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Julie Thomas
Environmental Superintendent
Muswellbrook Coal Company Ltd

Dear Julie,

Ambient Air Monitoring - Muscle Creek Rd - October 2019

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 October to 31 October 2019.

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.

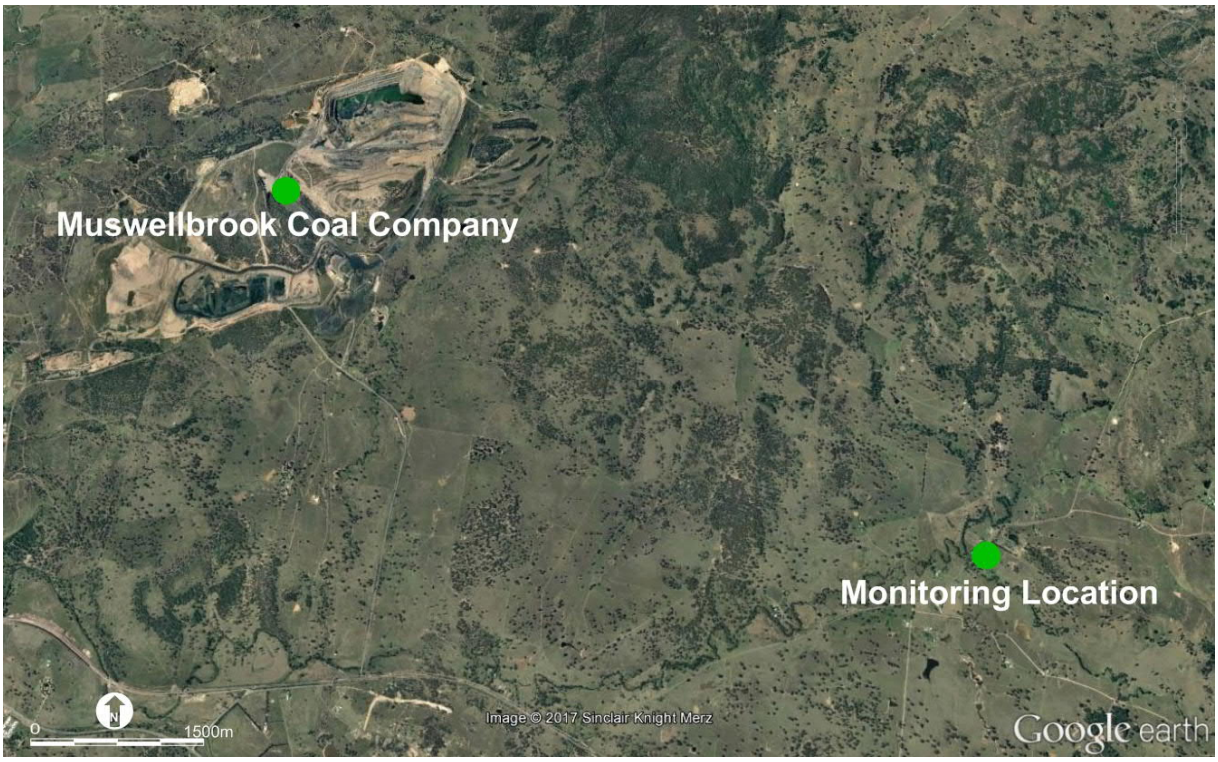

Figure 1 Muscle Creek Rd Monitoring Location

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

Following the GrayWolf Advanced Sense probe failing on the evening of 29 August 2019, the unit was removed from site and sent away for repairs. No replacement unit was installed due to their being no other GrayWolf Advanced Sense probe available. Other replacement options were explored in the interim, however these options would not meet the requirements or criteria of MCC's Development Consent, therefore no gas data was recorded for the October 2019 monitoring period.

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 October 2019 after the unit failed and was sent away for repairs.

Yours faithfully,

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