Muswellbrook Coal Company Limited

Spontaneous Combustion Report

For: Environmental Protection Licence 656

Reporting Period:	**February 2020**
Authority Holder:	**Muswellbrook Coal Company Limited**
Report Date:	**29 April 2020**
Approved by:	**Julie Thomas** **Environmental Superintendent**

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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
01/02/20	-	OC1	S21	S22 & RL137 Dump	
02/02/20	-	OC1	S21	RL137 Dump	
03/02/20	-	OC1	S22	S22	
04/02/20	-	OC1	-	-	
05/02/20	-	OC1	S21	-	
06/02/20	-	S21	S21	-	
07/02/20	-	-	-	-	Wet weather
08/02/20	-	OC1	S21	S22	

Date	Water Sprays	Water Carts Assisting	Capping	Hot Material Removal	Comments
09/02/20	-	-	S21	-	Clay seal complete in S21
10/02/20	-	-	-	-	Wet weather
11/02/20	S21	OC1	RL137 Dump	S22	
12/02/20	-	OC1	-	-	
13/02/20	-	OC1	-	-	
14/02/20	-	OC1	RL137 Dump	-	
15/02/20	-	OC1	-	-	
16/02/20	-	OC1	-	-	
17/02/20	-	-	RL137 Dump	-	Wet weather
18/02/20	-	OC1	-	-	
19/02/20	-	OC1	S22 & RL137 Dump	-	Pipe installed for water infusion. Commissioning.
20/02/20	S21	OC1	-	-	
21/02/20	-	S22	-	S22	Repair Pipe
22/02/20	-	OC1	RL155 Dump	S22 & RL155 Dump	New outbreak in S22 Anticline
23/02/20	-	OC1	RL137 & RL155	S22, RL155 & ROM	
24/02/20	S22	S22	RL137 Dump	S22	
25/02/20	-	OC1	-	S22	
26/02/20	-	OC1	-	-	Infusion pipe being repaired – water carts assisting with infusion
27/02/20	OC1	OC1	-	-	
28/02/20	OC1	OC1	-	-	
29/02/20	OC1	OC1	-	S22	

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	18* 16*	Mining Capping Infusion	30** 30** 5,200**
Open Cut 2	N/A	0*	None Required	0**
SUMMARY				
Total Area Affected		24 *		
Total Area Controlled		60**		

* - at end of reporting period

** - during reporting period

No spontaneous combustion outbreaks were observed in Open Cut 2 throughout February 2020. Therefore, no active controls were implemented in Open Cut 2.

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. There was only one result in the reporting period where H_2S was above the odour threshold. This occurred on 17th February 2020 at 07:30am at Muscle Creek (Site 10).

The data capture rates for the reporting period and the last 12 months are shown in **Table 4**. The monthly data capture rate was less than 90% at Point 15 due to a fault in the sample line solenoid. After the solenoid was replaced on 13th February 2020, data capture returned to normal.

Table 4: Data Capture Rates

Monitoring Location	Pollutant	Averaging Period	Data Capture – February (%)	Data Capture – 12 Month Rolling (%)
Point 9, Nisbet	Hydrogen Sulphide	30 minutes	92.3	96.0
		1 hour	91.1	94.4
		24 hours	93.1	98.4
Point 10, Muscle Creek	Hydrogen Sulphide	30 minutes	96.3	95.7
		1 hour	95.5	93.9
		24 hours	100.0	98.4
Point 15, Nisbet	Sulphur Dioxide	1 hour	**66.4**	92.6
		24 hours	**69.0**	96.4
Point 16, Muscle Creek	Sulphur Dioxide	1 hour	95.5	94.1
		24 hours	100.0	98.4

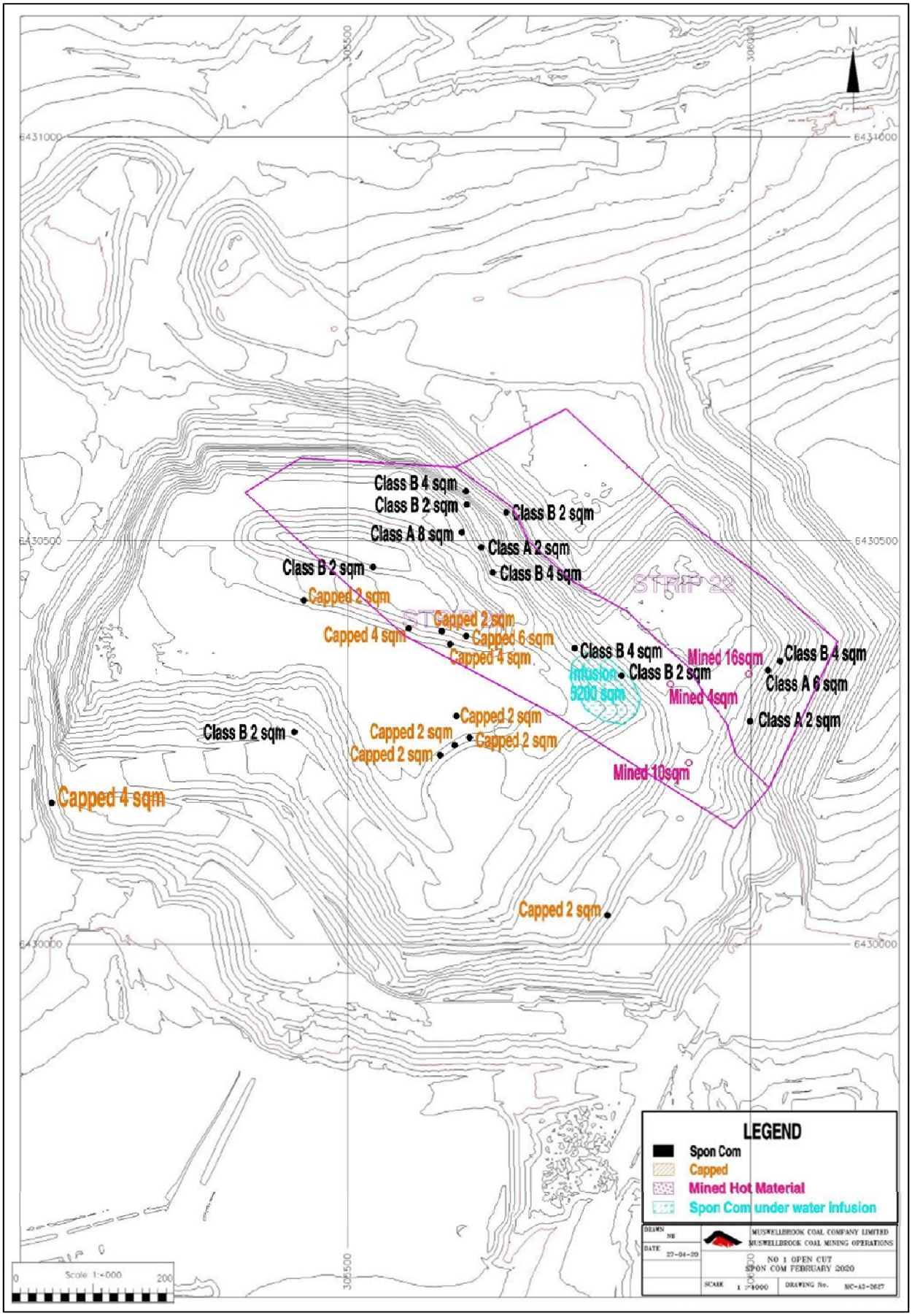

Figure 1: Location of Spontaneous Combustion Outbreaks in Open Cut 1

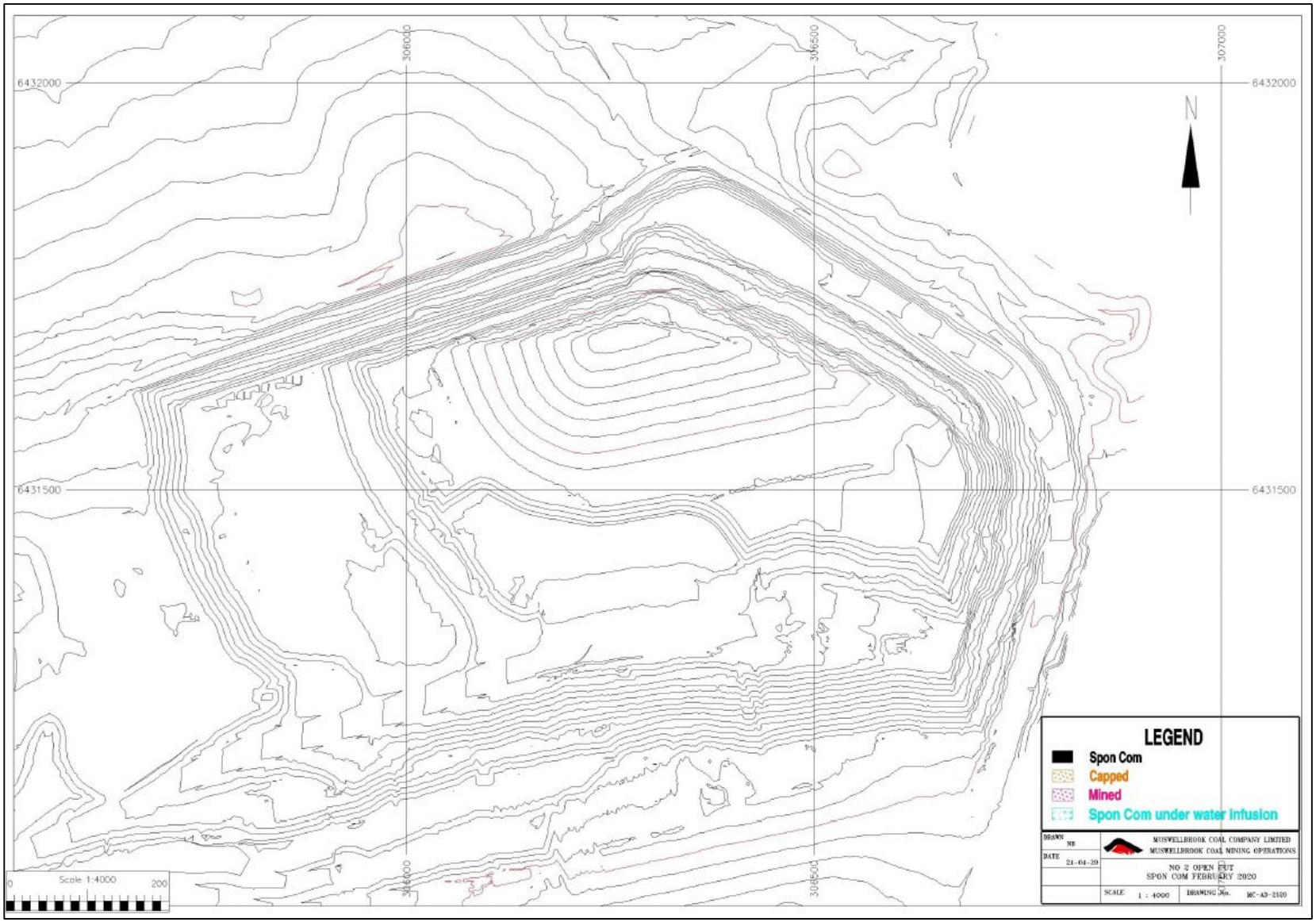

Figure 2: Location of Spontaneous Combustion Outbreaks in Open Cut 2

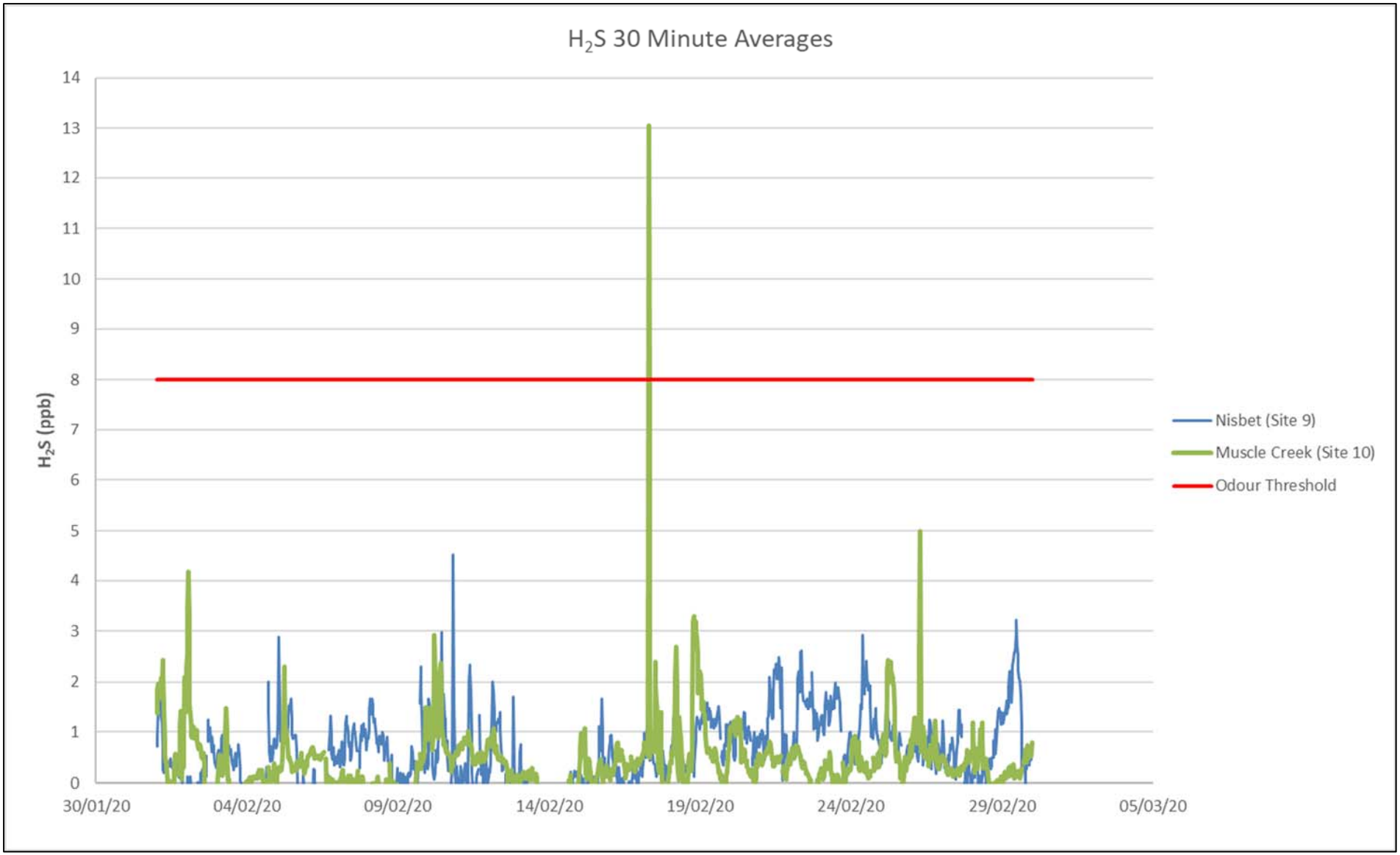

Figure 3: Hydrogen Sulphide 30 Minute Results

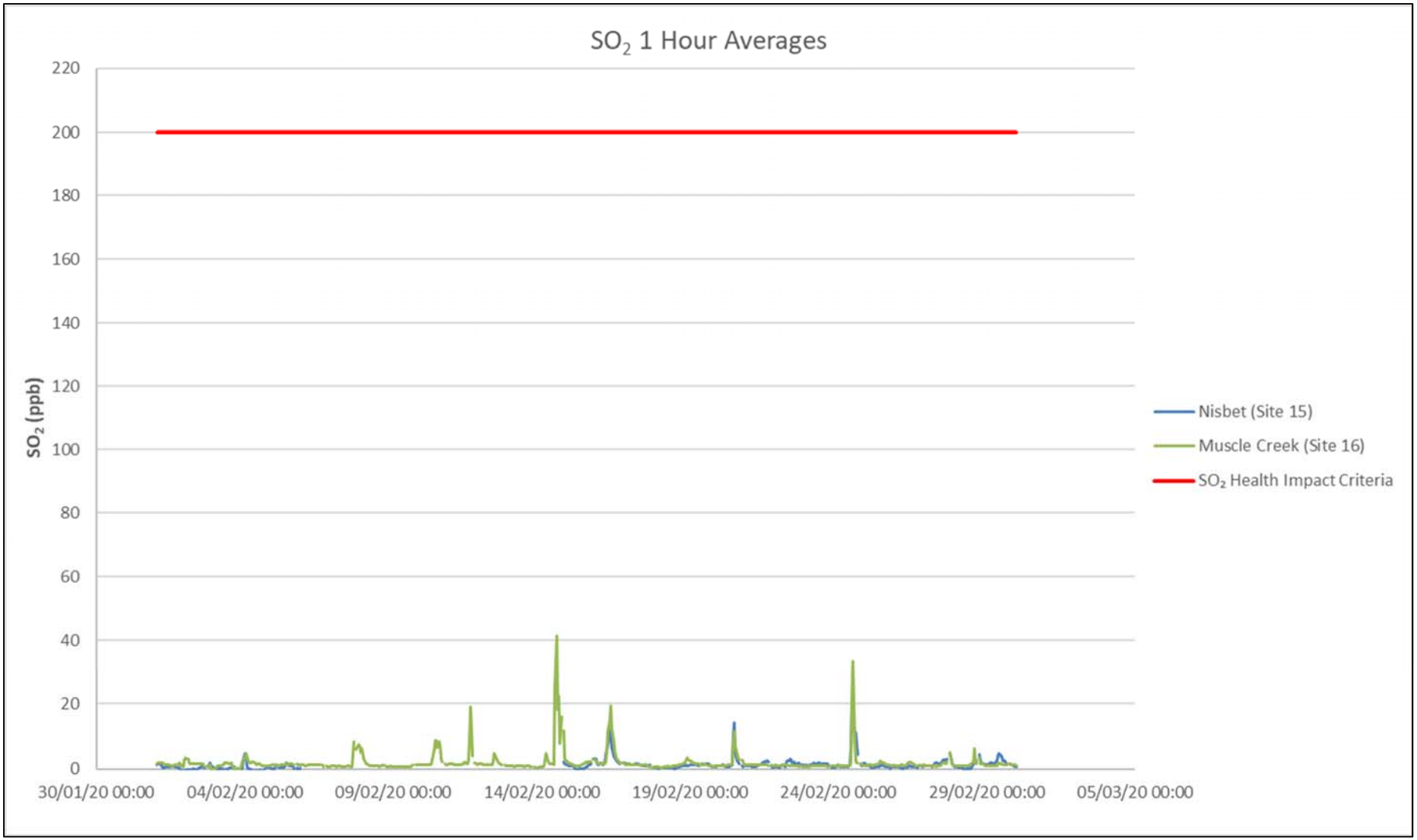

Figure 4: Sulphur Dioxide 1 Hour Results

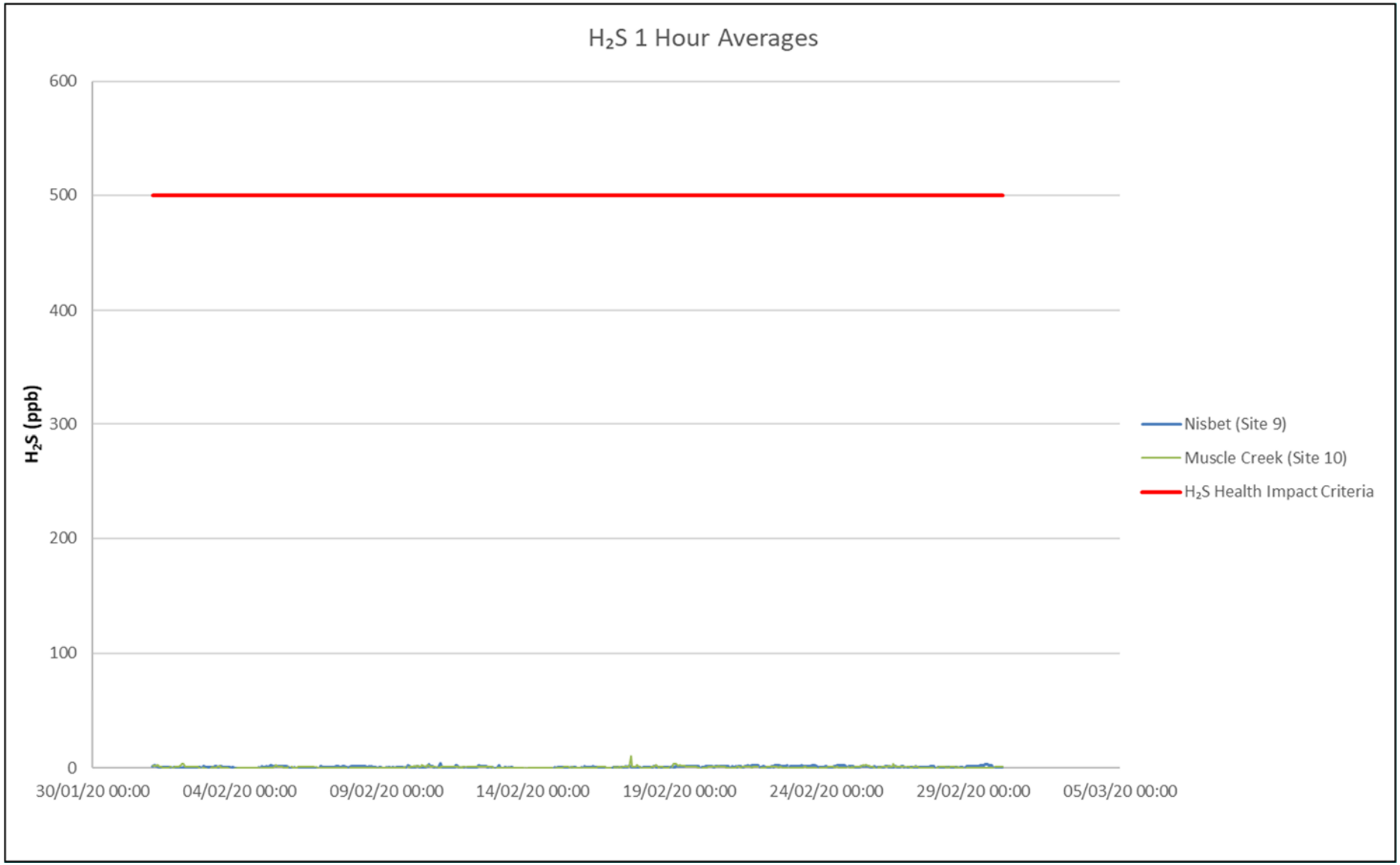

Figure 5: Hydrogen Sulphide 1 Hour Results

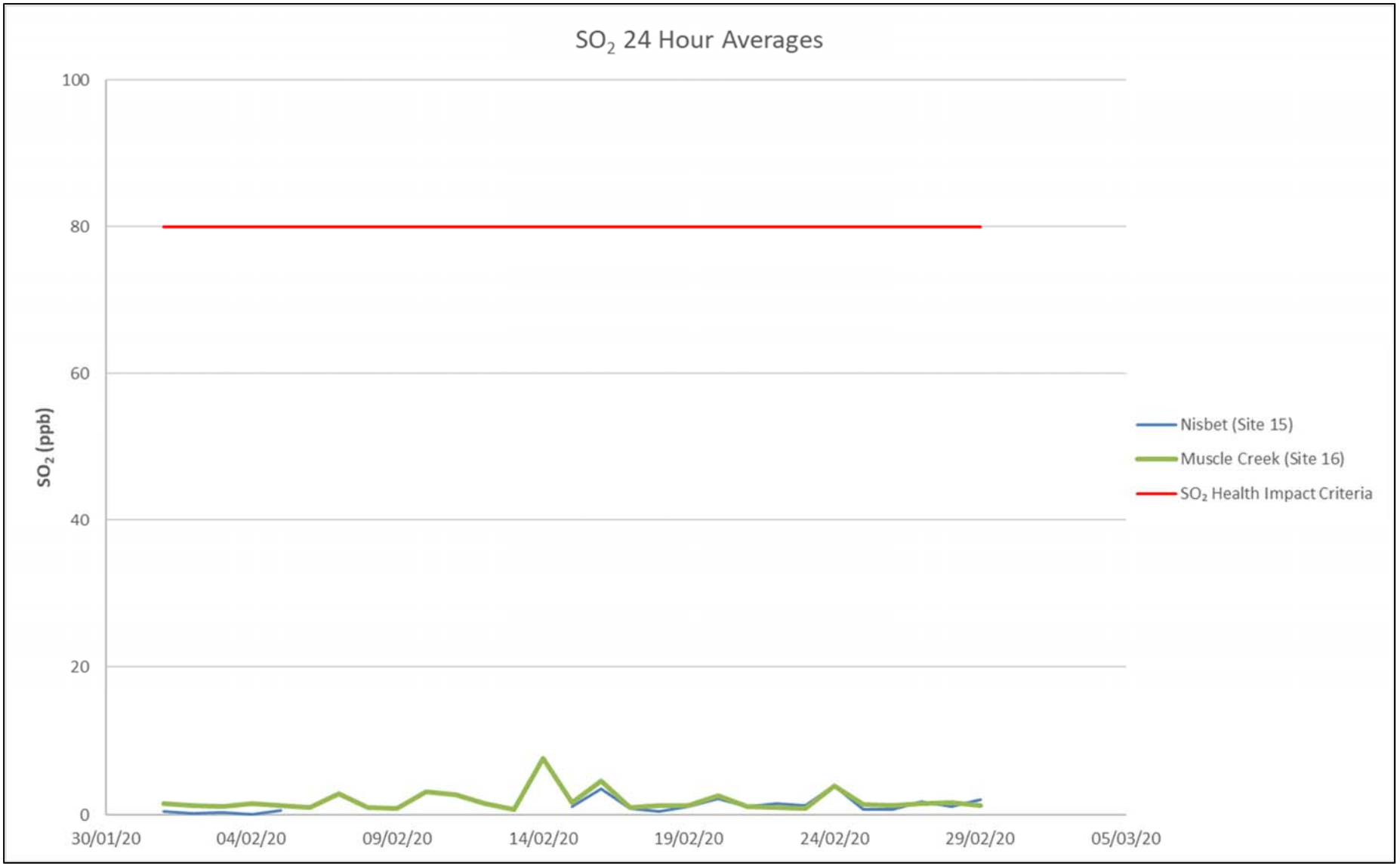

Figure 6: Sulphur Dioxide 24 Hour Results

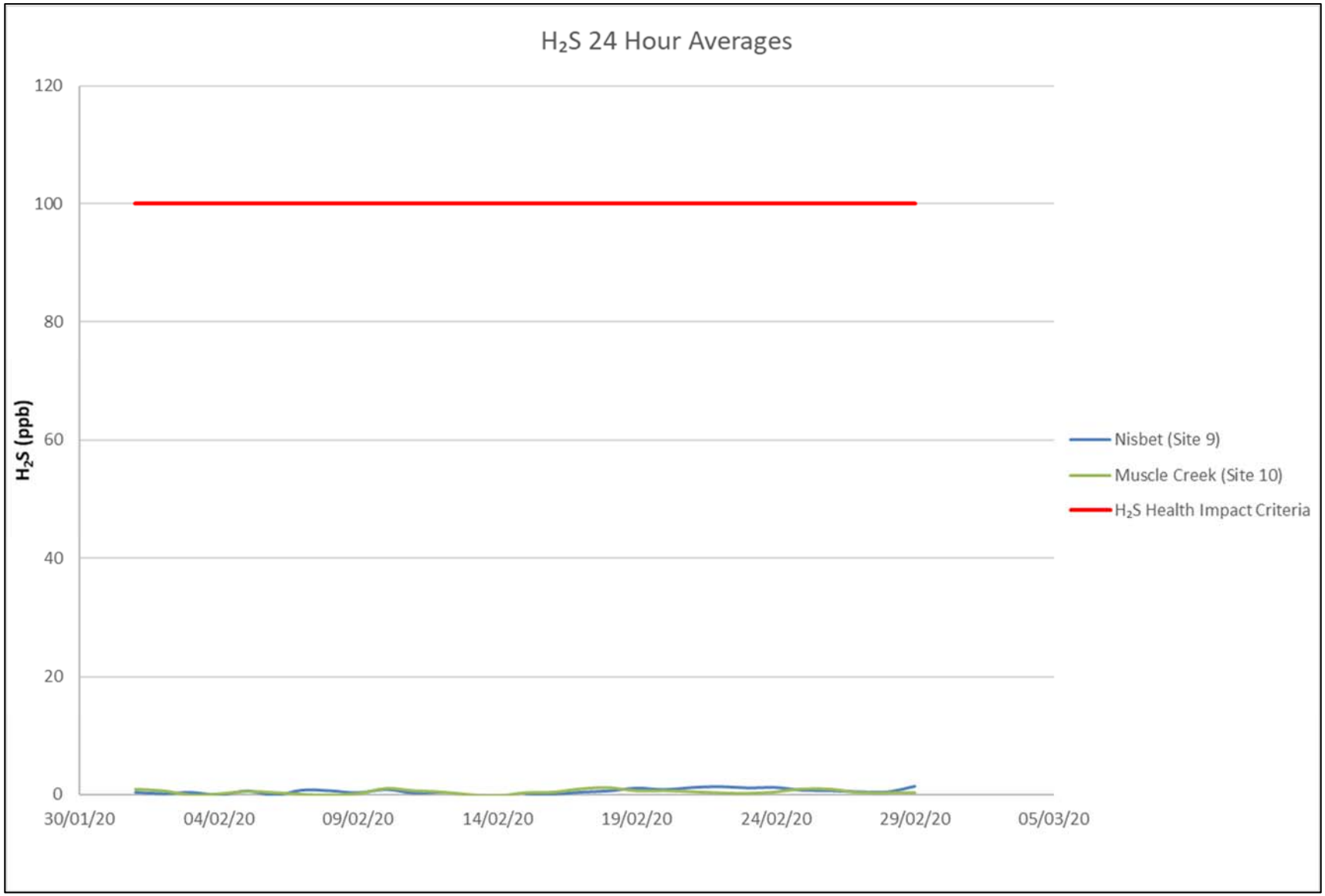

Figure 7: Hydrogen Sulphide 24 Hour Results

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. The responses to any alarms received during the reporting period are shown in **Table 5**. No alarms were received during the reporting period due to an issue with the alarming system and alarm trigger. Despite an alarm not being received, an investigation into the elevated hydrogen sulphide level was conducted. This shows that the wind was blowing from the monitor to the mine site indicating that the H_2S was most likely from another source.

Table 5: Actions Taken in Response to Elevated Gas Levels

Date and Time of Alarm	Location of Alarm	Weather Conditions at Time of Alarm	Response to Alarm	Classification of Spontaneous Combustion
17/02/2020 7:30am	Muscle Creek	Southerly wind at 1.2m/s. Total Rainfall = 0.8mm between 3:45am and 7:30am. Stability Class C	Spontaneous combustion management was being undertaken including clay capping.	Combination of Class A and B.

5.0 CORRELATION BETWEEN MANAGEMENT ACTIVITIES AND GAS LEVELS

A review of the correlation between spontaneous combustion management activities, gas levels and complaints has been undertaken. This review has found that spontaneous combustion management activities were occurring throughout the reporting period and gas levels during the reporting period were low.

6.0 CORRELATION BETWEEN COMMUNITY COMPLAINTS AND GAS LEVELS

There was one complaint received during the reporting period, which related to odour impacts from spontaneous combustion. This complaint was received at 6:05pm on 9th February 2020 from Scone, which is located approximately 30km north of the site. A review of the gas data for the complaint received on 9th February 2020 shows that the 30 minute and 1-hour gas levels were <2ppb for both sulphur dioxide and hydrogen sulphide at both monitoring locations.