ESTABLISHED 1907

**Muswellbrook Coal Company Limited**

# Spontaneous Combustion Report

## For: Environmental Protection Licence 656

**Reporting Period:** December 2021

**Authority Holder:** Muswellbrook Coal Company Limited

**Report Date:** 31 January 2022

**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 |
|---|---|---|---|---|---|
| 01/12/21 | | | | | Wet Weather |
| 02/12/21 | | OC1 | | S24 | |
| 03/12/21 | | S24/S25 | | S24/S25 | |
| 04/12/21 | | | | | Wet weather |
| 05/12/21 | | | | | |
| 06/12/21 | | S24/S25 | | S24 | |
| 07/12/21 | | S24/S25 | | | Wet weather |
| 08/12/21 | | OC1/ROM | | | Wet weather |
| 09/12/21 | | OC1 | | | Wet weather |
| 10/12/21 | | S24 | S24 | S24 | |

| Date | Water Sprays | Water Carts Assisting | Capping | Hot Material Removal | Comments |
|---|---|---|---|---|---|
| 11/12/21 | | S24/S25 | | | |
| 12/12/21 | | ROM | | Stockpile 1&2 | |
| 13/12/21 | | OC1 | | | |
| 14/12/21 | | OC1 | | S24 | |
| 15/12/21 | | OC1 | | S24 | |
| 16/12/21 | | OC1 | | S24 | Wet weather |
| 17/12/21 | | OC1 | | S24 | |
| 18/12/21 | | | | | |
| 19/12/21 | | | | | Wet weather |
| 20/12/21 | | OC1 | | | |
| 21/12/21 | S24 | ROM | | | Wet weather |
| 22/12/21 | S24 | S24/ROM | | | Wet weather |
| 23/12/21 | S24 | OC1/ROM | S24 | S24/ROM | |
| 24/12/21 | | | | | |
| 25/12/21 | | | | | |
| 26/12/21 | | | | | Wet weather |
| 27/12/21 | | | | | Wet weather |
| 28/12/21 | | | | | Wet weather |
| 29/12/21 | | OC1/ROM | | | |
| 30/12/21 | S24 | OC1/ROM | | | |
| 31/12/21 | S24 | S24/S25/ROM | | 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<br>B<br>C | 4*<br>66*<br>20* | Mining<br>Capping<br>Infusion | 1,220**<br>0**<br>2,205** |
| Open Cut 2 | N/A | 0* | None Required | 0** |
| **SUMMARY** | | | | |
| Total Area Affected | | 90* | | |
| Total Area Controlled | | 3,425** | | |

* - at end of reporting period

** - during reporting period

No spontaneous combustion outbreaks were observed in Open Cut 2 throughout December 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 – December (%) | Data Capture – 12 Month Rolling (%) |
|---|---|---|---|---|
| Point 9, Nisbet | Hydrogen Sulphide | 30 minutes | 96.3 | 95.6 |
| | | 1 hour | 94.2 | 94.1 |
| | | 24 hours | 96.8 | 98.6 |
| Point 10, Muscle Creek | Hydrogen Sulphide | 30 minutes | 94.6 | 96.6 |
| | | 1 hour | 91.8 | 94.4 |
| | | 24 hours | 96.8 | 99.2 |
| Point 15, Nisbet | Sulphur Dioxide | 1 hour | 94.1 | 94.6 |
| | | 24 hours | 96.8 | 98.6 |
| Point 16, Muscle Creek | Sulphur Dioxide | 1 hour | 92.5 | 94.6 |
| | | 24 hours | 96.8 | 99.5 |

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

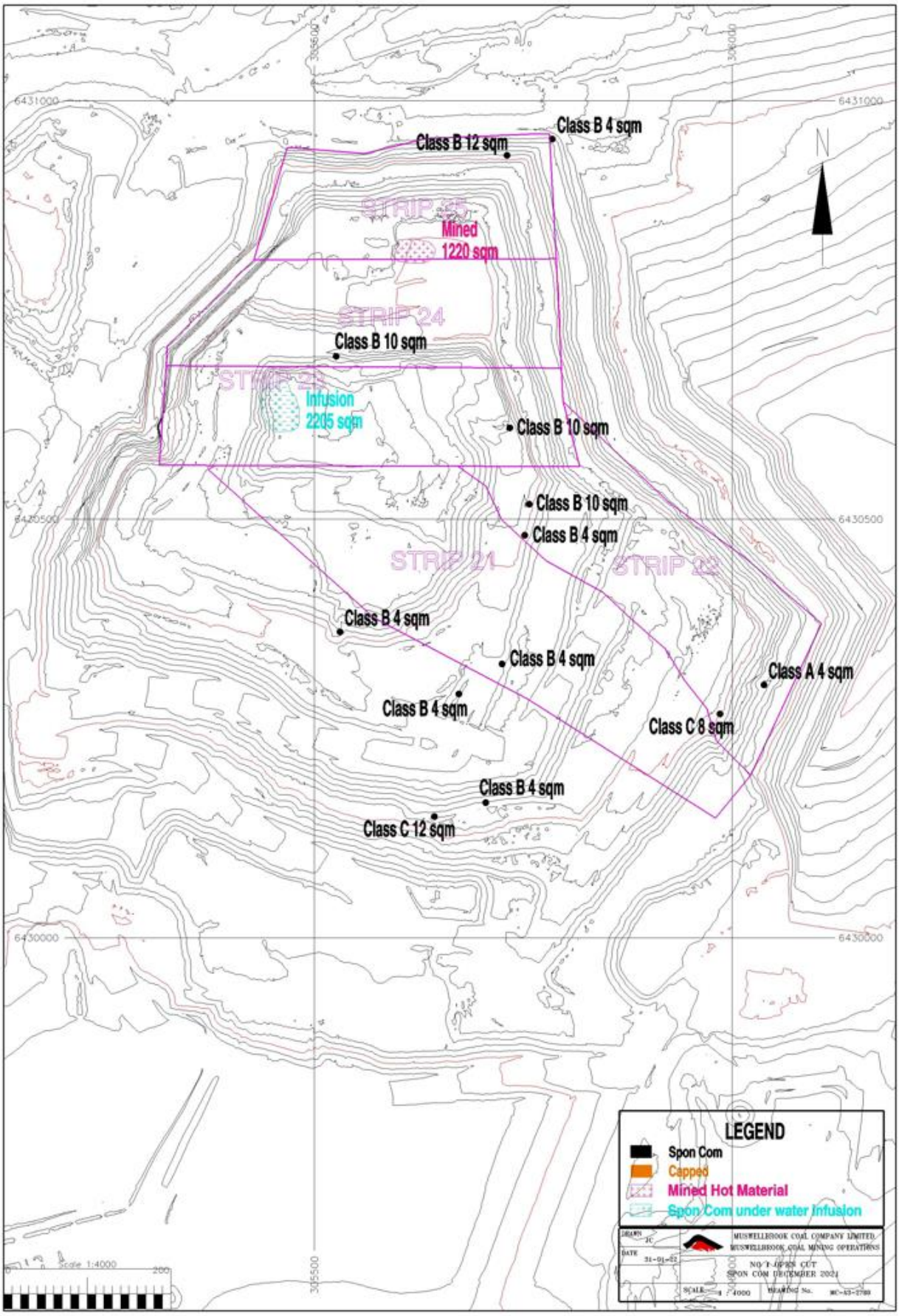


**Figure 1: Location of Spontaneous Combustion Outbreaks in Open Cut 1**

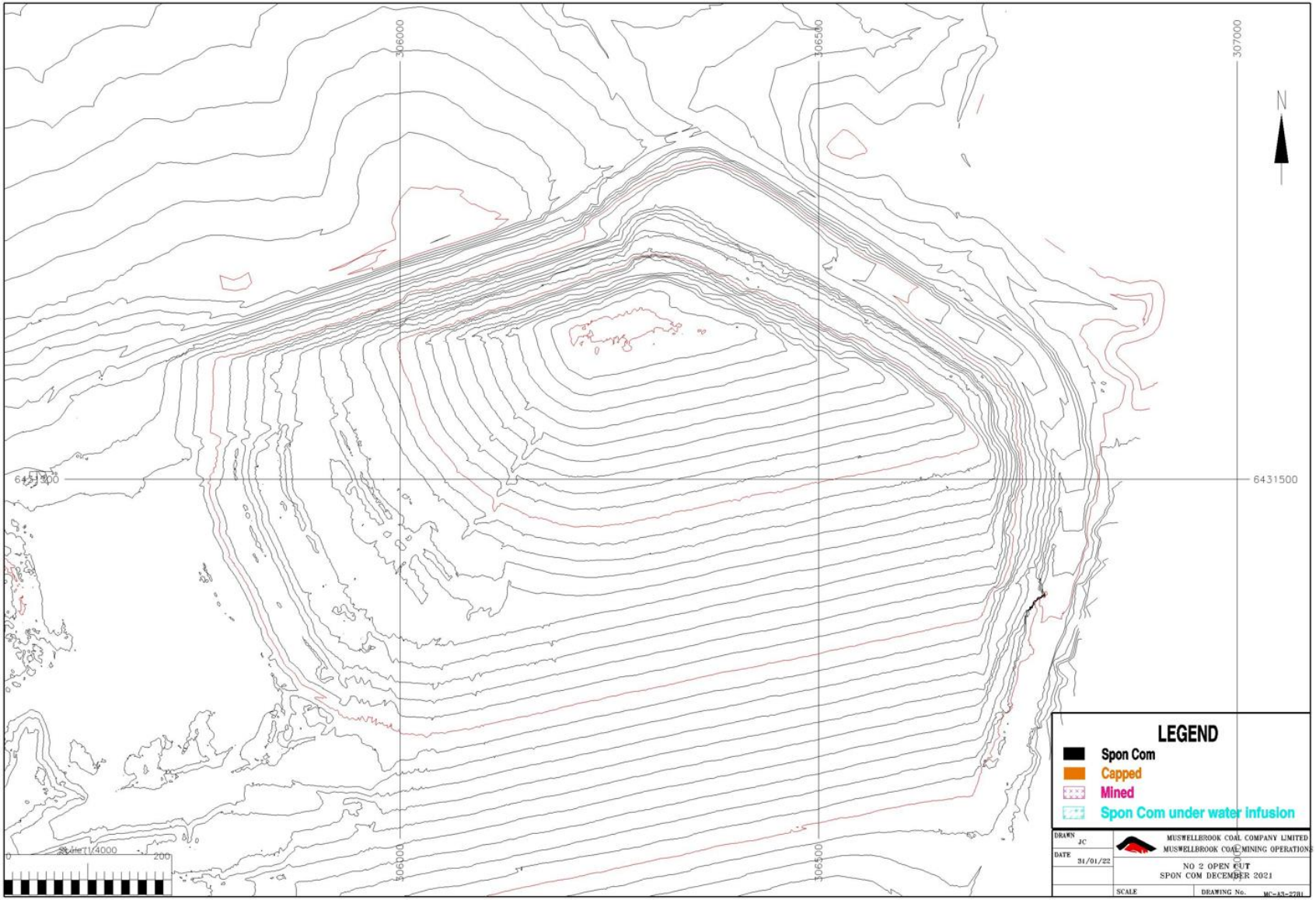


**Figure 2: Location of Spontaneous Combustion Outbreaks in Open Cut 2**

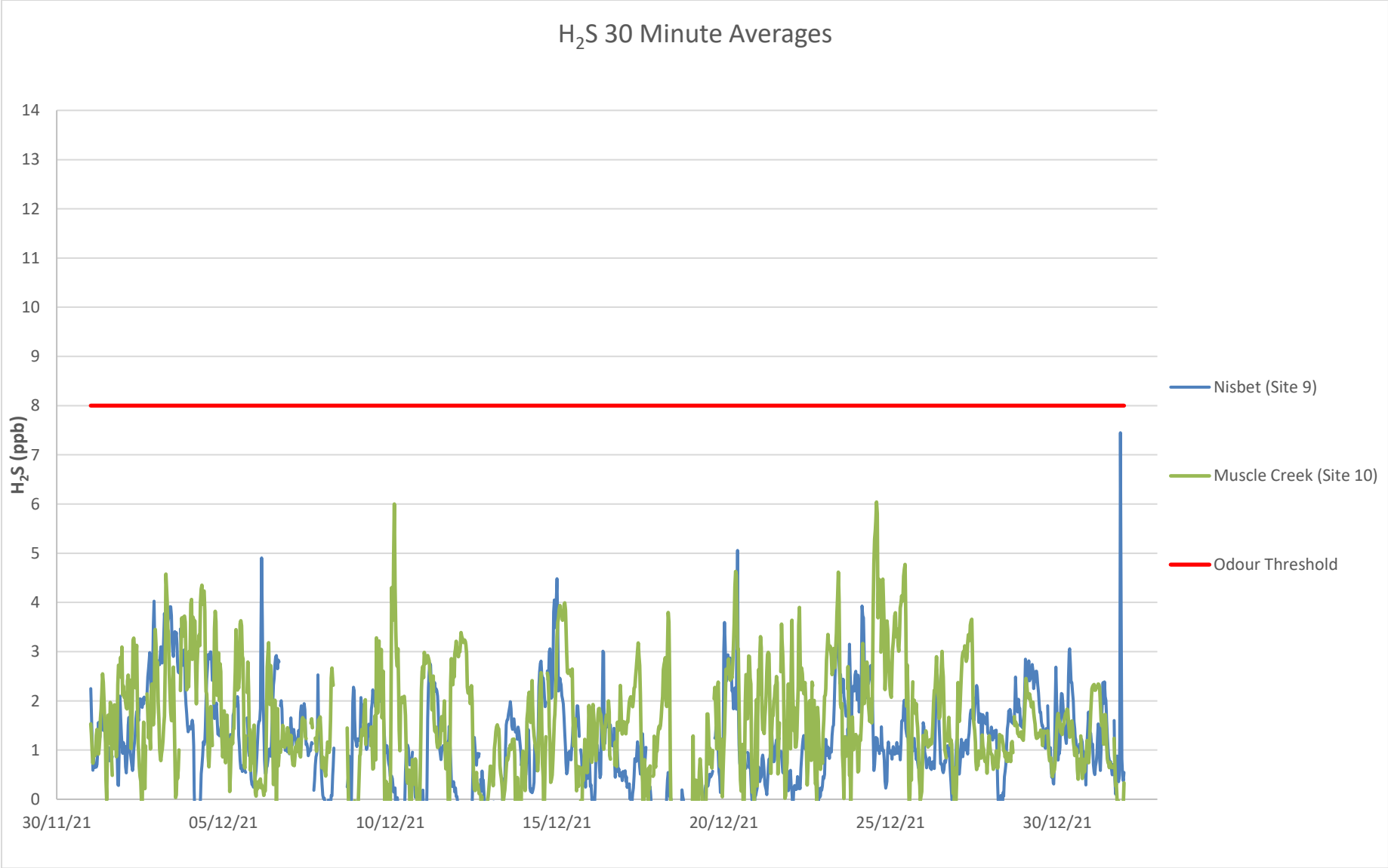


**Figure 3: Hydrogen Sulphide 30 Minute Results**

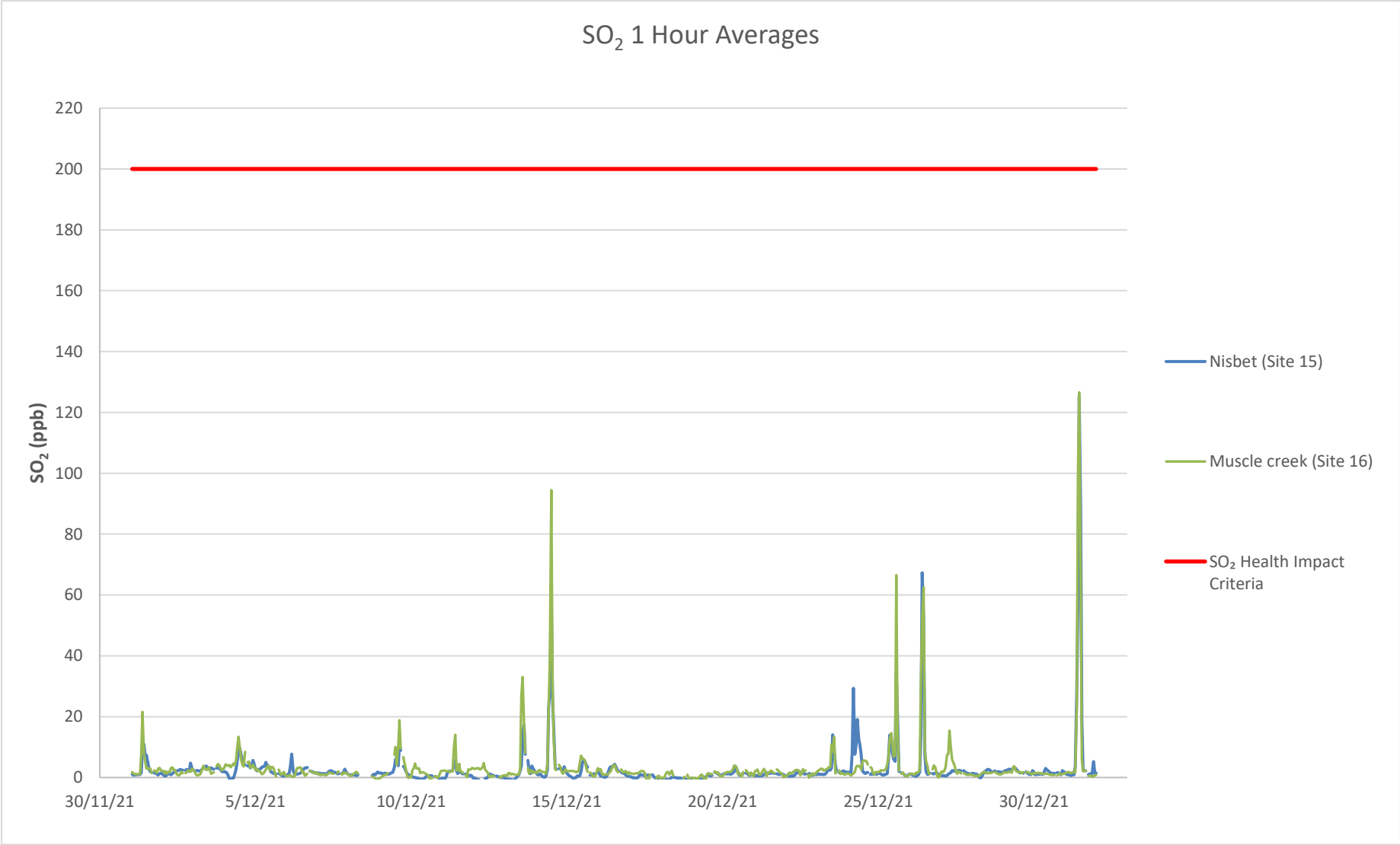


**Figure 4: Sulphur Dioxide 1 Hour Results**

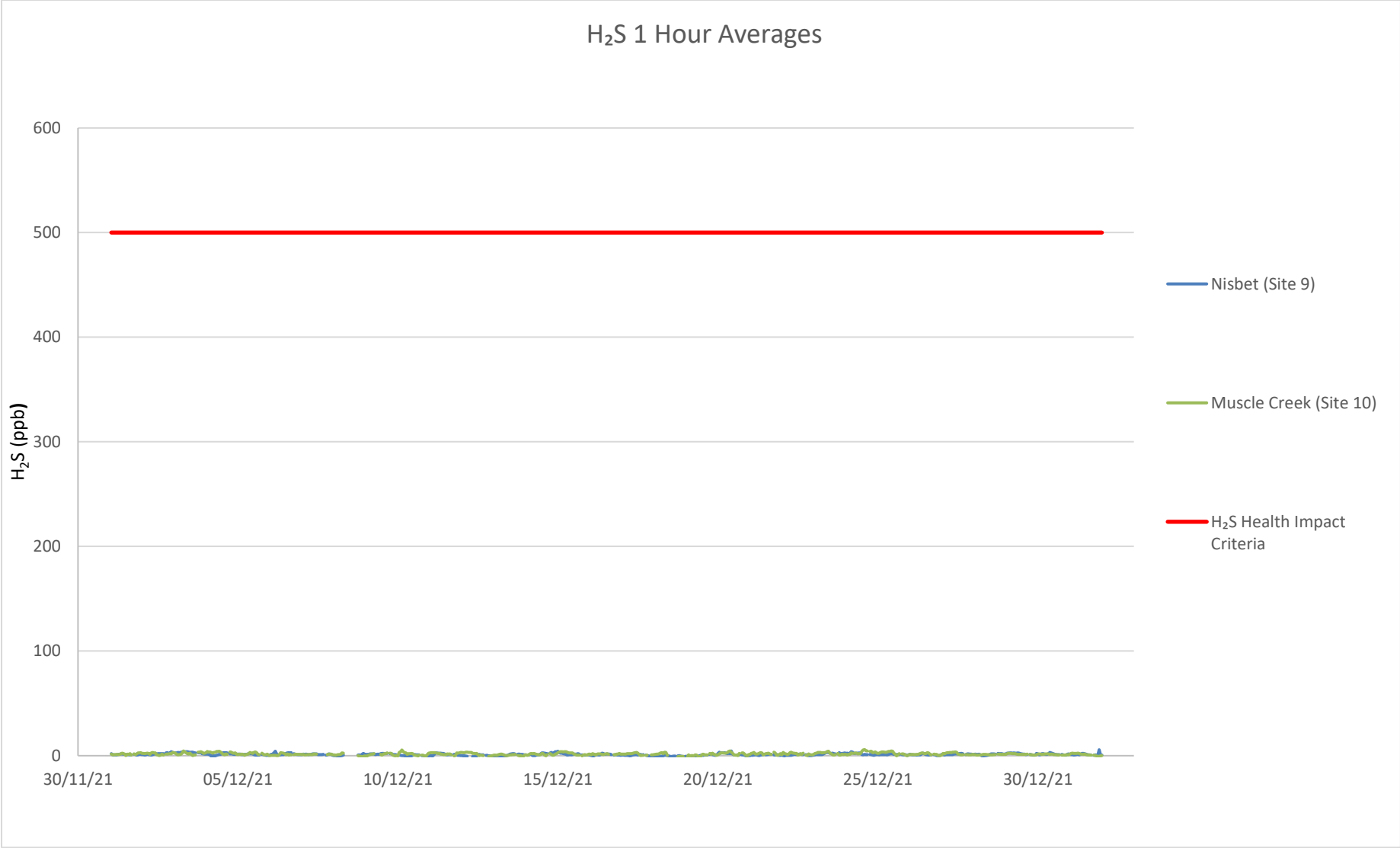


**Figure 5: Hydrogen Sulphide 1 Hour Results**

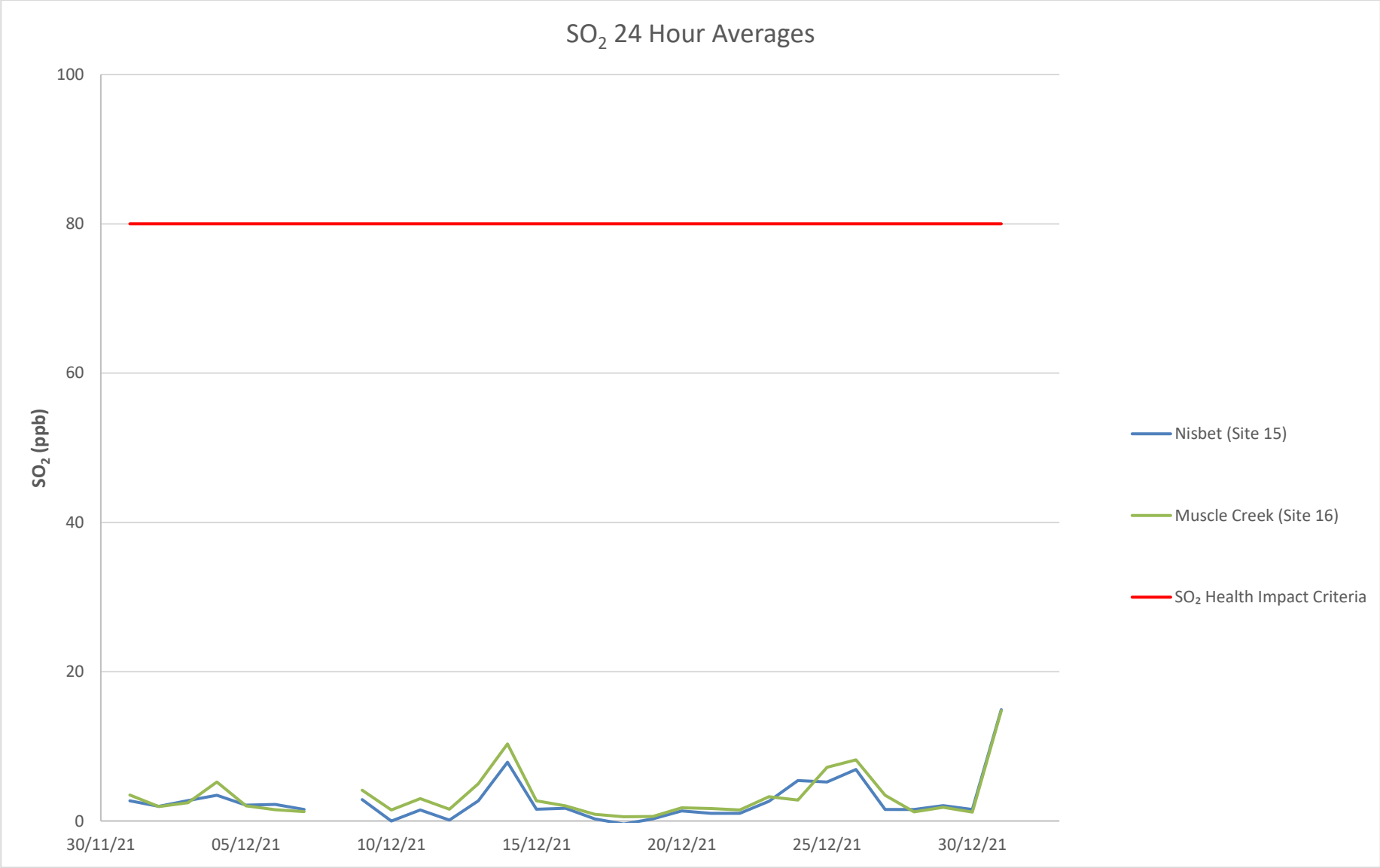


**Figure 6: Sulphur Dioxide 24 Hour Results**

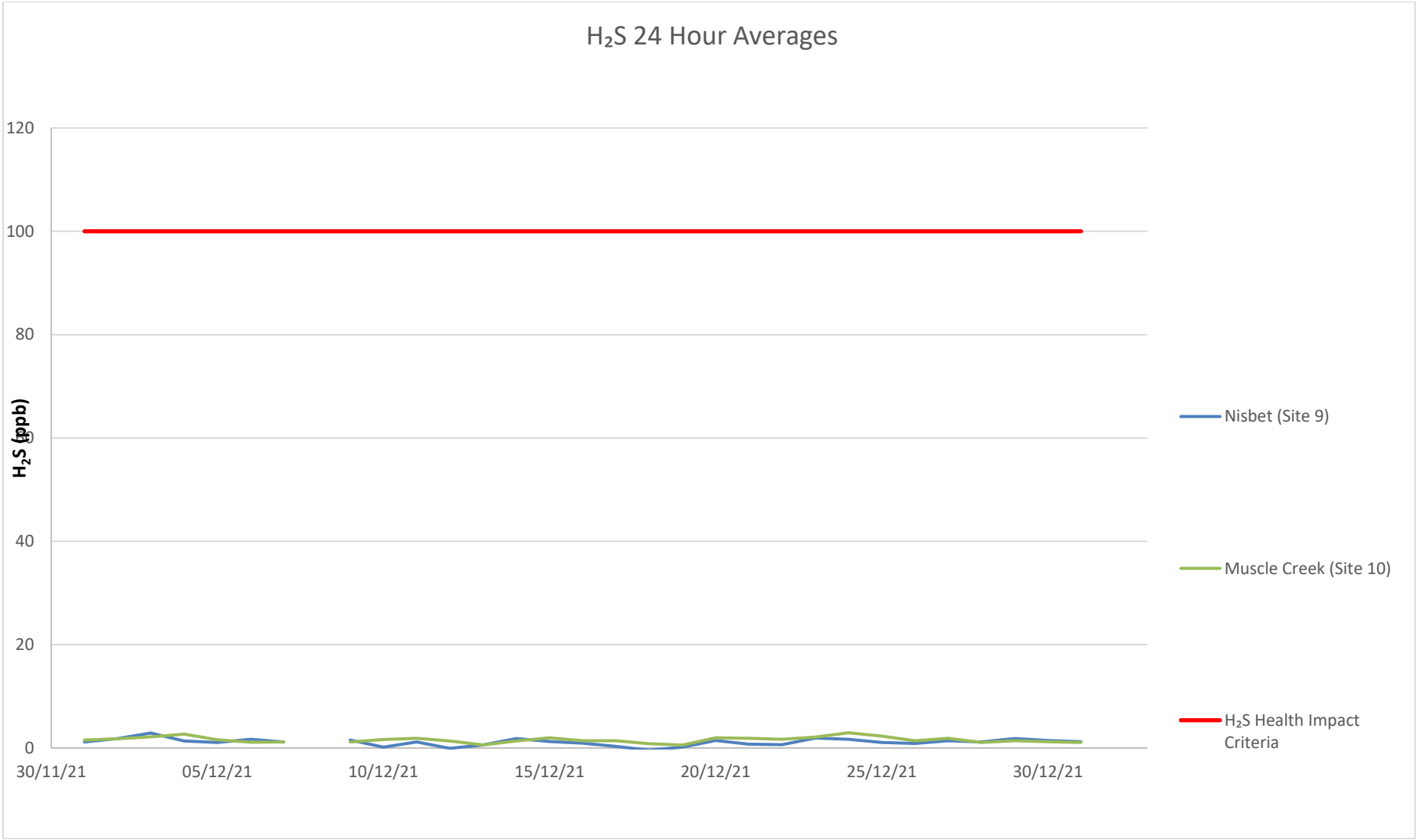


**Figure 7: Hydrogen Sulphide 24 Hour Results**

## 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. There were no alarms recorded for the reporting period in December 2021.

## 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.