

Final response to the Mossmorran best practice review by the Irish Environmental Protection Agency

July 2023



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Background

On 13 May 2020, SEPA announced a package of new measures to address flaring from ExxonMobil Chemical Limited's Fife Ethylene Plant (FEP). This included an external review by the Irish Environmental Protection Agency (IEPA) of regulation to share best practice and advise on further actions that may be taken to drive compliance.

In March 2021, the IEPA's review was completed and SEPA published the document alongside what recommendations it would be taking forward.

This report provides information on what SEPA has done to take forward the agreed recommendations made by the IEPA.

A culture of international collaboration and continuous improvement

In commissioning the best practice review, SEPA was clear that what mattered to communities was actions and outcomes. Whilst the agency had used the full force of its powers, from regulatory requirements and operating permit variations to Final Warning Letters and submission of a report to the Crown Office for consideration of prosecution, SEPA's culture of international collaboration and continuous improvement led to the review seeking to share best practice and advise on any further actions that may be taken to drive compliance at the Mossmorran site.

We welcomed the advice and recommendations from the IEPA and were pleased to see that they acknowledged the work that we were doing.

Laura Burke, Director General of the Irish Environmental Protection Agency, said:

“The regulation of complex industrial facilities is important for the protection of communities and our environment and it is good practice for regulatory authorities to draw on each other’s expertise and to share experience. Following our review, we have considerable confidence in SEPA’s approach to ensuring compliance at the Mossmorran complex. Our recommendations reflect that sharing of regulatory expertise and experience and it is clear that many of them are already being incorporated into SEPA’s approach or will be taken forward by the agency.

The recommendations have also helped us in deciding how we take forward our regulatory work in relation to the Mossmorran Complex. This has led to increased air quality monitoring and access to this data, and an enhanced Mossmorran Hub to provide more information, make the community more aware of what we are doing.

A clear pathway to compliance

- **Spring 2021:** £140m ExxonMobil Chemical Limited's Fife Ethylene Plant (ExxonMobil FEP) investment programme including installation of a noise reducing flare tip.
- **June 2022:** SEPA varies Shell UK Limited's Fife Natural Gas Liquids Plant (Shell FNGL) permit requiring a detailed project plan for a totally enclosed ground flare system to be provided to SEPA by 31 January 2023 and for the new ground flare system to be operational by 31 December 2025.
- **August 2022:** Shell FNGL install a new noise reducing flare tip.
- **January 2023:** Project plan for a totally enclosed ground flare system to be installed at Shell FNGL by the end of 2025 received.
- **June 2023:** ExxonMobil FEP fully enclosed ground flare operational in line with PPC permit requirements.

Following these improvements flaring events should occur less often, however if there is a flaring event at ExxonMobil FEP there may still be elevated flaring for a short period. After this the flaring will be contained within the ground flare. This will significantly reduce the amount of elevated flaring from this site.

When there is elevated flaring the technology that both ExxonMobil and Shell will be using should minimise the impact of noise and vibration.

Update on the work that SEPA has undertaken in response to the IEPA report.

At the time of the Irish Environmental Protection Agency best practice review, of the recommendations made, some nine actions were already underway by SEPA, a further eight were taken forward, one was considered and two were rejected.

Since then, key actions have seen:

- SEPA's programme of air quality (AQ) monitoring extended with community participation in its design and enhanced visibility of results.
- SEPA has installed 24/7 noise monitoring equipment to provide compliance data during flaring events. We have also reviewed data provided by ExxonMobil from their noise monitoring sites.
- As part of our ongoing improvements to the provision of information to the community post the cyber-attack in December 2020, we have restructured and enhanced our Mossmorran Hub. As part of this update, we have taken the opportunity to:
 - increase the amount of information on how the Mossmorran and Braefoot Bay Complexes are regulated;
 - provide access to relevant permits and information;
 - include more detail on our air quality monitoring network and air quality data.

The following table summarises the actions we have taken and the reasons why some recommendations have not been progressed. We will continue to review how we incorporate recommendations into our regulation of the sites at the Mossmorran complex as part of our ongoing work.

Update on Irish EPA recommendations

Site Infrastructure / Process / Installation

Recommendation - 1a. Assess whether the current ethylene production throughput at the facility is a significant contributory factor to the increased flaring and associated off-site impacts.

This recommendation was taken forward and has been completed.

What we committed to:

The permitted maximum throughput of the Fife Ethylene Plant (FEP) has not changed since the permit was issued in 2007. While there is no indication that increased flaring has been linked to production throughput, we will review if changes are a significant contributory factor to more recent flaring incidents.

What we have done:

We have reviewed production throughput and flaring events and concluded that there is no evidence that current ethylene production throughput at the facility was a significant contributory factor to the increased flaring and associated off-site impacts.

Recommendation - 1b. Update the inventory of key infrastructure and risk assess each with a view to their replacement/upgrading on an ongoing basis to ensure a proactive approach towards management of the root causes of flaring.

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Actions for this recommendation were already underway and continue to be undertaken as part of our ongoing regulatory programme.

What we committed to:

Whilst ExxonMobil already maintains an inventory of key infrastructure and has a maintenance programme in place, we agree that the inventory at the Fife Ethylene Plant would benefit from a review.

We will ensure that ExxonMobil;

- Reviews the inventory to ensure that all environmentally critical infrastructure is included.
- Check each item in the inventory has an appropriate maintenance strategy and performance review cycle to ensure that it performs satisfactorily and is replaced or upgraded as required.

We will continue to check that this inventory and maintenance programme is updated and implemented through our programme of inspections.

What we have done:

We have reviewed and discussed plant infrastructure and its maintenance with ExxonMobil, and this is an ongoing component of our regulatory work. A summary of the inspection work both planned and completed at the site is available on the [Mossmorran Hub](#).

Recommendation – 1c. Provide a dedicated plan of works which focuses on the continued deployment of key BAT requirements at the installation. SEPA should

Update on Irish EPA recommendations

Site Infrastructure / Process / Installation

consider the use of Article 14(6) of the Industrial Emissions Directive if any production process carried out within the installation is not covered by any of the BAT conclusions or where those conclusions do not address all the potential environmental effects of the activity or process.

Actions for this recommendation were already underway and will continue to be undertaken as part of our ongoing regulatory programme.

What we committed to:

We will continue to review the permit at the appropriate time.

Article 14(6) of the Industrial Emissions Directive enables regulators to set additional conditions based on BAT (Best Available Techniques), even where these are not covered by a BAT Reference Document (BREF) or BAT conclusions. Currently, all production processes carried out at the site and all the potential environmental effects from the activities at the Mossmorran complex are covered by BREFs, and so there is no need to consider Article 14(6) but we will keep this under review.

What we have done:

We continue to review and vary the permit, where required. All permits and recent variations for both Shell FNGL and ExxonMobil FEP can be found at [Regulating the Mossmorran and Braefoot Bay complexes | Scottish Environment Protection Agency \(SEPA\)](#).

It is still considered that there is no need to consider use of Article 14(6) at this time.

Recommendation - 1d. Provide proposals to limit/reduce the quantities of gas being fed to the ExxonMobil Chemical Ltd Fife Ethylene Plant installation during periods of prolonged elevated flaring. The potential cessation or reduction in intake of feedstock

Update on Irish EPA recommendations**Site Infrastructure / Process / Installation**

gas to the ExxonMobil Chemical Ltd Fife Ethylene Plant during periods of process instability / flaring may mitigate prolonged flaring events.

Actions for this recommendation were already underway and will continue to be undertaken as part of our ongoing regulatory programme.

What we committed to:

We will be providing feedback to ExxonMobil on the improvements it needs to make to the flaring prevention and minimisation plan and this will continue to be a focus of our regulatory work in 2021. We will continue to work with ExxonMobil to ensure gas feed rate to the Fife Ethylene Plant is minimised during planned and unplanned flaring to reduce flaring rates and thus reduce the impact of flaring. ExxonMobil Fife Ethylene Plant is unable to stop taking feed from Shell Fife Natural Gas Liquids Plant (FNGL) without action being taken further up the pipeline to both safely manage offshore operations and maintain a supply of gas to the national gas grid. This may take a number of days and may not prevent flaring during this period. In addition, in some cases a full plant shutdown may prolong a flaring event. Where a full Fife Ethylene Plant shutdown is required, such as that in August 2019, we liaise with both operators to ensure flaring is minimised.

What we have done:

We have provided feedback to ExxonMobil on their flaring prevention and minimisation plan. ExxonMobil are required to provide SEPA with an annual review of progress and this can be found at https://www.sepa.org.uk/media/594381/fep-4_3_12-fpm-update-2021_redacted.pdf.

We have continued to discuss planned and unplanned flaring events with the operators to ensure that the timing and rate of flaring causes the minimum impact possible on communities.

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Recommendation - 1e. Provide regular (i.e. no less than monthly) written updates regarding progress towards the installation of the low noise and vibration flare tip that has been proposed for the ExxonMobil Chemical Ltd Fife Ethylene Plant installation and is required by Permit.

This recommendation was taken forward and has been completed.

What we committed to:

We will require ExxonMobil, likely through a variation to the Fife Ethylene Plant PPC permit, to provide monthly written updates on progress to be made available to the public. The new flare tip will be installed during the plant shutdown commencing in Spring 2021, and we will continue to ensure that updates are also made available on progress with designing and delivering new ground flares as these will make a real difference to local communities.

What we have done:

We varied the ExxonMobil FEP permit ([VAR01](#)), in February 2022, to require monthly updates on progress towards the operation of their enclosed ground flares. These are published on both the ExxonMobil FEP website and the SEPA Mossmorran Hub.

As the flare tip had been installed prior to this variation there was no need for these to be included in the updates.

Update on Irish EPA recommendations

On-site Technical expertise

Recommendation - 2a. Consider the deployment of a suitably qualified and experienced expert(s) to act as site agent(s) on the ExxonMobil Chemical Ltd Fife Ethylene Plant installation. Their duties would include the observation and assessment of the day to day operation of the installation, to assess compliance with the PPC Permit for the facility and to monitor impacts on the surrounding locality and environment. The selection and appointment of the site agent(s) would be undertaken by SEPA.

Whilst this recommendation was rejected, actions have been taken forward and completed.

What we committed to:

Whilst we can see there may be benefit in deploying a site agent at other types of sites we regulate we do not consider it would add value at the Mossmorran Complex. In considering this recommendation we have identified potential opportunities to enhance our regulatory approach, for example more targeted inspections by our expert officers during flaring events and unannounced site visits, and we will further strengthen our resource commitment at the Mossmorran Complex to implement these where appropriate.

What we have done:

We have continued to review how we deploy resource in the most effective way.

We regularly review our inspection programme as an ongoing component of our regulatory work and have deployed additional specialist inspectors to review various aspects of the operation of the Mossmorran complex. A summary of the inspection work both planned and completed at the site is available on the [Mossmorran Hub](#).

We also reviewed how to best to utilise SEPA staff to undertake field and community impact assessments during significant events, for example, the restart of the ExxonMobil FEP in the

Update on Irish EPA recommendations**On-site Technical expertise**

summer of 2021 following a prolonged shutdown. A report summarising the range of assessments undertaken by SEPA regulatory and scientific staff during this re-start is available on the Mossmorran Hub at <https://www.sepa.org.uk/media/594425/summary-of-sepa-monitoring-of-the-re-start-of-the-fife-ethylene-plant-at-mossmorran-junejuly-2021.pdf>

Update on Irish EPA recommendations**Regulatory approach**

Recommendation - 3a. Record all visits by SEPA regulatory personnel to the ExxonMobil Chemical Ltd Fife Ethylene Plant installation and its environs (e.g. odour assessments, complaint investigations, etc). Reports of all such visits, including the main findings, should be prepared and published on the SEPA website.

This recommendation was taken forward and has been completed.

What we committed to:

Subject to any legal constraints we will make reports publicly accessible in the future so local communities are aware of this significant part of our regulatory effort.

What we have done:

As part of our ongoing improvements to the provision of information to the community post the cyber-attack in December 2020, we have restructured and enhanced our Mossmorran Hub. As part of this update, we have taken the opportunity to make information available on impact assessment, complaint investigations etc. For example:

- We are publishing [regular updates](#) with a summary of the quarter's complaints on the Hub.
- We have published noise assessments undertaken during a period of ground flaring at the complex ([noise-investigation-mossmorran-07-march-2022-1.pdf \(sepa.org.uk\)](#)).
- A summary of the inspection work both planned and completed at the site is available on the [Mossmorran Hub](#)..
- A report summarising the range of assessments undertaken by SEPA regulatory and scientific staff during the re-start of FEP in the summer of 2021 is available on the

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Regulatory approach

Mossmorran Hub at <https://www.sepa.org.uk/media/594425/summary-of-sepa-monitoring-of-the-re-start-of-the-fife-ethylene-plant-at-mossmorran-junejuly-2021.pdf>.

Recommendation - 3b. Undertake a review of 'Permit Variations' process and, in particular, whether on-site changes are considered to be substantial or otherwise. This review should clearly establish the criteria for deciding on what warrants a review of the PPC permit for key aspects (e.g. installation of ground flare).

Whilst this recommendation was rejected, actions have been taken forward and completed.

What we committed to:

We will assess our guidance to ensure it is clear what criteria we use to decide when a permit review is required. We will make this guidance publicly available and will carefully consider how we will engage with the community so that they are informed about decisions made about sites in their local area.

What we have done:

SEPA undertakes public consultation for both new applications and substantial changes to existing permit as required by the PPC Regulations. Information on this is available at [SEPA's Consultation under Industrial Emissions Directive webpage](https://consultation.sepa.org.uk/permits/consultations-under-industrial-emissions-directive/). <https://consultation.sepa.org.uk/permits/consultations-under-industrial-emissions-directive/>

Our guidance for identifying a substantial change variation is available on the SEPA website at https://www.sepa.org.uk/media/361879/ied_tg_03_identifying_a_substantial_change_variation.pdf.

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Regulatory approach

Communities are kept informed on changes at the site through the Mossmorran and Braefoot Bay Community and Safety Committee. This forum allows operators, community representatives and regulators to share and discuss information relating to work being undertaken at or around the site (including permit variations), as well as any concerns that the Community may have about site operation.

Our guidance on the review of PPC Part A permits following the publication of Best Available Techniques (BAT) Conclusions documents, or where significant developments in BAT may need to be reflected in a permit is also available on our website at [IED-TG-43 Pollution Prevention and Control \(Scotland\) Regulations 2012 \(sepa.org.uk\)](https://www.sepa.org.uk/IED-TG-43-Pollution-Prevention-and-Control-Scotland-Regulations-2012).

Recommendation - 3c. Non-Technical summaries should be included in all 'Permit variations' issued by SEPA together with a report from the inspector for each 'Permit variation' and made available to the public on the SEPA website.

This recommendation was taken forward and has been completed.

What we committed to:

In future we will go beyond the requirements of the legislation and make our decision documents for all variations to the Mossmorran complex permits available on our public register.

What we have done:

SEPA's Public Register remains impacted by the cyber-attack. We are rebuilding in phases: We will be able to progressively make more information available to the public as we continue to recover data, with an aim of building back better to create an improved public register over the next couple of years. In the meantime, for the Mossmorran complex, where the permit is varied we are providing non-technical summaries and decision documents on the SEPA Mossmorran

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Regulatory approach

Hub at [Compliance and enforcement at the Mossmorran Complex and Braefoot Bay | Scottish Environment Protection Agency \(SEPA\)](#).

Update on Irish EPA recommendations

Community liaison

Recommendation - 4a. SEPA should undertake a review of the community liaison and communications programme and have regard to the delivery of a more comprehensive and improved programme, including more workshops and meetings chaired by an independent facilitator agreeable to interested parties.

Actions for this recommendation were already underway and will continue to be undertaken as part of our ongoing regulatory programme.

What we committed to:

We are already supporting Fife Council in its review of the Mossmorran and Braefoot Bay Community and Safety Liaison Committees, and together we are committed to strengthening community engagement. This includes exploring workshops and meetings chaired by an independent facilitator with our partners as part of our engagement programme.

What we have done:

We have maintained our ongoing commitment to improved community engagement.

We continue to provide timely and relevant information to the community through our Mossmorran hub, which has been improved to make it easier to use.

In September 2021, we held four community engagement sessions in partnership with Fife Council and the Health and Safety Executive to listen to the needs of the community. We used the feedback to inform our review of the monitoring we undertake and to explore how we share the results of that monitoring with the local community. Some participants in the workshops also participated in the design and assessment of the Air Quality Assessment tool.

We continue to take part in the Mossmorran and Braefoot Bay Community Safety Committee and its Expert Advisory Groups.

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Community liaison

Recommendation - 4b. The appointment and deployment of community liaison personnel who are sourced from within the community should be considered. This can act as a communication conduit between the ExxonMobil Chemical Ltd Fife Ethylene Plant operators, SEPA and the local communities.

Actions for this recommendation were already underway and will continue to be undertaken as part of our ongoing regulatory programme.

What we committed to:

We will continue to encourage ExxonMobil to engage with the community in ways the community considers would benefit them most.

What we have done:

We continue to encourage operators to provide community updates and support this by linking to their community updates on our Hub.

We continue to attend the Mossmorran and Braefoot Bay Community and Safety Liaison Committee, at which the operators are also present, to strengthen community engagement.

Feedback from Community representatives at the Mossmorran and Braefoot Bay Community and Safety Liaison Committee is that they have found communications from the operators to be helpful.

Update on Irish EPA recommendations

Communications

Recommendation - 5a. Maintain appropriate records of all key compliance and regulatory actions in a standardised format and make these available to the public via the SEPA website. Likewise, all key information from ExxonMobil Chemical Ltd Fife Ethylene Plant which is submitted to SEPA should be made available to the public on the SEPA website where appropriate.

This recommendation was taken forward and has been completed

What we committed to:

We already make most records of key compliance and regulatory actions available to the public via our website but whilst we carry out frequent on-the-ground assessments of the impacts of the FEP, such as odour and noise assessments, we do not currently make records of these visits available on our public register. Subject to any legal constraints, we will make reports of all such visits available to the public. Likewise, information submitted to us by ExxonMobil under a condition of the permit or in response to a formal notice is already made available to the public on our public register (subject to any commercial confidentiality limitations). We recognise that not all of these documents were available on our website and we will work to update this as we bring our public register back online following a cyberattack.

What we have done:

SEPA's Public Register remains impacted by the cyber-attack. We are rebuilding in phases: We will be able to progressively make more information available to the public as we continue to recover data, with an aim of building back better to create an improved public register over the next couple of years. In the meantime, for the Mossmorran complex, all information which is submitted to SEPA in accordance with permit requirements and, subject to any legal constraints, records of on the ground assessments is being made available to the public

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through the SEPA Mossmorran Hub at [Mossmorran and Braefoot Bay complexes | Scottish Environment Protection Agency \(SEPA\)](#).

As part of our ongoing improvements to the provision of information to the community post the cyber-attack in December 2020, we have restructured and enhanced our Mossmorran Hub. As part of this update, we have taken the opportunity to make information on impact assessment, complaint investigations etc. available. For example:

- We are publishing [regular updates](#) with a summary of the quarter's complaints on the Hub.
- We have published noise assessments undertaken during a period of ground flaring at the complex ([noise-investigation-mossmorran-07-march-2022-1.pdf \(sepa.org.uk\)](#)).
- A summary of the inspection work both planned and completed at the site is available on the [Mossmorran Hub](#).
- A report summarising the range of assessments undertaken by SEPA regulatory and scientific staff during the re-start of FEP in the summer of 2021 is available on the Mossmorran Hub at <https://www.sepa.org.uk/media/594425/summary-of-sepa-monitoring-of-the-re-start-of-the-fife-ethylene-plant-at-mossmorran-junejuly-2021.pdf>

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Communications

Recommendation - 5b. SEPA should consider an upgrade of its website to allow clear and easy access to different types of information (e.g. permit applications, permit variations, compliance and regulatory information). This will enhance the ability of data to be shared and information to be exchanged with the key stakeholders.

Actions for this recommendation were already underway and will continue to be undertaken as part of our ongoing regulatory programme.

What we committed to:

We welcome this timely recommendation, which is particularly welcome as we are considering the best ways to bring our public register back on line following a cyber attack. We plan to embed the public register within the website to develop a refreshed online community information hub.

We will engage the local community in conversation and encourage feedback to help shape our decision making, including what would assist them most and how that might be best presented as we review the hub and our public register.

What we have done:

SEPA's Public Register remains impacted by the cyber-attack. We are rebuilding in phases: We will be able to progressively make more information available to the public as we continue to recover data, with an aim of building back better to create an improved public register over the next couple of years. In the meantime, we have refreshed our Hub and, for the Mossmorran complex, all key information which is submitted to SEPA is being made available to the public through the SEPA Mossmorran Hub at [Mossmorran and Braefoot Bay complexes | Scottish Environment Protection Agency \(SEPA\)](#).

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The new Hub was shared with Fife Council and NHS Fife to help ensure that public information access is improved across key stakeholders.

Previews of the Hub were taken to the Mossmorran and Braefoot Bay Safety Liaison Committee to get feedback on our plans and assess whether our aim to provide clear and easy access to different types of information has been achieved. The input of Community Council representatives has been key in this.

Feedback on the new Hub has been positive from all areas so far.

Recommendation - 5c. While the review team recognise that SEPA have a service charter and instructions on how to make an environmental complaint on the SEPA website, it is recommended that SEPA publish additional details on its complaint handling procedure for investigating and responding to complaints from the public.

This recommendation is being taken forward.

What we committed to:

We will update our website to provide clearer information on how we respond to environmental incident/pollution complaints and what people submitting them can expect.

What we have done:

SEPA is reviewing how we respond to all environmental complaints and this is being taken forward as a larger piece of work.

SEPA remains committed to reviewing and following up on complaints.

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Quarterly updates are published on the Mossmorran Hub so it is clear how many complaints have been received, what they have been about and, where possible, what SEPA's findings and action were.

Reports of pollution and complaints in relation to sites regulated by SEPA should be reported to us using the details on our website at [Contact | Scottish Environment Protection Agency \(SEPA\)](#).

Update on Irish EPA recommendations**Ambient monitoring**

Recommendation - 6a. A continuous noise monitoring network, which provides real-time and historic monitoring data, compliance management and audio playback should be installed in the vicinity of the ExxonMobil Chemical Ltd Fife Ethylene Plant installation. This data should be used to assess compliance with noise limits (at noise sensitive locations) which should be included in the PPC permit for the ExxonMobil Chemical Ltd Fife Ethylene Plant installation.

This recommendation was taken forward and has been completed

What we committed to:

We are reviewing the noise data currently available and considering whether reviewing the permit to set numeric noise limits at sensitive receptors might be of benefit. We will also review our noise monitoring network to ensure suitable data would be available to assess compliance with any new conditions.

What we have done:

In relation to the ExxonMobil Chemical Ltd Fife Ethylene Plant installation, we have reviewed the noise data currently available and decided not to set numeric noise limits at sensitive receptors.

Setting specific numeric noise limits at sensitive receptors (such as nearby housing) is not always practical, necessary or the best approach to assess compliance or the impact on the local community, particularly where there are other sources of noise, such as busy roads. Decisions on whether a noise limit is appropriate are made on a site specific basis.

There is a condition in the ExxonMobil Fife Ethylene Plant permit (inserted via [VN04](#)) which requires the operator to ensure all appropriate preventative measures are taken against noise and vibration emissions through the application of Best Available Techniques and ensure that

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no significant pollution is caused. Our inspection and noise monitoring programmes are designed to assess compliance with this noise condition in the permit. Any noise assessments undertaken to determine compliance will, subject to legal constraints, be published on the [Mossmorran Hub](#).

The responsibility for demonstrating compliance with permit conditions lies with the operator and to reinforce that we have required both operators (see variations [Shell FNGL VAR02](#) and [ExxonMobil FEP VAR01](#)) to undertake noise assessments in the event of “major” flaring events and to submit those noise assessments to SEPA.

SEPA has additionally deployed equipment at two noise monitoring sites (one of which is based in a community location) to provide data to verify operator monitoring and compliance with permit conditions.

We are also, subject to legal constraints, publishing noise assessments undertaken during flaring events at the complex (for example [noise-investigation-mossmorran-07-march-2022-1.pdf \(sepa.org.uk\)](#)).

Update on Irish EPA recommendations**Ambient monitoring**

Recommendation - 6b. A network of real time VOC monitors should be installed in the vicinity of the ExxonMobil Chemical Ltd Fife Ethylene Plant installation in order to enhance the air quality monitoring programme around the area.

This recommendation was taken forward and has been partially completed

What we committed to:

While there is no evidence of VOC levels breaching air quality standards, SEPA understands that this remains an area of concern to local communities. We will work with Fife Council through the new Mossmorran and Braefoot Bay Community and Safety Liaison Committee air quality sub group to design a VOC monitoring programme, in the vicinity of the Mossmorran complex in order to enhance the air quality monitoring programme around the area and engage with the local community in designing any network, including considering and reviewing the value of continuous VOC monitors.

What we have done:

In September 2021, we held four community engagement sessions in partnership with Fife Council and the Health and Safety Executive to listen to the needs of the community. We used the feedback to inform our review of the monitoring we undertake and how we share the results of that monitoring with the local community.

To date, our monitoring has shown no breaches of the air quality objectives, but it was clear in hearing from the community that there continues to be a concern about air quality in the area.

The community asked for:

- Permanent monitoring of air quality in the communities around Mossmorran.
- Simple, easy to understand and timely data, with the ability to get more detail if required.

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We have reviewed how we will monitor air quality and taking the feedback from communities into account we have enhanced how we monitor air quality and how we make information on air quality available, in a way that will hopefully provide greater reassurance to local communities.

We have implemented a new monitoring plan which has allowed us to:

- change the monitoring locations;
- increase the number of monitoring points;
- increase the range of air pollutants that we measure.

The new monitoring equipment also allows us to explore improved ways of presenting data and trends on the levels of the pollutants measured.

More information on the enhanced monitoring plan is available online at [mossmorran-air-quality-stakeholder-update.pdf \(sepa.org.uk\)](#).

We are actively exploring real time monitoring of volatile organic compounds (VOCs). However, it's important to note different types of monitors have different limitations.

- Diffusion tubes can monitor for individual VOCs over a set time period (e.g., over a fortnight or a month). They provide a measured average concentration over that time period, not the variation in the concentration over the period.
- Many real time total VOC monitors are indicative and useful for showing changes in total VOC concentration, rather than providing accurate concentrations of the individual VOCs present.

We have committed to carry out and publish an annual review of our air quality monitoring.

Update on Irish EPA recommendations**Ambient monitoring**

Recommendation – 6c. Continue to undertake field testing and investigations of any alleged off-site odour impact (using SEPAs guidance) at and in the vicinity of the ExxonMobil Chemical Ltd Fife Ethylene Plant installation. The odour assessments should continue to be carried out by ExxonMobil Chemical Ltd Fife Ethylene Plant and SEPA personnel who are specifically trained in the relevant method. Formal records of all such assessments should be maintained and included in inspection reports.

Actions for this recommendation were already underway and will continue to be undertaken as part of our ongoing regulatory programme.

What we committed to:

Subject to any legal constraints, we will make reports of such visits available to the public. We continue to require ExxonMobil to manage their operations so that there is no offensive odour outside the site boundary. Whilst ExxonMobil commonly undertake odour investigations of their own in response to complaints about odour any assessments carried out by them are not used to assess compliance.

What we have done:

Where odour impact assessments are undertaken, subject to legal constraints, we will publish, for example a report summarising the range of assessments undertaken by SEPA regulatory and scientific staff during the re-start of FEP in the summer of 2021 is available on the Mossmorran Hub at <https://www.sepa.org.uk/media/594425/summary-of-sepa-monitoring-of-the-re-start-of-the-fife-ethylene-plant-at-mossmorran-junejuly-2021.pdf>

We have also published reports from the operator as required by the permit: [measurement of gaseous and particulate emissions \(sepa.org.uk\)](#)

Update on Irish EPA recommendations**Ambient monitoring**

SEPA's Odour Regulation Support (ORS) group is coordinated by SEPA's technical lead on odour regulation in the Waste and Industry Unit. A key purpose of the ORS group is to provide support, advice, training and coaching to staff on a wide range of odour related topics and to act as a conduit of information with other functions within SEPA.

We have published the guidance staff use to conduct odour assessments, and this is available online: [Odour | Scottish Environment Protection Agency \(SEPA\)](#). Although the guidance is aimed at aimed at SEPA officers, it can also be referred to by members of the public and industrial operators.

Update on Irish EPA recommendations**Emissions monitoring**

Recommendation - 7a. A detailed assessment of emissions from the ground flare at the Shell UK Ltd installation (that is used by ExxonMobil Chemical Ltd) should be carried out in order to assess the efficiency and capacity of the flare and to quantify the emissions from the flare.

Actions for this recommendation were already underway and will continue to be undertaken as part of our ongoing regulatory programme.

What we committed to:

We had already required Shell to undertake a BAT assessment of the provision of ground flaring and review the performance of the current ground flares, including the efficiency and capacity of the flare, and identify any actions that are required to improve their performance and reliability. An improved capacity has been demonstrated during recent flaring events and we are reviewing with Shell what can be done to ensure that this is delivered when required.

What we have done:

Following the BAT assessment SEPA [varied Shell FNGL's permit](#) to require a detailed project plan for a totally enclosed ground flare system to be provided to SEPA by 31 January 2023 and for the new ground flare system to be operational by 31 December 2025.

Shell have undertaken a programme of improvements to improve performance and reliability. This work has been completed satisfactorily – see the summary of the inspection work completed at the site available on the [Mossmorran Hub](#).

Update on Irish EPA recommendations**Emissions monitoring**

Recommendation - 7b. Periodic assessments of the emissions to air from permitted point sources at the ExxonMobil Chemical Ltd Fife Ethylene Plant installation and the ground flare at the Shell UK Ltd installation should be carried out at least annually by SEPA and the reports of the monitoring should be made available on the SEPA website.

Actions for this recommendation were already underway and will continue to be undertaken as part of our ongoing regulatory programme.

What we committed to:

We review the programme regularly and will increase the frequency of periodic assessment for the Fife Ethylene Plant to annually.

What we have done:

We have increased the frequency of periodic assessment for the Fife Ethylene Plant and Shell UK Ltd Fife Natural Gas Liquids Plant.

The responsibility for demonstrating compliance with permit conditions lies with the operator, SEPA carries out check monitoring and audits of monitoring undertaken by operators, or third parties on their behalf, to provide assurance that the results are correct and in line with appropriate national and international standards. This will inform the frequency of SEPA monitoring in the future.

Stack testing was undertaken at the ExxonMobil Chemical Ltd Fife Ethylene Plant in March 2022. Reports of the monitoring are available on our [Mossmorran Hub](#).

Monitoring of the ground flare has not been included in this programme due to the technical difficulties in monitoring emissions from a high temperature and large area source. However, SEPA continues to monitor air quality throughout ground flare operation and there have been

Update on Irish EPA recommendations

Emissions monitoring

no measured breaches of air quality objectives at the locations where monitoring is being undertaken.

Update on Irish EPA recommendations

Modelling

Recommendation - 8a. Undertake a revised assessment, including appropriate air dispersion modelling, using actual emission data, to predict the impact of emissions from the ExxonMobil Chemical Ltd Fife Ethylene Plant installation from both point and fugitive sources (and including emissions from the ground flare at the Shell UK Ltd installation). Modelling should be used to model a number of different scenarios (e.g. worst case scenario, prolonged flaring impact scenario, etc).

This recommendation was taken forward and has been completed

What we committed to:

We will ensure a further assessment is carried out using the most up to date emissions data to model emissions from fugitive and point sources, including the Shell ground flare, for a number of scenarios including worst case scenario and prolonged flaring impact scenario. This will be required for both the existing and future arrangements (i.e. with and without the proposed new ExxonMobil Enclosed Ground Flare (EFG). In the event that modelling is carried out by the companies we will carry out validation checks to ensure it has been carried out correctly and appropriately.

What we have done:

As part of their application for variation of their PPC permit, ExxonMobil FEP included the new ground flare in the emissions modelling assessment undertaken by Wood Group UK Limited ('Wood').

In 2019, Wood undertook assessments to quantify the potential impacts on local air quality associated with emissions to air from ExxonMobil FEP and Shell FNGL. The assessments had a particular emphasis on flare emissions, but also included the other process and combustion plant emitting to atmosphere at the two installations.

In 2021, the assessment was updated to consider further scenarios for both the current site operation and proposed operation with the EGF operational:

- Assessment of impacts during normal operation of FEP;
- Assessment of a worst case and prolonged flaring event emission scenarios (an assessment of impact during plant trips assuming flaring occurs at the instantaneous peak rates of 130 & 200 tonnes per hour continuously over the course of the year).

The [Wood assessment](#) is available on our website.

The report indicates that there are no predicted exceedances of any AQ standards or objectives or environmental assessment levels during normal operation of ExxonMobil FEP and during both plant trip scenarios with the proposed changes to the flare system.

SEPA have reviewed the modelling assessment and consider that it has been carried out correctly and appropriately, including:

- using the most up to date emissions data to model emissions from fugitive and point sources, including the Shell ground flare,
- considering a number of scenarios including worst case and prolonged flaring impact scenarios,
- considering scenarios with and without the proposed new ExxonMobil Ground Flare;
- and that no further assessment is required.

More detail can be found in [the Decision Document](#) published by SEPA explaining its determination of the variation application by ExxonMobil to include the Enclosed Ground Flares in their permit.

For information on accessing this document in an alternative format or language, please contact SEPA by emailing 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. contactscotland-bsl.org