



ESTABLISHED 1907

**Muswellbrook Coal Company Limited**

**Spontaneous Combustion Report**

**For: Environmental Protection Licence 656**

**Reporting Period: September 2021**

**Authority Holder: Muswellbrook Coal Company Limited**

**Report Date: 13 October 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
01/09/21	S23	S23	S23		
02/09/21		S23		S23/212RL	
03/09/21		OC1			Wet weather
04/09/21		OC1			Wet weather
05/09/21		OC1			Wet weather
06/09/21		OC1			
07/09/21		S23/ROM		S23/235RL	
08/09/21		S23			
09/09/21	S23	OC1			



Date	Water Sprays	Water Carts Assisting	Capping	Hot Material Removal	Comments
10/09/21		OC1			
11/09/21		OC1			
12/09/21		OC1			
13/09/21		OC1			Wet weather
14/09/21			S23/S24		Wet weather
15/09/21		OC1			Wet weather
16/09/21		OC1			
17/09/21		S23			Wet weather
18/09/21	160DUMP	OC1		160DUMP	Wet weather
19/09/21	160DUMP	OC1		160DUMP	Wet weather
20/09/21		OC1			
21/09/21		OC1			
22/09/21		OC1			
23/09/21		S24/S25			Wet weather
24/09/21		S24/S25			Wet weather
25/09/21		OC1			Wet weather
26/09/21		OC1			
27/09/21		OC1			
28/09/21		S23/S24			
29/09/21		OC1			Wet weather
30/09/21		OC1			Wet weather

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	8*	Mining	600**
	B	46*	Capping	50**
	C	46*	Infusion	700**
Open Cut 2	N/A	0*	None Required	0**
<b>SUMMARY</b>				
Total Area Affected		100*		
Total Area Controlled		1,350**		

\* - at end of reporting period

\*\* - during reporting period

No spontaneous combustion outbreaks were observed in Open Cut 2 throughout September 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 – September (%)	Data Capture – 12 Month Rolling (%)
Point 9, Nisbet	Hydrogen Sulphide	30 minutes	97.7	94.9
		1 hour	95.6	93.7
		24 hours	100.0	98.4
Point 10, Muscle Creek	Hydrogen Sulphide	30 minutes	96.0	96.7
		1 hour	93.6	95.0
		24 hours	96.7	100.0
Point 15, Nisbet	Sulphur Dioxide	1 hour	95.4	94.4
		24 hours	100.0	98.6
Point 16, Muscle Creek	Sulphur Dioxide	1 hour	94.2	95.1
		24 hours	100.0	100.0

Data capture for all monitoring sites was 90% or higher during September 2021.

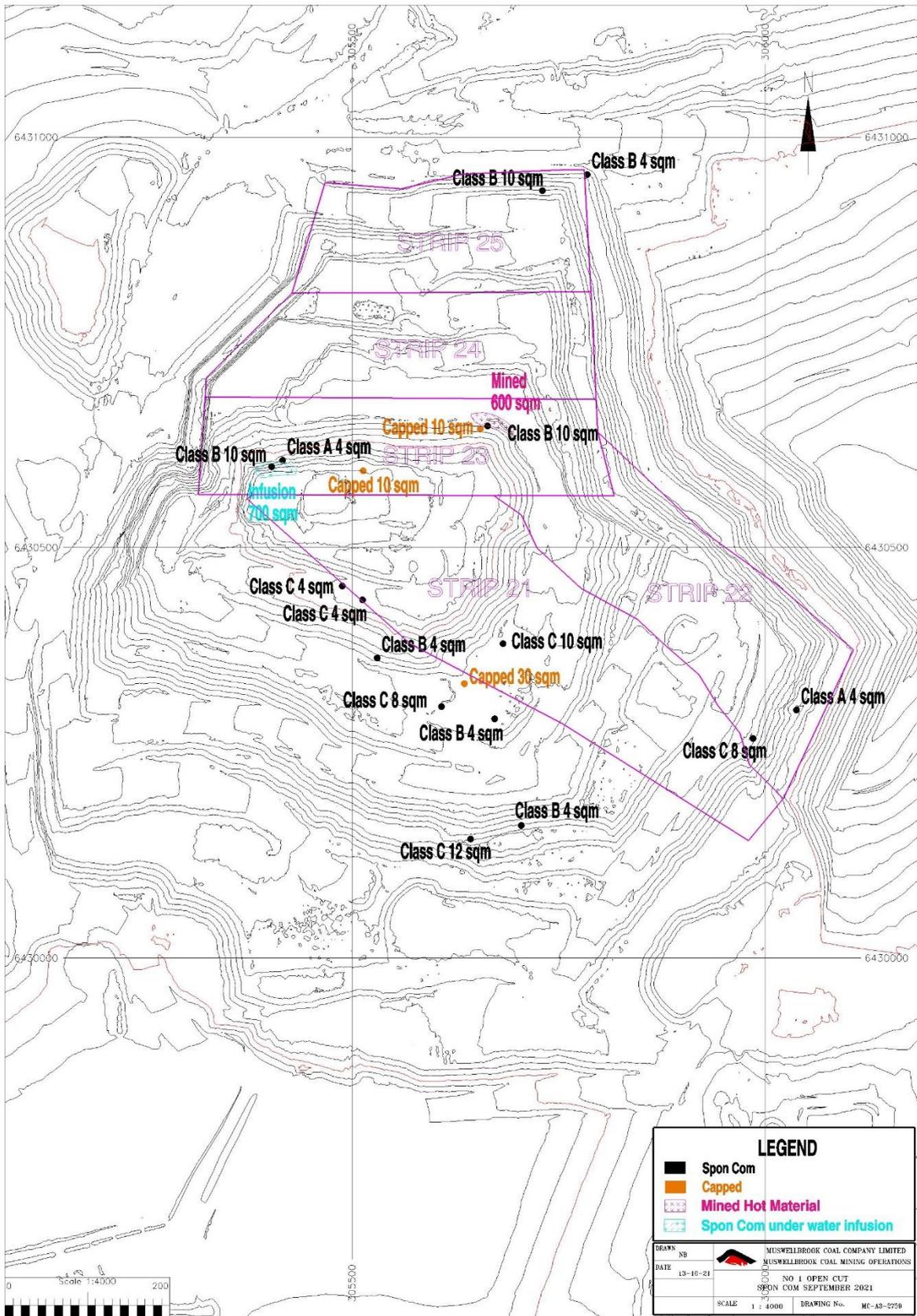


Figure 1: Location of Spontaneous Combustion Outbreaks in Open Cut 1

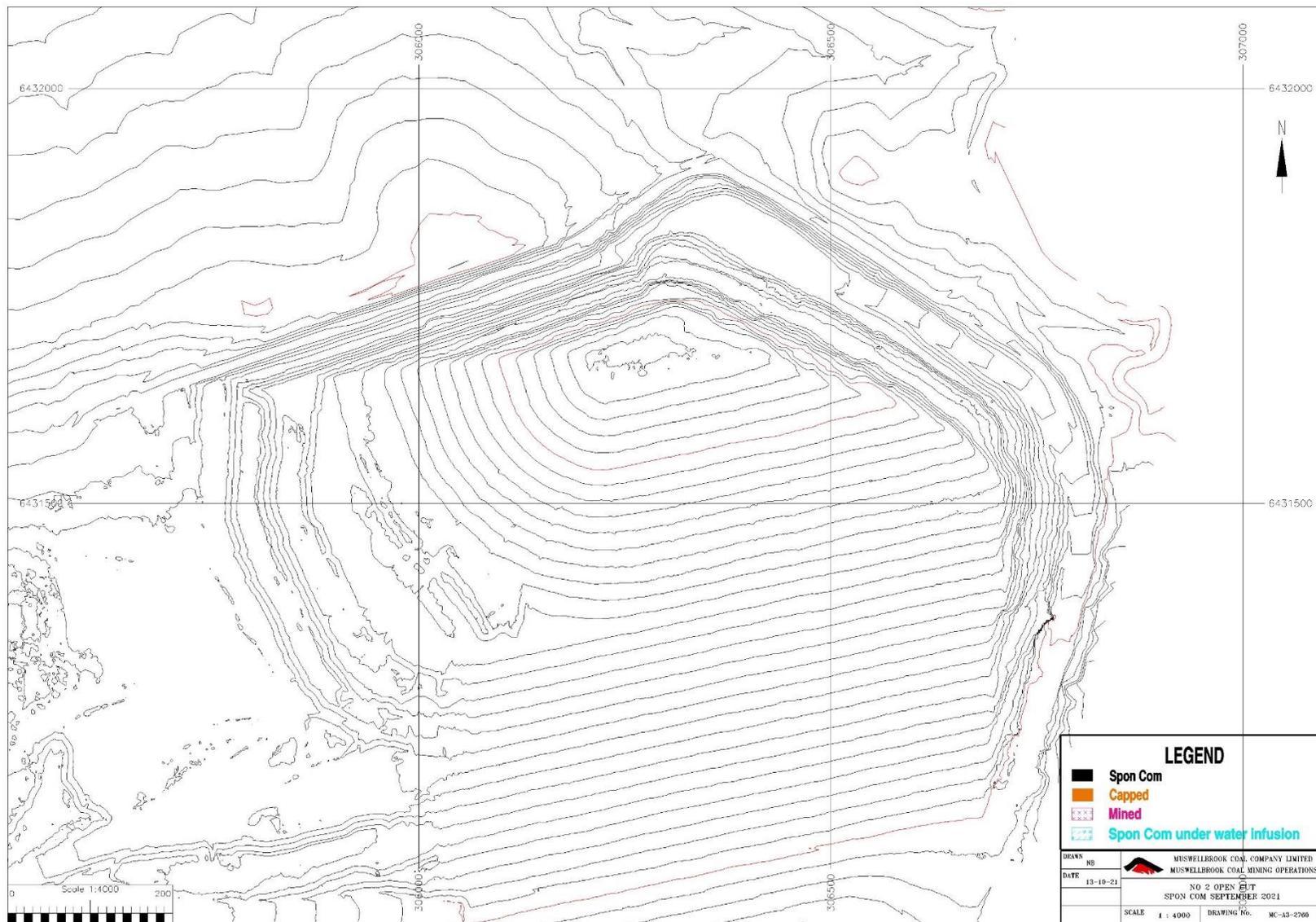


Figure 2: Location of Spontaneous Combustion Outbreaks in Open Cut 2

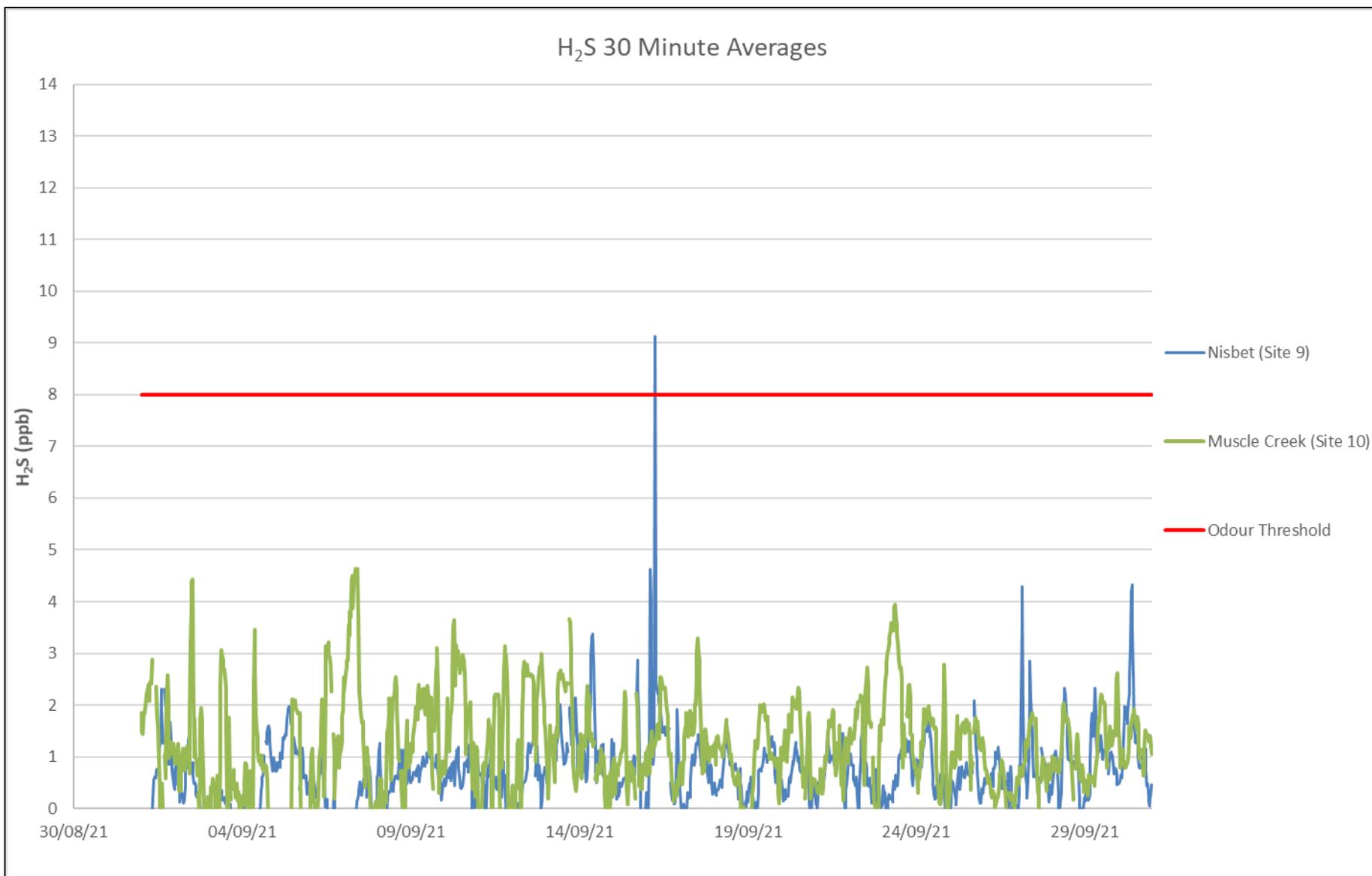


Figure 3: Hydrogen Sulphide 30 Minute Results

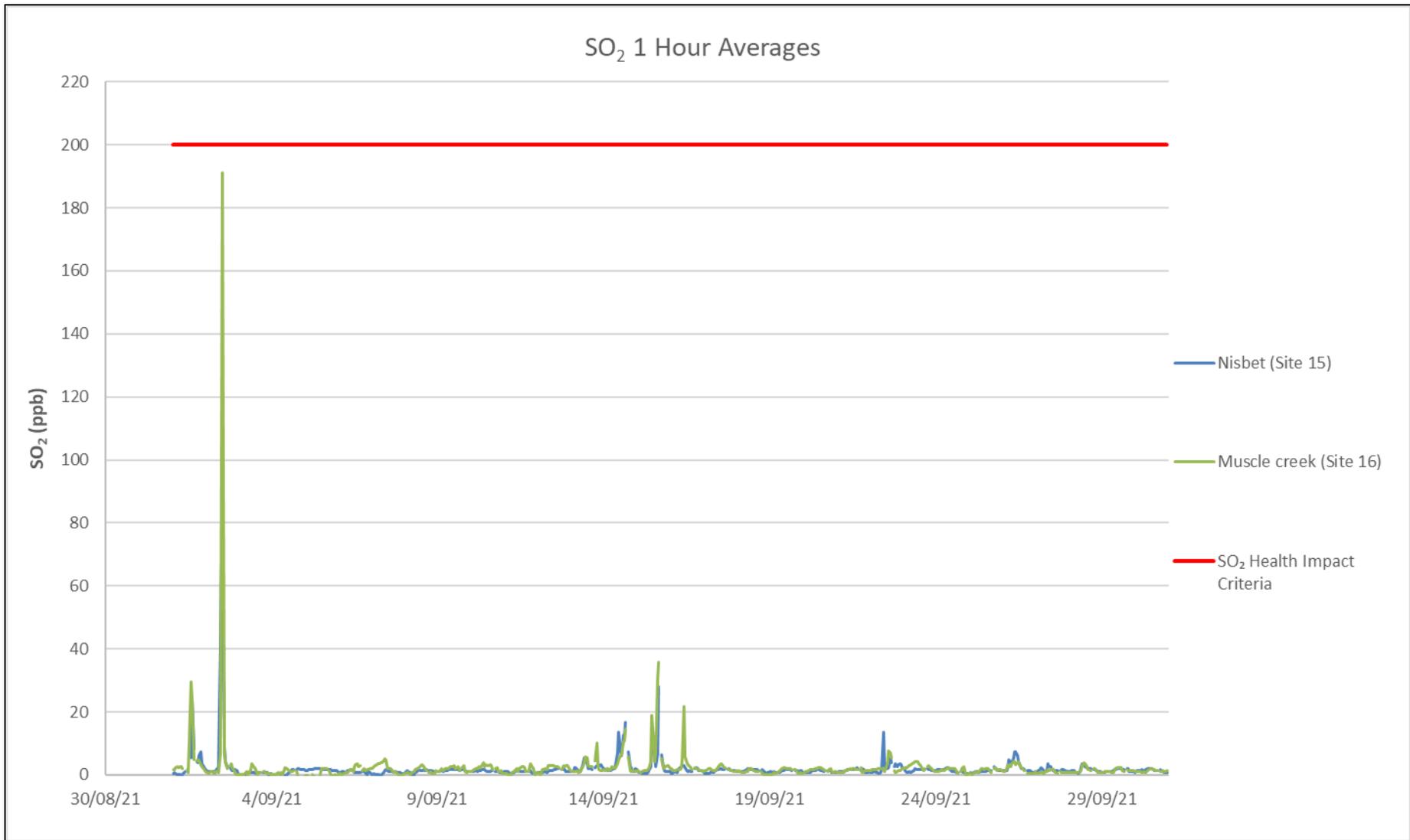


Figure 4: Sulphur Dioxide 1 Hour Results

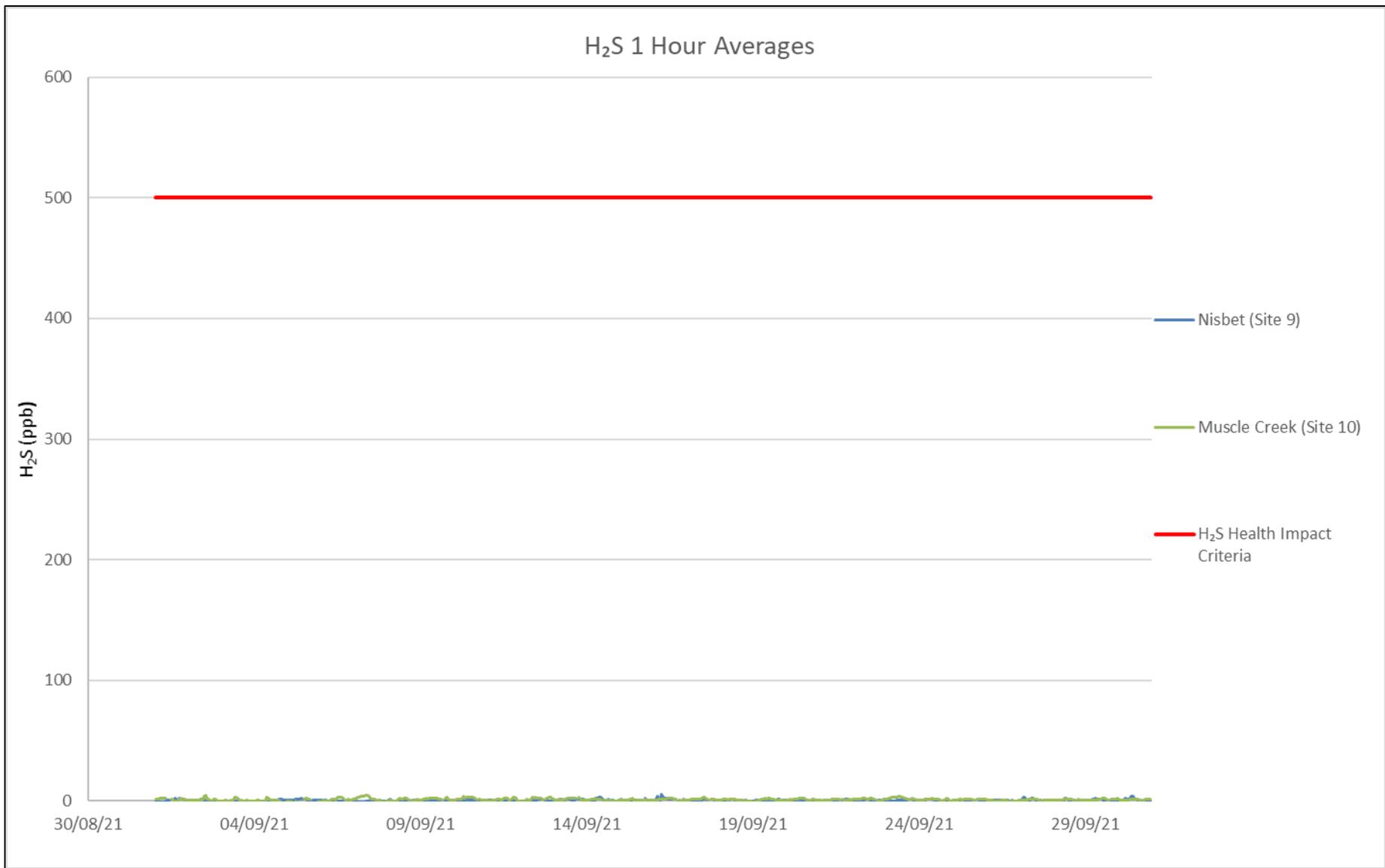


Figure 5: Hydrogen Sulphide 1 Hour Results

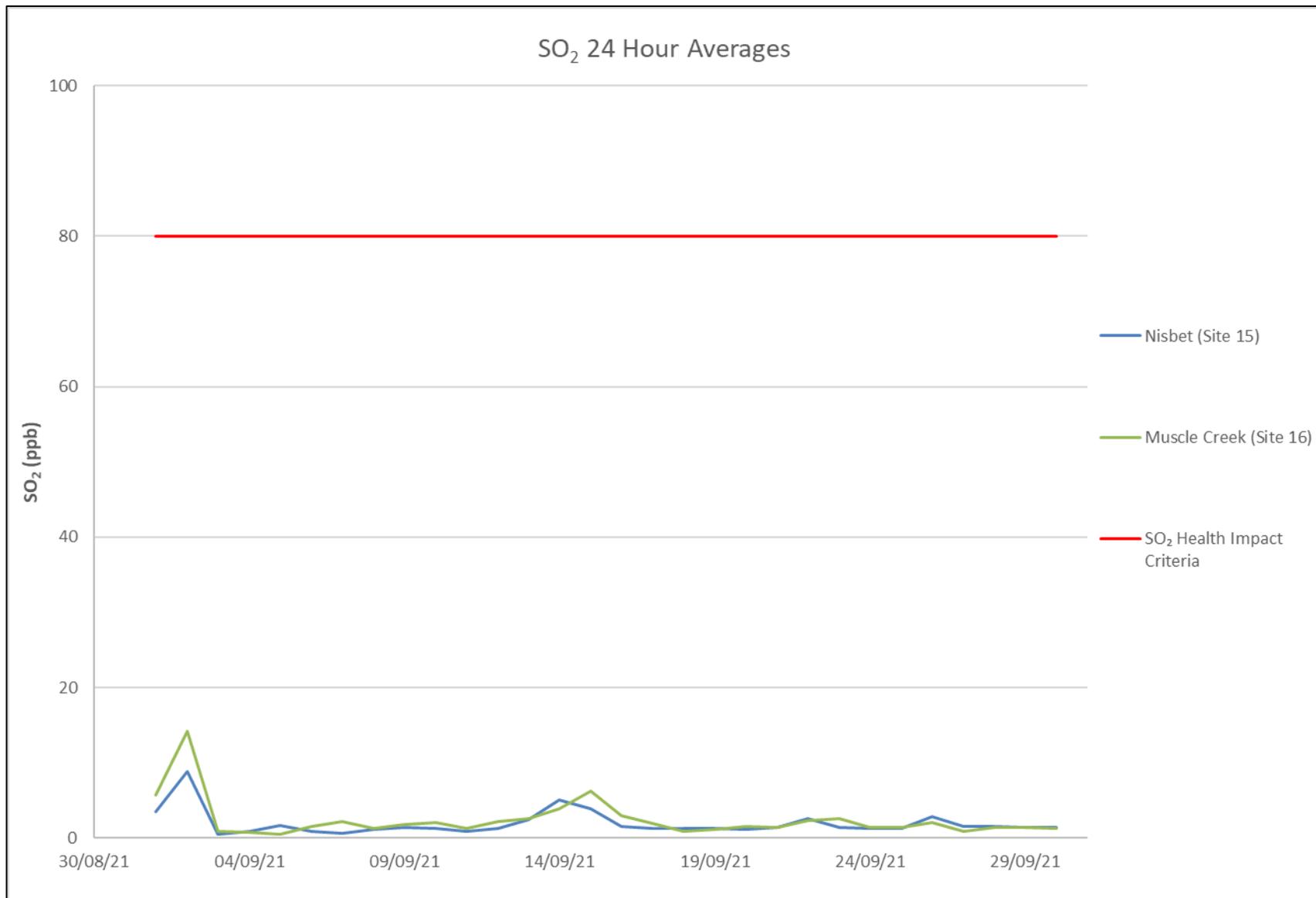


Figure 6: Sulphur Dioxide 24 Hour Results

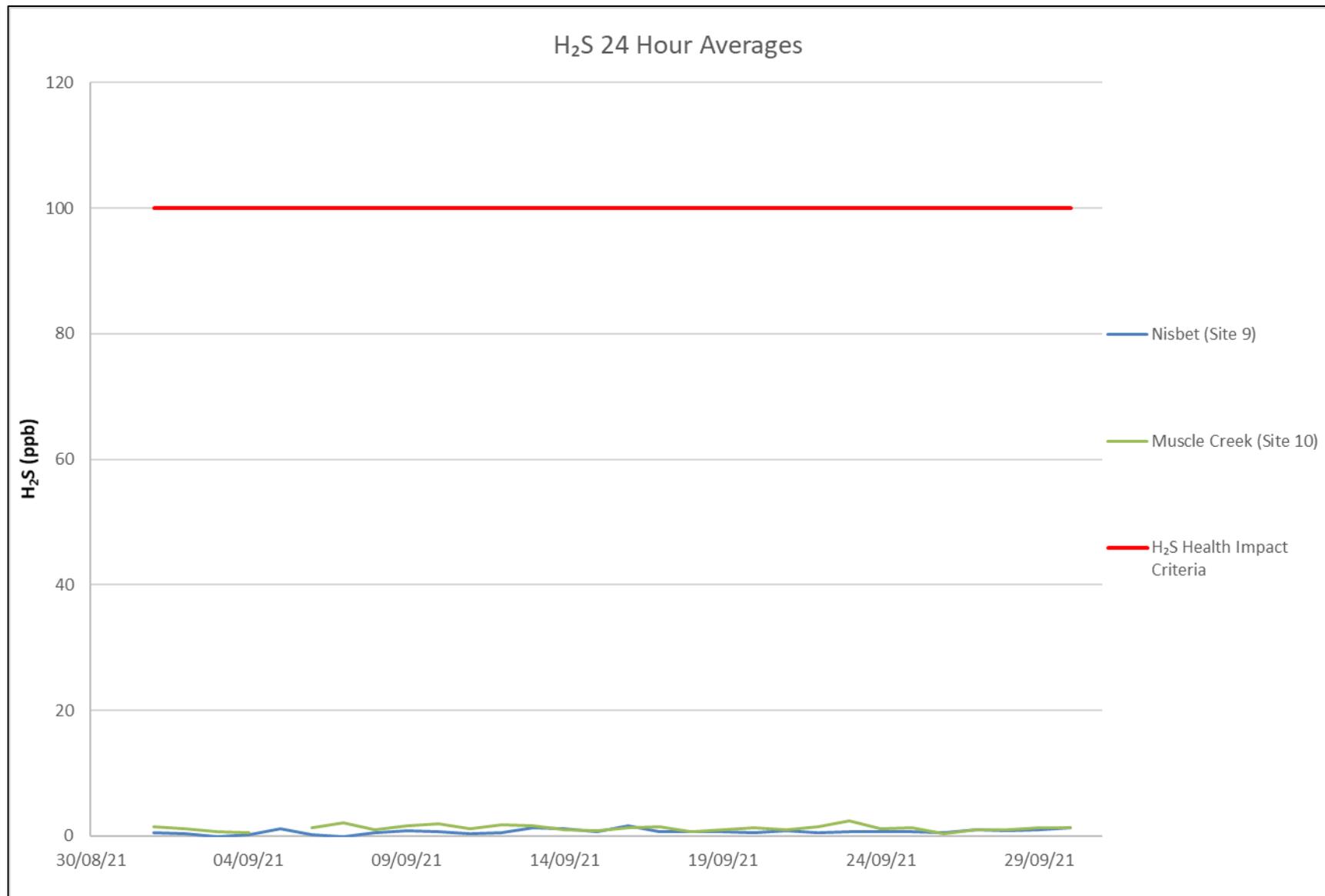


Figure 7: Hydrogen Sulphide 24 Hour Results



#### 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**

<b>Date and Time of Alarm</b>	<b>Location of Alarm</b>	<b>Weather Conditions at Time of Alarm</b>	<b>Response to Alarm</b>	<b>Classification of Spontaneous Combustion</b>
16/09/2021 05:22am	Nisbet	At the time of the alarm, the wind speed was 0.6 m/s from the south west. There was no rainfall at the time of the alarm.	A water cart was cooling spontaneous combustion areas and hot material was being capped with clay and inert material in Strip 23.	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

There were no odour complaints received during the reporting period.