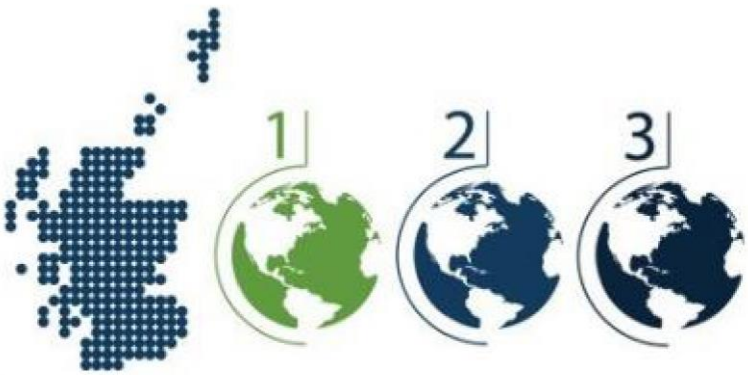
SEPA
Scottish Environment Protection Agency
Buidheann Dìon Àrainneachd na h-Alba

A summary of SEPA monitoring of the re-start of the Fife Ethylene Plant at Mossmorran June/July 2021

Every day SEPA works to protect and enhance Scotland's environment, helping communities and businesses thrive within the resources of our planet.

We call this **One Planet Prosperity**



For information on accessing this document in an alternative format or language please either contact SEPA by telephone on 03000 99 66 99 or by email to equalities@sepa.org.uk.

If you are a user of British Sign Language (BSL) the Contact Scotland BSL service gives you access to an online interpreter enabling you to communicate with us using sign language.

http://contactscotland-bsl.org/

www.sepa.org.uk

03000 99 66 99

Strathallan House, Castle Business Park, Stirling, FK9 4TZ

Executive Summary

During the re-start of ExxonMobil Chemical Limited's Fife Ethylene Plant SEPA carried out a range of assessments in community locations between 23 June and 12 July 2021.

1) Regulatory visits by our officers throughout the start-up period showed:
   - Some noise was heard (e.g. a low hum), but at no time was it assessed as breaching permit conditions.
   - A background sewage/farmyard odour was experienced on a number of occasions but no odours associated with the site were identified.
   - A white plume was visible on most visits and occasional short periods of darker emissions were observed but these were in compliance with the permit.
2) Air quality monitoring at four locations around the site showed:
   - PM_{10} levels [1] were within the daily (UK) Air Quality Standard of 50 µg/m^3 (micrograms per cubic metre).
   - PM_{10} and $PM_{2.5}$ would be classified as "low" using the (UK) Daily Air Quality Index (DAQI) 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.
3) Attended and continuous unattended [2] noise monitoring carried out across the period did not indicate any link between activity on site and noise levels.
   - Continuous unattended noise monitoring – no clear link between sound levels measured and flaring at the Mossmorran site
   - Attended noise assessments (carried out by staff in community locations) – flaring noise was either not audible, or not distinguishable from general site noise, at all locations.
   - Flaring noise during the re-start was not considered to have caused impact on amenity at the assessed locations.

[1] PM10 means particles 10 µm or smaller. PM2.5 means particles 2.5 µm or smaller. See appendix 1 for further detail.

[2] Unattended means that the monitoring equipment is left running continuously, but there is not a noise scientist in attendance. Therefore, it is continually taking measurements and recordings but does not have accompanying observations made by an attendant noise scientist. Attended means that a noise scientist was present at the location during the assessment.

1. Introduction

Between February and June 2021 ExxonMobil Chemical Limited's Fife Ethylene Plant (FEP) at Mossmorran, Fife underwent a planned shutdown in order to undertake planned maintenance and improvements to the flare system. Ahead of the planned start-up, SEPA put together an action plan to monitor any potential community impacts from activity on site during the start-up period.

In addition to the existing air quality and noise monitors already in place in locations around the site, additional visits to community locations were carried out by SEPA staff during the period from 23 June 2021 to 11 July 2021. This report summarises the regulatory observations; the particulate matter (PM_{10} and $PM_{2.5}$) data; and the noise monitoring collected by SEPA across this period.

2. Methodology

Regulatory Observations: Throughout the start-up period SEPA regulatory officers were deployed to locations around the Mossmorran facility (Auchtertool, Cowdenbeath, Donibristle (near Cowdenbeath) and Lochgelly); Staff were asked to capture their observations regarding: sight, sound, and smell.

Air Quality: 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.

Noise: SEPA currently has continuous unattended noise monitoring equipment installed at two community locations (Little Raith and Lochgelly) in order to assess long-term noise conditions. These were operating throughout the start-up period enabling an assessment of the impact of any flaring noise at these locations. SEPA noise scientists also attended the Mossmorran area in person to carry out noise assessments, at a number of locations, during the final part of the site's start-up procedure, when it was most likely that elevated flaring would occur. These assessments were carried out during the daytime on 11 July and during the night time on 11 into 12 July 2021. The objective of the noise investigations was to assess the noise impact of any flaring on nearby residential areas.

3. Results

Summary of observations during visits to community locations:

White plumes from the operation of process equipment at the site could be seen on all visits with some elevated and ground flaring on occasion.

In many cases traffic noise was heard at most locations. On some occasions a low-level rumbling or aircraft like noise was detected in some locations, it was not always possible to confirm the source of this noise but on at least one occasion it was considered to be coming from the site. The noise heard was not considered to be having an impact on amenity.

No odours associated with the site were experienced. The only odours being sludge/manure type odours from general activities in the area.

Air Quality:

The particulate matter 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 graphs on the following pages (Figures 1 & 2) show the daily average PM_{10} and $PM_{2.5}$ values measured between 23 June 2021 and 12 July 2021 (Figures 1 and 2).

The PM10 daily AQS of 50 µg/m3 (which should not be breached more than seven times in a year) was not breached at any location. There is no daily AQS for PM2.5.

Table 1 summarises the observations and assessments made by regulatory and specialist noise staff and provides the daily average particulate matter values recorded by SEPA monitoring equipment during the start-up period. Further information is given in the text below the table.

Table 1: A summary of the regulatory observations, air quality monitoring and noise monitoring carried out from 23 June 2021 to 12 July 2021 during the re-start of ExxonMobil Chemical Limited's Fife Ethylene Plant.

Date	Particulate Matter Daily Average (µg/m^3)[3]					Noise Assessment[4]	Visits to Community Locations	
	Location	PM_{10}	DAQI	PM2.5	DAQI		Time(s)	Observations
23 June 2021	Auchtertool	2.5	LOW	1.6	LOW	Continuous unattended noise monitoring – no assessment	1) 11:00 - 12:35 2) 19:05 -21:05	Traffic noise audible in all locations. No site noise detectable. No odours from site experienced. White vapour plumes visible from stacks and ground flare.
	Donibristle	7.7	LOW	1.4	LOW			
	Little Raith	6.9	LOW	5.4	LOW			
	Lochgelly	5.2	LOW	2.9	LOW			
24 June 2021	Auchtertool	2.2	LOW	1.0	LOW	Continuous unattended noise monitoring – no assessment	1) 19:00 - 21:00	Traffic noise audible in all locations, very low drone at Auchtertool, unable to ascertain whether from site,. Otherwise, no site noise detectable. No odours from site experienced. White vapour plumes visible.
	Donibristle	3.2	LOW	0.9	LOW			
	Little Raith	3.9	LOW	2.9	LOW			
	Lochgelly	3.7	LOW	1.6	LOW			
25 June 2021	Auchtertool	2.3	LOW	1.3	LOW	Continuous unattended noise monitoring – no assessment	1) 11:00 - 12:30 2) 18:45 – 20:45	No noise from site. Traffic noise noted at Cowdenbeath (pm). White vapour from site visible, ground flares visible from Lochgelly (am).
	Donibristle	2.3	LOW	1.1	LOW			
	Little Raith	3.2	LOW	2.0	LOW			
	Lochgelly	2.8	LOW	1.2	LOW			
26 June 2021	Auchtertool	4.6	LOW	3.4	LOW	Continuous unattended noise monitoring – no assessment	1) 10:40 - 11:40	No site noise detectable. No odours from site experienced. White vapour plumes from site visible. Ground flares operational.
	Donibristle	5.0	LOW	2.9	LOW			
	Little Raith	7.3	LOW	5.9	LOW			
	Lochgelly	5.0	LOW	3.0	LOW			

Date	Particulate Matter Daily Average (µg/m^3)[3]					Noise Assessment[4]	Visits to Community Locations	
	Location	PM_{10}	DAQI	PM2.5	DAQI		Time(s)	Observations
27 June 2021	Auchtertool	6.5	LOW	4.9	LOW	Continuous unattended noise monitoring – no assessment	1) 10:30 - 11:41	No site noise detectable. No odours from site experienced. White vapour plumes from site visible. Ground flares operating.
	Donibristle	7.3	LOW	4.5	LOW			
	Little Raith	13.3	LOW	10.8	LOW			
	Lochgelly	9.1	LOW	6.6	LOW			
28 June 2021	Auchtertool	6.1	LOW	3.7	LOW	Continuous unattended noise monitoring – no assessment	No visit	N/A
	Donibristle	8.8	LOW	4.0	LOW			
	Little Raith	16.2	LOW	13.7	LOW			
	Lochgelly	11.9	LOW	8.6	LOW			
29 June 2021	Auchtertool	8.5	LOW	5.8	LOW	Continuous unattended noise monitoring – no assessment	No visit	N/A
	Donibristle	9.0	LOW	4.9	LOW			
	Little Raith	16.3	LOW	14.6	LOW			
	Lochgelly	12.9	LOW	9.6	LOW			
30 June 2021	Auchtertool	4.3	LOW	2.7	LOW	Continuous unattended noise monitoring – no assessment	No visit	N/A
	Donibristle	6.8	LOW	2.7	LOW			
	Little Raith	8.1	LOW	7.2	LOW			
	Lochgelly	6.6	LOW	4.4	LOW			

Date	Particulate Matter Daily Average (µg/m^3)[3]					Noise Assessment[4]	Visits to Community Locations	
	Location	PM_{10}	DAQI	PM2.5	DAQI		Time(s)	Observations
1 July 2021	Auchtertool	6.7	LOW	4.2	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	No visit	N/A
	Donibristle	8.8	LOW	4.1	LOW			
	Little Raith	11.7	LOW	8.6	LOW			
	Lochgelly	10.5	LOW	5.9	LOW			
2 July 2021	Auchtertool	9.0	LOW	6.4	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	No visit	N/A
	Donibristle	10.2	LOW	6.1	LOW			
	Little Raith	15.2	LOW	12.5	LOW			
	Lochgelly	10.2	LOW	6.8	LOW			
3 July 2021	Auchtertool	8.2	LOW	5.7	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	1) 19:55 - 22:20	Low hum from site detectable at all locations except Auchtertool, increasing and decreasing according to (low) cloud conditions No odours from site experienced. White vapour plumes from site visible.
	Donibristle	9.5	LOW	4.7	LOW			
	Little Raith	19.6	LOW	17.3	LOW			
	Lochgelly	12.5	LOW	10.0	LOW			

Date	Particulate Matter Daily Average (µg/m^3)[3]					Noise Assessment[4]	Visits to Community Locations	
	Location	PM_{10}	DAQI	PM2.5	DAQI		Time(s)	Observations
4 July 2021	Auchtertool	6.2	LOW	3.2	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	1) 10:40 - 12:31 2) 18:45 - 21:00	No site noise detectable, slight drone in the evening at Donibristle, unable to ascertain if coming from site, possibly traffic noise. Traffic noise detected at Lochgelly. No odours from site experienced. White vapour plumes from site visible. Ground flares operating. Elevated flaring in pulses seen from Donibristle, some dark grey smoke (am), emissions ceased within a few minutes of observation.
	Donibristle	3.8	LOW	1.1	LOW			
	Little Raith	No data[5]	LOW	No data[5]	LOW			
	Lochgelly	7.5	LOW	6.5	LOW			
5 July 2021	Auchtertool	5.6	LOW	2.3	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	1) 12:58 -13:35	No site noise detectable. Slight noise at Auchtertool, unable to ascertain if site was the source. No odours from site experienced. Water vapour plumes from site visible.
	Donibristle	4.1	LOW	1.3	LOW			
	Little Raith	No data[5]	LOW	No data[5]	LOW			
	Lochgelly	4.1	LOW	2.5	LOW			
6 July 2021	Auchtertool	8.3	LOW	4.1	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	No visit	N/A
	Donibristle	8.7	LOW	4.0	LOW			
	Little Raith	No data[5]	LOW	No data[5]	LOW			
	Lochgelly	7.9	LOW	4.8	LOW			

Date	Particulate Matter Daily Average (µg/m^3)[3]					Noise Assessment[4]	Visits to Community Locations	
	Location	PM_{10}	DAQI	PM2.5	DAQI		Time(s)	Observations
7 July 2021	Auchtertool	5.2	LOW	2.6	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	1) 10:26 - 11:22 2) 19:15 - 21:35	No site noise detectable am, constant hum in Auchtertool pm from the direction of the site, with road noise experienced at all other locations No odours from site experienced. Water vapour plumes from site visible.
	Donibristle	7.0	LOW	2.3	LOW			
	Little Raith	No data[5]	LOW	No data[5]	LOW			
	Lochgelly	7.3	LOW	4.2	LOW			
8 July 2021	Auchtertool	3.7	LOW	2.0	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	1) 10:08 - 11:08	No site noise detectable No odours from site experienced. Steam emission visible.
	Donibristle	5.2	LOW	1.7	LOW			
	Little Raith	11.8	LOW	10.1	LOW			
	Lochgelly	8.4	LOW	5.7	LOW			
9 July 2021	Auchtertool	4.3	LOW	2.3	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	1) 18:40 - 21:05	Low level rumble detected at Lochgelly, low level jet engine like noise at Donibristle, both attributed to site. No noise at Auchtertool or Cowdenbeath No odours from site experienced. Non site related sludge like odour detected in Auchtertool. White vapour plumes from site visible.
	Donibristle	5.4	LOW	1.9	LOW			
	Little Raith	13.7	LOW	12.3	LOW			
	Lochgelly	9.9	LOW	7.7	LOW			
10 July 2021	Auchtertool	4.2	LOW	2.4	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	1) 09:15 - 11:10	Road noise heard in all locations except Auchtertool. In addition, constant low hum, like a jet engine, heard at Donibristle, coming and going in intensity. No odours from site experienced, except for Auchtertool where sewage sludge, farmyard type was experienced. White vapour plumes from site visible.
	Donibristle	4.7	LOW	1.9	LOW			
	Little Raith	16.0	LOW	13.6	LOW			
	Lochgelly	9.8	LOW	7.6	LOW			

Date	Particulate Matter Daily Average (µg/m^3)[3]					Noise Assessment[4]	Visits to Community Locations	
	Location	PM_{10}	DAQI	PM2.5	DAQI		Time(s)	Observations
11 July 2021	Auchtertool	7.7	LOW	3.4	LOW	Continuous unattended noise monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations. Attended noise assessment (15:00-17:00 & 23:00 – 01:00) – flaring noise was either not audible, or not distinguishable from general site noise, at all locations.	1) 10:30 - 12:40 2) 18:45 - 21:24	No site noise detectable apart from Lochgelly (am) and Donibristle (pm), where a low-level rumbling, aircraft like noise was detected. Constant road noise at Lochgelly No odours from site experienced. Non site related sewage sludge/faint manure odour at Donibristle (pm). White vapour plumes from site visible. Short periods of elevated flaring noted with short periods of associated emissions of dark grey smoke which quickly dissipated. Ground flaring and pulsing seen from Lochgelly (pm).
	Donibristle	5.4	LOW	2.1	LOW			
	Little Raith	18.0	LOW	15.4	LOW			
	Lochgelly	10.8	LOW	8.3	LOW			
12 July 2021	Auchtertool	6.9	LOW	4.3	LOW	Continuous unattended monitoring – flaring noise was not considered to have caused impact on amenity at the assessed locations	No visit	N/A
	Donibristle	7.5	LOW	3.6	LOW			
	Little Raith	18.7	LOW	16.0	LOW			
	Lochgelly	10.2	LOW	8.1	LOW			

[3]A description of how the particulate matter levels compare against air quality standards can be found below

[4]Further details of the noise monitoring results are detailed below

[5]Power supply issues meant that data at Little Raith was unavailable between 4th and 8th July 2021. This was resolved as expediently as possible.

Air Quality:

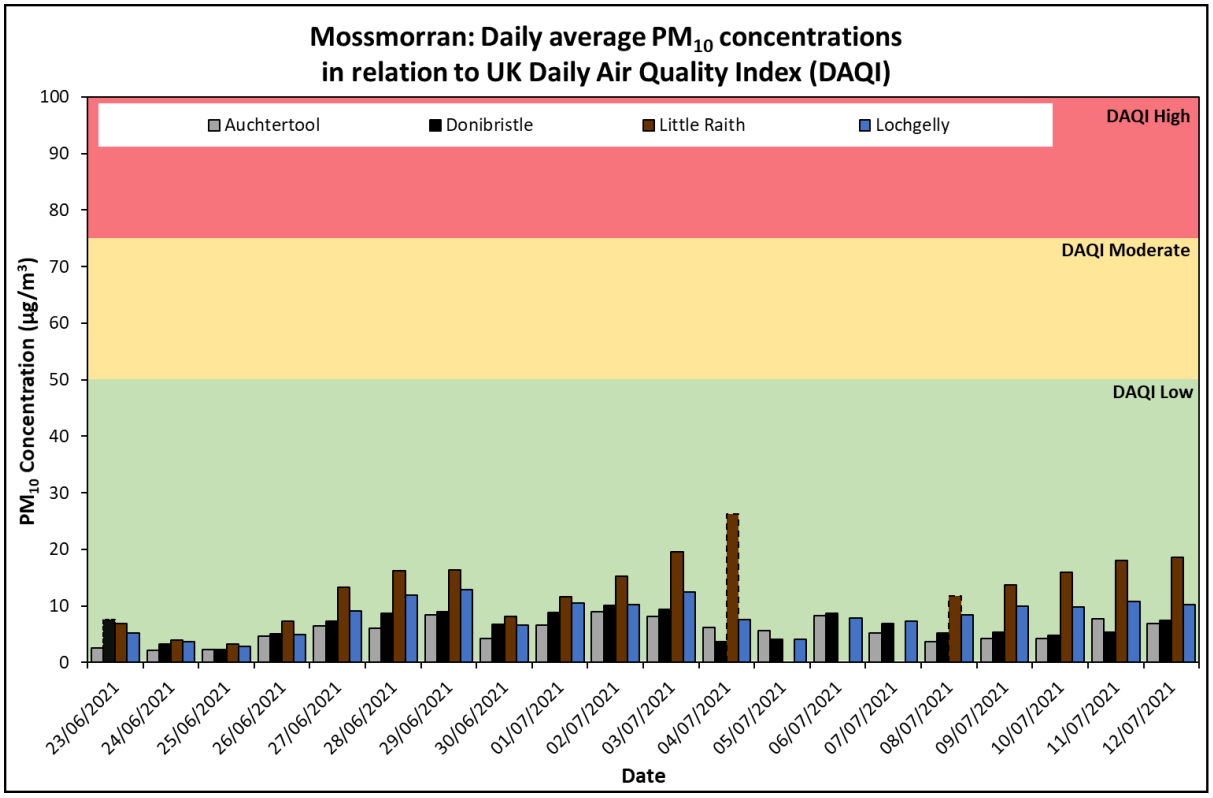


Figure 1: Daily average PM_{10} at Auchtertool, Donibristle, Little Raith and Lochgelly. Dotted lines represent mean values based on less than 24 hours of data collection.

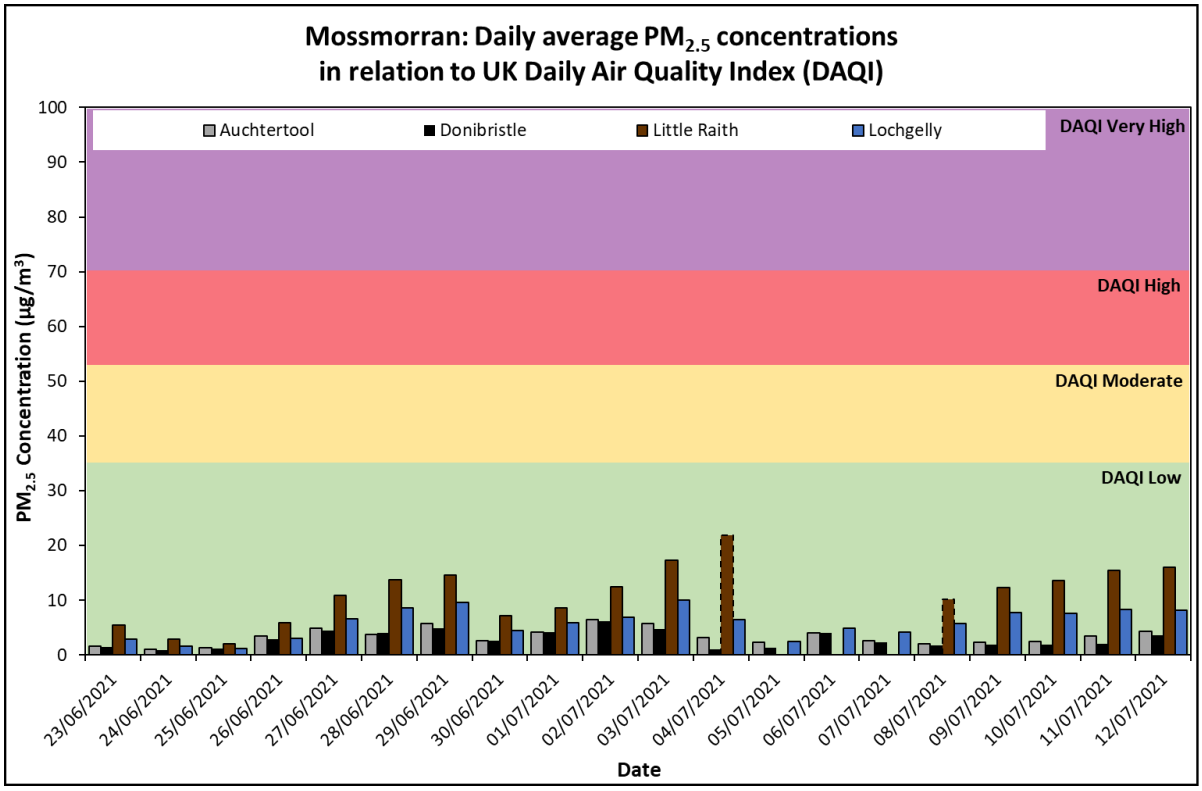


Figure 2: Daily average $PM_{2.5}$ at Auchtertool, Donibristle, Little Raith and Lochgelly. Dotted lines represent mean values based on less than 24 hours of data collection.

Noise:

Unattended noise monitoring at the two community locations (Little Raith Farm and Lochgelly) indicates that during the start-up there was no clear link between sound levels measured at these locations and (either) ground or elevated gas flaring rates at the Mossmorran site. Further analysis of the raw noise data, the frequencies present within the measured sound levels, the audio recordings and meteorological conditions all back up this assessment and further indicate that any flaring at the site over this period was unlikely to be causing an impact at Lochgelly or Little Raith. Listening to the audio recordings, targeting the periods of elevated flaring, also indicated the lack of any distinct flaring noise at Lochgelly or Little Raith (including during the peak period of elevated flaring on the morning of 11 July 2021).

Day time on Sunday 11 July 2021 (15:00 to 17:00)

Attended observations at community locations around Lochgelly, Little Raith, Dorloch Cottage, Auchtertool and Donibristle indicated that there was no elevated flaring during this period, only ground flaring. At each community location ground flaring noise was either not audible, or not distinguishable above general site noise, and therefore unlikely to have had an impact on amenity at the time of the assessment.

Night time on Sunday 11 into Monday 12 July 2021 (23:00 to 01:00)

Attended monitoring around Lochgelly, Auchtertool, Little Raith and Donibristle indicated that there was no elevated flaring from ExxonMobil's elevated flare stack during this period, only ground flaring. At each community location flaring noise was either not audible, or not distinguishable above general site noise, and therefore unlikely to have had an impact on amenity at the time of the assessment.

4. Conclusion

Regulatory Observations: Regulatory visits throughout the start-up period showed:

- Some noise was heard (e.g. a low hum) – but at no time was it assessed as breaching permit conditions.
- A background sewage/farmyard odour was experienced on a number of occasions but no odours associated with the site were identified.
- A white plume was visible on most visits and occasional short periods of darker emissions were observed but in compliance with the permit.

Air Quality: 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.

Noise: Continuous, unattended noise monitoring at Lochgelly and Little Raith over the period from 1 to 13 July 20121 indicated that during the start-up there was no clear link between measured sound levels and ground or elevated gas flaring rates at the Mossmorran site and that any flaring at the site over this period was unlikely to be causing an impact. Attended observations at a number of community locations in the daytime and night time of 11 July indicated that flaring noise was either not audible, or not distinguishable above general site noise, and therefore unlikely to have had an impact on amenity at the time of the assessment.

Appendix 1 – Supplementary Information

Particulate Matter

Particulate matter is made up of several 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/m^3	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/m^3	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 $PM_{2.5}$. 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.