



Review of the Economic Impact Assessment of the Dendrobium Mine Extension

Prepared for the NSW Department of Planning,
Industry and Environment

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1 Introduction

BAEconomics was commissioned by the NSW Department of Planning, Industry and Environment (the Department) to prepare a comprehensive review of the Economic Assessment included in the Dendrobium Extension Project's EIS. In particular the review is to include consideration of:

- whether the assumptions used are reasonable, appropriate and suitably justified;
- whether the assessment (particularly the Cost Benefit Analysis) is consistent with applicable NSW Government guidelines;
- the adequacy of the methodology, analysis and assessment presented in evaluating the economic costs and benefits of the proposed development;
- the identification of any areas of deficiency (including inconsistencies, overlaps or "double counting") and recommendations to improve or resolve these issues in the assessment; and
- any recommendations (if required) for additional information to inform the assessment of the project.

1.1 Purpose and scope of an economic assessment

An economic assessment must be prepared to address the economic components of the Secretary's Environmental Assessment Requirements (SEARs), with reference to various guidelines published by the NSW Government, in particular the 'Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals' (2015, 'the 2015 Guidelines'). The 2015 Guidelines require a 'cost-benefit analysis' (CBA) to be undertaken to assess the net benefit of the project to the NSW community. The 2015 Guidelines also require a 'local effects analysis' (LEA) to be undertaken to assess the likely impacts of the project on the local economy.

As set out in the 2015 Guidelines, the LEA is intended to be complementary to the CBA by translating the effects estimated at the state level into impacts on the communities located near the project site.

Both the CBA and the LEA require that the economic merits of a proposal are compared to a meaningful counterfactual. The CBA and the LEA prepared for the project should consider the incremental (net) benefits that would arise if the project is approved, relative to the counterfactual.

2 Review of methodology and assumptions

2.1 The EIA assumptions

The EIA prepared by Cadence Economics carefully sets out all the assumptions underlying the analysis throughout the report. Cadence Economics has relied on the project description and costings supplied by the proponent together with various social and environmental consultant reports describing the indirect costs of the project.

The central case assumptions for the cost benefit analysis are set out on p.9ff of the EIA. As far as I can determine Cadence Economics has accurately incorporated the results from relevant technical reports that have been included in the EIS in their cost benefit analysis. Consistent with most cost benefit analyses of mining projects the estimated net benefits arising from the project are most sensitive to the product price assumptions (EIA, p.49).

Coal price assumptions are taken from the *Energy & Metal Consensus Forecast* released in November 2018 by Consensus Economics. These projections are largely consistent with those produced by the Commonwealth Government's Department of Industry, Science, Energy and Resources at the time and published in the *Resources and Energy Quarterly*. More importantly, the assumed long run real price of hard coking coal of \$173/t is close to the Commonwealth Government's most recent long term forecast of \$184/t published in March 2020.¹ The EIA's assumed thermal coal price of \$93/t is higher than the Commonwealth Government March 2020 long term projection of \$81/t but well above the lower sensitivity bound for prices reported in the EIA. However, given that thermal coal output constitutes a little less than 10 per cent of total coal output from the proposed project an assumption of a lower price for thermal coal would not alter the overall conclusion of the EIA that the proposed project has the potential to deliver a significant net economic benefit to the NSW community especially considering that even with an assumed lower bound on coal prices of 25 per cent below the central case, the project remains net present value positive.

2.2 Consistency of the CBA with the guidelines

The 2015 Guidelines require a cost-benefit analysis (CBA) to be prepared to evaluate

¹ See

<https://publications.industry.gov.au/publications/resourcesandenergyquarterlymarch2020/index.html>, accessed on 25 May 2020. The implicit real price projection has been calculated by taking the reported total export revenue forecast from metallurgical coal sales and dividing by forecast export volume. This calculation results in a volume weighted price for metallurgical coal exported from Australia. The grades produced by the Dendrobium mine may differ from the average grade exported from Australia.

the economic impacts of a coal mining proposal. The CBA is intended to identify the economic impacts relating to the State of NSW. In the present case the key components of the CBA are:

- coal royalties accruing to New South Wales;
- company income and other tax payments attributable to New South Wales;
- the net producer surplus;
- economic benefits to NSW workers;
- economic benefits to NSW suppliers;
- net environmental, social and transport-related costs (including impacts on the Sydney water catchment) attributable to New South Wales;
- net public infrastructure costs if any; and
- the potential loss of surplus to other industries.

As a general matter, a CBA relies on the ‘opportunity cost’ principle to value goods and services (NSW Government 2017). In practice, the opportunity cost concept is made operational with reference to the ‘willingness-to-pay’ criterion. For ‘conventional’, market-based transactions, such as the sale of coal outputs or the purchase of labour and other inputs, the relevant value is determined with reference to market prices.

With the exception of environmental costs, all of the benefits listed above can be determined using market prices, as prescribed by the 2015 Guidelines. The environmental costs reported in the EIA have been assessed with reference to the ‘Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals’ (2018, ‘the 2018 Technical Notes’), published by the NSW Government and reported in the relevant sections of the EIS.

The estimated direct benefits to NSW from the project are reported on pp.14-17 of the EIA. The indirect benefit estimates are set out in pp.17-20 of the EIA. The indirect cost calculations are set out on pp.20-46 of the EIA. The calculations are consistent with the Guidelines (on the assumption that the environmental technical reports have incorporated all relevant costs).

In addition to the CBA, the Guidelines require the preparation of a Local Effects Analysis (LEA). The LEA is intended to be complementary to the CBA by translating the effects estimated at the state level into impacts on the communities located near the project site. In the analysis presented in this EIA, both the CBA and the LEA draw on the same data set. The central assumptions that underpin the analyses are common to both.

Cadence Economics has reported the LEA for the Dapto Port Kembla SA3 region

consistent with the guidelines. The assumptions regarding the attribution of benefits and costs to the local area appear conservative and consistent with the Guidelines.

2.3 Adequacy of the methodology

The EIA is well presented, logically set out and comprehensive in its coverage. The CBA and LEA have been complemented with a computable general equilibrium (CGE) analysis of the benefits and costs of the project to NSW. A CGE analysis is not required by the guidelines but is a useful complementary tool that provides a way of checking the results from the CBA and the LEA. The results from the CGE analysis are largely consistent with those from the CBA and LEA and I conclude that the analysis has accurately estimated the net benefits of the project to the NSW community.

2.4 Identification of areas of deficiency

In my assessment the report is comprehensive and the analysis is of high quality. However, I believe that it is worth considering the scope of the assessment. In Appendix C of the EIA Cadence Economics present an analysis of the proposal in which account is also taken of the benefits of mining Area 3C. While approval has already been granted to mine this block there are technical reasons that make it less economic to mine this area without access to the blocks subject to the current approval process. This then raises the issue of what is the correct counterfactual against which to judge the value of the proposed project to the NSW community.

If it is necessary to gain access to the new mine areas before Area 3C is mined (to assist with the process of gas drainage of Area 3C and to maintain the continuity of mining at Dendrobium) then the analysis presented in Appendix C of the EIA represents an appropriate estimate of the benefits of the proposal. In that case the net present value of the direct benefits of the project to NSW under the central case assumptions would increase from \$498m to \$547m according to the estimates presented in the EIA.

2.5 Possible additional information

My understanding is that since the completion of the EIA by Cadence Economics in 2019 South 32 has committed additional resources to preparation for the development of the proposed project. While any additional expenditure may not add materially to the net present value of the proposed project any additional expenditure is likely to be of assistance to NSW in the short term, especially in the current economic environment. The Department may wish to seek further clarification on any additional expenditure relevant to the proposal from South 32.

References

Department of Industry, Science, Energy and Resources, various years. *Resources and Energy Quarterly*, Commonwealth Government, Canberra.

NSW Government 2015, *Guidelines for the economic assessment of mining and coal seam gas proposals*, December.

NSW Government, 2017. *NSW Government Guide to Cost-Benefit Analysis, Policy and Guidelines Paper*, March.

NSW Department of Planning and Environment, 2018. *Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals*, April.