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# **Draft guidelines for economic assessment of mining and coal seam gas proposals**

## **Submission**

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## SUMMARY

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Economic assessment has been at the centre of controversial planning decisions on mining and coal seam gas projects in New South Wales (NSW) for several years. The Australia Institute welcomes the efforts of the NSW Government and NSW Department of Planning and Environment to improve the standard of economic assessment.

The draft *Guidelines for economic assessment of mining and coal seam gas projects* currently on display include several measures that will greatly improve the economic assessment's transparency and usefulness to decision makers and other stakeholders:

- **Standardised approach** – Very clear guidance is provided as to the type of analysis and the data that is required for economic assessment of mining and gas projects. Over several years, different projects' assessments have taken very different approaches, producing reports that are inconsistent and sometimes not useful. Under the draft guidelines, consistent, useful analysis will be provided, making the task of review by decision makers and other stakeholders much easier.
- **Transparency** – The draft guidelines will significantly improve the transparency of assessment, provided that the cost benefit analysis spreadsheet is made public. Currently, some assessments do not disclose even the most basic assumptions, such as the assumed coal price. With full disclosure of assumptions under the draft guidelines, decision makers can have much more confidence in the assessments.
- **Scope** – The draft guidelines set the scope of assessment to be NSW. This is appropriate. There have been instances in the past where proponents have used different scopes for different parts of their assessments, depending on which was to their advantage.

The draft guidelines propose two approaches to cost benefit analysis. We strongly support 'Approach 1' and recommend that 'Approach 2' be removed from the guidelines:

- Under Approach 1, analysts estimate the project's production and related revenues and costs. An understanding of a project's financial costs and benefits is essential for decision makers. Projects that show strong results under Approach 1 will be able to provide benefits such as consistent jobs and royalties.  
Projects with weak results under Approach 1 are likely to be financially

marginal or unviable. These projects will not deliver consistent benefits to the community or the government and will be under cost pressure to cut corners on safety and environmental management.

- Under Approach 2, what proponents predict they will pay in royalties and tax payments is used to calculate economic benefits to the state. This gives proponents a strong incentive to overstate these future payments, which they are under no obligation to pay. Approach 2 provides decision makers with no means of assessing how realistic the forecasts are.

Projects with strong results under Approach 2 may be speculative projects that are likely to be unviable or marginal. This encourages speculation within the mining industry rather than value creation.

**Other points that should be amended in the draft guidelines are:**

- **Payments to workers, landholders and suppliers** – Standard cost benefit analysis treats these as a cost to the proponent, as it is assumed that the payment reflects the opportunity cost of the labour or other input. The draft guidelines contradict this standard by suggesting that payments may exceed the opportunity cost, making the projects appear more beneficial to the community.

Because they are under no obligation to pay the wages they say they will in their economic assessment, the draft guidelines' approach encourages proponents to overstate such economic 'surpluses'. Furthermore, such surpluses are largely unobservable and the resources required to estimate them are not available to most analysts. Existing Treasury guidelines do not support including such values in economic assessment and they have been abused by several project proponents in NSW.

- **Input-output multipliers** – Multipliers should not be used to estimate a project's impact on jobs. Multipliers assume no "resource constraints". That is, they assume that there is a limitless amount of inputs – skilled labour, land, water, etc – available to the economy. This method is mathematically certain to overstate the employment generated by the project and understate negative impacts on other industries. The Australian Bureau of Statistics (ABS), the Productivity Commission and the NSW Land and Environment Court have all criticised this approach. Instead, proponents should state the number of people the project would aim to employ and details of the nature of these jobs and the skills they require. This way, communities can have a more objective understanding of what jobs might be created and whether these jobs will go to local people.

- **Company tax** – The draft guidelines calculate the tax that a project will pay by applying the full company tax rate of 30% to predicted gross operating surplus. Taxable income is usually considerably lower than gross operating surplus, meaning that tax actually paid is lower than the tax rate would suggest. Economists generally do not have the required data and skills to estimate taxes paid by a particular project. This would require sensitive information such as financing costs and depreciation allowances, as well as information around marketing hubs and profit shifting. The best way of approximating tax takings from mining projects is to calculate what rate of tax the mining industry actually pays relative to gross operating surplus, and use that to estimate the tax take of individual projects. Based on 2008–2009 figures, this would be a rate of 13.9%, or less than half the company tax rate.



## INTRODUCTION

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Economic assessment has been at the centre of controversial planning decisions on mining and coal seam gas projects in New South Wales (NSW) for several years. These controversies typically arise when groups opposed to coal projects contest the proponents' claims of economic benefit. Opposition groups sometimes carry out extensive economic analysis of their own.

Project approvals have been overturned or rejected partly as a result of these controversies. Examples are:

- Warkworth Extension Project – the economic assessment was dismissed by NSW Land and Environment Court as “deficient”.
- Ashton South East Open Cut – the proponents discarded their original economic assessment during the court hearing and commissioned a fresh assessment, which also did not comply with 2012 NSW guidelines for mining assessment. The judge described this as “regrettable”.
- Coalpac mines – the economic assessment, which estimated large net benefits, was dismissed by Planning Assessment Commission (PAC), which found that it would provide little social or economic benefit.
- Drayton South – the economic assessment estimated large net benefits, and was dismissed by PAC as failing to give adequate consideration to other industries, particularly the thoroughbred breeding industry.
- Cobbora coal project – approved on the basis of estimated \$2 billion net present benefit, but the project is financially unviable and has not proceeded, which imposed costs on the local community in Dunedoo.

In all of these cases, the proponent's net present benefit estimates were heavily overstated. In most cases, decision makers have implied that the net present value of the project to the NSW community is negative, whereas in every case the proponents' estimated value was strongly positive.

Given this background, The Australia Institute welcomes efforts to improve the quality of economic assessment in NSW and the opportunity to make a submission on the draft *Guidelines for economic assessment of mining and coal seam gas (CSG) projects* (the draft guidelines). Some measures in the draft guidelines will greatly improve economic assessment. However, the existing draft has several flaws which threaten to actually weaken the standards of economic assessment within the planning system.

The aspects of the draft guidelines that will strengthen economic assessment of mining and gas projects are:



- Standardised approach for assessment.
- Improved transparency through published, standardised workbooks.
- Clarification on scope of assessment.
- ‘Approach 1’ to cost benefit analysis, based on estimates of all costs and benefits.

Other parts of the draft guidelines are problematic. If left unaddressed, they could lead to weaker assessments of mining and gas projects:

- ‘Approach 2’ to cost benefit analysis, based on royalty and tax payments.
- Assuming that labour, land and inputs are priced at above their opportunity cost when calculating benefits to workers, landholders and suppliers.
- Use of input–output multipliers in local effects analysis.
- Approach to company tax estimates.

## STANDARDISED APPROACH

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A standardised spreadsheet model provides very clear guidance for analysts as to the type of analysis required and the data that is required. It will ensure consistency of approach in analysis between projects, which will hopefully make the task of reviewing economic assessment easier for the Department as well as other stakeholders. Several controversies could have been avoided if this approach had been in place in the last few years, such as:

- The unorthodox approach to assessment of the Airly, Springvale and Angus Place mines, which was criticised in a peer review commissioned by the department as:

Inconsistent with well-established principles and the NSW Government’s November 2012 Guideline for the use of CBA in mining and coal seam gas proposals. The analysis presented also lacks transparency and it is, therefore, difficult to verify the calculations undertaken.<sup>1</sup>

- The \$1 billion dollar difference between two assessments of the Wallarah 2 project, described by the PAC as “staggering”.<sup>2</sup>

Providing this guidance could reduce the costs of economic assessment for some proponents. Several times, new economic assessment has been commissioned after submissions demonstrated the inadequacy of the original cost benefit analysis:

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<sup>1</sup> (Centre for International Economics 2015) page 2

<sup>2</sup> (PAC NSW 2014) page 64

- Glencore’s Bulga Extension project originally commissioned research from Western Australian firm Economic Consulting Services. This was criticised in submissions and the proponent later commissioned Deloitte Access Economics (DAE) to re-do the economic assessment, adding considerable cost to the EIS process.<sup>3</sup>
- The Rocky Hill Coal Project originally commissioned socio-economic assessment from Newcastle firm Key Insights, which has little experience in economic assessment. The proponents later commissioned DAE to redo this assessment.<sup>4</sup>

On many other occasions significant revisions have been necessary, which also add delay the project and make it more expensive.

There may be occasions where this standardised approach is not ideal. Projects that involve infrastructure construction, such as the T4 coal terminal project, may require a different approach. Projects with different externalities, such as a potential mine for radioactive minerals, may also require a different approach. Projects that may have a significant impact on local or global markets may also need a different approach. However, as a guide for the majority of mining projects in NSW, the standardised approach can provide clarity for proponents and decision makers.

## TRANSPARENCY

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From our communication with the Department of Planning and Environment, we understand that the cost benefit analysis spreadsheet will be made public with the EIS. This would represent a significant advance in the transparency of assessment.

Currently, some assessments do not disclose even their most basic assumptions – for example, many assessments leave out which coal price was used in their calculations. Without knowing which coal price was assumed, decision makers cannot assess how realistic the benefit calculations are. For example:

- The Angus Place mine assessment did not disclose the assumed coal price that was used to estimate a net benefit of \$770 million. The mine has since been placed in care and maintenance, which suggests that the net benefit was not accurately estimated.<sup>5</sup>
- Assessment of the Bylong coal project did not disclose the assumed coal price used to estimate net benefit of \$766 million. The price used can be estimated

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<sup>3</sup> (ECS 2012; DAE 2013)

<sup>4</sup> (Key Insights 2013; DAE 2014)

<sup>5</sup> (AIGIS Group 2014b)

from other data provided. Working backwards, The Australia Institute submission shows that a price of AUD\$100 per tonne has been used. This is far above the current price and most long term forecasts, which puts the viability of the project in doubt.<sup>6</sup>

These problems will be avoided under the new guidelines and workbooks.

Some proponents have cited confidentiality as a reason not to disclose some modelling assumptions. However, decision makers cannot have confidence in estimates of economic benefit if they are not given the modelling assumptions behind them. These figures are easily manipulated and proponents have a strong incentive to portray their project in a positive light to decision makers and markets. An example is the original T4 coal terminal proposal, with estimated net present value of up to \$30 billion. Many assumptions behind this modelling were not disclosed, and the proponents later downsized the project because it was not financially viable at the original scale. Clearly the model assumptions were misleading and the benefit claim was overstated.<sup>7</sup>

Furthermore, most project proponents have disclosed this information for many years. Most mine projects in NSW since 2008 provide estimates of revenue, capital and operating costs. For an example of minute cost detail provided in economic assessment for planning purposes, see the assessment of the Kevin's Corner project in Queensland. That assessment includes item by item, year by year, estimates of costs at a level of detail far in excess of what is usually provided, and is more than sufficient for planning purposes.<sup>8</sup>

The DAE assessment of Bulga Expansion Project provides a good level of detail around production volumes and realistic assumptions for coal prices. They use a regional average for production costs, with explanation of why it is appropriate. There has been no suggestion that the proponents have been disadvantaged by using this approach, which gives decision makers a good indication of the economic strength of the project without onerous data requirements or revealing commercial secrets.<sup>9</sup>

The increased transparency that the draft guidelines and workbooks will bring will greatly increase the confidence decision makers, stakeholders and the wider public have in economic assessment.

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<sup>6</sup> (Gillespie Economics 2015) See Australia Institute submission here: <http://tai.org.au/content/bylong-coal-project-submission-environmental-impact>

<sup>7</sup> (Gillespie Economics 2012; Gillespie Economics 2013)

<sup>8</sup> (Economic Associates 2011)

<sup>9</sup> (DAE 2013)

## SCOPE

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The draft guidelines set the scope of assessment as NSW. This is appropriate. There have been instances where proponents have been inconsistent with the scope of their assessments, for example by including producer surplus at a global level, but considering environmental impacts at a state level.

An example is the original assessment of the Warkworth Extension project. The analyst originally included profits that accrued to overseas shareholders in their calculation of “NSW Community Benefits”. However, their estimate of environmental values assumed that no one beyond NSW held any value for the existence of endangered ecosystems. This approach is not correct from a theoretical economic point of view and was criticised in the Land and Environment Court judgement of the case.<sup>10</sup>

Another example of where profits to overseas shareholders obscured the economic effects on NSW is the assessment of the Ashton South East Open Cut presented in the Land and Environment Court. This was also criticised in the judgement of that case.<sup>11</sup>

There may be occasions where a broader scope – national or at least multi-state – is appropriate. For example, projects near state borders may have costs and benefits that go beyond NSW. The approach in the draft guidelines could easily be adapted for such situations.

Of particular concern in relation to project scope is the issue of greenhouse gas emissions. Under a NSW-focused cost benefit analysis, the cost to NSW of each tonne of carbon emitted is a small fraction of the cost of emissions at a global scale. We recommend keeping the scope of the assessment consistent, but requiring discussion of scope 1, 2 and 3 emissions in the text of the assessment.

## COST BENEFIT ANALYSIS – APPROACH 1

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Approach 1 is broadly consistent with current economic assessment guidelines and general practice. We strongly support this approach.

Under this approach, analysts estimate, or are provided with estimates of, the project’s production and related revenues and costs. This information forms the core of the cost benefit analysis and how these costs and benefits flow to Australian or NSW interests is then assessed. These costs and benefits are compared to environmental

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<sup>10</sup> (Gillespie Economics 2009; Preston 2013)

<sup>11</sup> (Fahrer 2013; Pain 2014)

and social costs or 'externalities', which are not accounted for in the mine's cost and benefit figures.

An understanding of a project's financial costs and benefits, called 'net producer surplus' in the draft guidelines, is essential for decision makers. Projects that show strong net producer surplus results under Approach 1 are likely to provide benefits such as consistent jobs and royalties and will not be under cost pressure to cut corners on safety and environmental management. This calculation should give decision makers confidence that if external costs can be mitigated then the project will be of benefit for the state.

Under Approach 1, decision makers can also identify projects with low net producer surplus, which are likely to be financially marginal or unviable at the forecast commodity prices. These projects are unlikely to deliver consistent returns to their owners and will not deliver consistent benefits to the community or the government. Put simply, if a mine is not profitable it will be put into care and maintenance and will not provide jobs or pay royalties. Understanding how likely or unlikely a mine is to operate at or near its capacity is essential for balancing the likely costs and benefits of the project.

Almost all cost benefit analyses of mining projects in NSW in recent years have used variations on Approach 1. For example:

- Maules Creek Coal Project
- Boggabri Coal Project
- Tarrawonga Coal Project
- Wallarah 2 Coal Project
- Warkworth Extension Project
- Bulga Extension Project

None of these assessments utilising what is effectively Approach 1 had difficulty with data availability or with confidentiality issues. Many of these assessments have methodological shortcomings and have produced flawed results. However, the overall approach that they took is useful and appropriate. Our main concern with the draft guidelines is the potential for weaker economic assessment where Approach 1 is not used, and where assessments are based on the much less transparent Approach 2.

## COST BENEFIT ANALYSIS – APPROACH 2

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In contrast to Approach 1 above, Approach 2 does not assess revenues and costs of the mine. Instead, economic benefits to the state are estimated from forecasts of royalties and tax payments. We agree with the Vivid Economics peer review which describes this approach as “unconventional and may lead to confusion” (page 3).

The weakness of this approach is that it gives decision makers no understanding of the producer surplus that the mine will generate. Under Approach 2, no information on the operating or capital costs of the project is provided, so decision makers cannot know whether it is likely to be profitable, financially marginal or unviable. Decision makers need to have this information to assess whether the mine will operate consistently and actually pay the forecast royalties. This is not possible under Approach 2.

Approach 2 effectively assumes any project is viable. Alternatively, it assumes that proponents would continue producing for years at a time at an operating loss. This is not realistic; according to recent correspondence with the Division of Resource and Energy, 55 of NSW’s 101 registered coal operations are suspended. Many others are operating on reduced rosters and other cost cutting measures. The possibility of a mine going into ‘care and maintenance’ is not considered under Approach 2.

An example of where a variation on Approach 2 has been used in assessment is the Angus Place mine project. Royalties were estimated at present value \$203 million.<sup>12</sup> No information was provided on production, coal price, revenue or costs, but in response to criticism that the mine may not be viable, the analysts wrote:

It should also be noted that in relation to the Angus Place Colliery, the mine has operated continuously since 1979. [There has been great] volatility in thermal coal prices over a 30-year period. As noted, this volatility has not affected continuation of mining at Angus Place Colliery. Centennial Coal submits that this would amply establish the viability of continued operation of the mine.

That was written on 24 September 2014.<sup>13</sup> Just four weeks later, Centennial announced that it would mothball Angus Place.<sup>14</sup> The economic assessment of the project provided no indication that this outcome was possible; in fact, it implied the opposite. Had the project been assessed under Approach 1, decision makers and other

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<sup>12</sup> (AIGIS Group 2014b)

<sup>13</sup> (AIGIS Group 2014a)

<sup>14</sup> <http://www.centennialcoal.com.au/News/Latest-News/Angus-Place-Springvale-Restructure-Announcement.aspx>

stakeholders could have seen that the project's costs are high and at likely coal prices the mine was at risk of becoming unviable.

It has been argued that a mining company would not propose a project that was not viable. This ignores several key benefits that project approval brings to proponents:

- The option, but not the obligation, to develop the project in the future.
- Increased value of the project for sale to other parties.
- For extension projects, the opportunity to defer rehabilitation liabilities.

An example of this is the latest Warkworth Continuation Project. At current coal prices and operating cost estimates in the economic assessment, the project is marginal. This point has not been seriously disputed. The expansion is unlikely to proceed as proposed. However, the sensitivity analysis has been conducted along the lines of Approach 2, ignoring the project's finances and concentrating only on royalties that will only be received if the project continues to operate at a loss. The reason for this is clear. Proponents Rio Tinto have given every indication that they intend to sell the project along with their other Hunter Valley coal projects. Selling the project will be difficult without this major expansion being approved.<sup>15</sup>

Approach 2 reduces transparency and provides no advantage to mining projects that are robust and will benefit NSW. It provides a huge advantage to speculative projects that are likely to be unviable or only just marginal. This encourages speculation within the mining industry rather than value creation. Approach 2 should be removed from the guidelines and all cost benefit analysis done through Approach 1, in line with existing guidelines and textbook economics.

## **ECONOMIC BENEFITS TO WORKERS, LANDHOLDERS AND SUPPLIERS**

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The draft guidelines outline how benefits may accrue to workers, landholders and suppliers through payments from mining and gas companies. In cost benefit analysis, payments to workers, landholders and suppliers are treated as a cost to the project proponent, as the Vivid Economics peer review points out:

Payments to workers and suppliers... should be entered as costs into the cost benefit account (page 3)

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<sup>15</sup> <http://www.theaustralian.com.au/business/mining-energy/rio-tinto-on-track-to-exit-hunter-valley-coalmines/story-e6frg9df-1227569414398>; <http://tai.org.au/content/mt-thorley-warkworth-continuation-project-0>.

These payments are not usually considered a benefit to recipients as it is assumed that the payment reflects what the work, land or supplies are worth to them – their opportunity cost. In other words, we assume that workers would get a similar job, suppliers would sell a similar amount, etc, with or without the project. The Vivid Economics peer review states:

The text [of the draft guidelines] suggests that project expenditures may be higher than opportunity cost. This is mentioned again on the following page. It is unclear what the basis is for this comment in the text. (page 3)

The standard approach in most cost benefit analysis is to assume that markets for labour, supplies, etc, are operating efficiently and to assume that project proponents would not pay above the market value for labour, supplies or land. This general assumption is supported by consultants to the coal industry:

BCA involves the comparison of the 'with and without' project circumstances. The use of resources with and without the mine must therefore be considered. Without the mine, the resources to be allocated to the mining operation would be engaged in other uses in the economy. These are the opportunity costs of the proposed mine. Given that markets for these resources (land, machinery, labour etc.) in the Australian economy are relatively competitive and not highly distorted by subsidies and regulations, market prices reflect these resources opportunity costs.<sup>16</sup>

This assumption of prices being equal to marginal cost is also recommended in existing NSW Guidelines to Economic Assessment:

The use of resources (manpower, finance or land) in one particular area will preclude their use in any other. Hence the basis for valuing the resources used is the "opportunity cost" of committing resources; ie the value those resources would have in the most attractive alternative use ...

In certain cases, where a resource has a market price, that price may not reflect the marginal social cost of using the resource. Such cases are reasonably rare.<sup>17</sup>

The draft guidelines, however, seem to assume that such cases are frequent. Payments to workers, landowners and suppliers are assumed to provide benefit beyond the opportunity cost of the input. The cost benefit analysis workbook includes lines for inclusion of these estimates, with no "if applicable"-type warning.

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<sup>16</sup> (Bennett 2011) page 2

<sup>17</sup> (NSW Treasury 2007) page 44–45



The draft guidelines provide direction on how to work out benefits between what payment might be paid for the input and what the company intends to pay. Figure 3.8 in the draft guidelines shows the benefit is the difference between a worker's reservation wage and the wage the proponent claims they intend to pay. The draft guidelines argue that if the company pays above the worker's reservation wage there is a benefit to NSW. This is because the worker receives a higher payment than they would have accepted and they are likely to be a NSW resident, whereas the cost is to the proponent, likely a foreign mining company.

Technically this is correct. However, the draft guidelines note that "in practice, minimum (reservation) wages are not observable." It is for this exact reason that Treasury guidelines recommend against the use of such values, here called "shadow prices":

It is generally considered that the problems of measurement of shadow prices may often be substantial and the size of the impact on the analysis comparatively small. Hence, this level of sophistication in the analysis will not generally be warranted as it will introduce unnecessary controversy.<sup>18</sup>

Treasury goes on, specifically in relation to labour:

It can be argued that in times of unemployment the opportunity cost of labour employed on a project is less than the wage costs, and project costs and benefits should be adjusted accordingly. However, in practice such adjustments are not generally made and are not recommended.

Uncertainty exists as to what represents the "full employment" level of output and employment in the economy. The degree of full employment would need to be assessed by occupation and region and forecast over the project period. An adjustment for unemployed resources assumes that the resources employed are not at the expense of the employment of other resources. Where macroeconomic parameters act to constrain the overall level of activity in the economy and/or the funds available for capital works such an assumption is not appropriate.<sup>19</sup>

Because reservation wages and other shadow prices are unobservable and because proponents are not bound by their commitments in the economic assessment, these calculations are non-transparent and open to abuse. Proponents may claim in their economic assessment that they will pay wages or prices for supplies well above market

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<sup>18</sup> (NSW Treasury 2007) page 48

<sup>19</sup> (NSW Treasury 2007) page 48

rates, but pay the going price once they receive approval. In fact, large mining companies are often in a position of market power in regional economies and can demand lower prices for inputs.

An example of abuse of estimates of benefits to labour is the Warkworth Continuation project economic assessment. The assessment assumes (but does not disclose) that the proponent will pay \$170,000 per year to each of the mine's 1,300 workers. The analysts compare this to the average Hunter Valley wage of \$55,000 and claim the difference as benefits to workers. This comes to a present value benefit of \$612 million over the life of the project, almost half of the \$1,501 million net benefit estimate.

This \$612 million value would not be included under standard assumptions as discussed by Bennett and Treasury above. It heavily overstates the value of the project relative to the standard approach. While some of the many assumptions necessary for this calculation are discussed in the assessment, there is no discussion of why the proponent would pay above the industry average wage of \$140,000 per year. There is no consideration that the project is for sale and a new owner may employ fewer staff. This is the sort of controversy that Treasury's 2007 guidelines on economic assessment seek to avoid.

In the case of access to land, we are concerned that CSG companies would claim large benefits to landholders through this method. The companies would claim that grazing land has low opportunity cost and that almost all of their payment represented a benefit to landholders. This would not recognise the environmental and health risks that landholders perceive around gas development and the resulting higher access payments they would demand to compensate for this risk.

In the case of suppliers, it is entirely unclear how an accurate assessment would be obtained of increased surplus as a result of a project. This would require a detailed understanding of local businesses' operations. Analysts either do not have this information, or the businesses supplying it would have a clear incentive to overstate the case for the project.

The draft guidelines should be amended to exclude these values. If not, projects of minimal value to the state will continue to bolster their economic cases by claiming to pay prices they actually will not.

## LOCAL EFFECTS ANALYSIS – MULTIPLIERS

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The local effects analysis (LEA) is a new addition to the economic assessment of mining projects in NSW. Some assessments have included LEAs that would be partly compliant with what is proposed in the draft guidelines.

Information about and for local communities is an important part of planning assessment. A consistent approach could be beneficial, but the LEA needs to be objective rather than serving as public relations material for the proponent.

What effects a project will have on employment is the primary concern for many decision makers and local communities. The draft guidelines make employment effects the centre of the LEA. This is appropriate. However, the methodology proposed in the draft guidelines is very problematic. We strongly oppose the use of input–output modelling or employment multipliers in the LEA.

Input–output multipliers have been at the centre of the controversies around economic assessment of mining in NSW:

- The Warkworth Extension project EIS claimed that project would:

generate an additional 44,675 jobs. That is, a further 44,675 jobs will be generated in the Hunter Region economy from Year 1 (2011) to Year 21 (2031) because of the Warkworth extension.<sup>20</sup>

This claim, based on input–output multipliers was central to the proponent’s lobbying for approval. The project currently employs only around 1,200 people. The huge overstatement of the mine’s importance for employment was part of the reason that the Land and Environment Court found that the mine’s benefits had been overstated. The judgement dismissed input–output modelling as “deficient” and overturned the mine’s approval.<sup>21</sup>

- Following the Warkworth judgement, Yancoal, the proponents of the Ashton SE Open Cut project, discarded their input–output modelling and commissioned more sophisticated analysis.

The Ashton project would employ 160 people directly. The original input–output model estimated the project would create 682 direct and indirect jobs. Yancoal’s own economist criticised this early model in court as being deficient

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<sup>20</sup> (HVRF 2009a) page 10

<sup>21</sup> (Preston 2013)

and submitted a new estimate of employment effects – a net increase of 78 jobs.<sup>22</sup>

The reason input–output models make such large employment estimates is that they have no “resource constraints”. That is, they assume that there is a limitless amount of inputs – skilled labour, land, water, etc – available in the economy. This means the project being assessed is assumed to employ people without taking those people away from any other part of the economy.

The reason the later Ashton assessment estimated a net job increase of 78, lower than the 160 direct jobs, is that the model used allows for the reality that most people who work on the mine would otherwise have a job elsewhere in the economy. These models are known as general equilibrium models. They are less favoured by project proponents as they are more expensive to commission and produce lower employment estimates.

The problems with input–output models are well known. The Productivity Commission has noted that they are often “abused”:

Abuse primarily relates to overstating the economic importance of specific sectoral or regional activities. It is likely that if all such analyses were to be aggregated, they would sum to much more than the total for the Australian economy. Claims that jobs ‘gained’ directly from the cause being promoted will lead to cascading gains in the wider economy often fail to give any consideration to the restrictive nature of the assumptions required for input–output multiplier exercises to be valid. In particular, these applications fail to consider the opportunity cost of both spending measures and alternate uses of resources, and may misinform policy-makers.<sup>23</sup>

Similar issues have been noted by WA Treasury and in reports by The Australia Institute.<sup>24</sup> NSW Treasury has also been critical of this approach:

The apparent simplicity of utilising I–O [(input–output)] multipliers also makes these open to misinterpretation or possible unintended error. Therefore it is important to correctly interpret and present estimates from I–O models.<sup>25</sup>

The Australian Bureau of Statistics (ABS) provides an extensive discussion of why input–output multipliers are a “biased” tool for project assessment:

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<sup>22</sup> (HVRF 2009b; Fahrer 2013)

<sup>23</sup> (Gretton 2013) page 1

<sup>24</sup> (Denniss 2012; Layman 2002)

<sup>25</sup> (NSW Treasury 2009) page 2

**Lack of supply-side constraints:** The most significant limitation of economic impact analysis using multipliers is the implicit assumption that the economy has no supply-side constraints. That is, it is assumed that extra output can be produced in one area without taking resources away from other activities, thus overstating economic impacts. The actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.<sup>26</sup>

The ABS also notes that input–output multipliers are:

**Not applicable for small regions:** Multipliers that have been calculated from the national I–O table are not appropriate for use in economic impact analysis of projects in small regions. For small regions multipliers tend to be smaller than national multipliers since their inter–industry linkages are normally relatively shallow. Inter–industry linkages tend to be shallow in small regions since they usually don’t have the capacity to produce the wide range of goods used for inputs and consumption, instead importing a large proportion of these goods from other regions.

The draft guidelines are recommending exactly what the ABS says is not applicable: the applying multipliers meant for national or state input–output tables to small regions. The draft guidelines require the use of multipliers published by the AURIN centre in South Australia. The AURIN centre has not conducted the necessary fieldwork to construct local-level input–output tables that could be used accurately for employment analysis in NSW.

The use of input–output multipliers should be removed from the draft guidelines. Such multipliers have been abused by project proponents for many years in NSW. Their abuse is common due to the favourable results these models produce for proponents. They produce these results because the input–output multiplier approach is mathematically certain to overstate employment impacts. If the draft guidelines are implemented without amendment, they will be in opposition to the position adopted by the Productivity Commission, the ABS, several treasuries and the vast bulk of the economics profession.

A far better approach to employment in the LEA would be to simply state the number of people the project would aim to employ and details of the nature of these jobs and the skills they require. This way local communities can have a more objective understanding of what jobs might be created and whether these jobs will go to local people.

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<sup>26</sup> (ABS 2011)

At present the draft guidelines require only quantitative analysis of employment effects. More information should be provided about the jobs themselves. Information about wages and job duties is more useful to local people than controversial modelled estimates. This information is already known to proponents and can be supplied at minimal cost compared to commissioning a modelling exercise.

We strongly recommend amending the draft guidelines to focus on direct employment and the nature of this employment. We oppose the multiplier approach taken in the draft guidelines and cannot support the use of LEA if it is based on this method.

## COMPANY TAX

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The draft guidelines require an estimate of the company tax the project will pay and consideration of how much of this will accrue to NSW. While this approach is correct in theory, the draft guidelines ignore the complexities of company tax calculation. Most economists lack the skills and data necessary to estimate company tax payable from a mining operation, which is a job usually done by accountants.

Company tax is charged on a company's taxable income, but the draft guidelines and the cost benefit analysis workbook suggest using gross operating surplus as a proxy. Economists can work out operating surplus, but taxable income requires different data and skills. Taxable income is usually much lower, as companies are able to deduct items like depreciation and interest payments as well as losses incurred in other parts of their business.

Furthermore, tax minimisation schemes involving related party transactions are common in the Australian mining industry. Companies set up trading hubs in low-tax countries such as Singapore. Sales are made to the Singapore entity at a low price, then the Singapore entity sells to end buyers at a higher price. This ensures minimal profit is made in Australia, so less tax is paid here. The profit is transferred to Singapore, where it is taxed at a lower rate. The recent Senate inquiry into multinational tax avoidance included evidence of similar practices from mining companies operating in NSW such as BHP and Rio Tinto. Similar controversy surrounds major NSW miner Glencore.<sup>27</sup>

Applying the company tax rate of 30% to operating surplus is not correct from an economic or accounting perspective and will overstate the value of company tax paid and accruing to NSW. Even if estimates of company tax paid are accurate, this information is commercially sensitive and companies will object to its disclosure.

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<sup>27</sup> <http://www.abc.net.au/news/2015-05-25/tax-man-targets-the-singapore-sling/6495592>

The correct approach would be to apply a rate of tax to operating surplus. The amount of company tax paid by the mining industry is available through Australian Tax Office statistics. Estimates of the gross operating surplus of the mining industry are published by the ABS. The rate of company tax paid to operating surplus can be calculated this way and applied to the operating surplus of the project being assessed. The rate of company tax paid on gross operating surplus in the mining industry in 2008–09 was 13.9 per cent.<sup>28</sup> Applying this rate, or an updated estimate, would result in a more accurate estimate of tax payments accruing to NSW and also protect companies' commercially sensitive information.

## **ENVIRONMENTAL, HERITAGE AND SOCIAL VALUES**

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Many environmental, social and heritage costs are difficult to value and incorporate into cost benefit analysis. In general, the draft guidelines take a reasonable approach to these valuation or qualitative assessment exercises. Our main concern is that the data available to economists to conduct these valuations will not be adequate and objective.

Most of the data will come from the environmental impact statement (EIS) prepared by proponents and their consultants. This data will not be objective and is likely to understate the risks and uncertainties involved in protecting and offsetting these impacts. Basing economic analysis on data that is not reliable will obviously reduce the usefulness of the economic analysis.

## **CONCLUSION**

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The draft guidelines will improve the quality of economic assessment in NSW if implemented and enforced. However, several amendments need to be made to ensure that these improvements are realised. Without these amendments, the standard of assessment in NSW could decline.

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<sup>28</sup> (Richardson & Denniss 2011)

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