Muswellbrook Coal Company Limited

Spontaneous Combustion Report

For: Environmental Protection Licence 656

Reporting Period:	**June 2020**
Authority Holder:	**Muswellbrook Coal Company Limited**
Report Date:	**21 July 2020**
Approved by:	**Julie Thomas** **Environmental Superintendent**

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
01/06/20	-	OC 1 Dump	-	-	
02/06/20	-	OC1	-	-	
03/06/20	-	OC1	-	-	
04/06/20	-	OC1	S21	-	
05/06/20	-	S21 and S22	-	-	
06/06/20	-	S21 andS22	-	-	
07/06/20	-	S21 andS22	-	-	
08/06/20	-	OC1	-	-	

Date	Water Sprays	Water Carts Assisting	Capping	Hot Material Removal	Comments
09/06/20	-	OC1	-	-	
10/06/20	-	OC1	-	-	
11/06/20	-	OC1	-	-	
12/06/20	-	OC1	-	S22	
13/06/20	-	OC1	-	S22	
14/06/20	-	OC1	-	S22	Wet Weather
15/06/20	-	OC1 and ROM	-	S22	
16/06/20	-	OC1	-	S22	
17/06/20	-	S22 and OC1 Dump	-	-	
18/06/20	-	S22 and OC1 Dump	-	-	
19/06/20	-	OC1	-	-	
20/06/20	-	OC1	-	-	
21/06/20	-	OC1	-	-	
22/06/20	-	OC1	-	-	
23/06/20	-	S22 and OC1 Dump	-	-	
24/06/20	-	S22 and OC1 Dump	OC1 Ramp	S22	
25/06/20	-	OC1	-	-	
26/06/20	-	OC1	-	-	
27/06/20	-	OC1	S22	-	
28/06/20	-	OC1	S21 Ramp and S22 Dump	-	
29/06/20	-	OC1	S21 Ramp	-	
30/06/20	-	OC1	-	-	
31/06/20	-	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 C	10* 32* 22*	Mining Capping Infusion	3,060** 34** 0**
Open Cut 2	N/A	0*	None Required	0**
SUMMARY				
Total Area Affected		64*		
Total Area Controlled		3,094**		

* - at end of reporting period

** - during reporting period

No spontaneous combustion outbreaks were observed in Open Cut 2 throughout June 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. However, there were three occasions in the reporting period where H_2S was above the odour threshold and an alarm was received. These alarms were received on 14th June 2020 at 2:38am at Nisbet (Site 9) and on 28th June at 06:08am and again at 07:28am at Muscle Creek (Site 10).

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	95.1	92.5
		1 hour	93.9	91.2
		24 hours	96.7	94.8
Point 10, Muscle Creek	Hydrogen Sulphide	30 minutes	95.9	95.3
		1 hour	95.1	93.8
		24 hours	100.0	98.1
Point 15, Nisbet	Sulphur Dioxide	1 hour	94.2	**89.4**
		24 hours	100.0	92.9
Point 16, Muscle Creek	Sulphur Dioxide	1 hour	95.3	94.1
		24 hours	100.0	98.4

Data capture for all monitoring sites was 90% or higher during June 2020. However, the data capture 12-month rolling average for sulphur dioxide at Nisbet (Site 15) remained less than 90% due to the previous outages in February and May 2020.

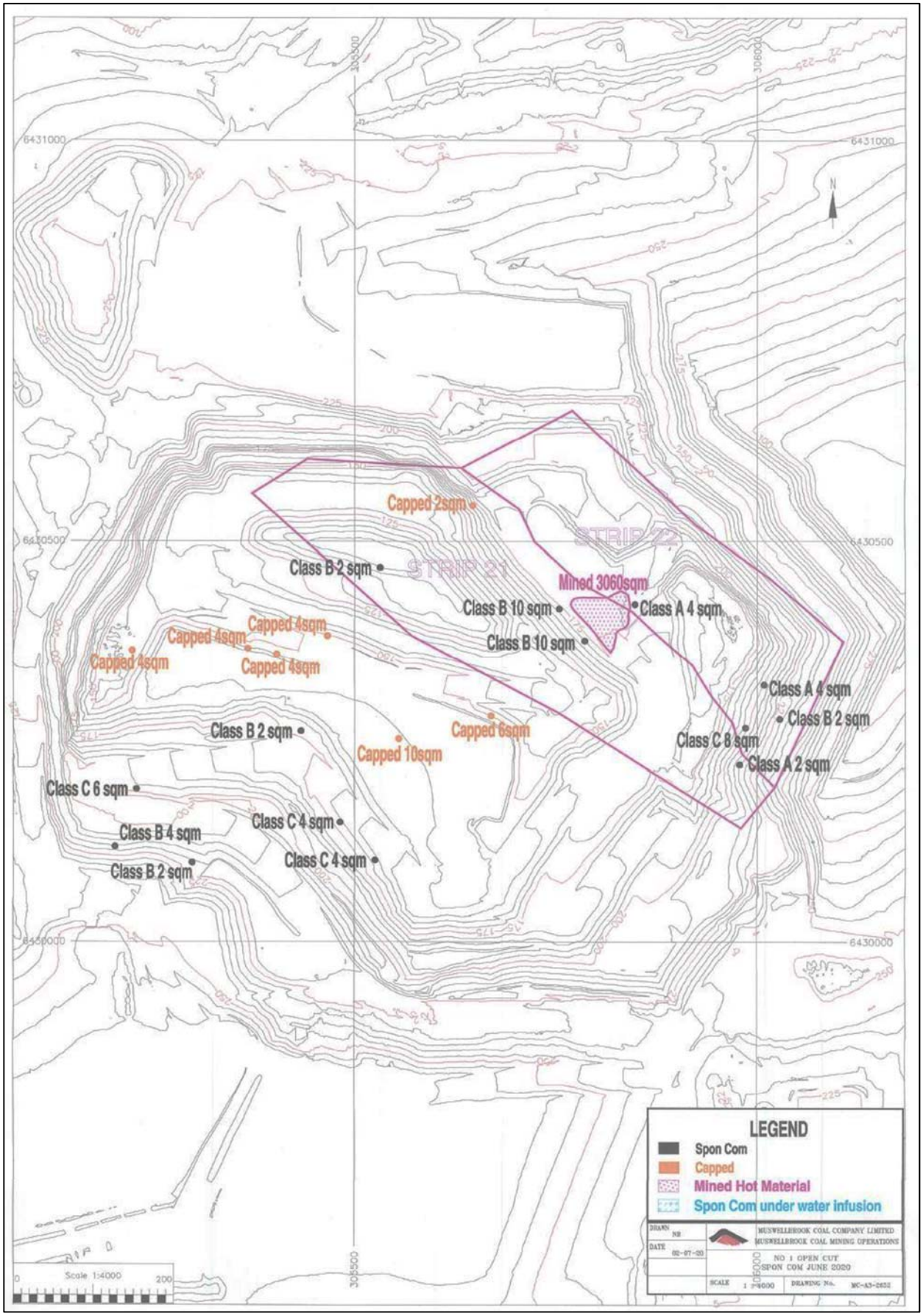

Figure 1: Location of Spontaneous Combustion Outbreaks in Open Cut 1

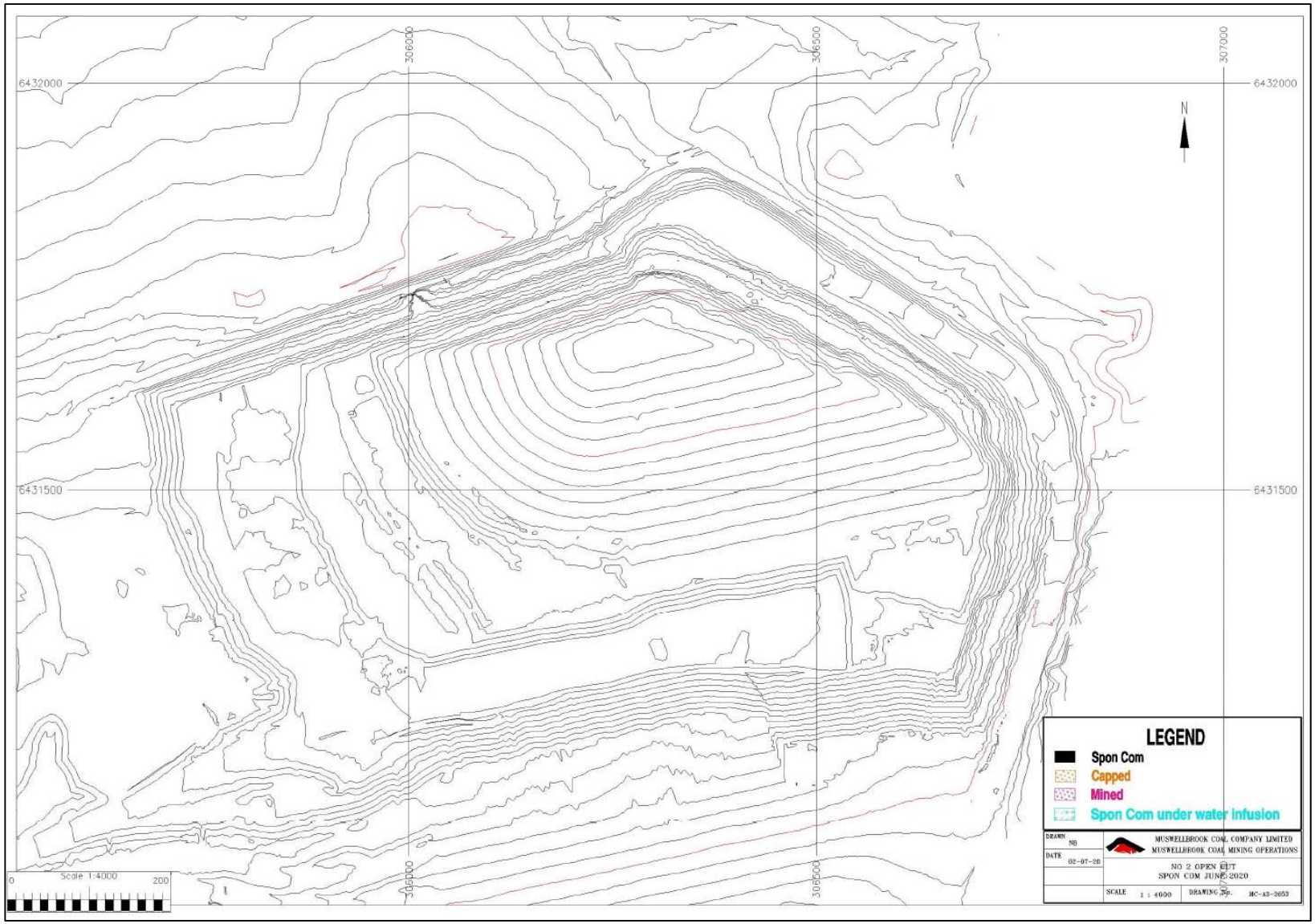

Figure 2: Location of Spontaneous Combustion Outbreaks in Open Cut 2

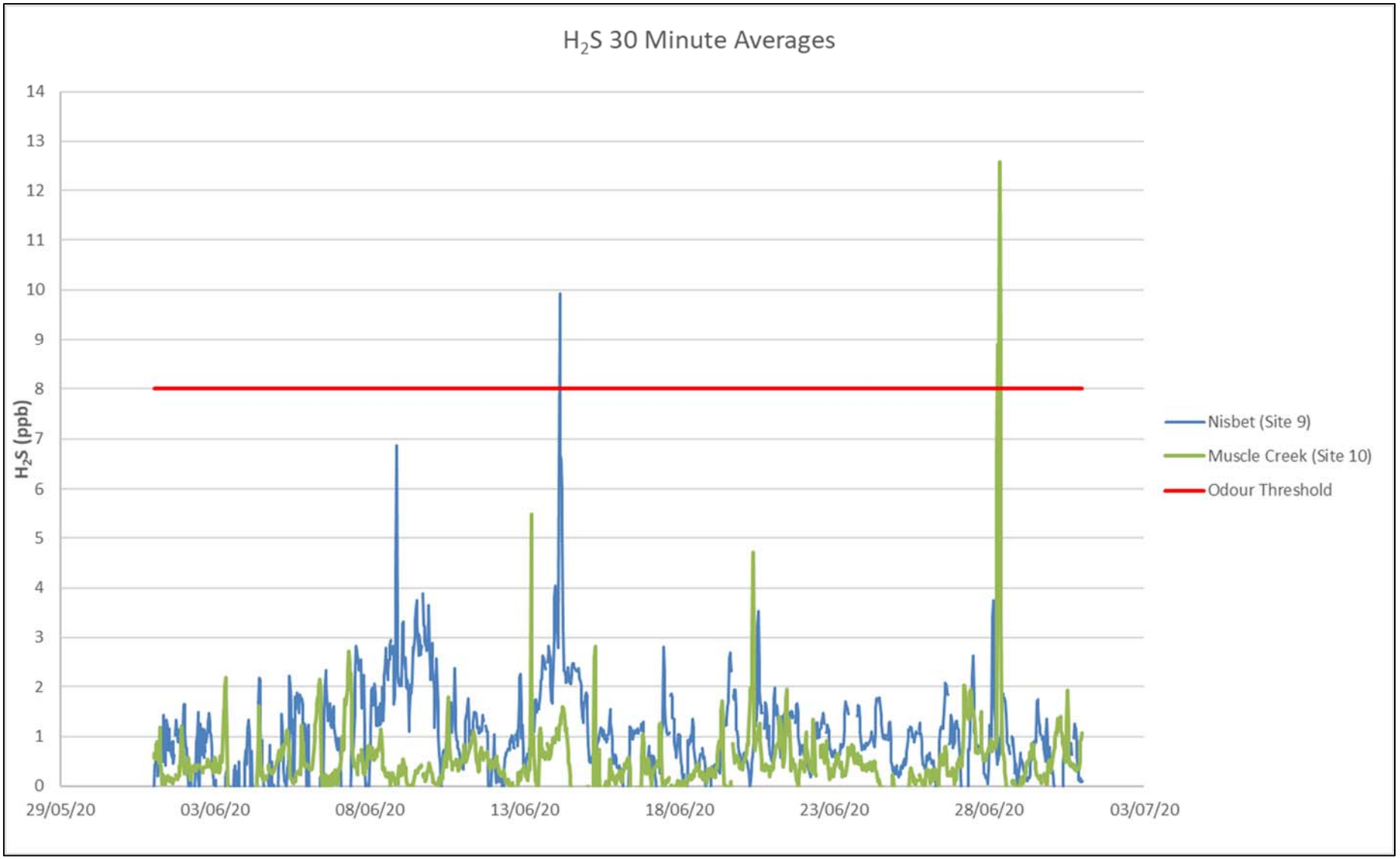

Figure 3: Hydrogen Sulphide 30 Minute Results

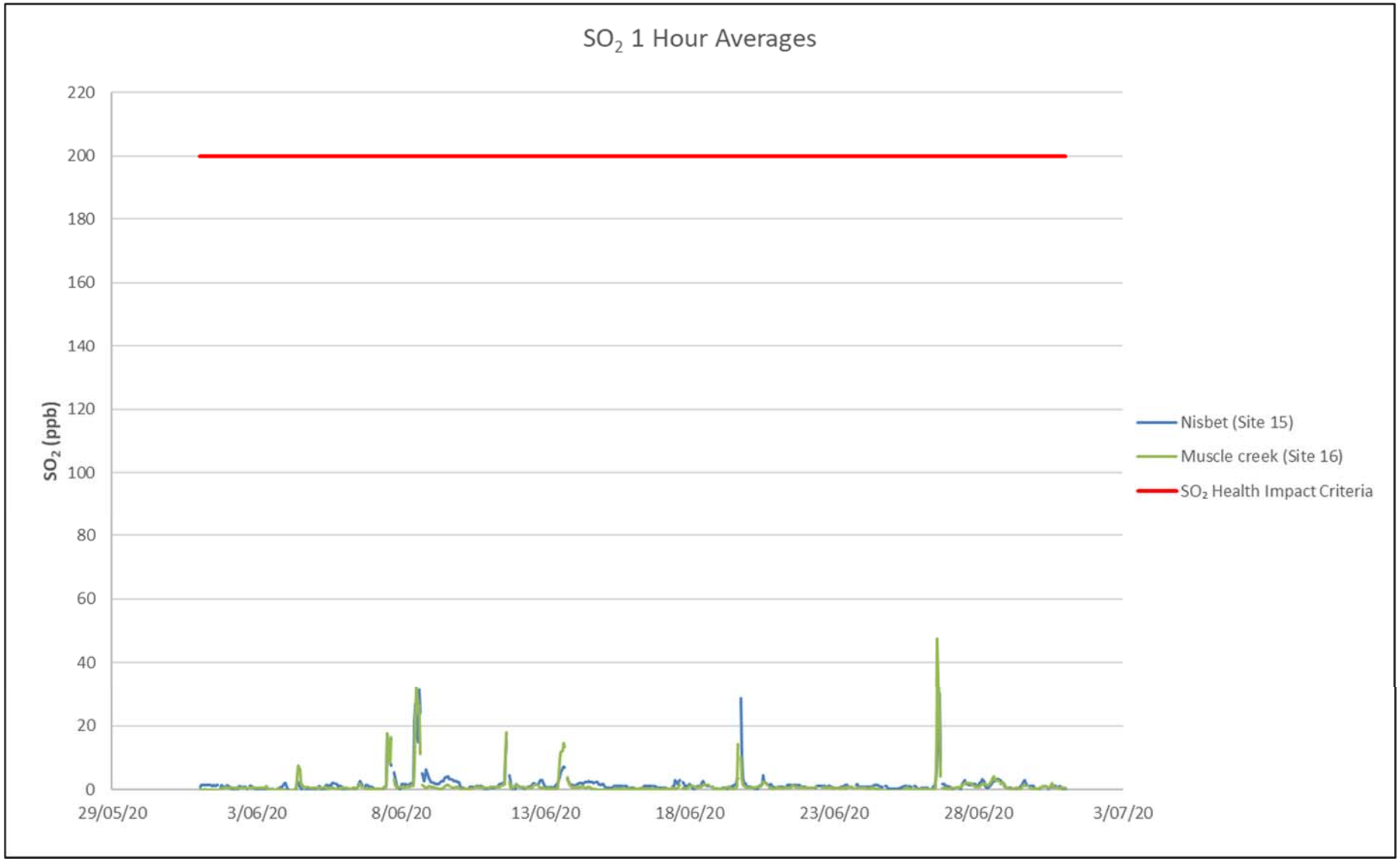

Figure 4: Sulphur Dioxide 1 Hour Results

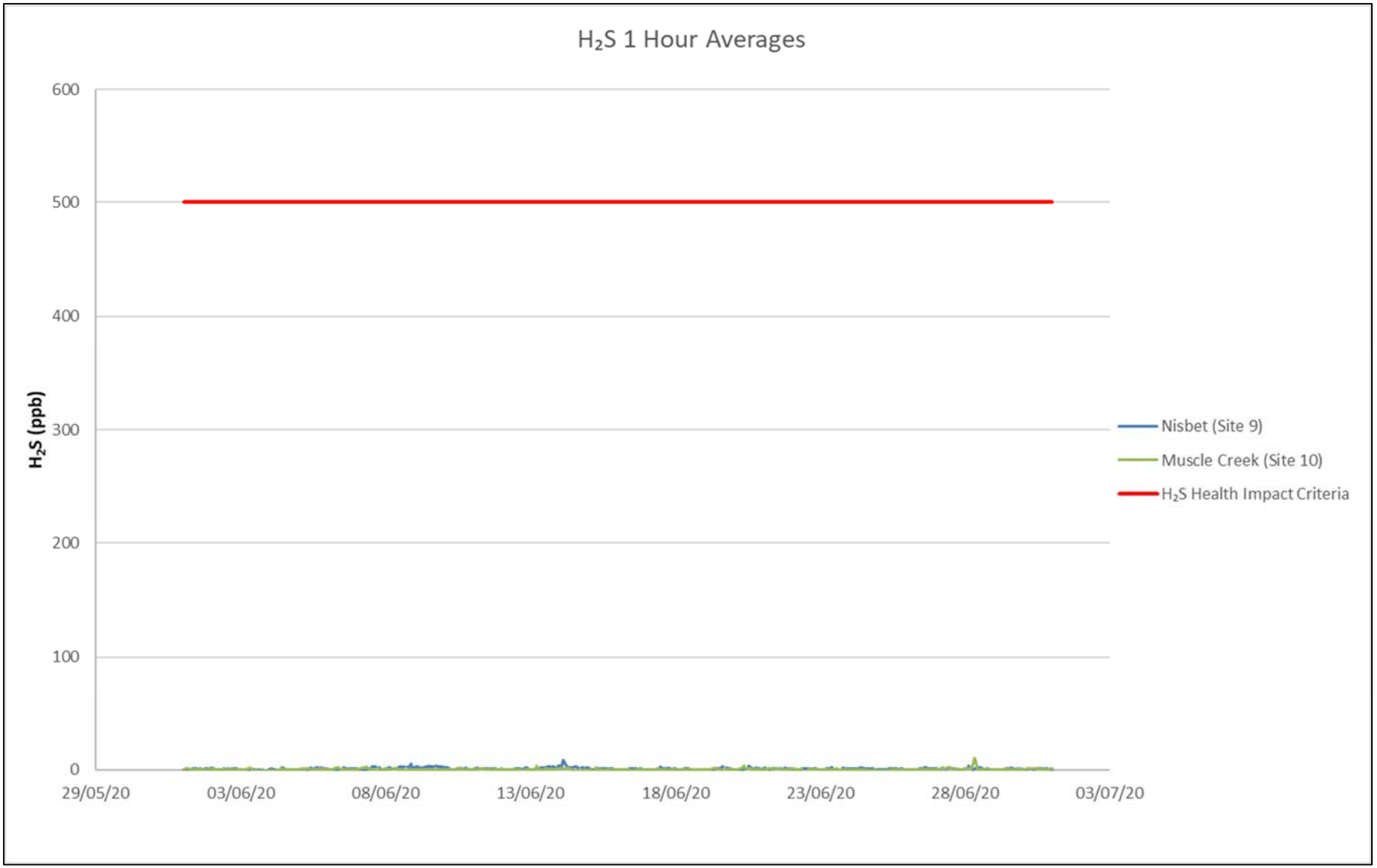

Figure 5: Hydrogen Sulphide 1 Hour Results

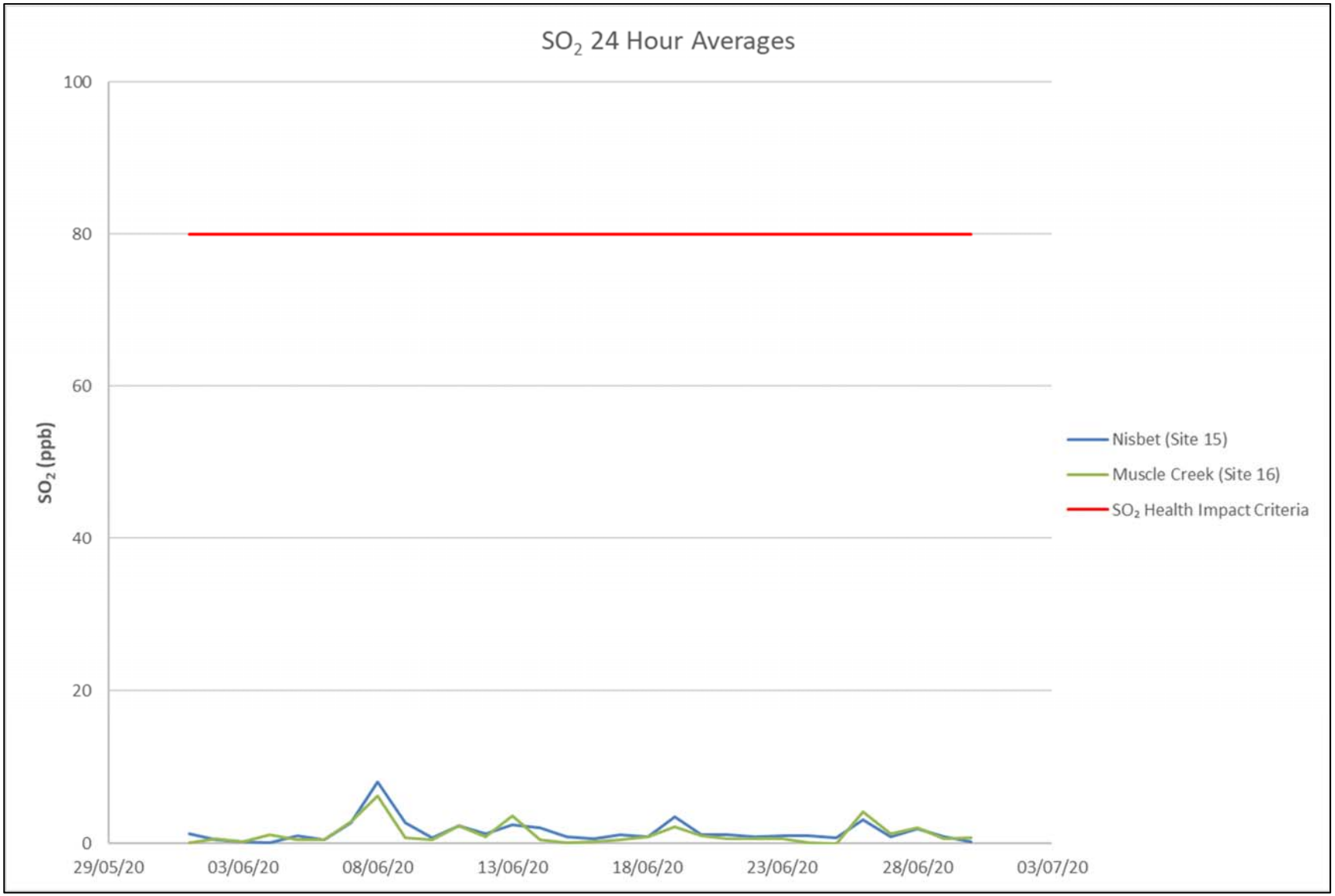

Figure 6: Sulphur Dioxide 24 Hour Results

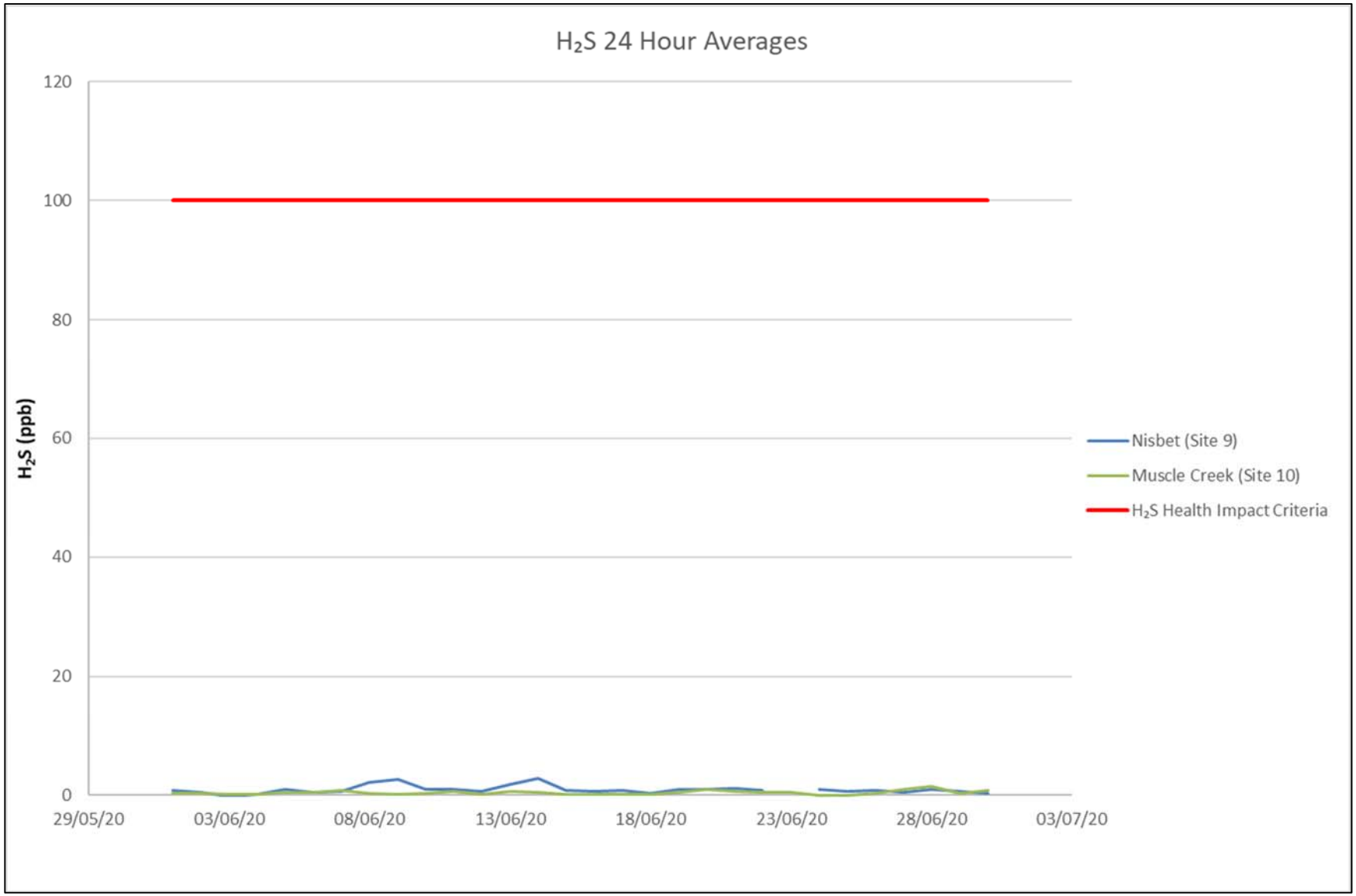

Figure 7: Hydrogen Sulphide 24 Hour Results

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.**

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
14/06/2020 2:38am	Nisbet	Wind speed = 0 m/s No rainfall. Barometric pressure = 985.8 hPa. 24 mm of rainfall received later that day between 04:15am and 08:00am.	Alarm was received on a Sunday morning, when there was no night shift crew working. Therefore, no active spontaneous combustion management was being undertaken at the time of the alarm.	Combination of Class A, B and C.
28/06/2020 6:08am and 7:38am	Muscle Creek	Wind speed = 0 m/s No rainfall, conditions were foggy throughout the morning.	The first alarm was received on a Sunday morning, when there was no night shift crew working. Therefore, no active spontaneous combustion management was being undertaken at the time of this alarm. Active spontaneous combustion management commenced at the start of day shift (06:45am) and included water carts dealing with hot spots and clay capping of hot spots in Open Cut 1.	Class B – visible steam or smoke

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 generally low. Active spontaneous combustion management activities were not being undertaken at the time of the elevated gas levels on 14th and 28th June 2020. This was due to the three alarms being received on Sunday nights when there is no night shift crew working.

6.0 CORRELATION BETWEEN COMMUNITY COMPLAINTS AND GAS LEVELS

There were no complaints related to odour impacts from spontaneous combustion received during the reporting period.