AnalytEcon Pty Ltd

27 January 2022

Mr Chris Lauritzen
General Manager – Resource Development
MACH Energy Australia Pty Ltd

Dear Chris:

RE: Mount Pleasant Optimisation Project – Response to Department of Planning, Industry and Environment's Information Request

The Department of Planning, Industry and Environment (DPIE) requested additional information in relation to the calculation of the externality cost of the Project greenhouse gas emissions (GHG) in the *Mount Pleasant Optimisation Project Economic Assessment* (AnalytEcon, 2021) (the Economic Assessment) by letter on 24 December 2021.

This letter provides a response to the matters raised by the DPIE.

In summary, the approach adopted by AnalytEcon for apportioning the net externality cost of the Project GHG emissions to NSW is consistent with the *Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals 2015* (NSW Government, 2015) (the Guideline) and the *Technical Notes supporting the Guidelines for the economic assessment of mining and coal seam gas proposals* (Department of Planning and Environment, 2018) (the Technical Notes). AnalytEcon's approach reflects one of a number of options for allocating the externality cost of the Project GHG emissions to NSW in a way that enables an internally consistent comparison of costs and benefits accruing to NSW, and that have been deemed appropriate and reasonable by the relevant NSW authorities in the past.

Further, we have provided the alternative allocation of the externality cost of the Project GHG emissions. We do not regard them a germane under the Guideline and Technical Notes as they include the indirect impacts of the Project GHG emissions on the rest of the world. However, they demonstrate that the allocation itself is not a threshold issue in terms of the benefits of the Project to NSW.

Consideration of the Requirements of the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals 2015 and the Technical Notes Supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals

> *The Department has carefully reviewed the assessment and notes that it included a calculation (based on proportion of the NSW GSP as a percentage of World Gross Domestic Product) to reduce the direct GHGEs attributable to NSW.*
>
> *The Department does not support this approach and considers it is inconsistent with the Department's Guidelines for the economic assessment of mining and coal seam gas proposals 2015, Technical Note 9.*
>
> *The Department is of the view that the costs associated with all Scope 1 and Scope 2 emissions should be alternatively apportioned to NSW, noting the approaches for apportionment in the recent decisions by the Independent Planning Commission on the Mangoola Continued Operations and Maxwell Underground Mine. In addition, the Department considers that the Economic Assessment should present a range of carbon prices via sensitivity testing for the cost-benefit analysis.*

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AnalytEcon considers that the approach to calculating the externality cost of the Project GHG emissions in the Economic Assessment is consistent with the Guideline and the Technical Notes.

In relation to the calculation of the externality cost of GHG emissions, the Technical Notes state:

> *Accordingly, project proponents should provide an analysis of:*
>
> - *their business-as-usual (BAU) GHG emission output (central estimate) and the expected emissions profile of this central estimate*
> - *Estimate the economic impact of GHG emission output to NSW only;*
> - *Undertake a sensitivity analysis on anticipated project GHG emissions output (Scope 1 and 2) at carbon prices below and above the central estimate price.*
>
> *The value of the externality is limited to the impact on NSW, consistent with the Guidelines and how all other costs/benefits are measured within the CBA. As noted in the Guidelines, the focus is on the costs and benefits of the project as they relate to the community of NSW.*

Consistent with the Technical Notes, the following approach was adopted in the Economic Assessment:

1. The Project Scope 1 and 2 GHG emissions were provided by Todoroski Air Sciences (2021) (Attachment A of Appendix S of the Environmental Impact Statement).
2. The externality cost of the Project Scope 1 and 2 GHG emissions to NSW was calculated using the forecast price of emission allowances with the European Union Emissions Trading System (central price scenario) (Section 3.9.3 of the Economic Assessment).
3. The sensitivity of the externality cost of the Scope 1 and 2 GHG emissions to NSW was considered (low and high price scenarios) (Section 3.9.3 of the Economic Assessment).

More detail on the methodology adopted for Steps 2 and 3 is provided below. It is worth, however, also setting out the general considerations that have guided our approach.

The Guideline is clear that the cost benefit analysis (CBA) that must be prepared for a mining proposal should estimate the net benefit to the NSW community. Accordingly, all monetary and non-monetary benefits and costs of a proposal must be calibrated to ensure that only the NSW share of these costs and benefits is included in the CBA calculation. In the case of the Project, for example, the benefits associated with company tax payments generated by the Project were adjusted to reflect the fact that the majority of the company tax payments would be spent by the Australian Government outside of NSW, and therefore would not benefit NSW. By the same token, for the purpose of the NSW CBA, any costs that might arise as a result of the proposal must be adjusted to ensure that only the share of costs that impacts the community of NSW is offset against NSW benefits. Not doing so, for instance by comparing benefits accruing to NSW with costs that arise in other jurisdictions as well (or vice versa) would introduce a fundamental inconsistency into the CBA.

Where the externality cost of GHG emissions is concerned, as noted, the Technical Note does not set out a precise calculation for determining its value, but states that the value should be 'limited to the impact on NSW'. The general approach described in the Technical Note of determining only that share of the externality costs of GHG emissions that fall on NSW is consistent with the focus of the Guideline on the net benefit of a proposal for the NSW community. Given that the costs associated with global warming from GHG emissions are generally deemed to arise worldwide, AnalytEcon's approach has therefore been to apportion the global cost of Project GHG emissions to NSW on the basis of NSW' share of world gross domestic product (GDP).

As set out in the following, the approach adopted by AnalytEcon for apportioning the net externality cost of the GHG emissions from the Project is one of a number of options for allocating the externality cost to NSW in a way that both:

- ensures that a consistent, 'like with like' comparison can be made between the costs and benefits of a proposal; and
- has been deemed appropriate and reasonable by the relevant NSW authorities in the past.

More generally, it should be noted that as a matter of economics, there is generally no single 'correct' approach for allocating or apportioning costs. In particular in regulated industries such as utilities and telecommunications, widely different approaches for cost allocation are applied in practice. In a market context, costs are allocated depending on what the market will bear. Different approaches are therefore possible depending on the overall framework and context. In the case of mining proposals in NSW, the applicable framework is the Guideline and the Technical Notes issued by the NSW Government.

Estimating Externality Cost of Scope 1 and 2 Greenhouse Gas Emissions to NSW (Step 2)

The overall externality cost of the Project Scope 1 and 2 GHG emissions using the forecast price of emission allowances with the European Union Emissions Trading System was determined to be $227 million (NPV terms).

This overall externality cost (i.e. climate change impacts) are distributed across the world and are not restricted to the location where the greenhouse gases are emitted (i.e. NSW). The Technical Notes acknowledge this point, by requiring the externality cost of the Project Scope 1 and 2 GHG emissions to be "limited to the impact on NSW". The Technical Notes do not provide a specific methodology for adjusting the overall externality cost to reflect the impact to NSW. To ensure consistency with the Guideline and the Technical Notes, the overall externality cost of the Project Scope 1 and 2 GHG emissions was therefore adjusted to reflect the potential impact of Project emissions on NSW. This adjustment was made on the basis of the share of NSW's gross state product (GSP) of the world's GDP.

The approach adopted in the Economic Assessment (outlined above) was also adopted in the *Vickery Extension Project Economic Assessment* (AnalytEcon, 2018).[1] The DPIE's (2020) Assessment Report for the Vickery Extension Project did not raise any issues with the approach adopted to calculate the externality cost of the Scope 1 and 2 GHG emissions.[2] Furthermore, the Independent Planning Commission (IPC) concluded the following in its Statement of Reasons for Decision (IPC, 2020a) for the Vickery Extension Project:[3]

> *The Commission agrees with the Department and Independent Economic Review referenced in paragraph 285 above and is of the view that the Economic Assessment is robust and aligns with the applicable guidelines. …*

Consideration of the Maxwell Underground Coal Mine Project

In the *Maxwell Underground Coal Mine Project Economic Assessment* (Deloitte Access Economics, 2019) the externality cost of the Scope 1 and 2 GHG emissions were adjusted to reflect the impact on NSW. Deloitte Access Economics (2019) used an alternative methodology to AnalytEcon, applying NSW's share of the Australian population to adjust the overall externality cost. The approach taken by Deloitte Access Economics (2019) would therefore seem to imply that the externality cost of GHG emissions is limited to Australia, rather than falling on the world as a whole.

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[1] *https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-7480%2120190303T213440.399%20GMT; accessed 21 Jan 2022.*

[2] *https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2020/03/vickery-extension-project/referral-from-the-department-of-planning-industry-and-environment/dpie-final-assessment-report.pdf; accessed 21 Jan 2022.*

[3] *https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2020/03/vickery-extension-project/determination/vickery-extension-project--statement-of-reasons.pdf; accessed 21 Jan 2022.*

The DPIE (2020) noted in its Assessment Report for the Maxwell Project that the *Maxwell Underground Coal Mine Project Economic Assessment* was prepared in accordance with the Guideline.[4] The IPC in its Statement of Reasons for Decision (IPC, 2020b) for the Maxwell Underground Coal Mine Project did not raise any concerns with the alternative approach adopted by Deloitte Access Economics (2019) to calculate the externality cost of the Scope 1 and 2 GHG emissions.[5]

Consideration of the Mangoola Coal Continued Operations Project

In the *Economic Impact Assessment of the Mangoola Coal Continued Operations Project* (Cadence Economics, 2019) adjusted the overall externality cost of the Scope 1 and 2 GHG emissions to reflect the impact on NSW consistent with the Guideline and Technical Notes.[6]

Cadence Economics (2019) applied NSW's share of the global population (rather than global GDP) to calculate the cost of GHG emissions that can be attributed to NSW. As is the case for the approach taken by AnalytEcon, the approach taken by Cadence Economics (2019) therefore also implies that the externality cost of GHG emissions fall on the world as a whole.

The DPIE (2021) noted in its Assessment Report for the Mangoola Coal Continued Operations Project that the *Economic Impact Assessment of the Mangoola Coal Continued Operations Project* (Cadence Economics, 2019) was prepared in accordance with the Guideline and the Technical Notes.[7] Furthermore, the DPIE (2021) did not raise any issues with the approach adopted to calculate the externality cost of GHG emissions.

Notwithstanding the DPIE's advice and the IPC's previous endorsement of similar methodology applied at the Vickery Extension Project (amongst many other projects), the IPC concluded the following in its Statement of Reasons for Decision (IPC, 2021) for the Mangoola Coal Continued Operations Project:[8]

> *The Commission notes that the EIA multiplies the cost of climate impacts by the ratio of NSW population. The Commission does not accept the methodology for calculating GHG impacts and costs referenced above. The Commission notes this approach, in particular for addressing the costs of Scope 1 and 2 emissions, is not consistent with international rules, as these emissions are entirely accounted for where they are generated and emitted (i.e. in NSW) and by the emitting entity. The Commission has therefore disregarded the EIA's estimate of the indirect cost of fugitive emissions and is of the view that all Scope 1 and Scope 2 emissions should be fully costed in the economic analysis because they are emitted in NSW, and therefore attributable to NSW and the Project. …*

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[4] *Refer to S 6.10: https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-9526%2120200930T080308.339%20GMT; accessed 21 Jan 2022.*

[5] *https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2020/09/maxwell-underground-coal-mine-project/determination/201222-ssd-9526-statement-of-reasons.pdf; accessed 21 Jan 2022.*

[6] *Refer to S2.6.4; https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-8642%2120190705T021704.991%20GMT; accessed 21 Jan 2022.*

[7] *Refer to Section 6.9.1; https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-8642%2120210201T045402.510%20GMT; accessed 21 Jan 2022.*

[8] *Refer to Para 250: https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2020/12/mangoola-coal-continued-operations-project-ssd-8642/determination/210426-mangoola-coal-continued-operations-project-ssd-8642--statement-of-reasons.pdf; accessed 21 Jan 2022.*

The Mangoola IPC justified its alternative interpretation on the basis that the approach adopted in the Cadence Economics (2019) was "not consistent with international rules". Although it is not clear what "international rules" the IPC is referring to, it is likely that it was referring to the Greenhouse Gas Protocol (GHG Protocol) (World Business Council for Sustainable Development and World Resources Institute, 2020) that provide consistent frameworks for the international accounting of global GHG emissions. The requirement to account for emissions where they are generated is relevant to international greenhouse gas conventions. However, that is a different framework from the one the NSW Government has prescribed for attributing the costs and benefits of a mining proposal for the NSW community. As noted above, the framework set out in the Guideline is one that relies on an internally consistent, 'like with like' comparison of the costs and benefits that arise for the NSW community.

This interpretation is reinforced by other NSW Treasury guidance such as the *NSW Government Guide to Cost-Benefit Analysis* which states the following (NSW Treasury, 2017):[9]

> ***Scope of analysis***
>
> *This Guide makes clear that, in terms of geographic scope, a CBA should focus on impacts (costs and benefits) to the NSW community (households, businesses, workers and/or governments).*
>
> ***The NSW community is the core referent group in this Guide.***
>
> *To fully inform NSW decision-makers, the CBA can also include analysis of local and/or multijurisdictional impacts where relevant or required (for instance, by legislation). In cases where an initiative generates costs or benefits to neighbouring Australian jurisdictions, the CBA should report both:*
>
> - *A central estimate showing costs and benefits to the NSW community, and*
> - *Separate results showing any interstate costs and benefits.*

Notwithstanding our concerns set out above, we provide the various calculations necessary below to provide the relative values, should the DPIE wish to provide "Separate results showing any interstate costs and benefits" for the IPC's consideration as explicitly separate to the central CBA estimate which is limited to potential impacts on NSW (as presented in the EIS).

Sensitivity Analysis (Step 3)

Section 3.9.3 of the Economic Assessment includes consideration of the sensitivity of the externality cost of the Scope 1 and 2 GHG emissions to NSW using prices from:

- Australian Treasury Clean Energy Future Policy Scenario (high price scenario); and
- US EPA Social Cost of Carbon (low price scenario).

The results of this sensitivity analysis conducted in the Economic Assessment are provided in Table 1.

[9] *Refer Page iii; https://www.treasury.nsw.gov.au/sites/default/files/2017-03/TPP17-03%20NSW%20Government%20Guide%20to%20Cost-Benefit%20Analysis%20-%20pdf.pdf; accessed 21 Jan 2022.*

Table 1: Project emissions valuation ($2020)

Price Assumption	Externality Cost of Greenhouse Gas Emissions to NSW (NPV)	Net Benefit to NSW (NPV)
Central price scenario European Union Emissions Trading System	$0.7M	$855M
High price scenario Australian Treasury Clean Energy Future Policy Scenario	$1.1M	$855M
Low price scenario US EPA Social Cost of Carbon	$0.4M	$856M

Requested Information

> *To align with the Departments position, it is requested that you recalculate the net benefits of the Project in net present value terms and ensure that GHGE costs are alternatively apportioned to NSW, including a sensitivity analysis around carbon pricing.*

As requested by the DPIE, Table 2 provides alternative estimates of the externality cost of Project Scope 1 and 2 GHG emissions based on the following alternative approaches:

- NSW's share of Australia's population has been used to adjust the overall externality cost of Project Scope 1 and 2 GHG emissions to attribute a proportion of impacts to the NSW jurisdiction (i.e. consistent with the alternative approach used in the Maxwell Underground Coal Mine Project Economic Assessment).
- No adjustment to the overall externality cost of Project Scope 1 and 2 GHG emissions to attribute a proportion of impacts to the NSW jurisdiction (i.e. consistent with the alternative approach proposed by the IPC in its Statement of Reasons for Decision for the Mangoola Coal Continued Operations Project).

Table 2 also considers the same central, low and high price scenarios adopted in the Economic Assessment. The revised net benefit to NSW as a result of the Project in all circumstances remain positive.

Table 2: Alternative Project emissions valuation ($2020)

Price Assumption	Adjusted by NSW's Share of Australia's Population		No Adjustment to Reflect Potential Impacts on NSW	
	Externality Cost of Greenhouse Gas Emissions to NSW (NPV)	Net Benefit to NSW (NPV)	Externality Cost of Greenhouse Gas Emissions to NSW (NPV)	Net Benefit to NSW (NPV)
Central price scenario European Union Emissions Trading System	$72M	$784M	$227M	$629M
High price scenario Australian Treasury Clean Energy Future Policy Scenario	$113M	$743M	$354M	$502M
Low price scenario US EPA Social Cost of Carbon	$39M	$817M	$124M	$732M

Note: As of June 2021, NSW' share of the Australian population was 31.82 per cent (https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/latest-release#states-and-territories; accessed 21 Jan 2022).

Sincerely,

Stephen C. Beare

Dr Stephen Beare
Director