

Steve O'Donoghue
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By email:
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10 December 2021

Dear Steve,

Subject: Advice in relation to the Mount Pleasant Optimisation Project, Predicted Greenhouse Gas Emissions

We provide advice in relation to the greenhouse gas emissions assessment for the Mount Pleasant Optimisation Project. We have undertaken a review of the key documents provided for consideration.^{1,2} Our findings and recommendations follow.

Technical review of estimated greenhouse gas Scope 1, 2 and 3 emission calculations

The greenhouse gas (GHG) assessment by Todoroski Air Sciences¹ addresses the relevant sources and scopes. Emission estimates are consistent with contemporary practice and emission factors and appear to be adequately calculated. The emissions calculations (except for fugitive emissions) use the National Greenhouse Accounts (2020) emission factors. These are based on global warming potentials (GWPs) from the International Panel on Climate Change (IPCC) Fifth Assessment Report (AR5).

The GHG assessment calculates fugitive emissions using a site-specific intensity factor based on Method 2 of the National Greenhouse and Energy Reporting Scheme (NGER) (Measurement) Determination 2008. The Method 2 approach is correct and produces more accurate results than using the NGER Method 1 default emission factor.

Improvement points for the GHG assessment are:

- 1) The proponent should provide assumptions for quantities of all materials consumed for the Project in the construction and operations phase. If these are significant, use embodied emission factors to calculate emissions from each material.
- 2) The proponent should indicate the type and area of vegetation being cleared for the Project.
- 3) The proponent should list all assumptions for fuel consumption during the construction phase
- 4) Similarly, assumptions for fuel consumption over the decommissioning phase should be provided.
- 5) The proponent should indicate the source of the Scope 1 explosives emission factor and the density of grease assumed (since masses of grease consumed are provided).
- 6) Assumptions for electricity consumption should be given.
- 7) The proponent should provide the conversion factor for ROM to product coal volumes or a column of annual product coal figures so that the Scope 3 calculations can be verified.
- 8) The proponent considered the impact of annual mine emissions on total NSW emissions as at 2017. The proponent should provide updated figures for 2020.

Consistency with DPIE modelling for Net Zero Stage 1: 2020-2030 Implementation Update

The Mount Pleasant Optimisation Project was accounted for in DPIE NZEM's emission projections. DPIE NZEM's modelling is based on Minerals, Exploration and Geoscience Group (MEG; DRNSW) annual ROM coal production central forecasts for the Project. Over 2023-2048, total ROM production was forecast to be 444 million tonnes (Mt). Over the same period, the proponent forecast 407 Mt.¹

The fugitive emissions in the GHG assessment were calculated based on a site-specific emission factor that complies with NGERs Method 2. The fugitive emission factor was 0.012 t CO₂-e/t ROM.

In discussions with the Commonwealth Department of Industry, Science, Energy and Resources (DISER) regarding the fugitive emissions for the Project, DISER assumed a fugitive ROM intensity of 0.003 t CO₂-e/t ROM for their modelling. DPIE NZEM adopted this fugitive intensity figure for all future projections for the Project for consistency with national emission projections.

As a result of applying lower emission intensities, the DPIE NZEM modelling predicts lower scope 1 fugitive emissions (1.3 Mt CO₂-e over 2023-2048) compared to the GHG assessment estimates of 4.9 Mt CO₂-e over the same period.

The proponent's fugitive emissions intensity for the Project appears to be relatively high for an open-cut mine. It would be helpful if the proponent could discuss the reasons for this in terms of the nature of the seams to be mined, the coal seam gas content levels in m³/t and %methane content of the gas to be encountered.

Review of the Proposed GHG Mitigation Measures

We were requested to consider measures to minimise the Scope 1 and 2 emissions of the project and any additional measures that could be implemented to mitigate Scope 1 and 2 emissions to the greatest extent practicable over the life of the project. A synthesis of our review is at Attachment 1, and our recommendations are as follows:

- The proponent needs to provide a deeper, quantified assessment of GHG mitigation and energy efficiency measures, particularly in regard to diesel consumption and fugitive methane emissions for the Project.
- The proponent should discuss if pre-drainage of methane from the coal seams is feasible or not, providing detailed reasoning to support the judgement. If it is feasible, the proponent should consider beneficial uses of the methane besides e.g. flaring.
- In addition to the requirements of the Safeguard Mechanism, the proponent should investigate the feasibility of purchasing offsets for the emissions from the Project which cannot be mitigated.

Yours sincerely,



Matthew Riley

Director Climate and Atmospheric Science
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Appendix 1 – Overview of Greenhouse Gas Mitigation Information received

The proponent provided only a cursory discussion of GHG mitigation measures.

These included reducing energy consumption during project planning and reviewing energy efficient alternatives, optimising the design of haul roads, regular maintenance of equipment and plant, monitoring diesel consumption and site electricity. These measures appear consistent with industry practice in Australian coal mining.

Apart from this, the proponent did not provide any analysis on the impacts of reducing energy consumption on the scope 1 and 2 emissions from the Project.

The proponent should consider broader measures such as the use of conveyors to reduce road haulage, energy efficient pumps and motors, variable speed drives and LED lighting where applicable.

Given that the Project will emit a total of 6.4 Mt CO₂-e of emissions from scope 1 diesel consumption, the proponent needs to provide a more detailed, quantified assessment of mitigation measures.

Given that the total fugitive emissions from the project are 4.9 Mt CO₂-e the proponent should consider measures to abate the fugitives. For example, the proponent should discuss if pre-drainage of methane from the coal seams is feasible or not. If so, quantify the benefits of mitigation more fully. This may enable flaring of the methane if the methane content is high enough, however no information has been provided.

In Section 3.2.3 of the main GHG assessment report,¹ the proponent discusses the Project liabilities under the Commonwealth Government's Safeguard Mechanism. The mechanism sets an emissions cap on all Australian facilities that emit over 100,000 t CO₂-e of scope 1 emissions per year. If the facility's emissions exceed the cap, then it must offset the exceedance by surrendering Australian Carbon Credit Units (ACCUs).

The current Mount Pleasant Operations emission cap is 663,971 t CO₂-e. The project is expected to emit 452,000 t CO₂-e per year, on top of existing mine emissions. The proponent adds that if a mining operation exceeds its approved baseline then the operation is required to purchase Australian carbon credit units in order to acquit its liability.

In addition to the requirements of the Safeguard Mechanism, the proponent should investigate the feasibility of purchasing offsets for the emissions from the Project which cannot be mitigated.

¹ Mount Pleasant Optimisation Project – Greenhouse Gas Assessment (MACH Energy). Calculations were prepared by Todoroski Air Sciences, 11 January 2021 and presented as an attachment to the report.

<https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-10418%2120210201T005053.450%20GMT>

² Mount Pleasant Optimisation Project – Submissions Report, section 4.3.14, Greenhouse Gas Emissions.

<https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=EXH-13365457%2120210704T214136.719%20GMT>