit to the community as a whole. Where costs exceed the benefits, then the options should be rejected as society is worse-off if the options were implemented. Where there are a number of options, all of which deliver net benefits (i.e. benefits exceed costs), then the option that generates the highest net benefit is preferred.

Impacts are often not known with certainty.¹ In these circumstances the CBA needs to be presented as an expected value taking account of the range of possible outcomes (each with a known probability of occurrence). In some circumstances, not all impacts can be readily quantified and valued in a robust manner. Decision makers will need to draw on other information to complement the result of the CBA and to assist in deciding on whether society is better off from adopting an option.

¹ For the purposes of our analysis the term risk and uncertainty are used interchangeably. In theory, risk refers to events where a probability distribution can be developed whereas uncertainty refers to situations where the probability of outcomes cannot be estimated.

The CIE's approach to the review

In conducting this peer review, the CIE relied on the Government's *NSW Guidelines for the economic assessment of mining and coal seam gas proposals* (December 2015). Technical notes will support the guidelines and outline methodologies, parameters and assumptions for the economic assessment. Technical notes are currently unavailable, therefore, the methods applied in this peer review have relied on the methodologies and assumptions in the draft Guidelines (October 2015). We have also referred to the 2012 NSW Government (2012), *Guidelines for the use of Cost Benefit Analysis in mining and coal seam gas proposals*, where relevant.

In conducting the review the CIE utilised evidence provided in the EIS as well as government agencies response and independent reviews. The CIE is not in a position to test the robustness of the scientific analysis presented in the EIS. We have, however, taken into account any issues raised by Government agencies in their review of the EIS documentation.

The CIE's conclusions

Table 2 presents a summary of the estimates presented by Gillespie Economics and the CIE's 'minimum threshold estimate' of the net benefits. *At a minimum*, the Project is expected to deliver net benefits in the order of \$32m to \$229m to the NSW community.

2 Summary of the Cost Benefit Analysis

	Gillespie Economics	CIE
		Minimum threshold estimate
	\$m, 2015	\$m, 2015
Benefits		
Royalties	200	154 - 257
Company tax	70	
Net producer surplus	0	
Contributions not linked to demand	5	
Wage benefits to employment	25	
Non-market benefits to employment	186	
Economic benefits to landholders	Not quantified	
Economic benefits to suppliers	No material impacts	
Total benefits	486	154 - 257
Costs		
Surface water and local water supply	1	1
Agricultural impacts	0.3	
Greenhouse gas emissions	0.1	27 - 121
Forestry impacts	0.01	
Net Benefits	485	32 - 229

^a The low end Net Benefit estimate assumes the lower royalty forecast with the upper greenhouse gas cost estimate.

Source: Gillespie Economics (2016), Wallarah 2 Coal Project - Economic Impact Assessment, p.46.

The CIE's conclusions are summarised in Box 3.

3 CIE Conclusions - February 2017 report

In general we conclude that the CBA completed by Gillespie Economics was undertaken in a manner that is broadly consistent with the 2015 NSW Government guidelines for conducting mining related applications and the 2007 Guidelines for economic appraisals.

While the analytical approach is broadly consistent, the individual components and parameter estimates warrant testing. Some of the estimates are difficult to test, particularly where there is limited publicly available data on, for example, the cost of the operations. Further, the CBA requires Gillespie Economics to develop assumptions regarding future factors, such as the future price of coal which are volatile.

On the benefits side, *at a minimum*, the NSW Government would receive royalty payments. On the cost side, there are a range of externalities that need to be accounted for. In some instances, these externalities have been mitigated (in full) by the actions of the company. However, there are instances where there are residual impacts that are not fully mitigated. We have relied on the findings presented in the EIS documents and NSW Government agency submissions to the process to understand whether these impacts are likely to be material and would change the conclusion regarding the quantum of net benefits.

Based on alternative assumptions, we would anticipate that the benefits associated with royalties to be between \$154m to \$257m in present value terms over the life of the Project. This can be viewed as the *minimum benefit* that could be expected from the Project. On the cost side, the key item relates to the greenhouse gas emissions which ranges from around \$27m to \$121m in present value terms, depending on assumptions used.

Therefore, even if we assume upper bound estimates of greenhouse gas emissions (\$121m) and lower bound estimate of royalties (\$154m), the Project is expected to deliver net benefits of around \$33m in present value terms. The quantum of the net benefits could be higher if other elements of the benefits stream are included in the analysis, although it is difficult to test/confirm the quantum of these other elements. This, of course, assumes that there are a range of negative impacts that are mitigated in full or have no material impact which is consistent with the findings of the EIS documentation and NSW Government agencies' submissions.

Proponent's June 2017 response

As noted earlier, the PAC has raised a number of concerns with the application and sort clarification of the different expert opinions in relation to the economic analysis. This section considers the Proponent's response to the PAC review that are relevant to the economic analysis as well as comments provided by the Proponent in relation to the February 2017 CIE Report.

The Proponent's response to the CIE's economic assessment largely relied on the information provided by Gillespie Economics. Our response, therefore, focuses on the Gillespie Economics' report.

- **Overall Gillespie Economics' response appears to misinterpret the CIE's analysis and conclusions. No new evidence was provided to support the previous arguments presented. The CIE has reconsidered the analysis previously presented in February 2017 but believe that there is no justification to depart from the previous analysis and conclusions noted above.**

Specific response to the individual comments raised by Gillespie Economics is provided below. There was broad agreement on the quantum of royalties expected from the Project but Gillespie challenged the CIE's approach on a number of issues.

Overall comments

Gillespie Economics comments that

CIE's approach to estimating the net benefits of the Project to NSW is to exclude any company tax benefits, exclude residual producer surplus in the form of contributions, exclude any wage benefits (even the lower estimate that CIE calculated), exclude any non-market benefits of employment and to include all the global (rather than just the NSW) social damage costs of greenhouse gas emissions. CIE identifies its estimate as a "minimum". The range from CIE is obtained by subtracting the highest global social damage cost of greenhouse gas from the lowest royalty estimate and the lowest social damage cost from the highest royalty estimate.

- **This is a misrepresentation of the CIE's approach. The CIE's point of reference is the NSW Government's Guidelines for mining assessment:**
 - **to understand whether the items quantified/valued in the Proponent's CBA are consistent with the Guidelines; and**
 - **test the quantum of the benefits and costs submitted by the Proponent.**
- **We also present sensitivity analysis to test the extent to which alternative estimates of the benefits/costs would change the conclusion regarding the merits of the Project.**

As a reviewer the challenge is often to test the analysis presented and the information used to inform the analysis. Where items cannot be readily tested (due to confidentiality, for example) the reviewer should not just accept the information presented by the Proponent.

Instead we present a '*minimum threshold approach*' focuses on those items that are consistent with the guidelines and can be readily tested. The quantum of the net benefit is

expected to be larger than the minimum threshold but it is difficult to test precisely *how much larger*. However, as long as the minimum still delivers net benefits to the community then the Project should be approved (assuming that there are no other factors outside the CBA that need to be considered).

As noted earlier:

- The key benefit item is the royalties estimated to be received from the Project. The CIE and Gillespie estimate of royalties are broadly consistent.
- The key cost item is the impact associated with greenhouse gas emissions. We test alternative prices associated with the emissions and illustrate that even using high-side assumptions of emissions and conservative assumptions on royalties that the Project still delivers net benefits to the community.

In the remaining sections of this report we consider the remaining issues raised regarding the quantification of company tax benefits, the market employment benefits, greenhouse gas emissions and residual environmental impacts.

Company tax

Gillespie Economics states that,

On the basis of the submission from The Australia Institute (TAI), that the Project is unlikely to be financially viable, and the complexities involved in company tax payments, CIE considered that the estimates of company tax payments from the Project should be seen as an upper bound estimate. CIE then omits it from its consideration of the net benefits of the Project to NSW.

Gillespie Economics further states that it

has correctly calculated the company tax associated with the Project based on the revenue and cost assumptions identified in the Economic Impact Assessment and estimation of a depreciation schedule.

The CIE recognises that the inclusion of this benefit item in the CBA is consistent with the 2015 Guidelines. The CIE has not made any judgements on the financial viability of the Project, nor relied on the assessment by TAI on the viability of the Project, as asserted by Gillespie Economics.

Rather the CIE noted that it is difficult to test the robustness of the estimate presented by Gillespie Economics, in the absence of detailed independent information. From this perspective, Gillespie's estimates could be viewed as an 'upper-bound estimate' for the purposes of the CBA, although we recognise that this would depend on coal price assumptions used.

- **Our review indicated that, even if, the company tax benefits is zero it does not change the conclusion that the mine still delivers net benefits to the community. This is the case even under conservative assumptions.**

Gillespie Economics notes that a separate report commissioned by the Minerals Council of Australia supports the case that 'the Australian mining industry pays corporate tax at a

rate close to 30% of its taxable income'.² Data released by the ATO regarding the tax payments of 670 large companies operating in Australia identified 5 large companies that paid tax equivalent to 26-30 per cent of taxable income in the 2014-15 financial year.³ Although there were a range of other companies such as Ashton Coal Mines Ltd (\$103m income), Whitehaven Coal Ltd (\$1,079m income) and Yancoal Australia Ltd (\$1,693m income) that had no 'taxable income' in 2014-15 and, therefore, did not pay any tax in that year.

In discounted cashflow terms, the company earns revenue from the sale of coal of around \$3bn, with an estimated company tax of around \$220m or around 7 per cent of sales revenue. As a comparison, of the five companies noted above which paid company tax in 2014-15, the tax payable was between 0.04 per cent to 4.5 per cent of 'total income'.

The observed tax data for 2014-15 from the ATO, therefore, highlights some of the challenges in testing the estimates presented by Gillespie Economics. It does, however, support the view that (for the purposes of the CBA) that is reasonable to treat the company tax estimate presented by Gillespie Economics as a high side estimate. As noted earlier, whether the company tax is zero or \$70 million (as estimated by Gillespie Economics) does not change the conclusion that the mine will deliver net benefits to the NSW community.

Market Employment Benefits

The February 2017 CIE report stated,

The cost benefit framework outlined in the NSW Government guidelines recognises this as a potential gain to be included in a CBA.

The CIE approach assumes that all future workers at Wallarah 2 are already employed in the mining industry in the region and that the NSW economy is at full employment. The approach provides an approximation of the potential impacts on the mining wage. In order to refine this analysis further additional detailed information is required on, for example, the current unemployment rates in the area and evidence that the new mine would draw labour from the currently unemployed.

The CIE report concludes that

The analysis above provides an indication of the 'orders of magnitude' that can be expected associated with the benefits attributable to the wage premium. For the purposes of the CBA, and in the absence of more detailed data on the labour force in the area, it is reasonable to assume that the benefit attributable to the wage premium is between \$3.7m to \$7.4m in present value terms.

In the June 2017 response Gillespie Economics argues that this is a

² Davidson, S (2014), *Mining Taxes and Subsidies: Official Evidence*, A Minerals Council of Australia Background Paper.

³ <http://www.abc.net.au/news/2016-12-09/tax-data-transparency-ato/8106178> . The companies included Coal and Allied Industries Ltd, Port Waratah Coal Services, BHP Billiton Mitsui Coal Pty Ltd, Wambo Coal Pty Ltd and Ulan Coal Mines Ltd.

...highly conservative approach that does not represent the mining unemployment situation in NSW and therefore is likely to considerably understate wages' benefits.

Again, the downturn in coal mining in NSW has resulted in considerable shedding of labour and hence it is reasonable to expect that some proportion of future workers will come from the unemployment pool or lower paying jobs.

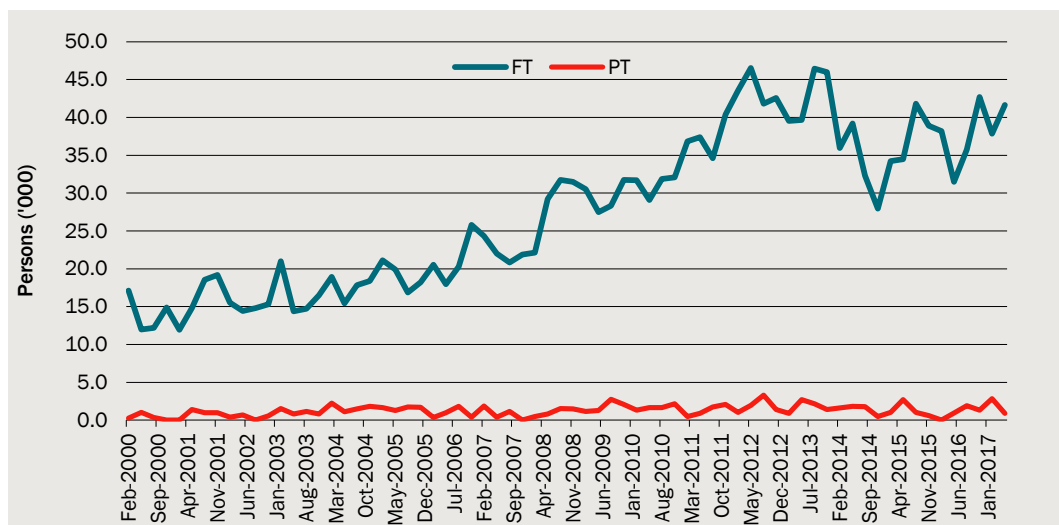
Gillespie presents two different approaches:

- 1 Assuming that 50% of the direct workforce in the Project would otherwise be unemployed for three years and the reservation wage for these people was \$52,000 compared to a mining wage of \$134,000. This is consistent with a Resource Assessment Commissions in its Inquiry into the forests of South Eastern Australia (referenced in Streeting and Hamilton 1991).
- 2 where it is assumed that labour for the Project is drawn from all points along the labour supply curve and that given the difficulties identifying the minimum reservation wage, the labour supply curve passes through the minimum market wage and the market wage for mining i.e. the average reservation wage is the average wage rate.

Gillespie does not provide any additional information regarding the current unemployment rate in the relevant region and the extent to which a new mine would draw labour from the currently unemployed labour force. An assumption based on a 1991 study of the forestry sector in South Eastern Australia that "50% of the direct workforce would otherwise be unemployed" does not appear to be a useful comparator.

Chart 4 presents information on the number of persons employed in the mining sector in NSW over the period February 2000 to May 2017. There was a substantial increase in persons employed since February 2000, reaching a peak of just over 46 000 persons in July 2013. Since then there has been a dip in the number of persons employed, although it has recovered to around 42,000 persons as at May 2017. Again, this does not appear to support an assumption of 50 per cent of the direct workforce being otherwise employed.

4 Persons employed in the mining sector in NSW



Data source: ABS 6291.0.55.003 - Labour Force, Australia, Detailed, Quarterly, May 2017

- **Gillespie Economics has not provided any new information that would warrant a change the CIE's previous estimates. The CIE's approach is also consistent with the NSW Guidelines.**

Greenhouse Gas Emissions

Gillespie Economics comments that

CIE only includes royalties as the Project's only benefit. From the lowest royalty estimate, CIE has subtracted potential global greenhouse impacts due to emissions from the Project.

This is contrary to the NSW Guidelines (2015) which require the cost benefit analysis to only include those costs and benefits that "accrue to the NSW community".

The NSW Guidelines are very clear that the CBA of mining projects should be undertaken from a NSW perspective "requiring benefits and costs to be estimated where possible as those that accrue to the NSW community" (NSW Government 2015, p. 9).

In contrast, CIE has attributed all of the global impacts of greenhouse gas emissions from the Project to households of NSW. CIE's justification for this that it is consistent with the 2015 draft guidelines, which require the attribution of the full global social cost of emissions to NSW.

Gillespie makes the argument that the cost of emissions should be scaled downwards as Australia comprises 0.3% of the world population and NSW 32% of that. This results in a cost estimate of between \$25,000 and \$114,000 (in present value terms).

- **As indicated above, the CIE's review has been conducted with reference to the NSW Guidelines (2015) and technical reports which provide guidance on the quantification of certain impacts. Gillespie's approach is *inconsistent* with the approach specified in the 2015 draft guidelines to attribute costs to NSW and accompanying technical workbooks.**

Having said this, the final 2015 guidelines do not explicitly provide a 'rule' on how to estimate the impact.

Gillespie Economics, therefore, does raise a valid point which requires further consideration. There is also debate in the economics literature regarding the extent to which the *global* social cost of carbon is appropriate for the use in the benefit cost analysis of *domestic* policy options.⁴ If all jurisdictions took the view that only the domestic impacts should be accounted in decision-making then it is likely to lead to a global level of greenhouse gas emissions that is above the socially optimal level. In the longer term, NSW could be worse-off by adopting this approach.

- **Nevertheless, irrespective of whether the costs associated with greenhouse gas emissions (under all price scenarios) are allocated in full to NSW or only a portion is allocated to NSW this does not change the conclusions that the Project delivers net benefits to the NSW community.**

⁴ See for example Kotchen, M (2016), *Which Social Cost of Carbon? A theoretical Perspective*, National Bureau of Economic Research, May, Working Paper 22246, <http://www.nber.org/papers/w22246>

Water impact

Underground mining presents various risks to the groundwater system. However, through monitoring and management these impacts can be mitigated and minimised. The Project is predicted to have impacts on both shallow and deep groundwater systems, however, these impacts are expected to be minimal and will be managed by the WACJV Groundwater Monitoring Plan.

NSW DPE has requested the CIE to consider

the social and economic benefits of the guaranteed 300ML/year compensatory water supply to be returned to the Central Coast Water Supply System following mining of Longwall 5N and throughout the remaining life of the project. If it is considered that this is a significant factor, then account for it in the economic assessment.

From the perspective of the cost benefit analysis there is no net impact if the compensatory water supply that is returned to the Central Coast Water Supply System fully offsets any potential loss in groundwater supply associated with the mining activities. Under the proposal, excess treated water produced by the project will be provided to the Central Coast Water Authority to offset potential impacts on catchment yield.

The capital cost and operation of the Water Treatment Plant and associated pipeline will be incurred by the Proponent. The Proponent notes that these costs have been included in the \$1.5 billion life of project capital estimate utilised for the Project.⁵ Confidential information provided by the Proponent to the NSW DPE confirms that the capital value for “Surface Infrastructure/Building/Water Treatment Services” and additional capital investment attributable to “Additional Treatment & Pipe” form part of the \$1.5 billion capital estimate. We are not in a position to test the accuracy of the Proponent’s estimates but can confirm that they are included in the CIV estimate.⁶

Conclusions

The additional arguments put forward by the Proponent in its response to the PAC report do not change the CIE’s previous conclusion that

at a minimum, the Project is expected to deliver net benefits in the order of \$32m to \$229m to the NSW community.

There are expected to be additional benefits, although the quantum of these additional items is not as high as that estimated by Gillespie Economics. For example, if the company tax estimate of \$70m attributable to NSW is adopted then the net benefits could be closer to \$300m.

⁵ Hansen Bailey (2017), *Wallarah 2 Coal Project Amendment, PAC2 Report Response for Wyong Areas Coal Joint Venture*, June, p.28.

⁶ All figures are reported in Australian dollars.