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Mark Jacobs
General Manager, Environment, Approvals & Community Relations
Yancoal Australia Ltd
Level 25, 363 George Street
Sydney NSW 2000

RE: Clarification of risk of compliance with DP&E criteria – Moolarben Stage 2 Project

Dear Mark,

It is understood the Department of Planning and Environment (DP&E) seeks to clarify whether 24 hour average PM₁₀ impacts associated with the Stage 2 Project exceed 50 µg/m³ at the 98.6th percentile. In plain English, DP&E seeks to clarify whether there may be more than 5 days above a level of 50µg/m³ for the cumulative impact of the mine, background dust levels and the Proposed Stage 2 Project.

It is noted that PAEHolmes conducted the analysis and assessment of the Stage 2 modelling data in regard to potential 24-hour PM₁₀ impacts; refer to "Air Quality Impact Assessment Moolarben Stage 2 Preferred Project" **PAEHolmes (2011)**. Notwithstanding, Todoroski Air Sciences (TAS) has conducted a more recent air quality assessment for the Stage 1 and Stage 2 Projects; refer to "Moolarben Coal Project - Stage 1 Optimisation Modification - Air Quality and Greenhouse Gas Assessment" **TAS (2013)**.

The TAS assessment was completed for the Stage 1 MOD9 Project, and is more relevant as it includes the currently proposed mining configuration for the Moolarben mine complex (i.e. the Stage 1 Project inclusive of MOD9 and the Stage 2 Project). The Stage 1 MOD9 assessment completed by TAS includes a cumulative 24-hour PM₁₀ assessment strictly per the NSW guidelines outlined in the EPA Approved Methods (**NSW DEC, 2005**), and considers the cumulative effects of the existing measured background dust levels, the Stage 1 component of the mine inclusive of MOD9 and also the complete Stage 2 Project.

The TAS assessment found that there was one day in the year on which the total cumulative levels, including Stage 2 and Stage 1 with MOD9, may exceed the cumulative 24-hour average level.

Thus to be clear, the results indicate that the predicted cumulative 24-hour PM₁₀ levels would not exceed a level of 50µg/m³ at the 98.6th percentile at any non mine-owned receptor.

A relevant extract from **TAS (2013)** in this regard is copied below for convenience.

"...Assessment per NSW EPA Approved Methods

An assessment of cumulative 24-hour average PM_{10} impacts was undertaken in accordance with the methods outlined in Section 11.2 of the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (NSW DEC, 2005). The "Level 2 assessment - Contemporaneous impact and background approach" was applied to assess potential impacts.

As shown in **Section 5**, maximum background levels have in the past reached levels near to the 24-hour average PM_{10} criterion level (depending on the monitoring location and time). As a result, the first-pass Level 1 NSW EPA approach of adding maximum background levels to maximum predicted mine only levels may show levels above the criterion.

In such situations, the NSW EPA approach applies a more thorough Level 2 assessment whereby the measured background level on a given day is added contemporaneously with the corresponding proposed modification only level predicted using the same day's weather data. This method factors in to a significant degree the spatial and temporal variation in background levels affected by the weather and existing sources of dust in the area on a given day. However, even with a detailed Level 2 approach, any air dispersion modelling has limitations (as described previously) in predicting short term impacts that may arise many years into the future, and these limitations need to be understood when interpreting the results.

Ambient (background) dust concentration data for January 2011 to December 2011 from the TEOM stations and HVAS stations have been applied in the Level 2 contemporaneous 24-hour average PM_{10} assessment and represent the prevailing background levels in the vicinity of the proposed modification and surrounding privately-owned receptors.

As the existing mine was operational during this period, it would have contributed to the measured levels of dust in the area on some occasions. Due to this it is important to account for these existing MCP activities in the cumulative assessment. Modelling of the actual mining scenario for the Project for the 2011 period (of weather and background dust data) was conducted to determine the existing MCP contribution to the measured levels of dust. The results were applied in the cumulative assessment to minimise potential double counting of existing mine emissions (as they would occur in both the measured data and in the predicted levels), and thus to make a more reliable prediction of the likely cumulative total dust level.

Table 1 provides a summary of the findings of the contemporaneous assessment at each monitoring location. Detailed tables of the full assessment results are provided in **Appendix F**.

Table 1: NSW EPA contemporaneous assessment - maximum number of days above 24-hour average criterion depending on background level at monitoring sites

Location	Year 2	Year 6	Year 11	Year 16
TEOM01	0	0	0	0
TEOM03/TEOM04*	0	1	0	0
PM01	0	0	0	0
PM02	0	0	0	0

*Note that TEOM03 was relocated closer to the majority of the receptors and was renamed TEOM04.

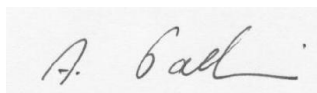
The results in **Table 1** indicate that it is unlikely that cumulative impacts would arise at the receptors near the monitoring locations TEOM01, PM01 and PM02 during the years assessed.

There is potential for cumulative impacts near TEOM03/TEOM04, during the first half of the year, in Year 6 as a result of activity occurring close to this monitor during these periods. We note however the potential risk of cumulative impacts at this monitor is relatively low with only one day of predicted impact above the relevant criterion....."

Please feel free to contact me directly if you would like to discuss or further clarify any aspect of the above.

Yours faithfully,

Todoroski Air Sciences



Aleks Todoroski

References:

NSW DEC (2005)

"Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales", Department of Environment and Conservation (NSW), August 2005.

PAEHolmes (2011)

"Air Quality Impact Assessment Moolarben Stage 2 Preferred Project". Prepared by PAEHolmes for Hansen Bailey, November 2011.

TAS (2013)

"Moolarben Coal Project - Stage 1 Optimisation Modification - Air Quality and Greenhouse Gas Assessment" Prepared by Todoroski Air Sciences for EMGA Mitchell McLennan, May 2013.

