Muswellbrook Coal Company Limited

Quarterly Spontaneous Combustion Report

For: Environmental Protection License 656

Reporting Period: 1 October – 31 December 2016

Authority Holder: Muswellbrook Coal Company Limited

Report Date: 10 January 2017

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Environmental Coordinator
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FIGURE 1 Open Cut 1 Spontaneous Combustion Outbreaks
FIGURE 2 Open Cut 2 Spontaneous Combustion Outbreaks
1 INTRODUCTION

The coal seams mined by the Muswellbrook Coal Company (MCC) operations are the Greta Coal Measures. These measures have a history of spontaneous combustion. Spontaneous combustion has been a long-term issue at MCC since the first operation commenced in 1907.

The NSW Department of Trade and Investment - Division of Resources and Energy (DRE), and, the Environment Protection Authority (EPA), require MCC to provide spontaneous combustion reports on a quarterly basis. This report identifies:

- Areas of spontaneous combustion;
- Areas capped during the reporting period;
- Areas mined during the reporting period;
- Areas under water infusion;
- Number of complaints relating to spontaneous combustion;
- Regulatory interaction; and
- Management practices.

This document addresses the reporting period of 1 October to 31 December 2016. Text is supported by a plan showing the location and extent of currently identified spontaneous combustion areas.

A Spontaneous Combustion Management Plan (SCMP) was prepared according to the specific requirements of the Development Consent. The main objective of the SCMP is to minimise the occurrence of spontaneous combustion and manage the effect by identification, control, removal, mitigation and prevention in the following areas:

- Existing open cut and underground workings;
- Drilling and blasting;
- Mining of overburden;
- Mining of coal;
- Emplacement of overburden;
- Emplacement of washery reject; and
- Coal stockpiles.

2 OCCURRENCE OF SPONTANEOUS COMBUSTION

A summary of the areas affected by spontaneous combustion and the areas controlled and treated is provided in Table 1. The classification system for spontaneous combustion outbreaks is provided in Table 2. Section 3 outlines the control procedures and treatments that are implemented at MCC.
Table 1: 4th Quarter Summary of Spontaneous Combustion

<table>
<thead>
<tr>
<th>Site Map Location</th>
<th>Intensity Class (A-D)</th>
<th>Affected Area (m²)</th>
<th>Controls Completed</th>
<th>Area Controlled (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Cut 1</td>
<td>C</td>
<td>52²</td>
<td>Mining</td>
<td>8²</td>
</tr>
<tr>
<td>Open Cut 2</td>
<td>C</td>
<td>4¹</td>
<td>Capping</td>
<td>8²</td>
</tr>
</tbody>
</table>

**SUMMARY**
- Total Area Affected: 56²
- Total Area Controlled: 16²

¹ - at end of reporting period
² - during reporting period

Table 2: Classification of Spontaneous Combustion Outbreaks

<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>MAJOR: Open flame - regardless of area affected</td>
</tr>
<tr>
<td>B</td>
<td>MODERATE: Visible steam or smoke - area affected is greater than 200m²</td>
</tr>
<tr>
<td>C</td>
<td>MINOR: Visible steam or smoke – area affected is less than 200m²</td>
</tr>
<tr>
<td>D</td>
<td>OTHER: Other physical evidence of spontaneous combustion (e.g. cracks, coal tars, sulphur crusting, etc)</td>
</tr>
</tbody>
</table>

2.1 **Open Cut 1**

At the end of the reporting period there were 16 areas located in the Open Cut 1 that were actively affected by spontaneous combustion. These areas totalling 68m² were classified as “C-Minor, areas less than 200m² and showing visible steam or smoke”.

A map displaying the approximate location, size and classification of area affected by spontaneous combustion in Open Cut 1, is provided in Figure 1.

2.2 **Open Cut 2**

At the end of the reporting period there were 3 areas located in the Open Cut 2 that was actively affected by spontaneous combustion. The total area was 12m² and is classified as “C-Minor, areas less than 200m² and showing visible steam or smoke”.

A map displaying the approximate location, size and classification of areas affected by spontaneous combustion in the Open Cut 2, is provided in Figure 2.
2.3 Monthly Treatment – Capping, Mining and Water Infusion Areas

Table 3 provides monthly spontaneous combustion management information, detailing the areas of spontaneous combustion managed during the reporting period (1 October – 31 December 2016).

Table 3: Monthly Spontaneous Combustion Management

<table>
<thead>
<tr>
<th>Month</th>
<th>Date of Survey</th>
<th>Area of SC Capped Since Last Survey (m²)</th>
<th>Area of SC Mined Since Last Survey (m²)</th>
<th>Area Under Water Infusion (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No 1 Open Cut</td>
<td>October 2016</td>
<td>1 November 2016</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>November 2016</td>
<td>2 December 2016</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>December 2016</td>
<td>4 January 2017</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>No 2 Open Cut</td>
<td>October 2016</td>
<td>1 November 2016</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>November 2016</td>
<td>2 December 2016</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>December 2016</td>
<td>4 January 2017</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

3 ACTIONS AND PROCEDURES TO PREVENT OR CONTROL SPONTANEOUS COMBUSTION

3.1 Control Methods

MCC has reduced the potential for spontaneous combustion at the mine by using the following strategies during mining:

- removing fuel by mining the coal;
- cooling heated areas with water before mining (water infusion);
- minimising areas of coal exposed to the air prior to mining;
- retaining 5m of non-reactive overburden above workings to exclude oxygen from areas not immediately required for mining operations;
- sealing of decommissioned underground workings with clay or non-reactive overburden to exclude oxygen;
- rapidly burying of reactive overburden to minimise the time that it is exposed to oxygen and rainfall infiltration;
- selective placement of reactive overburden so that it is in the lower portions of the spoil emplacement areas for deep burial (encapsulation) to exclude oxygen and rainfall infiltration; and
• limiting spoil emplacement area lifts, under normal conditions, to a height of 10–15m to exclude oxygen and rainfall infiltration.

If an increased risk of spontaneous combustion is identified as mining progresses, it will be managed by the following additional management strategies to those described above:
• any blast hole which shows signs of spontaneous combustion or is allowing air into areas of spontaneous combustion would be bagged off or backfilled;
• water infusion or water sprays would be used in accordance with the relevant safe work procedure;
• coal subject to active spontaneous combustion would be removed and spread out on the ground surface to allow it to cool; and
• loose heaps of coal that are subject to spontaneous combustion would be spread out and compacted with a dozer and saturated with water from the water cart.

3.2 Prioritisation
During the reporting period, areas requiring spontaneous combustion control were prioritised to indicate to production staff the order in which control works were to be carried out.

3.3 Inspections
The OCE inspects the open cut each shift to identify areas of spontaneous combustion. Technical Services staff inspects the open cut on a weekly basis, placing emphasis on those areas identified in annual inspections, to identify areas of spontaneous combustion. Technical Services staff and/or production staff outline areas requiring control works.

Outbreaks of spontaneous combustion that are reported by the community or other employees are referred to the OCE for inspection and corrective action.

3.4 Resourcing
The OCE is responsible for allocating and coordinating appropriate levels of manning and machinery to undertake control works for outbreaks of spontaneous combustion that have been identified.

4 COMMUNITY COMPLAINTS
There were 14 complaints received referring to spontaneous combustion (odour, or dust/smoke related to spontaneous combustion) between 1 October and 31 December 2016.
5 REGULATORY INTERACTION
Discussions about spontaneous combustion with MSC and EPA were ongoing during the reporting period.

6 ASSESSMENT
Mining of spontaneous combustion areas and water infusion continued on an ongoing basis according to the severity of the problem and the ability to access these areas.
FIGURE 1: Open Cut 1 Spontaneous Combustion Outbreaks
October – December 2016
FIGURE 2: Open Cut 2 Spontaneous Combustion Outbreaks
October – December 2016