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12 February 2019

Julie Thomas
Environmental Superintendent
Muswellbrook Coal Company Ltd

Dear Julie,

Ambient Air Monitoring - Muscle Creek Rd - January 2020

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was appointed by Muswellbrook Coal Company Ltd (MCC) to provide static real time atmospheric monitoring for Hydrogen Sulfide (H_2S) and Sulfur Dioxide (SO_2) at one location on Muscle Creek Road, Muswellbrook.

Monitoring is conducted using a GrayWolf Advanced Sense II Probe with Hydrogen Sulfide and Sulfur Dioxide sensors capable of reading in the parts per billion range. Data is recorded as 5 minute average concentrations on an Advanced Sense hand held unit with live data then transmitted to an online account at regular intervals where it can be viewed and downloaded for further analysis by MCC and AECOM staff.

Meteorology data is obtained from the onsite MCC weather station, located approximately 6km to the northwest of the monitoring location. Wind data will be analysed each month with the aim of identifying any trends or relationships between the wind data and monitoring results. Results are reported on a monthly basis with this report presenting results for the period 1 January to 31 January 2020.

2.0 Site Location

The monitoring location on Muscle Creek Rd was chosen due to it being downwind of the mine site during the prevailing north westerly winds. Siting was performed in accordance with AS 3580.1.1 2016.

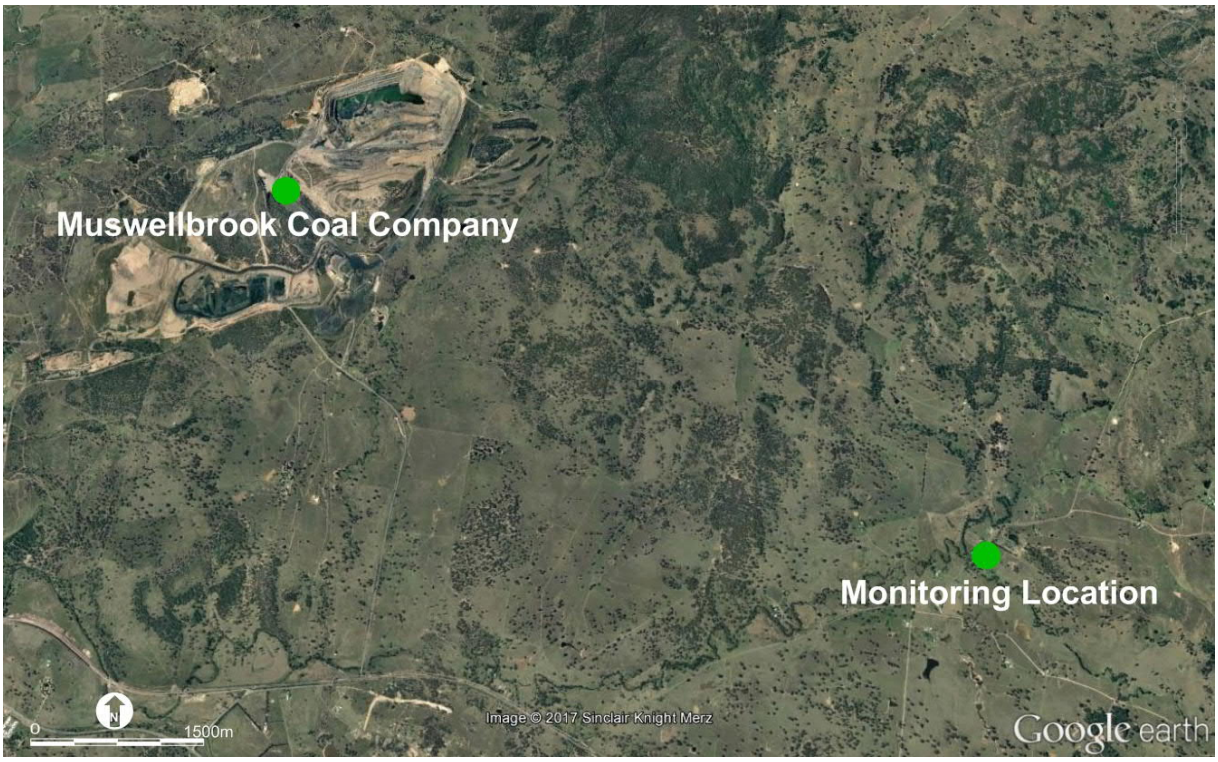

Figure 1 Muscle Creek Rd Monitoring Location

3.0 Assessment Criteria

The gaseous ambient air quality criteria in **Table 1** and **Table 2** are reproduced from the MCC Development Consent (DA 205/2002, Condition 28).

Table 1 H_2S Assessment Criteria

Analyte Averaging Period	Criteria	Unit
H_2S 1 Hour Average	500	ppb
H_2S 24 Hour Average	100	ppb

Table 2 SO_2 Assessment Criteria

Analyte Averaging Period	Criteria	Unit
SO_2 1 Hour Average	200	ppb
SO_2 24 Hour Average	80	ppb

4.0 Methodology

Monitoring is performed by a GrayWolf Advanced Sense II Probe fitted with H_2S and SO_2 sensors. The unit is enclosed in a weatherproof case with the sensor at a height of approximately 1.8m above the ground. While the sensor is designed as a passive sampler, a small fan has been installed to generate airflow past the sensor ensuring adequate air movement to provide a representative atmosphere for gas analysis.

The GrayWolf monitor measures gasses in parts per million (ppm) with the following limits of detection (LOD).

- H_2S: 0.01 ppm; and
- SO_2: 0.01 ppm.

Readings are logged in parts per million (ppm) and are converted to parts per billion (ppb) for reporting purposes, with the LOD's being 10 ppb for both H_2S and SO_2. For the calculation of 1hr and 24hr averages, where the instrument returns a zero reading, half the instrument LOD value is used (5 ppb).

5.0 Results

The GrayWolf Advanced Sense probe ceased logging data on 26 December 2019 with efforts to log into the unit remotely unsuccessful. Limited staff availability over the Christmas break meant a site investigation was conducted upon AECOM returning to work on 6 January 2020. This site visit determined onsite repairs were likely not possible with the unit not loading correctly and the touch screen not responding. As a result, a further site visit was conducted on 7 January when it was determined onsite repairs were not possible and the unit was removed from site and sent to GrayWolf for repairs. A replacement unit was requested by AECOM and a "Microsoft Go" unit has been supplied by GrayWolf to be installed as an interim solution while the Advanced Sense unit is repaired.

The replacement unit was received by AECOM on approximately 23 January however a solution to the USA style power cord/plug provided needed to be researched and purchased online prior to installing onsite. The power cord arrived on 30 January and the unit was installed onsite on 31 January 2020. Reportable data logging commenced 1 February 2020. As a result of the issues discussed, no H_2S or SO_2 data was recorded between 1 January and 31 January 2020.

6.0 Conclusion

AECOM commenced ambient air quality monitoring on Muscle Creek Rd on 26 July 2017. No monitoring results were returned for the period 1 to 31 January 2020 after the unit failed and was sent away for repairs.

Yours faithfully,

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