Scottish Environment Protection Agency
Buidheann Dìon Àrainneachd na h-Alba

SEPA response to flaring at Mossmorran: Air quality data summary

Tuesday 13 April 2021

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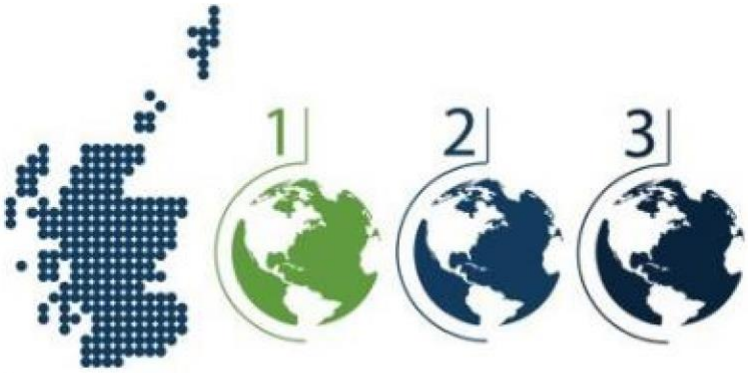
We call this **One Planet Prosperity**



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Executive Summary

SEPA had four particulate monitors deployed during planned flaring at the Mossmorran Complex on Monday, 12 April 2021. These monitors have been in place since 2019. This report provides a summary of the findings from the monitoring undertaken on 12 April 2021:

- PM_{10} levels were within the daily (UK) Air Quality Standard of 50 µg/m^3 (micrograms per cubic metre).
- PM_{10} and $PM_{2.5}$ are classified as “low” using the (UK) Daily Air Quality Index bandings.
- More information on particulate matter and Daily Air Quality Index bandings is available in the Supplementary Information section at the end of this report.

1. Introduction

Planned flaring commenced at the Mossmorran Complex at approximately 0900 on the morning of 12 April 2021. The elevated flare was observed to run continually and then intermittently through the daytime period until the flaring was solely through ground flares.

This report presents the particulate matter (PM_{10} and $PM_{2.5}$) data collected by SEPA throughout Monday 12 April 2021.

2. Monitoring

SEPA has had particulate monitoring equipment deployed at four locations (Auchtertool, Donibristle (nr Cowdenbeath), Little Raith and Lochgelly) around Mossmorran since 2019 to assess long-term air quality conditions and this remains in place gathering data.

3. Results

The particulate data was compared against the relevant UK Daily Air Quality Index (DAQI) and the daily Air Quality Standard (AQS). All measurements were within the 'Low' DAQI banding. The daily average values for 12 April 2021, for each monitoring location, are summarised in Table 1.

The graphs on the following pages show the data measured on 12 April 2021, for PM_{10} particles and $PM_{2.5}$ particles (Figures 1 – 2).

The PM_{10} daily AQS of 50 µg/m^3 (which should not be breached more than seven times in a year) was not breached at any location. There is no daily AQS for $PM_{2.5}$.

Table 1: A summary of the particulate data collected on 12 April 2021.

Location	**Data Collection Period**	**Daily Average (µg/m^3)**	
		PM_{10}	**$PM_{2.5}$**
Auchtertool	12 April 2021	2.4	1.6
Donibristle		3.1	1.7
Little Raith		16.7	3.6
Lochgelly		4.4	1.3

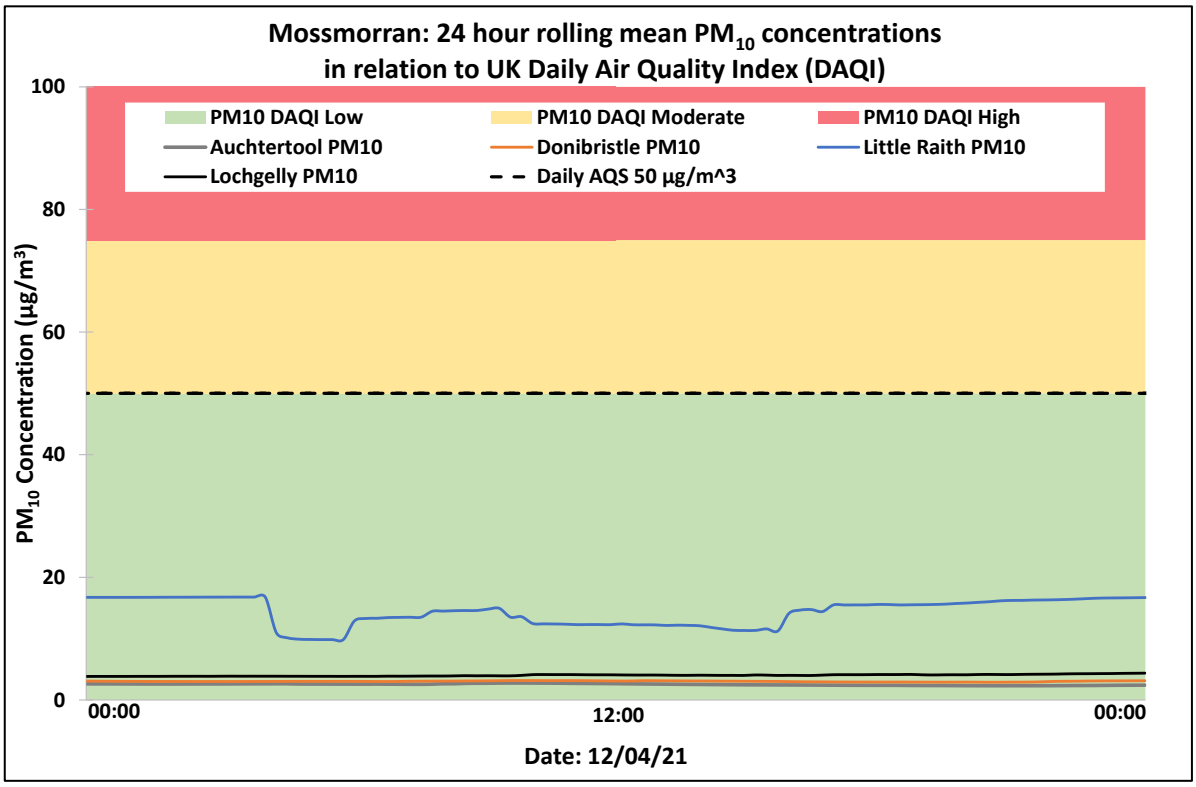

Figure 1: 24-hour rolling means for PM_{10} at Lochgelly, Auchtertool, Donibristle and Little Raith on the 12 of April 2021.

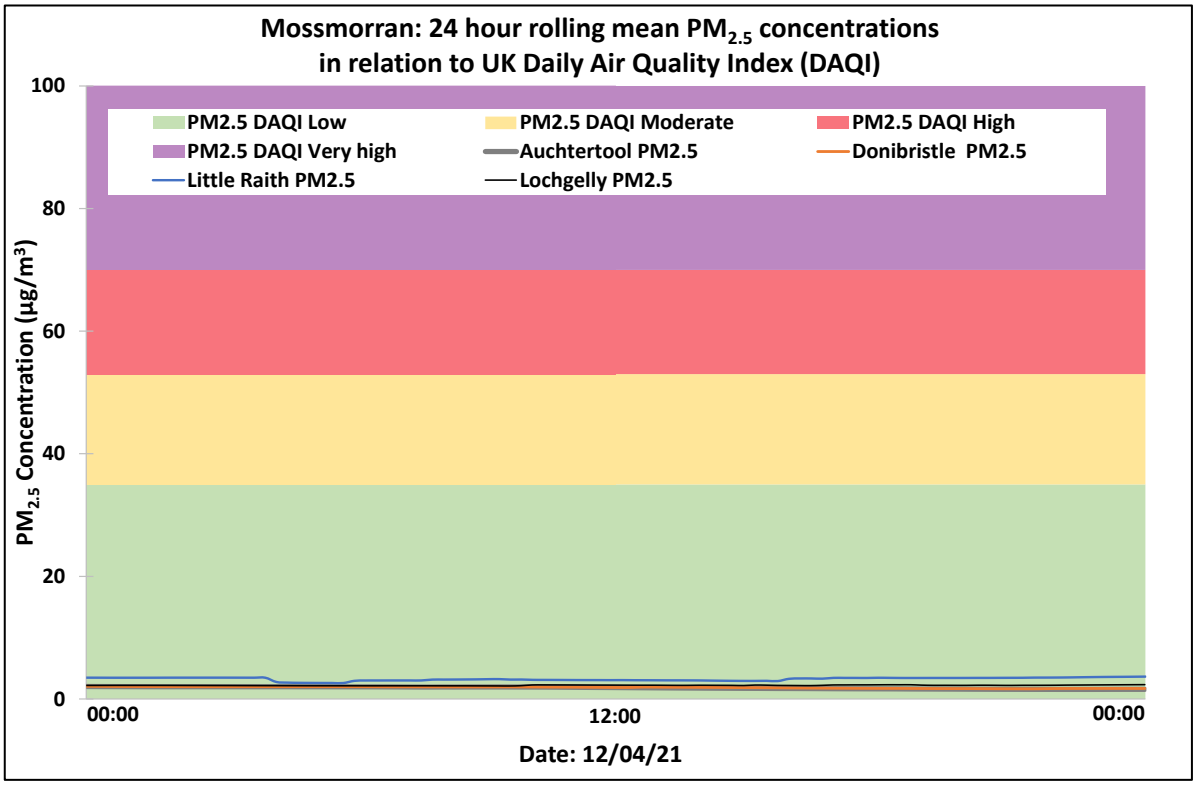

Figure 2: 24-hour rolling means for $PM_{2.5}$ at Lochgelly, Auchtertool, Donibristle and Little Raith on the 12 of April 2021.

4. Conclusion

PM_{10} levels were within the daily (UK) Air Quality Standard of 50 µg/m^3 (micrograms per cubic metre) and the values recorded for both PM_{10} and $PM_{2.5}$ are classified as “low” using the (UK) Daily Air Quality Index (DAQI) bandings.

Appendix 1 – Supplementary Information

Particulate Matter

Particulate matter is made up of a number of components, including chemical substances, and soil and dust particles and comes from both human-made and natural sources. It consists of substances, which are released directly from the source into the atmosphere, and secondary components, which are formed in the atmosphere by chemical reactions.

Particulate matter is not made up of one type of substance; it is a classification of particles by size. It is measured in micrometres (μm). A human hair is approximately 100 μm wide. Larger particles are generally filtered in the nose and throat, but particulate matter smaller than about 10 micrometres (μm) can be inhaled, which is why these are the ones measured for air quality monitoring.

• PM_{10} means the particles are 10 μm or smaller. The measurement of this figure includes $PM_{2.5}$.

• $PM_{2.5}$ means the particles are 2.5 μm or smaller.

Particulate levels can vary for a variety of reasons, such as rush hour traffic, building work, elevated pollen levels and emissions from industrial activities. Changes in wind direction can also have an impact on the measurements at a monitoring site.

What does the UK Daily Air Quality Index mean?

The following information is taken from the Air Quality in Scotland website at *http://www.scottishairquality.scot/air-quality/daqi.*

In the UK, most air pollution information services use the index and banding system approved by the Committee on Medical Effects of Air Pollution Episodes (COMEAP).

The overall Daily Air Quality Index (DAQI) looks at five substances, not just PM_{10} and $PM_{2.5}$.

These tables are included to help put the levels detected by SEPA into context.

PM_{10} Particles - Based on the daily mean concentration for historical data, latest 24-hour running mean (24-hour average) for the current day.

Band	**Low**			**Moderate**			**High**			**Very High**
Index	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
μg/m³	0-16	17-33	34-50	51-58	59-66	67-75	76-83	84-91	91-100	101 or more

$PM_{2.5}$ Particles - Based on the daily mean concentration for historical data, latest 24-hour running mean (24-hour average) for the current day.

Band	**Low**			**Moderate**			**High**			**Very High**
Index	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
µg/m³	0-11	12-23	24-35	36-41	42-47	48-53	54-58	59-64	65-70	71 or more

Air Pollution Banding	**Value**	**Accompanying health messages for at-risk individuals***	**Accompanying health messages for the general population**
Low	**1-3**	**Enjoy** your usual outdoor activities.	**Enjoy** your usual outdoor activities.
Moderate	**4-6**	Adults and children with lung problems, and adults with heart problems, **who experience symptoms**, should **consider reducing** strenuous physical activity, particularly outdoors.	**Enjoy** your usual outdoor activities.
High	**7-9**	Adults and children with lung problems, and adults with heart problems, should **reduce** strenuous physical exertion, particularly outdoors, and particularly if they experience symptoms. People with asthma may find they need to use their reliever inhaler more often. Older people should also **reduce** physical exertion.	Anyone experiencing discomfort such as sore eyes, cough or sore throat should **consider reducing** activity, particularly outdoors.
Very High	**10**	Adults and children with lung problems, adults with heart problems, and older people, should **avoid** strenuous physical activity. People with asthma may find they need to use their reliever inhaler more often.	**Reduce** physical exertion, particularly outdoors, especially if you experience symptoms such as cough or sore throat.

* Adults and children with heart or lung problems are at greater risk of symptoms. Follow your doctor's usual advice about exercising and managing your condition. It is possible that very sensitive individuals may experience health effects even on Low air pollution days. Anyone experiencing symptoms should follow the guidance provided on the Defra UK-AIR website.

Appendix 2 – Equipment and Methodologies

PM_{10} and $PM_{2.5}$ monitoring at Auchtertool and Donibristle was completed using a calibrated Turnkey Osiris particulate monitor, following SEPA procedure ES-NFC-WP-031. The Turnkey Osiris is a light scattering-type analyser which is certified (Sira MC090157/06 initial certification 30 September 2009, Renewed 29 September 2019) to measure PM_{10} in the range 0 to 100 µg/m^3. Turnkey Osiris units are capable of measurement of PM_{10} and $PM_{2.5}$ to 6000 µg/m^3; however, the unit is not certified for PM_{10} levels above 100 µg/m^3 or for PM2.5. This means that results for these are classed as “indicative”.

PM_{10} and $PM_{2.5}$ monitoring at Little Raith was completed using a calibrated GRIMM EDM180 particulate monitor. The GRIMM EDM180 is certified (Sira MC120198/04 issued 08 February 2018) to measure PM_{10} in the range 0 to 10,000 µg/m^3 and $PM_{2.5}$ in the range 0 to 6,000 µg/m^3. This certificate applies to all EDM180 instruments with firmware version 7.80 onwards (serial numbers 18A12020 onwards). Monitoring was completed using a routinely calibrated analyser following SEPA procedure ES-AHER-WP-02014.

PM_{10} and $PM_{2.5}$ monitoring at Lochgelly was completed using a calibrated Palas FIDAS 200 particulate monitor, following SEPA procedure ES-NFC-WP-067. The Palas FIDAS 200 is a light scattering-type analyser which is certified (Sira MC16290/02 issued 23 February 2017) to measure PM_{10} and $PM_{2.5}$ in the range 0 to 10,000 µg/m^3.