Heidelberg Materials, Ribblesdale Air Quality Stations October 2024 Data Summary

14 Nov 2024

Quality Management

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Location	Newcastle Office		
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Revision Status / History

Rev	Date	Issue / Purpose/ Comment	Prepared	Authorised
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1. Introduction

Element Materials Technology were commissioned by Heidelberg Materials UK, Ribblesdale to maintain the Air Quality Stations (AQS) located in Chatburn and Clitheroe. Both AQS use the Turnkey Instruments' Osiris and iGas analysers to provide real-time particulate, gas concentrations and meteorological data, at the AQS sites identified in **Figure 1**. The AQS is permanently connected to the AirQWeb system and provides an online portal to view current and historical data, and 24/7 alarm trigger function to alert any exceedence of the relevant air quality standards.

The October 2024 air quality data summary from the Chatburn and Clitheroe AQS are summarised below.

1.1 Site description

The Chatburn AQS (AQS-1) is situated within Chatburn village on Ribblesdale View. The monitoring location is situated northeast of the Heidelberg Materials, Ribblesdale cement site and quarry.

The Clitheroe AQS (AQS-2) is situated on Butts Grove, in Clitheroe. The monitoring location is situated southwest of the Heidelberg Materials, Ribblesdale cement site and quarry.

Figure 1 Chatburn Air Quality Station

2. Standards and Guidance

The objectives adopted in England for the purpose of Local Air Quality Management are set out in The Air Quality Strategy for England, Scotland, Wales & Northern Ireland (DEFRA, 2000), as amended 2003. Similar targets are set at EU level, where there are called limit or target values. These are set out in the European 2008 Ambient Air Quality Directive (2008/50/EC).

A summary of the current UK Air Quality Objectives is provided in **Table 1**.

Table 1 UK Air Quality Objectives for protection of human health, July 2007

Pollutant	Air Quality Objective		To be achieved by
	Concentration	Measured as	
Benzene			
All authorities	16.25 µg m^{-3}	Running annual mean	31 December 2003
England and Wales Only	5.00 µg m^{-3}	Annual mean	31 December 2010
Scotland and N. Ireland	3.25 µg m^{-3}	Running annual mean	31 December 2010
1,3-Butadiene			
All authorities	2.25 µg m^{-3}	Running annual mean	31 December 2003
Carbon Monoxide			
England, Wales and N. Ireland	10.0 mg m^{-3}	Maximum daily running 8-hour mean	31 December 2003
Scotland Only	10.0 mg m^{-3}	Running 8-hour mean	31 December 2003
Lead			
All authorities	0.5 µg m^{-3}	Annual mean	31 December 2004
	0.25 µg m^{-3}	Annual mean	31 December 2008
Nitrogen Dioxide			

Pollutant	Air Quality Objective		To be achieved by
	Concentration	Measured as	
All authorities	200 µg m^{-3} not to be exceeded more than 18 times a year (99.79th percentile)	1-hour mean	31 December 2005
	40 µg m^{-3}	Annual mean	31 December 2005
Particles (PM_{10}) (gravimetric)			
All authorities	50 µg m^{-3}, not to be exceeded more than 35 times a year (90.41th percentile)	24 hour running mean	31 December 2004
	40 µg m^{-3}	Annual mean	31 December 2004
Scotland Only	50 µg m^{-3}, not to be exceeded more than 7 times a year (98.08th percentile)	24 hour running mean	31 December 2010
	18 µg m^{-3}	Annual mean	31 December 2010
Particles ($PM_{2.5}$) (gravimetric) *			
All authorities	25 µg m^{-3} (target)	Annual mean	2020
	15% cut in urban background exposure	Annual mean	2010 - 2020
Scotland Only	12 µg m^{-3} (limit)	Annual mean	2010
Sulphur dioxide			
All authorities	350 µg m^{-3}, not to be exceeded more than 24 times a year (99.73th percentile)	1-hour mean	31 December 2004
	125 µg m^{-3}, not to be exceeded more than 3 times a year (99.18th percentile)	24-hour mean	31 December 2004
	266 µg m^{-3}, not to be exceeded more than 35 times a year (99.90th percentile)	15-minute mean	31 December 2005
PAH *			

Pollutant	Air Quality Objective		To be achieved by
	Concentration	Measured as	
All authorities	0.25 ng m^{-3}	Annual mean	31 December 2010
Ozone *			
All authorities	100 µg m^{-3} not to be exceeded more than 10 times a year	8 hourly running or hourly mean*	31 December 2005

**Not included in regulations at present*

Pollutant	Air Quality Objective		To be achieved by
	Concentration	Measured as	
Nitrogen dioxide (for protection of vegetation & ecosystems) *			
All ecosystems	30 µg m^{-3}	Annual mean	31 December 2000
Sulphur dioxide (for protection of vegetation & ecosystems) *			
All ecosystems	20 µg m^{-3}	Annual mean	31 December 2000
	20 µg m^{-3}	Winter Average (Oct - Mar)	
Ozone *			
All ecosystems	18 µg m^{-3}	AOT40^{+}, calculated from 1h values May-July. Mean of 5 years, starting 2010	01 January 2010

**not included in regulations at present*
$^{+}$AOT 40 is the sum of the differences between hourly concentrations greater than 80 µg m^{-3} (=40ppb) and 80 µg m^{-3}, over a given period using only the 1-hour averages measured between 08:00 and 20:00 hours.

3. Data Summary

3.1 Chatburn AQS-1

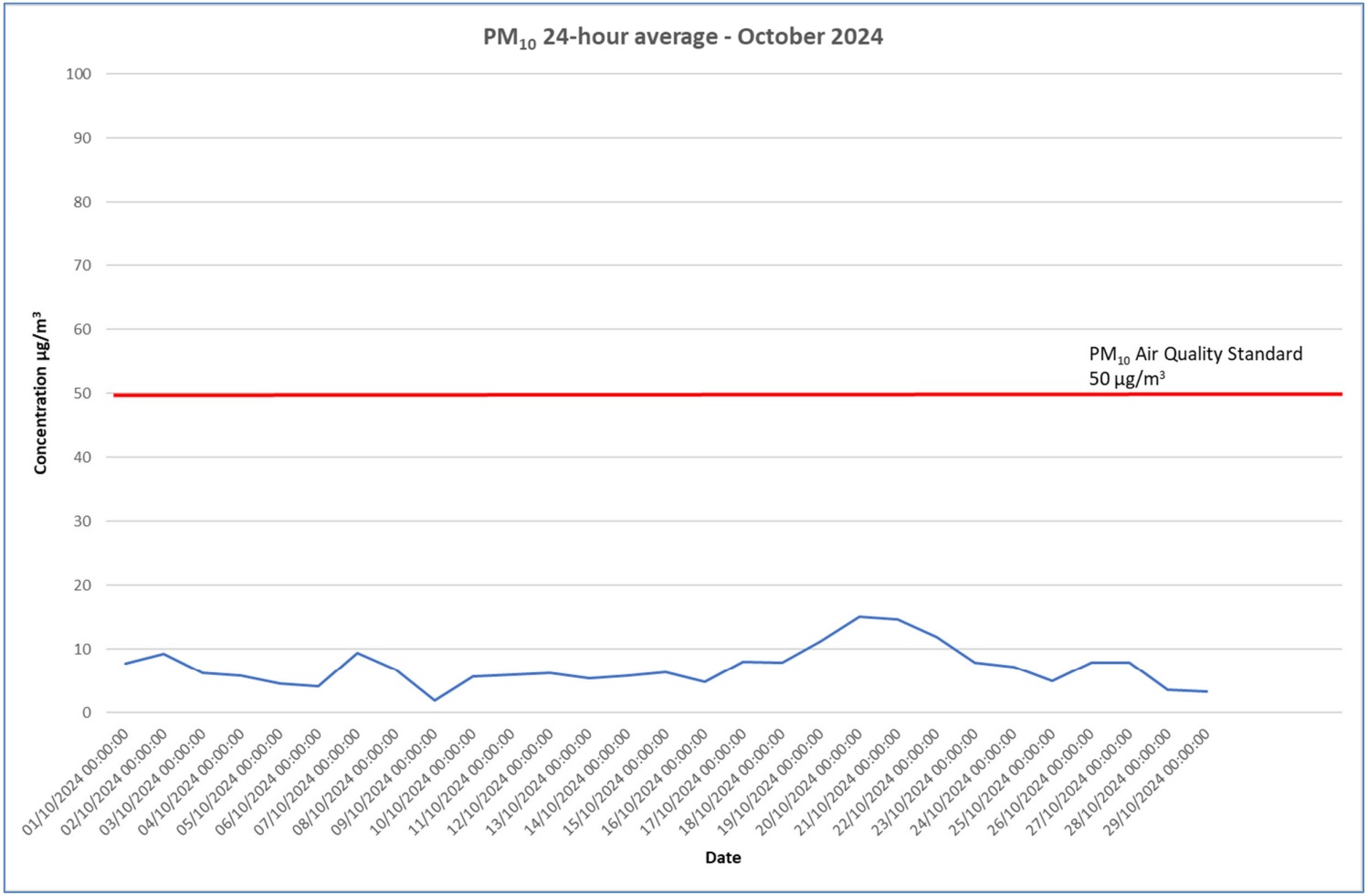
3.1.1 Osiris particulate data

Based upon the current UK air quality guidance, the following relevant alarm trigger levels are active on the Osiris analyser and data are presented below:

- PM_{10} 50 µg/m^3 over a 24-hour period; and
- TSP 250 µg/m^3 over a 15-minute period.

3.1.1.1 October 2024 data summary

There were no exceedences of the particulate air quality standards.


PM10 24-hour average - October 2024
Concentration µg/m³
100
90
80
70
60
50
40
30
20
10
0
PM10 Air Quality Standard
50 µg/m³
01/10/2024 00:00:00
02/10/2024 00:00:00
03/10/2024 00:00:00
04/10/2024 00:00:00
05/10/2024 00:00:00
06/10/2024 00:00:00
07/10/2024 00:00:00
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15/10/2024 00:00:00
16/10/2024 00:00:00
17/10/2024 00:00:00
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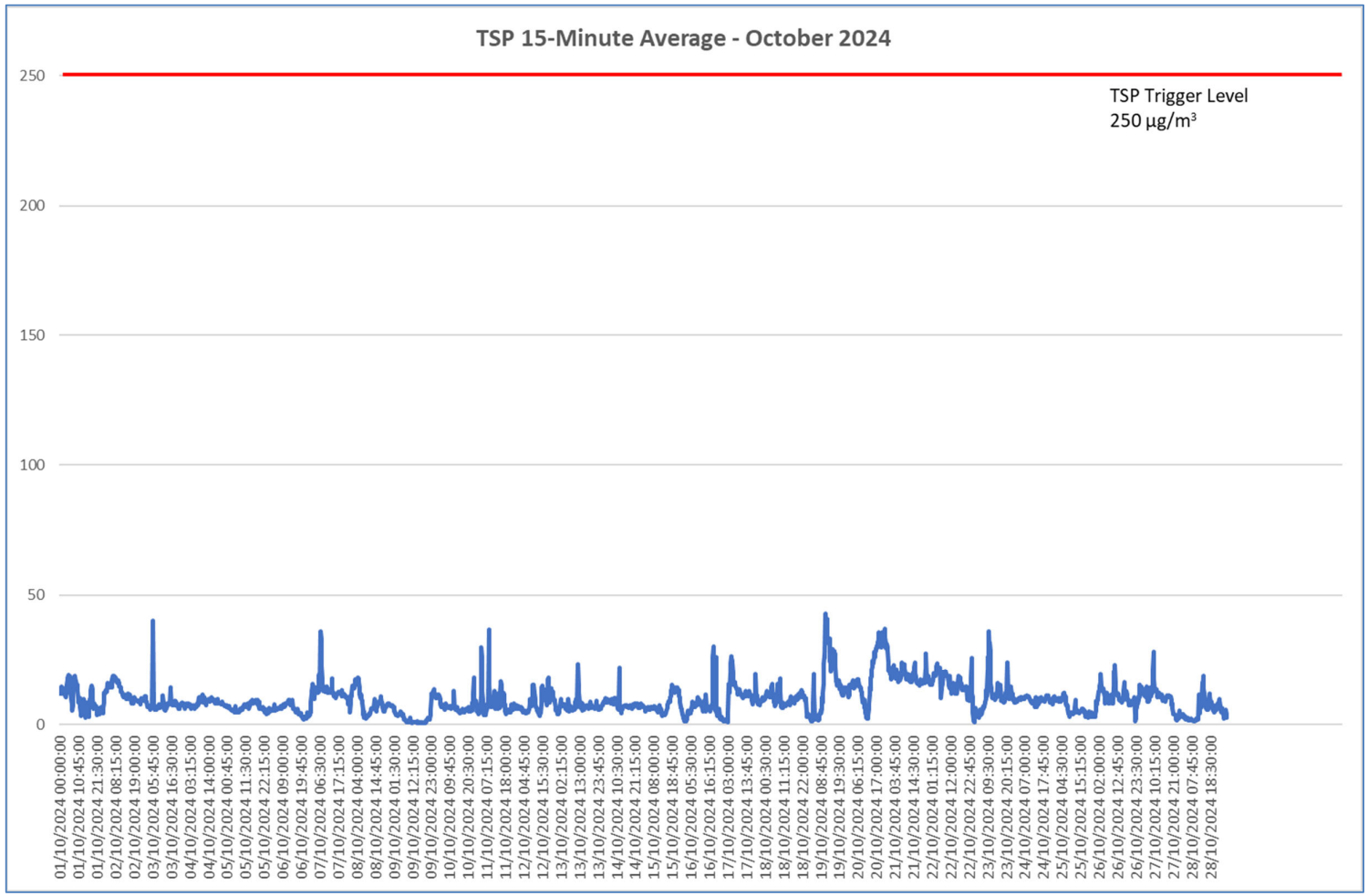
27/10/2024 00:00:00
28/10/2024 00:00:00
29/10/2024 00:00:00
Date


TSP 15-Minute Average - October 2024
250
200
150
100
50
0
TSP Trigger Level
250 µg/m³
01/10/2024 00:00:00
01/10/2024 10:45:00
01/10/2024 21:30:00
02/10/2024 08:15:00
02/10/2024 19:00:00
03/10/2024 05:45:00
03/10/2024 16:30:00
04/10/2024 03:15:00
04/10/2024 14:00:00
05/10/2024 00:45:00
05/10/2024 11:30:00
05/10/2024 22:15:00
06/10/2024 09:00:00
06/10/2024 19:45:00
07/10/2024 06:30:00
07/10/2024 17:15:00
08/10/2024 04:00:00
08/10/2024 14:45:00
09/10/2024 01:30:00
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09/10/2024 23:00:00
10/10/2024 09:45:00
10/10/2024 20:30:00
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11/10/2024 18:00:00
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13/10/2024 02:15:00
13/10/2024 13:00:00
13/10/2024 23:45:00
14/10/2024 10:30:00
14/10/2024 21:15:00
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15/10/2024 18:45:00
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26/10/2024 12:45:00
26/10/2024 23:30:00
27/10/2024 10:15:00
27/10/2024 21:00:00
28/10/2024 07:45:00
28/10/2024 18:30:00

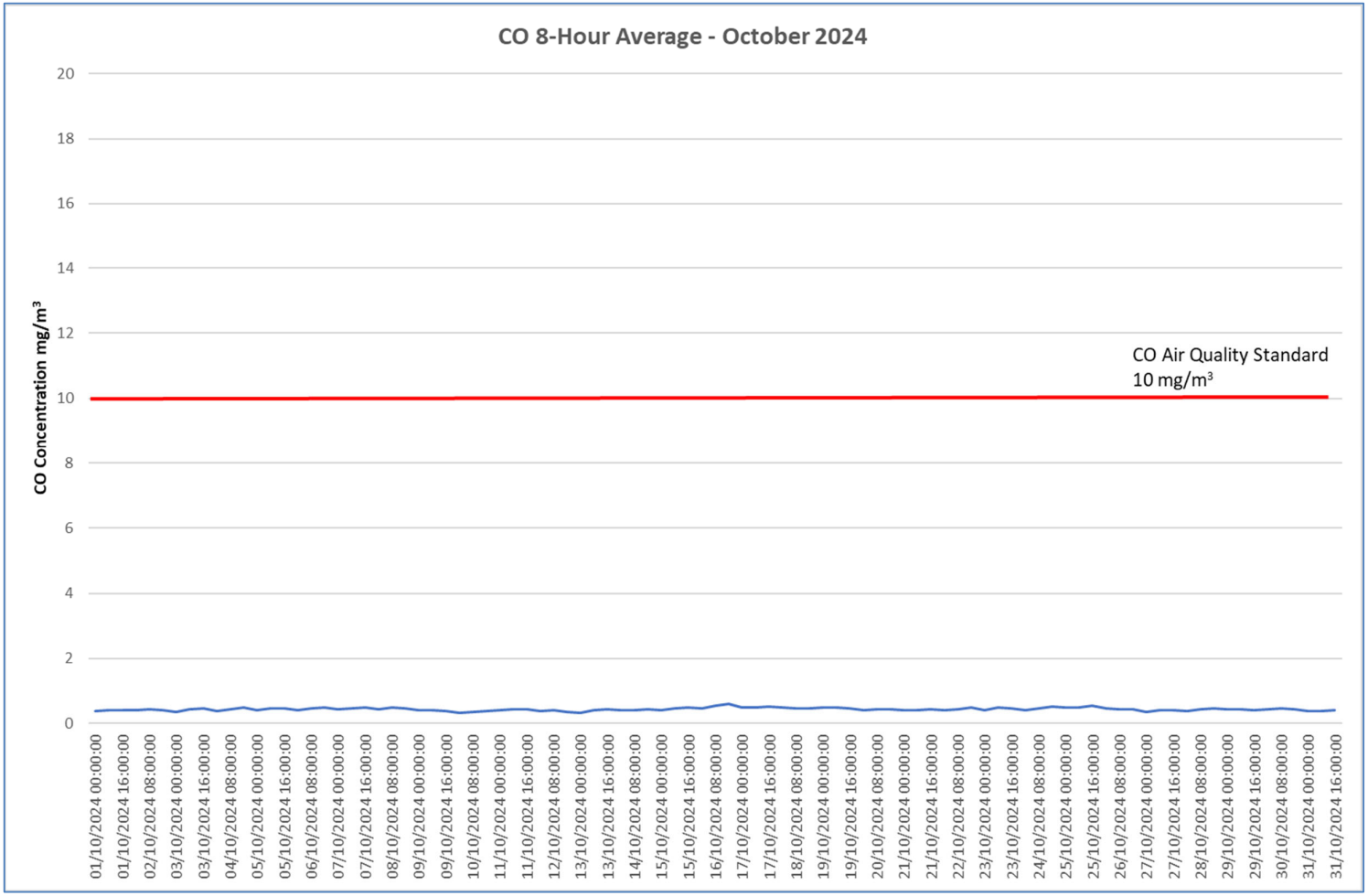
3.1.2 iGas data

Based upon the current UK air quality guidance, the following relevant alarm trigger levels are active on the iGas analyser and data are presented below:

- CO 10 mg/m^3 over an 8-hour period;
- NO_2 200 µg/m^3 over a 1-hour period; and
- SO_2 266 µ/m^3 over a 15-minute period.

3.1.2.1 October 2024 data summary

There were no exceedences of the gas air quality standards.


CO 8-Hour Average - October 2024
CO Concentration mg/m³
CO Air Quality Standard
10 mg/m³
0
2
4
6
8
10
12
14
16
18
20
01/10/2024 00:00:00
01/10/2024 16:00:00
02/10/2024 08:00:00
03/10/2024 00:00:00
03/10/2024 16:00:00
04/10/2024 08:00:00
05/10/2024 00:00:00
05/10/2024 16:00:00
06/10/2024 08:00:00
07/10/2024 00:00:00
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08/10/2024 08:00:00
09/10/2024 00:00:00
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10/10/2024 08:00:00
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28/10/2024 08:00:00
29/10/2024 00:00:00
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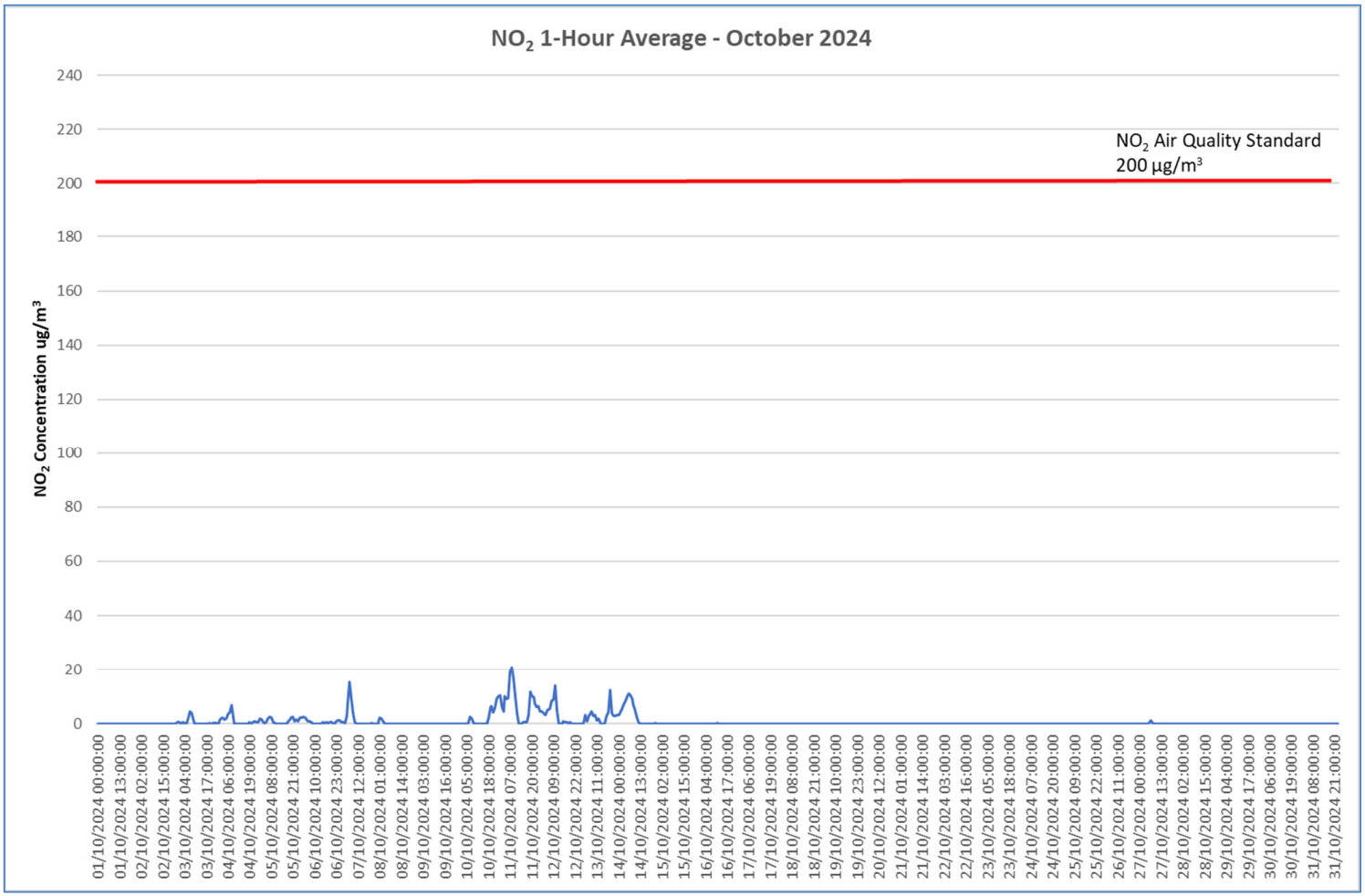
30/10/2024 08:00:00
31/10/2024 00:00:00
31/10/2024 16:00:00


NO2 1-Hour Average - October 2024
NO2 Concentration ug/m3
NO2 Air Quality Standard
200 µg/m3
240
220
200
180
160
140
120
100
80
60
40
20
0
01/10/2024 00:00:00
01/10/2024 13:00:00
02/10/2024 02:00:00
02/10/2024 15:00:00
03/10/2024 04:00:00
03/10/2024 17:00:00
04/10/2024 06:00:00
04/10/2024 19:00:00
05/10/2024 08:00:00
05/10/2024 21:00:00
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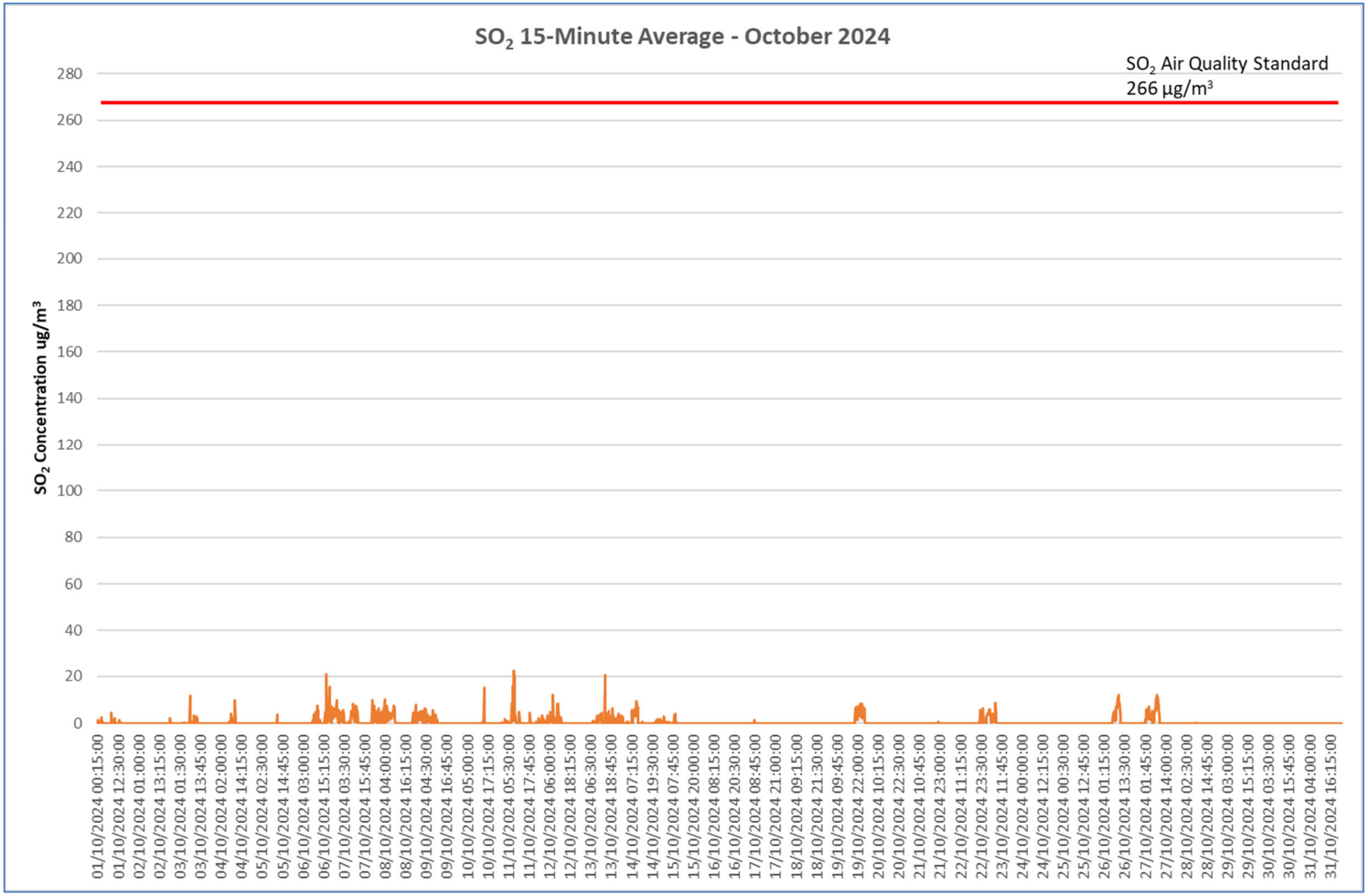
31/10/2024 08:00:00
31/10/2024 21:00:00


SO2 15-Minute Average - October 2024
SO2 Air Quality Standard
266 µg/m3
SO2 Concentration ug/m3
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
01/10/2024 00:15:00
01/10/2024 12:30:00
02/10/2024 01:00:00
02/10/2024 13:15:00
03/10/2024 01:30:00
03/10/2024 13:45:00
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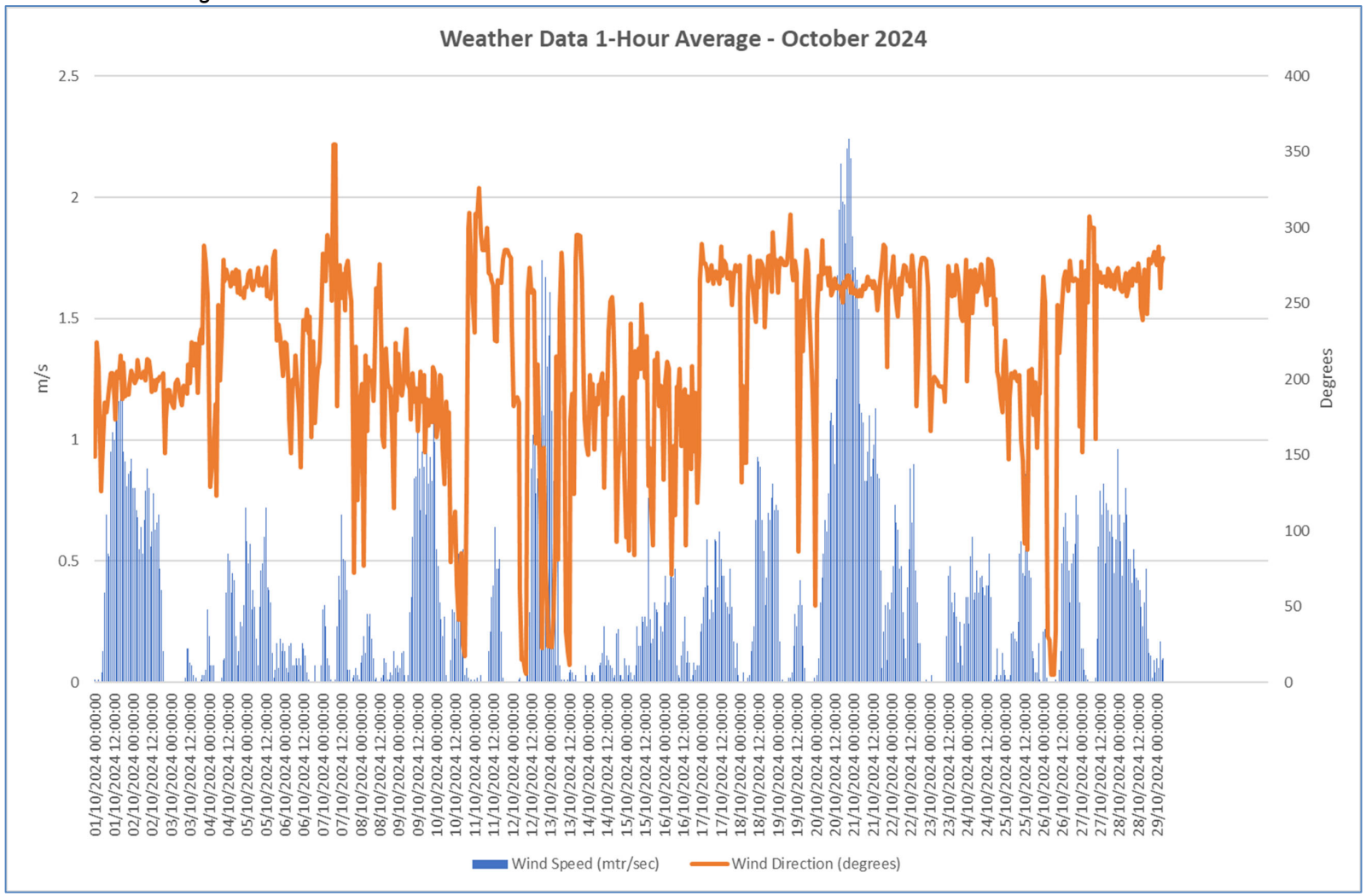
29/10/2024 03:00:00
29/10/2024 15:15:00
30/10/2024 03:30:00
30/10/2024 15:45:00
31/10/2024 04:00:00
31/10/2024 16:15:00

3.1.3 Meteorological data



3.2 Clitheroe AQS-2

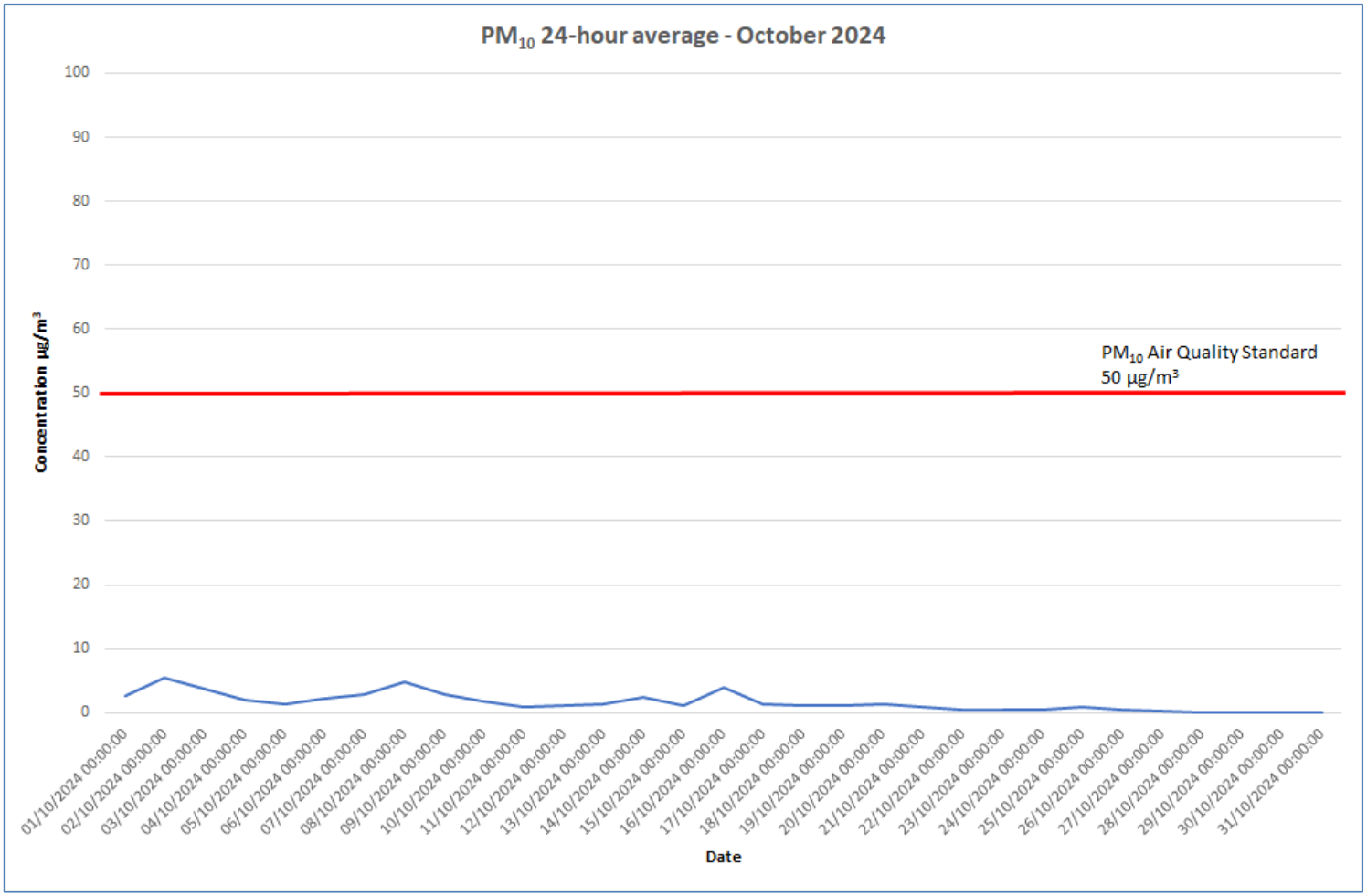
3.2.1 Osiris particulate data

Based upon the current UK air quality guidance, the following relevant alarm trigger levels are active on the Osiris analyser and data are presented below:

- PM_{10} 50 µg/m^3 over a 24-hour period; and
- TSP 250 µg/m^3 over a 15-minute period.

3.2.1.1 October 2024 data summary

There were no exceedences of the particulate air quality standards.


PM10 24-hour average - October 2024
Concentration µg/m³
100
90
80
70
60
50
40
30
20
10
0
PM10 Air Quality Standard
50 µg/m³
01/10/2024 00:00:00
02/10/2024 00:00:00
03/10/2024 00:00:00
04/10/2024 00:00:00
05/10/2024 00:00:00
06/10/2024 00:00:00
07/10/2024 00:00:00
08/10/2024 00:00:00
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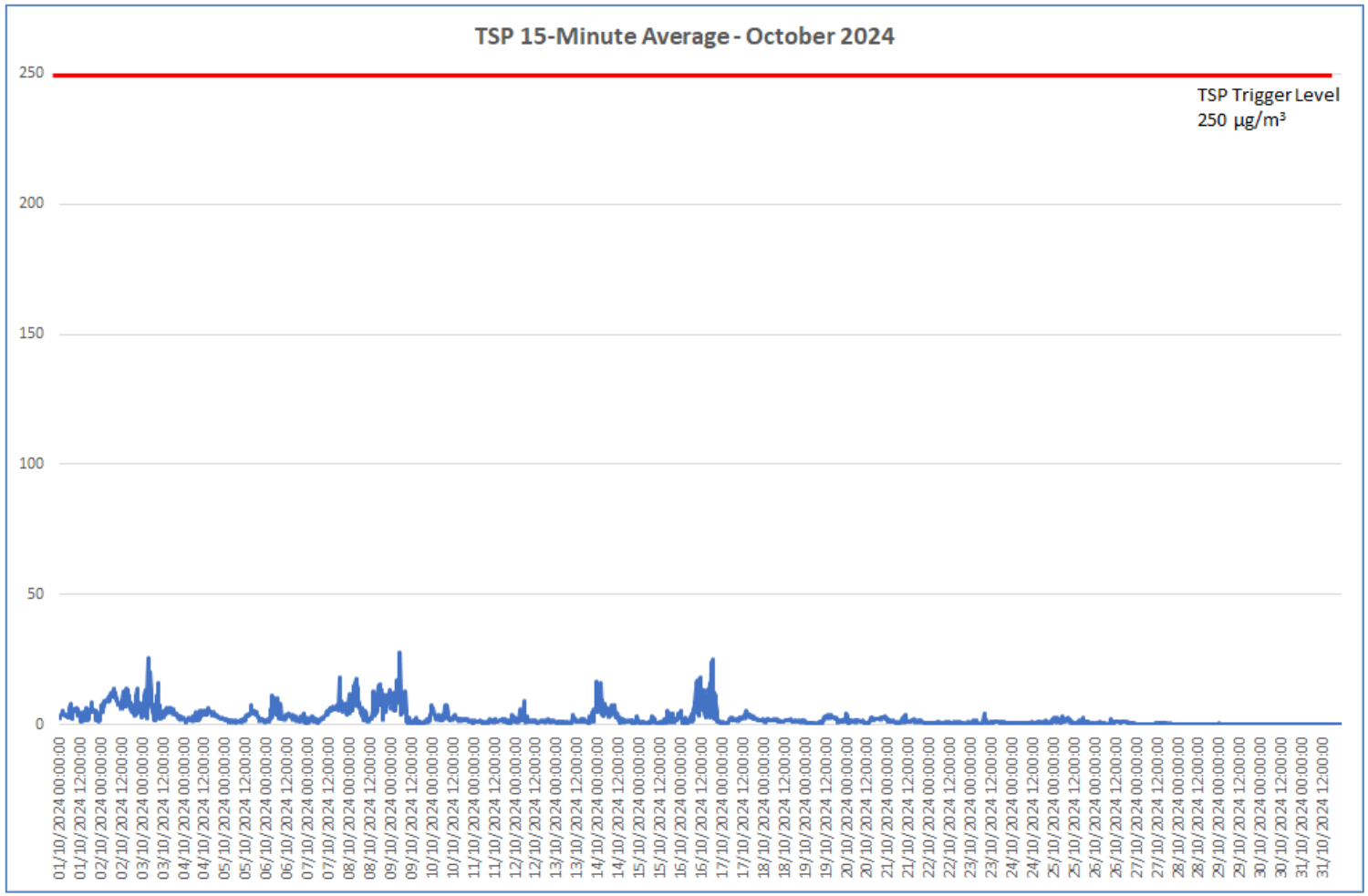
29/10/2024 00:00:00
30/10/2024 00:00:00
31/10/2024 00:00:00
Date


TSP 15-Minute Average - October 2024
250
200
150
100
50
0
TSP Trigger Level
250 µg/m³
01/10/2024 00:00:00
01/10/2024 12:00:00
02/10/2024 00:00:00
02/10/2024 12:00:00
03/10/2024 00:00:00
03/10/2024 12:00:00
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05/10/2024 00:00:00
05/10/2024 12:00:00
06/10/2024 00:00:00
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08/10/2024 12:00:00
09/10/2024 00:00:00
09/10/2024 12:00:00
10/10/2024 00:00:00
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27/10/2024 12:00:00
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28/10/2024 12:00:00
29/10/2024 00:00:00
29/10/2024 12:00:00
30/10/2024 00:00:00
30/10/2024 12:00:00
31/10/2024 00:00:00
31/10/2024 12:00:00

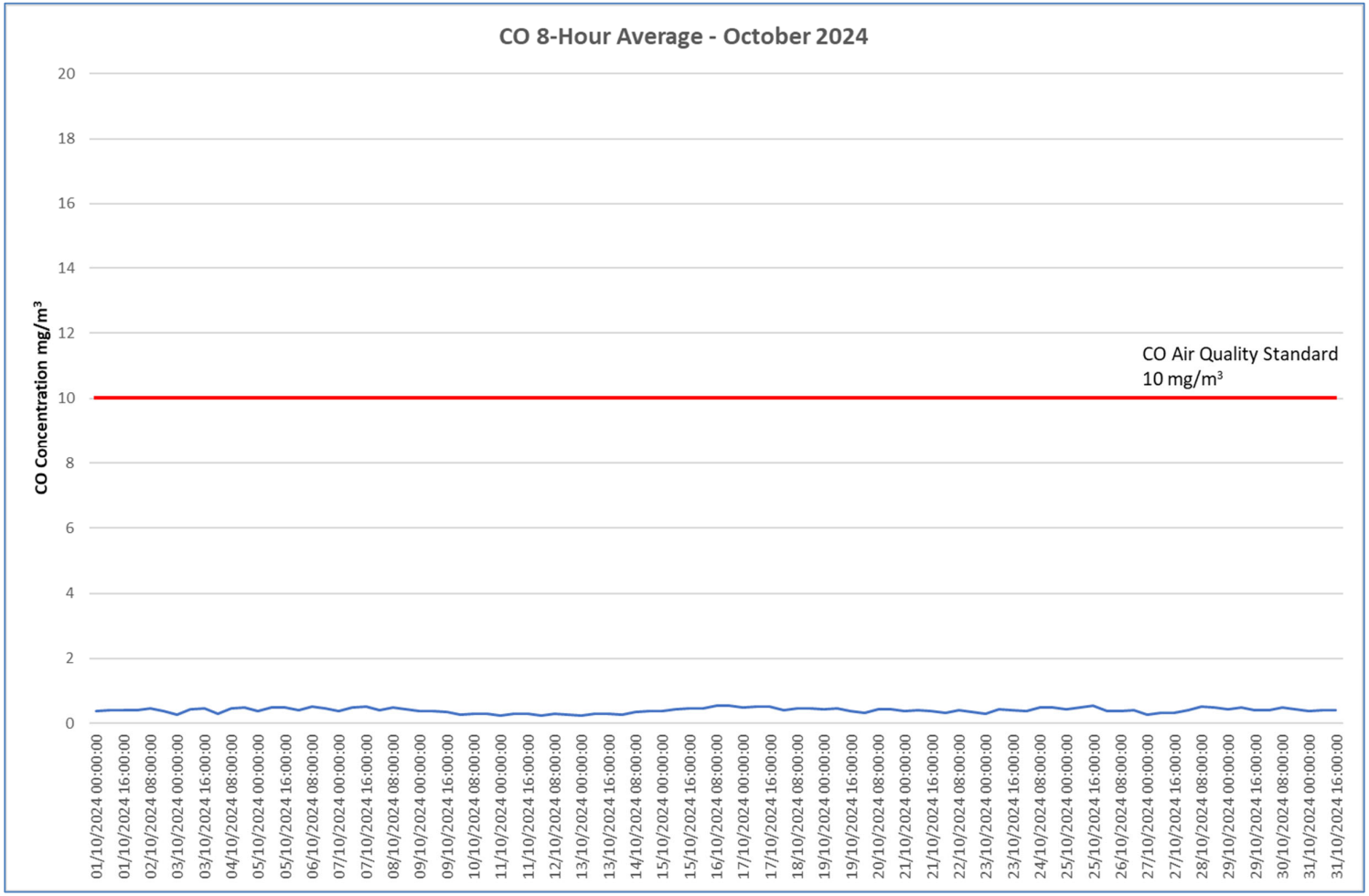
3.2.2 iGas data

Based upon the current UK air quality guidance, the following relevant alarm trigger levels are active on the iGas analyser and data are presented below:

- CO 10 mg/m^3 over an 8-hour period;
- NO_2 200 µg/m^3 over a 1-hour period; and
- SO_2 266 µ/m^3 over a 15-minute period.

3.2.2.1 October 2024 data summary

There were no exceedences of the gas air quality standards.


CO 8-Hour Average - October 2024
CO Concentration mg/m³
CO Air Quality Standard
10 mg/m³
0
2
4
6
8
10
12
14
16
18
20
01/10/2024 00:00:00
01/10/2024 16:00:00
02/10/2024 08:00:00
03/10/2024 00:00:00
03/10/2024 16:00:00
04/10/2024 08:00:00
05/10/2024 00:00:00
05/10/2024 16:00:00
06/10/2024 08:00:00
07/10/2024 00:00:00
07/10/2024 16:00:00
08/10/2024 08:00:00
09/10/2024 00:00:00
09/10/2024 16:00:00
10/10/2024 08:00:00
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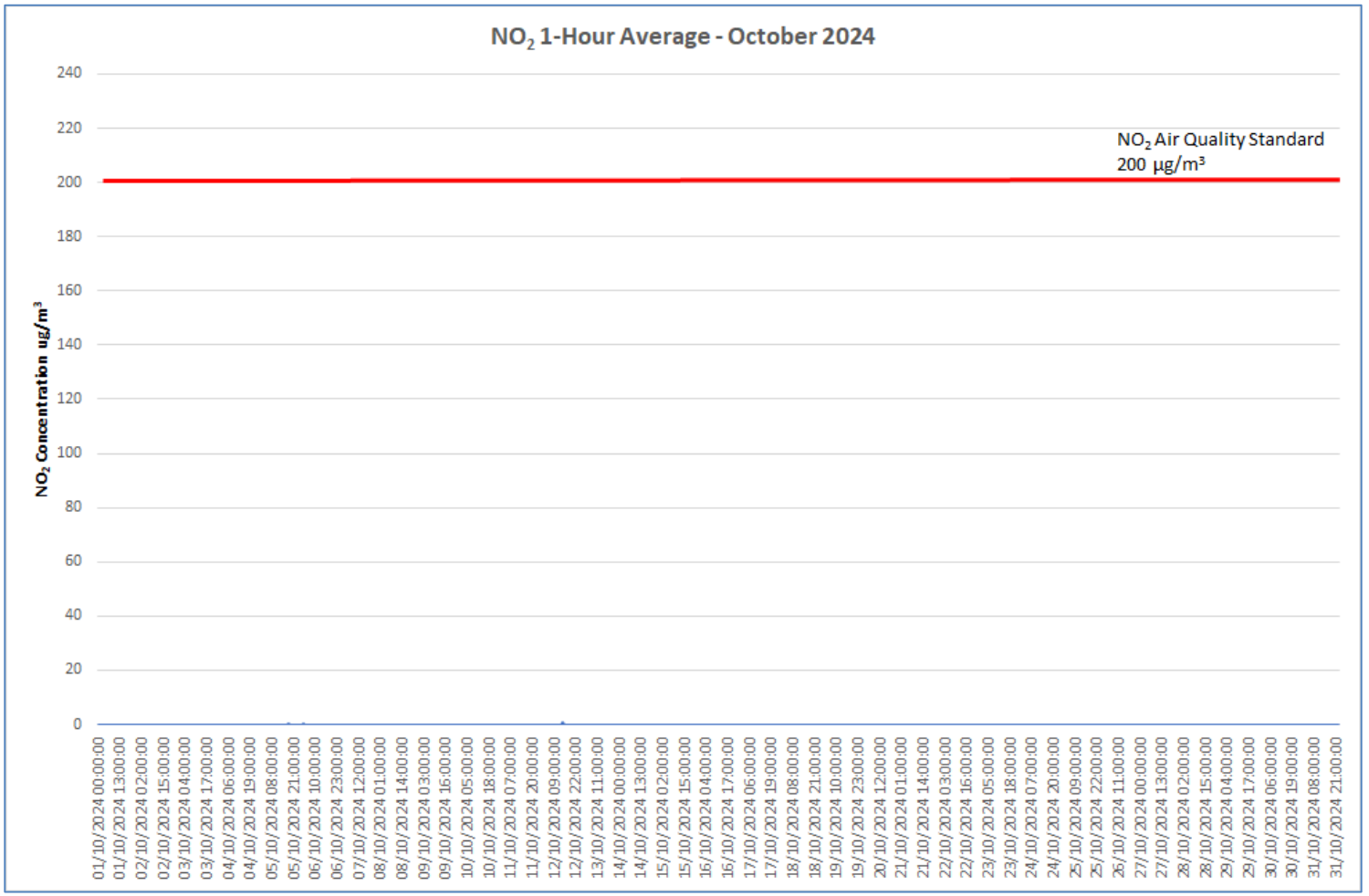
18/10/2024 08:00:00
19/10/2024 00:00:00
19/10/2024 16:00:00
20/10/2024 08:00:00
21/10/2024 00:00:00
21/10/2024 16:00:00
22/10/2024 08:00:00
23/10/2024 00:00:00
23/10/2024 16:00:00
24/10/2024 08:00:00
25/10/2024 00:00:00
25/10/2024 16:00:00
26/10/2024 08:00:00
27/10/2024 00:00:00
27/10/2024 16:00:00
28/10/2024 08:00:00
29/10/2024 00:00:00
29/10/2024 16:00:00
30/10/2024 08:00:00
31/10/2024 00:00:00
31/10/2024 16:00:00


NO2 1-Hour Average - October 2024
NO2 Concentration ug/m3
NO2 Air Quality Standard
200 µg/m3
240
220
200
180
160
140
120
100
80
60
40
20
0
01/10/2024 00:00:00
01/10/2024 13:00:00
02/10/2024 02:00:00
02/10/2024 15:00:00
03/10/2024 04:00:00
03/10/2024 17:00:00
04/10/2024 06:00:00
04/10/2024 19:00:00
05/10/2024 08:00:00
05/10/2024 21:00:00
06/10/2024 10:00:00
06/10/2024 23:00:00
07/10/2024 12:00:00
08/10/2024 01:00:00
08/10/2024 14:00:00
09/10/2024 03:00:00
09/10/2024 16:00:00
10/10/2024 05:00:00
10/10/2024 18:00:00
11/10/2024 07:00:00
11/10/2024 20:00:00
12/10/2024 09:00:00
12/10/2024 22:00:00
13/10/2024 11:00:00
14/10/2024 00:00:00
14/10/2024 13:00:00
15/10/2024 02:00:00
15/10/2024 15:00:00
16/10/2024 04:00:00
16/10/2024 17:00:00
17/10/2024 06:00:00
17/10/2024 19:00:00
18/10/2024 08:00:00
18/10/2024 21:00:00
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20/10/2024 12:00:00
21/10/2024 01:00:00
21/10/2024 14:00:00
22/10/2024 03:00:00
22/10/2024 16:00:00
23/10/2024 05:00:00
23/10/2024 18:00:00
24/10/2024 07:00:00
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25/10/2024 09:00:00
25/10/2024 22:00:00
26/10/2024 11:00:00
27/10/2024 00:00:00
27/10/2024 13:00:00
28/10/2024 02:00:00
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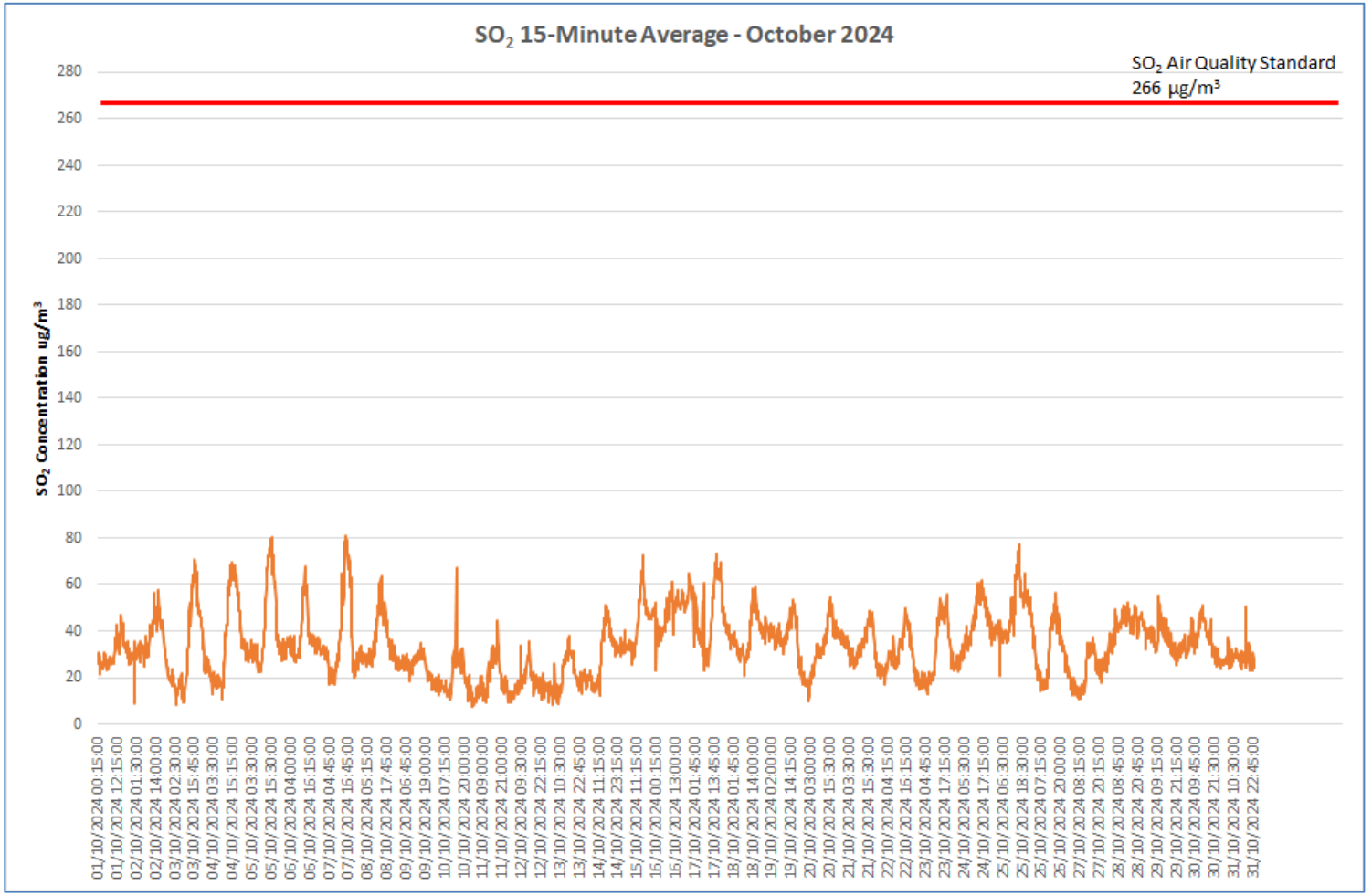
30/10/2024 19:00:00
31/10/2024 08:00:00
31/10/2024 21:00:00


SO2 15-Minute Average - October 2024
SO2 Air Quality Standard
266 µg/m³
SO2 Concentration ug/m³
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
01/10/2024 00:15:00
01/10/2024 12:15:00
02/10/2024 01:30:00
02/10/2024 14:00:00
03/10/2024 02:30:00
03/10/2024 15:45:00
04/10/2024 03:30:00
04/10/2024 15:15:00
05/10/2024 03:30:00
05/10/2024 15:30:00
06/10/2024 04:00:00
06/10/2024 16:15:00
07/10/2024 04:45:00
07/10/2024 16:45:00
08/10/2024 05:15:00
08/10/2024 17:45:00
09/10/2024 06:45:00
09/10/2024 19:00:00
10/10/2024 07:15:00
10/10/2024 20:00:00
11/10/2024 09:00:00
11/10/2024 21:00:00
12/10/2024 09:30:00
12/10/2024 22:15:00
13/10/2024 10:30:00
13/10/2024 22:45:00
14/10/2024 11:15:00
14/10/2024 23:15:00
15/10/2024 11:15:00
16/10/2024 00:15:00
16/10/2024 13:00:00
17/10/2024 01:45:00
17/10/2024 13:45:00
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28/10/2024 20:45:00
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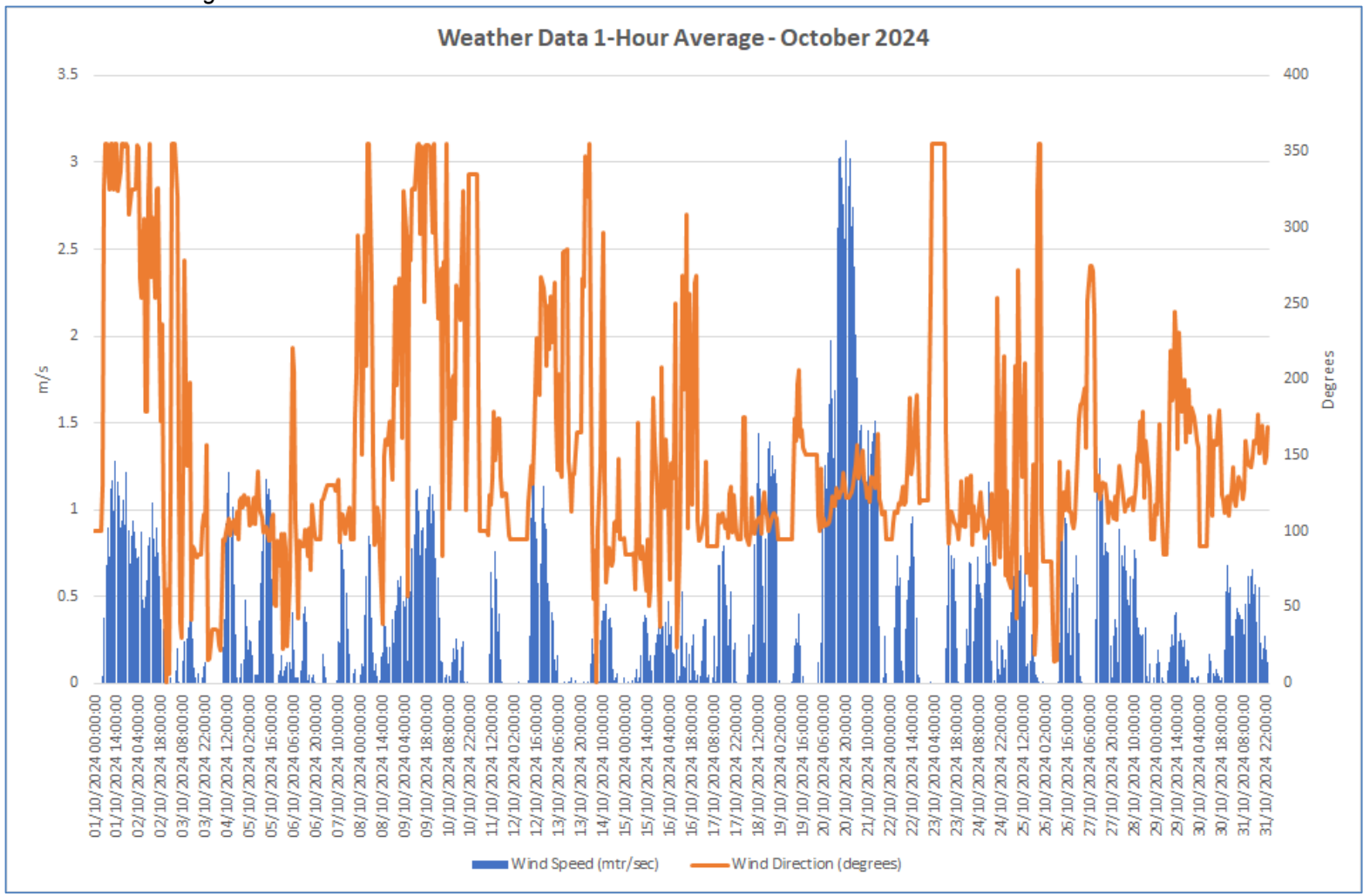
29/10/2024 21:15:00
30/10/2024 09:45:00
30/10/2024 21:30:00
31/10/2024 10:30:00
31/10/2024 22:45:00

3.2.3 *Meteorological data*



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