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Russell Vale Colliery Underground Expansion Project – Submission to the Planning Assessment Commission Public Hearing

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[redacted]

Background

This report has been prepared in response to an expert brief (annexed) from the EDO NSW made on behalf of Illawarra Residents for Responsible Mining.

I have read and agree to be bound by the Expert Witness Code of Conduct as described in Division 2 of the Uniform Civil Procedure Rules 2005 (UCPR).

Summary

- Economic theory suggests that the social costs and benefits of any project should be assessed and that a project is efficient when the social benefits outweigh the costs.
- The proponent uses a 'minimum threshold approach', which is appropriate for a foreign owned company, and calculate that the benefits are $23 million while the costs are $0.15 million.
- In my opinion the method used to derive these numbers is inappropriate.
- First, environmental offsets cannot be used as an argument to ignore the social cost of environmental impacts. The social costs still need to be calculated and compared to the social benefits. Any compensation for environmental impacts (perhaps in the form of offsets) comes later and should be equivalent to the social costs of environmental impacts. The concept of value is conflated with that of offset cost in the Economic Assessment. It is appropriate to include mitigation costs as part of the operating and capital costs of the project because these costs stop the environmental impact from occurring. However, offsets are a different issue. The impact has occurred and the social cost of this impact needs to be calculated using standard environmental valuation methods.
- Second, the social costs of carbon emissions should not be reduced by 99% just because Australia's share in global GDP is 1% as argued in the Economic Assessment. This argument has no justification and goes against advice provided by the NSW Government, the U.S. Environmental Protection Authority and the economic literature, not to mention the author of the Economic Assessment in other mine proposals. A new estimate should be provided. Based on what the author of the Economic Assessment has suggested for the global social cost of carbon, the actual social cost to be considered for carbon emissions is AUD 15 million.
- Third, the social cost of the noise (and air) pollution needs to be calculated in comparison to the 'no mining' scenario which the proponent states is the only other feasible alternative. Mitigation costs to reduce noise impacts should be part of the capital and operating costs of the project but residual noise impacts over and above the 'no mining' scenario have a social cost and need to be calculated.
- The Commission should ignore the regional economic impact analysis which, while interesting, does not form part of the economic benefits of the project.
- The non-market employment benefits should be ignored and any value to the alternative use of the land should be deducted from the benefits.
- On the basis of these arguments, the AUD 23 million in royalties and the unquantified company tax revenue (less any value for the alternative use of the land) should be compared to the social costs of AUD 15 million for carbon emissions plus unquantified noise and air pollution, expected water quality and quantity losses and biodiversity impacts.

- With these considerations, it is debatable whether the social benefits will outweigh the social costs.
- This suggests the precautionary principle should continue to be applied and the UEP rejected.

1. Introduction – economics and the evaluation of mine expansion

Economics is concerned with the efficient allocation of resources. Economic resources such as land, labour and capital must be allocated in an economic system to particular industries and for particular products or services. As there are unlimited wants with regards to these goods and services, an *efficient* system allocates land, labour and capital to the goods and services most valued by society.

In the case of the Russell Vale Colliery, land around the pit top site and land subject to subsidence is being allocated along with the labour and financial capital needed to purchase and develop the technology and machinery and operate the colliery. Other resources are also allocated to the colliery such as surface and underground water resources.

To determine whether this allocation of resources is efficient, economic theory suggests that the costs and benefits of any project should be assessed and that a project is efficient when the benefits outweigh the costs. This is a fundamental principle of welfare economics. The practical tool of cost-benefit analysis has developed around this theory and is used throughout the world to assess government and private-sector projects, regulations and policies.

It is important to note, however, that economics is not concerned with profits, the financials of the firm, or individual returns. Economists are concerned with the social costs and benefits and attempt to find out if *society's* resources are being allocated correctly. Thus, rather than the private costs and benefits of the project to a company, the social costs and benefits must be considered.

This is important for mining projects because mining typically leads to what economists refer to as external costs. These are costs which spill over onto third parties; that is, other members of society that are not party to the selling or buying of the product or service being produced. For example, when looking at a colliery, the benefits chiefly accrue to the owners, suppliers and workers. Costs such as water, air and noise pollution are incurred by residents near the colliery, and those individuals concerned with the impacts on other species or natural ecosystems.

Economists stress that the private and social benefits and costs must all be considered for a project to be evaluated correctly and that the social benefits of a project must outweigh the social costs if it is to lead to an improvement in welfare. It is on this basis that I have evaluated the following documents

- Relevant sections of the PAC Review Report of 2nd April, 2015
- Relevant sections of the Response to PAC Review including the annexed 'Economic Assessment' of Feb 2015 and updated 'Economic Assessment' of June 2015

- Relevant sections of the Secretary's Addendum Report including the annexed Review of the cost-benefit analysis in the 'Economic Assessment'
- Environmental Impact Statement (EIS) Main Report of April 2015
- Illawarra Residents for Responsible Mining Submission to EIS
- Relevant sections of the environmental assessment submitted to the NSW Government including the Preferred Project Report, the Response to Submissions, Department of Planning and Environment Recommendation - Secretary's Preliminary Environmental Assessment Report, and the Department of Planning and Environment Recommendation - Recommended Instrument of Approval

In the main, I comment on the Economic Assessment provided by Gillespie Economics in its original and updated format. This document is extremely important in the process of evaluating the Underground Expansion Project (UEP) because the argument is made that the social benefits outweigh the social costs and the UEP is justifiable from an economic perspective. The approval of the UEP rests on this document.

The approach in the Economic Assessment is firstly to conduct a cost-benefit analysis (CBA) using the minimum threshold approach. In the minimum threshold approach, the analyst calculates all the benefits and costs except for the 'net producer surplus' which would require the calculation of operating and capital costs, finance costs, environmental mitigation costs and the like. The approach relies on the argument that the producer surplus must be positive given the companies willingness to support it. Other benefits such as royalties therefore provide a minimum threshold to compare costs against. In the case of a foreign-owned company, the minimum threshold approach is appropriate because any producer surplus does not flow to the people of NSW. The Economic Assessment indicates this is the case in section 2.3. In the minimum threshold approach, the royalties, company income tax economic benefit to existing landholders, workers and supplies are the benefits which must be compared to the costs – net environmental, social and transport-related costs and net public infrastructure costs (NSW Government, 2015). Note that the economic benefit to workers must be additional income workers receive compared to a normal level of income in alternative employment. Similarly any economic benefit to landholders or suppliers are additional compared to alternative uses or sales.

The approach taken in the Economic Assessment however, is to outline the benefits of the project in terms of the royalties, unquantified company tax, and non-market employment benefits and disregard the costs. The justification for the latter is that any environmental costs will be offset and, as outlined in section 8 of the EIS, this may occur by utilising the principles and mechanisms of the NSW Biobanking Scheme. The authors also provide a regional economic impact assessment where they discuss secondary effects of the employment and income. While interesting, these secondary effects are not part of the cost-benefit analysis and should not be considered when evaluating the worth of the UEP.

I would like the Commission to be aware of the fact that environmental offsets, used throughout the Economic Assessment and cost-benefit analysis, are a relatively new phenomenon and to my knowledge there has not been a formal treatment of them in the theory of cost-benefit analysis. How they are treated in cost-benefit analysis is an open book. The NSW Government (2015), through the draft Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals, and the Commission itself can determine how offsets are treated in the future and in regards to the UEP. In the next section, I argue that for this mine offsets are not treated correctly. The proponent needs to work out the value of environmental losses because, in contrast to the method used in the Economic Assessment, the cost of offsets does not measure the value of losses. In the other sections that follow, I discuss the determination of non-market employment benefits, the argument used to limit the greenhouse gas costs, the regional economic impact analysis, and the use of CBA and the precautionary principle when uncertainty exists over environmental impacts.

2. The Treatment of offsets

The argument is made in the Economic Assessment that because any social and environmental damages will be offset, the social and environmental impacts (including noise, air quality, ecology impacts, surface water and groundwater impacts, visual impacts and heritage values) do not need to be calculated and compared to the benefits of the project. For example, in paragraph 5 of section 2.1 of the Economic Assessment, Gillespie Economics states:

> *The estimated net production benefits of a project provides the threshold value that the non-quantified environmental, social and cultural impacts of a project (based on the assessments in the EIS), after mitigation, offset and compensation by the proponent, will need to exceed for them to outweigh the net production benefits.*

This is then repeated throughout section 2.4 and particularly in the following:

> *When environmental, social and cultural impacts are mitigated, offset or compensated to the extent where community wellbeing is insignificantly affected (i.e. costs are borne by the proponent), then no environmental, social or cultural economic costs should be included in the UEP BCA apart from the mitigation, compensation or offset costs.*

When discussing each of the social and environmental costs Gillespie Economics ends the section with a statement as follows:

These [social or environmental costs] would form part of the capital and operating costs of the Project. In the minimum threshold value framework adopted in this analysis, these costs would not be subtracted from the estimate of royalties but would reduce the unquantified level of company tax payable.

This idea that the social costs do not need to be calculated is appropriate when the environmental and social impacts have been avoided or mitigated. If the avoidance or mitigation costs actually remove or reduce the social and environmental impact of the UEP, they would form part of the operating or capital costs. As long as the environmental impacts never happen, the only cost that needs to be considered are the operating and capital costs of mitigation. However, 'offsets' and 'compensation' are a different concept because there has been a social or environmental impact.[1]

In a CBA, economists are attempting to determine whether the winners from a project can theoretically compensate all the losers. For example, if there are only two people, A and B, affected by a project and A wins the utility-equivalent of $100 while B loses the utility-equivalent of $90 the cost-benefit test has been satisfied (+$10) whether or not A ever compensates B for the loss. This is a 'potential' improvement in welfare but not an actual one because one person has been made worse off. However, it is enough to pass the cost-benefit test under this method (which I will refer to as method 1). The distributional issues are assumed to be dealt with through other mechanisms under method 1 so that, potentially, both parties win or at least no one is made worse off.

Alternatively, in this simple example, an equivalent method (method 2) for the CBA is to perform the compensation upfront and then perform the CBA. If A pays B $90, A receives net surplus of $10 and B receives or loses $0. The CBA would lead to the same outcome; benefits exceed costs by $10.

The equivalence of these two methods is being relied upon by Gillespie Economics in the approach they have taken in the Economic Assessment. Instead of applying method 1 and calculating the winner's benefit and the losses to other individuals by calculating the value of the environmental impact (social cost), they state that they will compensate the losers by purchasing offsets. Therefore, they contend, there will be no losers as with method 2 and they only need to calculate the benefits and ensure these are greater than any uncompensated or offset environmental costs (essentially only the greenhouse gas costs).

There is an important difference between the simple example above, where the two methods are equivalent, and the use of offsets in mining projects. In the simple example,

[1] The NSW Government (2012) guidelines do not discuss offsets. The new draft Guidelines do include a statement about offsets on page 35 which follows a similar approach to Gillespie Economics (NSW Government, 2015). They include offset programs in the category of 'management strategies' and point out that it is not appropriate to include the value of environmental impacts that will be mitigated or managed. This simply illustrates the power of precedence and the lack of formal treatment of offsets in CBAs. It is not the definitive answer on the treatment of offsets.

person B's losses of $90 have to be interpreted as a monetary equivalent of B's welfare or utility loss. As such, the losses have to be interpreted as B's 'willingness to pay' to avoid the loss. It is B's utility that is being negatively affected by the project and B indicates that he or she would be willing to pay $90 to avoid the loss. This does not mean B will have to pay $90. It is just how economists interpret welfare gains and losses. Willingness to pay is fundamental to welfare economics and CBA. Note the equivalence of what B was set to lose and the compensation. Both the loss and the compensation are utility impacts expressed in monetary, willingness-to-pay terms. Note also that is was B's own assertion that he or she would lose $90 worth of utility that determined both the outcome of the CBA and the extent of the compensation.

The treatment of offsets in CBA should be viewed as compensation similar to the simple example above and as such could be either performed after the calculation of costs and benefits (method 1) or beforehand and therefore reduce the costs and net benefits (method 2). However, the CBA outcome should be equivalent. In contrast there is no equivalency under the approach used by Gillespie Economics and this is because the concept of 'value' is being conflated with that of 'cost'.

Applying method 1, the benefits of the project, after avoidance and mitigation costs, would be compared to the social cost (value) of the remaining environmental losses. The losses include increased noise and air pollution compared to the no-mining base case, the risks to upland swamps, the degradation (quantity and quality) of surface water and ground water and so on. To value these losses, environmental economists apply very similar methods to those described above for determining B's $90 welfare loss. Non-market valuation principles determine the value of these losses through stated or revealed preference methods. For example, the 'contingent valuation method' actually asks people what they would be willing to pay to avoid an environmental damage or for an environmental improvement. Once the value of these losses has been determined, compared to the benefits and the project is shown to be beneficial, compensation for the losers can be discussed. However, note that as with the simple example above, the extent of the compensation depends on the losers' own value of the losses.

Gillespie Economics attempt to apply the method 2. They essentially assume that all the losers have been compensated because of the offsets and they only need to consider the benefits. However, the resulting cost-benefit test will not be equivalent to the result under method 1 as it should be. This is because the 'value' of the environmental impacts have not been determined under the Gillespie Economics method. The authors have conflated the idea of 'value' with that of 'cost', in this case 'offset cost'. They assume that because the offsets cost a certain amount, this is the value of the losses to the people of NSW. However, there is no relation between the value of the environmental losses and the offset costs. Thus, rather than providing B with $90, they may be providing B with $40 or less or more. It is impossible to tell because the value of the losses has not been calculated.

The lack of equivalency can be seen by holding the benefit constant at $23 million and considering the two methods. If the value of the environmental impacts are determined through stated or revealed valuation approaches, the losses may turn out to be, say, $20 million. The cost-benefit test would indicate a net gain of $3 million and then the analyst may move on to discuss the compensation required. If the second method was used, the offset cost is not tied to the actual value of the environmental losses. Using $5 million as an example of the cost of offsets to replace the environmental assets lost, the cost-benefit test would indicate a net gain of $18 million (that is, net benefits or $18 million and costs of $0).[2] Thus, because the two methods do not lead to the same outcome, there is a problem with the approach and the problem lies with assumption that the offset costs is equivalent to the value of the losses.

It is obvious, of course, why Gillespie Economics have come to this approach. They assume that because the physical impact (say the degradation of two unique upland swamps) has been identically offset (by the improvement of two degraded, unique upland swamps) then the values of the losses must be equal to the value of the compensation.[3] But this is simply not justifiable. The physical replacement of an environmental asset with another could be part of the compensation for the loss but it will not be the whole compensation required. To use a recent international example, the death of Cecil the lion in Zimbabwe cannot be 'offset' by the mere physical replication of a new lion in the Hwange National Park. The value of Cecil the lion is not equivalent to the cost of his replacement even though the physical replacement is almost identical.

An economist might also indicate that where offsets are 'costed' using an offset market such as the NSW Biobanking scheme, the price of offsets should reflect the marginal social value of biodiversity. In this case, the loss of two upland swamps reduces the supply of the biodiversity 'commodity' and purchasing offsets to replace it will increase demand for credits, raise their price and as such the market price reflects the value of the biodiversity loss or what is referred to as the 'shadow price' of biodiversity – that is, its true marginal social value. This argument is false because of two very important reasons. First, such an argument relies on an economy characterised by perfect competition (no market power) in every single market including the biodiversity market, perfect information (no uncertainty) and zero transaction costs. This is not the case and, in particular, the losers from the UEP do not participate in the biodiversity offset market so their preferences for swamps and other environmental assets do not affect the price of offsets. Second, even if these conditions did apply, there are so many commodities associated with biodiversity (from different characteristics of habitats to different ecosystem services) that there would need to be many

[2] In addition, the $5 million spent on offsets may not provide %5 million in value. It could provide les or more. Cost is not equivalent to value.

[3] Gillespie Economics essentially concede this point because they state that they do not need to consider environmental costs when offsets occur and "community wellbeing is insignificantly affected". That is, as long as the offset is equivalent to the value of the environmental asset to the community then method 2 above is being applied. As mentioned, this is impossible to tell without calculating the cost to the community.

markets for each of the different 'commodities' that swamps, groundwater, surface water, and biodiversity provide.

In summary, the Economic Assessment and CBA has not determined whether the project is worthwhile from an economic perspective. The environmental losses associated with the UEP and mine (in comparison to the 'no mine' situation) would need to be calculated. This is not an easy task but neither is it that onerous. There are many values in the literature and standards applied by governments (including the NSW Government) all around the world in terms of the costs of increased noise pollution, air pollution and other standard environmental impacts.[4] The biodiversity and upland swamp impacts are harder but estimates can be made or an indicator can be given that these costs have not been monetised and need to be considered by the Commission as a cost of the UEP. In addition, the value of environmental losses would need to consider the uncertainty involved, as indicated in the Secretaries addendum report (p. iii), and determine the risks associated with the UEP given the existing mine-related developments; that is, the linkages between the upcoming environmental impacts and the existing impacts need to be explored.

3. The alternative use of the land

NSW guidelines for the conduct of CBA indicate that the benefit (in this case royalties and company tax) must be net of the value of the land in its alternative use and residential amenity foregone (NSW Government, 2012, pp. 5, 11, 13). The alternative use of the land in many mining projects is agricultural activities which is not the case for the land set aside for the Russell Vale Colliery. However, there is an alternative use of the land which should be discussed. It may be the case that the best alternative use has a negligible value. For example, the best alternative use may be the base case of no mining and this is discussed on page 30 of the Environmental Impact Statement as the 'feasible alternative'. If this is the best alternative use of the land then the cost-benefit analysis has been performed correctly. However, if there are other alternatives such as residential housing development at the pit top site then the benefits have been overstated. The benefits should be net of the benefits in its alternative use. Of course, if a foreign owned company owns the land the people of NSW would not benefit from the sale of the land for development. However, the people of NSW would benefit from the producer, worker, and supplier surpluses generated from the development and the land taxes and company taxes. The cost benefit analysis should discuss the alternative use of the land.

4. Non-market employment benefits should not be included

[4] For example, see NSW Government (2015).

The case is made in section 2.4 of the Economic Assessment that non-market employment benefits should be included as a benefit of the project. The argument is made that people in communities value the fact that other people have gainful employment. Thus, there is an additional value to the mine that can be calculated using the contingent valuation methodology most commonly used in economics to value environmental impacts. The author's cite Portney's (1994) seminal article on contingent valuation analysis (CVA).

The vast majority of Portney's article relates to the importance of CVA for determining the non-market value of environmental assets, air quality, enhanced workplace health and safety and the like. Portney does briefly mention on page 13 the idea that people may derive satisfaction (receive a value) from knowing that refineries or mining provides well-paying jobs. However, this idea has not been developed in the economics academic literature as far as I know and for good reason.

First, following CBA guidelines, the value would only relate to the additional income that workers receive in mining over and above their income in alternative employment. It is not a case of working in the mine or bust. Employment will be gained elsewhere in the economy if it is not available in the mine.

Second, if such an analysis of non-market employment benefits was allowed to form the basis of mining benefits, it opens up a can of worms because people receive non-market benefits for a whole host of reasons. For example, there is a considerable movement behind the idea that coal should be left in the ground. The people behind this movement derive non-market benefits from people not working in the mine and such an analysis would have to be performed if the non-market benefits of employment were considered as relevant. In addition, if everyone in NSW values the fact that everyone else in NSW is employed, the value would exceed the total income of the State and this is nonsensical. Value equates with willingness to pay as mentioned above. Thus, value can never exceed the total income of a region.

Third, working out the non-market benefit of employment in the mine is simply not part of the NSW guidelines on CBA (NSW Government, 2012). What is a part of the guidelines is an estimation of the non-market value of environmental costs, perhaps by using CVA. However, this has not been attempted in the CBA.

Finally, the figures cited in the section titled "Employment" in section 2.4 are not robust. There are very different estimations of the value per worker. This relates to the fact that Portney's suggestion has not been developed by economists. A great deal of exploration would need to be done to determine the correct format for a CVA for these purposes. This exploration would be needed to ensure that biases are not prevalent in the results. For example, people will tend to conflate the employment of miners with employment in the economy more generally when they state their non-market value of employment.

For all these reasons, the Commission should ignore the section on non-market employment benefits.

5. Carbon emission costs

The greenhouse gasses generated by the mine are valued using a price of AUD 23/tonne of CO_2-e which represents the social cost of carbon emissions. This leads to a cost estimate of AUD 15 million once discounting has been applied. However, this figure is reduced by 99% because Australia's share of global GDP is 1%. This method is not legitimate and should be ignored by the Commission.

The NSW Government (2012, p. 9) guidelines note that carbon emissions are the major exception to the rule that a CBA should consider only the benefits and costs to NSW. Unlike other environmental impacts, carbon emissions affect people outside the local and regional area. This implies that the entire social cost must be considered. The US Environmental Protection Agency and other reputable agencies use the full global cost of carbon when evaluating projects and policies (EPA, 2015). The draft Guidelines (NSW Government, 2015) also discuss the US Environmental Protection Agency estimates of the social cost of carbon and one of the methods proposed for estimating the economic cost of carbon emissions is to use the conservative figure associated with the EPA's estimates. This is USD 12/tonne (AUD 16.4/tonne) for 2015 and USD 13/tonne for 2020. However, the draft Guidelines also discuss using two other less numbers, the more conservative European price and the less conservative AUD 29/tonne carbon price estimated in the Australian Treasury's "Strong growth, low pollution: modelling a carbon price". Also note that the draft Guidelines do not discuss limiting the cost aspect of the greenhouse emissions based on a country's share of GDP. Finally, the value used most commonly in the literature is the mean value determined by Tol's (2005) meta-analysis of the social cost of greenhouse emissions which is USD 25.3/t CO_2-e and I note that Gillespie Economics uses a similar value in other CBAs for mine expansions (Gillespie Economics, n.d.). If the full global social cost of AUD 23/t CO_2-e was used, the social carbon cost would be AUD 15 million once discounting was applied. This greatly diminishes the net benefit as estimated in the CBA and the Commission should disregard the method used by Gillespie Economics to limit the social cost to AUD 0.15 million.

6. Regional economic impact analysis

Although the authors do not directly use the employment numbers in estimating the net social benefits, they are included in the Economic Assessment and the summary of socio-economic benefits on page 234 of the Environmental Impact Statement. The employment figures are included along with royalties and the now quantified (but unexplained) tax revenue.

Following the NSW Government (2012, p. 4) guidelines, the employment of workers in the mine and especially the indirect (multiplier) effects are not to be included in a CBA. The reason is that mine workers have alternative employment. Again, it is not a situation of the work in the mine or bust. What can be included in a CBA is the difference between the mine wage and the wage in alternative employment. However, even then, the indirect effects of this additional income should not be considered and for good reason. If the indirect employment is considered this again opens up a can of worms. For example, the indirect effect of coal production would also need to be considered. This includes the emissions that occur when coal is burned. Obviously, and again following the NSW Government (2012, p. 9) guidelines, "it is not appropriate to examine only some types of impacts in isolation".

The Commission should disregard the employment and flow-on production impacts. They are not relevant for the Economic Assessment.

7. Noise impacts

The noise impacts of the mine appear to be a long term and ongoing issue as emphasised in the PAC Review Report, pages 37-41. The Economic Assessment does not acknowledge these issues. As discussed in section 2 above, the noise impacts are passed over with the statement that noise management costs (which include 'management liabilities') are part of the capital and operating costs and do not need to be considered in the minimum threshold analysis.

Part of the issue with the noise debate is whether the local area can be classed as the 'suburban/industrial interface' or 'suburban'. The Department of Planning and Environment argues for the former but the PAC Review Report notes that the mine was not in operation from 1996-2004 and was not expected to reopen. Moreover, I argue here that from a CBA perspective, the relevant position to compare the noise impacts is the 'no mining' scenario. This is because the proponent has stated that the mine will cease operation if the UEP is not approved. From a CBA perspective, the project must be compared to the base-case for both the benefits and costs. If the benefits of the UEP are compared to the situation where the mine is closed, the costs must also be compared to this 'no mining' scenario. In this case it seems most appropriate to use the classification of 'suburban'.

If the 'suburban' classification is used, it is clear that the Russell Vale Colliery exceeds the acceptable and in many cases the recommended maximum Amenity Criteria. This is a classic negative externality that must be calculated to assess the economic efficiency of the proposal. The proponent can do everything required by the Commission, Department and EPA to mitigate the noise and these mitigation costs should be considered as part of the capital or operating costs of the project. However, the residual increased noise, in comparison to the 'no mining' scenario still represents a social cost to be compared to the benefits of the mine. The proponent may also choose to compensate locals but this must be determined prior to the approval of the UEP. Assuming the compensation is equal to the local resident's willingness to pay to avoid the noise damage, these costs can also be included in the capital or operating costs. Once again however, mitigation and management costs are not equal to the social cost of noise so the latter still must be determined to prove the economic efficiency of the project.

8. Conclusion

On the basis of the arguments above, the AUD 23 million in royalties and the undocumented company tax revenue should be compared to the social costs to determine the economic worth of the project. In the Economic Assessment, the social costs are stated as being as low is AUD 0.15 million. However, it has been argued that this figure grossly undervalues the social costs.

First, the argument that the cost of offsets is equivalent to the social environmental cost of the project on upland swamps, biodiversity, water quality and quantity cannot be supported from an economic perspective. Thus, these social costs need to be determined along standard environmental economic lines. Any compensation for these impacts would have to be equal to the estimated social costs for the argument used in the Economic Assessment to be applicable. That is, for the economic assessment to ignore the social costs, the compensation would have to be equal to the social costs.

Second, the social costs of carbon emissions should not be reduced by 99% just because Australia's share in global GDP is 1% as argued in the Economic Assessment. This argument has no justification and goes against advice provided by the NSW Government, the US EPA and the economic literature, not to mention the author of the Economic Assessment in other mine proposals. A new estimate should be provided and based on what the author of the Economic Assessment has suggested, the actual social cost to be considered for carbon emissions is AUD 15 million.

Third, the social cost of the noise (and air) pollution needs to be calculated in comparison to the 'no mining' scenario which the proponent states is the only other feasible alternative. Mitigation costs to reduce noise impacts should be part of the capital and operating costs of the project but residual noise impacts over and above the 'no mining; scenario have a social cost and need to be calculated.

In addition, the Commission should ignore the regional economic impact analysis which, while interesting, do not form part of the economic benefits of the project. Finally, the non-market employment benefits should be ignored and any value to the alternative use of the land should be deducted from the benefits.

With these considerations, it is arguable whether the social benefits will outweigh the social costs. Even if the benefits did outweigh the costs by a small margin, there is still the issue of uncertainty. A CBA cannot take into account uncertainty because the impacts are unknown. When uncertainty is present, and particularly when the potential impacts are large and benefit of following the CBA approach is small, the precautionary principle suggests that the proposal should not be approved, at least until such uncertainties can be removed or the costs of the uncertain event can be shown to be less than first thought. Alternatively, the benefits of the project to the people of NSW may be shown to be far greater than the social costs which would allow the Commission to ignore the precautionary principle. As it stands, the Economic Assessment has not shown this to be the case.

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Appendix A – Neil Perry's Qualifications and Experience

I am a Research Lecturer in Corporate Social Responsibility and Sustainability in the School of Business at the [redacted] where I have been employed since 2011. Previously, I held an Associate Professor position at [redacted] in Pennsylvania, USA (2004-2010), a Lecturer position at [redacted] (1997-2002) and a tutoring position at the [redacted]. I attained my PhD in Economics from [redacted] in 2006 and I have also graduated with a Master of Commerce (with Honours) [redacted], a Graduate Diploma in Advanced Economics [redacted] and Bachelor of Business [redacted]

My speciality is Environmental and Natural Resource Economics and I have published extensively in the field in international journals such as *Ecological Economics*, the *Journal of Economic Perspectives*, and *Wildlife Research* as well as in edited volumes published by respected publishers such as the Oxford University Press. I have 17 years of experience analysing environmental policy and the utilisation of natural resources in Australia, the USA and globally. I have led cost-benefit studies and carbon footprinting exercises in U.S. colleges and municipalities, served on the executive committee of the Pennsylvania Environmental Resource Consortium and performed economic evaluations of environmental policy for the Union of Concerned Scientists.

Staff profile:

[redacted]

Russell Vale 2nd PAC Review

Megan Kessler [[redacted]
Sent: Thursday, 26 November 2015 11:12 AM
To: [redacted]
Cc: [redacted]

Dear Neil,

Thank you for agreeing to review the documentation for the Russell Vale Colliery 2nd PAC Review. My apologies for the delay in getting this information to you. As per your original expert brief dated 28 January 2015, we request your advice on the economic aspects of these documents.

To assist your review, I provide hyperlinks to what we consider to be the most relevant documents below. Full project documentation is available at: http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=3448. We note that there are some very large documents that need to be downloaded. Please let us know if you would like us to post you a memory stick with the project documents.

The 2nd PAC Review Hearing is scheduled to begin at 1pm on Tuesday 8 December 2015. As such, we'd appreciate it if you could provide your advice by 9am **Monday 7 December 2015**. We request that you provide a written report that our clients can use to inform their own submission to the PAC and provide to the PAC for their consideration. If you are able to attend the PAC meeting you must register as an individual before 1 pm on 4 December 2015, by phoning (02) 9383 2112 or emailing pac@pac.nsw.gov.au with your name and phone number so they can confirm your registration. Please advise us if you are able to attend the PAC Hearing.

If you have any questions or would like to discuss this matter further, please contact me or the solicitor responsible for this matter, Sue Higginson on ph [redacted] or by return email. Please include Sue in all email correspondence.

Thank you again for your advice on this matter,
Megan

PROJECT DOCUMENTATION

PAC Review Report
Main Report *(4MB)*
Executive Summary (pp i-v)
Socio-economic benefits and impacts (pp 33-36)
Conclusions and Recommendations (pp 52-54)

Response to PAC Review
Response to the Public Hearing *(29MB)*
Economic assessment (p 24 of 284)
Economic modelling (pp 31-35 of 284)
Economic Assessment Feb 2015 (pp 271-284 of 284)
Response to PAC Review Report Part 1 *(10MB)*
Socio-Economic (pp 6-7 of 109)
Economic Assessment June 2015(pp 27-41 of 109)

Secretary's Addendum Report
Main Report *(1MB)*
Executive Summary (pp3-4 of 47)
Integrated Risk Assessment and Panel (pp 9-11 of 47)
Socio-economic (pp 20-21 of 47)
Appendices
I - Review of CBA

Megan Kessler
Scientific Director

Megan Kessler | Scientific Director | EDO NSW

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[redacted]

28 January 2015

Doctor Neil Perry
Research Lectureship - Corporate Social Responsibility & Sustainability
Economics, Finance and Property
University of Western Sydney

By email: [redacted]

Dear Neil,

Russell Vale Colliery Underground Expansion Project - Planning Assessment Commission Review

We act for Illawarra Residents for Responsible Mining (**IRRM**) in relation to the proposed Russell Vale Colliery Underground Expansion Project (**Russell Vale Project**) owned by Wollongong Coal Pty Ltd (**Wollongong Coal**). Wollongong Coal is proposing to expand its longwall mining operations to the north west to extract 4.7 million tonnes (**Mt**) of ROM coal over a project life of 5 years. The proposal involves the extraction of coal from eight longwalls and the continued operation of the mine's surface facilities site. The proposal would also consolidate the approved mining operations, together with the Russell Vale Project, into one integrated project approval. Our client is concerned about any environmental impacts arising from the proposal.

On behalf of IRRM, we wish to retain your services to provide independent expert advice to review the environmental assessment documentation for the full Russell Vale Project. Specifically, we brief you to:

1. prepare a written review of the relevant sections of the Environmental Impact Statement (**EIS**), Preferred Project Report and Response to Submission (**RTS**), Residual Matters Report, relevant Peer Reviews, DPE Secretary's Preliminary Environmental Assessment Report (**Secretary's Report**) and Recommended Conditions of Consent (**Conditions**); and
2. subject to your findings and availability, to present the results of your review to a Planning Assessment Commission (**PAC**) public hearing for this projects or assist the community to prepare a presentation on your findings.

Background

The EIS for the Russell Vale Project was on public exhibition between February and April 2013. Wollongong Coal prepared a Preferred Project Report and response to the issues raised during the exhibition periods and a response to residual issues raised by Government departments who were given the opportunity to review the RTS. These documents are available on the Major Projects website of the DPE. The DPE has recommended that the Russell Vale Project be approved and has prepared a Secretary's Report and recommended Conditions for any approval.

The Project has now been referred to the PAC to carry out a review. The Terms of Reference for the PAC Review are:

1. *Carry out a review of the Russell Vale Colliery Underground Expansion Project, and:*
    a) *consider the EA for the project, the issues raised in the submissions, the formal response to submissions, the Preferred Project Report, the Residuals Matter Report, the Department of Planning & Environment's preliminary assessment report of the project, and any other relevant information provided on the project to the Commission during the course of the review;*
    b) *assess the merits of the project as a whole, paying particular attention to:*
        i. *upland swamps and water resources (especially Cataract Creek and the stored waters of Cataract Reservoir) resulting from mine subsidence; and*
        ii. *residents in the vicinity of the Russell Vale pit top resulting from noise and air emissions and the trucking of product coal;*
    c) *apply all relevant NSW Government policies in that consideration and assessment; and*
    d) *provide recommendations on any reasonable and feasible measures that could be implemented to avoid, reduce and/or offset the potential impacts of the project.*
2. *Conduct public hearings on the project no later than 30 January 2015.*
3. *Complete the review by 20 March 2015, unless the Secretary of the Department of Planning and Environment agrees otherwise.*

As stated in the Terms of Reference above, the Minister for Planning has requested that the PAC undertake a public hearing on the project. A public hearing provides an opportunity for interested parties to present relevant information to the PAC. A consequence of a PAC public hearing is that community merit appeal rights against any approval are removed.

It is our client's intention to appear at the PAC public hearing and to present its objections to the Russell Vale Project. Accordingly, our client wishes to retain your services to act as an expert witness to assist the PAC impartially on matters relevant to your area of expertise, prepare a written report on your opinion for submission to the PAC and, subject to the findings of your review and your availability, either appear before the PAC as an expert witness or assist the community to prepare a presentation on your findings.

Primary purpose to assist the PAC

We note as a preliminary matter that our primary purpose in briefing you to prepare your report is to assist the PAC. We do not ask you to be an advocate for our client. You are requested to prepare an independent report that is clear and well-written.

In this respect, we draw your attention to Division 2, Part 31 of the *Uniform Civil Procedure Rules 2005* (NSW) (**UCPR**) and the Expert Witness Code of Conduct (**Code of Conduct**) which both govern the use of expert evidence in the Court. We understand that the PAC public hearing is not a Court proceeding, however, we are of the view that the same Code of Conduct should be adhered to. Clause 2 of the Code of Conduct states that:

1. *an expert witness has an overriding duty to assist the court impartially on matters relevant to the expert witness's area of expertise;*
2. *an expert witness's paramount duty is to the court and not to any party to the proceedings (including the person retaining the expert witness);*
3. *an expert witness is not an advocate for a party.*

Your expert report must contain an acknowledgment that you have read the Code of Conduct under the UCPR and that you agree to be bound by it.

PAC public hearings

A public hearing is an opportunity for individuals or groups to make verbal submissions before the PAC. These submissions are on the public record and are taken into account by the PAC when making its recommendation to the DPE.

Each party is allocated a set period of time to speak at the public hearing, which is usually 5-10 minutes for an individual or 15 minutes for a registered group.

We have attached a copy of the PAC's *Guide to Public Hearings* for your assistance.

Overview of work requested

We request that you undertake the following work:

1. review the documents listed below;
2. prepare a written expert report that addresses the issues identified below ('Issues to address in your expert report'), and ensure that the work is prepared in accordance with Division 2 of Part 31 of the UCPR;
3. review any further expert reports (relevant to your area of expertise) submitted by Wollongong Coal; and
4. subject to the findings of your review and your availability, appear as an expert witness at the PAC public hearing for the purpose of giving oral evidence or assist the community to prepare a presentation on your findings.

Please note that any report you prepare for the PAC will become a public document and be available on the PAC website.

The documents

Key documents relating to the Russell Vale Project have been provided to assist you in preparing your expert report, below. Full project documentation can be downloaded from:
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=3448.

Environmental Impact Statement

- EIS Main Report Part A - Executive Summary and Background Information: https://majorprojects.affinitylive.com/public/93a6e6bb202ae01a50b441445f0ee3fb/1.%20NRE%20Underground%20Expansion%20Project%20-%20Main%20Report%20-%20Part%20A.pdf
- EIS Main Report Part D – Social Assessment (pg 2 of 67), Economic Assessment (pg 21 of 67): https://majorprojects.affinitylive.com/public/daa0eeb82d16378a08a89e1c395587d5/4.%20NRE%20Underground%20Expansion%20Project%20-%20Main%20Report%20-%20Part%20D.pdf

Submissions to EIS

- IRRM Submission to EIS: https://majorprojects.affinitylive.com/public/cf23599e425afd0916130a2bca8682ce/IRRM%20Submission.pdf

Preferred Project Report and Response to Submissions

- Preferred Project Report – Economic (pg 199 of 203): https://majorprojects.affinitylive.com/public/5d171d78b91de44731631bf763c19c3b/NRE%20Underground%20Expansion%20Project%20-%20Preferred%20Project%20Report.pdf
- Response to Submissions – Economics (pg 8 of 442): https://majorprojects.affinitylive.com/public/5323d898761f20f81cb016b4b65ef1f1/NRE%20Underground%20Expansion%20Project%20-%20Response%20to%20Submissions.pdf

Department of Planning and Environment Recommendation

- Secretary's Preliminary Environmental Assessment Report: https://majorprojects.affinitylive.com/public/9f9597d4318cb4804baadc44dc010b5f/01.%20Russell%20Vale%20Colliery%20UEP_%20Assessment%20Report.pdf
- Recommended Instrument of Approval: https://majorprojects.affinitylive.com/public/33e05c6905e65baf93c834b492ba3bcd/07.%20Russell%20Vale%20Colliery%20UEP_%20Recommended%20Instrument%20of%20Approval.pdf

NSW Government Guidelines

- Guideline for the use of Cost Benefit Analysis in mining and coal seam gas proposals http://www.planning.nsw.gov.au/Portals/0/DevelopmentAssessments/OnExhibition/cba_guidline.pdf

Please let us know as soon as possible if you require further information for the purpose of giving your expert opinion.

The purpose of your expert report

Your expert report will be used as evidence in chief of your professional opinion. Information which you believe the PAC should be aware of must be contained in your expert report. Your report will be considered by the PAC and will be made available to the public as part of that consideration.

In providing your opinion to the PAC you must set out all the assumptions upon which the opinion is based. This may include, for example, facts observed as a result of field or lab work or 'assumed' facts based on a body of scientific opinion. If the latter, you should provide references which demonstrate the existence of that body of opinion.

Your expert report must also set out the process of reasoning which you have undertaken in order to arrive at your conclusions. It is insufficient for an expert report to simply state your opinion or conclusion reached without an explanation as to how this was arrived at. The purpose of providing such assumptions and reasoning is to enable the PAC and experts engaged by other parties to make an assessment as to the soundness of your opinion.

Issues to address in your expert report
In preparing your expert report for the PAC, we ask that you consider the following issues in relation to the economic assessment:

1. Has the environmental assessment used the appropriate methods to quantify the costs and benefits of the project, particularly in relation to environmental costs? In forming your view, please consider the NSW Government *Guideline for the use of Cost Benefit Analysis in mining and coal seam gas proposals*. Please explain your reasoning for your response.
2. Are there any additional issues that should be put before the PAC?

Format of expert report
Division 2 of Part 31 of the UCPR establishes information that your report is required to contain. This includes:
- your qualifications,
- the facts, and assumptions of fact, on which the opinions in the report are based and your reasons for each opinion expressed,
- if a particular issue falls outside your area of expertise, clear acknowledgement that it falls outside your field of expertise,
- any literature or other materials utilised in support of the opinions,
- details of any examinations, tests or other investigations on which you have relied, including details of the qualifications of the person who carried them out,
- a brief summary of the report,
- if you believe that the report may be incomplete or inaccurate without some qualification, the qualification must be stated in the report,
- If you consider that your opinion is not a concluded opinion because of insufficient research or insufficient data or for any other reason, this must be stated when the opinion is expressed, and
- If you change your opinion on a material matter after providing an expert's report to us, you must provide us with a supplementary report to that effect.

Please format your report as follows:
- Address your report to the PAC;
- Sign and date your report;
- Include a summary of your qualifications and experience as an appendix to your report;
- Use 12 point type and at least 2cm page margins;
- Supply a PDF version of your report for printing and binding;
- Number each paragraph of your report;
- Number <u>all</u> pages, including attachments and annexes, continuously from the first page to the last page (excluding any cover page to your report);
- Annex this letter of instruction to your report.

We also note that you may wish to use diagrams or other visual forms of representation in your report, where appropriate, to illustrate an issue or opinion.

Key dates
The PAC public hearing will commence at 9:00am on **Tuesday, 3 February 2015** at the WIN Entertainment Centre, Corner Crown & Harbour Streets, Wollongong.

To assist our client to prepare for the PAC public hearing, and subject to confirmation of a hearing date, we request that you provide us with a draft of your report by **Monday, 2 February 2015**. The purpose of providing this draft is not to influence the conclusions or recommendations you make but to ensure that the language and expression of the report is clear and complies with the formal legal requirements of an expert report.

Duty of confidentiality
Please treat your work as strictly confidential until your expert report is provided to the PAC, unless authorised by us.

Fees
Thank you for agreeing to assist the PAC in this matter on a pro bono basis. We confirm that all your reasonable expenses in attending the PAC hearing will be met by our client.

We are grateful for your assistance in this matter.

Yours sincerely,
EDO NSW

[redacted]

Belinda Rayment
Solicitor

[redacted]

Megan Kessler
Scientific Director

Our Ref: 1521600