ESTABLISHED 1907

Muswellbrook Coal Company Limited

Spontaneous Combustion Report

For: Environmental Protection Licence 656

Reporting Period: July 2022

Authority Holder: Muswellbrook Coal Company Limited

Report Date: 16 August 2022

Approved by: Brooke York
Environmental Advisor

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1.0 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.

A Spontaneous Combustion Management Plan (SCMP) has been 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.

The Environment Protection Authority (EPA) require MCC to provide reports on spontaneous combustion management and monitoring on a monthly basis. This report identifies:

- Spontaneous combustion management during the reporting period;
- Gas monitoring results;
- Number of complaints relating to spontaneous combustion;
- Response to hydrogen sulphide levels above the odour threshold; and
- Correlation between spontaneous combustion on site with gas results and complaints received.

2.0 SPONTANEOUS COMBUSTION MANAGEMENT MEASURES

The daily spontaneous combustion management measures for the reporting period are shown in **Table 1**.

Table 1: Spontaneous Combustion Management Measures

Date	Water Sprays	Water Carts Assisting	Capping	Hot Material Removal	Comments
01/07/22		OC1		S25	
02/07/22		OC1			Wet Weather
03/07/22		OC1		ROM	Wet Weather
04/07/22		OC1			Wet Weather
05/07/22		OC1		ROM	Wet Weather
06/07/22		OC1			Wet Weather
07/07/22		OC1			
08/07/22		OC1		ROM	
09/07/22		OC1			
10/07/22		OC1			

Date	Water Sprays	Water Carts Assisting	Capping	Hot Material Removal	Comments
11/07/22		OC1, S25 & ROM		ROM	
12/07/22		OC1, S25		S25	Wet Weather
13/07/22		OC1, S25 & ROM		S25	
14/07/22		OC1, S25		S25	
15/07/22	S25	OC1, S25		S25	
16/07/22	S25	OC1, S25		S25	
17/07/22	S25	OC1, S25 & ROM		S25	
18/07/22	S25	OC1, S25		S25	
19/07/22	S25	OC1, S25 & ROM		S25	
20/07/22	S25	ROM			
21/07/22	S25	OC1, S25 & ROM		S25	
22/07/22	S25	OC1, S25 & ROM		S25	
23/07/22		OC1			
24/07/22		OC1			
25/07/22	S25	OC1			
26/07/22	S25 & S24	OC1			Wet Weather
27/07/22	S24	OC1			
28/07/22	S24	OC1			
29/07/22	S24	OC1			
30/07/22	S25	OC1, S25 & ROM			
31/07/22	S25	OC1, S25 & ROM			

The classification system for spontaneous combustion outbreaks is provided in **Table 2**. A summary of the areas affected by spontaneous combustion and the areas controlled and treated during the reporting period is provided in **Table 3**. The locations of these areas can be seen in **Figure 1** to **Figure 2**.

Table 2: Classification of Spontaneous Combustion Outbreaks

Classification	Description
A	Open flame
B	Visible steam or smoke
C	Other physical evidence of spontaneous combustion (e.g. cracks, coal tars, sulphur crusting, etc)

* - classification revised in November 2019

Table 3: Summary of Spontaneous Combustion

Site Map Location	Classification (A-C)	Affected Area Without Active Control *(m^2)*	Active Controls Completed	Area Controlled *(m^2)*
Open Cut 1	A B C	4* 88* 20*	Mining Capping Infusion	2310** 0** 5400**
Open Cut 2	B	55*	Excavated and replaced	0**
SUMMARY				
Total Area Affected		167*		
Total Area Controlled		7710**		

* - at end of reporting period

** - during reporting period

3.0 GAS MONITORING RESULTS

The gas monitoring results are displayed graphically in **Figure 3** to **Figure 7.** As noted in these graphs, there were no results above the health impact assessment criteria for the reporting period.

The data capture rates for the reporting period and the last 12 months are shown in **Table 4**.

Table 4: Data Capture Rates

Monitoring Location	Pollutant	Averaging Period	Data Capture – July (%)	Data Capture – 12 Month Rolling (%)
Point 9, Nisbet	Hydrogen Sulphide	30 minutes	94.6	96.7
		1 hour	92.9	94.7
		24 hours	96.8	99.2
Point 10, Muscle Creek	Hydrogen Sulphide	30 minutes	93.4	94.5
		1 hour	90.6	92.1
		24 hours	96.8	96.7
Point 15, Nisbet	Sulphur Dioxide	1 hour	92.7	94.7
		24 hours	100.0	99.2
Point 16, Muscle Creek	Sulphur Dioxide	1 hour	90.7	92.3
		24 hours	93.5	96.7

Data capture for all monitoring sites was greater than 90% during July 2022.

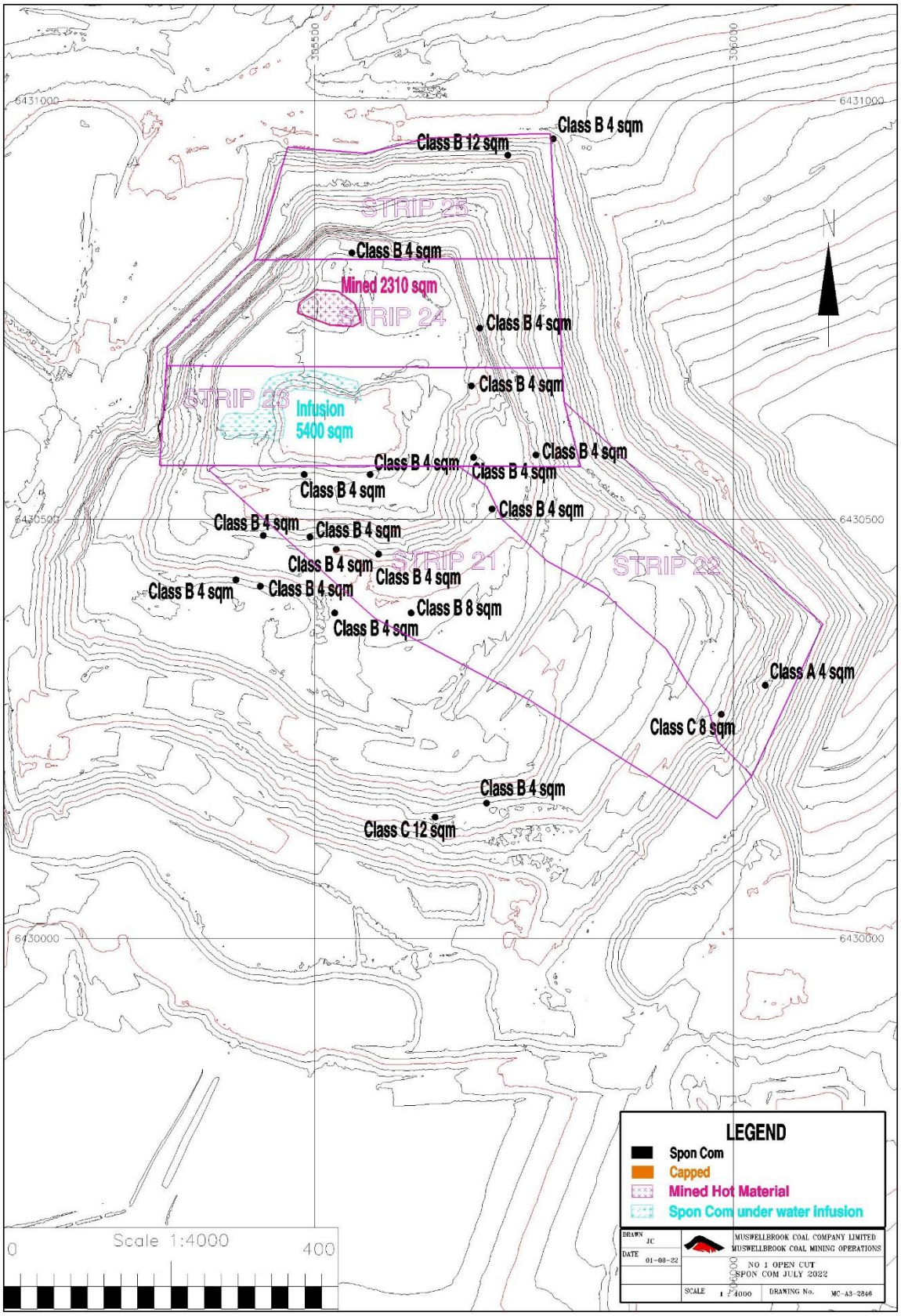

Figure 1: Location of Spontaneous Combustion Outbreaks in Open Cut 1

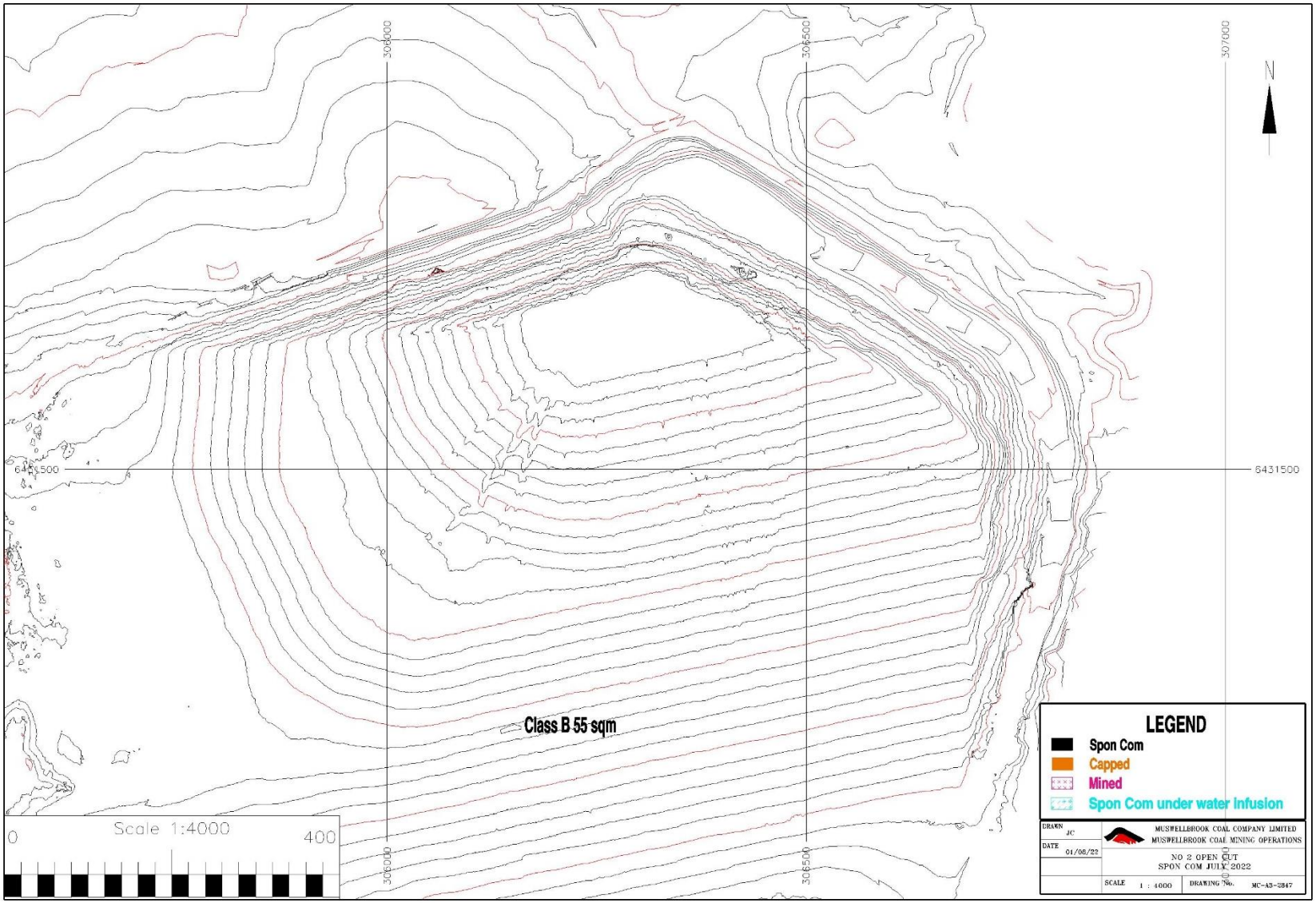

Figure 2: Location of Spontaneous Combustion Outbreaks in Open Cut 2

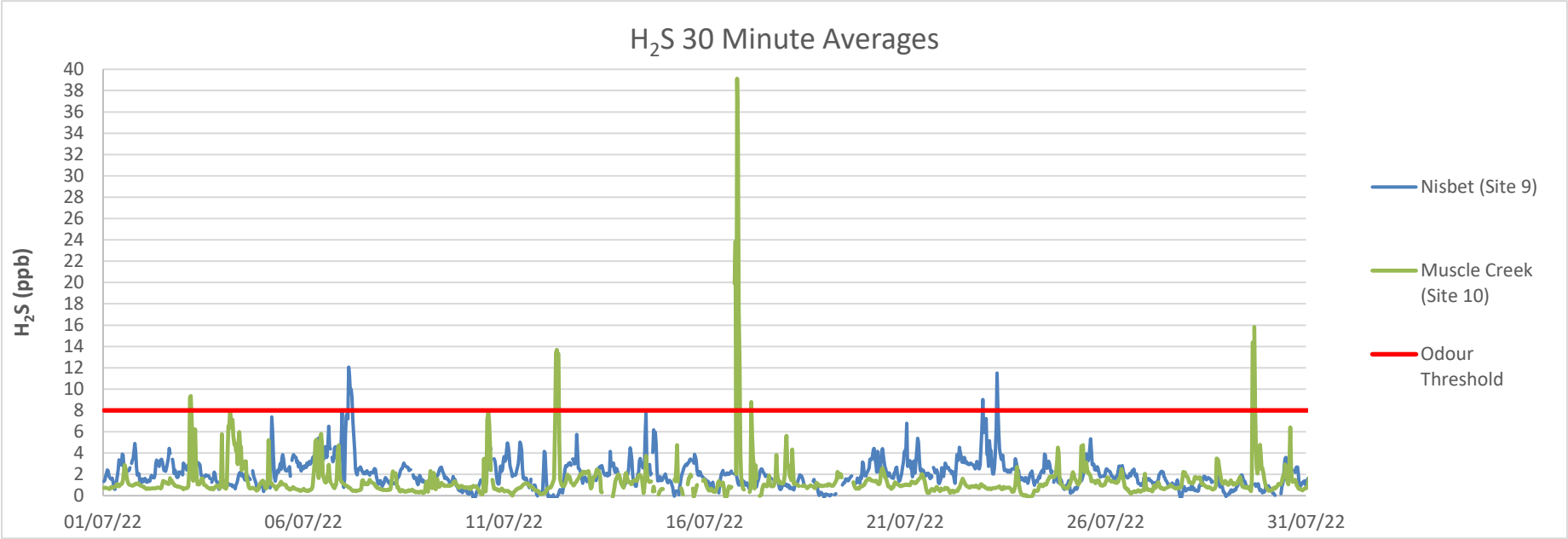

Figure 3: Hydrogen Sulphide 30 Minute Results

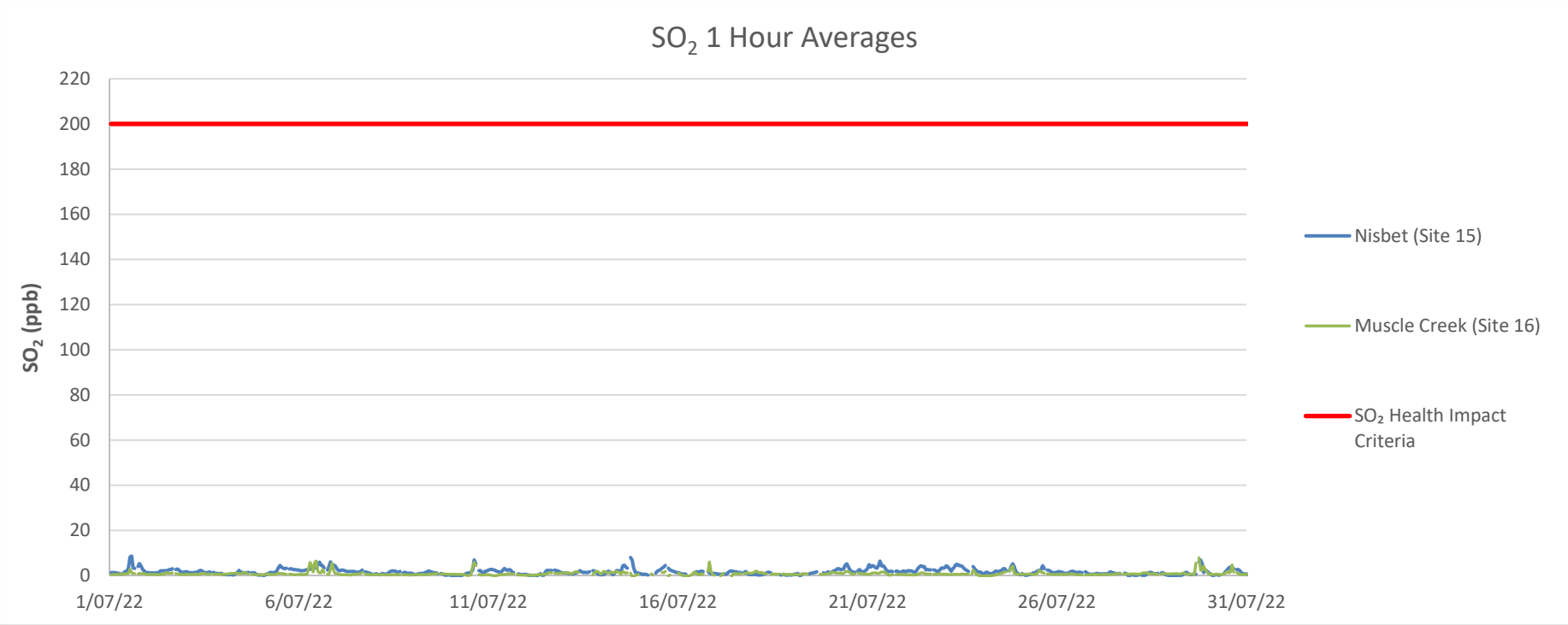

Figure 4: Sulphur Dioxide 1 Hour Results

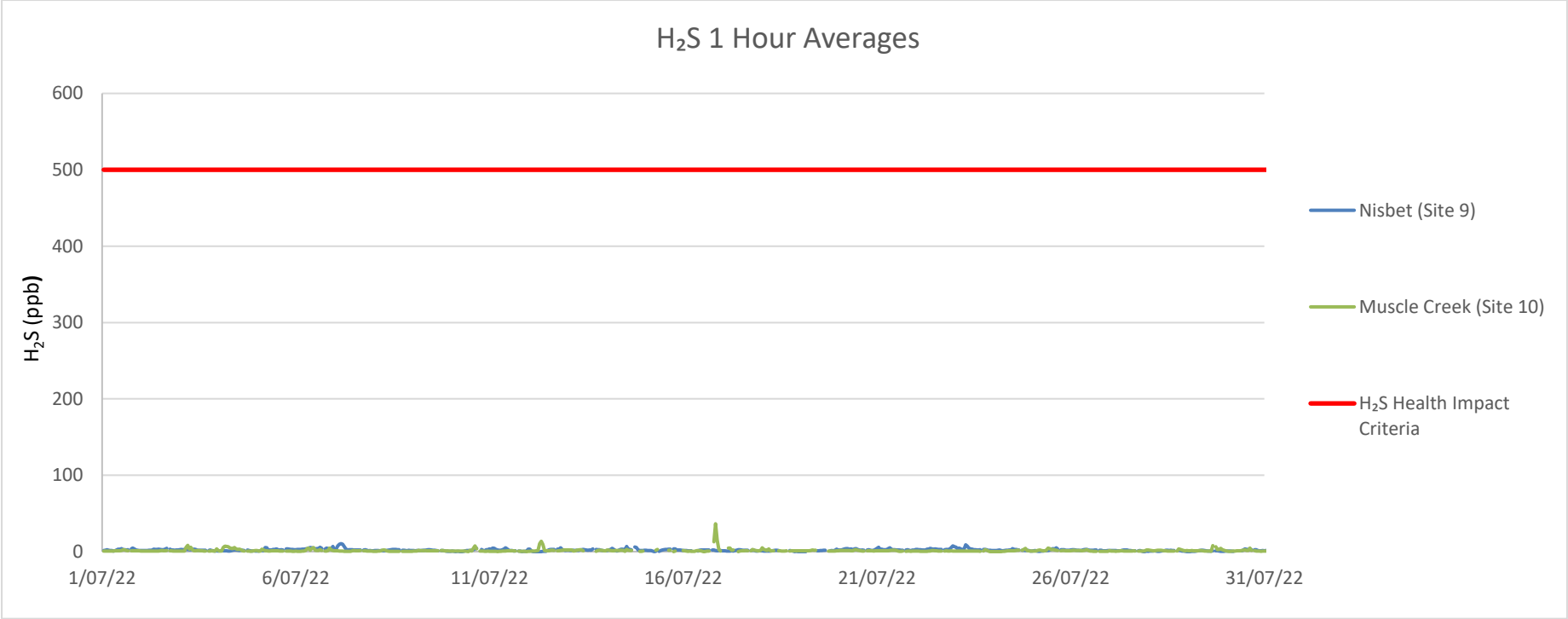

Figure 5: Hydrogen Sulphide 1 Hour Results

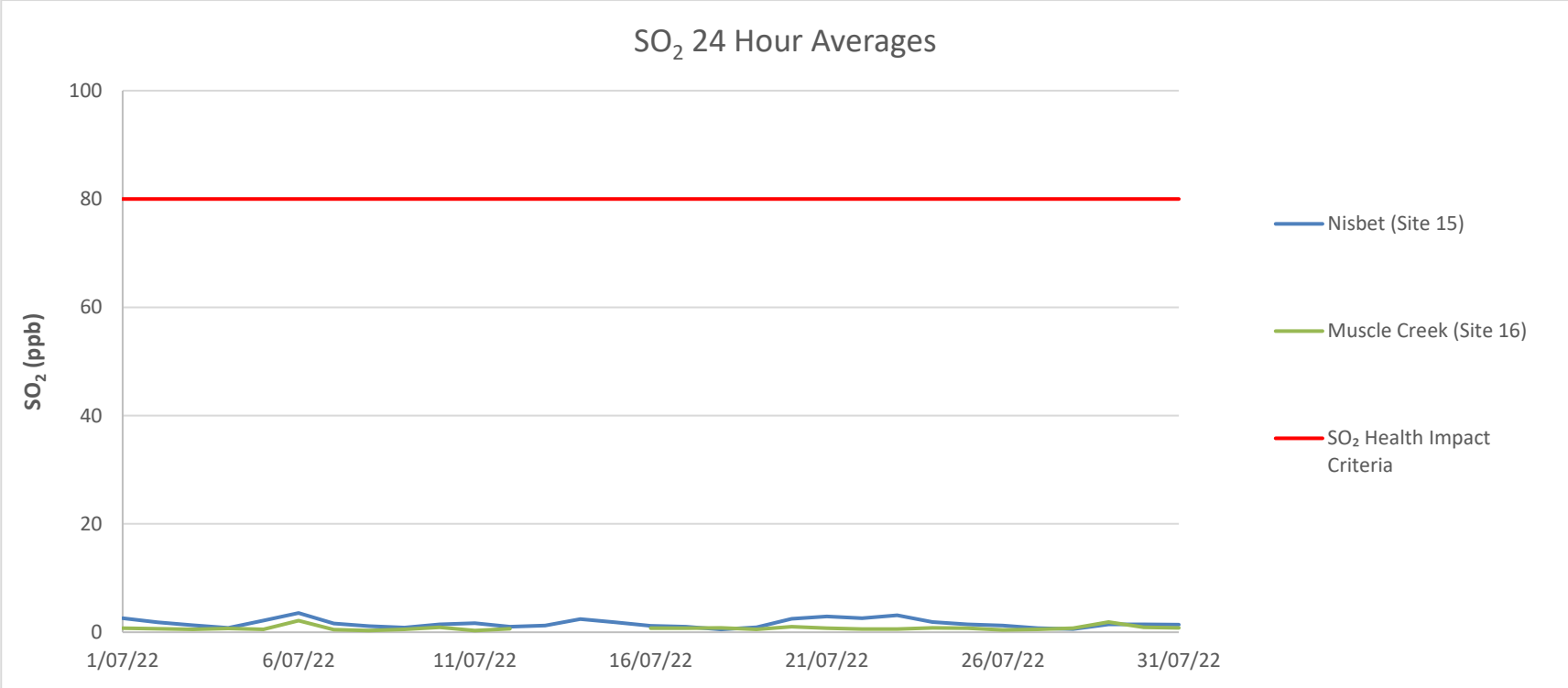

Figure 6: Sulphur Dioxide 24 Hour Results

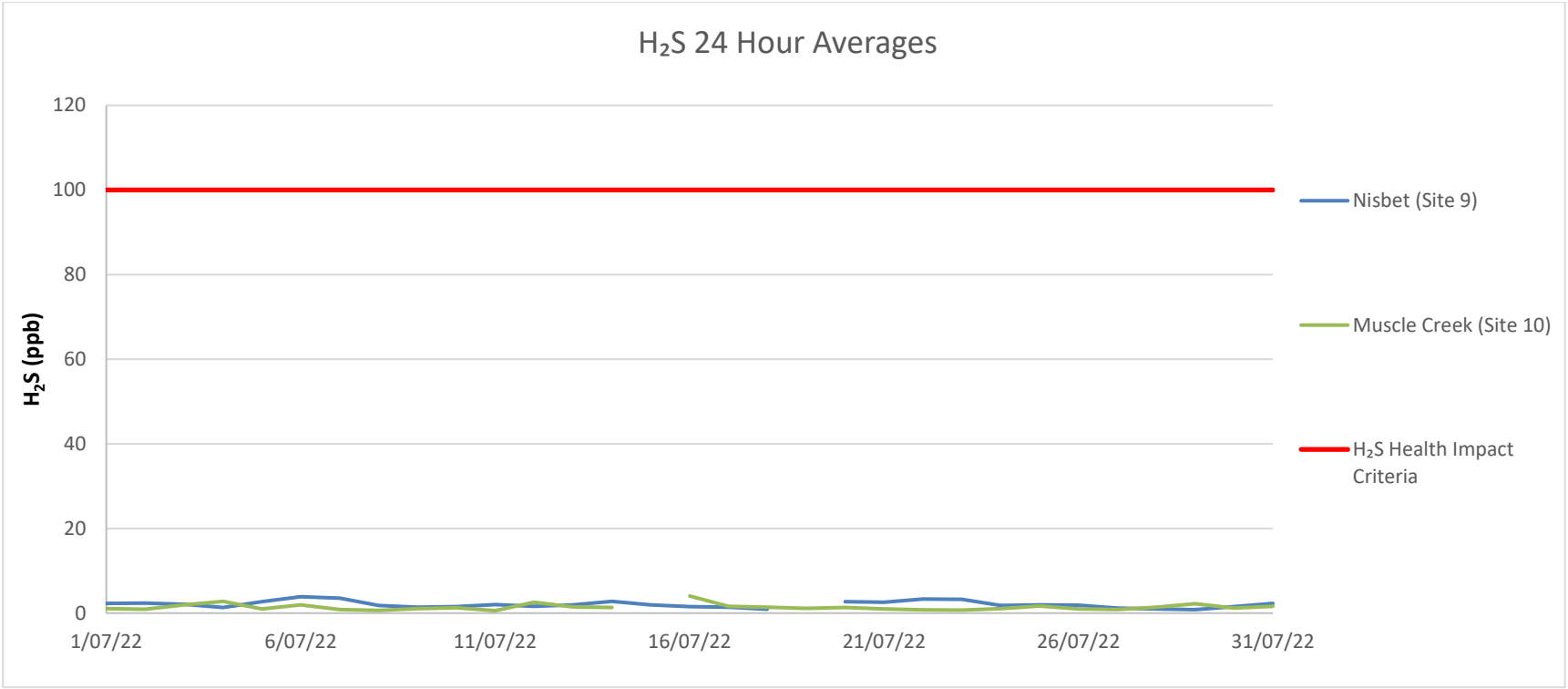

Figure 7: Hydrogen Sulphide 24 Hour Results

4.0 RESPONSE TO ELEVATED GAS LEVELS

When MCC receive an alarm that the hydrogen sulphide levels at the gas monitors are above the odour threshold of 8ppb a review of operations and gas sources in the local area is undertaken. There were fifteen alarms during July, occurring on Sunday 3rd at 3:20am, Monday 4th at 3:30am, Wednesday 6th at 10:20pm, Thursday 7th at 1:30am, and 2:00am, Sunday 10th at 1:30pm, Tuesday 12th at 6:00am, Thursday 14th at 12:10pm, Saturday 16th at 5:30pm, and 6:30pm, Sunday 17th at 3:20am, Friday 22nd at 9:50pm, Saturday 23rd at 6:10am, and Friday 29th at 3:10pm and 4:20pm. For each of the alarms, the elevated results were short duration spikes and returned to low levels after a brief period.

5.0 CORRELATION BETWEEN MANAGEMENT ACTIVITIES AND GAS LEVELS

A review of the correlation between spontaneous combustion management activities and gas levels has been undertaken. This review found that spontaneous combustion management activities were occurring and gas levels during the reporting period were generally low. All possible management controls for spontaneous combustion were being undertaken at the time of the elevated gas levels and operations were modified where possible to reduce the spontaneous combustion emissions.

6.0 CORRELATION BETWEEN COMMUNITY COMPLAINTS AND GAS LEVELS

There were no complaints received during the reporting period.