Air Quality Strategy 2025 – 2029

FALKIRK COUNCIL

FOREWORD

Good air quality makes the Falkirk Council area a welcoming place to live, work and visit. It is vitally important for resident's health, the local environment, biodiversity and the economy.

Many factors can affect the quality of air, for example: road transport, home energy use, petrochemical industries or power stations burning fossil fuels creating unwanted airborne emissions.

Historically, the economic benefits from the nationally significant industries within Grangemouth have contributed to poor local air quality. Over recent years, air quality has improved through industrial process developments, collective working and effective monitoring techniques.

Falkirk Council has been working to improve air quality and public health and we have a responsibility to comply with legislation and policy regulations when managing local air quality. This five-year Air Quality Strategy sets out nine key areas where having good air quality is fundamentally important to our lives.

Vision

"This is the first Air Quality Strategy for Falkirk Council to cover the period 2025-2029. We aim to make this detailed, robust and ambitious to ensure that the Falkirk Council area endeavours to regularly achieve the best air quality in Scotland. This will help protect the health and wellbeing of residents and visitors to the area into the future."

CONTENTS

1. OUR PLEDGE

Clean air is fundamental to a healthy lifestyle and environment. Air quality is generally good in the Falkirk Council area however, action is still required to address current and future air pollution challenges.

Good air quality benefits us all, through positive effects on health, climate change, sustainable economic growth and general wellbeing. This Air Quality Strategy details how we envisage good air quality being achieved in the Falkirk Council area. The Strategy will be updated every five years, as a minimum, building on previous actions and setting out how we will tackle emerging issues.

Our Air Quality Strategy sets out how we will deliver good air quality in the Falkirk area over the next five years. The Strategy will be implemented by the dedicated Air Quality Specialist within our Growth, Planning, Sport and Culture division. We have aligned our approach with the national Cleaner Air for Scotland 2 (CAFS2)[1] strategy to ensure consistency in delivering air quality improvements.

The strategy focuses on key areas where the council can improve air quality and in doing so commits us to the following;

- **Health:** Educate and raise awareness of the health impact of air pollution and the benefits of reducing emissions.
- **Integrated Policy:** Work collaboratively with partners to create effective policy and a comprehensive approach to air pollution control and other environmental issues.
- **Placemaking:** Integrate good air quality practices into the planning decision making process.
- **Data:** Continue to monitor air quality and provide high quality data.
- **Public Engagement and Behaviour Change:** Encourage the local community and visitors to the area to contribute to improving air quality.
- **Industrial:** Minimise emissions from industry and communicate with local residents on any concerns.
- **Non-Transport Emissions:** Tackle emissions from domestic combustion consistent with Scottish Government guidance and funding.
- **Transport:** Support sustainable transport modes such as walking, cycling, car sharing and public transport.
- **Governance:** Provide long term commitment to deliver and fund air quality improvements within the area.

[1] Scottish Government (2021), *Cleaner Air For Scotland 2: Towards a Better Place for Everyone*, accessible at: https://www.gov.scot/publications/cleaner-air-scotland-2-towards-better-place-everyone/

2. ABOUT AIR QUALITY

Air quality is a measure of how clean the air is in a specific area and what concentrations of pollutants may be present. Both natural and man-made sources can emit air pollutants. Emissions from vehicles are an important source of pollution and can contribute to local air quality issues to varying degrees depending on the age of the vehicles using the road network and the amount of congestion present in populated areas.

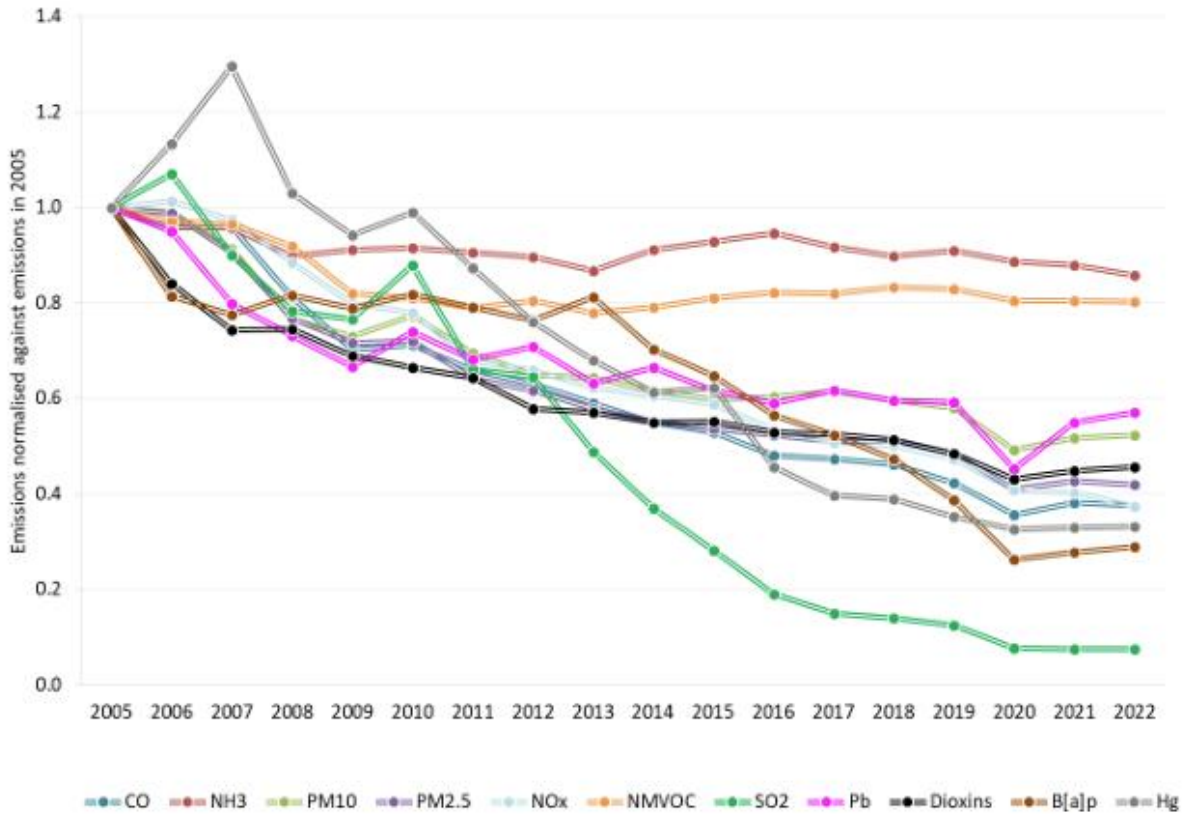
Industrial processes can also impact air quality, depending on the kind of industries in the area and how many are present. Energy generation and domestic heating can also contribute to air pollution. In addition to local sources, emissions generated from hundreds of miles away can add to local pollution due to the long-range transport of some air pollutant types.

The Technical Glossary at the end of the document provides explanations of all the technical terms related to air quality that are used throughout this strategy.

Air Quality in Scotland

Air quality in Scotland has improved greatly over the years as a result of engagement with communities, advances in technology and legislation imposing tighter controls on emissions of pollutants from major sources. The normalised trend for all pollutants is shown in Figure 2-1.

Figure 2-1 Normalised trends for all pollutants



Legislation sets out air quality standards and objectives for several pollutants of concern for human health. The concentrations of pollutants (i.e. the levels of pollution in the air that we breathe) considered safe for humans and the environment take the form of air quality objectives or AQOs.

Table 1 sets out the concentrations (in micrograms of pollutant per cubic meter of air) to be achieved in Scotland[2].

Table 1 - Air Quality Objectives (AQO) for Scotland

AQ Objective-Pollutant	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg m^{-3} not to be exceeded more than 18 times a year	1-hour mean
	40 µg m^{-3}	Annual mean
Particulate Matter (PM_{10})	50 µg m^{-3}, not to be exceeded more than 7 times a year	24-hour mean
	18 µg m^{-3}	Annual mean
Particulate Matter ($PM_{2.5}$)	10 µg m^{-3}	Annual mean
Sulphur Dioxide (SO_2)	350 µg m^{-3}, not to be exceeded more than 24 times a year	1-hour mean
	125 µg m^{-3}, not to be exceeded more than 3 times a year	24-hour mean
	266 µg m^{-3}, not to be exceeded more than 35 times a year	15-minute mean
Benzene	3.25 µg m^{-3}	Running annual mean
1,3 Butadiene	2.25 µg m^{-3}	Running annual mean
Carbon Monoxide	10.0 mg m^{-3}	Running 8-Hour mean
Lead	0.25 µg m^{-3}	Annual Mean

[2] https://www.scottishairquality.scot/air-quality/standards

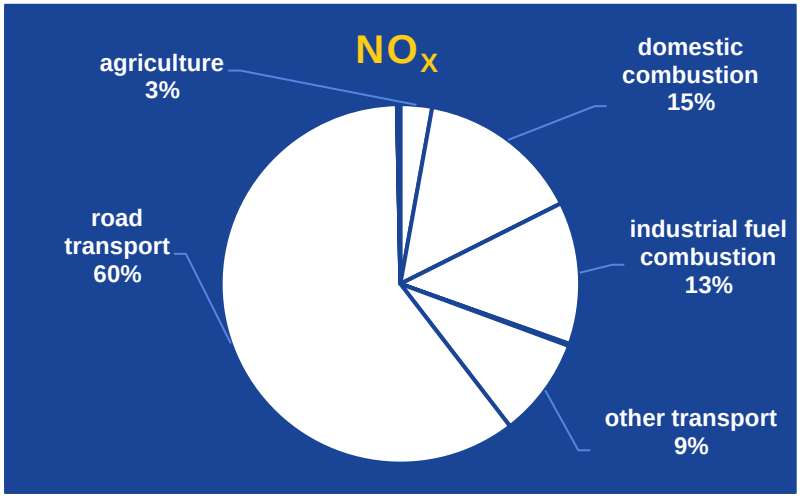
Air Quality in Falkirk Council Area

The local authority of Falkirk has a population of almost 160,000 and covers an area of around 300 km^2. Falkirk is the main town and administrative centre of the Falkirk Council area, which also includes the towns of Grangemouth, Bo'ness, Denny, Camelon, Larbert, and Stenhousemuir.

Falkirk Council have been successfully tackling the issue of air pollution in the region for many years as part of its commitment to the Local Air Quality Management (LAQM) regime. Our work in reducing air pollution has resulted in achieving compliance with the air quality objectives, enabling us to revoke four Air Quality Management Areas (AQMAs) since 2021, with only one still in place. We will continue to ensure that reductions in emissions from industry in the area are maintained and that these sources continue to be monitored and reported upon.

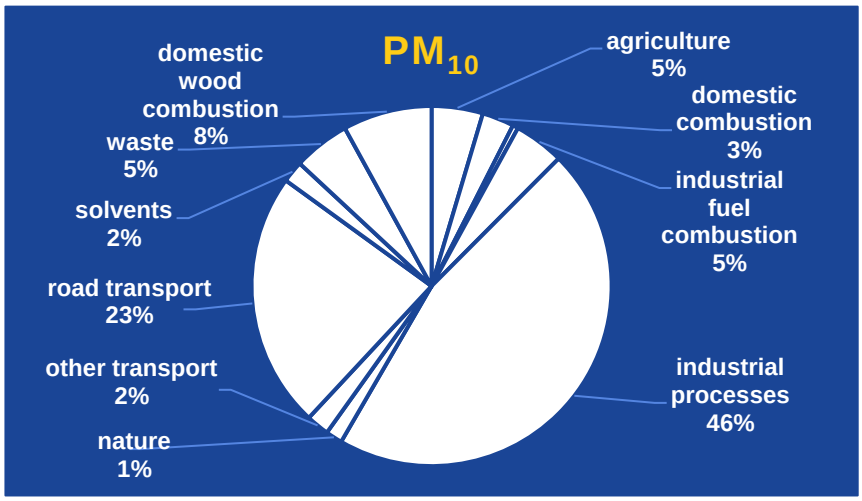
Sources of Air Pollution in the Area

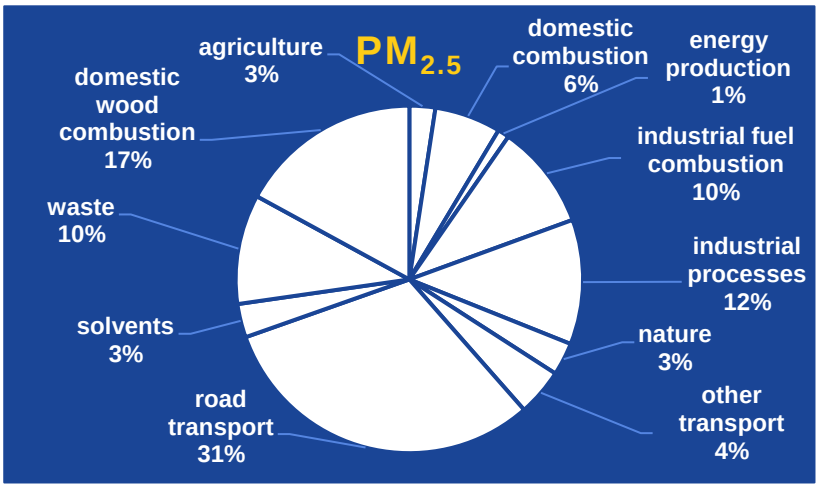
Source apportionment analysis (a technique that uses modelling to determine the origins of pollution and how much they contribute to air pollution levels) was carried out for the Falkirk Council area as part of this strategy and found that the contribution from each source within the local region is very similar to what is seen across the rest of the UK. The main sources of localised air pollution in the Falkirk Council area are road transport and industrial processes.



Exhaust fumes from road transport are the largest source of **NO_2** in Falkirk, totalling 60% of the total emissions in 2021[3]. Industrial emissions, domestic combustion (household fuel burning) and other transport contribute around 10 to 15% each to the total emissions within the Falkirk Council area.

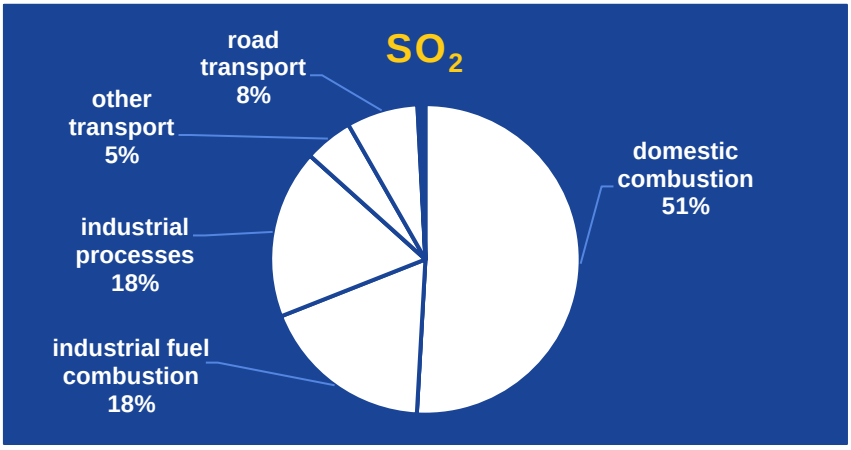
For **PM_{10}**, almost half of emissions come from industrial combustion and processes. Transport makes up around a quarter of emissions and other sources contribute the remaining 25-30%.





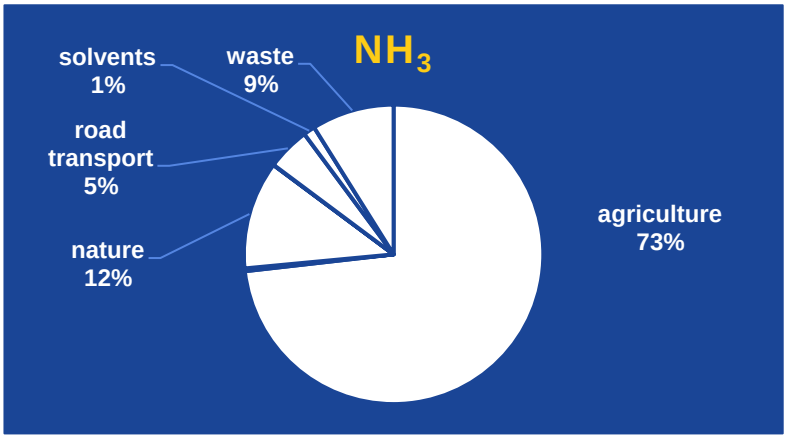
For **$PM_{2.5}$**, over a quarter of emissions are from transport, a quarter from industrial combustion and processes, and the remainder coming from other sources such as domestic wood combustion and waste.

[3] Emissions of air pollutants in the UK – Summary, DEFRA, 2024. Accessible at: https://www.gov.uk/government/statistics/emissions-of-air-pollutants



As of 2021, domestic combustion is the largest source of **SO_2** in the Falkirk Council area. Industrial fuel combustion and industrial processes make up the rest of the emissions with a small contribution from road and other transport.

Agriculture makes up almost three quarters of the total emissions of ammonia (**NH_3**) within the Falkirk Council, with the remainder coming from other natural sources and waste.



Annual Progress Reports (APRs)

All local authorities are required to compile Annual Progress Reports (APRs) on air quality within their geographical areas (in accordance with the LAQM regime established by part IV of The Environment Act 1995). APRs include a review of recent air quality monitoring data, and of any new developments or significant changes in the area, to identify any areas of poor air quality.

APRs give full details of measured concentrations and monitoring sites[4]. Other reports such as emissions studies, detailed assessments (which give breakdowns of the various sources in each area), revocation proposals and action plans are available on the Falkirk Council local air quality webpage[5].

[4] https://www.scottishairquality.scot/laqm-reports/falkirk-council
[5] https://www.falkirk.gov.uk/environmental-policy/air-quality/local-air-quality

Air Quality Management Areas (AQMAs)

All Scottish local authorities are required to regularly review and assess air quality in their areas against objectives for several air pollutants of concern for human health. If the local authority identifies a likely breach of one or more of the air quality standards, and if there is sufficient evidence to confirm such a breach of one or more of the air quality objectives, an 'Air Quality Management Area' (AQMA) must be declared.

The majority of the AQMAs in Scotland relate to localised pollution hotspots within urban centres. Falkirk Council were unique in Scotland as they were the only local authority to have an AQMA declared for sulphur dioxide (SO_2) due to emissions from the Grangemouth oil refinery.

In recent years, measured SO_2, nitrogen dioxide (NO_2) and particulate material (PM) concentrations have continued to remain significantly lower than the required objective levels, with the implementation of the associated Air Quality Action Plans (AQAPs), developed by the Council and key partners, significantly contributing to these reductions. As a result, the Council have revoked four of the five AQMAs that were declared in the area and we await the revocation of the remaining AQMA[6].

The following AQMA remains designated in the Falkirk Council Area:

- Falkirk Town Centre (NO_2): An AQMA was declared in Falkirk Town Centre in 2013 for exceedances of the NO_2 annual mean. It is anticipated that this will soon be revoked if recent (automatic and non-automatic) monitoring results continue to comply with AQS objectives.

The following AQMAs were previously designated but have now been revoked:

- Falkirk Town Centre (PM_{10}): Declared in 2013 for PM_{10} (24-hr and annual mean) and revoked in 2023.
- Grangemouth: Declared in 2005 due to exceedances of the SO_2 15-minute mean and revoked in 2024.
- Haggs: Declared in 2010 for NO_2 (annual mean) and revoked in 2021.
- Banknock: Declared in 2011 for PM_{10} (24-hr and annual means) and revoked in 2021.

The revocation of the AQMAs has not altered the commitment of the Council to maintaining good air quality levels and continuing their air quality monitoring and abatement measures. Weare committed to ensuring that air pollution remains below the AQS objective levels and will continue to monitor and improve air quality..

[6] https://www.scottishairquality.scot/laqm/aqma#!/la/446

3. HEALTH

Our Pledge: To provide clean air for residents and visitors

Background

Poor air quality is the largest environmental risk to public health within the UK[7]. Reduced life expectancy is associated with long-term exposure to air pollution which can cause chronic conditions such as cardiovascular and respiratory diseases as well as lung cancer.

Currently, there is no clear evidence of a safe level of exposure to particulate matter below which there is no risk of human health effects[8]. The estimated annual number of deaths associated with long-term exposure to air pollution (specifically NO_2 and $PM_{2.5}$) in the UK is reported to be between 29,000 – 43,000[9], of these deaths, 1,800 to 2,700 are estimated to occur in Scotland.

Evidence suggests that interventions aiming to reduce the exposure of the population to pollution will have the biggest overall health impact, although action also needs to be taken to reduce inequalities in exposure and to protect vulnerable groups[10]. The greatest burden of air pollution often falls on the most deprived communities and the most vulnerable individuals. Therefore, a precautionary approach is required to protect public health, especially those most at risk.

[7] UK Health Security Agency (2018), Health matters: air pollution. Accessed at: https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution

[8] Review of evidence on Health Aspects of Air Pollution – REVIHAAP: final Technical Report, World Health Organization Office for Europe, 2013. Accessed at: https://www.who.int/europe/publications/i/item/WHO-EURO-2013-4101-43860-61757

[9] UK Health Security Agency (2022). Chemical Hazards and Poisons Report. Accessed at: https://www.gov.uk/government/collections/chemical-hazards-and-poisons-reports

[10] Improving outdoor air quality and health: review of interventions. Public Health England, 2019. Accessed at: https://www.gov.uk/government/publications/improving-outdoor-air-quality-and-health-review-of-interventions

The main pollutants of concern and their associated health impacts are detailed in Table 2.

Table 2 - Pollutants and their associated health impacts

Pollutant	Associated Health Impacts
Nitrogen dioxide (NO_2)	Associated with a range of adverse effects of the respiratory system. Exposure can result in irritation of the lungs and lower resistance to respiratory infections. Frequent exposure to concentrations that are typically much higher than those normally found in the ambient air may cause increased incidence of acute respiratory illness in children.
Sulphur Dioxide (SO_2)	Even moderate concentrations have been associated with a fall in lung function in asthmatics. Sulphur dioxide pollution is considered more harmful when particulate and other pollution concentrations are also high.
Fine Particulate Matter ($PM_{2.5}$)	'Ultrafine' particles which can enter deep into the lungs and even the bloodstream. Short term exposure (a few hours to weeks) can trigger cardiovascular disease-related mortality; longer-term exposure (e.g. a few years) increases the risk for cardiovascular mortality to an even greater extent and reduces life expectancy.
Particulate Matter (PM_{10})	'Coarse' particles can irritate the eyes, nose and throat and cause increases in respiratory illness, and deterioration in cases of cardio-respiratory disease.
Ozone O_3 (Ground level)	Increase in mortality rates. Increase in cases of respiratory illness. Decreased lung function. Irritation to the eyes, and the airways of the lungs, exacerbating the symptoms of those who suffer from asthma and lung diseases.

Though it is widely recognised that long term exposure to air pollution has the greatest public health effect, short-term 'high pollution' episodes can also have a profound impact especially on individuals with pre-existing heart and lung conditions such as asthma and potentially trigger increased hospital admissions. Acute episodes can also contribute to the premature death of people who are more vulnerable to daily changes in ambient air pollutant levels, notably the elderly and those with pre-existing health conditions.

The air quality objectives for SO_2 are for short-term concentrations (15-minute, 1-hour and 24-hours, see Table 1). Historically, emissions of SO_2 from Grangemouth industries have influenced air quality in the Falkirk area.

Significant evidence of the health impacts of long-term exposure to typical lower levels of ambient air pollution has also been documented in many studies. The biggest impact of particulate air pollution on human health is understood to be from long-term exposure to $PM_{2.5}$, which increases mortality risk, particularly from cardiovascular causes.

In 2016, Scotland became the first country in Europe to adopt the World Health Organisation (WHO) guideline value for $PM_{2.5}$ of 10µg m^{-3} as an annual mean. $PM_{2.5}$ has been monitored within the Falkirk Council area since 2008. In 2024, Falkirk Council increased its $PM_{2.5}$ monitoring capability by installing two new analysers at the Bo'ness and Grangemouth Moray air quality stations.

What We Do

Emissions Reductions

Falkirk Council has been successful in reducing concentrations of the three main air pollutants of concern, SO_2, NO_2 and PM_{10}. Reductions of SO_2 have been achieved by working with the site operators and the Scottish Environment Protection Agency (SEPA) at Grangemouth to reduce flaring operations, make improvements to energy production efficiency and installation of abatement equipment. It is important to discuss the health and environmental impacts of air quality when engaging with businesses in the area and the public with support from local public health agencies.

Partnership with NHS

In partnership with NHS Forth Valley, Clackmannanshire Council and Stirling Council, Falkirk Council has produced and implemented the Joint Health Protection Plan (JHPP) which provides an overview of health protection and environmental health priorities, provision and preparedness for the NHS Board area. This plan highlights the importance of a collaborative approach to tackling air quality issues. This partnership has also produced the pro forma for reporting Environmental Health complaints (including those relating to air quality).

Local Plans and Policies for Indoor Air Quality

The Local Heat and Energy Efficiency Strategy and Delivery Plan (in development) sets out measures to achieve energy efficiency and decarbonised heat for buildings in Falkirk and specifically prioritises indoor air quality.

Future Challenges

The concentrations of $PM_{2.5}$ in the Falkirk Council area have remained steady over recent years. Reducing concentrations of this pollutant is challenging due to the diverse and numerous emission sources, however it remains present at low concentrations which are within the AQS objectives..

Another challenge in reducing concentrations of $PM_{2.5}$ in the local area is caused by long-range transport. Around 50% of local ambient $PM_{2.5}$ concentrations relate to long-range transboundary transport from out with Scotland . The Council works with other local authorities and the Scottish Government to tackle this issue.

Our Strategy

We will:

- Work with local industry to highlight the human health impact of emissions from industrial processes and continue to regulate and improve industrial emissions;
- Collaborate with NHS Forth Valley to engage with communities and those in the public and private sectors to improve air quality and raise awareness;
- Communicate with the most vulnerable residents so that they are aware of the impact of air pollution on their health and what can be done to reduce the impact and protect themselves; and
- Continue to implement air pollution abatement measures, to ensure that the Scottish Air Quality Objectives (AQOs) continue to be achieved, and public health continues to be protected.

4. INTEGRATED POLICY

Our Pledge: To incorporate air quality within our local policies and strategies

Background

CAFS2 highlights that strategies, policies and plans developed for air quality management overlap with those strategies implemented for transport, climate change mitigation, the economy and other policies.

Across Scotland there are several notable frameworks which take into consideration air quality governance, including the National Transport Strategy 2[11] (NTS2), the National Planning Framework[12] (NPF4) and the Update to the Climate Change Plan 2018-2032[13].

Transport

Historically, transport has been the dominant source of air pollution in the UK and the NTS2 aims to have a positive impact on choices about the types of journeys made and how they are made. Integrated transport management will have long-term benefits to air quality, emissions reduction and improving physical health.

Planning

Planning policy is also an important mechanism for improving air quality. The NPF4 aims to reduce the need to travel unsustainably, reduce the demand for private vehicle use and improve transport equity, all of which will improve health and air quality.

Climate Change

The Climate Change Plan 2018-2032 sets out a co-ordinated approach to meet climate change targets. Air quality is focussed on a local scale and the impacts on a short timescale whereas climate change considers the global scale and longer periods of time. However, both issues are linked by human activity and therefore tackling sectors such as energy, transport will bring air quality improvements as well as other associated benefits.

Tackling climate change by reducing our reliance on fossil fuels has a knock-on improvement to local air quality in Falkirk. This is a unique situation within Scotland due to the impact of the Grangemouth refinery on local air pollution and the associated reduction in SO_2 emissions due to scaling back of operations. Air quality benefits to reducing SO_2 emissions in the area include improvements to human health outcomes.

[11] National Transport Strategy 2, Transport Scotland (2020). Accessible at: https://www.transport.gov.scot/publication/national-transport-strategy-2/
[12] National Planning Framework 4, Scottish Government (2023). Accessible at: https://www.gov.scot/publications/national-planning-framework-4/
[13] Update to the Climate Change Plan 2018–2032: Securing a green recovery on a path to net zero, Scottish Government (2020). Accessible at: https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/

Sulphur Dioxide

The UK government has several policies in place to specifically tackle SO_2 emissions. Legislation prohibits the sale of the most polluting fuels and ensures that only the cleanest biomass burning stoves are available for sale to the public. There are also national policies to reduce emissions from energy production, shifting away from high sulphur fuels, such as coal. Emissions from combustion in energy industries have decreased by 99% between 1990 and 2022[14], proving that this legislation has had a positive impact.

What We Do

Local Plans and Policies

The policies set out at a national and regional level are implemented and integrated into Falkirk Council local plans and strategies.. This work is done collaboratively with the community. Within the Council, departments work together to find the best approach for issues that are linked with air quality and health, such as tackling fuel poverty.

[14] DEFRA, Emissions of air pollutants in the UK – SO_2 (2024). Accessible at: https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-sulphur-dioxide-so2#:~:text=Industrial%20combustion%20refers%20to%20the,tables%20that%20accompany%20this%20release.

Falkirk Council set out how national and regional policies will be implemented and how these are integrated with air quality and sustainability, through the:

- Falkirk Local Transport Strategy[15] (for more see Section 10: Transport)
- Local Development Plan[16] (for more see Section 5: Placemaking)
- The Council Plan[17]

The Council Plan sets out the Council's objectives and priorities up to 2027, centred on a long-term vision to create "*Strong communities where inequalities are reduced and lives are improved*"". Air quality is a key consideration within the Plan and it ties in with supporting stronger and healthier communities, promoting opportunities and educational attainment and reducing inequalities and supporting a thriving economy and green transition. This Plan was created in collaboration with local communities as well as integrating good practice, legislation and policy from Scotland and the UK.

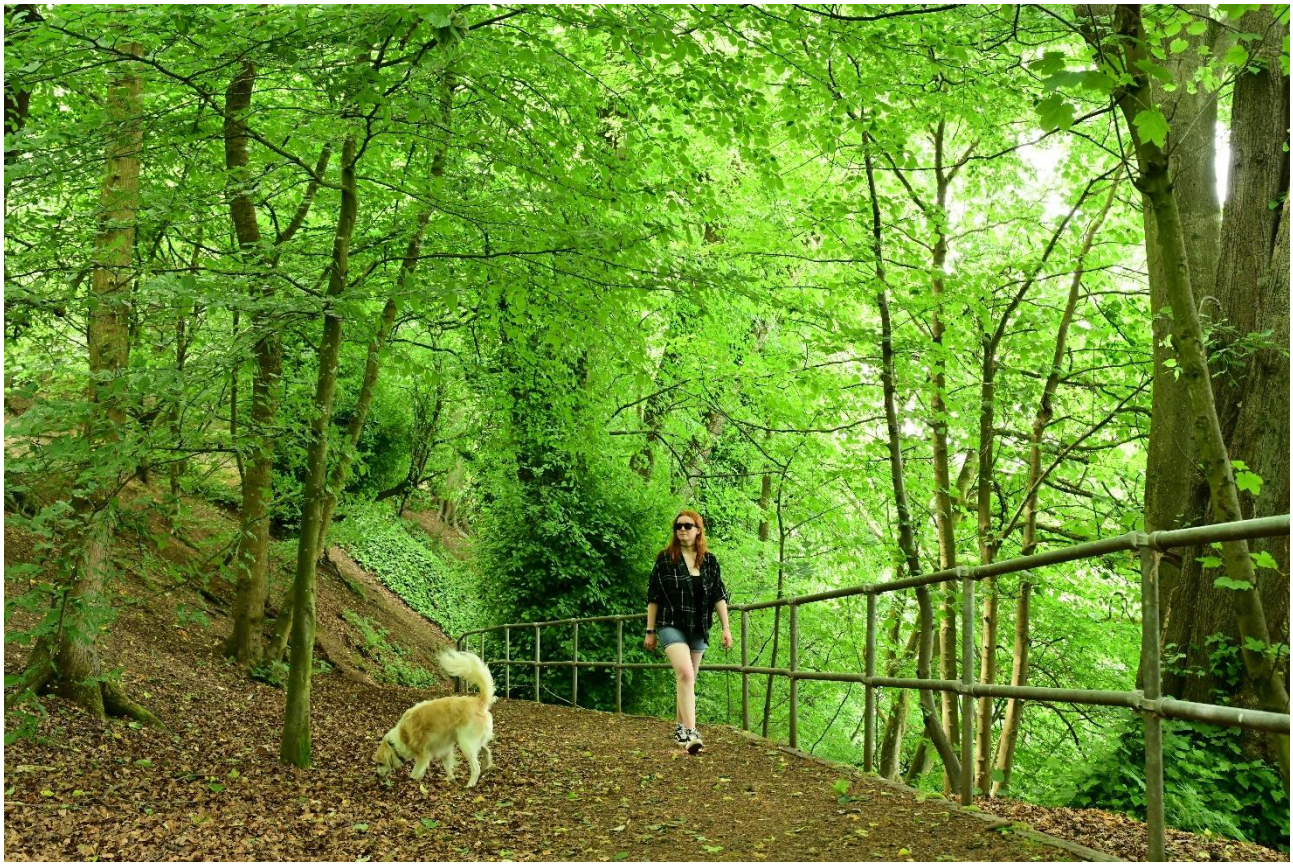
Integration of environmental issues related to air quality is also considered within local educational policy. Air quality is a topic which is incorporated in the curriculum and there is a focus on public engagement and behaviour change. Initiatives include using air quality monitors near schools to provide live data to teachers and students. Promotion of active transportation, such as walking and cycling, to reduce traffic-related air pollution is also key.

The Council collaborates with local institutions to promote the economic benefits of improving air pollution and the overall local environment .

Air Quality and Climate Change Co-Benefits

Climate change and air pollution often relate to the same sources. Climate change can also exacerbate the impacts of air pollution on human health and the environment. The policies and measures adopted to mitigate climate change and reduce pollution are intrinsically linked. The Council takes this into consideration in their developing Climate Change Strategy[18], so in addition to reducing the carbon footprint of the Council, this strategy will set out progress made and targets to be achieved for air quality improvements.

[15] Falkirk Local Transport Strategy 2023, Falkirk Council (2023). Accessible at: https://www.falkirk.gov.uk/roads-parking-transport-policies-and-strategies/local-transport-strategy-2023
[16] Falkirk Local Development Plan 2, Falkirk Council (2020). Accessible at: https://www.falkirk.gov.uk/local-development-plan/falkirk-local-development-plan-2
[17] Falkirk Council Plan 2022-2027, Falkirk Council (2022). Accessible at: https://www.falkirk.gov.uk/policies-and-strategies/council-plan-2022-2027
[18] Falkirk Council Climate Change Strategy 2023-2030, Falkirk Council (2023), Accessible at: https://www.falkirk.gov.uk/media/5048f7a6-4b62-4273-a6c0-1e7c33062161



Greenspace Initiatives

Falkirk Council signed up to the Central Scotland Green Network (CSGN), Europe's largest greenspace initiative, to transform Central Scotland into a place where the environment adds value to the economy. We aim to link the CSGN with their policies, strategies and plans, including the Open Space Strategy[19] Falkirk Council have an excellent track record with over 20 years of concerted effort in local green infrastructure creation and enhancement.

Biodiversity

The Biodiversity Action Plan[20] recommends the use of nature-based solutions for carbon sequestration, tackling climate change and improving air quality. Improving and maintaining good air quality can help to safeguard the diversity of local plants, animals and habitats. Enriching the biodiversity of the area can also play a part in providing good air quality.

[19] Falkirk Open Space Strategy, Falkirk Council. Accessible at: https://www.falkirk.gov.uk/environmental-policy/falkirk-open-space-strategy
[20] Second Nature – A Biodiversity Action Plan for the Falkirk Council Area, Falkirk Council (2019). Accessible at: https://www.falkirk.gov.uk/media/cc12cee9-df25-46f7-9f8b-8ec2e2287edf

Energy Efficiency

We are also working to produce a Local Heat and Energy Efficiency Strategy (LHEES)[21] to accelerate the move to net zero carbon and improve energy efficiency in tenanted buildings. This strategy will also include actions that tenants can take to reduce their energy consumption.

Our Strategy

We will:

- Collaborate with Council departments, local institutions and communities to ensure incorporation of air quality issues into future and existing policies;
- Work with the education board to include air quality and environmental issues within school curriculum;
- Continue to highlight the role that air quality plays within climate change and Net Zero policies and plans; and
- Develop and maintain policies and strategies that are aligned with current thinking.

[21] https://www.falkirk.gov.uk/environmental-policy/energy-in-falkirk

5. PLACEMAKING

Our Pledge: Ensure that air quality is a prime consideration for placemaking

Background

Placemaking policy is an important mechanism for improving air quality. Collaborative working on place-based approaches is an effective tool to tackle air pollution locally and to create healthier and more sustainable communities. Strategic planning and development control allows Falkirk Council to deliver long-term sustainable growth whilst at the same time providing a healthy living environment.

The approach to planning and placemaking has developed over recent years, and current guidance focuses on the creation of '20-minute neighbourhoods'. This is a planning concept that aims to provide people with access to the majority of their daily needs within a 20-minute walk, wheel, or cycle of their home. The goal is to encourage people to 'live locally' and give communities better access to the things they need to live well.

Nationally, guidance is available in the form of the National Planning Framework 4[12] (NPF4) and the Local Development Planning Guidance[22]. Other guidance and tools that are used to consider air quality in the context of placemaking include the Place Principle[23], the Place Standard Tool[24] and the Local Living Framework[25].

Provision of open spaces and associated community facilities can improve social interaction within communities, supporting better mental and physical wellbeing. Trees and plants can help to improve air quality by removing particles and gases from the air. About 16% of the Falkirk Council area is buildings and gardens. As well as small remnants of seminatural habitat like woodlands, the built landscape has some uniquely urban habitats. These include man-made structures, parks, churchyards and cemeteries, gardens, allotments, and waste ground.

What We Do

Local Development Plan

The priority of the Local Development Plan (LDP)[16] for Falkirk is to support placemaking to reduce the need to travel, facilitate the live local ambitions and reduce car dependency. The new LDP will be in place at the end of 2027 and will include latest best practice guidance and technological advances. More information is available on how LDP3 will be prepared, including a programme and how we will consult people on the plan.[26]

[22] Local Development Planning Guidance, Scottish Government (2023). Accessible at: https://www.gov.scot/publications/local-development-planning-guidance/
[23] The Place Principle, Scottish Government (2019). Accessible at: https://www.gov.scot/publications/place-principle-introduction/
[24]The online Place Standard Tool, available at: https://www.ourplace.scot/About-Place-Standard
[25] Local Living Framework (Consultation Draft), Scottish Government (2023). Accessible at: https://www.gov.scot/publications/local-living-20-minute-neighbourhoods-planning-guidance/documents/
[26] https://www.falkirk.gov.uk/local-development-plan/falkirk-local-development-plan-3

Infrastructure Planning

The new Denny Eastern Access Road (DEAR) completed in May 2024 is designed to ease congestion in and around Denny Cross which will lead to improvements in air quality, road safety and will better support the local economy with improved access.

The route provides more sustainable transport options in the area providing better walking and cycling opportunities.

Active Travel

Integrated policy in this area will help the Council to achieve a safe and accessible network of sustainable travel options. Sustainable and active travel will be promoted within the Local Development Plan.

Falkirk Council have a separate Active Travel Strategy[27] which focuses on adopting a people-first approach to planning and transport. The vision is to shape communities around people making walking, wheeling or cycling the most popular choice for shorter journeys. Our goal is to make it easier and safer for people to undertake local journeys by walking, wheeling and cycling. We plan to support the development of thriving communities, a growing economy and a sustainable place.

[27] Active Travel Strategy 2023. Accessible at: https://www.falkirk.gov.uk/roads-parking-transport-policies-and-strategies/active-travel-strategy

Local Living

The ’20-minute neighbourhood’, or ‘live-local’ ambitions of the Council are to make walking, wheeling or cycling the most attractive options to move around the local area. As well as the effect of reducing the number of vehicles on the road and thereby improving air quality, this will have beneficial effects on health, social and economic inequalities and climate change.

Transport costs can limit access to services, therefore providing good quality active travel options contributes to an inclusive community and supports the principles of the Just Transition Commission[28].

We have created an interactive tool[29] that allows communities and businesses to judge how well their neighbourhood meets the principles of the 20 Minute Neighbourhood. The tool allows you to find out what local facilities are within a direct distance of a given location such as your home, school or workplace.

[28] https://www.gov.scot/publications/transition-commission-national-mission-fairer-greener-scotland/documents/
[29] https://www.falkirk.gov.uk/planning-policy/20-minute-neighbourhoods

Greenspace

The Council has also published the Biodiversity and Development Supplementary Planning Guidance[30] to provide developers with information on sustainable development, assessment of air quality, and how to mitigate air pollution through appropriate building design, method of construction and choice of heating and energy plant.

Our Strategy

We will:

- Consult with other council departments to ensure air pollution concerns are considered at the early stages of planning;
- Ensure that development proposals are assessed for air quality impacts and appropriate mitigation measures considered;
- Provide guidance to the council planning departments and developers with regards air quality issues; and
- Use best available tools to assess air quality at the planning stage.

[30] https://www.falkirk.gov.uk/environmental-management/biodiversity

6. DATA

Our Pledge: To monitor air pollution and provide high quality data

Background

High quality monitoring data is a vital component of air quality management and serves a number of purposes, including:

- Allowing compliance against air quality standards and health guidelines to be assessed;
- Allowing long-term trends and the effectiveness of policies and interventions to improve air quality to be assessed; and
- Raising public awareness and creating alerts when levels of air pollution are high.

The Environment Act in 1995 required the Government to support local authorities in measuring and improving air quality. This precipitated the development of high-quality local and national monitoring networks which are still used and developed to this day.

Local authorities are required to publish monitoring data as part of their duties under LAQM. This includes an Annual Progress Report, which also describes any changes to monitoring, any improvements or new issues and a summary of new developments that might affect air quality.

Air quality measurements use established reference methods to provide accurate concentrations at areas of interest (using automatic monitoring) and indicative concentrations (using passive diffusion tubes) over wider areas of interest .

Advances in technology allow low-cost sensors to be deployed in areas of concern that may not have previously been accessible. They also present a great opportunity to make a wider range of measurements over a larger geographical area. This can help to pinpoint any local pollution hotspots or to ease the concerns of residents in their local areas.

Traffic data can also be useful to consider in the context of journey planning and provision of travel infrastructure. This data can be used to encourage changes in behaviour that will contribute to improving local air quality.

What We Do

Our Monitoring Network

The air pollution monitoring network is well-established and extensive throughout towns and cities in Scotland.. Full details of monitoring locations and recent and historic pollution data can be found in the LAQM reports[4] and Air Quality in Scotland[31].

Long-term air pollution monitoring is undertaken across the Falkirk Council area using two methods: automatic analysers and passive diffusion tube monitoring. The pollutants NO_2, PM_{10}, $PM_{2.5}$ and SO_2 are monitored using automatic analysers. In 2024, there were nine continuous monitoring sites in operation.

Falkirk Council make this data readily available via the Air Quality in Scotland website which provides access to near real time data, statistical analysis as well as a suite of data analysis tools. The data is also processed and ratified using UK Government guidelines.

Passive diffusion tube samplers are devices which are exposed to the air for a month and then analysed in a laboratory. These samplers measure NO_2 and in 2023 there were 61 monitoring locations in the Falkirk Council area.

[31] https://www.scottishairquality.scot/

1,3-Butadine is also measured at three locations using passive diffusion tubes and Benzene is measured at 16 locations in 2023. This monitoring (along with the measurement of SO_2) is carried out to obtain pollution data from industrial process emissions in Grangemouth.

The locations selected for air quality monitoring are reviewed annually. Locations are chosen following consideration of congestion, idling traffic and high traffic flows as well as sensitive receptors such as hospitals, schools, health centres and nursing homes.

Maintaining and Updating the Network

Falkirk Council keep up to date with new technology by upgrading our analysers when new technology becomes available. This ensures that the analysers continue to be serviceable, parts are available and the reference method is consistent and high quality for the future. Newer analysers provide better data capture and have fewer breakdowns in the longer term.

All automatic monitoring sites have had their communications equipment updated in recent years which have improved the overall data accuracy and data capture rates. We will continue to keep equipment up to date to maintain data accuracy and quality.

The data collected and the rigorous quality assurance regime implemented on said data, provides a sound basis for the development of air quality improvement measures and abatement policy. The data is reviewed regularly as part of the LAQM commitments, to identify any gaps or areas for improvement. Recent LAQM reports prepared by the Council can be found on the Air Quality in Scotland website[4].

Falkirk Council also make use of the latest models to produce data that supplements monitored measurement data. This allows for greater spatial coverage and the relatively quick assessment of sensitive areas across the region without the need for monitoring.

Our Strategy

We will:

- Develop and enhance the capabilities of the monitoring network to better understand air quality in the Falkirk Council area;
- Collect and publish high-quality data, identify trends or gaps;
- Provide the latest measured data online via the Air Quality in Scotland website and App;
- Make available the relevant high-quality data to assist in the develop of policy;
- Continue to work with SEPA to obtain and utilise industrial emissions data to develop policy;
- Stay up to date with the latest monitoring and modelling technology and analysis tools; and
- Collect traffic and transport data to support air pollution mitigation plans.

7. PUBLIC ENGAGEMENT AND BEHAVIOUR CHANGE

Our Pledge: To use public engagement and behaviour change to help improve air quality

Background

Behaviour change is important as it focuses on the prevention of air pollution, giving local people the opportunity to reduce their exposure and tackle pollution before it arises rather than solely concentrating on mitigation measures. Air pollution usually cannot be seen and often the health effects are not immediately felt, individuals are often unaware of their exposure which can make it more difficult to identify ways they can shift their behaviour. This is why it is important to raise awareness of the impacts of air pollution and actions that can be taken to reduce exposure.

Communicating complex scientific data to a general audience can be challenging. By focussing on the health and environmental impacts, rather than facts and figures about concentrations or emissions, the message is more easily understood. Making air quality data more personal by focussing on real world air quality issues and local and personal exposure to pollution is also an effective way to communicate and engage with the public.

In Scotland there are many free resources available for public engagement and education including:

- Learn About Air[32]: a dedicated teaching resource, linked to Scotland's Curriculum for Excellence;
- Air pollution detectives[33]: an interactive resource aimed at primary school children and features information on pollutants and actions that can be taken to improve air quality; and
- Clear the Air[34]: an educational resource for secondary school pupils to find out about air pollution, use the emissions calculator, or sign up to the Citizen Science project to get involved in understanding how air pollution is measured in the local area.
- Air Quality in Scotland website[31]: check the pollution forecast in your local area and protect yourself by avoiding pollution hotspots.

[32] http://www.learnaboutair.com/
[33] https://children.scottishairquality.scot/
[34] https://cleartheair.scottishairquality.scot/

What We Do

Raising Awareness

Raising awareness about air pollution and providing information on how to reduce exposure to air pollution is a priority for Falkirk Council. A wide range of actions are being taken to protect public health in the Falkirk Council area. Clean Air Day is the UK's largest air pollution campaign and has become a successful platform in raising awareness of air quality in schools across Scotland. Each year focuses on a different theme and helps improve public understanding and increase participation in pollution-reducing behaviours. Falkirk Council plan to develop their engagement with local schools promoting Clean Air Day and working closer with the transport planning and climate change departments.

Sustainable and Active Travel

The Council uses and will continue to use a wide range of measures to engage the local community and encourage journeys made by active and sustainable modes of transport such as cycling and walking. Falkirk Council installed the Abbotshaugh bridge in 2018 to connect the communities of Carron, Carronshore, Langlees and Bainsford to the Helix Park and neighbouring communities. A bespoke cycling and pedestrian bridge was proposed to connect the path network on either side of the River Carron and encourage people to be more active.

The number of people walking and cycling continues to increase across the region. There are many organisations that support this including Sustrans[35] and Love to Ride[36]. Bikeability is a behaviour change initiative run by the Council aimed at encouraging walking and wheeling for residents of all ages. Bespoke Trails have been set up to encourage people to explore their local area. A series of sculptures have been placed throughout the village of Maddiston and through the parks and pathways of Larbert and Stenhousemuir area.

Take the Right Route is a campaign to promote walking, cycling, car sharing and the use of public transport for all journeys but particularly short everyday journeys. This campaign covers a range of projects across the district. Behaviour change projects through Take the Right Route include:

- Public events providing active and sustainable travel advice and support, such as Green Travel Maps, pedometers, bike repair kits and water bottles.
- Area-wide advertising, using billboards, bus shelters, radio adverts, bus wraps and social media messaging to highlight the benefits of active and sustainable travel.
- Implementing walking and cycling signage to enable path users to navigate the walking and cycling network more comfortably.
- Incentivised active and sustainable travel journeys through the BetterPoints app. This app enabled users to log their journeys to gain points that could be redeemed for rewards such as free coffee, bus tickets and retail discounts.
- Providing resources to enable journey planning to be delivered in businesses throughout the Falkirk Council area.
- The Kelpies to Kick Off walks saw 300 participants walk 3km or 5km around the beautiful Helix Park and the iconic Kelpies sculptures.

[35] https://www.sustrans.org.uk/
[36] https://www.lovetoride.net/uk

Our Strategy

We will:

- Continue promoting and raising public awareness and understanding of local air quality issues;
- Produce and implement educational initiatives that focus on behavioural change at Primary School level;
- Produce programmes and initiatives that enables local residents to get involved in contributing to air quality improvements;
- Improve Infrastructure so that cycling and walking is more attractive to locals and visitors;
- Continue to support the development of the electric vehicle infrastructure throughout the Falkirk Council area;
- Promote sustainable travel (walking, cycling and public transport) over the use of cars; and
- Promote and organise educational events around air quality.

8. INDUSTRIAL

Our Pledge: To control and reduce air pollution from industrial sources

Background

Falkirk has a diverse economy with a range of sectors, including a large number of industrial sites. The area has a history as the location of substantial industry with numerous former coal and shale mines alongside sites previously occupied by manufacturing of every kind. Industrial processes have historically had a major influence on air quality.

The Grangemouth area encompasses a number of operators focused on fuel production through oil refining as well as chemicals and pharmaceuticals manufacturing, with a cohort of many smaller businesses co-located nearby. There are also ongoing port and logistics operations in the area in connection with Forth Ports Grangemouth, and international shipping port and Scotland's largest container terminal port.

What We Do

Falkirk Council works closely with SEPA to assist in the regulation of industrial operations to control emissions to air. Regulations require industry to meet environmental performance standards, including emission limit values (ELVs), and data is collected from regulated sites to ensure compliance. The requirement for a permit to operate depends upon the size of the plant, and how often they are used.

SEPA carries out permitting and compliance action throughout Scotland. Before an industrial site can operate, it must obtain an environmental permit from SEPA, which sets out air quality standards under the Industrial Emissions Directive.

Reducing Industrial Emissions

SO_2 is produced as a by-product of refining oil in Grangemouth and from shipping operations at the port. Over recent years, the air quality in the Grangemouth area has improved and is consistently meeting the required standards for sulphur dioxide (SO_2) (see Figure 8-1). The site operators along with Falkirk Council and SEPA have been working together to improve emissions in recent years and a number of initiatives and plans have been put in place that have results in the installation of abatement equipment at significant emission points.

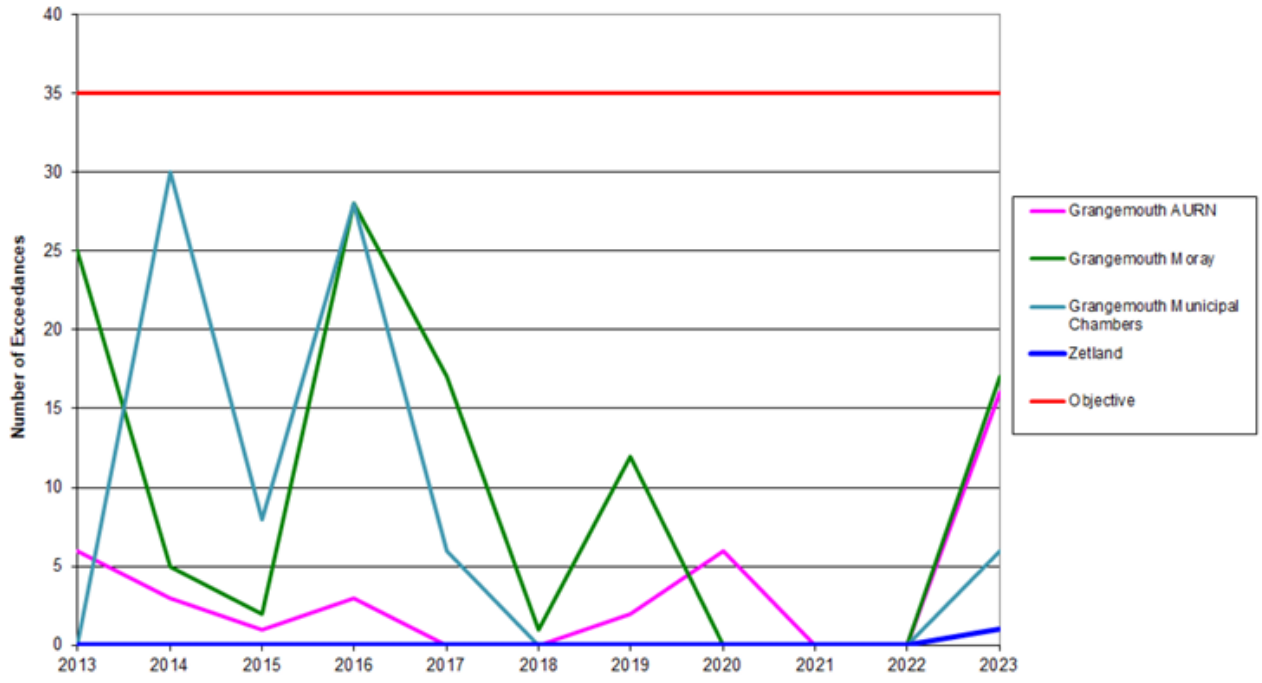


Figure 8-1 - Exceedances of the 15-minute mean SO_2 Objective at the Grangemouth monitoring sites 2013-2023

Circular Economy

Waste-to-energy plants burn waste to produce steam, which is then used to power an electric generator turbine. This process reduces the need for landfill and creates resources that can be used to generate electricity and heat. There are two located in the Falkirk Council area.

The Avondale facility is located at Lathallan near Polmont and uses the latest technology to recycle and recover materials from waste. The facility separates and recovers materials like wood, metal, plastics, and aggregates. Any remaining waste is prepared into a fuel and used to generate energy

The Earls Gate Energy Centre in Grangemouth converts an average of 2,000 tonnes of waste a month into electricity. The process enables energy to be extracted from materials at very high temperatures and allows any metals present to be recovered and recycled.

Although not strictly combating air pollution, these site helps the Council fulfil their commitment to supporting a circular and sustainable economy whilst maintaining strict controls on industrial sites. The Council's Climate Emergency Action Plan (CEAP)[37] highlights the actions the role of the council's Waste to Energy contracts in reducing in CO_2 emissions. This contract has replaced landfill with safe incineration to convert residual waste into energy, reducing emissions by approximately 95%.

Our Strategy

We will:

- Continue to work closely with the Scottish Environment Protection Agency in the regulation of local industrial processes that emit emissions of air pollution;
- Communicate with SEPA on industrial emission sources and pollution events using set procedures;
- Engage and educate local industry on the control of emissions to air and the relevant legislation and latest best practice guidelines; and
- Provide local residents a pathway to raise their air quality concerns and communicate the work carry out by the council to tackle these concerns.

[37] https://www.falkirk.gov.uk/coins/viewDoc.asp?c=e%97%9Dc%92r%82%88

9. NON-TRANSPORT EMISSIONS (DOMESTIC COMBUSTION)

Our Pledge: To improve air pollution from domestic combustion sources

Background

Whilst road transport and industrial emissions remain the issue of most concern in the Falkirk Council area there is now a requirement for a greater focus on other sources most notably domestic combustion.

Domestic combustion, in the form of household wood stoves or biomass burners, has been growing in popularity as a secondary heat source in Scotland. Burning fuel in this way emits particulate matter, specifically $PM_{2.5}$ as well as NO_2 and sulphur dioxide (SO_2).

There is variability in the magnitude of emissions and the type of pollutants released from burning wood, which makes it difficult to legislate. Local authorities have a certain amount of control over the environmental performance standards for domestic fires, stoves and fuels, however these powers do not capture every source, especially outdoor small scale wood burners.

Additionally, unless located in an AQMA, household wood burners do not require planning permission and it can therefore be difficult for local authorities to calculate the number and location of appliances in their areas. It is important to be able to evaluate the number of appliances in a relatively small urban area because of the cumulative effect of appliance use which contributes to overall emissions.

What We Do

Domestic Combustion and Smoke Control

Falkirk Council receive a large volume of complaints in relation to smoke and odour from domestic biomass sources such as wood burning stoves, open garden bonfires and fire pits. These complaints are thoroughly investigated and advice is provided on smoke control area rules. Smoke Control Areas (SCA) [38] are in place throughout the region, which means it is an offence to emit black smoke from the combustion of fuel from any premises.

Only fuels that are on the list of authorised fuels or 'smokeless' fuels, can be burnt in these areas, unless an 'exempt appliance' is used[39]. Falkirk Council is responsible for enforcing the regulations and for undertaking compliance checks. A specific webpage has been developed for residents to provide guidance on solid fuel appliances such as wood burning stoves[40].

Raising awareness of the air quality impacts associated with household wood burning and instigating behaviour change is key. As well as local guidance there are several UK-wide programmes. Burnright[41] is an educational campaign which provides a range of materials and resources for stove users. Within Scotland, Home Energy Scotland[42] provides advice and support to households considering low-carbon heating for their homes.

Our Strategy

We will:

- Continue to investigate and tackle local air quality issues relating to domestic combustion;
- Provide advice and implement the rules of the Falkirk Council Smoke Control Area;
- Raise awareness of air quality issues associated with domestic combustion;
- Encourage behaviour change using national and local initiatives;
- Work with business and industry within the Falkirk Council area to support educational schemes; and
- Provide a dedicated team to investigate complaints.

[38] https://www.falkirk.gov.uk/environmental-policy/air-quality/smoke-control-areas
[39] https://smokecontrol.defra.gov.uk/fuels.php
[40] https://www.falkirk.gov.uk/environmental-policy/solid-fuel-appliances
[41] https://burnright.co.uk/
[42] https://energysavingtrust.org.uk/scotland/home-energy-scotland

10. TRANSPORT

Our Pledge: To support sustainable travel and provide a transport network that promotes good air quality

Background

Motor vehicles are a major cause of local air quality issues in towns and cities across the UK and this is no different for the Falkirk Council area. High concentrations of pollutants next to busy roads and junctions lead to localised pollution 'hotspots'.

The substantial reduction in air pollution achieved during COVID-19 lockdowns, where road traffic fell significantly, provided evidence of air quality improvements that can be achieved through reduction in traffic. However, the Council understands that these can only be achieved along with sustainable development.

Increasing the accessibility and provision of electric and hydrogen powered vehicles is part of the solution, however actively reducing the use of private vehicles is considered the most effective way to ease congestion and decrease emissions from the transport sector.

What We Do

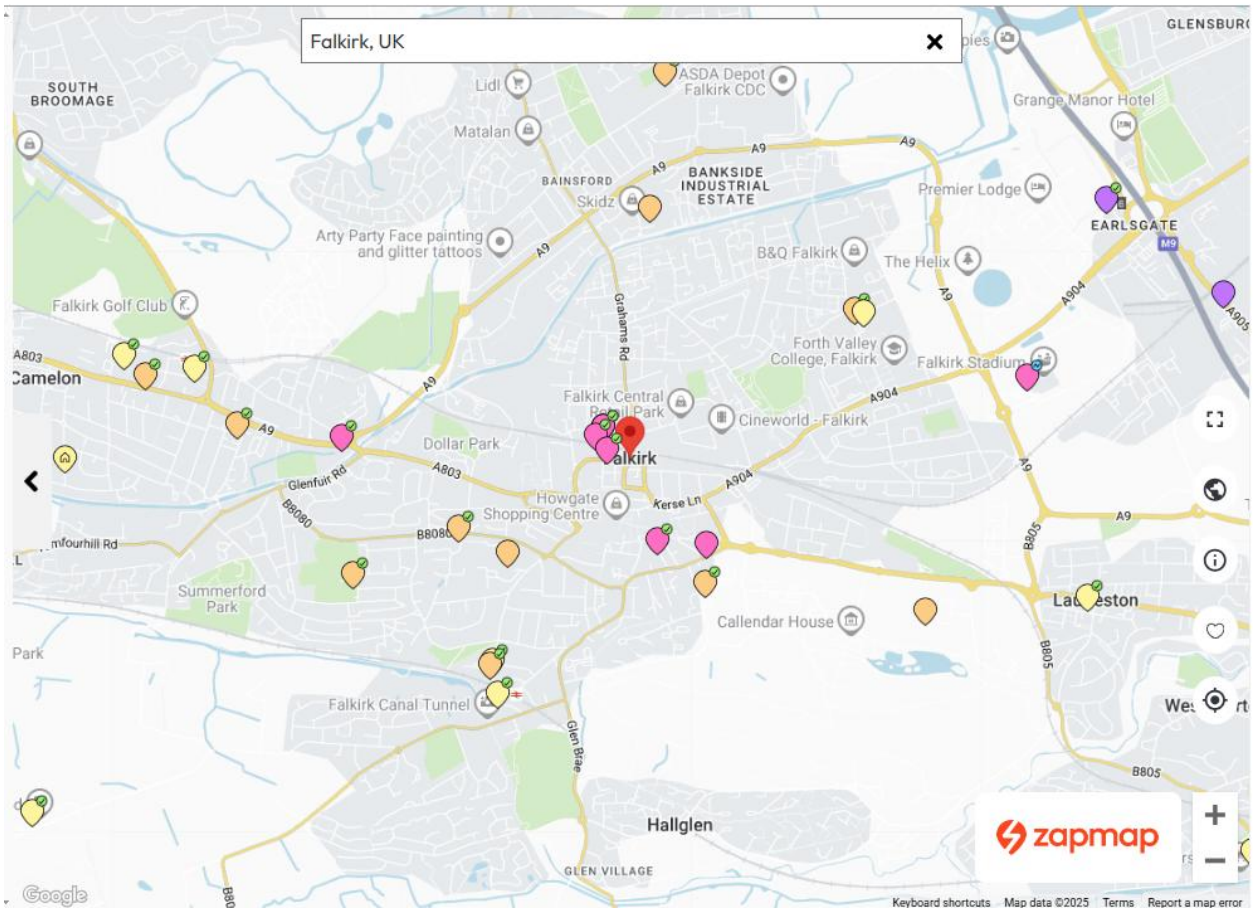
Local Air Quality Management

Due to the actions and abatement measures implemented by Falkirk Council, combined with technological advances prompted by the vehicle Euro emissions standards and other legislation, concentrations of NO_2 and PM_{10} have declined significantly in recent years.

Concentrations have now fallen below AQS objectives, allowing the Council to revoke AQMAs for three areas; Falkirk town centre, Haggs and Banknock. A revocation has been requested for the remaining traffic-related AQMA in Falkirk town centre for exceedances of the NO_2 annual mean as monitoring results continue to comply with the objective.

Tackling Idling Vehicle Engines

The Council take a wide range of actions to reduce emissions from unnecessary vehicle idling and raise awareness amongst drivers to increase support for the Scottish Government's anti-idling policy. Actions include changing of traffic-light timing to minimise congestion and prevent excessive idling, engaging directly with drivers, installing street signs and place signs on lamp posts, and working with local schools .



Electric Vehicles and Charging Infrastructure

The key theme of Falkirk Council's Local Transport Strategy is sustainability and this is achieved in part through leading by example and decarbonising the Council's own vehicle fleet. The Council will continue to increase the proportion of electric, hybrid and other low emission vehicles in their fleet.

Falkirk Council provides over 170 charging bays with varying capabilities, additional bays are planned in various locations. The Falkirk Stadium Vehicle Charging Hub[43] opened in 2020 and allows electric vehicles to park and charge-up. This is a £1.4m facility with charging capacity for 26 vehicles. 30% of the required electricity comes from solar panels covering the area, saving 75 tonnes of carbon a year.

The location of the charge points and their availability can be found via an interactive map on ChargePlace Scotland[44] and on the Zap-Map website[45].

[43] https://www.falkirk.gov.uk/news/article.aspx?aid=6615
[44] https://chargeplacescotland.org/
[45] https://www.zap-map.com/charge-points/falkirk

Active Travel

There are many initiatives to enhance the transport system and encourage active and sustainable travel throughout the region including Take the Right Route, the Active Travel Strategy, Forth Environment Link, Paths for All, Sustrans, Cycling without Age and several walking groups.

Strategic routes have been identified to ensure safer and more accessible walking, wheeling and cycling infrastructure. The Helix path network connects communities via paths for walking, running or cycling. I Bike is a partnership project between Sustrans and local authorities to support schools to embed walking, wheeling and cycling into the curriculum in Scotland. As part of the focus on long term sustainability and behaviour change, I Bike Falkirk has engaged with senior pupils, teachers and school staff on a number of training programmes.

Public Transport

Public transport plays an essential role in reducing single-occupancy car trips and is an integral component of a sustainable transport system. A network of buses, rail and shared mobility will help achieve a more sustainable transport system and reduce carbon emissions.

Falkirk Council have a number of objectives around public transport to help enable sustainable travel choices including working with public transport operators to ensure everyone has access to up-to-date travel information and working with local bus operators to improve connectivity to Grangemouth.

We aim to provide increased investment in street / path lighting on active travel routes, especially when changing transport modes. Enhancing safety is key during the 'first and last mile' where people need to walk, wheel or cycle to the transport hub to improve accessibility.

Combining an optimised local bus service with the Young Persons' (Under 22s) free bus travel scheme introduced by Transport Scotland will improve access to opportunities for the younger population of Falkirk Council area. The Scottish Government estimate almost 45% of the eligible population in Falkirk will claim a travel card[46]. A comparison of public transport use before introduction of the scheme and one year later indicated that car and train use had declined across nearly all journey purposes, while use of the bus and active modes had increased since the introduction of the scheme[47].

Alternative Fuels

Falkirk Council has been proactive in the use of alternative fuels as part of their fleet and freight management. A trial of hydrogenated vegetable oil (HVO) in heavy goods vehicles (HGVs) was successful and 14 refuse collection vehicles and 3 roads vehicles now run on HVO. The fuel is made from cooking and vegetable oils and performs in exceptionally cold environments. HVO is a low carbon, low emission, fossil-free and sustainable alternative to conventional fossil fuels. It is fully interchangeable with conventional diesel and can be mixed at any percentage. Using HVO instead of using traditional fossil fuels such as diesel saves a huge 90% on Falkirk Council's carbon footprint and supports Scotland's Net Zero targets.

[46] https://www.gov.scot/publications/young-persons-under-22s-free-bus-travel-scheme-foi-release/
[47] https://www.transport.gov.scot/publication/year-1-evaluation-young-persons-free-bus-travel-scheme/

Our Strategy

We will:

- Maintain the reductions achieved in NO_2 and PM_{10} concentrations from road traffic;
- Continue to implement existing abatement measures introduced for the previous AQMAs and develop new measures that will achieve further improvements;
- Ensure air quality issues are considered in all transport planning decisions;
- Continue to decarbonise the Council's own fleet;
- Continue to improve the electric car infrastructure;
- Reduce the need to travel by settlement and development planning;
- Promote active and sustainable travel; and
- Increase uptake of public transport by improving accessibility.

11. GOVERNANCE

Our Pledge: To deliver air quality improvements in partnership with the community

Improvements to air quality in Falkirk are the result of the implementation of the air quality action plans developed by the Council in partnership with key stakeholders. We take a collaborative approach in our commitment to reducing air pollution across the Falkirk Council area.

Key stakeholders have confirmed their commitment to supporting the Council in the delivery of this Air Quality Strategy by appending their signatures below. The organisations that we work with to improve air quality are also listed.

Our Strategy

We will:

- Work collaboratively with Council departments to promote and tackle Air Quality issues; and
- Review and update this Air Quality Strategy every five years.

Key Stakeholders in the Air Quality Strategy for Falkirk:

Organisations We Work With:

12. RESOURCES

National:

- Air Quality Management Areas (AQMA) - Air Quality Management Areas (scottishairquality.scot)
- Air quality monitoring data - Measurement and annual statistics | Scottish Air Quality
- Scottish Air Quality Database (SAQD) website - Home page | Scottish Air Quality
- Air pollution email bulletin: You can sign up to receive emails about air pollution in Scotland from the SAQD website.
- Know and Respond app: A free service to subscribers in Scotland that sends registered users an alert message if air pollution in their area is forecast to be moderate, high or very high.
- Air pollution forecasting (X, formerly known as Twitter): Follow @scotairquality for the latest pollution information for Scotland.
- Educational resources:
    - http://www.learnaboutair.com/
    - https://children.scottishairquality.scot/
    - https://cleartheair.scottishairquality.scot/
- Energy saving: https://energysavingtrust.org.uk/scotland/home-energy-scotland
- Scottish Government:
    - Cleaner Air for Scotland 2 (CAFS2): An air quality strategy setting out the Scottish Government's air quality policy framework for the next five years and a series of actions to deliver further air quality improvements.
    - National Transport Strategy 2
    - National Planning Framework 4
    - Update to the Climate Change Plan 2018–2032
- Smoke control:
    - https://smokecontrol.defra.gov.uk/fuels.php
    - https://burnright.co.uk/

- Transport:
    - https://chargeplacescotland.org/
    - https://www.sustrans.org.uk/
    - https://www.lovetoride.net/uk
    - https://www.zap-map.com/charge-points/

Local:

- Falkirk Council's air quality webpages give further details on local air quality and actions being taken to improve pollutant concentrations.
- Falkirk Council 20 Minute Neighbourhoods
- Falkirk Council Active Travel Strategy
- Falkirk Council Biodiversity
- Falkirk Council Climate Change
- Falkirk Council Energy
- Falkirk Council Local Transport Strategy 2023
- Falkirk Council Local Development Plan 2
- Falkirk Council Local Development Plan 3
- The Falkirk Plan 2021 - 2030
- Falkirk Council Smoke Control Area
- Falkirk Council Solid Fuel Appliances (SFA)

13. TECHNICAL GLOSSARY

- **Anthropogenic** or man-made sources such as fuel combustion.
- **Natural sources** such as wind-blown dust.
- **Mobile sources** such as vehicles.
- **Stationary sources** such as chimney stacks.
- **Concentrations** are the levels of pollutants found in ambient air once background concentrations and emissions from various sources have been mixed and transported by atmospheric processes.
- **Primary pollutants** are those emitted directly from the source:
    - **Nitrogen dioxide (NO_2):** In urban areas within the UK, road transport is the main source of poor air quality as it is the principal source of NO_2. This pollutant can cause inflammation of the lungs and over time it can lead to reduced lung function. High levels of NO_2 are also harmful to vegetation and can damage foliage, decrease growth or reduce crop yields.
    - **Sulphur dioxide (SO_2):** SO_2 is a corrosive, acidic gas which is predominantly produced from the combustion of coal or crude oil. Direct exposure to SO_2 is associated with asthma and chronic bronchitis and can lead to irritation and constriction of the airways. SO_2 can combine with other chemicals in the air to form particulate matter (PM), which can also be harmful to health. SO_2 can also combine with water vapor to form acid rain, which can damage ecosystems like forests and freshwater habitats.
    - **Ammonia (NH_3):** The largest source of UK emissions of NH_3 is agriculture. NH_3 is a highly reactive gas and interacts with acids and particulates to form products which are harmful to ecologically sensitive habitats as well as to human health.
    - **Carbon dioxide (CO_2):** CO_2 is produced by the combustion of fossil fuels for energy and contributes to climate change.
    - **Carbon monoxide (CO):** CO is a poisonous gas produced by incomplete, or inefficient, combustion of fuel.
- **Secondary pollutants** are formed when primary pollutants undergo changes in the atmosphere:
    - **Ozone (O_3):** O_3 is a transboundary secondary pollutant formed in the atmosphere when primary pollutants react with sunlight. Harmful to humans and the environment at ground level.

  - **Sulphuric acid (H_2SO_4):** H_2SO_4 and other acids and salts are formed when water and oxygen mix with SO_2 in the atmosphere. These are harmful in their own right as well as contributing to the formation of particulate matter and acid rain.

  - **Suspended particles or particulate matter (PM_{10} and $PM_{2.5}$):** PM is both a primary and a secondary pollutant. PM_{10} and $PM_{2.5}$ are particles with a diameter smaller than 10 or 2.5 µm (1 µm = 1 millionth of a metre or 1 thousandth of a millimetre). These fine particles can enter the lungs and the bloodstream, as we discuss in more detail in Section 6 - Health. They are made up of components such as acids, metals, and dust particles sourced from natural and man-made activity.

- **Annual mean:** The average concentration of a pollutant measured over one year.
- **1-hour mean:** The average concentration of a pollutant measured over one hour.
- **8-hour mean:** The average concentration of a pollutant measured over eight hours.
- **24-hour mean:** The average concentration of a pollutant for a single day.
- **µm:** Micrometer, equal to one millionth of a meter. µg: Microgram, equal to one millionth of a gram.
- **µg/m3:** Microgrammes per cubic metre. A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m3 means that one cubic metre of air contains one microgram of pollutant.
- **Emission:** The release, direct or indirect, of an air pollutant into the atmosphere.
- **Concentration:** The amount of a particular air pollutant in the air.