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Wallarah 2 Coal Project

Submission to Planning Assessment Commission

Rod Campbell
Tony Shields
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Level 5, 131 City Walk
Canberra, ACT 2601
Tel: (02) 61300530
Email: mail@tai.org.au
Website: www.tai.org.au

Summary-Introduction

The Wallarah 2 Coal Project (**Project**) proposes to produce 4 to 5 million tonnes per annum (**mtpa**) of thermal coal. The project is located on the Central Coast of NSW near Wyong. The proponent is Kores, a South Korean government owned corporation.

The Australia Institute welcomes the opportunity to make a submission to the November 2017 Planning Assessment Commission (**PAC**) consideration of the Project. We believe that points raised in our April 2017 and September 2016 submissions (provided as Attachment 1 and 2) on the Amended Development Application and Second PAC review remain valid, as is our conclusion that the benefits of the project are unlikely to outweigh its costs.

Part 1 of this submission focuses on the internal detail of economic assessment and recent planning documents related to the Wallarah 2 project. Estimates of economic costs and benefits of the project have changed radically from the original estimate of $1,519 billion[1] to as little as $32 million in the latest review commissioned by the Department of Planning and Environment (DPE).[2] The reasons for this revision include changing scope of assessment, changing coal price and approach to environmental costs. What is clear and consistent, however, is that the costs of the project have been continually underestimated, while the benefits have always been overestimated.

Part 2 looks at the Wallarah 2 economic assessment documents from the outside and considers them in the wider context of economic literature on major project assessment. Major projects the world over rarely perform as predicted in assessment documents. Systemic flaws in assessment processes lead to optimistic assessments, with around one project in a thousand being completed on time, on budget and achieving estimated benefits. Wallarah 2's delays and revisions should be seen as the norm, not the exception. Further delays, downgrades and cancellation are all possible.

The continued uncertainty in relation to this project imposes costs on the community. The only way to end this uncertainty is for the PAC to refuse approval of the project. Given that the costs of the project are likely to outweigh its benefits, this is the best course of action from an economic perspective.

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[1] Gillespie Economics (2008) *Wallarah 2 Coal Project Benefit Cost Analysis*. p3

[2] Centre for International Economics (2017) *Wallarah 2 Coal Project Economic Assessment: Response to Submissions,* http://www.pac.nsw.gov.au/resources/pac/media/files/pac/projects/2017/09/wallarah-2-coal-project/department-of-planning-and-environments-assessment-report/appendix-g--cie-review-report-2017.pdf.

Part 1: Inside Wallarah 2 economic assessments

OPERATING COSTS

In our September 2016 and April 2017 submissions we point out that the 2016 economic assessment of the Amended Development Application assumes an operating cost of AUD$55 per tonne, currently USD$42 per tonne. This would make the Wallarah 2 mine one of the cheapest mines to operate in the world traded thermal coal market despite being relatively small, underground and operating in a sensitive water catchment. This operating cost estimate apparently includes the operation of a water treatment plant and associated pipeline.[3]

This is not credible. It is likely that the project's operating costs have been understated by the proponents. The September 2017 CIE review notes of the proponent's assessment:

> While the analytical approach is broadly consistent, the individual components and parameter estimates warrant testing. Some of the estimates are difficult to test, particularly where there is limited publicly available data on, for example, the cost of the operations. (p7)

Despite noting this neither the CIE, DPE or the proponent have tested these operating cost assumptions, nor have they contested our point that AUD$55 per tonne appears very low given the circumstances of the Wallarah 2 project.[4]

The implications of the project having much higher operating costs than assumed by the proponents are significant. Wallarah 2 is a relatively small mine with likely high costs that would compete with existing mines in a market that will rapidly decline if governments move to act on climate change. Australia has already approved hundreds

[3] CIE (2017) p13

[4] Note in particular that Gillespie Economics 2016 assessment includes sensitivity testing of how a 20% change in operating costs affects benefits to NSW, but not the overall viability of the project. See Table 4.7, p49. This does not assist decision makers understand whether the project is likely to face the delays and changes, or whether it will proceed and provide the claimed level of benefits.

of millions of tonnes of coal production into the 2040s,[5] while the Paris Agreement requires a significant reduction in coal use.

Furthermore, the project proponent is a large corporation with no shortage of competing projects for its capital investment.

APPROVAL OF UNECONOMIC PROJECTS

Wallarah 2's likely higher operating costs and uncertain place in the coal market means that PAC approval of the project is unlikely to lead to immediate construction, job creation and payment of royalties. The project would likely be deferred or sold and claims for assistance made to governments. Further modifications may be required to make the mine more competitive, potentially brining increased costs to the community. The reality that planning approval is often sought for non-economic projects was noted by the recent PAC for the Bylong Coal Project, which quoted from that project's proponents:

> International mining companies routinely make investment decisions across their portfolios that on the surface may appear sub-economic, but for other strategic reasons are attractive to the broader business…if the mine is truly not economically viable…the project would be unlikely to proceed. This would result in the claimed benefits not being realised, but would equally mean that none of the impacts of the mine would eventuate either.[6]

This is correct. The approval of an uneconomic mine would not bring the benefits or the impacts outlined in the economic assessments. This does not mean there are no impacts, however. There are clear costs to the community if a project is approved, but the timing and final nature of it is unknown. Property prices would be affected by this uncertainty, not to mention personal anxiety by those living nearby, and the considerable community energy that has gone into opposing the Wallarah project would likely continue, rather than being directed in more positive directions. PAC approval of the project is likely to prolong the uncertainty around this project rather than end it. Only rejection will provide certainty.

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[5] Denniss et al (2016) Never gonna dig you up! Modelling the economic impacts of a moratorium on new coal mines, http://www.tai.org.au/sites/defualt/files/P198%20Never%20gonna%20dig%20you%20up%20FINAL.1.pdf

[6] Gilligan, Goldberg, O'Connor and Fisher (2017) *Bylong Coal Project SSD 6367 Review Report*, http://www.pac.nsw.gov.au/resources/pac/media/files/pac/projects/2017/02/bylong-coal-project/review-report/bylong-coal-project--review-report.pdf

The reality that project proposals are not always viable and impose further costs on the community has begun to be acknowledged by other jurisdictions. The Northern Territory's Scientific Inquiry into Hydraulic Fracturing has just released its economic assessment that includes an assessment of the probability of given levels of development proceeding.[7] Contrary to most industry-commissioned assessments that estimate economic benefit based on an assumption that the project proceeds, this assessment makes it clear that there is uncertainty around projects proceeding. The highest levels of employment and income, which are typically referred to by industry advocates as what could be "unlocked", are considered to have "low" to "very low" probability in this assessment.

This is in contrast with the latest reviews of the Wallarah 2 project by CIE and DPE, which assume approval will lead to development:

> On the benefits side, at a minimum, CIE indicates that the NSW Government would receive royalty payments of between $154 m to $257 m in present value terms over the life of the project. Both CIE and Gillespie agree with the quantum of this benefit.[8]

This may be the quantum of royalties, if the project proceeds to construction soon after approval and continues at expected production rates for the full 25 years. None of this is certain and none of the assessments assist decision makers in understanding how probable this level of benefit is. Based on estimates in our earlier submissions it is clear that this is uncertain. The repeated claim that hundreds of millions in present value royalties are a "minimum" of benefit that would accrue to NSW is misleading.

The PAC must consider the possibility that it could approve the Wallarah 2 Project but zero economic benefits could result if prices are low, or better returns are available to the proponent elsewhere, or if external costs are higher than anticipated in the EIS.

Exactly this situation occurred with the Cobbora Coal Project, which was assessed by the same consultant, Gillespie Economics, claiming large economic benefits using similar methodology. Cobbora was met by DPE with similar enthusiasm, despite abundant evidence that the project was unviable.

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[7] See ACIL Allen (2017) *The Economic impacts of a potential shale gas development in the Northern Territory*, https://frackinginquiry.nt.gov.au/news/?a=456788

[8] DPE (2017) RESIDUAL MATTERS REPORT: STATE SIGNIFICANT DEVELOPMENT Wallarah 2 Coal Project (SSD 4974), p21 https://majorprojects.accelo.com/public/9d3ef028b398b005e90258f77f5f4c09/RESIDUAL%20MATTERS%20REPORT%20Final.pdf See also CIE (2017) p7

The PAC approved the Cobbora project in May 2014. The Australia Institute wrote to Chair Gabrielle Kibble, outlining the flaws in the PAC's reasoning. In response she wrote:

> Regarding the economic component of the Cobbora Coal Project, as the PAC report indicates, NSW Treasury on 1 July 2013 announced the sale of the venture. Therefore any prospective purchaser would carry out due diligence to satisfy themselves of the projects viability as part of their pre-purchase consideration. (Correspondence dated 3 June 2014)

There was no purchaser because the project was not viable. Instead, the NSW taxpayer must try to clean up the social damage caused by the community planning for a mine that never came.[9] The PAC and DPE could have avoided the debacle of Cobbora by considering the economically marginal nature of the project and the probability that it would fail. Successive Wallarah 2 PACs have been more sceptical of this project's economic claims, an approach we hope will continue.

[9] Wellington Times (2014) Dunedoo wins in Cobbora Funding, http://www.wellingtontimes.com.au/story/2457575/dunedoo-wins-in-cobbora-funding/

Part 2: The outside view of Wallarah 2 economic assessments

Wallarah 2, Cobbora and Bylong all fit into a pattern of systemically flawed economic assessments that is seen not just in relation to NSW coal projects, but in major project assessment worldwide. Much economic assessment, particularly when it is done by the project proponents, suffers from critical biases that are highly likely to cause over-estimations of the net benefits of projects. A considerable amount of academic literature is devoted to this phenomenon.

WHY NET BENEFITS ARE OVER-ESTIMATED

The biases that lead to over-estimation of the benefits and under-estimation of the costs in cost benefit projects are well documented, particularly by megaproject expert, Bent Flyvbjerg, and the work of Nobel Prize Winner for Economics Daniel Kahneman and his colleague Amos Tversky.

Their work identifies systemic flaws in major project assessment including:

- Optimism bias – where analysts underestimate the costs, completion times and risk of planned actions, whereas they overestimate the benefits of the same actions.[10]
- Planning fallacy - the tendency for people involved in base their forecasts of the future on the best case rather than the likely case.
- Strategic misrepresentation – where proponents have an incentive to present the best case to investors and regulators.
- Principal agent theory – where an agent or consultant has an incentive to deliver work that furthers the interests of their principle or client.

Arguably all of these flaws have been at work in assessments of Wallarah 2 and other NSW coal projects. Flyvbjerg highlights strategic misrepresentation and the principal agent theory.[11] These theories suggest that there are strong incentives for project proponents to deliberately overstate the benefits and underestimate the costs and

[10] 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

[11] Flyvbjerg (2008) *Curbing Optimism Bias and Strategic Misrepresentation in Planning*

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 they will meet with more approval if they work 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.

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
- construct in their minds scenarios of their coming progress and extrapolate current trends into the future.

This results in overly optimistic forecasts.[12] Kahneman and Tversky contrast the inside view with the *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.[13]

Considering the context of other greenfields coal proposals in NSW, the Wallarah 2 experience is not unusual. The only such project to proceed in recent years has been Maules Creek, in the face of considerable controversy. Others such as Cobbora, Watermark, Rocky Hill and Caroona have not gone ahead and have mostly been abandoned.

FLYVBJERG AND THE DANGERS OF COST BENEFIT ANALYSES

[12] 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

[13] Paraphrasing Flyvbjerg (2008) *Curbing Optimism Bias and Strategic Misrepresentation in Planning,* p9

Bengt Flyvbjerg 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.[14] Flyvbjerg has collected statistics on megaprojects from around the world. With a capital cost of AUD$1.5 billion, the Wallarah 2 project is around the size of the projects assessed by Flyvbjerg. In summarising his work on megaprojects, Flyvbjerg writes:

> 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.[15]

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 planners use to decide whether to invest in new projects is highly inaccurate and biased making plans and projects very risky***.[16]

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

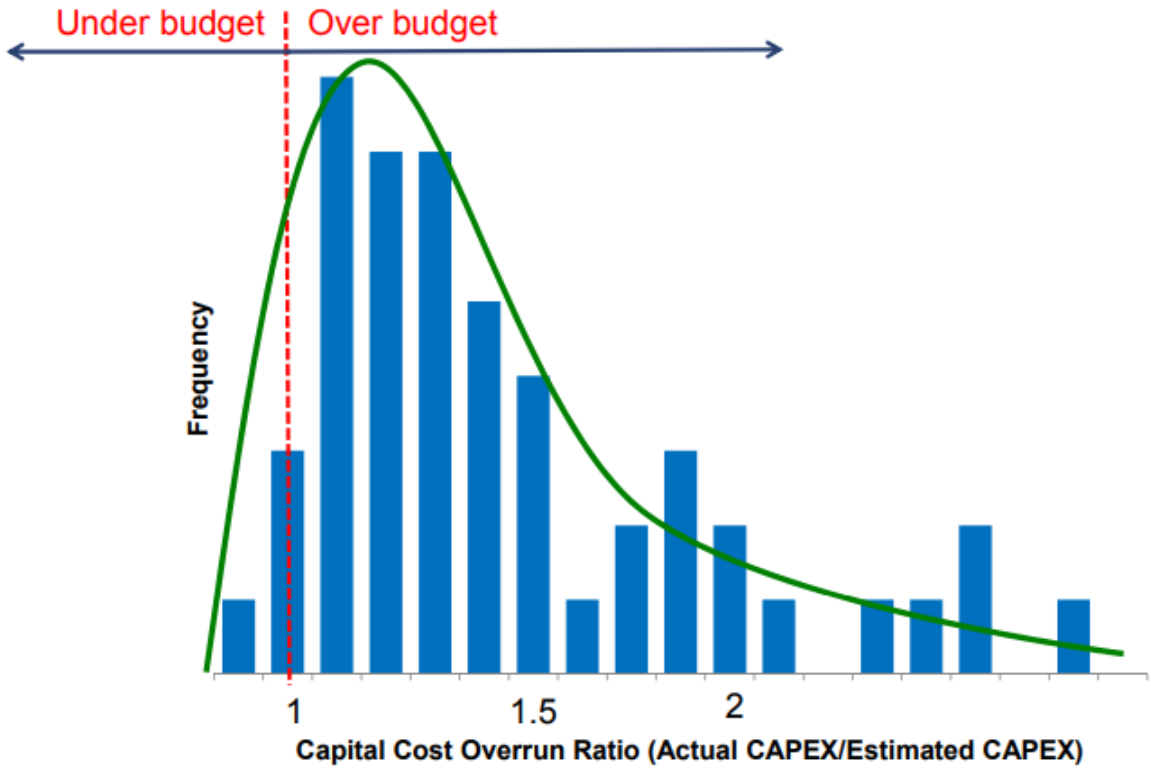
[15] Flyvbjerg (2014) *What you should know about megaprojects and why….,* p11, emphasis added.

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

OVER ESTIMATION IN THE MINING INDUSTRY

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".[17] 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.

Figure 1: Distribution of Capital Cost Overruns[18]



Haubrich also found that marginal projects, such as Wallarah 2, 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.

[17] 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

[18] Haubrich (2014), p22.

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.
>
> 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."[19]

COST OVER-RUNS AND REVENUE SHORTFALLS IN THE 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%.[20] Westney also quote Independent Project Analysis who found only 22% of large oil and gas projects were on time and on budget.[21] 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.[22]

[19] 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*

[20] 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

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

[22] 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.

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.[23]

[23] 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

Conclusion

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.*

Over and over again the estimated net benefits for the Wallarah 2 project have been revised down. Benefits were overstated and costs understated. There is no guarantee that the latest estimates are accurate, despite being a fraction of the original $1.6 billion estimate. Indeed, as the net present value of the project approaches zero, there is even stronger incentive for consultants and proponents to present the project in a positive light.

The outside view of this project is clear: surrounded by other failed greenfields mine proposals in NSW, the Wallarah 2 project already has the odds stacked against it. The world outlook for thermal coal is highly uncertain and approved supply abundant. The project is not in a strong competitive position.

The inside view is also bleak. It is a relatively small mine operating in a sensitive area. Costs are likely to be higher than many of its competitors. Assessments of net benefit have been continually revised down. Many points in each assessment are highly contestable.

Neither the inside view nor the outside view of the Wallarah 2 project is appealing. The PAC should refuse approval and provide long-overdue certainty for the Central Coast community.

Attachment 1: April 2017 submission to Second PAC Review

Introduction

The Wallarah 2 Coal Project (**Project**) proposes to produce 4 to 5 million tonnes per annum (**mtpa**) of thermal coal for export. The project is located on the Central Coast of NSW near Wyong. The proponent is Kores, a South Korean government owned corporation.

The Australia Institute welcomes the opportunity to make a submission to the April 2017 Planning Assessment Commission (**PAC**) consideration of the Project. We believe that all points raised in our September 2016 submission (provided as Attachment 1) on the Amended Development Application remain valid, as is our conclusion that the benefits of the project have been overstated and the costs understated.

In this submission we would like to bring several points to the attention of the PAC, points that have not been addressed in the Response to Submissions on the Amended Development Application,[24] the Peer Review of Economic Assessment,[25] or the Addendum Report.[26] These key points are:

- Financial viability of the project, including:
    - Operating costs reported;
    - Implications for net economic benefits; and
- Treatment of water issues in economic assessment of the project.

FINANCIAL VIABILITY

We point out in our submission to the Amended Development Application that the claimed operating costs of the Project in the economic assessment are very low. Our estimates are that the costs assumed in the economic assessment equate to $AUD55 (USD$39.6) per tonne. As mentioned in our submission, this would make the Project

[24] Hansen Bailey (2016) *Amendment to SSD-4974 – RTS2*, https://majorprojects.affinitylive.com/public/b6e3fbaa65628f29da7e27041ac62977/Wallarah%202%20Coal%20Project_Amended%20DA%20RTS%20Part%203.pdf

[25] Centre for International Economics (2017) *Peer review of economic assessment Wallarah 2 Coal Project*, https://majorprojects.affinitylive.com/public/27e2e38b9ebb348863a3e5f36d11a357/Wallarah%202%20-%20Economic%20Expert%20Review%20-%20Feb%202017.pdf

[26] Department of Planning and Environment (2017) ADDENDUM REPORT: STATE SIGNIFICANT DEVELOPMENT Wallarah 2 Coal Project (SSD 4974), https://majorprojects.affinitylive.com/public/5071f10a8e6f2582bd76a9c00a7f8725/2.%20Wallarah%202%20Coal%20Project%20SSD%204974%20-%20Addendum%20Report.pdf

one of the cheapest mines to operate in the world, a very surprising assumption for a relatively small, underground, greenfield mine in Australia, outside of the major mining areas.

This estimate of $AUD55 per tonne and the observation that it makes it one of the cheapest mines in the world to operate are not contested in any of the response documents:

- The Response to Submissions points out:
    - An EIS does not need to consider financial viability;
    - *"Economic impact assessment makes no comment on the financial viability or profitability of the project"*; and
    - Coal preparation costs are expected to be low and the Project is relatively close to port.
- The Peer Review of economic assessment makes no attempt to assess the veracity of operating costs, noting:

    The financial viability can impact on the profitability of the mine, impacting on the expected revenue from company taxes. The financial viability of a project could also has [sic] implications for who bears the rehabilitation costs of the project. (p27)

This is a statement of the obvious – financial viability and profitability are the same thing. They obviously have implications for any unmet rehabilitation costs. The Peer Review makes no consideration of whether the mine may be forced to delay or interrupt operations if costs have been understated and what this may mean for net benefits to the community.

The Department's Addendum Report erroneously says that in the Peer Review:

> *CIE gave specific consideration to the key points raised in the Australia Institute's submission including in relation to coal prices, company tax and the financial viability of the amended project. These were considered in the revised estimates of the benefits of the amended project provided by CIE. While CIE questioned some of the inputs to the CBA and the methods used, CIE concluded that the EIA is broadly consistent with the Economic Guidelines and would result in a net benefit to NSW.*

This is false. The CIE did not consider whether claimed operating costs were realistic, or whether the project is likely to be financially viable, or whether this would affect net benefits to NSW.

Our point is that operating costs appear heavily understated, giving a misleading impression of the Project's likely financial and economic position. The reason the proponent would do this is for corporate strategic purposes, as stated in our previous submissions. In our opinion, the Project is being pursued not because it is profitable, but for corporate strategic reasons, such as:

- Banking approval for potential future development.
- Approval would add to the sale value of the Project.
- Lack of approval would result in an asset write down, with implications for company balance sheets and the careers of the people responsible.

The ongoing uncertainty over the Project imposes costs on the community. People living with the uncertainty of a potential coal project impacting on their property value, business plans and water sources experience serious social, financial and psychological costs, not to mention the amount of time the ongoing assessment process requires of them.

In our view, the Project should be rejected on this basis.

WATER ISSUES

The potential effects of the Project on water resources have been hugely controversial. It is inappropriate for the economic assessment to include no detailed consideration of these impacts and to assume that all impacts will be offset by mitigation measures.

The Peer Review claims:

> *Based on the proponent's Response to Submissions (dated November 2016) and the recent responses by the NSW Government agencies, we understand that actions will be undertaken to mitigate impacts and that any residual impacts would not materially change the results of the CBA. (p23)*

A cursory examination of Agency Submissions shows this is not correct. The Department of Health submission states:

> *Our concern about impacts from the project on the Central Coast's drinking water supply remains (see 2013 submission)….It is important to consider what may be the impact on these supplies ie having a clear process for identifying*

whether a bore is affected by the project. Methods to mitigate these potential impacts are essential.[27]

The Department of Primary Industries submission states:

> *DPI Water requests that the proponent provide updated information on water licensing for the project, including reference to the new and amended water sharing plans and information on how the predicted take of groundwater within these water sources will be licensed.*
>
> *DPI Water also requests that the proponent provide information on the water management components of the project as a whole, including any changes that may affect the original Surface Water and Groundwater Impact Assessments, the groundwater monitoring program (including baseline data) and the proposed water management arrangements for the project.*[28]

Central Coast Council commissioned additional engineering consulting reports and wrote in their submission:

> *The EIS underestimates the potential impact on groundwater. The conclusions reached in the EIS are primarily the result of the input parameters adopted for their numerical modelling. These input parameters are primarily driven by the unsuitable method by which the makeup of the rock and its defects have been sampled and are not consistent with available data or modelling within the EIS. Further, the modelling assumes recharge of the water system based on average climatic conditions.*

The economic peer review is wrong to imply that government agencies are satisfied with all water management plans. The CIE are wrong to then carry this into their economic assessment as an assumption that impacts to groundwater will have zero cost and that impacts to surface water and water supplies will have a maximum cost of $1 million. This is a very optimistic approach and one that overlooks the potential impacts of the Project on water – the very issue at the centre of much of the controversy around the Project.

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[27] NSW Health (2016) https://majorprojects.affinitylive.com/public/25428161cb2ed1c68a7cb88779a37223/Wallarah%202%20Coal%20Project_Amendment%20to%20DA_CCPHU%20Health.pdf

[28] NSW Department of Primary Industries (2016) https://majorprojects.affinitylive.com/public/15918488d8f9cc187573bf569ce9e546/Wallarah%202%20Coal%20Project_Amendment%20to%20DA_Department%20of%20Primary%20Industries.pdf

CONCLUSION

Our conclusion remains that the Project is unlikely to be financially viable. Its costs have been underestimated and its benefits overestimated in the economic assessment of the amended project, as in the two previous iterations. This is not seriously contested in the response to submissions or the economic peer review.

If approved the Project is likely to stall, with ongoing uncertainty over the Project imposing costs on the community.

If the Project does proceed it could impose major costs on the community through water impacts that have not been seriously assessed in any of the many economic reports. If drinking water or aquifers are damaged by the project and engineering works required to address these impacts, costs could easily exceed the $200 million estimated royalty benefit, an optimistic estimate that assumes the Project experiences no delays, periods in care and maintenance. This estimate also assumes that the Project can compete on world coal markets for 28 years, as the world moves away from thermal coal.

Attachment 2: September 2016 submission on Amended Development Application

The Australia Institute
Research that matters.

Wallarah 2 Coal Project

Submission on Amended Development Application

Rod Campbell
September 2016

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Level 5, 131 City Walk
Canberra, ACT 2601
Tel: (02) 61300530
Email: mail@tai.org.au
Website: www.tai.org.au

Introduction

The Wallarah 2 coal project proposes to produce 4 to 5 million tonnes per annum (mtpa) of thermal coal for export. The project is located on the Central Coast of NSW near Wyong. The proponent is Kores, a South Korean government owned corporation.

The Wallarah project is controversial and has faced community opposition as the area is not a major mining area, has sensitive water resources and is near Aboriginal land. Then state opposition leader Barry O'Farrell pledged to stop the project if elected and famously wore a "water not coal" t-shirt on a visit to the area, a pledge he reversed after taking office. O'Farrell's premiership ended partly due to a bottle of wine sent to him by lobbyist Nick Di Girolamo, a lobbyist for Kores and other interests.[29]

The Australia Institute welcomes the opportunity to make a submission on the Amended Development Application of the Wallarah 2 Coal Project. Our submission relates mainly to APPENDIX J Economic Impact Assessment of the application, by consultants Gillespie Economics.

The economic assessment is flawed. It overstates the benefits of the project while understating its costs. While the economic assessment concludes the Wallarah 2 project would bring considerable net economic benefits, in fact the project is unlikely to be financially viable and would likely result in a net cost to the NSW community.

PAST ASSESSMENTS OF WALLARAH 2 PROJECT

The last economic assessment of the project was described by the Planning Assessment Commission as "not credible":

> In considering the merits of the project as a whole the Commission has found that the benefits claimed for the project by the Proponent (and largely adopted in the Department's Preliminary Assessment Report) are not credible.
>
> …
>
> The Commission's view is that the PAR's acceptance of the benefits of the project as presented by the Proponent is simply not credible. No attempt has been made to address the specific points raised by the critics of the economics

[29] Nichols (2014) *Barry O'Farrell 'dropped in' on meeting attended by Nick Di Girolamo and Chris Hartcher*, http://www.smh.com.au/nsw/barry-ofarrell-dropped-in-on-meeting-attended-by-nick-di-girolamo-and-chris-hartcher-20140226-33i5u.html

> assessment, yet these points appear to be soundly argued and entirely plausible. It is not acceptable practice to gloss over this material with a few generalisations of the kind found on pp.48 and 50 of the PAR. [30]

Part of the PAC's concerns over economic assessment of this project relate to the large differences between the different assessments of it, all by the same consultant, Gillespie Economics. The first assessment of the project estimated:

> Overall the W2CP is estimated to have net benefits to the community of $1,519M and hence is desirable and justified from an economic efficiency perspective.[31]

Yet five years later, the same consultants, Gillespie Economics, evaluating the same mine, assuming the same production rate and an even higher coal price found:

> Overall, the Project is estimated to have net benefits to Australia of between $346M and $531M and hence is desirable and justified from an economic efficiency perspective.[32]

Three years later, readers are told:

> Overall, the Project is estimated to have net social benefits to NSW of $274M to $485M (present value at 7% discount rate) and hence relative to the 'without Project' scenario, is desirable and justified from an economic efficiency perspective.[33]

The huge differences in estimated net benefits are not adequately explained to readers. They relate largely to changes in scope. Gillespie Economics initially considered "the community" to include the South Korean government, while in the latest assessment has limited its scope to the community of NSW.

The Wallarah 2 project is not the only project to have experienced difficulties with assessment by Gillespie Economics:

- Gillespie's flawed assessment of the Warkworth Extension Project was a key contributor to the Land and Environment Court's decision to overturn that project's approval.

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[30] PAC (2014) *Wallarah 2 Coal Project Review Report*, http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=4974, page i and 65

[31] Gillespie Economics (2008) *Wallarah 2 Coal Project Benefit Cost Analysis*. p3

[32] Gillespie Economics (2013) *Wallarah 2 Coal Project - Appendix W Economic Impact Assessment*. p16

[33] Gillespie Economics (2016) *Wallarah 2 Coal Project Economic Impact Assessment.* p5

- Gillespie's assessment of the Ashton SE Open Cut project was abandoned by proponents Yancoal when that project was challenged in court.
- Gillespie's assessment of the Cobbora coal project estimated a net benefit of $2 billion. The hopelessly unviable project had to be abandoned by the proponents at a cost of tens of millions to the NSW taxpayer and the community of Dunedoo.[34]
- Gillespie's assessment of the T4 coal terminal estimated net benefits of $60 billion. This proved a huge overestimate, with a review commissioned by the PAC concluding "In our view, the assumptions adopted for the scenarios modelled by the Proponent are likely to present an optimistic view of the likely benefits to society arising from the Project.[35] The project looks unlikely to proceed.

There are many other examples of flawed analysis by this consultant. In fact it was Gillespie Economics' assessment of the earlier iterations of the Wallarah 2 project that sparked extensive reviews of NSW Government Guidelines on economic assessment:

> The Planning Minister, Pru Goward, said on Monday her department would commission ''separate expert economic analysis'' for all future applications for major mining projects.
>
> The announcement follows a report last week by the state's independent planning body, which slammed Ms Goward's department for uncritically accepting the proponent's claims about the benefits of the proposed Wallarah 2 mine north of Wyong.[36]

Given this background, it is surprising that the proponent persists with economic assessment by Gillespie Economics and that the Department of Planning and Environment accepts it.

[34] See Gillespie Economics (2012) *Cobbora Coal Project Economic Assessment*, and ABC (2015) *NSW Govt to sell Cobbora coal mine*, http://www.abc.net.au/news/2015-11-20/nsw-govt-to-sell-cobbora-coal-mine/6956274

[35] See Gillespie Economics (2012) *Port Waratah Coal Services Terminal 4 Project – Economic Assessment*, and CIE (2014) *Port Waratah Expansion T4 Review of Economic Analysis*.

[36] Mckenny and Whitbourn (2014) *Mining assessments to be beefed up after scathing review*, http://www.smh.com.au/nsw/mining-assessments-to-be-beefed-up-after-scathing-review-20140616-zs9sd.html

Economic assessment of Amended Development Application

FINANCIAL VIABILITY

The economic assessment estimates net production benefit of $585 million in present value terms. This suggests that the project has a strong financial case, a surprising conclusion given that many coal projects are being delayed or abandoned in NSW and beyond. Many coal companies are in financial distress, with several filing for bankruptcy protection in the USA, including former major company Peabody Energy. Existing coal mines are being traded at peppercorn prices in Australia and shares in operating mines can be bought cheaply. It is highly unlikely in this environment that a company would invest in a new, deep-underground greenfields thermal coal mine, particularly one with so much political and environmental controversy surrounding it.

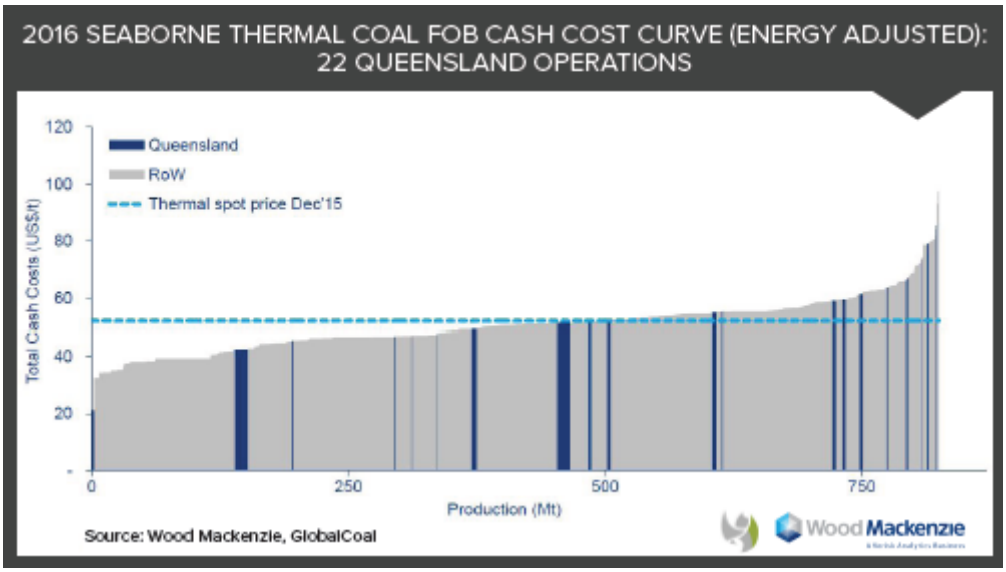
The key reason the economic assessment overestimates the financial viability of the project is its low figure for operating costs. Gillespie Economics estimate annual average operating costs at $192 million (p32), before royalties. Average annual production is estimated at 3.974 mtpa (p33). This equates to an average cost of production of $48 per tonne.

Gillespie Economics assume a coal price of just under $100 per tonne, discussed further below. Assuming most of the project's coal is liable for a royalty rate of 7%, this adds $7 to the per tonne cost of production, a total of $55.

To compare this to other coal mines in Australia and internationally, it needs to be converted to US dollars. At current exchange rates this is USD$42 per tonne, or at Gillespie Economics' favoured exchange rate, USD $39.6 per tonne.

This would mean the Wallarah 2 project is one of the cheapest mines to operate in the world, and certainly cheaper than almost every mine in Queensland. This can be seen in a chart recently released by the Queensland Resource Council, based on analysis by Wood MacKenzie, analysts favoured by Gillespie Economics:

Figure 1: Thermal coal cost curve



Source: Queensland Resource Council (2015) State of the sector.[37]

Figure 1 shows that there are very few mines in the world that can produce at $US40 per tonne. Unfortunately this chart does not show NSW mines, only Queensland mines in dark blue. Almost none of Queensland's coal mines can produce at the costs claimed by the proponents of Wallarah 2 and Gillespie Economics.

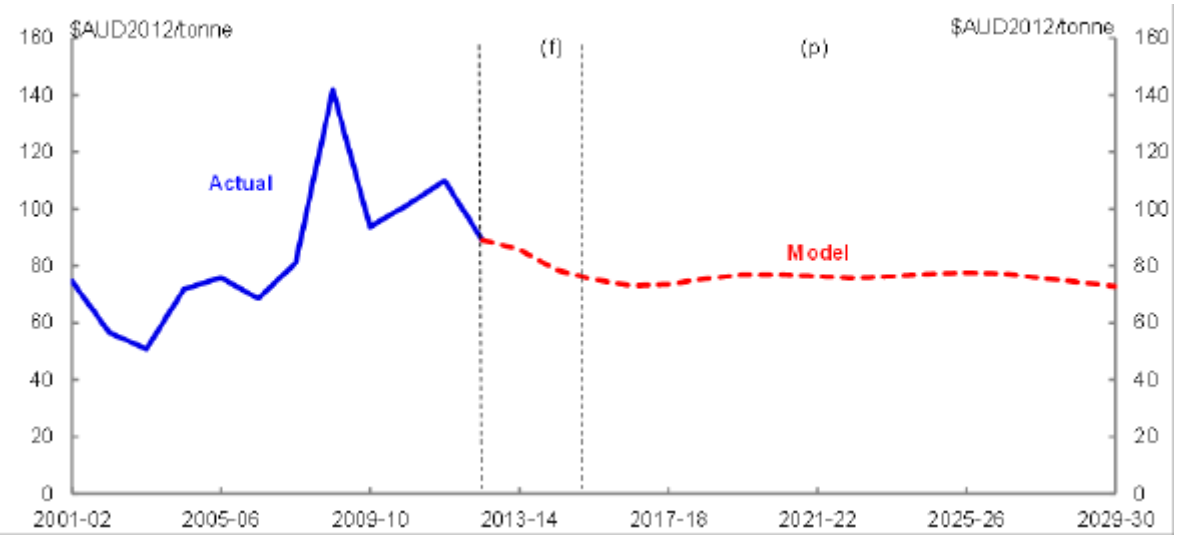
Given that Wallarah is a relatively small, fairly deep underground mine, and it would involve mining in a sensitive area, it is not credible to suggest that it will be able to operate at an average cost among the cheapest in the world. It seems likely that its average costs would be well above world averages, which would likely make the project unviable at current, or at Gillespie Economics', coal prices. Gillespie Economics sensitivity analysis does not test the sensitivity of net production benefits to a change in operating costs.

COAL PRICES

Gillespie Economics use a coal price of AUD$100 per tonne, substantially above the current AUD price of $88 per tonne, and far above the long term Treasury forecast of around $80 per tonne:

[37] https://www.qrc.org.au/_dbase_upl/State%20of%20the%20Sector_DecQtr15.pdf

Figure 2 Federal Treasury, Australian thermal coal real unit export price forecast



Source: Bullen, J., Kouparitsas, M. & Krolikowski, M., 2014. Long-run forecasts of Australia's terms of trade, Published by The Treasury, Commonwealth of Australia. Available at: http://www.treasury.gov.au/~/media/Treasury/Publications and Media/Publications/2014/Long run forecasts of Australia's terms of trade/Documents/PDF/long_run_tot.ashx.

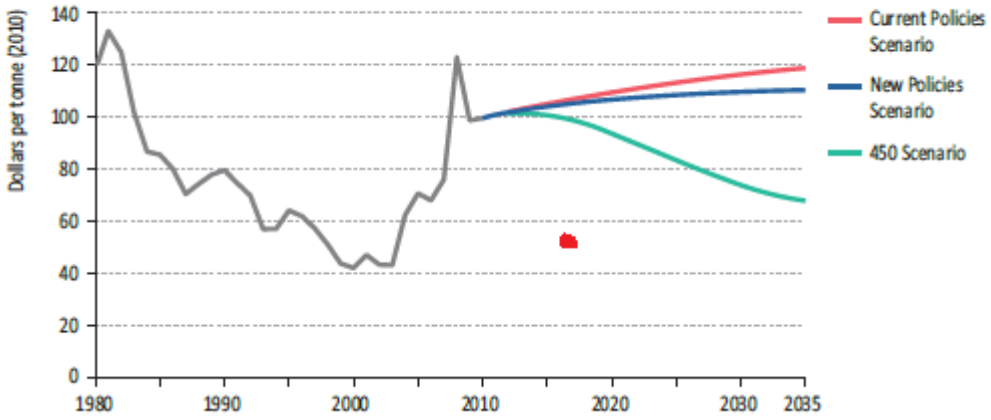
Gillespie Economics claim that "forecasts" (p34-35) from the International Energy Agency (IEA) support their use of higher coal prices and that these include consideration of new climate policies. However, the IEA does not make "forecasts" at all, as it makes clear:

> The [IEA's modelling] results however, do not constitute a forecast. New policies, as yet unformulated, will certainly be adopted over the course of the next twenty-five years. Indeed, one purpose in projecting the future is to demonstrate the need for their adoption.[38]

If the IEA's modelling of coal prices were to be treated as forecasts, they would not be very good ones. Consider the price 'forecasts' from the IEA's 2011 World Energy Outlook, shown in the Figure 3 below:

[38] IEA 2015, World Energy Outlook 2015, p34

Figure 3 2011 World Energy Outlook average OECD steam coal import price by scenario



Source: IEA 2011, World Energy Outlook, p363

In Figure 3 above, we have added a red spot at approximately where current coal prices are. We see that none of the IEA's scenarios 'forecast' that such an outcome was possible. The IEA's current coal price scenarios also seem optimistic.

Gillespie Economics also fail to conduct sensitivity testing around the coal price on net production benefits, giving decision makers no understanding of the financial outlook for the project. This is inappropriate given the current uncertainty around coal markets and the viability of many coal projects.

Decision makers should be aware that the project is unlikely to be financially viable currently or in the foreseeable future. If approved, it is unlikely to proceed as planned. In our opinion, the current approval is being pursued not because the project is profitable, but for corporate strategic reasons, such as:

- Banking approval for potential future development.
- Approval would add to the sale value of the project.
- Lack of approval would result in an asset write down, with implications for company balance sheets and the careers of the people responsible.

The ongoing uncertainty over the project imposes costs on the community. People living with the uncertainty of a potential coal project impacting on their property value, business plans and water sources experience serious social, financial and

psychological costs, not to mention the amount of time the ongoing assessment process requires of them. The project should be rejected on this basis.

TRANSMISSION LINES

The project lies under high voltage transmission lines, as noted in the EIS. A submission from the Division of Resources and Energy (DRE) notes:

> The infrastructure owner has indicated it may not be feasible to undermine the two towers in question, based on the subsidence predictions and current technology. If coal barriers are required to protect the towers due to their location a substantial volume of coal would need to be sterilised. The amount of coal sterilised by barriers necessary to protect the towers in question may significantly exceed the proponent's estimate in the EIS. It follows that the viability of a significant proportion of the proposed mine layout may be questionable.[39]

While the DRE notes that this occurs late in the project's life, this is still important for the financial viability of the project and potential timing of commencement. Gillespie Economics' assessment gives no understanding of how this issue could affect the viability of the project or its potential net benefit to the NSW community. Sensitivity analysis should be conducted to assess what volumes of coal might be affected, the timing of any sterilisation and how this affects the viability of the project. Potential costs to infrastructure owners, governments and power users should also be considered.

WATER ISSUES

The potential effects of the Wallarah 2 project on water resources have been hugely controversial. It is inappropriate for the economic assessment to include no detailed consideration of these impacts and to assume that all impacts will be offset by mitigation measures. Based on community submissions, it is clear that there is potential for considerable costs to the community from impacts on water supply, stream morphology, groundwater, flooding, biodiversity and water balance. These costs would be entirely borne by the NSW community. By failing to assess these costs it is likely the economic assessment understates the costs of the project.

[39] DRE (2016) *Wallarah 2 Coal Project Environmental Impact Statement Review*, https://majorprojects.affinitylive.com/public/ec0397d0b0c9b19da71b298e32ac5fe6/DRE.pdf

OTHER INDUSTRIES AND LANDHOLDERS

A key part of controversy around the Wallarah 2 project has been its potential impacts on land owned by the Darkinjung Local Aboriginal Land Council and the various developments existing and planned for this area. The economic assessment includes no consideration of costs that might be imposed on the Darkinjung in either the cost benefit analysis or the local effects analysis. This may serve to heavily understate the costs of the project at a local level.

COMPANY TAX

The economic assessment claims that $220 million in present value company tax will be paid by the proponents, over half the estimated benefit to Australia. There is no transparency around Gillespie Economics' calculation of this figure. Given the complexities involved in company tax payments, particularly with large companies with offshore entities, this is inappropriate and almost certainly serves to overestimate the benefits of the project. Mining companies have a huge array of ways to minimise company tax payments and this calculation should be shown in detail.

NON-MARKET VALUE OF EMPLOYMENT

It is important to understands what this value is. It refers to an amount of money that the community would be willing to pay to ensure that other people have jobs in a coal mine, over and above the wages that the mine workers receive. This value assumes that members of the public derive benefit from knowing someone else is working in a coal mine and they are willing to pay for that benefit.

That the public is willing to pay to subsidise some employment is not entirely surprising. We regularly subsidise Indigenous employment and employment in industries such as car manufacturing – situations, people and industries which for various reasons the public may value. Whether this value exists for a coal mine in sensitive catchment areas is debatable.

What is not debatable is that social value of unemployment is heavily overstated in the assessment of the Wallarah 2 project. The assessment assumes $186 million present value of this external benefit, some $620,000 per job. It seems highly unlikely that the public would be willing to pay such a large sum for employment in a well paid industry and one that tends to attract controversy around its environmental impacts. By comparison, Ford was receiving a subsidy of around $2800 per job per year until

recently, a subsidy that attracted searing criticism from many economists and politicians.

INPUT-OUTPUT ANALYSIS

The "Supplementary Local Effects Analysis" is based on thoroughly discredited input output modelling. It has been heavily criticised by the PAC, including in relation to the Wallarah 2 project. The Land and Environment Court dismissed this modelling as "inadequate".[40]

The Land and Environment Court's criticism was taken on board by another coal company, Yancoal. They had submitted an input-output study by the same authors as the earlier Warkworth assessment for initial planning approval.[41] Faced with more serious scrutiny in the Land and Environment Court, Yancoal discarded their input-output model and commissioned a GE modelling exercise from well-known consultants ACIL Allen.

ACIL Allen's analysis found that the Ashton project would result in a change in employment of just two jobs more than direct employment in the project. Director of ACIL Allen, Jerome Fahrer, said to the Land and Environment Court:

> [In] the Warkworth case input/output modelling was criticised by the chief judge and ... for good reason. Input/output modelling is fine for some purposes but it's not the best technique … for this kind of purpose [evaluating a coal mine]. The reason is that input/output modelling takes no account of the fact that there are limited productive resources [in the economy] principally people to be employed. So it always makes the amount of output, income, jobs, bigger than would likely be the case, unless you're in the Great Depression, or a very deep recession.[42]

Gillespie Economics continue to defend input output modelling and they are entitled to their opinion. We note that they are contradicted not only by their consulting peers at ACIL Allen and by the bench of the Land and Environment Court, but also by recent

[40] Preston, B. (2013). Judgement on Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Limited. Judgement in the Land and Environment Court, New South Wales. Retrieved from http://www.edo.org.au/edonsw/site/pdf/casesum/Warkworth_judgment.pdf

[41] HVRF. (2009). Ashton coal EIS Appendix 17: Social and Economic Environment. Prepared for Wells Environmental Services on behalf of Ashton Coal Operation

[42] See court transcripts of Hunter Environment Lobby Inc v Minister for Planning and Infrastructure in the Land and Environment Court of NSW, page 546.

Planning and Assessment Commission decisions, the ABS[43], the Productivity Commission[44] and many other economists.

CONCLUSION

The Wallarah 2 project is unlikely to be financially viable. Its costs have been underestimated and its benefits overestimated in the economic assessment of the amended project, as in the two previous iterations. Even if approved, it is unlikely to proceed as planned and deliver any benefits of royalties or jobs to the NSW community.

The ongoing uncertainty over the project imposes costs on the community. People living with the uncertainty of a potential coal project impacting on their property value, business plans and water sources experience serious social, financial and psychological costs, not to mention the amount of time the ongoing assessment process requires of them. The project should be rejected on this basis.

[43] ABS. (2011). 1367.0 - State and Territory Statistical Indicators, 2011 - Count of Businesses. Australian Bureau of Statistics website. Retrieved February 13, 2014, from http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by+Subject/1367.0~2011~Main+Features~Count+of+Businesses~2.24

[44] Gretton, P. (2013). On input-output tables: uses and abuses. Staff Research Note, Productivity Commission, Canberra. Retrieved from http://www.pc.gov.au/__data/assets/pdf_file/0008/128294/input-output-tables.pdf