ESTABLISHED 1907

Muswellbrook Coal Company Limited

Spontaneous Combustion Report

For: Environmental Protection Licence 656

Reporting Period: June 2022

Authority Holder: Muswellbrook Coal Company Limited

Report Date: 18 July 2022

Approved by: Brooke York
Environmental Advisor

Table of Contents

List of Tables

List of Figures

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
01/06/22	S24	OC1			
02/06/22		OC1			
03/06/22		OC1			Wet Weather
04/06/22		OC1			Wet Weather
05/06/22		OC1			
06/06/22		OC1		S25, & RL160	
07/06/22		OC1			
08/06/22		OC1			
09/06/22		OC1			
10/06/22		OC1	RL150		

Date	Water Sprays	Water Carts Assisting	Capping	Hot Material Removal	Comments
11/06/22		OC1			
12/06/22		OC1			
13/06/22	S24 & S25	OC1			
14/06/22		OC1			
15/06/22		OC1	ROM Ramp		
16/06/22		OC1	ROM Ramp		
17/06/22		OC1	ROM Ramp		
18/06/22		ROM S25	ROM Ramp		
19/06/22		OC1 & ROM	RL160-RL190		
20/06/22		S25 & ROM		S24	
21/06/22		OC1			
22/06/22		OC1			
23/06/22		OC1			
24/06/22		OC1	RL140		
25/06/22		OC1	RL150		
26/06/22		OC1			
27/06/22		OC1	S24 East	S24 Coal	
28/06/22		OC1	S10 High Wall	S24	
29/06/22		OC1	RL150	S24	
30/06/22		OC1		S25	

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* 68* 20*	Mining Capping Infusion	0** 0** 3300**
Open Cut 2	N/A	0*	Excavated and replaced	0**
SUMMARY				
Total Area Affected		92*		
Total Area Controlled		3376**		

* - 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 – June (%)	Data Capture – 12 Month Rolling (%)
Point 9, Nisbet	Hydrogen Sulphide	30 minutes	96.0	96.5
		1 hour	93.9	94.5
		24 hours	100.0	98.9
Point 10, Muscle Creek	Hydrogen Sulphide	30 minutes	97.6	94.8
		1 hour	95.4	92.5
		24 hours	100.0	97.0
Point 15, Nisbet	Sulphur Dioxide	1 hour	92.6	94.4
		24 hours	96.7	98.4
Point 16, Muscle Creek	Sulphur Dioxide	1 hour	95.4	92.7
		24 hours	100.0	97.3

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

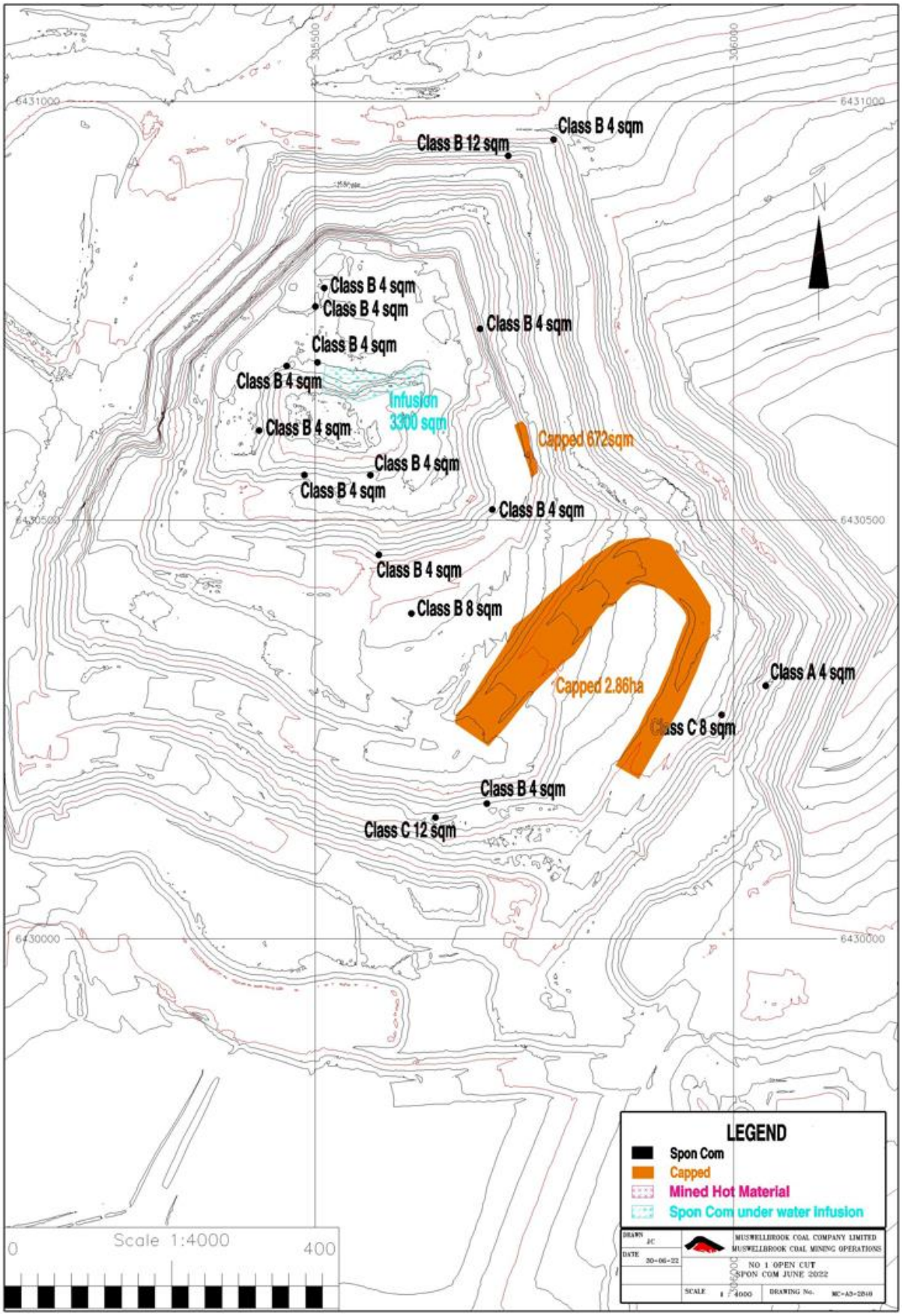

Figure 1: Location of Spontaneous Combustion Outbreaks in Open Cut 1

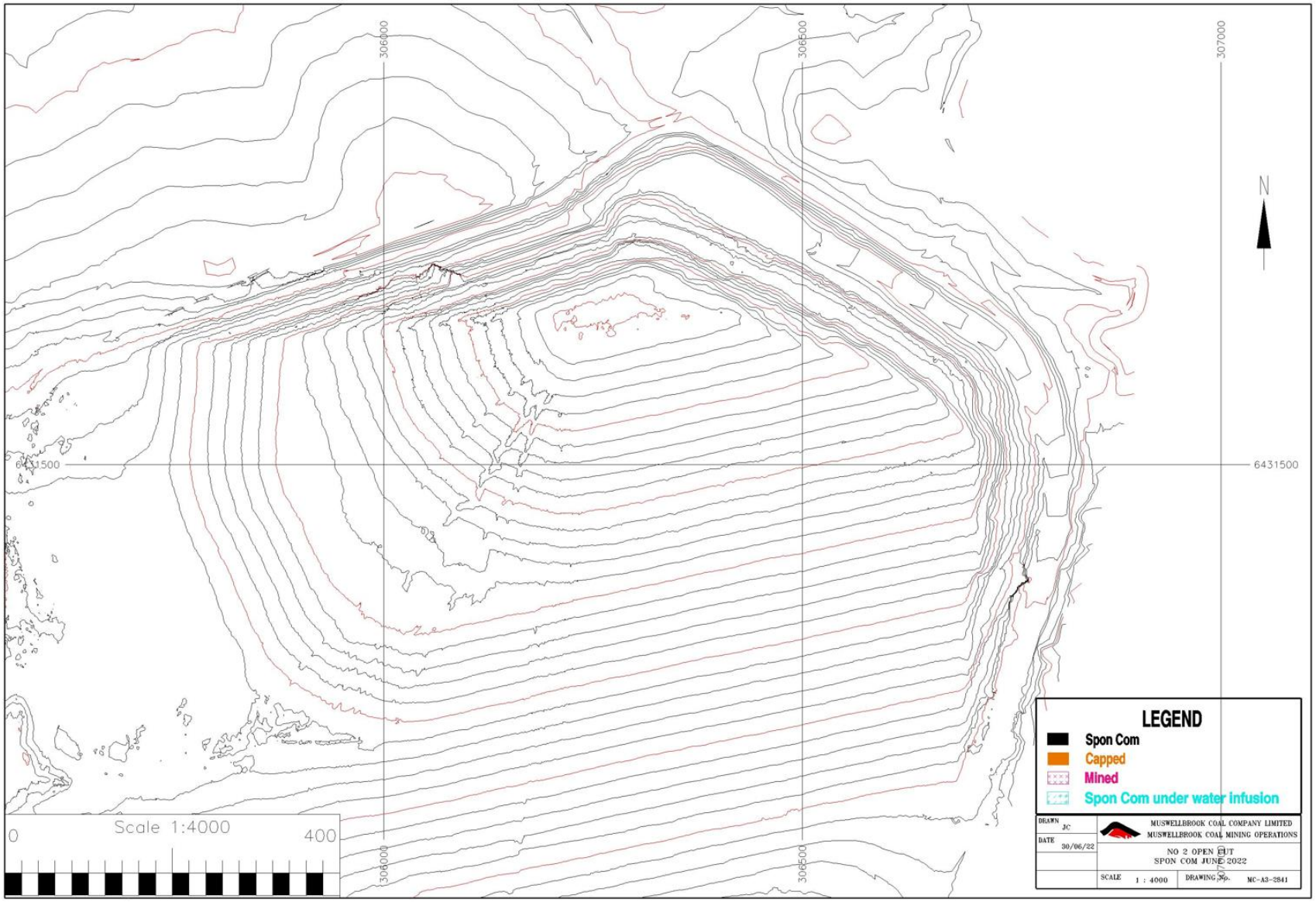

Figure 2: Location of Spontaneous Combustion Outbreaks in Open Cut 2

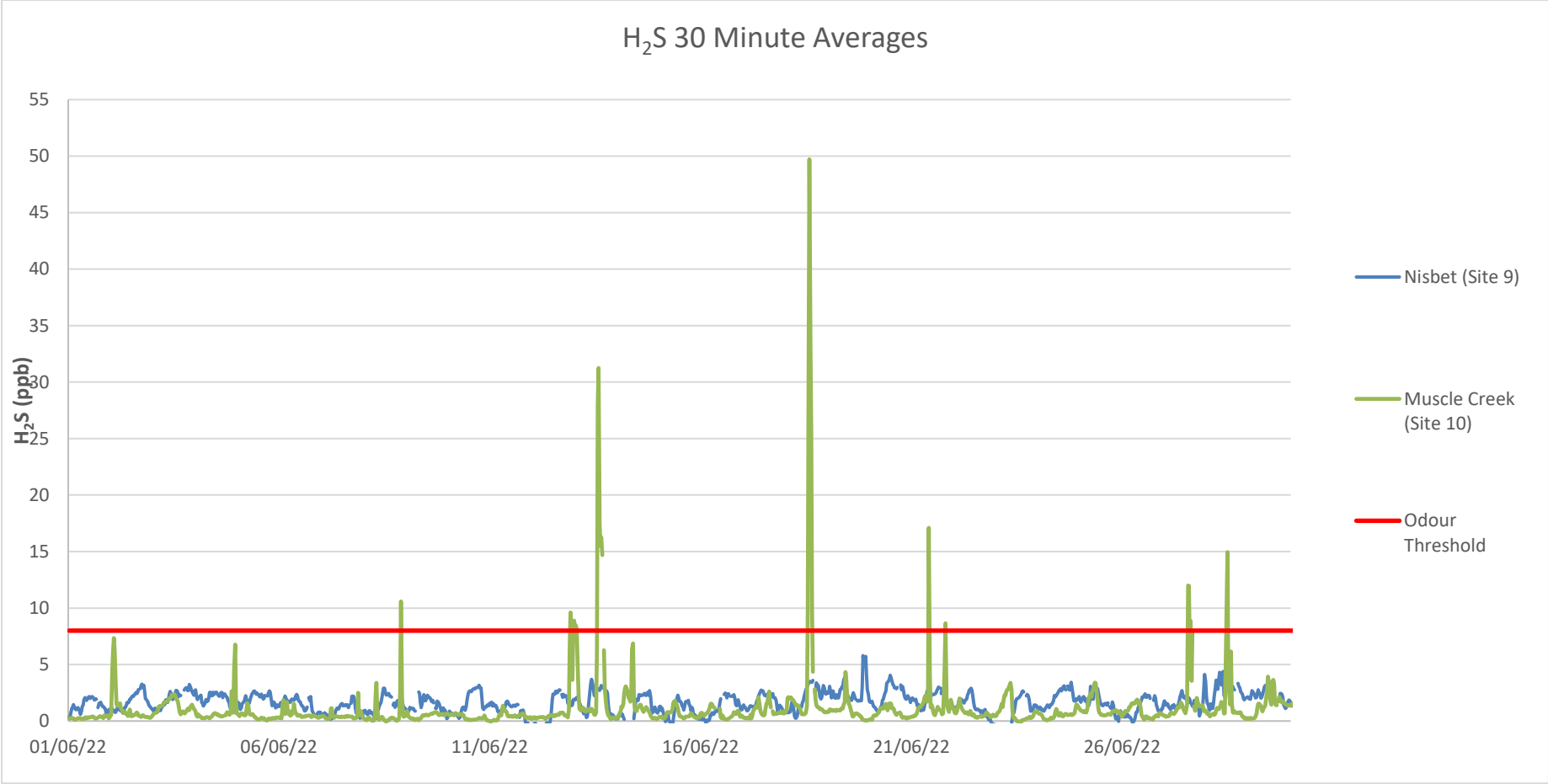

Figure 3: Hydrogen Sulphide 30 Minute Results

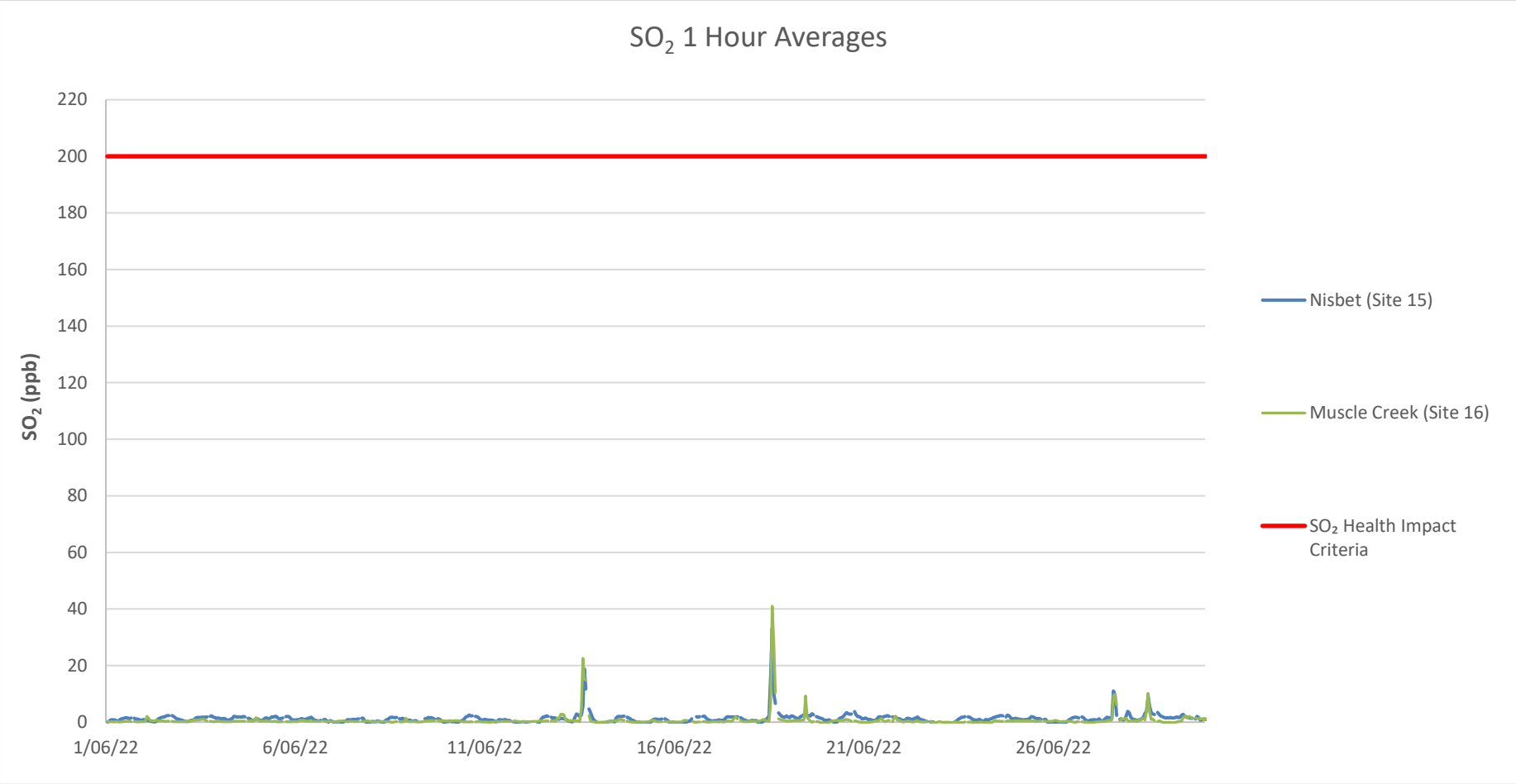

Figure 4: Sulphur Dioxide 1 Hour Results

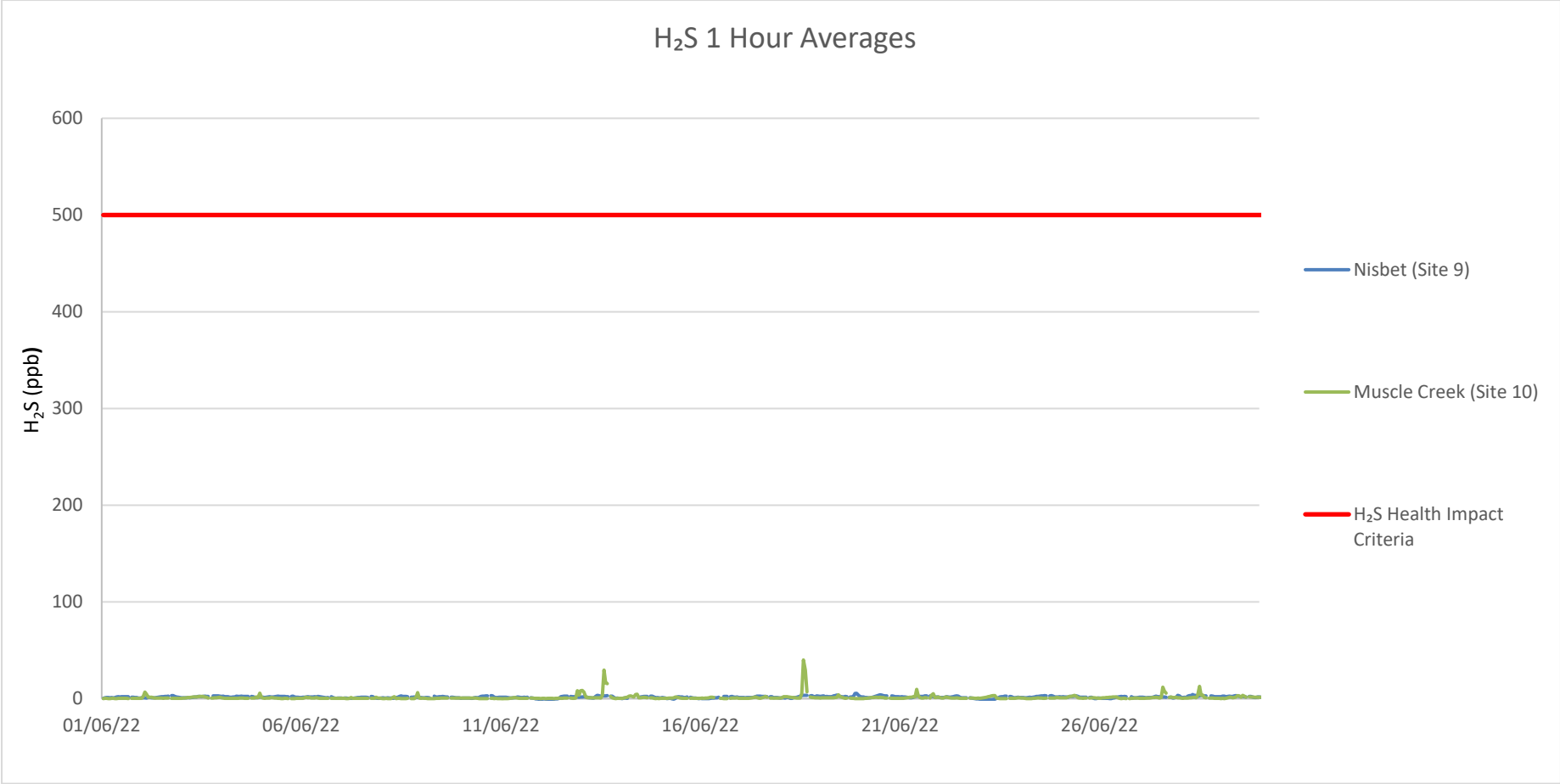

Figure 5: Hydrogen Sulphide 1 Hour Results

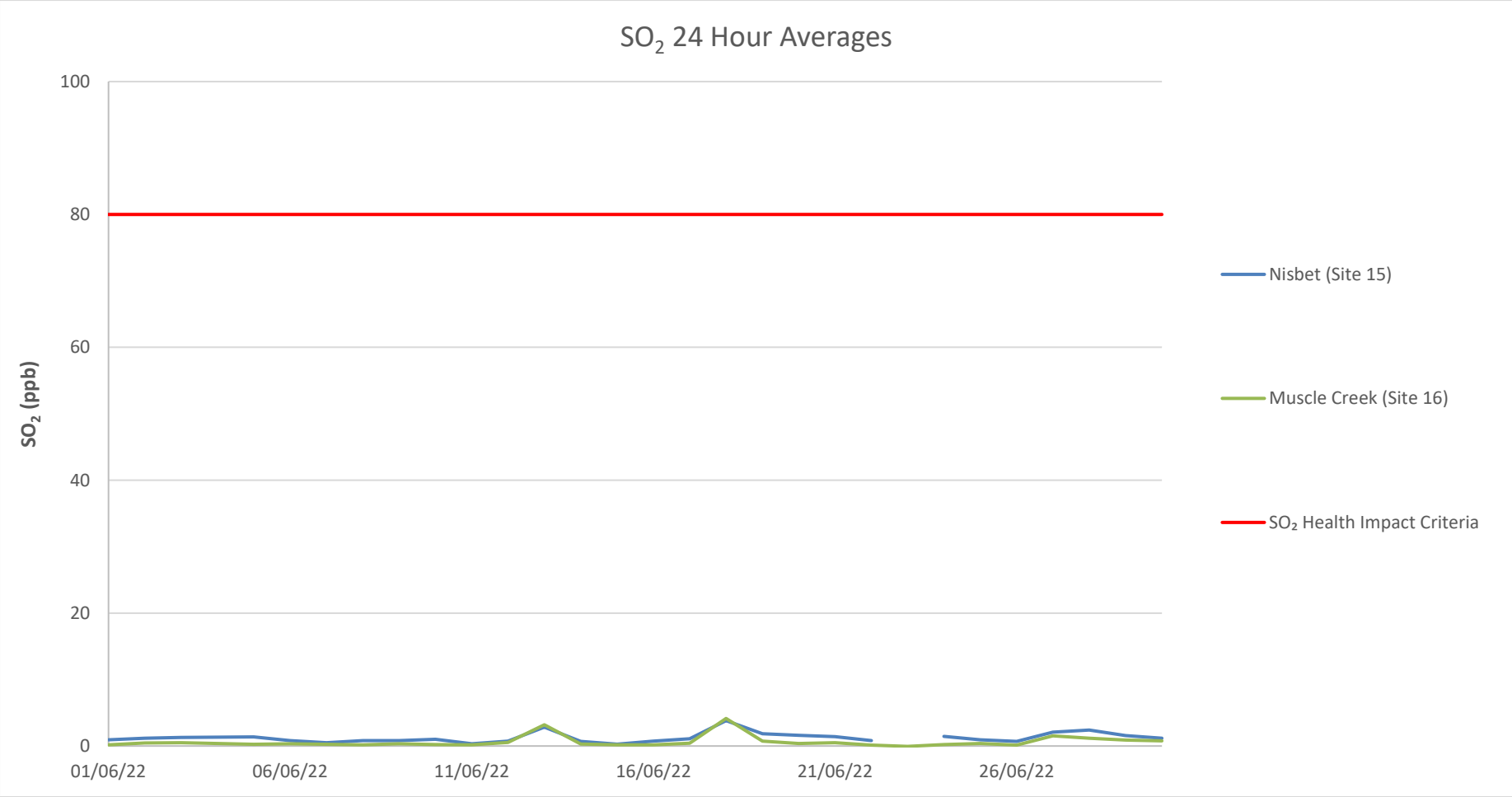

Figure 6: Sulphur Dioxide 24 Hour Results

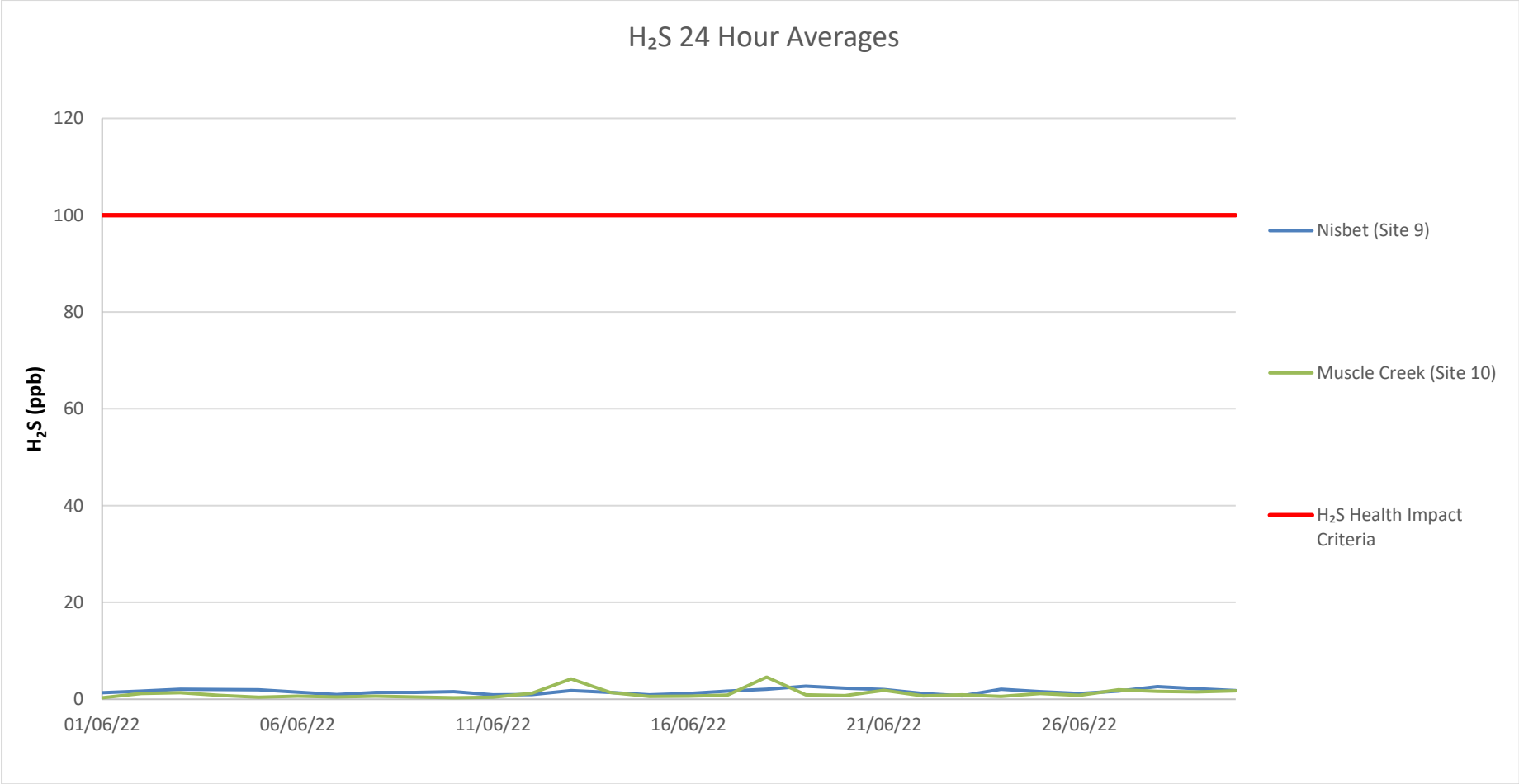

Figure 7: Hydrogen Sulphide 24 Hour Results

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 eleven alarms during June, occurring on Wednesday 8th at 9:30pm, Sunday 12th at 10:00pm, Monday 13th at 12:00am, Monday 13th at 13:00pm, Saturday 18th at 1:00pm, Tuesday 21st at 10:00am, Tuesday 21st at 7:30pm, Monday 27th at 1:00pm, 3:00pm and 4:00pm and Tuesday 28th at 11:30am.

On the 8th and 12th watercarts were cooling hot spots. On the 13th a water infusion program occurring cooling hot spots. On the 18th watercarts were focusing on hot spots on the ROM and hot material was being capped on the ROM Ramp. On the 21st watercarts were cooling hot spots and on the 27th and 28th there was hot material being removed from strip 24, capping of hot material in strip 24 and strip 10 and watercarts focusing on hot spots.

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 was one odour complaint received during the reporting period. The complaint occurred at 6:30pm on the 21st which did coincide with an alarm which occurred at 7:30pm. Operations had watercart running all shift focusing on hot spots, the OCE attended the Muscle Creek monitor and noted they were unable to detect any odour at that time.