The Australia Institute
Research that matters.

The banality of Anvil

Submission on the Mangoola Coal Project

The economic case for the Mangoola mine (aka Anvil Hill) has been heavily overstated by its consultants and the Department of Planning, Industry and Environment (DPIE). Methods relied on have been described in the NSW Land and Environment Court as "inflated", "incorrect" and "plainly wrong". DPIE officers have breached their legal responsibilities in presenting analysis to the Independent Planning Commission that they know to be misleading or false. Their claims to be 'just following guidelines' echo the 'banality of evil' defence in Nazi war crimes trials.

Rod Campbell

March 2021

ABOUT THE AUSTRALIA INSTITUTE

The Australia Institute is an independent public policy think tank based in Canberra. It is funded by donations from philanthropic trusts and individuals and commissioned research. We barrack for ideas, not political parties or candidates. Since its launch in 1994, the Institute has carried out highly influential research on a broad range of economic, social and environmental issues.

OUR PHILOSOPHY

As we begin the 21st century, new dilemmas confront our society and our planet. Unprecedented levels of consumption co-exist with extreme poverty. Through new technology we are more connected than we have ever been, yet civic engagement is declining. Environmental neglect continues despite heightened ecological awareness. A better balance is urgently needed.

The Australia Institute's directors, staff and supporters represent a broad range of views and priorities. What unites us is a belief that through a combination of research and creativity we can promote new solutions and ways of thinking.

OUR PURPOSE – 'RESEARCH THAT MATTERS'

The Institute publishes research that contributes to a more just, sustainable and peaceful society. Our goal is to gather, interpret and communicate evidence in order to both diagnose the problems we face and propose new solutions to tackle them.

The Institute is wholly independent and not affiliated with any other organisation. Donations to its Research Fund are tax deductible for the donor. Anyone wishing to donate can do so via the website at https://www.tai.org.au or by calling the Institute on 02 6130 0530. Our secure and user-friendly website allows donors to make either one-off or regular monthly donations and we encourage everyone who can to donate in this way as it assists our research in the most significant manner.

Level 1, Endeavour House, 1 Franklin St
Canberra, ACT 2601
Tel: (02) 61300530
Email: mail@australiainstitute.org.au
Website: www.australiainstitute.org.au
ISSN: 1836-9014

Introduction

The banality of evil is a term popularised by the trial of Nazi administrator Adolph Eichmann, who oversaw millions of deaths during the Holocaust. Observers were struck by Eichmann's mild and normal nature and his defence that he was simply following orders, or following the laws and guidelines of the Nazi regime. The abhorrent content of those orders and requirements were not his concern.

Echoing Eichmann, NSW Department of Planning, Industry and Environment (DPIE) officials stated in a recent planning hearing that they are primarily concerned with following guidelines in providing information to the Independent Planning Commission. The veracity and quality of the information they provided was not their concern.

The hearing in question related to the Mangoola Coal Continued Operations Project, owned by Glencore, a proposal to expand an existing mine in the Hunter Valley and extend its life to 2030. It is currently seeking approval from the NSW Independent Planning Commission (IPC). The Australia Institute welcomes the opportunity to make a written submission to the IPC, expanding on our appearance via Zoom at the public hearing on Thursday 4 March.

The economic case for the project has been overstated with benefits calculations based on unorthodox techniques that have been heavily criticised in the NSW Land and Environment Court's Rocky Hill case. This is particularly the case for estimates of supplier and worker benefits, estimated in the June 2019 economic assessment in the Mangoola project's Environmental Impact Statement (EIS) by consultancy Cadence Economics.[1] Despite the Rocky Hill judgment's criticism of Cadence in February 2019, the June 2019 economic assessment of the project is based on the same discredited techniques.

The January 2021 DPIE assessment report relies on the results of this discredited economic assessment in recommending approval of the project. The Department makes no mention of the Rocky Hill judgement's criticisms, or of the work of its own commissioned expert economist who criticised Cadence's approach and made alternative estimates that were, in the words of Preston CJ, "orders of magnitude" smaller than those estimated by Cadence.[2] In our view, it is extraordinary that the Department is prepared to accept a form of

[1] Cadence (2018) Economic impact assessment of the Mangoola Coal Continued Operations Project, https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-8642%2120190705T021704.991%20GMT

[2] Rajaratnam (2018) *Economic Expert Report for the NSW Land and Environment Court in the matter of Gloucester Resources Ltd and the Minister for Planning NSW*, available on request; Land and Environment Court (2019) *Gloucester Resources Limited v Minister for Planning*, https://www.caselaw.nsw.gov.au/decision/5c59012ce4b02a5a800be47f. See

economic assessment in relation to Mangoola that it, or at least its commissioned expert, argued vigorously against in Rocky Hill.

DPIE officials know, or reasonably ought to know, that the approach taken in the Mangoola/Anvil Hill economic assessment is flawed and misleading. In uncritically passing this on to the IPC, they are in breack of the NSW Environmental Planning and Assessment Act.

Overstatement of economic value

The economic assessment of the Mangoola project, produced by Cadence Economics, overstates the value of the project by hundreds of millions of dollars. Benefits are overstated while costs are understated. The assessment uses unorthodox methods that have been heavily criticised by other economists and the NSW Land and Environment Court. The approach taken does not comply with NSW guidelines.

WORKER BENEFITS OVERSTATED

In standard approaches to cost benefit analysis, workers' wages are treated as a cost to the project. The (often unstated) assumption behind this is that the labour market is functioning efficiently and so regardless of the project being analysed, workers would earn a similar wage at a similar job. In economics jargon, labour is priced at its opportunity cost.

The approach taken by Cadence was to assume that workers in the Mangoola project would earn at least $180,000 per year if the project proceeds (substantially above the average mining industry wage of 137,000 per year).[3] On the other hand, if the project is not approved, workers would earn the average NSW wage of $66,401 per year. This results in a present value benefit to these workers of $107.6 million, more than a quarter of the total estimated net present value of the project.

This approach assumes that workers in mines are not compensated for their skills and qualifications, or for the disutility of working in mines. Cadence base this assumption on aspects of mining industry awards that suggest low additional loadings for "dirty work" in underground mines. This ignores the fact that these workers are already working in a mine, likely including overnight shift work, and not comparing their employment to working in an office or a café, which Cadence effectively does.

This approach of comparing (inflated) mining wages to NSW average wages is clearly contrary to NSW guidelines, which state:

> The economic benefit to workers is 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.[4]

[3] ABS (2020) *Average weekly earnings, Australia*, https://www.abs.gov.au/statistics/labour/earnings-and-work-hours/average-weekly-earnings-australia/latest-release#data-download

[4] DPIE (2015) *Guidelines for cost benefit analysis of mining and coal seam gas projects,* https://www.planning.nsw.gov.au/Policy-and-Legislation/Mining-and-Resources/~/media/C34250AF72674275836541CD48CBEC49.ashx

Because workers in a mine will likely work in the mining industry regardless of any particular project approval, the Guidelines state that "a zero wage premium is a useful starting assumption" unless there is clear "evidence in support of the valuation that has been adopted."

Cadence Economics' approach, omitting consideration of skills and shift work, does not meet this criteria. That is the opinion not just of The Australia Institute, but of other economists commissioned by the DPIE, the Land and Environment Court of NSW and even of the reviewer commissioned by Glencore.

Cadence Economics principal Steven Brown adopted the same approach for a 2018 assessment of the Rocky Hill coal mine as part of an expert witness report to the NSW Land and Environment Court. His approach was criticised by the expert witness called by the DPIE, Nigel Rajaratnam, and in the final judgement Preston CJ was highly critical of Mr Brown's evidence in relation to worker benefits:

> Mr Brown sought to inflate the benefit to workers by adopting a different methodological approach to that required by the Economic Assessment Guidelines.
>
> …
>
> Contrary to the comparison required by the Economic Assessment Guidelines, Mr Brown incorrectly compared the average coal mining wage (instead of the wage paid in the Project) to the weighted average non-mining wage (instead of the minimum or reservation wage of workers in the mining sector).
>
> Mr Brown assumed that there is no disutility of working in the mining sector and there are no additional skills needed to work in a mine compared to an average job. These assumptions are not only at odds with the Economic Assessment Guidelines that refer to the "wage difference due to skills and disutility to work in mining industry" (see p 13 and Chart 3.8 on p 14), they also lack evidentiary foundation. Mr Rajaratnam noted that Mr Brown put forward no evidence in support of his assumptions.[5]

Preston CJ also agreed with evidence from the DPIE expert that Mr Brown's approach was "contrary to economic theory".

In our view, it is extraordinary that Cadence Economics continued to use the same methodology to inflate the value of coal mines despite such strong criticism from the Chief Judge of the Land and Environment Court and the expert witness called by the DPIE. The

[5] NSW Land and Environment Court (2019) *Gloucester Resources Limited v Minister for Planning*, https://www.caselaw.nsw.gov.au/decision/5c59012ce4b02a5a800be47f

fact that the DPIE still accepts assessments that include these calculations and quotes figures that include this value is difficult to understand.

In April 2020 BIS Oxford Economics were commissioned by the DPIE to review the 2018 Cadence assessment of the Tahmoor coal project. Oxford identified key flaws in this assessment, particularly exaggeration of benefits to workers, recommending that worker benefits of $264 million be omitted as this calculation ignores the fact that most mine workers have experience working in the mining industry and unless the project was to recruit largely inexperienced workers then “there is no wage premium for such employees”.[6] In its assessment report of the Tahmoor project, the DPIE claimed to agree with this recommendation, although it subsequently included the inflated worker benefits in values it cited.[7]

Other economic consultants to the coal industry do not include this value in their assessments. The following extract is from Deloitte’s assessment of the Maxwell coal project:

Figure 1: Deloitte on worker and supplier benefits

> For the purposes of the CBA, it is assumed that local suppliers will earn similar margins relative to what they receive under the Base Case such that there are no additional benefits to suppliers in NSW. This is a conservative estimate given that suppliers might otherwise be affected by a decline in mining activity in the region. Similarly, it is also conservatively assumed that, on average, workers employed by the Project would not receive a wage premium. This assumes that workers will receive a net wage consistent with market rates.

Source: Deloitte (2019) Economic assessment of the Maxwell project, page vii

The consultants to the Mount Pleasant project, AnalytEcon, not only include “no economic benefits to workers…in the cost benefit analysis”, but criticise the approach permitted by the Guidelines and taken to its extreme by Cadence as “not in accordance with standard economic thinking about the nature of such ‘wage premia’, and is also inconsistent with the approach set out in the *NSW Government Guide to Cost-Benefit Analysis”.* Further:

---

[6] BIS Oxford Economics (2020) Peer review of economic impact assessment: Tahmoor South Coal Project, https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-8445%2120201218T044925.096%20GMT

[7] DPIE (2021) *Tahmoor South Coal Project: Planning Secretary’s Environmental Assessment Report*, https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-8445%2120201218T073017.375%20GMT

Figure 2: AnalytEcon on worker benefits

> Standard economic analysis which draws on considerable empirical evidence in Australia and overseas suggest that the fact that there are wage differentials for otherwise similar jobs reflects productivity differences of individuals employed in different industries. Wage differentials do not reflect some form of personal opportunity cost or disutility, that effectively negates a wage premium.

Source: AnalytEcon (2021) Mount Pleasant Optimisation Project: Economic Assessment prepared for MACH Energy Australia Pty Ltd

Even the “peer review” of the Mangoola economic assessment, commissioned by the proponents and appended to the Cadence report, is critical of this approach to worker benefits. The reviewer endorses the Cadence assessment overall but is critical of this aspect:

> While it is my professional opinion that The Guidelines are incorrect in attributing a proportion of the costs associated with the employment of labour and material in a project as ‘indirect benefits’ of a project, Cadence Economics has conducted an analysis of those ‘indirect benefits’ that is consistent with the existing expectations of NSW policy makers and their advisors.[8]

The reviewer is Jeff Bennett of consultancy Environmental & Resource Economics. Bennett is also an academic and a consultant to the coal industry, notably to Rio Tinto’s failed bid to have the Land and Environment Court approve the Warkworth Mine extension in 2012.[9] He is associated with the climate-denialist Mont Pelrin Society[10] and the Liberal Party-aligned Menzies Research Centre.[11]

These various opinions amount to rare unanimity in the economics profession and the courts that the approach taken by Cadence Economics in the Mangoola economic assessment to worker benefits is at best heavily overstated and at worst deliberately inflated.

SUPPLIER BENEFITS OVERSTATED

A similar logic applies to the Cadence calculation of supplier benefits. The usual economic assumption is that suppliers provide goods and services at prices that reflect their

[8] Bennett (2019) APPENDIX C: Peer review report, PDF page 60 of Cadence (2019) *Economic impact assessment of the Mangoola Coal Continued Operations Project*

[9] Manning (2012) *What’s good for globe may trouble town*, https://www.smh.com.au/business/whats-good-for-globe-may-trouble-town-20120914-25xdt.html

[10] Readfearn (2014) *Mont Pelerin – home to leaders of climate science denial*, https://reneweconomy.com.au/mont-pelerin-society-revealed-home-leaders-climate-science-denial-63003/

[11] ANU (2021) *Visitors & Honorary appointees – Jeff Bennett*, https://acde.crawford.anu.edu.au/people/visitors/jeff-bennett

opportunity cost and that with or without a particular project, they would sell them at this price. As NSW Treasury puts it:

> The costs of resources are based on the principle of opportunity cost. In a competitive market, the market prices reflect the value of resources in alternative uses. Most markets for goods and services in NSW are largely competitive and as a result market prices tend to reflect the value of resources used in production.[12]

Treasury note that there may be some situations where this is not the case and the *Guidelines for cost benefit analysis of mining and coal seam gas projects* do mention the possibility of benefits to suppliers but provide little commentary on how it should be estimated.[13]

Under standard cost-benefit analysis assumptions, supplier benefits are taken to be zero, while the Cadence estimate in the Mangoola assessment is $129 million. This is derived by assuming that 84 percent of mine inputs are sourced from NSW and applying an undisclosed (but approximately 20%) margin to $757 million in mine spending.

The same approach was taken by Cadence's Steven Brown in his assessment of the Rocky Hill project, receiving harsh criticism from Preston CJ:

> Mr Brown sought to inflate the benefits to suppliers by using his firm's Regional Input-Output model. This is a specialised modelling tool of Mr Brown's firm and the results are dependent on the assumptions embedded in the model. Mr Brown did not make the model or the assumptions embedded in the model available to Mr Rajaratnam or the Court. Mr Brown's results were therefore not able to be tested or verified. Mr Rajaratnam undertook preliminary modelling, using his centre's equivalent model, but the results were orders of magnitude different to Mr Brown's results.

Preston CJ also criticised the wider logic and approach taken by Cadence:

> I find that any economic benefit to suppliers by achieving higher surpluses through supplying to the Project will be small, in the order of magnitude of Mr Rajaratnam's estimate $2.86 million (in NPV terms). It may even be that there are no supplier benefits, as the DAE 2016 report concluded. Mr Brown's inflated figure of $408.7 million (in NPV terms) is unreliable and unproven. Mr Brown's inputs and methodology are uncertain and not able to be tested or verified. A number of inputs

[12] NSW Treasury (2017) *NSW Government Guide to Cost-Benefit Analysis*, https://www.treasury.nsw.gov.au/sites/default/files/2017-03/TPP17-03%20NSW%20Government%20Guide%20to%20Cost-Benefit%20Analysis%20-%20pdf_0.pdf

[13] DPIE (2015) *Guidelines for cost benefit analysis of mining and coal seam gas projects,* https://www.planning.nsw.gov.au/Policy-and-Legislation/Mining-and-Resources/~/media/C34250AF72674275836541CD48CBEC49.ashx

> seem plainly wrong. I accept and adopt the critical analysis of Mr Brown's estimates by Mr Rajaratnam and the Minister in cross-examination, summarised above.

The cross examination of Mr Brown in the Rocky Hill case is worth reading in relation to supplier benefits. In it, he blames multi-million dollar inconsistencies in his report on "typos", concedes that he "performed modelling for the single largest benefit [in the analysis] based entirely upon a figure that was given to [him by his] client", figures which he cannot vouch for the accuracy of:

> Barrister: We have, Mr Brown, a calculation where you can't vouch for the accuracy of the 896.9 figure because you've taken it from elsewhere? That's correct, isn't it?
>
> WITNESS BROWN: Well it's a figure that was reported that I've used. I, I, I'd assume that it's, it's accurate in the DAE report.
>
> Barrister: You heard my question, Mr Brown. You can't vouch for the accuracy of that figure, can you?
>
> WITNESS BROWN: I guess - I suppose not.
>
> Barrister: And you can't vouch for the accuracy of your assumption that there would be 75% of the supplier benefits would go to New South Wales, can you?
>
> WITNESS BROWN: Again, that's a figure that was provided so I can't, I can't vouch for that figure. That's a figure that we used.[14]

In Rocky Hill, Mr Brown's approach to supplier benefits was "inflated", "plainly wrong", based on "typos" and figures he "cannot vouch for". The same approach is taken in the Cadence Mangoola assessment.

As discussed in the worker benefits section above, other coal industry economists exclude this value from their cost benefit analyses, including Deloitte Access Economics, AnalytEcon and Jeff Bennett.

Controversial mining industry economist Brian Fisher of BAEconomics has also recommended against including supplier benefits in cost benefit analysis. Fisher advised the NSW Minerals Council NSW in the process that led to the 2015 *Guidelines for cost benefit analysis of mining and coal seam gas projects:*

> The information required to undertake this type of analysis typically does not exist. Large mining businesses will have a very large number of suppliers. Moreover, these suppliers may be located locally or interstate, but the proponent would have no knowledge of the margins under which these businesses operate, nor of their

[14] Gloucester Resources Limited v Minister for Planning, Wednesday 22 August 2018

> ownership arrangements – that is, to whom any surplus accrues. Any such analysis would therefore be, at best speculative.[15]

Again, there is rare unanimity from economists on this point, backed by the Land and Environment Court – the approach taken by Cadence Economics in estimating supplier benefits is at best inflated and at worst "plainly wrong". So it is difficult to understand why the Department endorses these values, values their own economists have opposed.

[15] BAEconomics (2014) *NSW Draft Guidelines for the economic assessment of mining and coal seam gas proposals – A review.* Report for the NSW Minerals Council.

Department view

The DPIE uncritically accepts the Cadence Economic assessment in its assessment report of the Mangoola project. The assessment report cites the Cadence net present value estimate of $408 million nine times, including three times in the Executive Summary. More than half of this value consists of estimated worker benefits ($108 million) and supplier benefits ($129 million). As discussed above, these benefits are at best “orders of magnitude” above a reasonable estimate, or potentially non-existent.

DPIE officials cannot be unaware of the problematic nature of these estimates and the details behind them:

- The Department was the respondent in the Rocky Hill case, where its commissioned expert from Centre for International Economics argued against the Cadence approach, ultimately winning the case.
- The Department commissioned the BIS Oxford Economics review of the Tahmoor economic assessment that recommended excluding worker benefits, a recommendation the Department claimed to agree with, and raising problems with supplier benefits.

At the public hearing into the Mangoola project, Department officials were asked to address criticism of the Assessment Report’s use of these figures. The answer from Executive Director for Assessments Mike Young is worth quoting at length, with bolded sections discussed further below:

> Clearly **the Australia Institute has a particular view** about the calculation of costs-benefits associated with coalmines and presents at all of these hearings that occur in regard to coalmines. **Our obligations are to ensure that economic assessments are undertaken in accordance with the relevant guidelines**, and we’re satisfied that the assessment undertaken in the EIS and presented to the Commission is consistent with those guidelines.
>
> I guess, at the end of the day, you know, **different experts can have different views about the technical aspects of how things are assessed in a cost-benefit analysis** and the sensitivities around the assumptions to be included in there, around coal price and other things, or local effects and the benefits associated with spending of wages in the local area and all those sorts of things. I guess **our role here is to present to you something that’s consistent with government guidelines**. We are satisfied that the assessment is consistent with those guidelines.
>
> …

> From a broader planning perspective, **I guess we're satisfied that there is reasonable information presented to the Commission** to show that it would have a positive benefit from a cost-benefit analysis to the State of New South Wales. There would be a range of other social and economic benefits if the project is approved. That's not to say that there wouldn't be negative social impacts and other externalities that need to be considered, such as climate change and so forth. **But on its face, you know, we're generally happy with the information that has been provided**.

Mr Young's claim that The Australia Institute has a "particular view" appears to be an ad hominem attempt to avoid the issue, but his claim that different experts have different views on the methods adopted in the Mangoola economic assessment is untrue. As discussed above, there is rare unanimity amongst economists and others that Cadence's approach is flawed. These include economists commissioned by the Department, economists commissioned by the coal industry, NSW Treasury and the NSW Land and Environment Court.

More concerning is Mr Young's view that the Department's obligation is to provide information to the Commission that is consistent with Guidelines. First, as discussed above, it is the view of the NSW Land and Environment Court and most economists that the Cadence approach does not meet the *Guidelines for cost benefit analysis of mining and coal seam gas projects.* Neither Mr Young nor the Assessment Report go into any detail around what the relevant parts of the guidelines are, or explain why the court and other experts are wrong in their views.

Second and more serious is Mr Young's view that it is his obligation to provide analysis that complies with guidelines rather than analysis that is based on robust data and valid assumptions. As long as guidelines have been arguably met, Mr Young is content to take commissioned economic assessment "on its face". Commissioner Cochrane pushed officials on this point in the public hearing:

> MR COCHRANE: But your analysis of that really – hearing Mike's comments, your assessment of that is really whether or not that approach was consistent with the relevant guidelines, not on the actual data that was used. Is that correct?
>
> MR SPROTT: Yes, whether the – sorry, Mike, you go.
>
> MR YOUNG: Go, Matt. You go. You go. That's fine.
>
> MR SPROTT: No. I was just going to clarify that, yes, our consideration has been whether the approach undertaken has been appropriately consistent with guidelines.

The clear message for the Independent Planning Commission is that it cannot rely on the economic claims in the DPIE assessment report. The Department has not assessed whether the proponent's economic analysis is based on valid data or assumptions, it has only assessed whether, at face value, the assessment complies with guidelines. The IPC should not make a decision on this project until it has information based on robust analysis rather than a face value assessment. It should also inquire as to whether the Department takes a similar approach to other aspects of project assessment, such as water and biodiversity impacts.

In the public hearing Director of Resource Assessment Matt Sprott downplayed concerns about the Mangoola economic assessment because it included sensitivity testing:

> MR SPROTT: One thing I would just add to Mike's comments there is that the actual sensitivity analysis conducted by Cadence on this project included consideration of several different scenarios associated with the proposal. So this included a range of factors including, you know, price of coal, opex costs, central case assumptions, supplier benefits, reserve wages, costs associated with the actual operation itself, as well as worst case predictions of what could potentially occur should several of those matters concurrently reduce relative to the base case assumed in the project. And what this actually showed was that, even under an actual worst case proposal, the direct and indirect benefits of the project would still result in substantial value to the New South Wales economy.
>
> So this is detailed in section 6.9 of our assessment report, Commissioners. And those additional matters demonstrated that a worst case assumption would result in $350 million NPV. So while I understand that different economists may have different views, and I know that Mr Campbell has put forward his comments relating particularly to the consideration about wages and associated benefits – supply benefits, but those sensitivity cases have been considered as part of the broader sensitivity analysis that was undertaken for the project.

The sensitivity analysis of the Cadence report is deeply flawed and clearly not compliant with the Guidelines. All scenarios considered include worker and supplier benefits, which account for more than 50 percent of the claimed benefits of the project. As discussed above, almost all economists and the Land and Environment Court believe these values are small or non-existent. Including these values ensures sensitivity testing is meaningless.

The *Guidelines for cost benefit analysis of mining and coal seam gas projects* require sensitivity testing to include:

- A "wide range" of output price estimates, with regard to historical pricing.
- Royalty calculations 25% higher or lower than primary case
- Company tax calculations 50% higher or lower than primary case
- "If a proponent considers that a project will generate net economic benefits for workers, they should also present the net present value of the project without taking these benefits into account."

- Consideration of case where environmental mitigation measures are ineffective.

The Cadence economic assessment of Mangoola does not meet these requirements. Its "worst case scenario" is as follows:

> ***'Worst-case' scenario***, the coal price is reduced by 15 per cent, operational and capital expenditure are increased by 10 per cent, the disutility of the mining wage premium is set to 25 per cent and supplier benefits are lowered by 10 per cent compared with central case assumptions. Environmental costs are increased by 10 per cent over the central case.[16]

The coal price has fluctuated by far more than 15 percent, mining cost overruns of 10 percent could be considered a good result and worker and supplier benefits should have been omitted entirely. It is unclear how the Department can claim this sensitivity testing complied with Guidelines. Again, the Department should be aware of problems with the Cadence approach to sensitivity analysis. It was heavily criticised over several pages by BIS Oxford Economics in its review of the Tahmoor project.[17]

The NSW Environmental Planning and Assessment Act 1979 - s10.6 states that it is an offence to provide false or misleading information in connection with a planning matter:

> A person must not provide information in connection with a planning matter that the person knows, or ought reasonably to know, is false or misleading in a material particular.[18]

It appears that Mr Young, Mr Sprott and Cadence Economics are all in breach of this section of the Act.

[16] Cadence Economics (2019) page 40, bold in original

[17] BIS Oxford Economics (2020) Peer review of economic impact assessment – Tahmoor South Coal Project, https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-8445%2120201218T044925.096%20GMT

[18] Austlii (1979) *Environmental Planning and Assessment Act 1979*, http://classic.austlii.edu.au/au/legis/nsw/consol_act/epaaa1979389/s10.6.html

Tax payments

The EIS economic assessment estimates the increase in company tax revenue from the project by applying a 30% tax rate to its estimate of project gross surplus. The assessment arrives at an estimate of $136 million in present value terms, or in undiscounted terms approximately $232 million over the seven years the project would affect production. The economic assessment considers that $43.5 million (present value) would accrue to NSW, if this revenue accruing to the federal government is distributed to the state based on its 32% share of population.

Glencore is known as a reluctant taxpayer around the world. In 2017, Glencore was implicated in the leaked Paradise Papers, which revealed that the company moved billions of dollars of global assets into offshore tax structures to avoid paying tax.[19] The company also recently lost a court case in Zambia where it was ordered to pay a total of $13 million in backdated taxes from between 2006-2010.[20]

ATO data shows that Glencore as a whole (excluding agricultural operations) pays no corporate tax at all in some years and when they do pay tax it is minimal. Over the 6 years between 2013-14 and 2018-19, Glencore paid a total of $1 billion in tax.[21] This is derived from all its operations, which include 25 active mining operations that produce copper, cobalt, zinc, lead, nickel, ferrochrome and coal.[22]

Over the same period the total Glencore operations in question had revenue of nearly $94 billion and taxable income of $7.6 billion. Total tax payments represent just 1.06% of revenue and 13% of taxable income. This demonstrates that the approach taken by the economic assessment of applying a 30% tax rate to what it estimates as profit is likely to heavily overestimate this benefit.

[19] International Consortium of Investigative Journalists (2019) *Court Rules Leaked Documents Are Fair Game in Tax Case Against Glencore*, https://www.icij.org/investigations/paradise-papers/court-rules-leaked-documents-are-fair-game-in-tax-case-against-glencore/

[20] African Tax Administration Forum (2020) *Zambia court ruling against copper mining company is a victory against abusive tax practices*, https://www.ataftax.org/zambia-court-ruling-against-copper-mining-company-is-a-victory-against-abusive-tax-practices

[21] Australian Taxation Statistics (2020) *Corporate Tax Transparency*, https://data.gov.au/data/dataset/corporate-transparency

[22] Glencore (2021) *Glencore in Australia at a glance*, https://www.glencore.com.au/who-we-are

Assessing net present value

The DPIE and Cadence claim that the project unambiguously provides a net benefit to the NSW community is clearly false. If the flawed estimates of worker benefits, supplier benefits and company tax are excluded, the benefits to the NSW community consist mainly of royalties of present value $121 million.

Against this the value of environmental impacts need to be considered. The Cadence economic assessment assumes that mitigation and offset measures work to perfectly offset the project's impacts on air quality, visual amenity, surface water, noise, groundwater, indigenous and historical heritage and social costs. The assessment places minimal values on biodiversity loss, impacts on other industries and greenhouse gas emissions.

Valuing these impacts is imprecise and difficult. However, reports of impact on local property values, population decline and human health make it clear that they are substantial.[23] If a more robust economic approach was taken to assessing these values, it seems likely that they could easily outweigh the value of royalties and result in a negative net present value of the project. Looming around all this discussion is the topic of climate change and greenhouse gas emissions.

[23] See for example Nichols (2021) *Benefits of Mangoola mine extension questioned*, https://www.singletonargus.com.au/story/7158923/benefits-of-mangoola-mine-extension-questioned/

Greenhouse gas emissions

Perhaps the most important aspect of the Mangoola project is its impact on greenhouse gas emissions. As the world attempts to keep carbon out of the atmosphere, this project is designed to take tens of millions of tonnes of carbon out of the ground and into the atmosphere.

Basic economic theory is that increasing the supply of a good reduces its price and, all other things being equal, increases its consumption. To some degree, this project would decrease the price of coal and result in more coal being burned in the world. Cadence Economics entirely ignore this discussion and fail to even mention scope 3 emissions.

Cadence consider only scope 1 and 2 emissions, those involved in the production of coal, in total around 3.7 million tonnes. Their approach understates the value of this impact, with an estimate of $30,000 included in the cost benefit analysis. Two points need to be made regarding this estimate.

Firstly, this is based on a low cost of $13.71 per tonne of C02 equivalent emitted. This estimate is based on prices paid in 2018 by the Australian Clean Energy Regulator under the Federal Government's Emissions Reduction Fund.

These prices reflect the prices paid in one auction for emissions reduction, not the social cost of C02 pollution. Bidders to the Emissions Reduction Fund face a range of incentives beyond government payment for emissions reduction, such as landholders increasing soil carbon for agricultural purposes beyond climate impacts. It is the cost to the community of carbon emissions that is relevant to a cost benefit analysis. While this cost is uncertain and estimates vary, the Cadence estimate is low by global standards. For example, the Biden Administration has recently used an estimates centring on US$51 per tonne for 2020 (AUD$66/t), increasing to US$62 per tonne in 2030.[24] Major economists such as Joseph Stiglitz and Nicholas Stern have made recent estimates at US$100 within the lifetime of the Mangoola project.[25]

[24] United States Government (2021) *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990*, https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf

[25] Stern and Stiglitz (2021) *The Social Cost of Carbon, Risk, Distribution, Market Failures: An Alternative Approach*, https://www.nber.org/papers/w28472, see this figure cited also in Skibba (2021) *The Biden Administration Increases the Social Cost of Carbon*, https://undark.org/2021/03/02/biden-weighs-social-cost-of-carbon/

At $13.71 per tonne, the climate cost of the project's direct emissions is approximately $30 million. With a social cost of carbon of $66 per tonne, this represents a social cost of $244 million dollars.

Cadence multiply the social cost of climate impacts by the ratio of NSW population to global population. NSW's 8 million residents represent 0.1% of the world's 7.8 billion people, so the cost benefit analysis includes a value of just 0.08% of the $30 million cost, approximately $30,000.

From a strict cost benefit analysis perspective, this approach is defensible. The scope of the analysis has been set as costs and benefits to the NSW community, so costs to the rest of the country and the rest of the world are omitted. Consistent with this approach, Cadence exclude profits of the project from its analysis as these accrue to non-NSW residents.

However, this approach serves to hide a significant cost of the project from decision makers, one that is likely to increase significantly under the centrifuge option. In my view, Cadence and the DPIE should have made it clear in the text of their report that an impact of this magnitude exists, even if only a fraction of it is included in the final estimate of net present value. This would provide decision makers and the community with a proper understanding of the climate impacts of the project.

Discount rates

In the public hearing, the Commission requested my opinion on the use of a 7 percent discount rate in cost benefit analysis.

With inflation and commercial interest rates well below this level and the focus of the commission on long-term social cost, there is a strong case for discounting at far lower discount rates. The Biden administration estimate of social cost of carbon referenced above is based on a 3% discount rate and analysis of coal mines using a discount rate of below 3% has been accepted by Australian courts, specifically Ashton SE Open cut in the NSW Land and Environment Court, Acland Stage 3 and Adani Carmichael in the Queensland Land Court.

The high 7% discount rate serves to understate long term impacts on climate, biodiversity loss, water impacts and other costs that can accrue for decades or centuries. In this sense, it is inappropriate.

However, the reality is, and the Mangoola example shows, that these values are not being properly assessed in the NSW planning system, regardless of the discount rate. As discussed above, most environmental impacts have been assumed by Cadence economics to be entirely offset by mitigation measures, an unrealistic assumption. Where long term impacts are assumed to have zero value, the rate at which their future value is discounted is irrelevant.

One useful function the high discount rate is serving is to account for uncertainty around future values of coal royalties. With sensitivity testing so poor, the high discount rate is the only factor providing for uncertainty in these assessments.

Ultimately, it is the quality of economic assessment commissioned by proponents, produced by consultants and accepted by the DPIE that is the problem, not a high discount rate. I encourage the Commission to make a strong finding on the low standard of the Mangoola economic assessment, and encourage reform on how assessment is considered, rather than focusing on the narrow issue of discount rates.

Conclusion

The IPC should reject the Mangoola project. It cannot make a decision based on the clearly flawed economic evidence presented to them.

Adolph Eichmann was hung for just following orders. DPIE officials do not deserve this fate, they should be merely censured, but the Mangoola/Anvil Hill mine should be killed off.