The Australia Institute
Research that matters.

Hume Coal Project

Submission on Environmental Impact Statement

The Hume Coal proposal is not economically viable as proposed and is already having a negative impact on the Southern Highlands economy. This is ignored in the EIS economic assessment, which is not transparent, does not comply with the relevant guidelines and suffers from flaws commonly identified in literature on major project assessment.

Rod Campbell
Tony Shields
June 2017

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. 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 aims to foster informed debate about our culture, our economy and our environment and bring greater accountability to the democratic process. 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. As an Approved Research Institute, 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@tai.org.au
Website: www.tai.org.au

Summary

The Hume Coal project should be rejected on economic grounds. It is a relatively small, high-cost, greenfields mine far from major markets. It is unlikely that it can be financially or economically viable as currently proposed. It is already imposing economic costs on the Southern Highlands community. Proceeding with the project, particularly with possible modifications to reduce operating costs, brings the risk of major impacts on groundwater, on which many local industries depend.

This submission should be read in conjunction with other Australia Institute research on coal and the Southern Highlands Economy:

- *Economic assessment of the Hume Coal project* (June 2016)
- *For Hume the bell tolls: Local economic impacts of the Hume Coal project* (May 2017)

The economic assessment in the EIS contains obvious errors and is non-transparent, with minimal information provided on the project's costs and benefits. It suffers from many of the problems with optimism bias and insider views identified in academic literature on major project assessment. The project should be quickly rejected to remove the uncertainty it is creating for Southern Highlands businesses.

Introduction

The Australia Institute objects to the Hume Coal proposal. We have conducted extensive research on the proposal and its potential impact on the economy of the Southern Highlands based on several field visits, interviews with businesses and local government. This submission should be read in conjunction with our two most recent reports on coal and the Southern Highlands:

- *Economic assessment of the Hume Coal project* (June 2016)
- *For Hume the bell tolls: Local economic impacts of the Hume Coal project* (May 2017)

These reports are attached to this submission. The Australia Institute received financial and logistical support from Coal Free Southern Highlands in producing these two reports.

Our research shows that the uncertainty around the Hume Coal proposal is currently imposing economic costs on the Southern Highlands economy. *For Hume the Bell Tolls* gives several examples of businesses that are deferring investment due to the project's potential impacts on water resources and amenity, particularly in Berrima. One example includes an olive growing business:

> with a shopfront, sheds, housing, machinery and the olive trees. They were planning to build a showroom and work shed, plant more trees, and employ more staff in higher-skill roles, but will not do so while the coal mine remains a possibility. Instead, they built a much smaller shed and sales area and would expand "straight away" if the mine were cancelled. (p19)

The Hume proposal is reducing land values. According to a local real estate agent:

> Buyers in the Sutton Forest/Berrima area always ask where the mine is in relation to the property on sale. Unfortunately, the region's most valuable properties are also nearest the proposed mine head, and typically downwind from the proposed mine during the south-westerly winter winds. (p18)

The Hume proposal is not consistent with the economic planning that has been undertaken in the region. The Southern Highlands Development Framework is an

initiative by Wingecarribee Shire Council, the Southern Highlands Chamber of Commerce and Industry and the Moss Vale Rural Chamber of Commerce.[1]

Based on the experience and opinions of local business and community leaders, there would be significant economic benefit if the project is rejected. Rejection would provide certainty for the many and diverse businesses that depend on groundwater and the amenity of the region, facilitating investment, increased activity and employment.

If approved, however, this uncertainty is likely to continue, as the project *as currently proposed* is unlikely to be financially or economically viable. We estimate the net present value of the project at negative $360 million. If approved the proponents would likely need to wait for higher coal prices or apply for a modification to mine using a different extraction method, one that would almost certainly bring greater risk to groundwater resources. These topics are covered extensively in our 2016 report *Economic assessment of the Hume Coal project*. Headline figures from that report have been updated in this submission.

The Environmental Impact Statement (EIS) for the Hume Project ignores these economic realities. The EIS's Appendix Q: Economic Impact Assessment Report by BAEconomics is flawed. It misrepresents the Southern Highlands economy, including obvious errors relating to the tourism industry. It ignores the central issue: the potential for groundwater impacts to affect agriculture and related industries, as covered in *For Hume the Bell Tolls*. It fails to consider the economic viability of the project and does not meet NSW economic assessment guidelines for mining projects.

The economic assessment and much of the EIS reflects the biases and flawed reasoning so common in assessment of major projects. There is now a substantial literature around how often major project assessment suffers from optimism bias and strategic misrepresentation, as well as the reasons why this occurs. Some of this literature is discussed in this submission in the context of the Hume project.

[1] Southern Highlands Development Framework (n.d.) http://www.southernhighlandsdevelopment.com/.

Misrepresentation of Southern Highlands economy

The EIS Economic Assessment does not provide an accurate description of the Southern Highlands economy. The main section describing the economy in the assessment completely omits any mention of the agri-tourism industry which is central to economic activity in Berrima and parts of the wider region. It does not mention the major employing service industries of health care and social assistance, retail trade, education or accommodation and food services:

> The project area is in a semi-rural setting, with the wider region characterised by grazing properties, small-scale farm businesses, natural areas, forestry, scattered rural residences, villages and towns, industrial activities such as the Berrima Cement work [sic] and Berrima Feed Mill, and some extractive industry and major trans port infrastructure such as the Hume Highway. (page 13)

While grazing is clearly visible around the Southern Highlands, it is wrong to suggest the economy of the region is "characterised" by grazing and other nondescript "small-scale farm businesses". The region has a strong network service providers and high-value agricultural producers closely integrated with the local tourism industry. This is described in the report appended to this submission, *For Hume the bell tolls: Local economic impacts of the Hume Coal project.*[2]

The economic assessment makes no mention of the substantial amount of economic planning that has been undertaken by local government, industry and community stakeholders. The Southern Highlands Development Framework is an initiative by Wingecarribee Shire Council, the Southern Highlands Chamber of Commerce and Industry and the Moss Vale Rural Chamber of Commerce. It was established in 2015 through a process involving 250 community members. Tourism groups have also undertaken economic planning work in collaboration with state government agency Destination NSW. These topics are also covered in the report appended to this submission, *For Hume the bell tolls: Local economic impacts of the Hume Coal project.*

The economic assessment's misleading description of the local economy is compounded in the Local Effects Analysis (LEA) section where the descriptions and data relating to tourism and agriculture industries are clearly wrong.

[2] Also available at http://www.tai.org.au/content/hume-bell-tolls-impacts-hume-coal-project-southern-highlands-businesses

LEA 'LOCAL TOURISM' SECTION

There are numerous errors in the 'Local tourism' section of the LEA. Table 4-1 suggests that there are only four tourism establishments in the Berrima–Moss Vale SA2 region. Anyone who has been to either town in the last decade would realise that this is wrong. BAEconomics' first error is in confusing the Australian Bureau of Statistics count of 'accommodation establishments' with 'tourism establishments'. Tourism-based businesses include a range of non-accommodation businesses such as historic sites, souvenir shops, restaurants, winery cellar doors, etc. BAEconomics ignore these completely. They also ignore that much Southern Highlands tourism is day trips from Sydney or Canberra, which do not require accommodation.

Furthermore, a simple internet search reveals that there are far more than 4 accommodation establishments in Berrima and Moss Vale. A Google search on 28/6/2017 shows seven accommodation businesses in Berrima village proper, 12 within Moss Vale town and dozens in the surrounding areas. AirBnB lists at least 15 options in Berrima and over 20 in Moss Vale.

The economic assessment claims that ABS data:

> Suggests that the Southern Highlands SA2 region where the mine would be located accounts for a relatively small share of tourism establishments, and, in particular a very small share of revenues from tourism accommodation in the Wingecarribee LGA.

This statement shows either ignorance of the local geography or an intention to mislead readers. The ABS 'Southern Highlands SA2 region' is different to what is generally referred to as the Southern Highlands, which is more accurately reflected by the Southern Highlands SA3 region. The SA2 region excludes Berrima and all the major towns and is relatively undeveloped.

BAEconomics use the SA2 region here to give the impression that there is little tourism activity in the locality of the mine. This is misleading as the mine entrance would be located very close to Berrima and its many tourism businesses. Berrima is omitted from Figure 2.4 of the economic assessment, which gives the impression that the project area is a considerable distance from population centres.

This is not the case. As discussed in the report appended to this submission, *For Hume the bell tolls: Local economic impacts of the Hume Coal project*, dust from the mine is a major concern for nearby businesses and the Wingecarribee Shire Council.

AGRICULTURE

The economic assessment considers impacts on agriculture only on the properties owned by Hume, where the surface mine infrastructure would be located. No consideration is made of any potential impact on agriculture through the mine's impacts on groundwater resources that would affect a much wider area. This is the key issue that has sparked the intense community opposition to the Hume Project. Despite the centrality of this issue to the community, BAEconomics make no attempt to quantify a range of potential impacts, stating only:

> The cost of estimated make-good measures has been accounted for in the costings for the project. (p33)

This cost estimate is not disclosed in the economic assessment. In the report attached to this submission, *Economic assessment of the Hume Coal project*, a range of values are estimated with a central estimate of $131 million, greater than the $114 million estimate of present value royalties of the mine.

Expert reports commissioned by Coal Free Southern Highlands show that it is highly likely that groundwater resources will be affected. Most recently a report by Pells and Pann (2017)[3] states that the water take from the mine could be ten times what is predicted in the EIS. Water drawdown could extend for kilometres beyond the mine workings.

BAEconomics failure to consider the potential economic effects of groundwater impacts means decision makers are not able to weigh these costs against potential economic benefits.

[3] Included in Coal Free Southern Highland's submission to the Hume Coal EIS process.

Economic and financial viability of current proposal

The Hume Project as currently proposed is not economically or financially viable. This is the strong conclusion of our appended paper *Economic assessment of the Hume Coal project*, as well as two reports from the Institute of Energy Economics and Finance.[4]

Updating the 2016 report *Economic assessment of the Hume Coal project* to current coal prices and revised information from Hume, our cost benefit analysis estimates that at a global level the project has a net present value of negative A$360 million. Key assumptions in this estimate are an average price for Hume's production of A$118 per tonne, operating costs of A$97 per tonne, a 7% discount rate and groundwater inflow of 9.7 gigalitres per year.

As before, the project as proposed is almost certain to represent a large financial loss to the proponent. Under our central assumptions, producer surplus – a basic estimate of profit – is estimated at negative A$351 million. This means that, if approved, the project is unlikely to proceed as proposed unless there is a major increase in coal price.

If it did proceed despite the financial loss to the proponent, we estimate the project would be liable for royalties worth A$132 million in present value terms (formerly A$118 million). While this represents a substantial benefit to the NSW community, our central estimate of the cost of groundwater impacts is A$131 million. Beyond this likely cost there are many, potentially large, unquantified impacts that make it extremely unlikely that the project represents an improvement in economic welfare for the Southern Highlands or the NSW community as a whole.

The 2016 report is appended to this submission. We would be pleased to provide worksheets and discuss the update in more detail with the Department.

The EIS economic assessment does not provide any detail on the viability of the project. It does not provide any estimate of the costs and benefits of the project at a global level, or any detail on producer surplus and whether the project as proposed would make money for the proponent. The economic assessment provides no

[4] Buckley and Nicholas (2016) *The Hume Coal Mine: A Stranded Asset in the Southern Highlands*, http://ieefa.org/wp-content/uploads/2016/08/The-Hume-Coal-Mine-A-Stranded-Asset-in-the-Southern-Highlands_Aug-2016.pdf A 2017 update of that report has also been prepared as part of submissions to the Hume Coal EIS process.

information on capital or operating costs of the project, despite noting on p25 various operating practices that are uncommon in Australia and would certainly add substantially to operating costs.

There is minimal transparency around key inputs to the economic assessment. This is compounded by the methodology used, which differs from assessments of every other coal mine in NSW other than those done by BAEconomics. BAEconomics explain:

> From an economic perspective, the extent to which a project contributes to the welfare of a country or state differs from a private benefit calculation, which focuses on the consumer and producer surplus. The public benefit of a project is measured with reference to 'value added'. Value added is the additional value of goods and services that are newly created in an economy, and that are available for domestic consumption or for export.

This is incorrect. Public benefit of a project is not measured with reference to value added, which as BAEconomics later explain is based on returns to capital, labour and mixed income. The foundations of cost benefit analysis are in welfare economics, and focus on changes to consumer and producer surplus which are suitable for private and public benefit calculations. This is clear from the NSW 2015 *Guidelines for the economic assessment of mining and coal seam gas proposals* with their emphasis on producer surplus. The Guidelines do not consider BAEconomics' approach, which works to minimise transparency. No working is provided for most values in their assessment, particularly those in Table 3-6. The BAEconomics assessment does not meet the letter of the 2015 Guidelines and is certainly not in the spirit that they were worked on with many stakeholder groups through 2015. The Guidelines must continue to develop and should incorporate the lessons of the substantial literature on systemic flaws in major project assessment, discussed below.

Systemic flaws in project assessment

The BAEconomics assessment suffers from flaws that are often seen in megaproject assessment. These systemic biases have become well documented and well known, particularly due to the work of Bent Flyvbjerg, but also due to the work of Nobel Prize Winner for Economics Daniel Kahneman, together with Amos Tversky. These biases include:

- optimism bias;
- the planning fallacy;
- strategic misrepresentation; and
- principal agent theory.

Kahneman and Tversky are credited with demonstrating the over-optimistic bias of humans. People underestimate the costs, completion times and risk of planned actions, whereas they overestimate the benefits of the same actions.[5] Kahneman and Tversky also highlighted the planning fallacy: the tendency for people involved in a project to underestimate the costs and risks of a project simply because they do not foresee what can go wrong. They base their forecasts of the future on the best case rather than the likely case. Kahneman and Tversky say those involved with a project take *the inside view*. People who take the inside view:

- make forecasts by focusing tightly on the project at hand, considering its objective, the resources they brought to it, and the obstacles to its completion; and
- imagine scenarios of progress and extrapolate these into the future.

This results in overly optimistic forecasts.[6]

[5] Kahneman & Tversky (1979) *Prospect theory: An analysis of decisions under risk*, Econometrica, 47, p 313–327; Kahneman & Tversky (1979) *Intuitive prediction: Biases and corrective procedures,* in Makridakis & Wheelwright (eds) *Studies in the Management Sciences: Forecasting*, vol 12

[6] Flyvbjerg (2008) *Curbing Optimism Bias and Strategic Misrepresentation in Planning: Reference Class Forecasting in Practice*, European Planning Studies 16:3-21, p9 https://www.researchgate.net/publication/233258056_Curbing_Optimism_Bias_and_Strategic_Misrepresentation_in_Planning_Reference_Class_Forecasting_in_Practice

Kahneman and Tversky contrast the inside view with the much more accurate *outside view*. The outside view examines the experiences of a class of similar projects, lays out a rough distribution of outcomes for this reference class, and then positions the current project in that distribution.[7]

Flyvbjerg highlights strategic misrepresentation and the principal agent theory.[8] These theories suggest that there are strong incentives for project proponents to deliberately overstate the benefits and underestimate the costs and risks of projects. For example, politicians may want to have projects built to meet political objectives. Managers may want to have projects built because there are tangible and intangible rewards for getting them underway and for running a bigger company than a smaller company. If senior managers are keen on a project, company employees know the benefits of working positively on the project rather than being a negative, though more realistic, critic. Employees' ownership of a company (for example, company shares) is often small compared to their salary and potential bonus, consequently their losses if a project fails are small but their rewards for success are much greater. Managers and employees may also rightly reason that they will have another job elsewhere by the time a project fails and that the blame for the failure will be diffuse.

In addition to the incentives mentioned above there are three particular incentives acting to make it likely that the benefits of the Hume Coal project are over-estimated and the cost underestimated:

Firstly, this project is strongly opposed by many people. Therefore the project proponents have stronger reasons to misrepresent the benefits and costs (ie overestimate the benefits and underestimate the costs) compared to if the Project had little opposition.

Secondly, to reduce the risk to groundwater from mining, the pine feather mining system is to be used. This is the first time such a method has been used in Australia. This is a high cost mining method.[9] Once the project is approved and operations are underway, the project proponents could then "find" that the pine feather mining system is uneconomic. The mine could then seek a modification of its licence to carry out the lower cost and more commonplace longwall mining technique. With a mine already constructed, employees earning regular income and businesses benefiting from supply contracts, there will be much stronger political pressures to grant this modification compared to today where there is no mine, no supply contracts and no employees.

[7] Paraphrasing Flyvbjerg (2008) *Curbing Optimism Bias and Strategic Misrepresentation in Planning,* p9
[8] Flyvbjerg (2008) *Curbing Optimism Bias and Strategic Misrepresentation in Planning*
[9] Buckley and Nicholas (2017) *Hume Coal Update 2017,* June 2017

Thirdly, approval to mine would add dramatically to the value of the Hume Coal project. It not only allows the proponents to start mining but also makes it more valuable and easier to sell. The return on investment from gaining mining approval is in the order of hundreds and thousands of per cent, making it potentially one of the best investments available in business. It costs a few million dollars to compose and lodge an Environmental Impact Statement; project approval can add tens or hundreds of millions of dollars of value to an asset. Once again, the incentives for misrepresentation to gain approval are clearly present.

Bengt Flybjerg is the world's most cited scholar on megaprojects. He has advised the UK Government on its "Green Book" used to evaluate projects, the US Government and several corporations.[10] Flyvbjerg has collected statistics on megaprojects from around the world. He summarises:

> Success in megaproject management is typically defined as projects being delivered on budget, on time, and with the promised benefits. If, as the evidence indicates, approximately one out of ten megaprojects is on budget, one out of ten is on schedule, and one out of ten delivers the promised benefits, then approximately ***one in one thousand projects is a success***, defined as "on target" for all three. Even if the numbers were wrong by a factor of two—so that two, instead of one out of ten projects were on target for cost, schedule, and benefits, respectively— the success rate would still be dismal, now eight in one thousand. This serves to illustrate what may be called the "iron law of megaprojects": ***Over budget, over time, over and over again***. ***Best practice is an outlier, average practice a disaster*** in this interesting and very costly area of management.[11]

In reference to benefit cost analyses, Flyvbjerg further writes that:

> When cost and demand forecasts are combined, for instance in the cost-benefit analyses that are typically used to justify large infrastructure investments, the consequence is inaccuracy to the second degree***. Benefit-cost ratios are often wrong, not only by a few percent but by several factors***. As a consequence, estimates of viability are often misleading, as are socio-economic and environmental appraisals, the accuracy of which are heavily dependent on demand and cost forecasts. These results point to a significant problem in policy and planning: ***More often than not the information that promoters and***

[10] Said Business School (2017) *Bent Flyvbjerg* http://www.sbs.ox.ac.uk/community/people/bent-flyvbjerg

[11] Flyvbjerg (2014) *What you should know about megaprojects and why….,* p11, emphasis added.

planners use to decide whether to invest in new projects is highly inaccurate and biased making plans and projects very risky.[12]

With a capital cost variously estimated at $982 million and $860 million,[13] the Hume project just falls short of the US$1 billion number that Flyvbjerg uses to define a megaproject. However, the dangers of the optimism bias and planning fallacy are just as likely to be present (as anyone who has renovated a kitchen or built a house will attest) as are the problems caused by misrepresentation and principal–agent conflict.

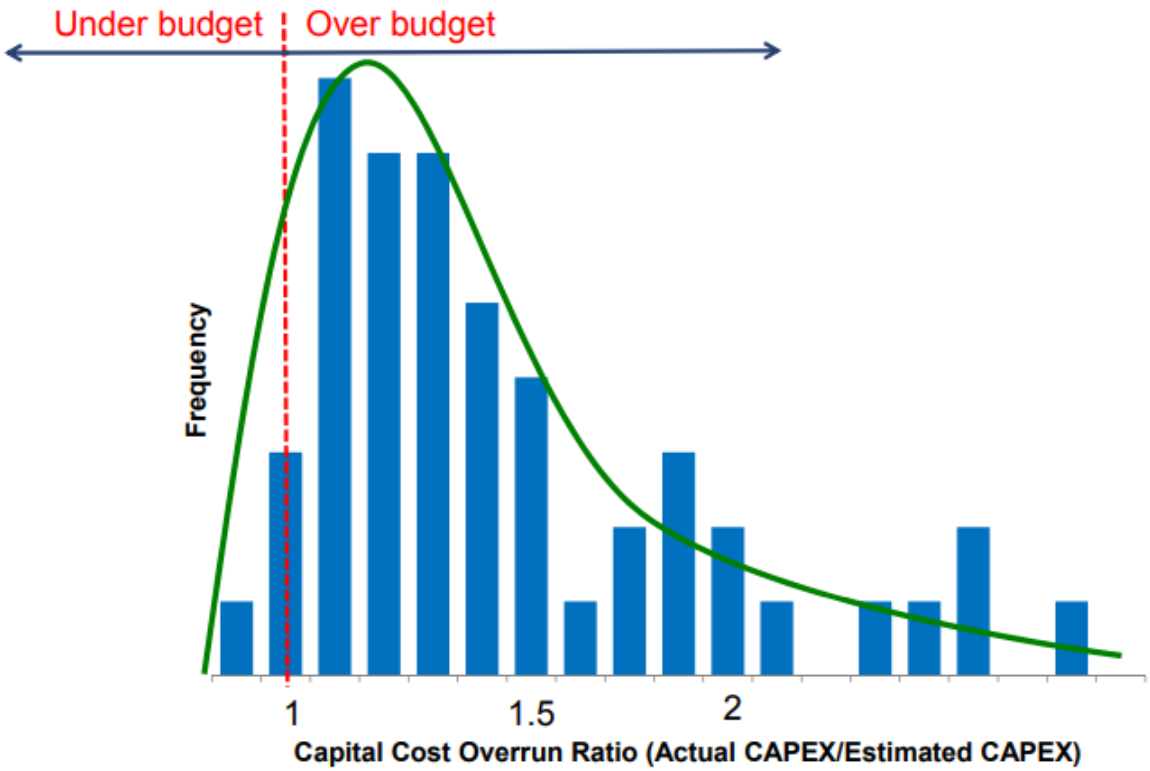
Research has found that the resources industry suffers from the same over-optimism that affects other industries. In 2014, Christopher Haubrich, a mining analyst, gave a paper titled "Why Building a Mine on Budget is Rare: A Statistical Analysis".[14] Haubrich constructed a database of 50 mining projects and found that capital cost overruns are significant and persistent with average cost overruns of 20%–60% recorded since 1965. Many projects run over cost by much greater percentages – see Figure 1 below. Haubrich stated that the mining industry has a worse record than other industries.

[12] Flyvbjerg (2008) *Curbing Optimism Bias and Strategic Misrepresentation in Planning…*, p5, emphasis added.

[13] Buckley and Nicholas (2017) *Hume Coal Update 2017,* June 2017,

[14] Haubrich (2014) *Why Building a Mine on Budget is Rare: A Statistical Analysis,* 16 October 2014, http://www.canadian-german-mining.com/files/events/2014-10-16_CIM_MES_Rocks__Stocks/3_Chris_Haubrich_Why_Building_A_Mine_on_Budget_is_Rare_-_A_Statistical_Analysis.pdf

Figure 1: Distribution of Capital Cost Overruns[15]



Haubrich also found that that marginal projects are likely to have larger cost overruns. Haubrich stated that this was because when projects are marginal, the incentive is to "sharpen your pencils" and reduce cost estimates in order to make the project numbers viable. Haubrich found no relationship between the cost of the project and cost overruns.

Global consulting firm EY found that mining projects run over-budget by an average of 62%, and that 50% of projects were reporting delays. Only 31% of projects came in on budget. EY quoted media coverage of some projects with cost overruns:

> A major copper and gold operation in Central Asia: The National Finance Minister had been quoted as saying: "No one understands why the project has gone US$2b over budget."
>
> A major iron ore project in Brazil: To date, the project has experienced an overrun from the initial estimate of approximately 690%. The chief executive officer of the company has gone on record to say that "they are working very hard" to ensure no more delays or cost overruns on the project.

[15] Haubrich (2014), p22.

> A Brazilian megaproject: This project saw capital costs escalate from US$3.6b in 2007 to US$8.8b in 2013. Media sources have described this investment as one of this organization's "most significant failures of recent years."[16]

The Australia Institute has also collected information on optimism bias in the oil and gas industry.

COST OVER-RUNS AND REVENUE SHORTFALLS IN THE MINING, OIL AND GAS INDUSTRY

Westney is a Houston-based engineering and risk consultant to the oil and gas industry. They estimate that the probability of oil and gas projects running on time and on cost is only between 5% and 25%.[17] Westney also quote Independent Project Analysis who found only 22% of large oil and gas projects were on time and on budget.[18] Both these estimations leave aside the question of whether the projects also achieved their stated benefits (i.e. revenue). To help answer this question Westney quote a PricewaterhouseCoopers study that found only 2.5% of megaprojects met their objectives of scope, cost, schedule *and* benefits.[19]

EY analysed 365 oil and gas megaprojects and found 65% were over-budget and 73% over schedule. The budget overruns were not small – current project estimated costs were, on average, 59% above the initial estimate. EY noted these estimates were likely to understate poor performance as a substantial amount of the projects were still underway. Once again, EY only looked at cost performance and did not cover revenue performance.[20]

[16] EY (2015*) Opportunities to enhance capital productivity: Mining and metals megaprojects,* *http://www.ey.com/Publication/vwLUAssets/EY-opportunities-to-enhance-capital-productivity/$FILE/EY-opportunities-to-enhance-capital-productivity.pdf*

[17] Briel, Luan and Westney (2014) *Built-in Bias Jeopardises Project Success, p2,* http://www.westney.com/wp-content/uploads/2014/04/Built-in-Bias-article-SPE-as-published.pdf

[18] Boschee (2012) *Panel Session Looks at Lessons Learned from Megaprojects*. SPE Today, 10 October 2012. Quoted in Briel, Luan and Westney (2012).

[19] PricewaterhouseCoopers (PwC) (2009) *Need to know: Delivering capital project value in the downturn*. Quoted in Briel, Luan and Westney (2012). Note this study refers to all megaprojects, not just oil and gas megaprojects.

[20] EY (n.d.) *Spotlight on oil and gas projects*, p4-5, http://www.ey.com/Publication/vwLUAssets/EY-spotlight-on-oil-and-gas-megaprojects/$FILE/EY-spotlight-on-oil-and-gas-megaprojects.pdf

Revenue forecasts are subject to the same biases that make cost forecasts so optimistic. Flyvbjerg estimates 84% of rail projects overestimate demand by more than 20%, and 72% of projects overestimate demand by more than 40%. For roads, 50% of projects overestimate demand by more than 20%, and 25% by more than 40%.[21] For mining projects, revenue projection is made doubly difficult because of the difficulty of forecasting both reserves under the ground *and* also forecasting commodity prices which can fluctuate wildly from year to year.

As Flyvbjerg writes, when optimistic forecasts of cost are combined with optimistic forecasts of demand, it is very risky to place much weight on the resulting estimation of net benefit. Take a generous estimate of the likelihood of mining projects running on cost: say 1/3 of projects run on budget or better as opposed to the 1 in 10 figure quoted by Flyvbjerg, the 31% quoted by EY, the 5–25% of oil and gas projects quoted by Westney and the 22% of oil and gas projects quoted by Independent Economic Analysis (see above). Combine it with a generous estimate of the probability of revenue running as forecast: say 1/3 of projects deliver their estimated revenue. The result is still only a 1 in 9 chance that a project will meet both its cost and revenue projections. Moreover as Flyvberg, Haubrich and EY indicate, there is also a good likelihood that if a project fails to meet its projections, it will not be off by just 10 or 20 per cent, but much more, possibly hundreds of per cent.

While BAEconomics estimates that this project will provide a net benefit to NSW of $295 billion in net present value terms, analysis shows that similar projects overstate their NPV in 90% of cases - often by a considerable amount.

NSW legislation and guidelines largely ignore the systemic biases that cause projections for mining projects to overestimate their benefits and underestimate their costs. These systemic biases have caused Flyvbjerg to propose the *iron law of megaprojects: over cost, over time, over and over again.* However, as Haubrich indicates, the systemic biases apply to all projects regardless of size.

[21] Flyvbjerg (2008) *Curbing Optimism Bias and Strategic Misrepresentation in Planning…*, p5.

Conclusion

The Hume Coal project should be rejected on economic grounds. It is a relatively small, high-cost, greenfields mine far from major markets. It is unlikely that it can be financially or economically viable as it is currently proposed. It is already imposing economic costs on the Southern Highlands community. Proceeding with the project, particularly with possible modifications to reduce operating costs, brings the risk of major impacts on groundwater, on which many local industries depend.

The economic assessment in the EIS contains obvious errors and is non-transparent, with minimal information provided on the projects costs and benefits. It suffers from many of the problems with optimism bias and insider views identified in academic literature on major project assessment. The project should be quickly rejected to remove the uncertainty it is creating for Southern Highlands businesses.