

Narrabri Underground Mine Stage 3 Extension

Submission to NSW Independent Planning Commission

The Department of Planning and Environment recommends approval of the project based on economic benefits, but finds these benefits reduce “significantly” if greenhouse emissions are properly accounted for. The Department did not quantify the significant reduction. Applying a carbon price of between \$24.50/t and \$73/t reduces the value of the project to zero. Such carbon values are likely to be conservative, meaning the project should be refused.

Rod Campbell
February 2022

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Summary

The NSW Department of Planning and Environment (DPE) recommended approval of the Narrabri Underground Mine Stage 3 Expansion Project (the Project) based largely on financial benefits of \$599 million in net present value (NPV) terms, as estimated by Whitehaven's consultants, AnalytEcon. DPE noted that this benefit is reduced "significantly" when greenhouse gas emissions are properly accounted for but made no attempt to quantify the reduction.

The Project is a particularly emissions intensive mine. It is expected to result in an additional 22 million tonnes of Scope 1 and Scope 2 emissions over its lifetime. Applying a carbon price of AUD\$73 per tonne of CO₂ equivalent to its emissions profile reduces the NPV of the project to the NSW community to zero.

While there is debate over the value of carbon and how it should be applied in Australian cost benefit analysis, this estimate is well within the range of values used by governments at present:

- AnalytEcon cites estimates ranging from \$21/t to \$124/t.
- Australian Carbon Credit Units are currently selling for \$AUD50/t, up from less than \$20/t in early 2021.
- The Biden Administration in the USA uses a benchmark price of AUD\$71/t.
- The UK Government uses carbon values equivalent to AUD\$270 to AUD\$958/t.

In other words, at carbon prices used by many governments, the Narrabri Underground Project is uneconomic even accepting its estimates of financial benefit at face value.

However, the estimates of financial benefit in the economic assessment are overstated. For example, undiscounted tax payments of \$1.6 billion are forecast. By contrast, proponent Whitehaven coal pays no tax in most years and has only paid \$15.7 million over the seven years for which the Australian Tax Office has published data. If benefit estimates are adjusted to reflect Whitehaven's average tax payments, a carbon price of just \$64 per tonne reduces NPV to zero.

Economic advice on other coal projects commissioned by DPE and the Independent Planning Commission (IPC) has recommended taking royalty estimates as an estimated lower bound for NSW benefits. This approach sees project net present value reduce to zero with a carbon price of \$38 per tonne.

Incorporating a small percentage (1% and 5%) of Scope 3 emissions into project assessment sees carbon prices of \$34/t and \$24.50/t reduce NPV to zero. Consideration of other environmental impacts, Whitehaven's record of environmental breaches and its record of underestimating the emissions of its mines, would reduce this even further.

It is clear that the Project will have a significant climate impact. It is highly likely that this impact will outweigh the financial benefits of the Project to NSW and should therefore be refused by the IPC.

Introduction

The Australia Institute welcomes the opportunity to make a submission to the NSW Independent Planning Commission (Commission) on the proposed Narrabri Underground Mine Stage 3 Extension Project (the Project). The Project, owned by Whitehaven Coal, would produce an average of eight million tonnes per annum (mtpa) of saleable thermal coal out to 2044. The Project is an extension on an existing underground mine which aims to produce around 7 mtpa out to 2034.

The Department of Planning and Environment (DPE)'s Assessment Report recommends approval of the Project based largely on estimated economic benefits of \$599 million in net present value terms (NPV, using a 7% discount rate).¹ That estimate comes from the economic assessment of the Project included in its environmental impact statement (EIS), written by consultants AnalytEcon.² DPE writes:

The key result of the cost benefit analysis was that the Project would provide a net benefit to NSW, estimated as \$599 million (NPV), inclusive of estimated costs for environmental externalities and after internalisation of most environmental management costs by [Whitehaven]...

... The Department generally accepts the cost benefit analysis's assessment and conclusions, including the sensitivity analysis. The exception is in the treatment of the cost of Scope 1 and Scope 2 GHG emissions, which were apportioned to the NSW community only based on the ratio between NSW Gross State Product and world Gross Domestic Product. Alternative apportionment of these full costs to NSW and Australia have been applied in recent coal mining assessments and determinations. This significantly reduce [sic] net benefits.³

Despite identifying that a different approach to climate impacts would significantly reduce the estimate of NPV, DPE make no attempt to quantify this reduction. Nor has DPE commissioned an expert review of the AnalytEcon assessment, as has become usual practice following years of problems around the quality of proponent-commissioned assessment and the capacity of DPE to review it.

¹ DPE (2022) *Narrabri Underground Mine Stage 3 Extension Project Assessment Report*, <https://mpweb.planningportal.nsw.gov.au/major-projects/project/10731>.

² AnalytEcon (2021) *Appendix O: Economic Assessment*, <https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-10418%2120210201T004517.605%20GMT>

³ DPE (2022) *Narrabri Underground Mine Stage 3 Extension Project Assessment Report*, page XII

The Australia Institute supports Lock the Gate’s recommendation to the Commission to obtain an independent review.

DPE’s decision not to quantify the reduction in NPV is likely because valuing future greenhouse gas emissions can be difficult and subjective. Predicting the future production of coal mines is fraught and estimates of the social cost of carbon vary widely. The price of emissions offsets can be volatile and there are questions around the integrity of most offset schemes, including Australia’s.⁴

Another important consideration for cost benefit analysis and climate impacts is scope – whose costs and benefits count? AnalytEcon take the approach that the whole world bears the cost of climate change equally, so their cost benefit analysis focused on NSW only includes the very small portion of the climate damage that they calculate would be borne by NSW. DPE and previous Commission Panels have taken a different approach, incorporating the emissions policies of the NSW and Australian Governments and referencing the international system of greenhouse gas accounting, under which jurisdictions take full responsibility for Scope 1 and Scope 2 emissions that they emit.

From a technical cost benefit analysis perspective, a case can be made either way. Far more important, however, is the overriding responsibility that the analyst has to present all relevant information to the NSW public and decision makers. If an assumption in the analysis has the effect of distorting a major cost or benefit, it is incumbent on the analyst to bring this to the reader’s attention. The approach taken by AnalytEcon on climate impacts is an example of this situation, where the analyst’s decision serves to radically overstate the economic case for their client’s project.

This submission considers the question of greenhouse gas emissions from a different angle – what value of greenhouse gas emissions would reduce the net present value of the project to zero? We see that even without questioning the AnalytEcon estimates of tax, royalty and surplus, realistic carbon prices would see the project return a negative NPV, and therefore, reduce the welfare of the NSW community.

AnalytEcon’s estimates of tax, royalty and surplus values are, however, unrealistic. If more realistic values are included, the value of greenhouse emissions required to reduce NPV to zero declines to levels that are well within estimates of social cost of carbon and prevailing offset prices.

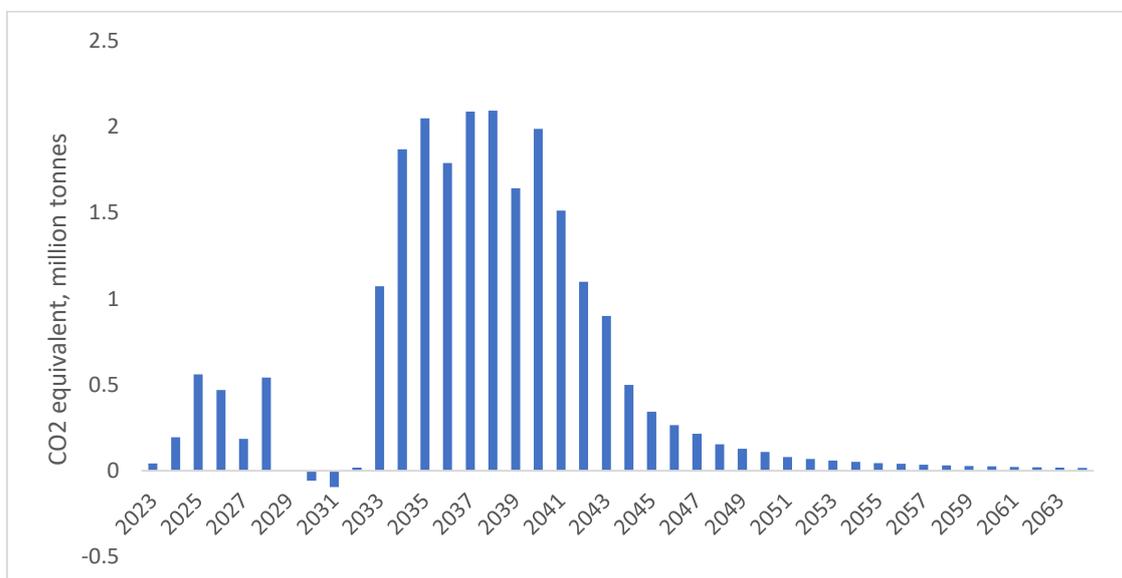
⁴ See for example Hemming et al (2021) *Questionable integrity: Non-additionality in the Emissions Reduction Fund’s Avoided Deforestation Method*, <https://australiainstitute.org.au/report/questionable-integrity-non-additionality-in-the-emissions-reduction-funds-avoided-deforestation-method/>

Comparing financial benefits and greenhouse emissions

ADDITIONAL SCOPE 1&2 VS FINANCIAL BENEFITS

To estimate the carbon price required to reduce the NPV of the project to zero, we have used the revised calculations of greenhouse emissions by consultants Jacobs, shown in Figure 1 below:

Figure 1: Additional combined Scope 1 and Scope 2 emissions



Sources: Jacobs (2021) Air Quality and Greenhouse Gas Assessment Response to Submissions, Table A1, p12, assuming no flaring; Jacobs (2021) Post mining and decommissioning GHG emission estimate, Table 2

Note that the emissions estimated in Figure 1 are those that are additional with the Stage 3 project. The emissions from Stage 2 approvals and estimated operations have been deducted.

Based on past performance, these emissions are likely to be an underestimate. New research from the Australian Conservation Foundation finds the Narrabri Underground mine has consistently emitted more than its approval documents estimated, as has Whitehaven's nearby Maules Creek Mine.⁵

⁵ ACF (2022) *Emissions exposé: Australia's biggest polluters are emitting more than approved and getting away with it*, https://www.acf.org.au/emissions_expose.

Applying a value of AUD \$73 per tonne of CO₂-e to these additional Scope 1 and 2 emissions returns a present value cost of \$599 million, equal to AnalytEcon's estimate of project financial net benefits.

A social cost of carbon of AUD \$73 per tonne over the life of this project is within many estimates:

- AnalytEcon cite estimates ranging from \$21/t to \$124/t.
- Australian Carbon Credit Units are currently selling for \$AUD50/t, up from less than \$20/t in early 2021.⁶
- The Biden Administration in the USA currently uses a benchmark price of USD\$51/t, equal to AUD\$71/t at current exchange rates.⁷
- The UK Government uses carbon values over 2032 – 2044 period of £144/t to £511/t, equivalent to current AUD\$270 to AUD\$958/t.⁸

In other words, at carbon prices used by many governments, the Narrabri Underground Project is uneconomic even accepting its estimates of financial benefit at face value. However, even basic scrutiny shows that these estimates of financial benefit are overstated.

ADJUSTING CORPORATE TAX ESTIMATE

AnalytEcon estimate that the Project would provide NSW with an additional \$177 million in present value (7% discount rate) company tax receipts, an Australia-wide present value benefit of \$607 million. This equates to an undiscounted total of approximately \$1.6 billion, if all payments occur during the years 2032 to 2044.

This is clearly not credible. In sections below, we outline how AnalytEcon have overstated the profitability of the Narrabri Mine by orders of magnitude, leading to this overstatement of tax revenues.

However, to see that the tax payments estimated are overstated, we need only to look at data from the Australian Tax Office (ATO), which shows that Whitehaven Coal has

⁶ Renewable Energy Hub (2022) *Carbon Market Prices*, <https://www.renewableenergyhub.com.au/market-prices/>

⁷ Chemnick (2021) *Cost of Carbon Pollution Pegged at \$51 a Ton*, <https://www.scientificamerican.com/article/cost-of-carbon-pollution-pegged-at-51-a-ton/>

⁸ UK Department for Business, Energy and Industrial Strategy (2021) *Valuation of greenhouse gas emissions: for policy appraisal and evaluation*, <https://www.gov.uk/government/publications/valuing-greenhouse-gas-emissions-in-policy-appraisal/valuation-of-greenhouse-gas-emissions-for-policy-appraisal-and-evaluation>

paid a total of \$15.7 million in company tax across all its projects for the seven years.⁹ Yet AnalytEcon assert that this project alone will pay \$1.6 billion during the 12 main years of the project, \$133 million per year, during a period when the world needs to decarbonise rapidly.

In the recent public hearing, the Commission heard from DPE officials that they accepted AnalytEcon's estimate of tax revenue because while Whitehaven is unlikely to pay any tax based on past performance, it is the project overall that is being assessed, not Whitehaven. The project could be sold to another owner with different finances that might pay tax:

[We] are doing the assessment based on the land not the proponent even though there's some information there about that. It's up to – for example, a new proponent may come along. That may occur. But given that the consent goes with the land, you could get a new proponent and different structures in doing that.¹⁰

A takeover of the project by a high tax-paying operator is unlikely. The main companies that have expanded into NSW coal in recent years are Yancoal, New Hope, Mach Energy and Glencore. Their tax records are similar:

- Yancoal – zero tax paid 2013-14 to 2019-20.
- New Hope – average \$33 million per year.
- Mach energy – zero tax paid (data only for 2019-20).
- Glencore Holdings – average \$14.8 million per year.

Few fossil fuel companies have performed well financially over the last decade.¹¹ It is highly unlikely that any operator of the Narrabri Underground Mine would generate the \$133 million in annual tax revenues estimated by AnalytEcon.

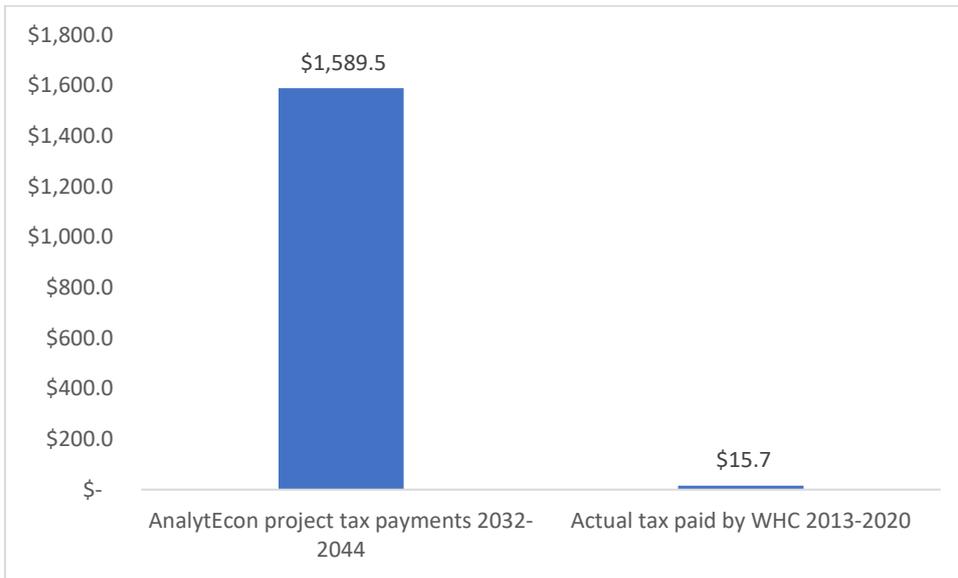
Figure 2 below puts AnalytEcon's estimated tax payments by the Project in context with Whitehaven's total tax payments for the last seven years:

⁹ ATO (2021) *Corporate tax transparency*, https://www.data.gov.au/data/dataset/2019-20_report_of_entity_tax_information

¹⁰ IPC (2022) *Transcript of proceedings: Public meeting re Narrabri Underground Mine Stage 3 Extension*, <https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/transcripts-and-material/2022/narrabri-underground/220218-narrabri-underground-mine-stage-3-public-hearing-transcript-day-2.pdf>

¹¹ Swann (2020) *Dirty Big Secret: Financial performance of fossil fuel companies*, <https://australiainstitute.org.au/report/dirty-big-secret-financial-performance-of-fossil-fuel-companies/>

Figure 2: Projected project tax payments vs Whitehaven actual tax paid

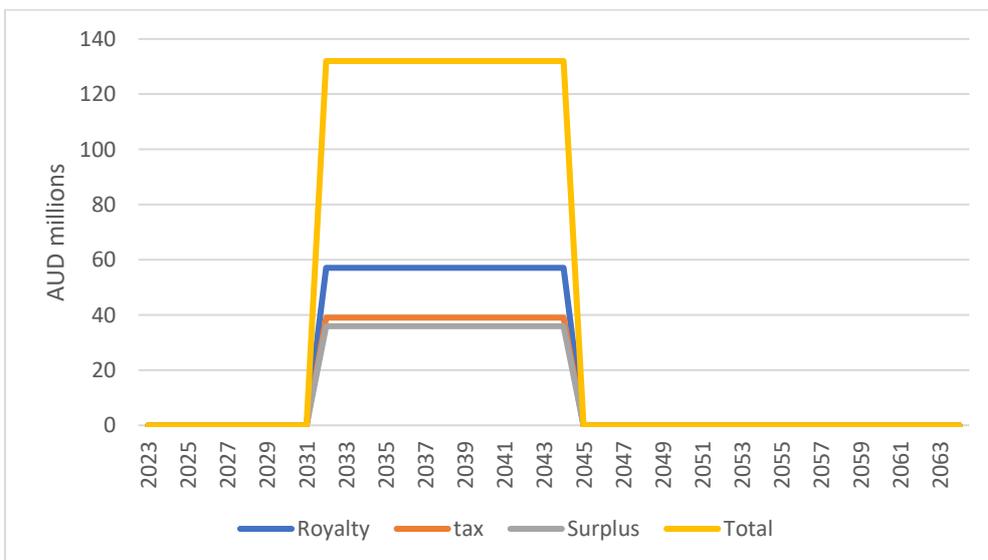


Sources: Author calculations based on AnalytEcon (2021); ATO (2021)

Figure 2 shows the Project’s tax payments as estimated by AnalytEcon are 100 times greater than the tax paid by the entire Whitehaven group from 2013-14 to 2019-20.

Note that AnalytEcon’s assessment does not provide detail on the timing of benefits. This means that to estimate the undiscounted total, assumptions must be made about the timing of the benefits. The above estimate of total project tax payments and later estimates of undiscounted profit/surplus assume that these benefits are evenly distributed over the years 2032 to 2044, the peak years of production for the project. The assumed levels and timing are shown in Figure 3 below:

Figure 3: Financial benefits of the project in Australia Institute calculations

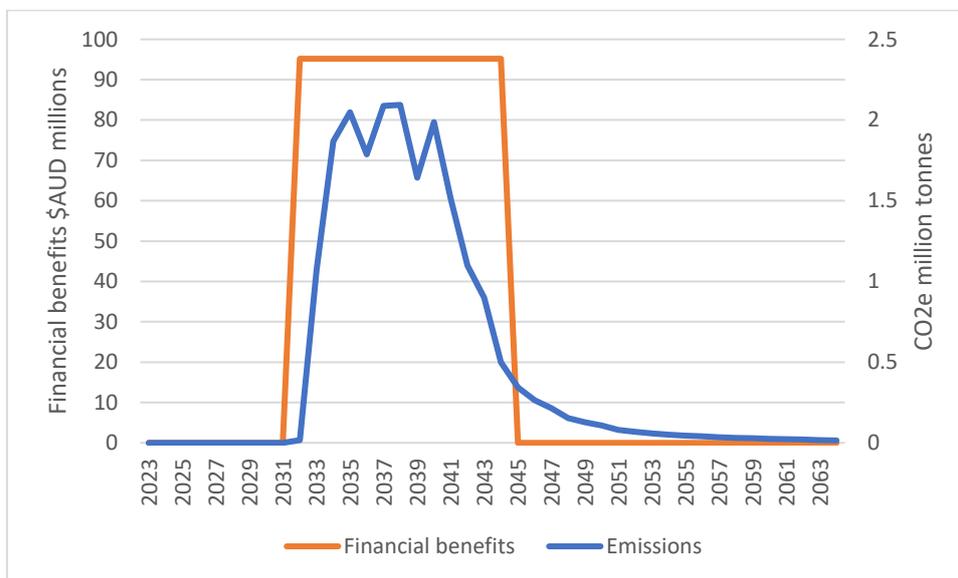


Source: Author calculations based on AnalytEcon

Figure 3 above assumes that all the additional financial benefits of the Project occur between the years of 2032 and 2044. This is a simplification, as a modest amount of additional production is planned for the earlier years, as can be seen from the increased emissions shown in Figure 1. Figure 3 also assumes that benefits are evenly spread over this time period and the ratio between royalties, tax and producer surplus/profit remains the same. While simplifications, the present values of the benefit streams in Figure 2 equal the present values estimated by AnalytEcon - \$599m in total – and so are used in the following comparisons.

Figure 4 below adjusts financial benefits to include tax payments not at \$39 million per year as estimated by AnalytEcon, but at Whitehaven’s average payment of \$2.2 million in corporate tax per year:

Figure 4: Additional emissions vs financial benefits (adjusted company tax)



Sources: Jacobs (2021) and Author calculations based on AnalytEcon

Using the more realistic tax payments in Figure 4 results in present value benefits of \$433m. Applying a carbon price of \$64 per tonne to the project’s 2032 to 2044 emissions results in zero NPV.

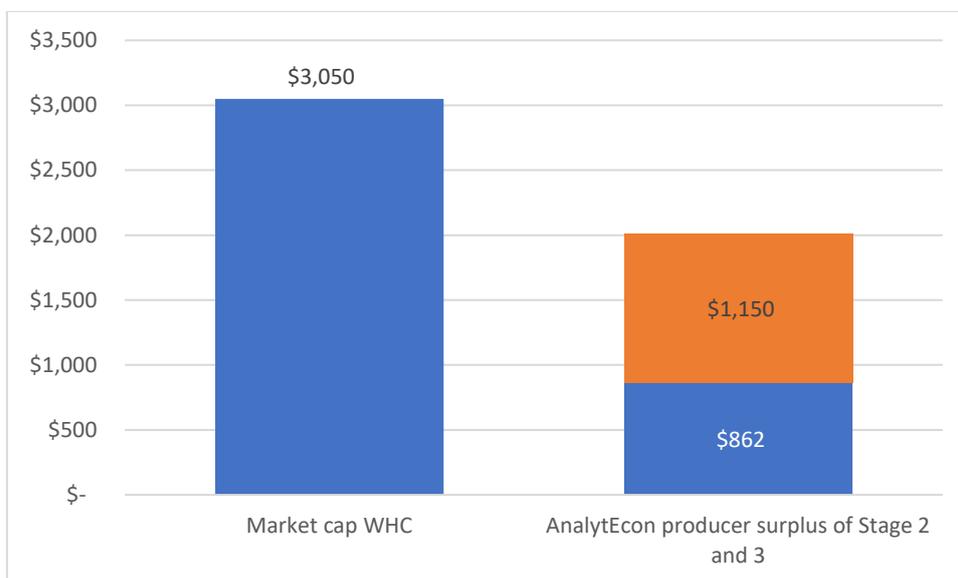
Points to note in Figure 3:

- Early-period emissions increases and financial benefits have been omitted for simplification, as data is not available from the EIS.
- The company tax payments assume that Whitehaven’s entire tax payment is due to the Project and that its benefits accrue entirely to NSW. These assumptions work to increase the value of the Project and the carbon price required to reduce NPV to zero.

PROFIT/SURPLUS ESTIMATES

AnalytEcon estimate that the total economic surplus of the Project and existing mine is at present value \$2,013 million, consisting of \$862 million for the existing Narrabri mine and \$1,150 million for the Project. Estimating the present value of future profits is one way that investors value companies, so comparing these estimates to the market capitalisation of the company can help assess their reasonableness. Figure 5 below Whitehaven Coal's total value as a company to AnalytEcon's estimated present value of Project and existing mine surplus:

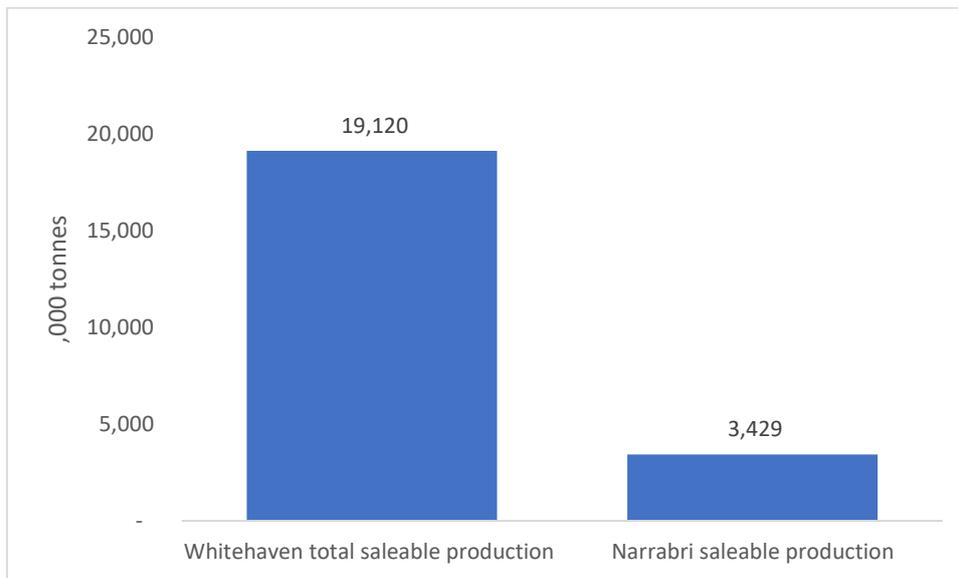
Figure 5: Whitehaven value vs estimated project value



Sources: AnalytEcon (2021), <https://www2.asx.com.au/markets/company/WHC>, accessed 14 February 2022.

Figure 5 shows that investors value Whitehaven at \$3 billion, while AnalytEcon estimate the present value of the Project and existing mine at \$2 billion. From this, we would expect that the Narrabri Mine would make up roughly two thirds of Whitehaven's coal production. However, Whitehaven company reports show that the mine makes up just 18% of production, as shown in Figure 6 below:

Figure 6: Whitehaven coal sales vs Narrabri saleable production, 2021



Source: Whitehaven (2022) Quarterly Report, January 2022.

Figure 6 shows that the Narrabri Mine is a small part of Whitehaven’s portfolio of mines and makes it highly unlikely that the present value of its future profits would be estimated at two thirds of the company’s total market capitalisation. This is, of course, a simplification. A more detailed analysis would consider other points such as:

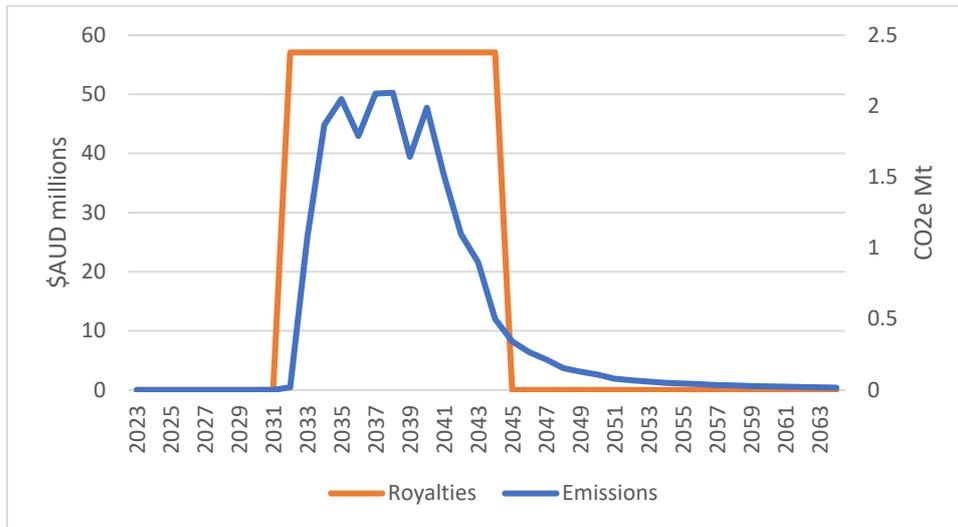
- Financing costs, such as interest, and how that differs from basic estimates of producer surplus.
- The profitability of each mine.
- Investor uncertainty around Project approval.

While a simplification, the calculations above show that AnalytEcon’s estimates of the profitability of the Project are orders of magnitude away from what would be expected from stock market data and Whitehaven production.

As such, a more realistic approach for decision makers to take would be to compare just royalty payments with potential climate costs. Using royalty estimates as an estimated lower bound for NSW benefits has been suggested by reviews commissioned by DPE and the Commission in the past.¹² Figure 7 below makes this comparison:

¹² See for example CIE (2021) *Review of economic impact assessment supporting the Glendell Continued Operations Project*, <https://mpweb.planningportal.nsw.gov.au/major-projects/project/10086>

Figure 7: Royalty payments vs emissions



Sources: Jacobs (2021) and Author calculations based on AnalytEcon

Based on the royalty payments and emissions in Figure 7, a carbon price of \$38 per tonne brings project net present value to zero.

CONSIDERATION OF SCOPE 3 EMISSIONS

The elephant in the room of any discussion of coal mines and climate change is Scope 3 emissions, the emissions that result from the burning of the coal. According to the Project documents, Scope 3 emissions from the project would total 250 million tonnes, compared to just 22 million tonnes of Scope 1 and Scope 2 emissions.¹³

Omission of Scope 3 emissions is often justified by an assumption that coal produced from any project would be produced by other mines in the absence of that project. This argument is contrary to basic economic theory, under which the increased supply of coal would be expected to reduce price and increase consumption. It has also been rejected by the NSW Land and Environment Court:

The ability of a new coking coal mine in another country to substitute for any volume of coal lost by refusal of the Project will depend on the market, including the demand and supply of substitute sources of coal and any difference in price between coal from the Project and from other substitute sources, which price difference might affect substitutability. Without any evidence about the existence and effect of these market forces on substitutability, no assumption can be made that there would be market

¹³ Jacobs (2021) Air Quality and Greenhouse Gas Assessment Response to Submissions, Table A1, p12, assuming no flaring; Jacobs (2021) Post mining and decommissioning GHG emission estimate, Table 2

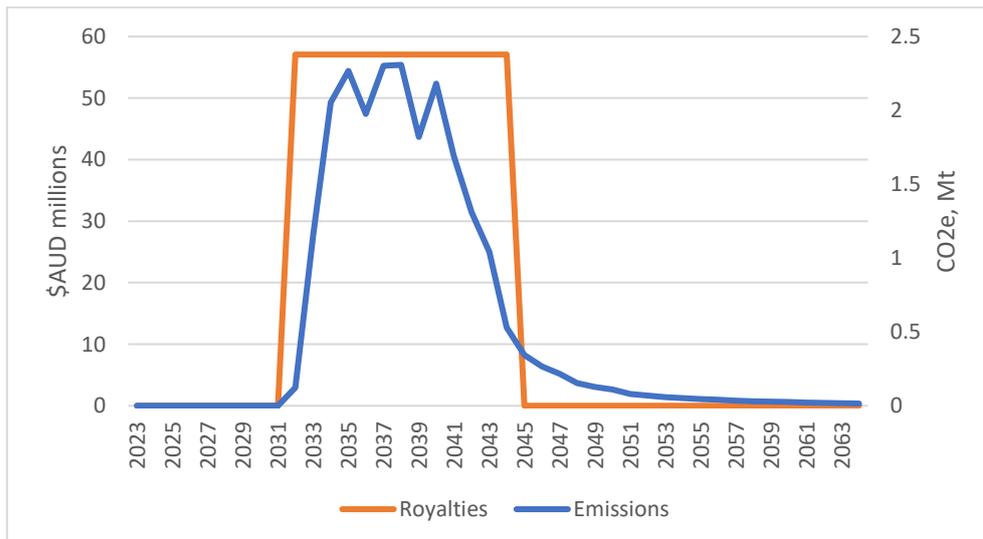
substitution by coal from new coal mines in other countries if the Project were to be refused.

...

There is also a logical flaw in the market substitution assumption. If a development will cause an environmental impact that is found to be unacceptable, the environmental impact does not become acceptable because a hypothetical and uncertain alternative development might also cause the same unacceptable environmental impact. The environmental impact remains unacceptable regardless of where it is caused. The potential for a hypothetical but uncertain alternative development to cause the same unacceptable environmental impact is not a reason to approve a definite development that will certainly cause the unacceptable environmental impacts. In this case, the potential that if the Project were not to be approved and therefore not cause the unacceptable GHG emissions and climate change impacts, some other coal mine would do so, is not a reason for approving the Project and its unacceptable GHG emissions and climate change impacts.¹⁴

It is beyond the scope of this submission to make a detailed assessment of the likely incremental Scope 3 emissions from the Project. Instead, we consider what the effects would be of including small, arbitrary percentages of Scope 3 emissions in the assessment of the Project. Figures 8 and 9 below include 1% and 5% of Scope 3 emissions as attributable to the Project:

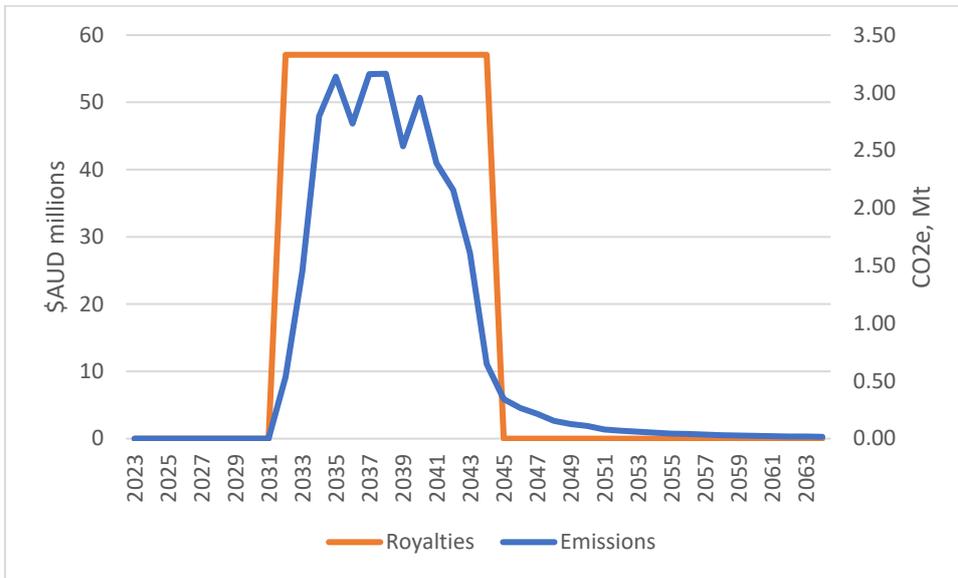
Figure 8: Scope 1, 2 and 1% of Scope 3 emissions vs royalty payments



Sources: Jacobs (2021) and Author calculations based on AnalytEcon

¹⁴ Environmental Law Australia (2019) *Gloucester Resources ("Rocky Hill") case*, <http://envlaw.com.au/gloucester-resources-case/>

Figure 9: Scope 1, 2 and 5% of Scope 3 emissions vs royalty payments



Sources: Jacobs (2021) and Author calculations based on AnalytEcon

Based on the royalty payments and emissions in Figure 8, a carbon price of \$34 per tonne brings project net present value to zero, while the scenario in Figure 9 requires a carbon price of \$24.50 per tonne to outweigh the estimated royalties.

Further considerations

The calculations above are limited to emissions, tax, royalty and surplus payments. More detailed consideration of the economics of the Project could also consider:

- Coal prices. The prices used by AnalytEcon appear optimistic.
- Other environmental impacts for which AnalytEcon assume impacts have been perfectly offset or mitigated, such as:
 - Surface water
 - Groundwater
 - Air quality
 - Biodiversity
 - This approach has been rejected as unrealistic by the NSW Land and Environment Court,¹⁵ and the Victorian Inquiry and Advisory Committee.¹⁶
- Whitehaven's record of non-compliance with environmental rules.¹⁷

Consideration of these factors would likely reduce NPV and, therefore, the carbon price required to reduce the NPV of the project to zero.

¹⁵ NSW Land and Environment Court (2019) *Gloucester Resources vs Minister for Planning*, <https://www.caselaw.nsw.gov.au/decision/5c59012ce4b02a5a800be47f>

¹⁶ Victorian Government (2022) *Fingerboards Mineral Sands: Inquiry and Advisory Committee Report*, https://www.planning.vic.gov.au/_data/assets/pdf_file/0015/550302/Fingerboards-Mineral-Sands-Project-IAC-Report-Volume-1.pdf, see section 17.6.

¹⁷ See for example Cox (2020) *Whitehaven Coal pleads guilty to breaching mining laws causing 'significant environmental harm'*, <https://www.theguardian.com/business/2020/dec/11/whitehaven-coal-pleads-guilty-to-breaching-mining-laws-causing-significant-environmental-harm>

Conclusion

Based on the proponent's own commissioned assessment, a cost of carbon equal to AUD\$73 per tonne would reduce the value of the Narrabri Underground Extension project to the NSW community to zero. This is generous as it includes almost certainly overstated tax and surplus payments. Carbon costs of just \$38 per tonne would outweigh royalty payments, even based on the proponent's coal prices. Consideration of just 5% of Scope 3 emissions would see net present value reduced to zero with a carbon price of just \$24.50 per tonne.