



ESTABLISHED 1907

Muswellbrook Coal Company Limited

Spontaneous Combustion Report

For: Environmental Protection Licence 656

Reporting Period: July 2021

Authority Holder: Muswellbrook Coal Company Limited

Report Date: 26 August 2021

**Approved by: Brooke York
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
01/07/21		S23/ROM	S23	S23	Wet weather
02/07/21	S23	OC1	S23		Wet weather
03/07/21		OC1		SP3	Wet weather
04/07/21		OC1		ROM	
05/07/21	S23	S23		S23/211	
06/07/21	S23	ROM			
07/07/21	S23	S23/S24/ROM			
08/07/21	S23	OC1			
09/07/21	S23	OC1			Wet weather
10/07/21		OC1			Wet weather



Date	Water Sprays	Water Carts Assisting	Capping	Hot Material Removal	Comments
11/07/21		OC1			
12/07/21		S23			
13/07/21	S23	S23			
14/07/21		S23			Wet weather
15/07/21		S23			Wet weather
16/07/21		S23			Wet weather
17/07/21		S23		S23	Wet weather
18/07/21		S23		S23	
19/07/21		S23	RL180E		
20/07/21	S23	OC1		S23	
21/07/21	S23	S23		S23	
22/07/21	S23	OC1		S23	
23/07/21	S23	S23			Wet weather
24/07/21	S23	OC1			Wet weather
25/07/21	S23	OC1			
26/07/21	S23	OC1			
27/07/21		S23		S23	
28/07/21		OC1		S23/S24/ROM	Wet weather
29/07/21		S23		S23	
30/07/21		OC1		S23	
31/07/21		S23/ROM		S23	

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	38*	Mining	5,300**
	B	150*	Capping	204**
	C	36*	Infusion	6,800**
Open Cut 2	N/A	0*	None Required	0**
SUMMARY				
Total Area Affected		224*		
Total Area Controlled		12,304**		

* - at end of reporting period

** - during reporting period

No spontaneous combustion outbreaks were observed in Open Cut 2 throughout July 2021. 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.

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	92.3	94.6
		1 hour	90.3	93.4
		24 hours	93.5	98.1
Point 10, Muscle Creek	Hydrogen Sulphide	30 minutes	97.4	96.7
		1 hour	95.3	95.2
		24 hours	100.0	100.0
Point 15, Nisbet	Sulphur Dioxide	1 hour	89.4	94.1
		24 hours	90.3	98.4
Point 16, Muscle Creek	Sulphur Dioxide	1 hour	95.3	95.2
		24 hours	100.0	100.0

Data capture for all monitoring sites was 90% or higher during July 2021 with the exception of the Nisbet gas monitoring sites Point 15 (sulphur dioxide). The data capture rates during July were primarily affected by power outages (planned and unplanned), maintenance and calibration of equipment.

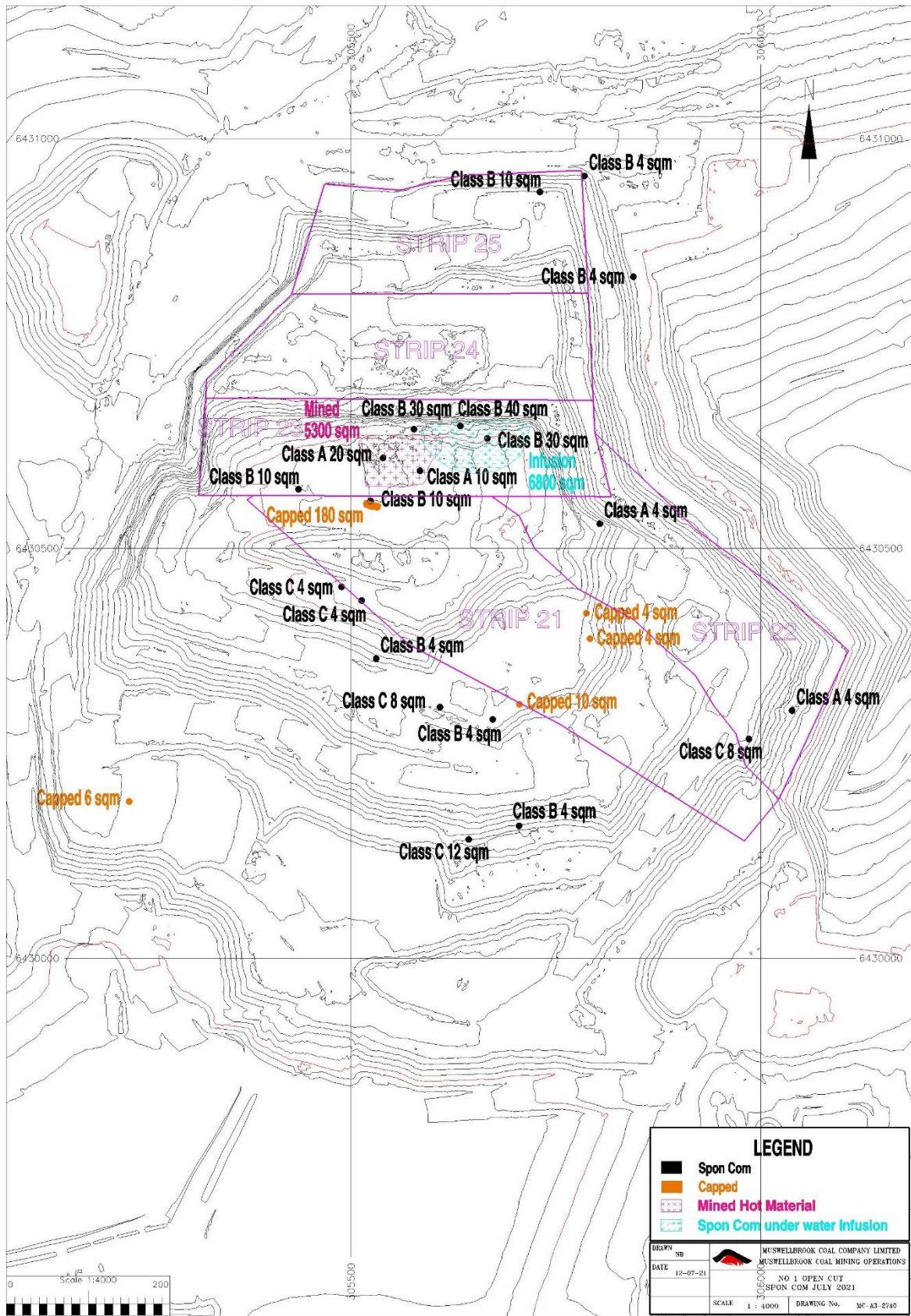


Figure 1: Location of Spontaneous Combustion Outbreaks in Open Cut 1

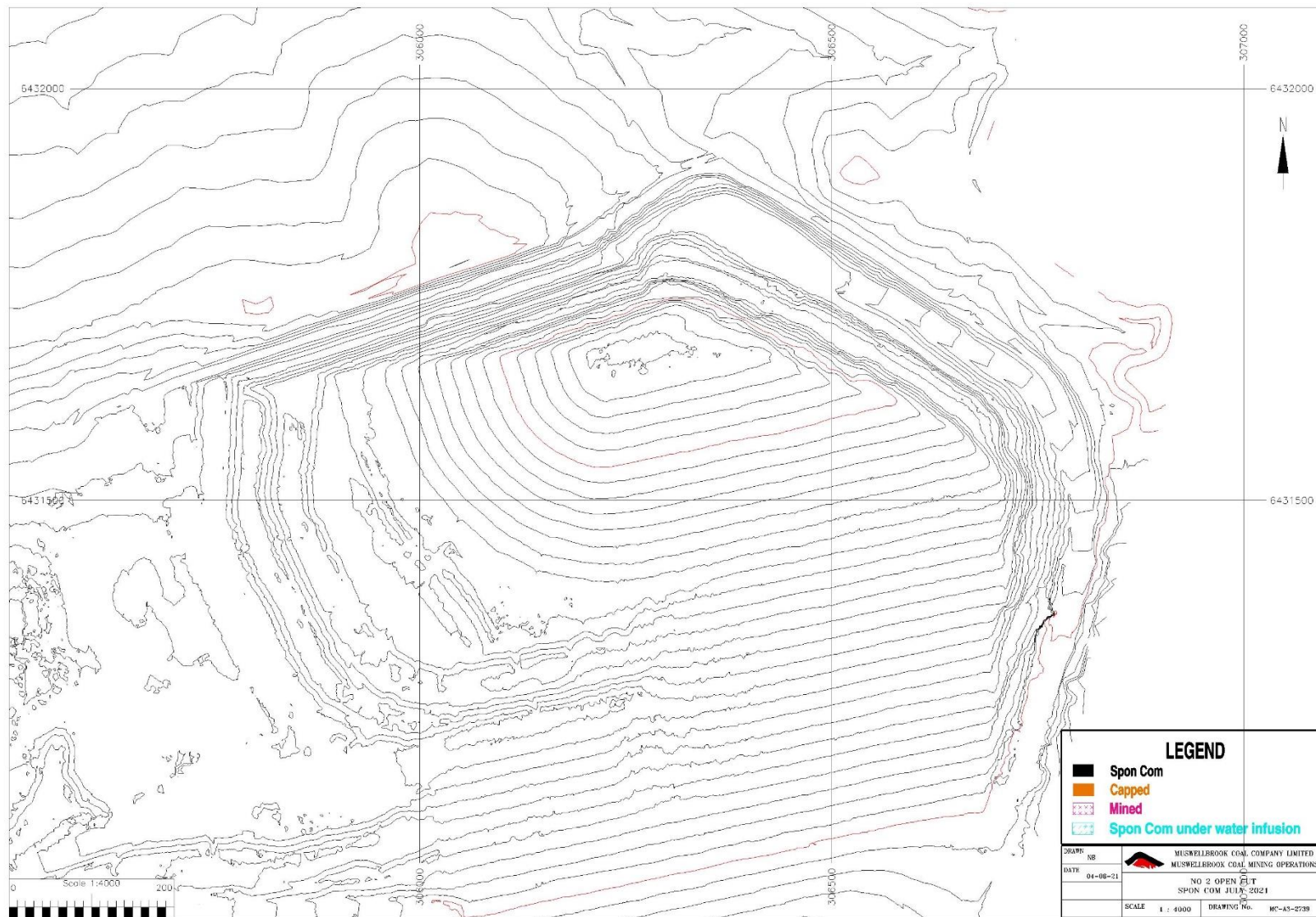


Figure 2: Location of Spontaneous Combustion Outbreaks in Open Cut 2

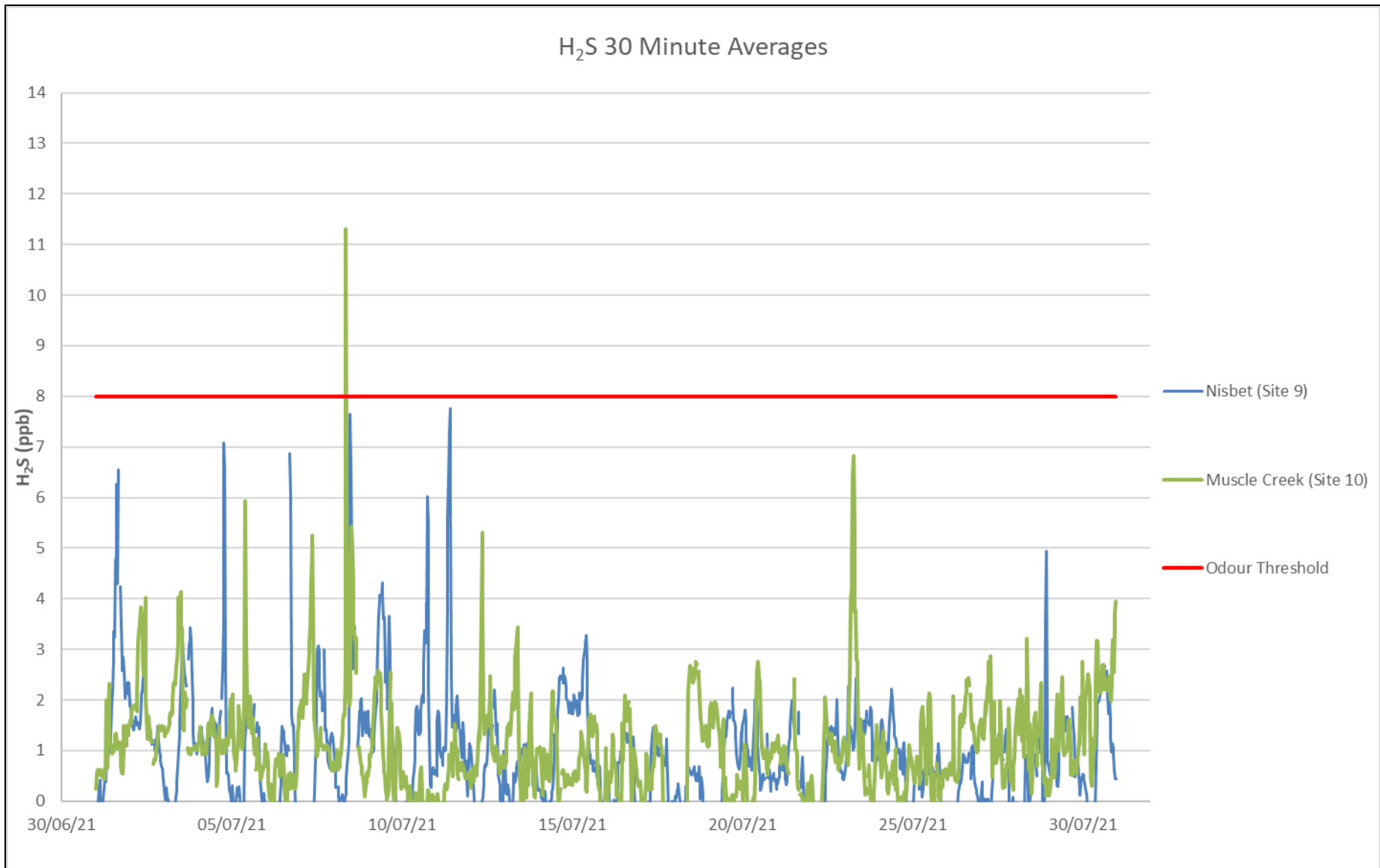


Figure 3: Hydrogen Sulphide 30 Minute Results

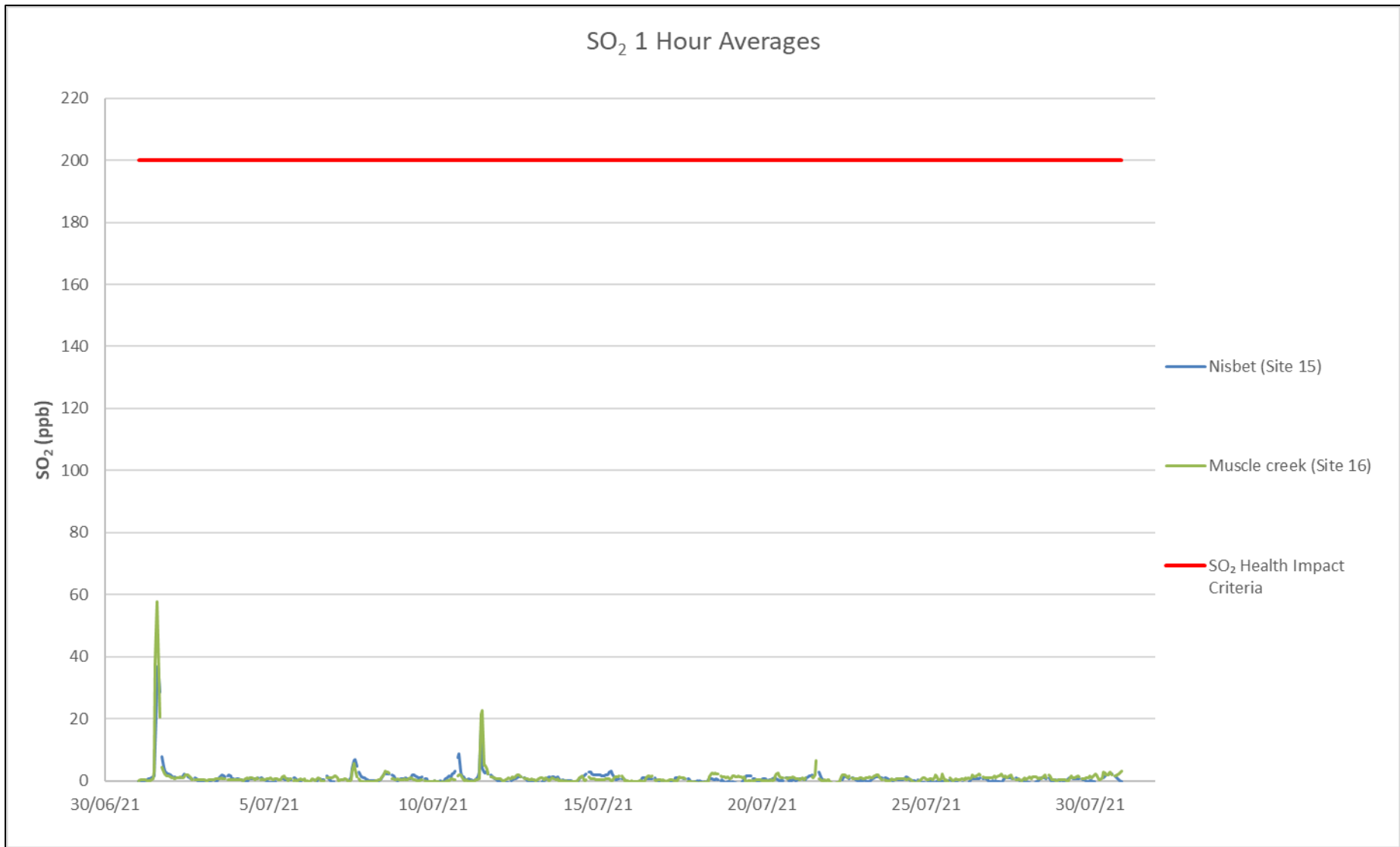


Figure 4: Sulphur Dioxide 1 Hour Results

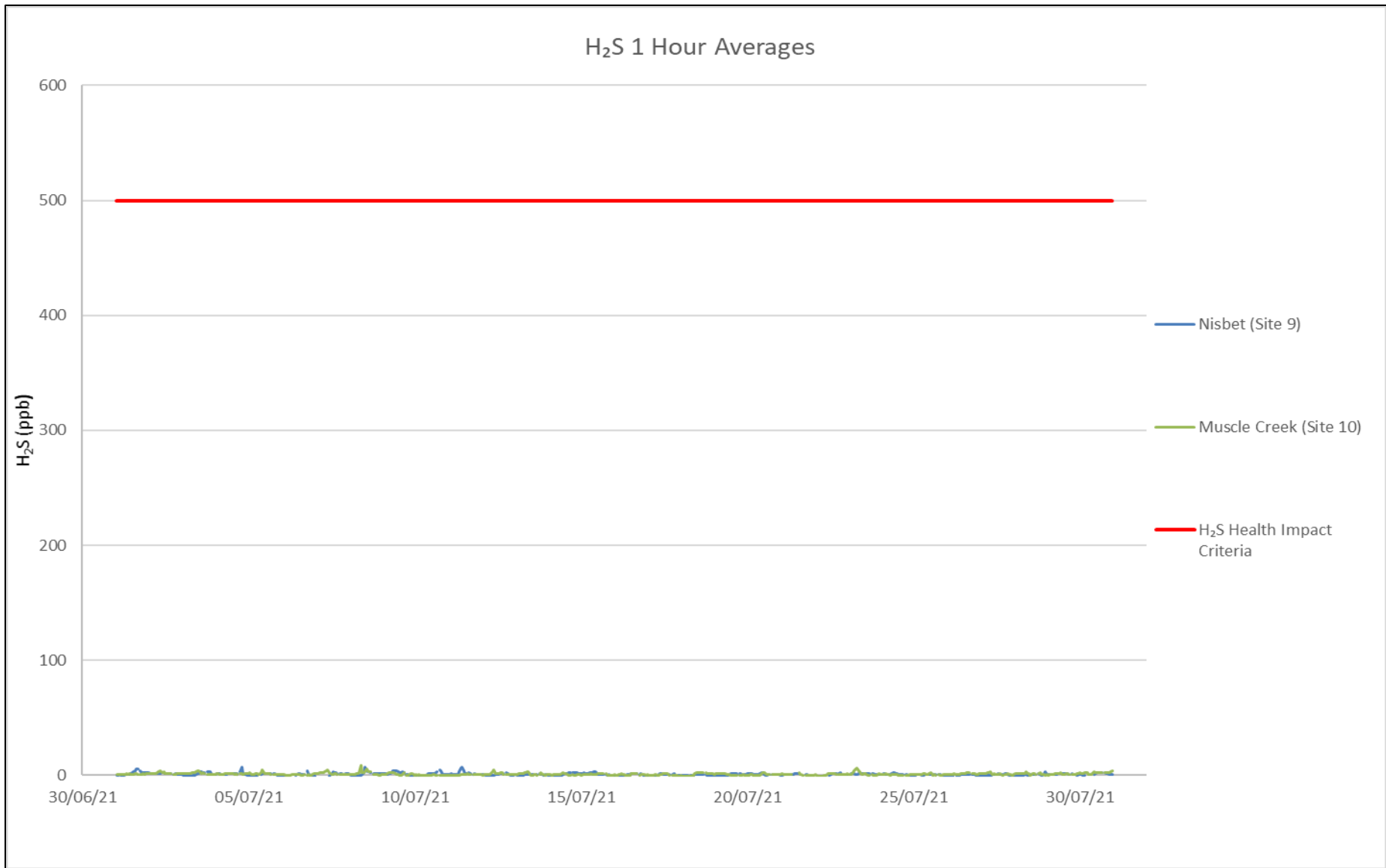


Figure 5: Hydrogen Sulphide 1 Hour Results

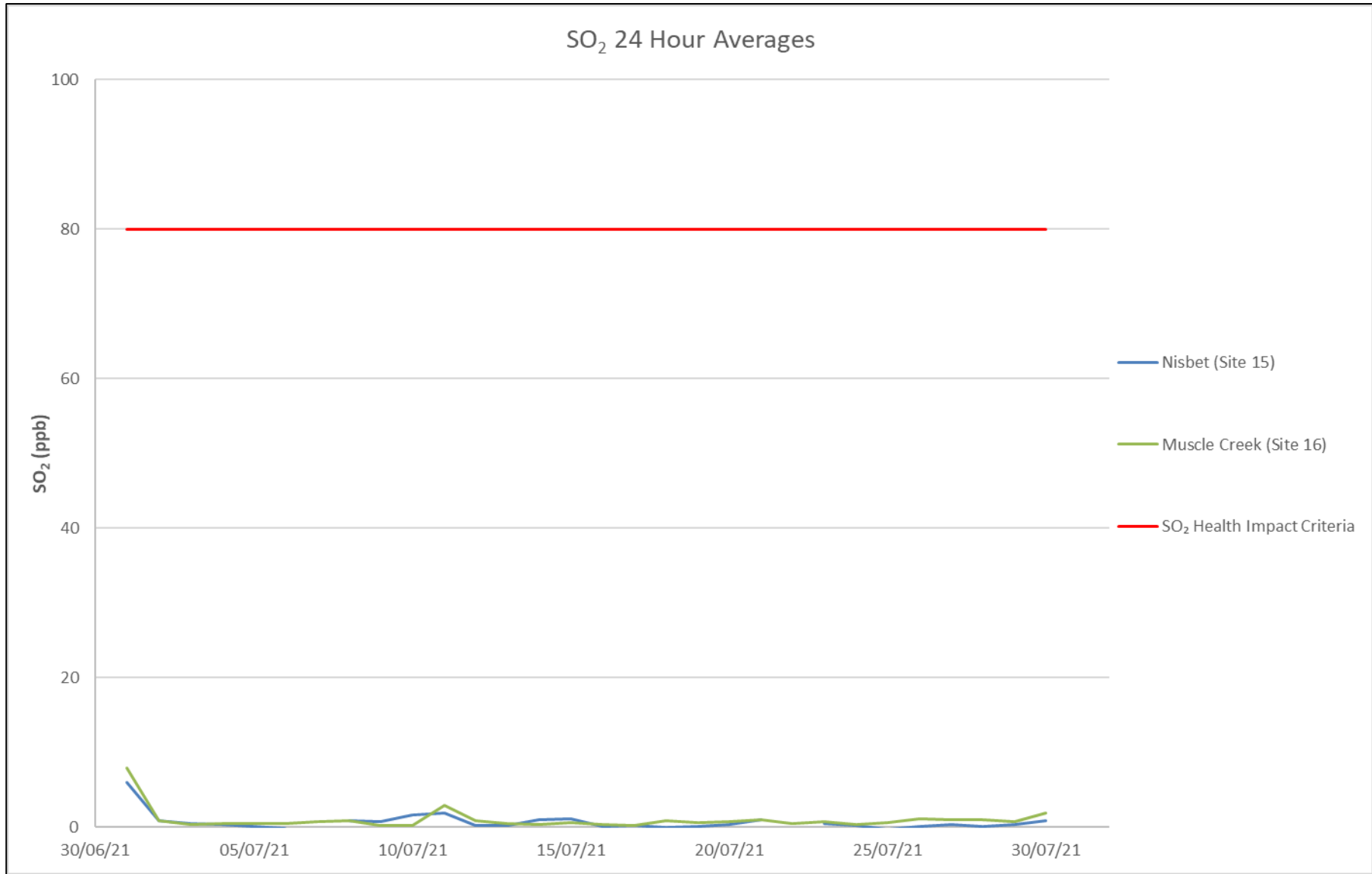


Figure 6: Sulphur Dioxide 24 Hour Results

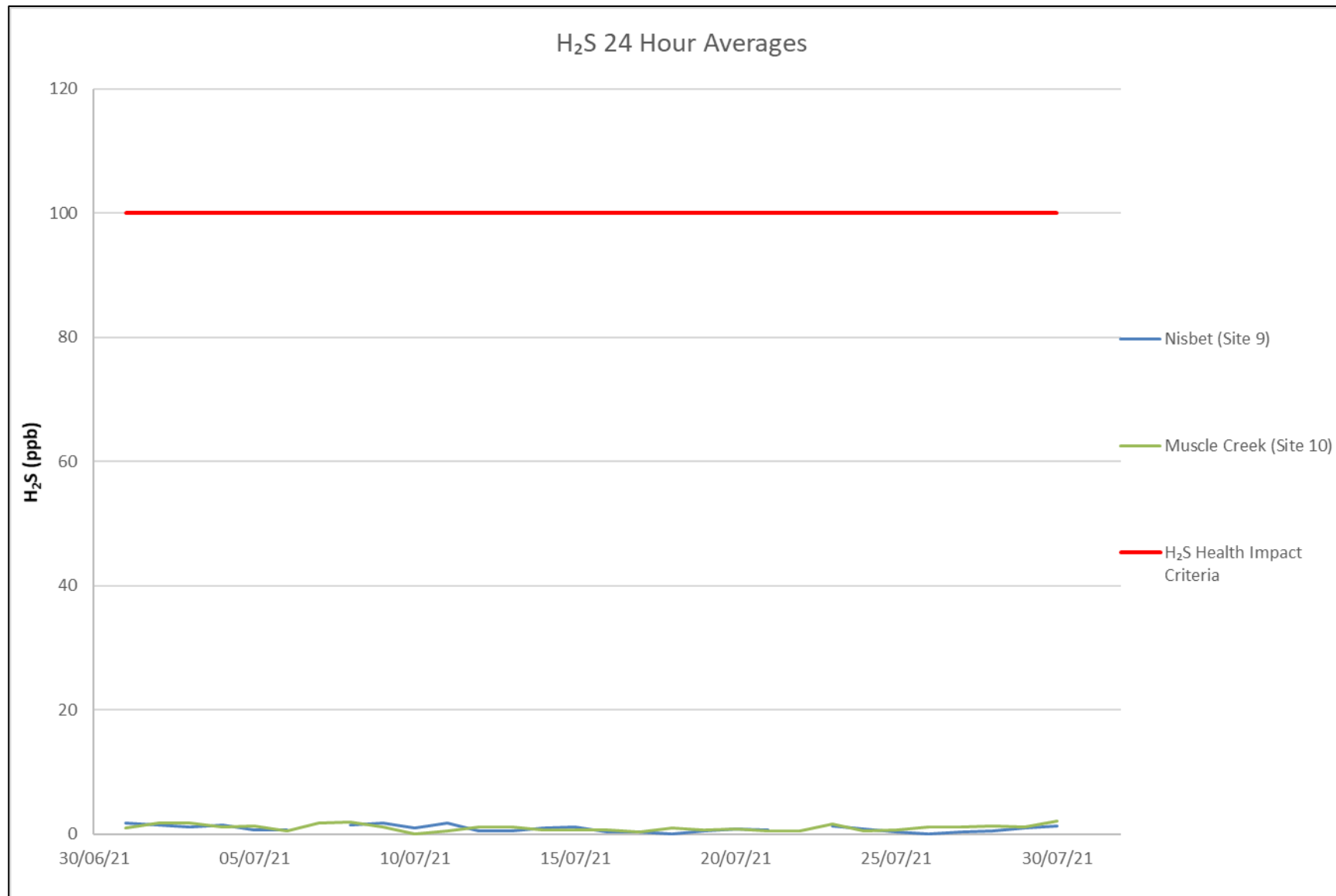


Figure 7: Hydrogen Sulphide 24 Hour Results



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 and 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
08/07/2021 08:28am	Muscle Creek	At the time of the alarm, the wind speed was 0.6 m/s from the North west. There was no rainfall at the time of the alarm.	Two water carts were cooling spontaneous combustion areas in Strip 23 and hot material in Strip 23 was being removed.	Combination of Class A, B and C

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

One complaint was received during the reporting period which related to odour impacts from spontaneous combustion. The complaint was received on 30 July 2021, at 10:15am from an anonymous resident. A north east wind was blowing at 2.2 m/s at the time of the complaint.

A review of the gas data for the complaint received on 30 July 2021 shows that the 30 minute and 1-hour gas levels were <3.2 ppb for hydrogen sulphide and <3.0 ppb for sulphur dioxide and at both monitoring locations at the time of the complaint.