

Funded via the Carrier Bag Levy by:



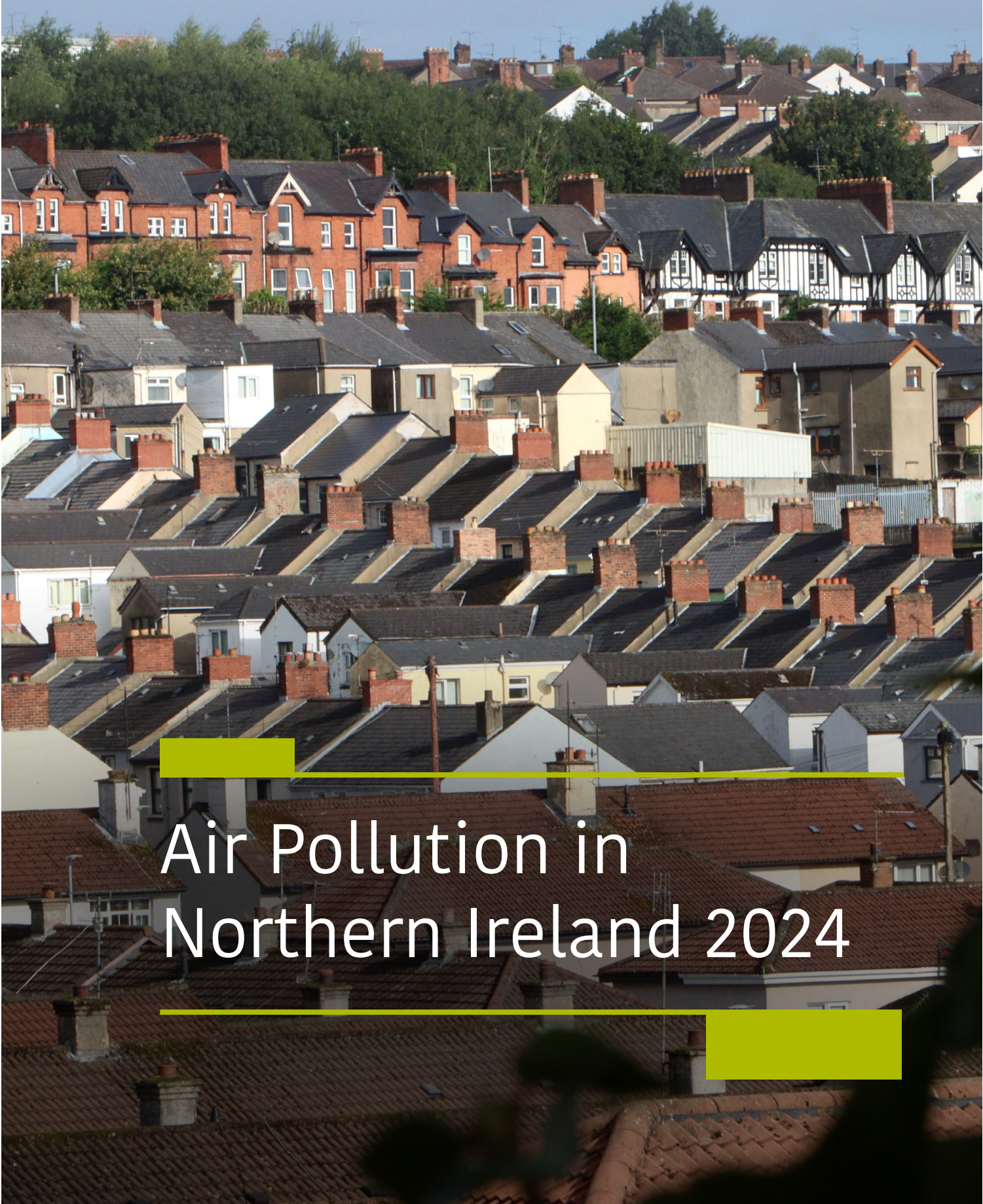
Department of
**Agriculture, Environment
and Rural Affairs**
www.daera-ni.gov.uk

An Roinn

**Talmhaíochta, Comhshaoil
agus Gnóthaí Tuaithe**

Department o'

**Fairmin, Environment
an' Kintra Matthers**



Air Pollution in Northern Ireland 2024



Contents

1. Report Highlights	3
2. Sources of Air Pollution in Northern Ireland	5
3. Legislation and Policy	6
4. Air Quality Monitoring Results for 2024	9
5. Polycyclic Aromatic Hydrocarbons: Changes Over Time and Contribution from Domestic Burning	19
6. Smoke Control Areas	26
7. Where to Find Out More About Air Quality	31

Figures

Figure 1.1: Monitoring sites in Northern Ireland in operation during part or all of 2024	3
Figure 4.1: Annual Mean PM ₁₀ Concentrations, 2024	10
Figure 4.2: Annual Mean PM _{2.5} Concentrations, 2024	11
Figure 4.3: Annual Mean NO ₂ Concentrations, 2024	12
Figure 4.4: Days with Maximum 8-hour mean Ozone Concentrations > 100 µg m ⁻³ for Five Years 2020 to 2024	14
Figure 4.5: Annual Mean Concentrations of Benzo[a]Pyrene, 2024	15
Figure 5.1: Annual Mean B[a]P Concentration as Measured by PAH Sites in Northern Ireland, compared to Network Average and 95% Confidence Interval	20
Figure 5.2: Monthly mean B[a]P Concentrations as measured at PAH Network sites in Northern Ireland, 2024	21
Figure 5.3: Annual Mean Anthracene Concentrations at PAH sites in Northern Ireland, 2021-2024	22

Tables

Table 2.1: Key Pollutants, their Sources and Effects	5
Table 3.1: WHO 2021 Air Quality Guidelines	7
Table 3.2: Air Quality Management Areas in Northern Ireland	8
Table 4.1: Summary of compliance status for pollutants measured in Northern Ireland in 2024	17

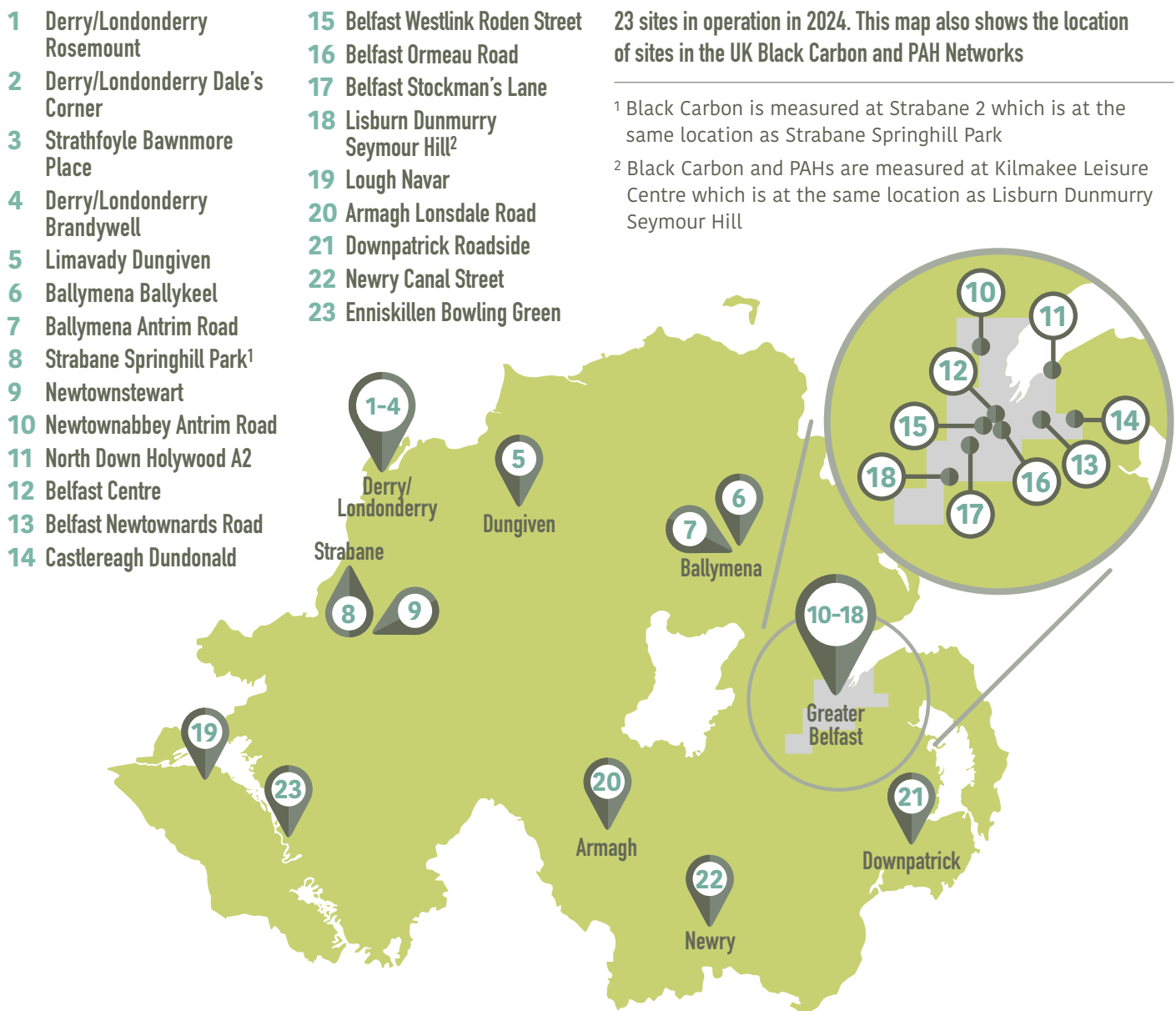
Figure 5.4: Annual Mean B[e]P Concentrations at PAH sites in Northern Ireland, 2021-2024	23
Figure 5.5: Annual Mean Retene Concentrations at PAH sites in Northern Ireland, 2021-2024	23
Figure 5.6: Diurnal, Seasonal and Weekly Variation in Black Carbon (BC) at Sites in Northern Ireland	24
Figure 5.7: Diurnal, Seasonal and Weekly Variation in UV-Absorbing Black Carbon (UV-BC) at Sites in Northern Ireland	25
Figure 6.1: PM _{2.5} emissions from Various Types of Domestic Heating Appliance	27
Figure 6.2: Antrim and Newtownabbey's Interactive Smoke Control Area Map	28
Figure 6.3: Using the Address Look-Up to Check Whether an Address is in an SCA (Antrim and Newtownabbey)	28
Figure 6.4: Lisburn and Castlereagh's Interactive Smoke Control Area Map	29
Figure 6.5: Newry, Mourne and Down's Interactive Smoke Control Area Map	30

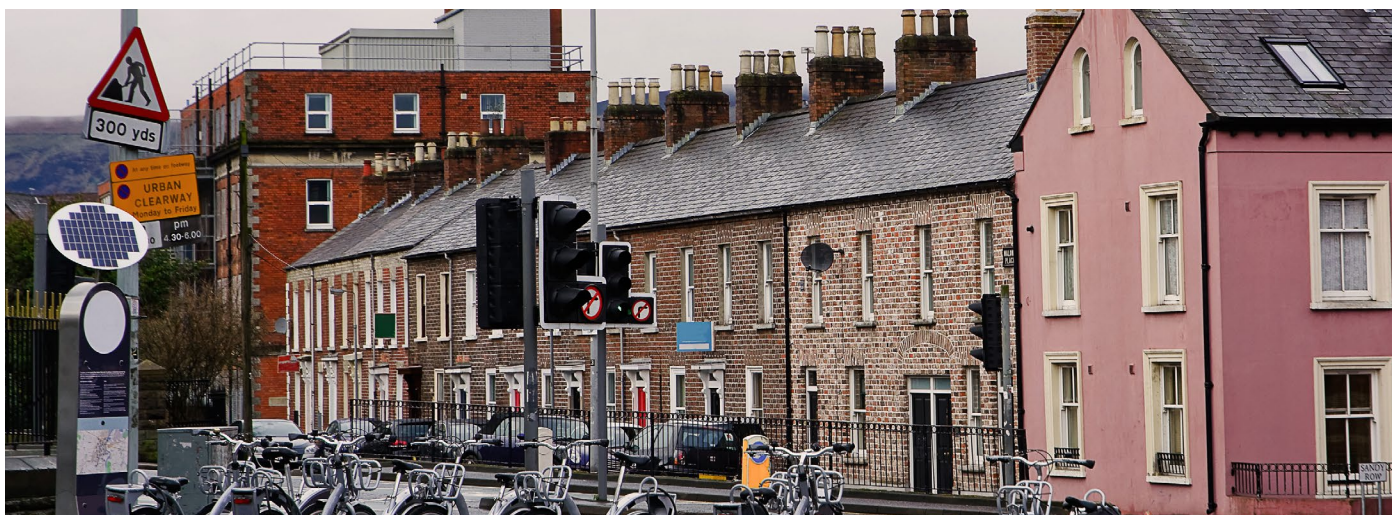
1. Report Highlights

This is the twenty-third in a series of annual reports on air quality in Northern Ireland. It has been written and produced by Ricardo, on behalf of the Department of Agriculture, Environment and Rural Affairs (DAERA).

The key purpose of this report is to summarise air quality monitoring results for Northern Ireland in 2024, to inform the public, government and wider air quality community in Northern Ireland. This report also contains useful information on air quality policy and legislation as well as on the sources of pollution. Figure 1.1 shows the locations of automatic, black carbon and Polycyclic Aromatic Hydrocarbons (PAH) network air quality monitoring sites in Northern Ireland that were in operation during part or all of 2024.

Figure 1.1: Monitoring sites in Northern Ireland in operation during part or all of 2024





Belfast

This report has been compiled using data from Northern Ireland's network of air quality monitoring stations. Some of these (e.g. the Automatic Urban and Rural Network - AURN), are operated on behalf of the Department of Environment, Food and Rural Affairs (Defra) and the Devolved Administrations, while others are managed by district councils, via the Local Air Quality Management framework, for which DAERA provides funding support. An interactive map of the automatic monitoring stations shown in Figure 1.1 can be found on the Northern Ireland Air Quality website at www.airqualityni.co.uk. Information on the sites in Northern Ireland within the Black Carbon, Polycyclic Aromatic Hydrocarbons (PAH), Hydrocarbon, Toxic Organic Micro Pollutants (TOMPs) and Heavy Metals Networks, can be found on the UK-AIR website at <https://uk-air.defra.gov.uk/interactive-map>. These networks are operated by (or on behalf of) Defra and the Devolved Administrations.

This report reviews the pollutants monitored, and highlights compliance as well as exceedances of air quality objectives.

In 2024, Northern Ireland remained compliant with applicable limit values and target values of the Air Quality Standards Regulations (Northern Ireland) 2010 (AQSRNI). They were also compliant

The PAH compound benzo[a]pyrene still exceeds the applicable Air Quality Strategy Objective at some sites in Northern Ireland.

with the corresponding Air Quality Strategy Objectives for all measured pollutants except one – the PAH compound benzo[a]pyrene. This pollutant still exceeds the applicable Air Quality Strategy Objective at some sites in Northern Ireland. Particulate matter (measured as PM₁₀ and PM_{2.5}), ozone and nitrogen dioxide are also still above the more stringent (but non-mandatory) World Health Organization (WHO) guidelines. There is also growing concern regarding particulate pollution and its impact on health. A continued effort to reduce air pollution from all known sources is therefore important, together with monitoring to assess progress and to provide sound, science-based input into policy development.

2. Sources of Air Pollution in Northern Ireland

Table 2.1 below illustrates the most significant air pollutants for our region and provides information on their sources.

Table 2.1: Key pollutants, their sources and effects		
Pollutant	Major Sources	Effects
Nitrogen oxides (NO _x includes NO, NO ₂)	- Domestic and industrial combustion - Energy production - Transport	- Respiratory irritant (i.e. irritates airways and lungs) - Contributes to formation of secondary particulate matter
Sulphur Dioxide (SO ₂)	- Combustion of fuels containing sulphur - Industry - Household heating	- Respiratory irritant - Contributes to formation of acid rain - Contributes to formation of secondary particulate matter
Particulate Matter (PM ₁₀ and PM _{2.5})	- Industrial combustion - Domestic combustion - Road transport - Formation from reactions involving other pollutants e.g. ammonia, SO₂, NO_x	- Inflammation (PM₁₀) - Respiratory irritant - Irritates eyes - Travels into the airways (PM₁₀) or deep into lungs and bloodstream (PM_{2.5})
Ground-level ozone (O ₃)	Secondary pollutant formed by chemical reactions in presence of sunlight	- Respiratory irritant - Irritates eyes
Ammonia (NH ₃)	- Agricultural activities - Waste	Forms fine particles of ammonium sulphate and nitrate
Polycyclic Aromatic Hydrocarbons (PAHs)	Domestic combustion	- Toxic - Carcinogenic

3. Legislation and Policy

During 2024 the management of air quality in Northern Ireland was based on the requirements of the Air Quality Standards Regulations (Northern Ireland) 2010, the 2007 UK Air Quality Strategy (AQS), the Environment Order (NI) 2002, and the Air Quality Regulations (Northern Ireland) 2003.

The Environment (Northern Ireland) Order 2002

Under this legislation, DAERA has a duty to publish an Air Quality Strategy, containing policies for assessment or management of air quality. DAERA currently meets this requirement through the 2007 UK Air Quality Strategy (AQS), but is finalising Northern Ireland's first Clean Air Strategy, driven by the need to protect public health. In autumn 2020, a Discussion Document was issued to public consultation. It invited views on a range of matters relating to air quality and enabled stakeholders to put ideas to DAERA. The consultation closed in spring 2021 and responses were analysed in detail. The Discussion Document and a synopsis of responses can be viewed at: <https://www.daera-ni.gov.uk/consultations/clean-air-strategy-northern-ireland-public-discussion-document> . DAERA is working with the other departments to finalise this important cross-cutting Strategy.

District councils have a duty to review and assess air quality in their areas under Part III of The Environment Order (Northern Ireland) 2002. These Regulations also make provision for DAERA to

provide financial support to the district councils in carrying out an air quality assessment, to review, prepare and implement an action plan, or management of the quality of air. DAERA supports the district councils financially through the Local Air Quality Management Grant.

The Air Quality Regulations (Northern Ireland) 2003

These Regulations set out the air quality objectives to be achieved. The Regulations require district councils to review the quality of air within their area. The reviews have to consider the current and likely future air quality and assess whether the air quality objectives are being met or are likely to be achieved within the relevant period. These Regulations also list a number of other Relevant Authorities in Northern Ireland, with important air quality responsibilities.

The Air Quality Standards Regulations (Northern Ireland) 2010

Ambient air quality in Northern Ireland is regulated by the Air Quality Standards Regulations (Northern Ireland) 2010 and their subsequent 2016 amendment¹. As well as limit values and non-mandatory target values for ambient concentrations of pollutants, the Regulations set out requirements for ambient air quality monitoring, including the number of monitoring sites required, siting criteria and acceptable methodology. They also identify the duties of Northern Ireland's Government Departments in relation to achieving limit and target values. It is the responsibility of DAERA to inform the public about air quality in the region, particularly with regard to warning the public when air quality is poor.

¹ Available at: <https://www.legislation.gov.uk/nisr/2010/188/contents/made>

The Air Quality Provisional Common Framework

The UK Government published the Air Quality Provisional Common Framework² in February 2022. This is a policy paper which explains how the UK Government and the Devolved Administrations propose to work together to develop air quality policy, following the UK's exit from the European Union.

World Health Organization (WHO) Guidelines

The World Health Organization (WHO) publishes guidelines for key pollutants based on the

scientific evidence on the health effects of the pollutants available at the time. The latest version with updated guidelines was issued in 2021³. The WHO also provides interim targets to guide reduction efforts towards the ultimate and timely achievement of its Air Quality Guideline levels. Table 3.1 shows the 2021 WHO Air Quality Guideline levels and interim targets for PM_{2.5} and PM₁₀ particulate matter, ozone (O₃), nitrogen dioxide (NO₂), sulphur dioxide (SO₂) and carbon monoxide (CO). The WHO guidelines are not legally binding but are valuable for providing guidance for future Northern Ireland legislation.

Table 3.1: WHO 2021 Air Quality Guidelines

Pollutant	Averaging Period	2021 WHO Interim Targets				2021 WHO Air Quality Guideline Level
		1	2	3	4	
PM _{2.5} (µg m ⁻³)	Annual	35	25	15	10	5
	24-hour*	75	50	37.5	25	15
PM ₁₀ (µg m ⁻³)	Annual	70	50	30	20	15
	24-hour*	150	100	75	50	45
O ₃ (µg m ⁻³)	Peak season**	100	70	-	-	60
	8-hour*	160	120	-	-	100
NO ₂ (µg m ⁻³)	Annual	40	30	20	-	10
	24-hour*	120	50	-	-	25
SO ₂ (µg m ⁻³)	24-hour*	125	50	-	-	40
CO (mg m ⁻³)	24-hour*	7	-	-	-	4

* measured as the 99th percentile of 24-hour means in a year (equivalent to 3-4 exceedances)

** Average of daily maximum 8-hour mean O₃ concentration in the six consecutive months with the highest six-month running-average O₃ concentration

² The Air Quality Common Framework is available online at <https://www.gov.uk/government/publications/air-quality-provisional-common-framework>

³ World Health Organization. (2021). WHO global air quality guidelines: particulate matter (PM_{2.5} and PM₁₀), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. World Health Organization. <https://www.who.int/publications/item/9789240034228/>

Local Air Quality Management

Local Air Quality Management (LAQM) provides the framework under the Environment Order (NI) 2002, within which air quality is managed by the 11 district councils in Northern Ireland. LAQM requires district councils to review and assess a range of air pollutants against the objectives set by the Air Quality Regulations (Northern Ireland) 2003, using a range of monitoring, modelling, observations and corresponding analyses. For locations where Air Quality Objectives (discussed in section 4) are not expected to be met by the relevant target date, district councils are required

to declare an Air Quality Management Area (AQMA), and (along with relevant authorities), to develop an Action Plan to address the problem. In 2024 there were 19 AQMAs in Northern Ireland, as shown in Table 3.2. Nine councils have AQMAs: of these, seven councils have AQMAs for NO₂ only, and two councils have AQMAs for PM₁₀ and NO₂. There are no AQMAs in place for any other pollutants in Northern Ireland.

District Council reports on air quality can be accessed through the following webpage: <https://www.airqualityni.co.uk/reports/district-council-reports-1> .

Table 3.2: Air Quality Management Areas in Northern Ireland

District Council	Number of AQMAs	Pollutant which triggered designation	Sources
Antrim and Newtownabbey Borough Council	1	Nitrogen Dioxide	Road traffic
Ards and North Down Borough Council	0	-	-
Armagh City, Banbridge and Craigavon Borough Council	1	Nitrogen Dioxide	Road traffic
Belfast City Council	4	Nitrogen Dioxide	Road traffic
Causeway Coast and Glens Borough Council	1	Nitrogen Dioxide	Road traffic
Derry City and Strabane District Council	4	Nitrogen Dioxide	Road traffic
Fermanagh and Omagh District Council	0	-	-
Lisburn City and Castlereagh District Council	1	Nitrogen Dioxide	Road traffic
Mid and East Antrim Borough Council	2	Nitrogen Dioxide (1) and PM ₁₀ (1)	NO ₂ : Road traffic PM ₁₀ : Domestic Heating
Mid Ulster District Council	3	Nitrogen Dioxide	Road traffic
Newry, Mourne and Down District Council	2	Nitrogen Dioxide (1) and PM ₁₀ (1)	Road traffic

4. Air Quality Monitoring Results for 2024

Monitoring in Northern Ireland

A wide range of air quality monitoring is carried out in Northern Ireland. Some monitoring sites are run as part of UK-wide monitoring networks; others are operated by district councils in order to meet local objectives.

The following pollutants were monitored in Northern Ireland during 2024:

- Particulate matter (as PM₁₀, PM_{2.5}, and black carbon);
- Oxides of nitrogen (NO_x), comprising nitric oxide (NO) and nitrogen dioxide (NO₂);
- Ozone (O₃);
- Sulphur dioxide (SO₂);
- Carbon monoxide (CO);
- Benzene;
- Polluting elements – including lead (Pb), arsenic (As), cadmium (Cd) and nickel (Ni);
- Polycyclic Aromatic Hydrocarbons (PAH) including benzo[a]pyrene; and
- Toxic Organic Micro Pollutants (TOMPs).

There were 23 air quality monitoring stations operating in Northern Ireland during part or all of 2024. This included one new site, Enniskillen Bowling Green, which started operation in August 2024, monitoring particulate matter as PM₁₀ and PM_{2.5} at a roadside location.

Each automatic monitoring site is equipped with continuous monitoring equipment for one or more of the pollutants for which automatic methods are used (PM₁₀, PM_{2.5}, black carbon, NO_x, O₃, SO₂ and CO), and/or a non-automatic sampler for PAH. These sites (shown previously in Figure 1.1) provide information on a wide range of pollutants.

Data from the continuous monitoring sites are communicated rapidly to the public via the website www.airqualityni.co.uk and the Northern Ireland Air app, which can be downloaded free of charge from <https://www.airqualityni.co.uk/stay-informed>. Notifications are issued online when levels are forecast to, or reach 'High' levels as defined by the Daily Air Quality Index (see <https://www.airqualityni.co.uk/air-quality/daily-air-quality-index> for an explanation of this Index). Public health alerts are also separately issued via the DAERA/Department of Health Air Aware SMS service. Further information and how to sign up can be found in Section 7 of this report.

Seven automatic monitoring sites (Armagh Lonsdale Road, Ballymena Antrim Road, Ballymena Ballykeel, Belfast Centre, Belfast Stockman's Lane, Derry/Londonderry Rosemount and Lough Navar) are part of the UK's national monitoring network and are used to assess compliance with the Air Quality Standards Regulations (Northern Ireland) 2010. Non-automatic monitoring techniques are used for benzene, metallic pollutants, and PAHs. Some of these measurements are used to assess compliance with the 2010 Regulations and the UK Air Quality Strategy (2007).

The Air Quality Standards Regulations (Northern Ireland) 2010 divide the region into two 'zones' for reporting purposes – the 'Belfast Metropolitan Urban Area' agglomeration (the conurbation of Greater Belfast), and the 'Northern Ireland' zone (the rest of the region). The Regulations then specify how many monitoring sites (or 'stations') are needed in each zone (based on its size and population). Only sites which meet the stringent siting criteria of the Regulations may be used for reporting compliance. The Regulations' siting criteria are different from those used for LAQM: for example, sites located close to major road

junctions are used in LAQM but must not be used for compliance monitoring purposes. There are also different criteria regarding relevant public exposure.

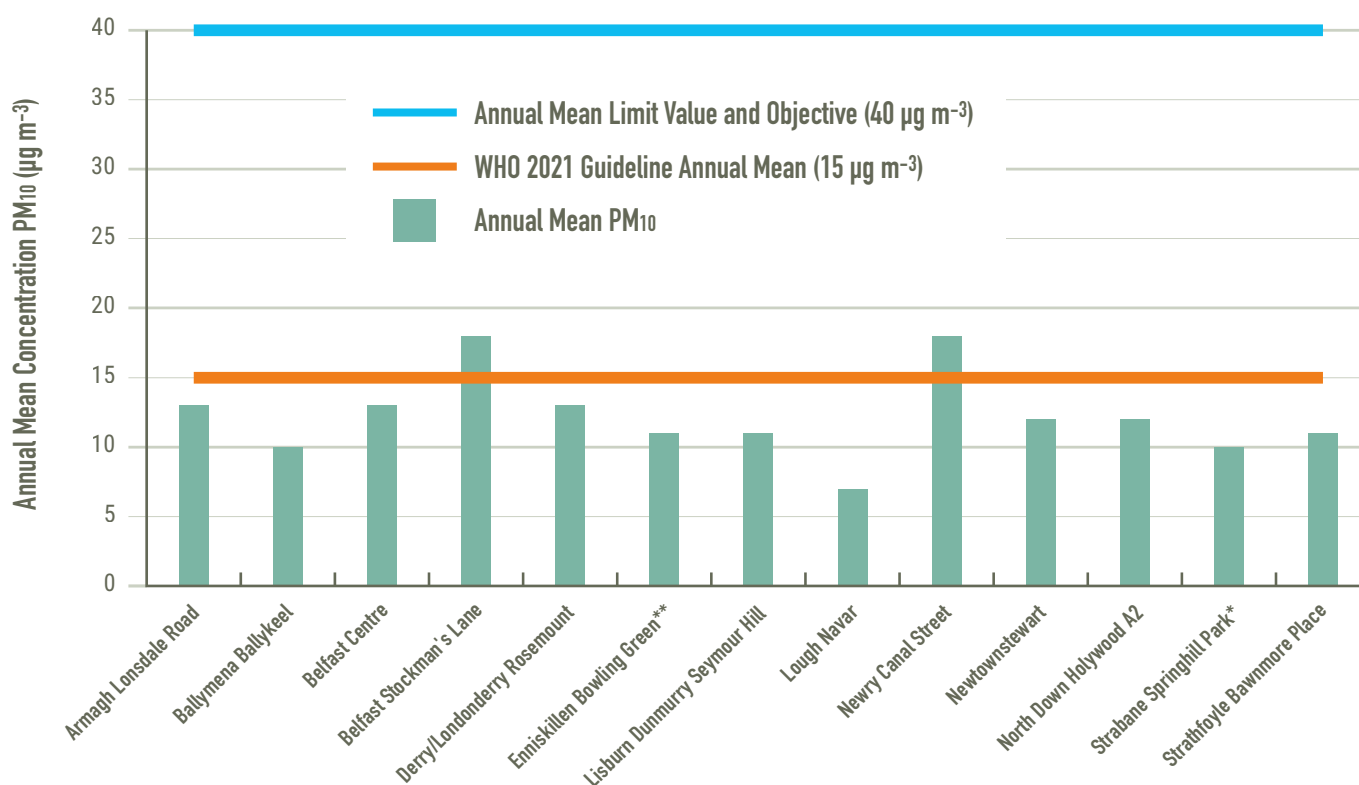
The Air Quality Standards Regulations set limit values, target values and long-term objectives for a range of air pollutants. There are no limit or target values for NO but it is measured along with NO₂ and total NO_x. Measurements of black carbon and TOMPs are carried out for research purposes, to increase our scientific understanding of these pollutants.

Key Results for 2024

This section summarises key monitoring results from 2024, including compliance with Air Quality Standards Regulations limit and target values and the corresponding Air Quality Strategy (AQS) objectives. Further information is provided on the Northern Ireland Air website.

Particulate Matter as PM₁₀ was monitored at 13 locations in 2024, including Enniskillen Bowling Green which started up during the year. Figure 4.1 shows the annual mean PM₁₀ concentrations (as vertical bars), compared with the Air Quality Objective and AQSRNI Annual Mean Limit Value (both 40 µg m⁻³) and WHO annual mean guideline (as horizontal lines). The new Enniskillen Bowling Green site had less than 75% data capture, having started up part way through the year: therefore annualisation has been undertaken to estimate the annual mean, using the procedure set out in the LAQM Technical Guidance, LAQM.TG(22) (Box 7.9)⁴. To perform annualisation, data from two to four nearby continuous background monitors with capture rates greater than 85% should be used to calculate an annualisation factor. In this case, data from Derry/Londonderry Rosemount, Ballymena Ballykeel, Lough Navar and Newtownstewart were used for this purpose.

Figure 4.1: Annual Mean PM₁₀ Concentrations, 2024



* Asterisk indicates sites with < 85% data capture.

** Two asterisks indicate sites with < 75% data capture, and data annualised.

⁴ Local Air Quality Management - Technical Guidance TG(22): Available at <https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/>.

All sites met the limit value and objective of $40 \mu\text{g m}^{-3}$ for annual mean PM_{10} , although two sites (Belfast Stockman's Lane and Newry Canal Street) exceeded the more stringent WHO 2021 guideline of $15 \mu\text{g m}^{-3}$ for annual mean PM_{10} concentrations, in 2024.

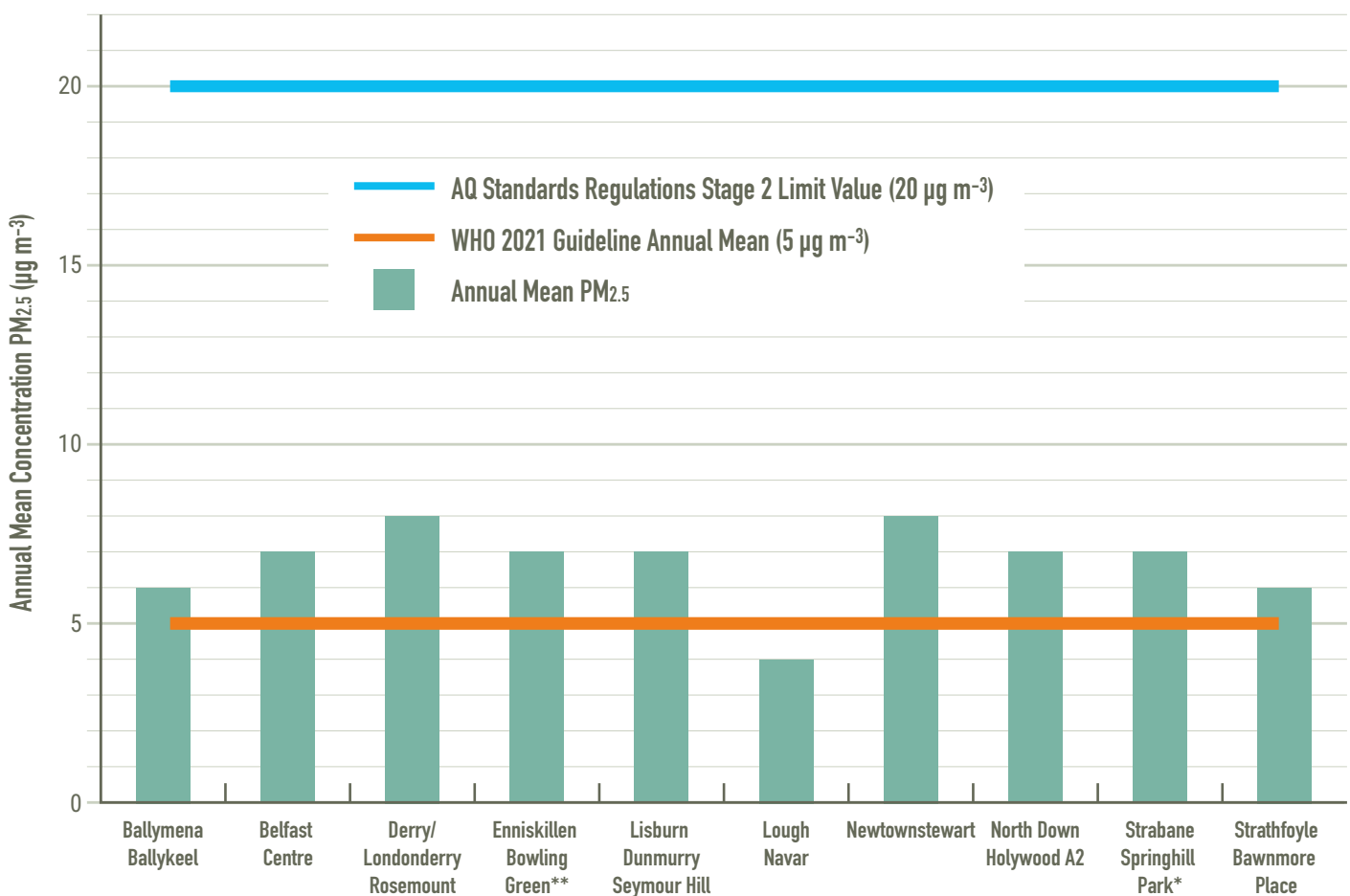
The Air Quality Standards Regulations and AQS Objectives also include a daily mean limit value/objective of $50 \mu\text{g m}^{-3}$, not to be exceeded on more than 35 occasions during the year. All sites were compliant with this limit value and objective: three sites (Belfast Stockman's Lane, Newry Canal Street and Strathfoyle Bawnmore

Place each recorded one daily mean above $50 \mu\text{g m}^{-3}$ and all other sites recorded none).

All sites were also compliant with the WHO 2021 guideline of $45 \mu\text{g m}^{-3}$ for annual 99th percentile of 24-hour mean PM_{10} concentrations.

Particulate matter as $\text{PM}_{2.5}$. Fine particulate matter as $\text{PM}_{2.5}$ was continuously monitored at 10 sites in 2024, including Enniskillen Bowling Green which started up during the year. Figure 4.2 shows the annual mean $\text{PM}_{2.5}$ concentrations for 2024, compared with the Air Quality Standards Regulations Stage 2 limit value and the WHO 2021 guideline.

Figure 4.2: Annual Mean $\text{PM}_{2.5}$ Concentrations, 2024



* Asterisk indicates sites with < 85% data capture.

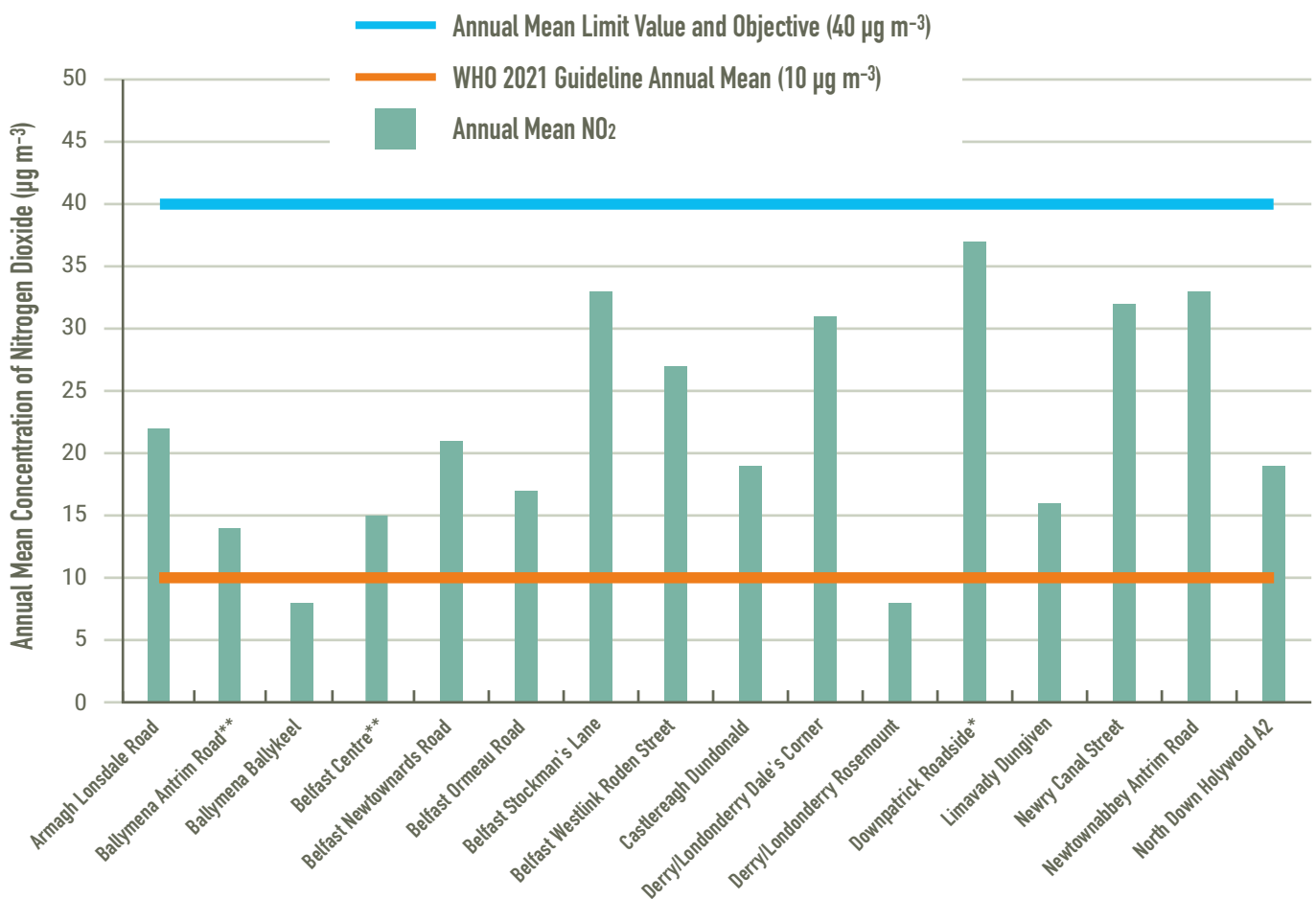
** Two asterisks indicate sites with < 75% data capture, and data annualised.

All sites reported annual mean PM_{2.5} concentrations well below the Air Quality Regulations Stage 2 limit value of 20 µg m⁻³. However, all sites except the rural site at Lough Navar exceeded the 2021 WHO guideline for annual mean PM_{2.5} concentrations (5 µg m⁻³), in 2024. For the new site at Enniskillen Bowling Green, which had less than 75% data capture, annualisation was undertaken following the same procedure as described above for PM₁₀. Data from Derry/Londonderry Rosemount, Ballymena Ballykeel, Lough Navar and Newtownstewart were used for this calculation.

There is also a WHO 2021 guideline of 15 µg m⁻³ for annual 99th percentile of 24-hour mean PM_{2.5} concentrations: all sites except rural Lough Navar exceeded this guideline in 2024.

Nitrogen Dioxide was monitored using automatic analysers at 16 sites during 2024. Figure 4.3 shows the annual mean NO₂ concentrations for all sites (note, these are rounded to the nearest integer). For comparison, Figure 4.3 shows the Air Quality Objective and AQSRNI Annual Mean Limit Value (both 40 µg m⁻³), and the WHO 2021 guideline for annual mean NO₂ (10 µg m⁻³) as horizontal lines.

Figure 4.3: Annual Mean NO₂ Concentrations, 2024



* Asterisk indicates sites with < 85% data capture.

** Two asterisks indicate sites with < 75% data capture, and data annualised.

No sites exceeded the AQS objective for annual mean NO₂ concentration (40 µg m⁻³). However, annual mean NO₂ concentrations were above the WHO 2021 guideline (10 µg m⁻³) at 14 out of 16 sites in 2024: the only two sites that did not exceed the WHO annual mean guideline were Ballymena Ballykeel and Derry/Londonderry Rosemount. Two sites - Belfast Centre and Ballymena Antrim Road - had data capture of less than 75%, and therefore required annualisation for NO₂ using the procedure in Box 7.9 of LAQM.TG(22). In both cases, data from Ballymena Ballykeel and Derry/Londonderry Rosemount were used to carry out the annualisation.

The Air Quality Strategy and Air Quality Standards Regulations also contain an Objective and Limit Value respectively of 200 µg m⁻³ for the hourly mean NO₂ concentration, not to be exceeded more than 18 times per calendar year. No sites in Northern Ireland recorded any hourly means above 200 µg m⁻³ in 2024. Where annual NO₂ data capture is less than 85% (as was the case for Ballymena Antrim Road and Belfast Centre in 2024) the exceedance of the hourly mean objective is judged on whether the 99.8th percentile of hourly values has exceeded 200 µg m⁻³ rather than the actual number of hourly means above the objective. The 99.8th percentile was well below the objective for both Ballymena Antrim Road and Belfast Centre, therefore all sites were compliant with the hourly mean NO₂ objective and Limit Value. All sites were also

compliant with the earlier (2005) WHO guideline of 200 µg m⁻³ for hourly mean NO₂ concentration.

There is also a WHO 2021 guideline of 25 µg m⁻³ for annual 99th percentile of 24-hour mean NO₂ concentrations: all sites except Ballymena Ballykeel exceeded this guideline in 2024.

Ozone was monitored at Belfast Centre, Derry/Londonderry Rosemount, and the rural Lough Navar site. The results are shown in Figure 4.4, and compared with the Air Quality Strategy objective, which is for the maximum daily 8-hour mean not to exceed 100 µg m⁻³ on more than 10 days per year. In 2024, the maximum daily 8-hour mean exceeded 100 µg m⁻³ on one day at Lough Navar and on two days at both Belfast Centre Derry/Londonderry Rosemount. Therefore, all three sites met the AQS Objective in 2024, as well as the less stringent Air Quality Standards Regulations target value, which requires the daily maximum 8-hour running mean not to be more than 120 µg m⁻³ on more than 25 days.

All three sites were compliant with the WHO Guideline of 100 µg m⁻³ for the maximum daily 8-hour mean, but none were compliant with the WHO 'peak season' guideline of 60 µg m⁻³ (for the average of daily maximum 8-hour mean O₃ concentration in the six consecutive months with the highest six-month running-average O₃ concentration).

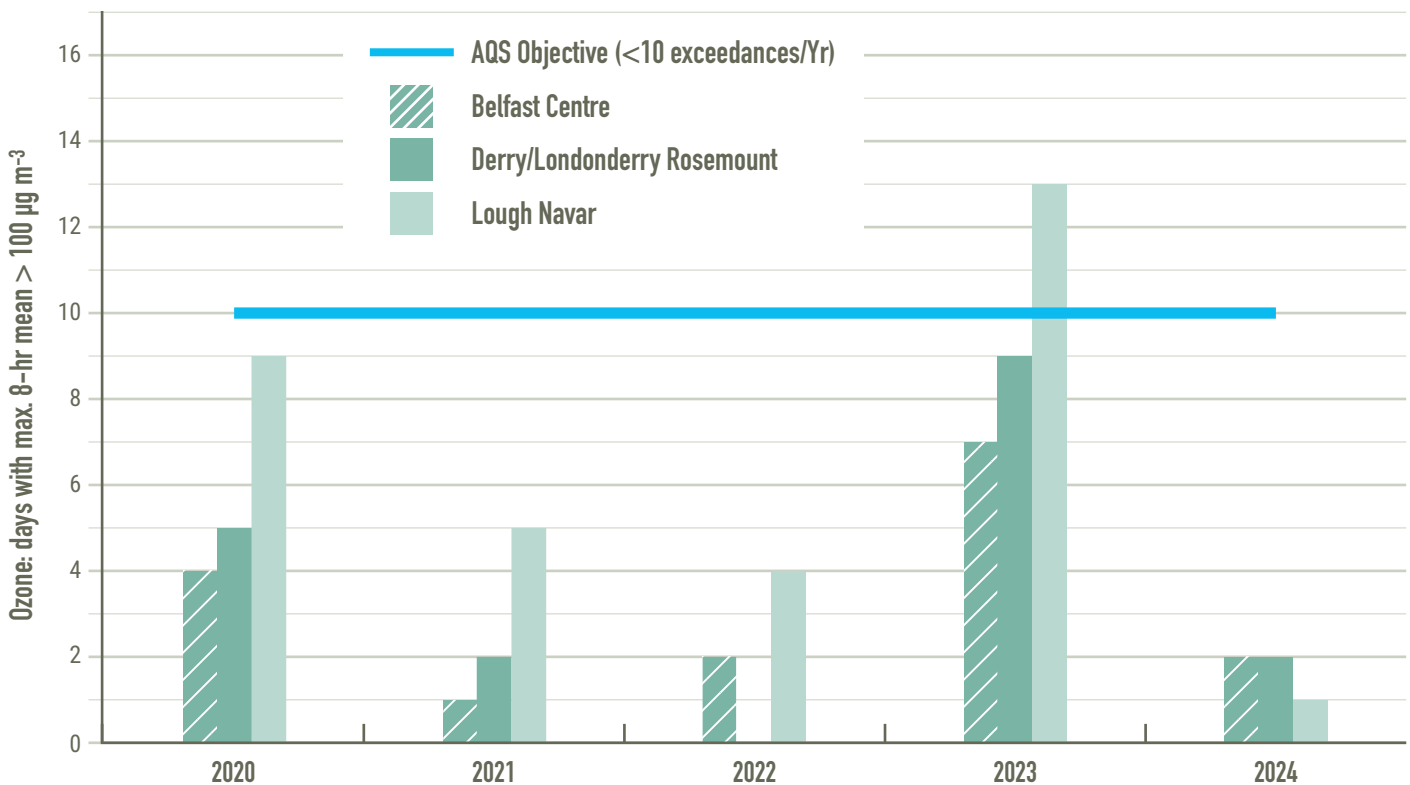


M1 Motorway Southbound Dublin Road Westlink Belfast City

However, concentrations of O_3 in Northern Ireland vary considerably from year to year, with O_3 exceedances in some years but not others. Ozone is formed by reactions involving other pollutants, in the presence of sunlight and heat, and over several

hours. Therefore, the number of O_3 exceedances in any given year depends substantially on weather conditions, with hot, sunny weather favouring O_3 formation. To illustrate this, Figure 4.4 shows O_3 exceedances for the most recent five years.

Figure 4.4: Days with Maximum 8-hour mean Ozone Concentrations $> 100 \mu g m^{-3}$ for Five Years 2020 to 2024



Sulphur Dioxide was monitored at five automatic sites during 2024 (Belfast Centre, Derry/Londonderry Rosemount, Lisburn Dunmurry Seymour Hill, Ballymena Ballykeel and Strabane Springhill Park). All sites met the Regulations limit values for SO_2 (1-hour and 24-hour mean), and the AQS objective for the 15-minute mean.

All sites were also compliant with the WHO 2021 guideline of $40 \mu g m^{-3}$ for annual 99th percentile of 24-hour mean SO_2 concentrations.

Concentrations of SO_2 in Northern Ireland have decreased substantially in recent decades, due to a decrease in reliance on oil and solid fuels for

domestic heating. There has also been a notable reduction in power station emissions due to the introduction of CCGT (Combined Cycle Gas Turbine) plants, which are more efficient than conventional coal and oil power stations and have negligible SO_2 emissions.

Carbon Monoxide was monitored using an automatic instrument at one site – Belfast Centre. The results were well within the Regulations limit value and AQS objective for this pollutant, as they have been for many years. Belfast Centre was also compliant with the WHO 2021 guideline of $4 mg m^{-3}$ for annual 99th percentile of 24-hour mean CO concentrations.

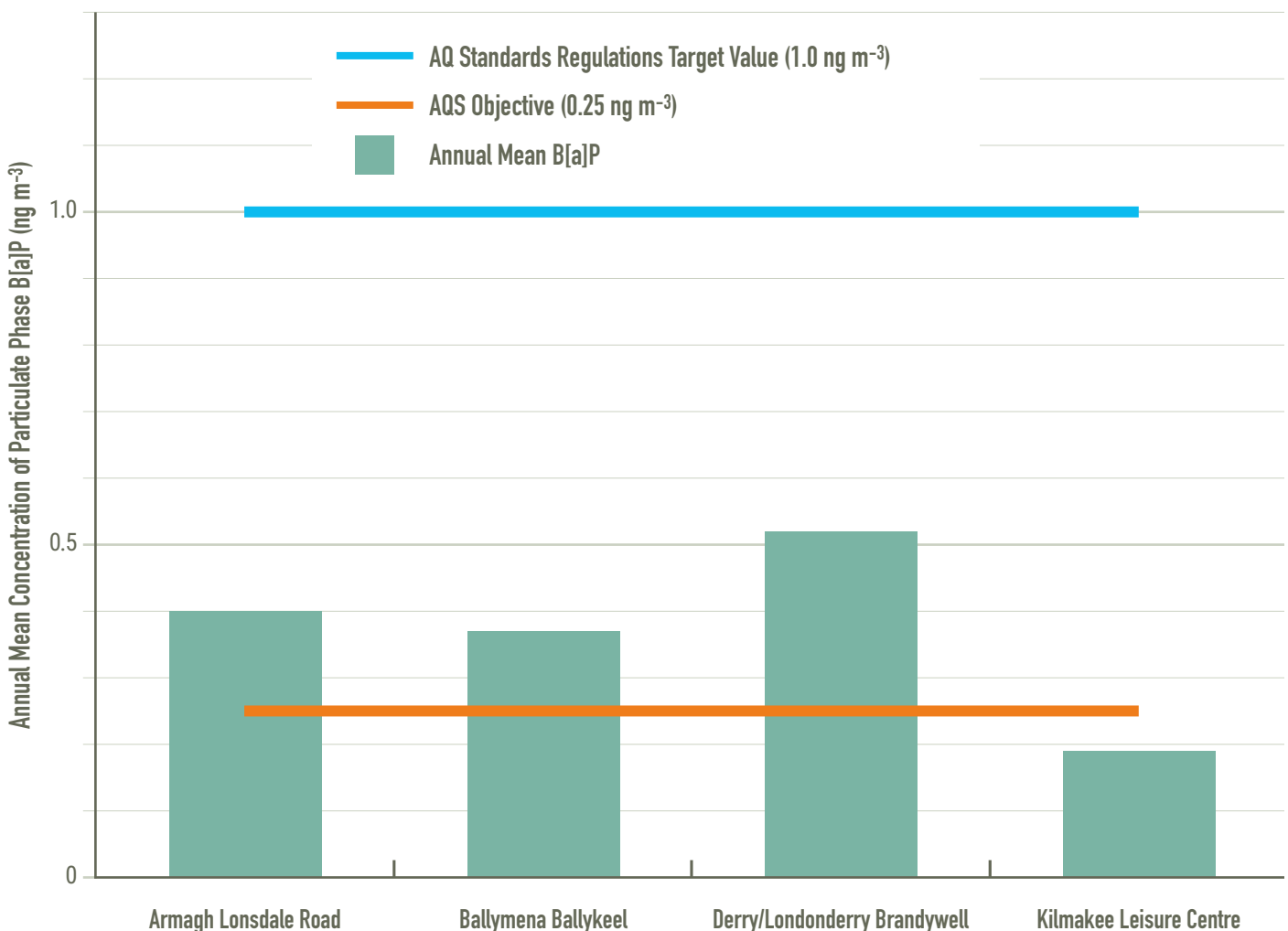
Benzene was monitored at one site, Belfast Centre, which met the Regulations annual mean limit value and AQS objective ($5 \mu\text{g m}^{-3}$ for the annual mean and $3.25 \mu\text{g m}^{-3}$ for the running annual mean respectively) in 2024, as it has done for many years.

Metallic Elements including lead, arsenic, cadmium and nickel – were monitored using non-automatic techniques at Belfast Centre, as part of the Heavy Metals Network. The results for 2024 were within the Regulations annual mean limit value and AQS objective for lead, and within the Regulations annual mean target values for arsenic, cadmium and nickel.

Polycyclic Aromatic Hydrocarbons (PAHs) were monitored at four sites in 2024: Ballymena Ballykeel, Derry/Londonderry Brandywell, Kilmakee

Leisure Centre (in Dunmurry), and Armagh Lonsdale Road. All four are part of the UK PAH Monitoring Network. This network measures a range of PAH compounds, but one species in particular, benzo[a]pyrene (B[a]P), is used as a ‘marker’ for PAH compounds and is the subject of an AQS Objective and Regulations target value. Figure 4.5 shows the annual mean concentrations for 2024. No site exceeded the Regulations target value of 1.0 ng m^{-3} for annual mean B[a]P concentration during 2024 (which was to be met by 31 December 2012). Three sites exceeded the more stringent AQS annual mean objective of 0.25 ng m^{-3} for this PAH species, which was to have been achieved by 31 December 2010: only Kilmakee Leisure Centre achieved this more stringent objective in 2024.

Figure 4.5: Annual Mean Concentrations of Benzo[a]pyrene, 2024





Monitoring station, Armagh Lonsdale Road

Summary

Air Quality Standards Regulations limit values, target values and corresponding AQS objectives have been met for the following pollutants in Northern Ireland:

- Particulate matter as PM₁₀
- Particulate matter as PM_{2.5}
- Nitrogen dioxide
- Ozone
- Sulphur dioxide
- Carbon monoxide
- Benzene
- The elements lead, arsenic, cadmium and nickel

Three of the four sites where benzo[a]pyrene was monitored in 2024 exceeded the AQS annual mean objective of 0.25 ng m⁻³.

Although no sites exceeded the AQS objective for ozone of 100 µg m⁻³ on more than the permitted 10 days in 2024, it is noted that ozone concentrations depend greatly on weather conditions and therefore the number of ozone exceedances varies considerably from year to year.

A summary of compliance status for the pollutants measured in Northern Ireland with the limit values and target values of the Air Quality Standards Regulations, the UK Air Quality Strategy Objectives and the WHO Air Quality Guidelines 2021, is shown in Table 4.1.

Table 4.1: Summary of compliance status for pollutants measured in Northern Ireland in 2024

Pollutant and units	Monitoring sites	Averaging time	Air Quality Standards Regulations (Northern Ireland) Limits/ Targets	AQSRNI Compliance	UK Air Quality Strategy Objective	AQS Objective Compliance	WHO Air Quality Guidelines 2021	WHO AQ Guideline Compliance
PM ₁₀ µg m ⁻³	Armagh Lonsdale Road, Ballymena Ballykeel, Belfast Centre, Belfast Stockman's Lane, Derry/Londonderry Rosemount, Enniskillen Bowling Green (annualised), Lisburn Dunmurry Seymour Hill, Lough Navar, Newry Canal Street, Newtownstewart, North Down Holywood A2, Strabane Springhill Park, Strathfoyle Bawnmore Place	Annual Mean	40	Compliant	40	Compliant	15	Non-compliant at the following sites: Belfast Stockman's Lane and Newry Canal Street
		24-hour	50 (not to be exceeded more than 35 times a year)	Compliant	50 (not to be exceeded more than 35 times a year)	Compliant	45 (99 th percentile of 24-hour means i.e. 3-4 exceedance days/year)	Compliant
PM _{2.5} µg m ⁻³	Ballymena Ballykeel, Belfast Centre, Derry/Londonderry Rosemount, Enniskillen Bowling Green (annualised), Lisburn Dunmurry Seymour Hill, Lough Navar, Newtownstewart, North Down Holywood A2, Strabane Springhill Park, Strathfoyle Bawnmore Place	Annual Mean	25	Compliant	20	Compliant	5	Non-compliant at all sites except Lough Navar
		24-hour	–	–	–	–	15 (99 th percentile of 24-hour means i.e. 3-4 exceedance days/year)	Non-compliant at all sites except Lough Navar
NO ₂ µg m ⁻³	Armagh Lonsdale Road, Ballymena Antrim Road, Ballymena Ballykeel, Belfast Centre, Belfast Newtownards Road, Belfast Ormeau Road, Belfast Stockman's Lane, Belfast Westlink Roden Street, Castlereagh Dundonald, Derry/Londonderry Dale's Corner, Derry/Londonderry Rosemount, Downpatrick Roadside, Limavady Dungiven, Newry Canal Street, Newtownabbey Antrim Road, North Down Holywood A2	Annual Mean	40	Compliant	40	Compliant	10	Non-compliant at all sites except Ballymena Ballykeel and Derry/Londonderry Rosemount
		24-hour	–	–	–	–	25 (99 th percentile of 24-hour means i.e. 3-4 exceedance days/year)	Non-compliant at all sites except Ballymena Ballykeel
		1-hour	200 (not to be exceeded more than 18 times a calendar year)	Compliant	200 (not to be exceeded more than 18 times a calendar year)	Compliant	200 (from previous 2005 guidelines, still valid)	Compliant
O ₃ µg m ⁻³	Derry/Londonderry Rosemount, Lough Navar, Belfast Centre	Peak season mean	–	–	–	–	60 (Avg. of daily max. 8-hour means in the 6 consecutive months with highest 6 month running average concentration)	Non-compliant at all three sites
		Daily maximum 8-hour running mean	120 (not to be exceeded more than 25 times a year, averaged over 3 years)	Compliant	100 (not to be exceeded more than 10 times a year)	Compliant	100 (99 th percentile of 8-hour means)	Compliant

Table 4.1: Summary of compliance status for pollutants measured in Northern Ireland in 2024 - Continued

Pollutant and units	Monitoring sites	Averaging time	Air Quality Standards Regulations (Northern Ireland) Limits/ Targets	AQSRNI Compliance	UK Air Quality Strategy Objective	AQS Objective Compliance	WHO Air Quality Guidelines 2021	WHO AQ Guideline Compliance
SO ₂ µg m ⁻³	Ballymena Ballykeel, Belfast Centre, Derry/Londonderry Rosemount, Strabane Springhill Park	24-hour	125 (not to be exceeded more than 3 times a year)	Compliant	125 (not to be exceeded more than 3 times a year)	Compliant	40 (99 th percentile of 24-hour means)	Compliant
		1-hour	350 (not to be exceeded more than 24 times a year)	Compliant	350 (not to be exceeded more than 24 times a year)	Compliant	–	–
		15-minute	–	–	266 (not to be exceeded more than 35 times a year)	Compliant	–	–
CO mg m ⁻³	Belfast Centre	24-hour	–	–	–	–	4	Compliant
		Daily maximum 8-hour running mean	10	Compliant	10	Compliant	10	Compliant
		1-hour	–	–	–	–	35	Compliant
		15-minute	–	–	–	–	100	Compliant
Benzene µg m ⁻³	Belfast Centre	Annual Mean	5	Compliant	3.25 as max. running annual mean	Compliant	–	–
Pb µg m ⁻³	Belfast Centre	Annual Mean limit value	0.5	Compliant	0.5, 0.25	Compliant	–	–
As ng m ⁻³	Belfast Centre	Annual Mean target value	6	Compliant	–	–	–	–
Cd ng m ⁻³	Belfast Centre	Annual Mean target value	5	Compliant	–	–	–	–
Ni ng m ⁻³	Belfast Centre	Annual Mean target value	20	Compliant	–	–	–	–
Benzo[a]pyrene ng m ⁻³	Armagh Lonsdale Road, Ballymena Ballykeel, Derry/Londonderry Brandywell, Kilmakee Leisure Centre	Annual Mean target value	1	Compliant	0.25	Non-compliant at all sites except Kilmakee Leisure Centre	–	–

5. Polycyclic Aromatic Hydrocarbons: Changes Over Time and Contribution from Domestic Burning

In this section, we look at one group of pollutants: the polycyclic aromatic hydrocarbons (PAHs). These chemical compounds are of concern because they are known to be toxic and carcinogenic. As explained in Section 4, there are numerous PAH compounds, but one, benzo[a]pyrene (B[a]P), is used as a ‘marker’ for PAH and has an AQS Objective and AQSRNI target value.

Domestic burning of solid fuels and oil is a significant source of many pollutants including particulate matter (PM₁₀ and PM_{2.5}), sulphur dioxide (SO₂), oxides of nitrogen (NO and NO₂), black carbon and PAHs. (The amount of pollutant emitted depends on the type of fuel, and also the type of appliance used to burn it.)

In this section we will look at the estimates of B[a]P emission rates and the trends in measured concentrations in Northern Ireland and how they compare with the rest of the UK. We will also review seasonal variation in concentrations and evidence for the contribution to air pollution

in Northern Ireland from domestic solid fuel burning from measurement of specific PAHs and measurements of black carbon concentrations that have been associated with this source.

B[a]P Emission Estimates for Northern Ireland

Emission inventory estimates indicate that the burning of solid fuels is a particularly significant contributor to PAH emissions throughout the UK including in Northern Ireland. The National Atmospheric Emissions Inventory (NAEI) estimated that in 2023, the ‘Residential, Commercial and Public Sector Combustion’ sector (which is dominated by domestic fuel use) accounted for 85.7% of B[a]P emissions in Northern Ireland, and similar percentages for the rest of the UK: (81.6% in England, 88.1% in Scotland and 77.6% in Wales). The NAEI cautions that these B[a]P estimates are experimental statistics, but states that *“the majority of B[a]P emissions in Northern Ireland come from residential combustion practices, primarily from the combustion of solid fossil fuels, particularly smokeless solid fuels.”*⁵

Changes Over Time

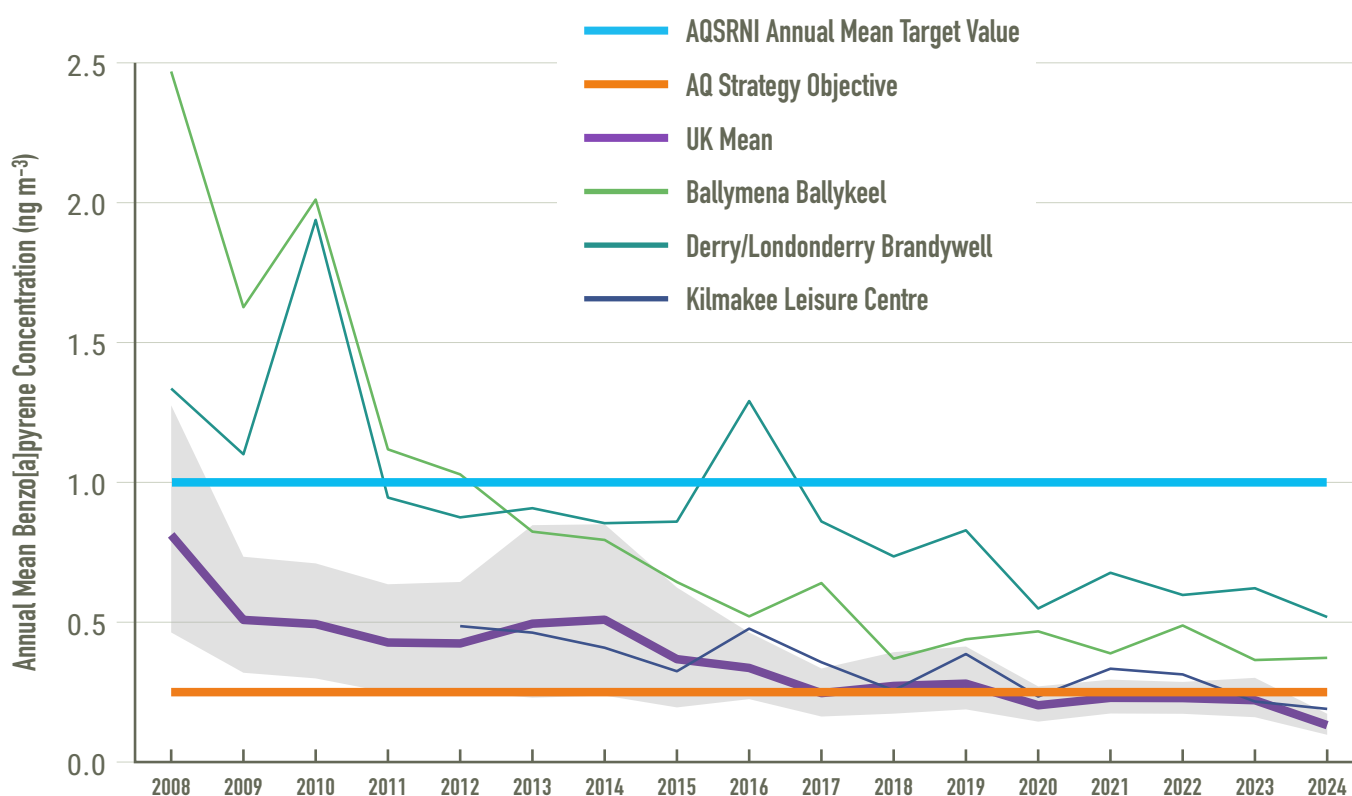
PAHs are monitored at four sites in Northern Ireland: Armagh Lonsdale Road (an urban traffic, i.e. roadside, site), Ballymena Ballykeel, Derry/Londonderry Brandywell and Kilmakee Leisure Centre in Dunmurry (all urban background sites). All four sites are in generally residential surroundings and none are in smoke control areas.

⁵ Air Pollutant Inventories for England, Scotland, Wales, and Northern Ireland: 2005-2022. Available at https://naei.energysecurity.gov.uk/sites/default/files/2024-10/DA_Air_Pollutant_Inventories_2005-2022.pdf

Figure 5.1 shows how measured annual mean concentrations of B[a]P at these monitoring sites have changed over the years since 2008 when measurement using the current monitoring methods commenced, and how they compare with the average of all UK PAH monitoring network sites. (Armagh Lonsdale Road is excluded as it only started monitoring PAH in 2022.) The UK average (mean of all sites in the whole network) is shown by the purple line, with the grey shaded area either side of it indicating the 95% confidence interval of the mean. The 95% confidence interval is included

to give an indication of how much the individual UK sites' annual means vary in any given year. There is considerable variation between monitoring sites in the PAH network, due to the range of different site types making up the network. The PAH network includes rural background areas, urban industrial areas, urban residential areas with a lot of solid fuel use, as well as more typical roadside and urban background sites. This grey shaded area has narrowed considerably over the years since 2008, as the spread of measured concentrations has decreased.

Figure 5.1: Annual Mean B[a]P Concentration as Measured by PAH Sites in Northern Ireland, compared to Network Average and 95% Confidence Interval



Measured annual mean B[a]P concentrations at Derry/Londonderry Brandywell and Ballymena Ballykeel have historically been amongst the highest in the PAH network, and have remained so in recent years, despite an overall decrease and convergence with the network mean. By contrast, annual mean B[a]P concentrations at Kilmakee

Leisure Centre have been much lower, closer to the PAH network UK mean and decreasing at approximately the same rate. These trends likely reflect the mix of domestic fuels used in the surroundings of the monitoring sites, and how these have changed over time.

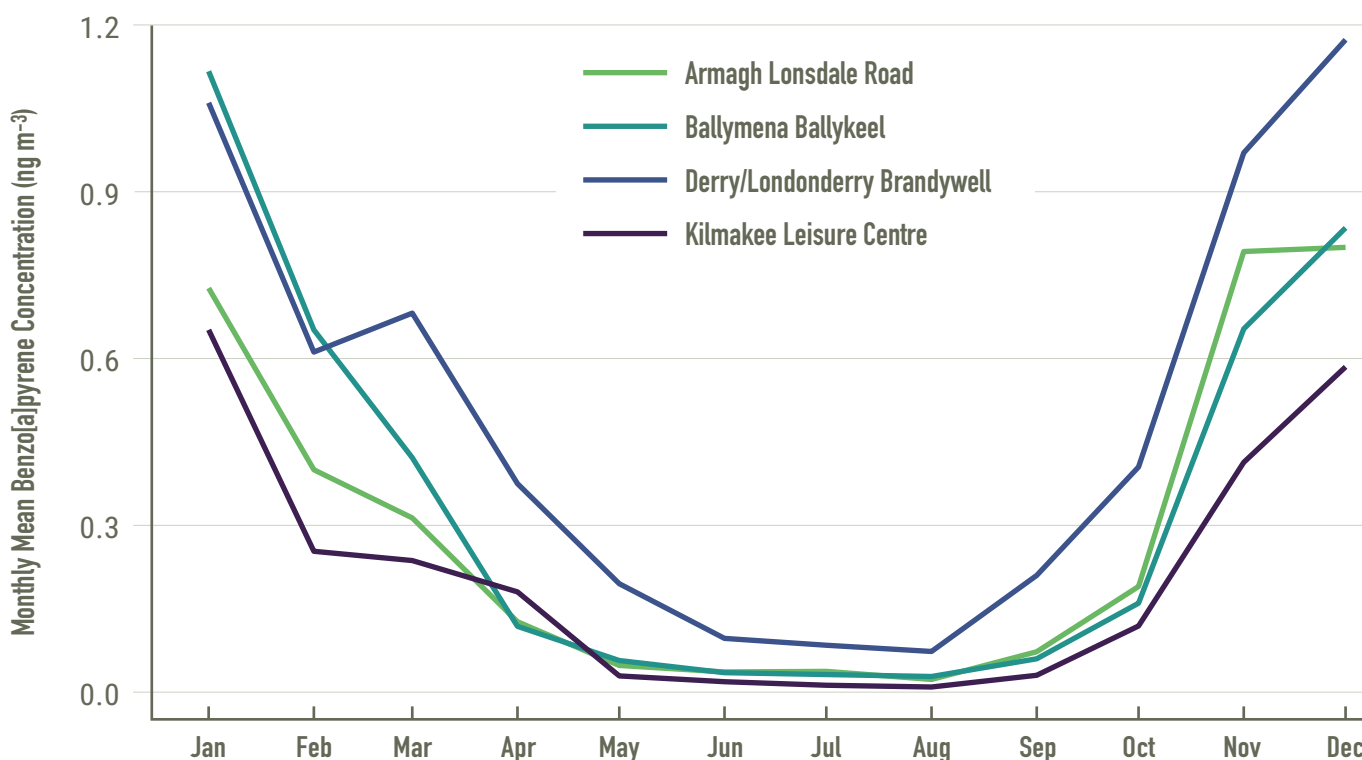
Seasonal variation in measured B[a]P concentrations

It is also interesting to look at seasonal variation in measured B[a]P concentrations. Figure 5.2 shows average monthly concentrations of B[a]P measured in Northern Ireland during 2024 at the four PAH sites.

There is a strong seasonal pattern for B[a]P, with highest concentrations measured during

the winter months, when domestic fuel burning is greatest. Also, periods of cold, still, winter weather can cause periods of poor air quality, as local emissions are not dispersed. The seasonal changes in concentrations are very similar at the background and roadside sites. This is consistent with the emission inventory estimates that domestic burning is a more important source of B[a]P than road transport.

Figure 5.2: Monthly mean B[a]P Concentrations as measured at PAH Network sites in Northern Ireland, 2024



Measurements of PAHs Associated with Wood Burning

In recent years there has also been increased focus on domestic wood burning stoves as a source of air pollution. Use of these has become more widespread, usually as an additional,

rather than main, heating source. Many PAH compounds have been identified as associated with wood burning^{6,7,8}: these include B[a]P as well as anthracene, benzo[b]fluoranthene, benzo[e]pyrene (B[e]P), phenanthrene and retene (the latter reportedly associated with burning

⁶ Bari M. A. et al, 'Characterisation of particulates and carcinogenic polycyclic aromatic hydrocarbons in wintertime wood-fired heating in residential areas'. Atmospheric Environment Volume 45, Issue 40, December 2011, Pages 7627-7634.

⁷ Dvorská, A. et al, 'Use of diagnostic ratios for studying source apportionment and reactivity of ambient polycyclic aromatic hydrocarbons over Central Europe.' Atmospheric Environment Volume 45, Issue 2, January 2011, Pages 420-427.

⁸ Hays, M.D. et al 'Polycyclic aromatic hydrocarbon size distributions in aerosols from appliances of residential wood combustion as determined by direct thermal desorption–GC/MS' Aerosol Science 34 (2003) 1061 – 1084.

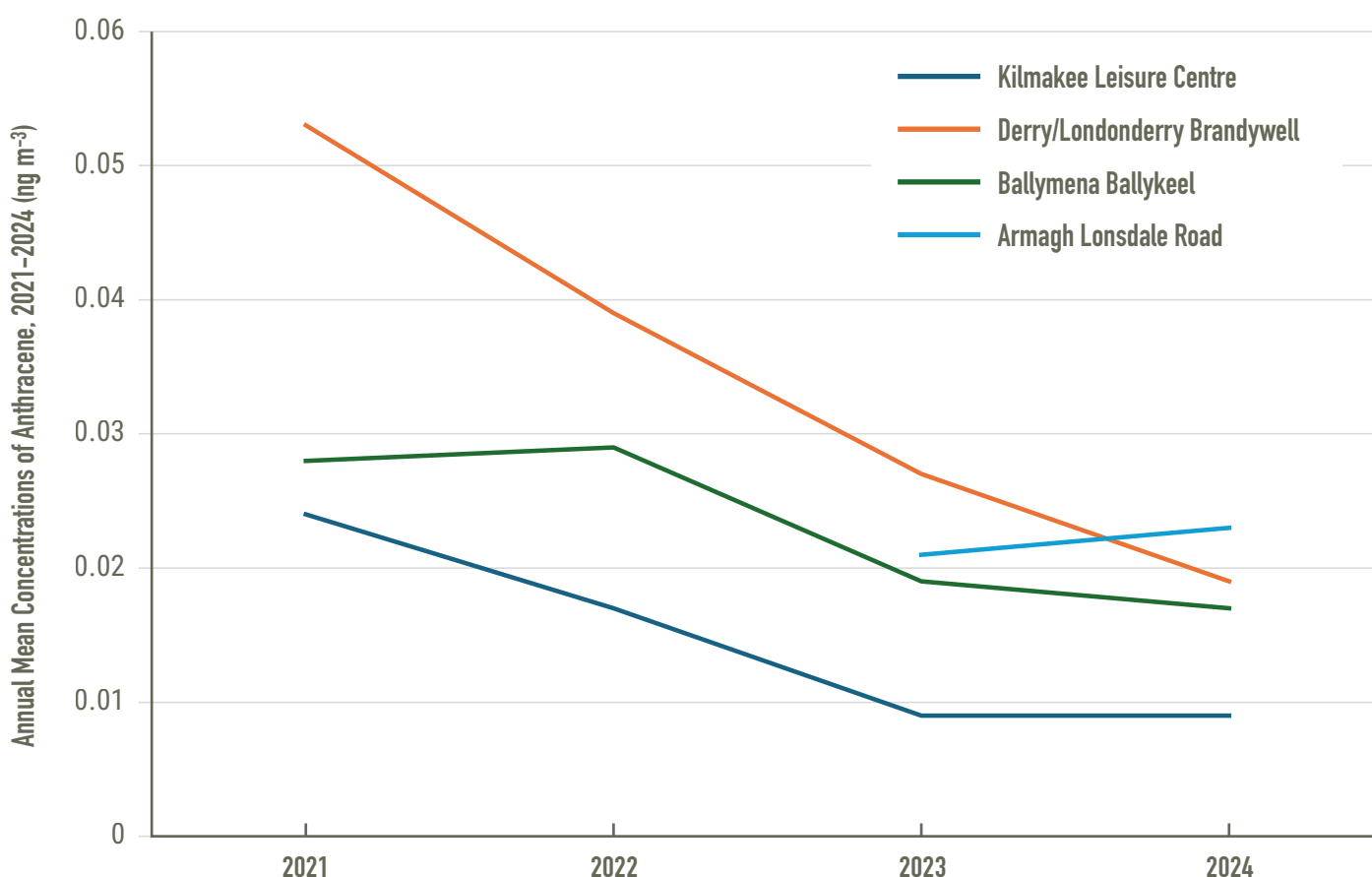
of softwood⁹). It should be noted that these compounds have other sources as well as wood burning. Conclusions on which are most strongly associated with wood burning vary, and there is evidence that emissions depend on the type of wood and the appliance used to burn it⁸. The above-mentioned PAH compounds are included in the suite of compounds measured by the PAH network although anthracene and retene have only been measured since 2021. Anthracene, B[e]P and retene have been selected as examples here. Figure 5.3, Figure 5.4 and Figure 5.5 show how annual mean concentrations of anthracene, B[e]P and retene measured by the PAH Network at the sites in Northern Ireland have changed over this period. (Armagh Lonsdale

Road is shown only for 2023 and 2024: it started monitoring these pollutants in 2022 but data capture for that year was low).

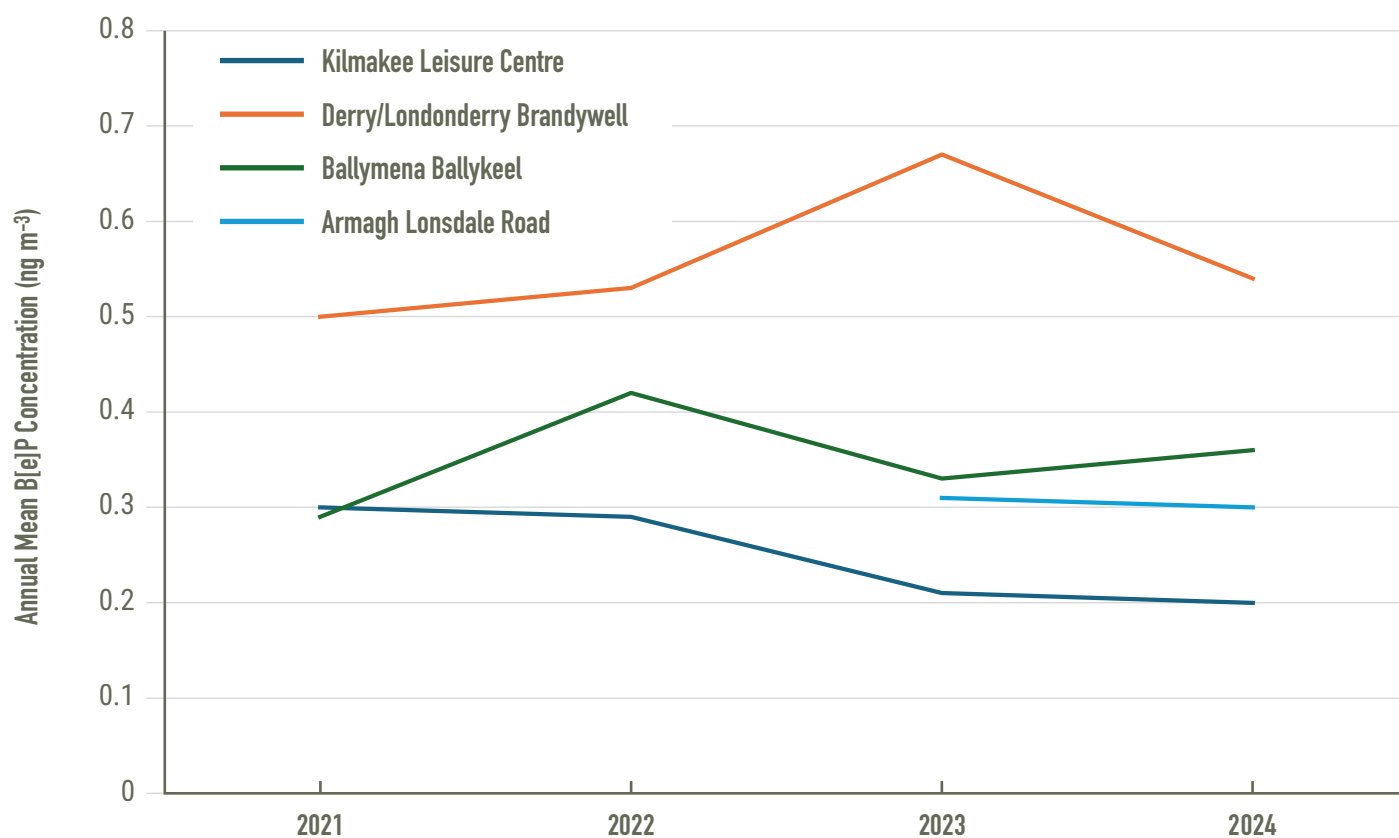
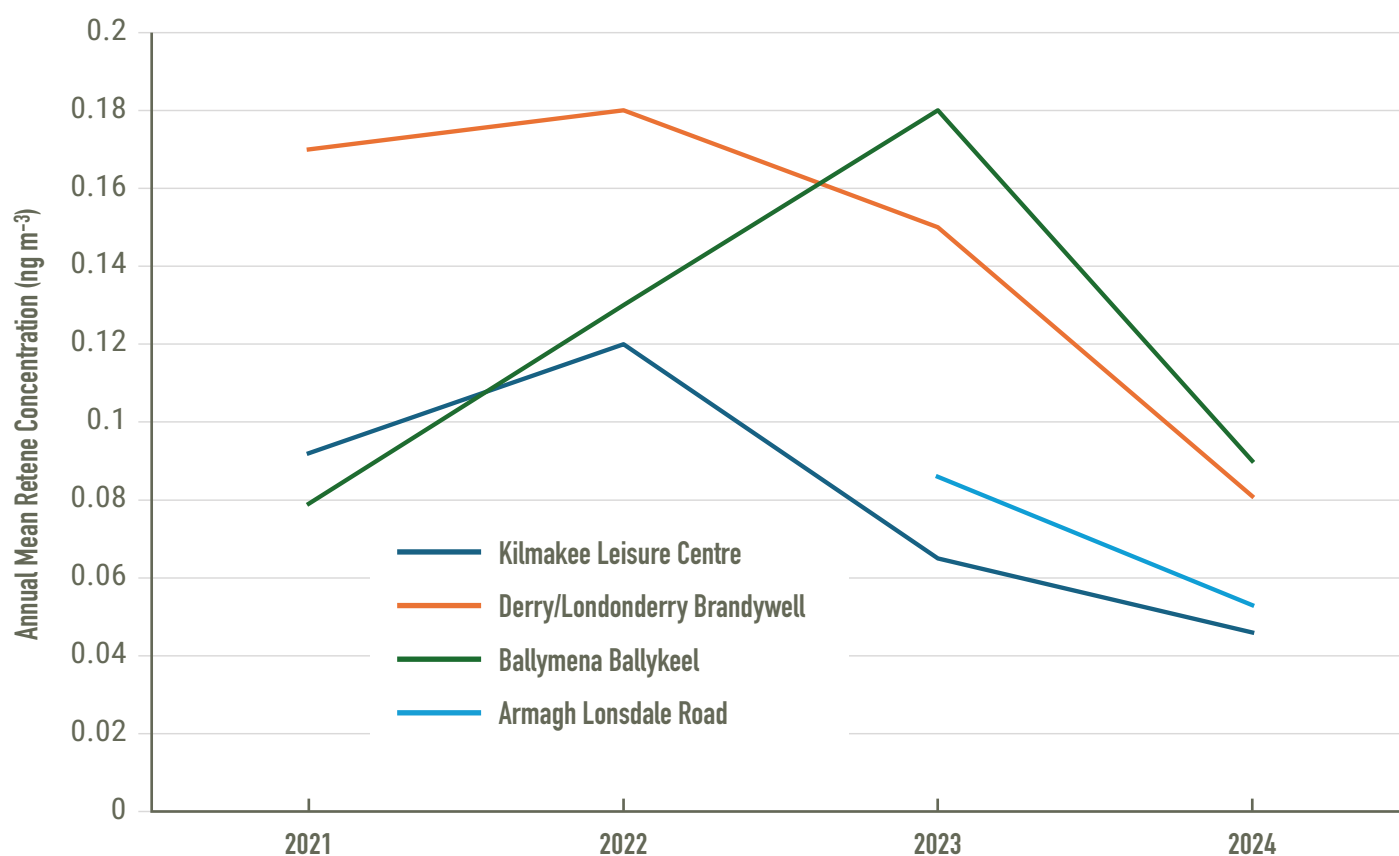
It is usually considered that at least five years of data are needed to assess long-term trends, so any apparent trends shown in these pollutants should be treated with caution.

Concentrations of anthracene appear to have decreased at most of the sites over this four-year period. There is no consistent pattern for B[e]P or retene. Although as stated above, these datasets are too short to assess long-term trends, it appears that so far there is no clear evidence of overall increasing trends.

Figure 5.3: Annual Mean Anthracene Concentrations at PAH sites in Northern Ireland, 2021-2024



⁹ Ramdahl, T. 'Retene—a molecular marker of wood combustion in ambient air.' *Nature* 306, 580–582 (1983). <https://doi.org/10.1038/306580a0>.

Figure 5.4: Annual Mean B[a]P Concentrations at PAH sites in Northern Ireland, 2021-2024**Figure 5.5: Annual Mean Retene Concentrations at PAH sites in Northern Ireland, 2021-2024**

Black carbon measurements

The method used in the PAH Network does not provide sufficient time resolution to investigate how ambient concentrations change over the course of a day.

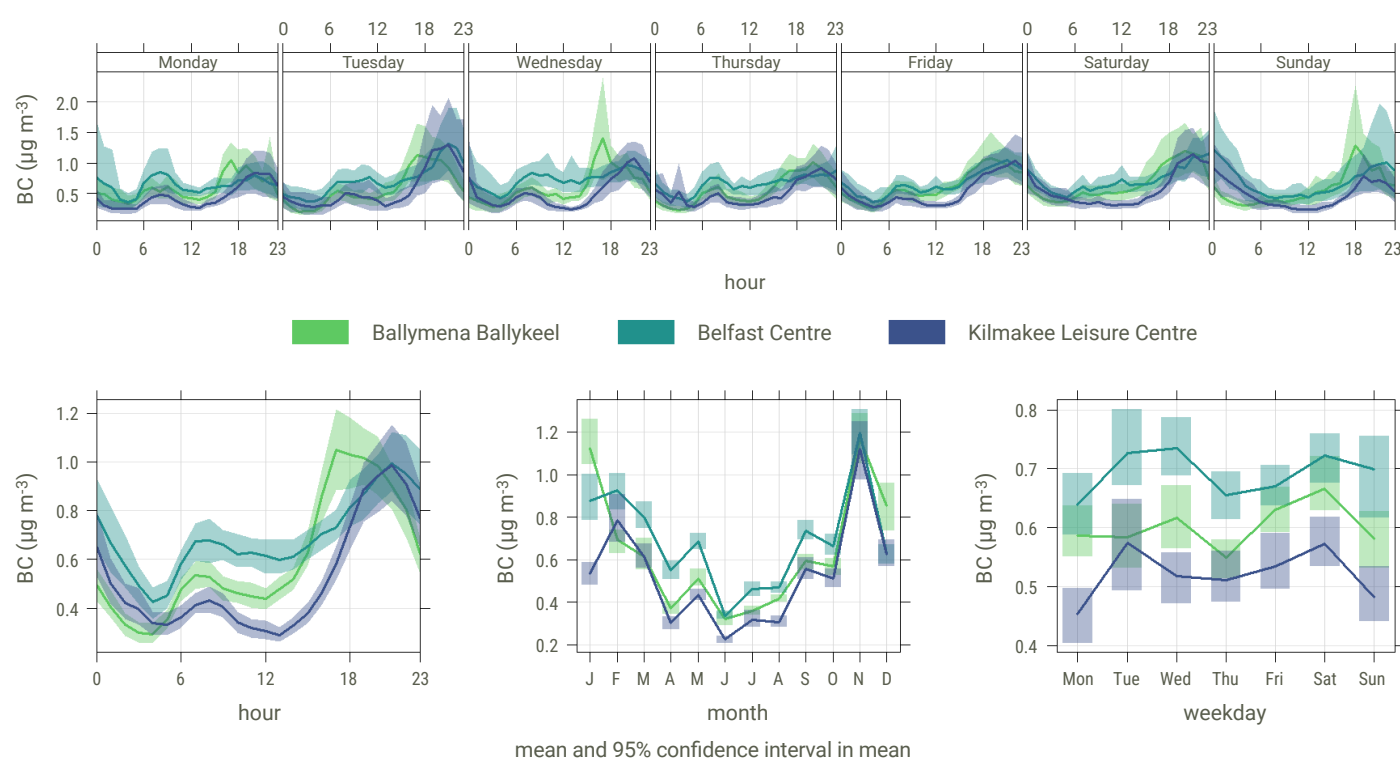
However, the Black Carbon Network measures several metrics associated with solid fuel burning, and this network uses an automatic technique that provides hourly measurements. There are Black Carbon Network sites at Ballymena Ballykeel, Belfast Centre, Kilmakee Leisure Centre and Strabane 2 (which is co-located with Strabane Springhill Park). Figure 5.6 shows how black carbon particulate matter concentrations measured at Ballymena Ballykeel, Belfast Centre and Kilmakee Leisure Centre varied over the course of day ('diurnal' variation) during 2024. (Strabane 2 is not included as black carbon data capture in 2024 was insufficient to be representative of the full year).

The top row of graphs in Figure 5.6 show average diurnal patterns for each day of the week. The

bottom row of graphs (from left to right) show firstly the overall diurnal variation for the whole year; then seasonal variation (by month), and finally weekly variation, for the three sites.

Concentrations of black carbon show a strong diurnal pattern, peaking in the evening and decreasing through the night. (The timing of the evening peak varies between sites, being earlier at Ballymena Ballykeel than at the other two sites, but all three sites show an evening peak). This is consistent with there being a significant contribution from domestic heating, in evenings and early mornings. In addition, on weekdays there is also a smaller peak visible, around 07:00 – 08:00. This is likely to be due to rush-hour traffic emissions. The early morning peak is biggest at Belfast Centre: this site also has the highest daytime black carbon concentrations of the three sites. This possibly indicates that at this city centre site, traffic emissions make a proportionately greater contribution to black carbon.

Figure 5.6: Diurnal, Seasonal and Weekly Variation in Black Carbon (BC) at Sites in Northern Ireland

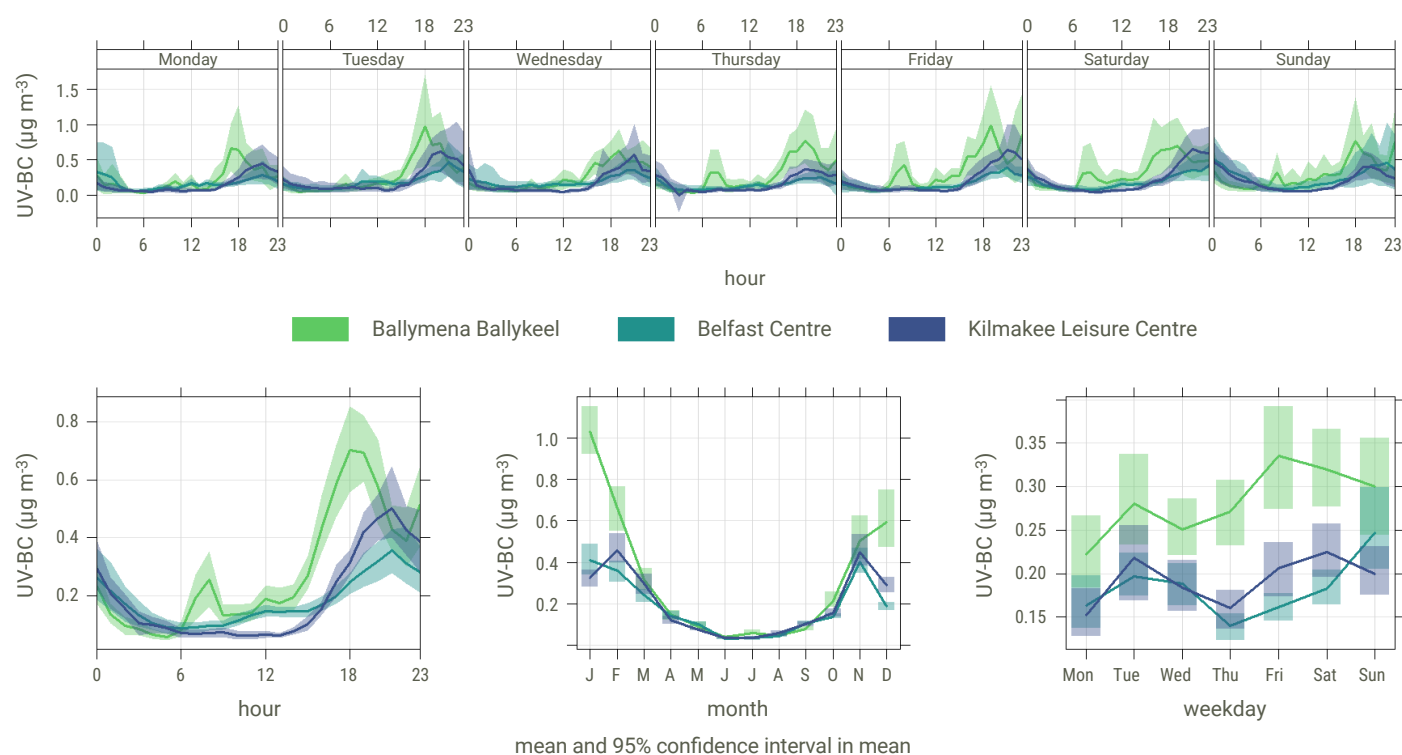


The Black Carbon Network also measures specifically ultraviolet (UV) light absorbing particulate matter (UV-BC), which indicates the presence of compounds from the burning of wood and other biomass, solid fuels and fuel oils. Figure 5.7 shows how concentrations of this specifically UV-absorbing particulate matter varied diurnally, seasonally and over the week at the same three monitoring sites as above.

The patterns shown for UV-BC in Figure 5.7 are similar to those seen for BC. However, the early

morning peak is only present for Ballymena Ballykeel, not Belfast Centre or Kilmakee Leisure Centre. Also, while Belfast Centre has the highest overall concentrations of BC throughout the week, for UV-BC it has the lowest, although similar to Kilmakee Leisure Centre. Ballymena Ballykeel shows the highest concentrations of UV-BC. This suggests that emissions from wood or biomass burning make a bigger contribution to BC at Ballymena Ballykeel than at Belfast Centre and Kilmakee Leisure Centre.

Figure 5.7: Diurnal, Seasonal and Weekly Variation in UV-Absorbing Black Carbon (UV-BC) at Sites in Northern Ireland



Summary on PAH and Contribution from Domestic Burning

- The NAEI indicates that emissions of B[a]P in Northern Ireland are dominated by emissions from domestic burning.
- Measured concentrations of B[a]P at two sites in Northern Ireland have consistently been higher than the average across the UK.
- Measured concentrations of B[a]P in Northern Ireland have declined between 2008 and 2023.
- Concentrations are much higher during winter months.
- There is no clear evidence of short-term trends for PAHs associated with wood burning over the years 2021-2024.
- The variations in measured black carbon concentrations during the day are consistent with a large contribution from domestic burning with concentrations highest during the evenings.

6. Smoke Control Areas

Smoke Control Area Legislation

Smoke control legislation was first introduced in the 1950s, as one of several measures to reduce the serious air pollution and dangerous smogs experienced at the time, particularly caused by coal burning. Since then, our air has become much cleaner, due to many changes including a general decrease in the domestic use of coal and oil, and a move towards natural gas and other cleaner fuels. However, many households still rely on oil or solid fuels as their main fuel.

Also, recent years have seen an increase in the popularity of domestic wood-burning stoves. These are often a supplementary, rather than main, domestic heat source, but can be a substantial source of smoke (including particulate matter) and other pollutants, and can have a significant impact on local air quality, particularly in the winter. Defra's 2025 annual report of UK air pollutant emissions (for PM₁₀ and PM_{2.5}) stated that *"From 2009 through to 2020, emissions of both PM_{2.5} and PM₁₀ from domestic combustion rose by 36 per cent, largely due to a rise in emissions from the burning of wood"* and that *"...considerable decreases in emissions from some sources (e.g. from road transport and energy industries) have been partly offset by increases in emissions from other activities, such as wood burning in domestic settings and the burning of biomass-based fuels in industry."*¹⁰

Smoke control legislation is therefore still very necessary and is widely used by district councils to help them control particulate matter (smoke) emissions and maintain good local air quality. The Clean Air (NI) Order of 1981, as updated by the Environmental Better Regulation Act (Northern Ireland) 2016, introduced controls for the emission of smoke in urban areas. District councils may designate

part or all of their district as a Smoke Control Area. Within a designated Smoke Control Area (SCA), residents must comply with the following rules:

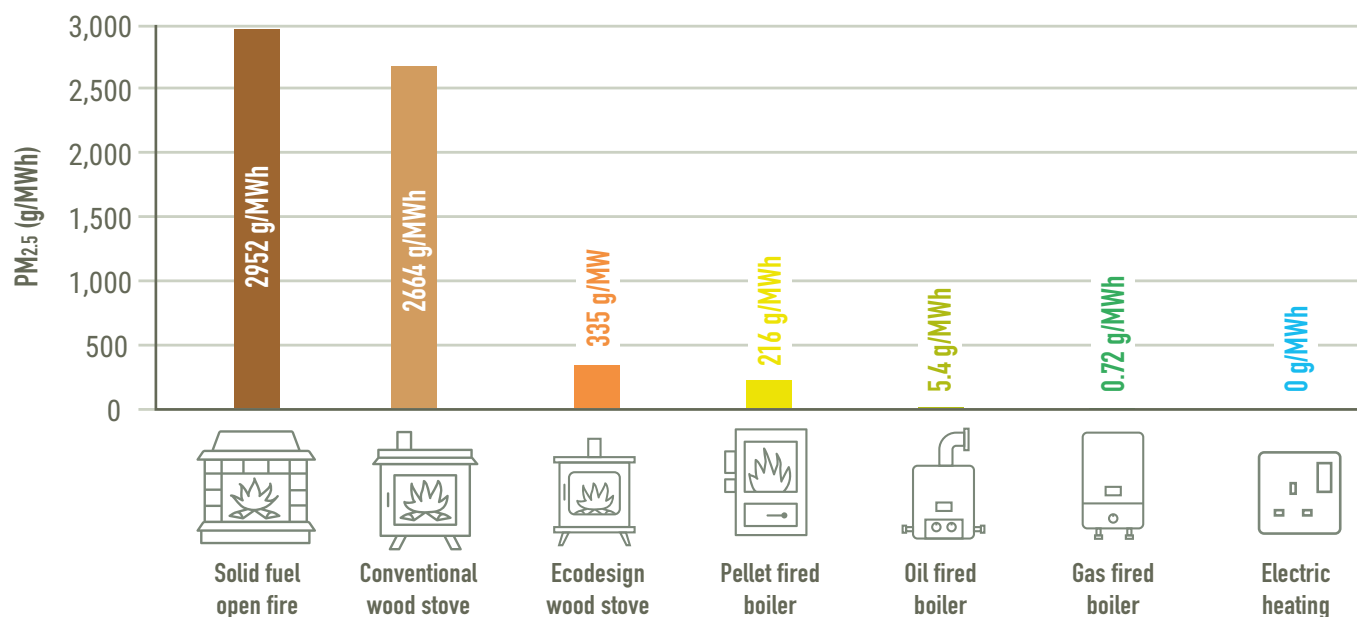
- To only burn designated Authorised Fuels. A list of Authorised Fuels can be found at <https://smokecontrol.defra.gov.uk/fuels-php/northern-ireland/> .
- If using any unauthorised fuels, such as wood, which are not on the above list, these must only be burned in a designated 'Exempted Fireplace' which is one of a list of appliances (such as stoves and heaters) approved by DAERA, available at <https://smokecontrol.defra.gov.uk/appliances-php/northern-ireland/> .

Each type of authorised fuel must be used in accordance with the conditions and specifications stated on the labelling.

Each type of exempted fireplace must be installed, maintained and operated in accordance with the manufacturer's listed specifications, and must only be used to burn authorised fuels specifically permitted for that type of appliance. The lists of Authorised Fuels and Exempted Fireplaces are updated periodically, and are authorised separately for Northern Ireland, England, Wales and Scotland.

Particulate matter is one of the pollutants of particular concern in the context of domestic fuel use. Figure 6.1 compares emissions of PM_{2.5} particulate matter per unit energy produced (in megawatt hours, MWh) for seven different domestic heating appliances and options. These values are the emissions at point of use – so for electric heating this is zero, but there may be emissions at the point of generation, depending on the power generation methods and fuels used.

¹⁰ Emissions of air pollutants in the UK – Particulate matter (PM₁₀ and PM_{2.5}): <https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-particulate-matter-pm10-and-pm25>

Figure 6.1: PM_{2.5} emissions from various types of domestic heating appliance¹¹

Failure to comply with the rules of an SCA could incur a substantial fine.

DAERA's guidance on smoke control can be found at <https://www.daera-ni.gov.uk/articles/air-pollution-and-smoke-control#toc-5> .

Northern Ireland's Smoke Control Areas

All except two of Northern Ireland's district councils have at least one SCA (the exceptions are Fermanagh and Omagh, and Mid Ulster). To date, 126 SCAs have been declared by district councils in Northern Ireland. To find out if you live in one of Northern Ireland's SCAs, please go to your district council's website: most district councils provide information about their SCAs on their websites, and some provide an interactive map allowing residents to check whether their address is within an SCA.

Antrim and Newtownabbey's advice about SCAs, and an interactive map, can be found at <https://antrimandnewtownabbey.gov.uk/residents/residents-community-information/community-advice/air-quality/> . Figure 6.2 shows Antrim and Newtownabbey's interactive map: the district is outlined in dark blue, with its two SCAs outlined in light blue (Newtownabbey SCA) and red (Antrim SCA).

¹¹ The emission factors in the chart are taken from the EMEP 2023 Guidebook <https://www.eea.europa.eu/en/analysis/publications/emep-eea-guidebook-2023> tables of emission factors for small combustion (part 1.A.4). They have been converted from g/GJ to g/MWh. The figure is based on a similar graph in the Chief Medical Officer's Report 2022 on air pollution: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1121599/executive-summary-and-recommendations-air-pollution.pdf

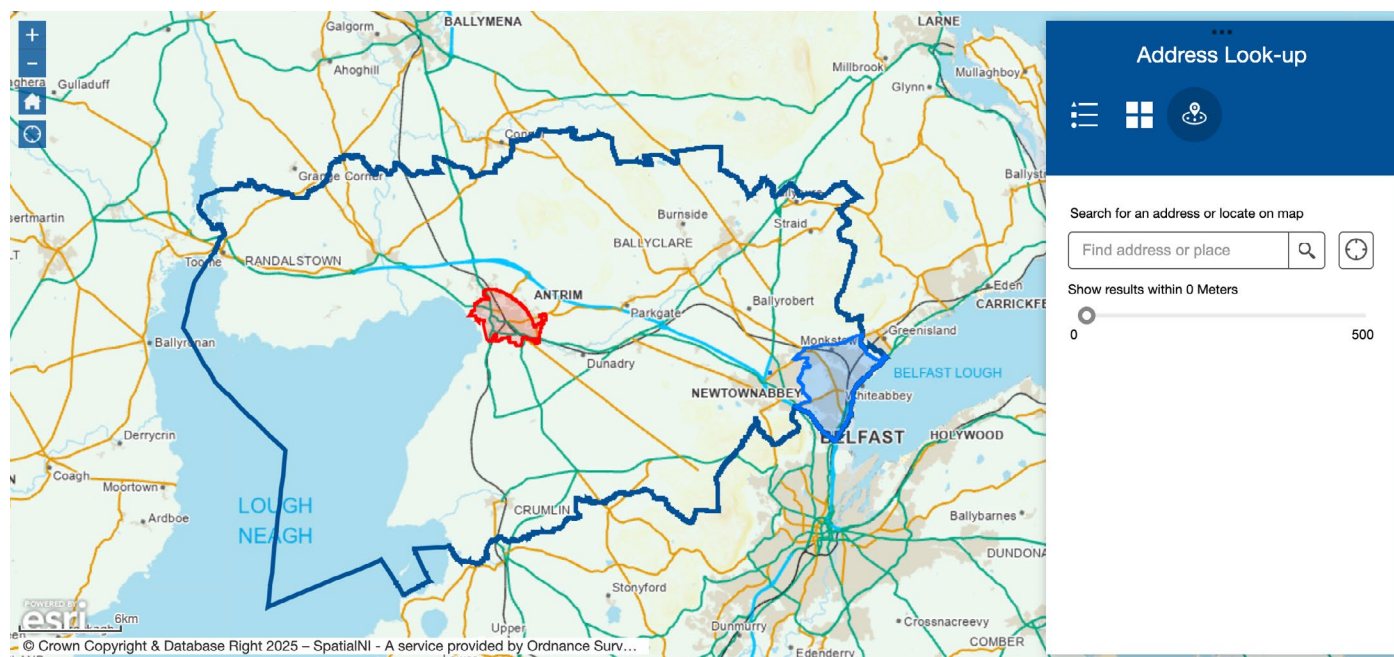
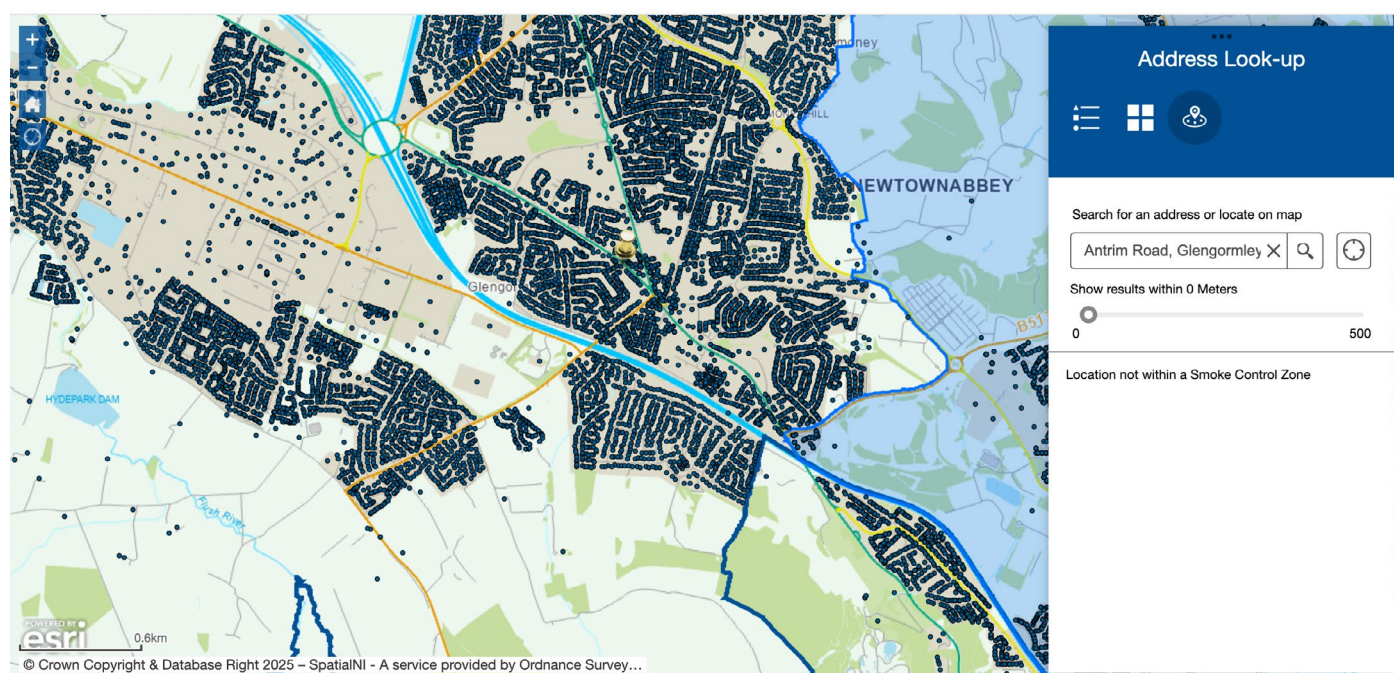
Figure 6.2: Antrim and Newtownabbey's Interactive Smoke Control Area Map

Figure 6.3 shows how the address look-up is used. As an example, the address entered here is the location of the Newtownabbey Antrim Road monitoring site, 'Antrim Road, Glengormley'. The interactive map states that the selected

location is 'not within a Smoke Control Zone'. (The Newtownabbey Antrim Road monitoring site is in a roadside location and mainly concerned with NO₂ emissions from traffic).

Figure 6.3: Using the Address Look-Up to Check Whether an Address is in an SCA (Antrim and Newtownabbey)

Armagh, Banbridge and Craigavon provides a static map of SCAs at <https://www.armaghbanbridgecraigavon.gov.uk/resident/environmental-protection/#1488202389547-ab06f25e-3795>.

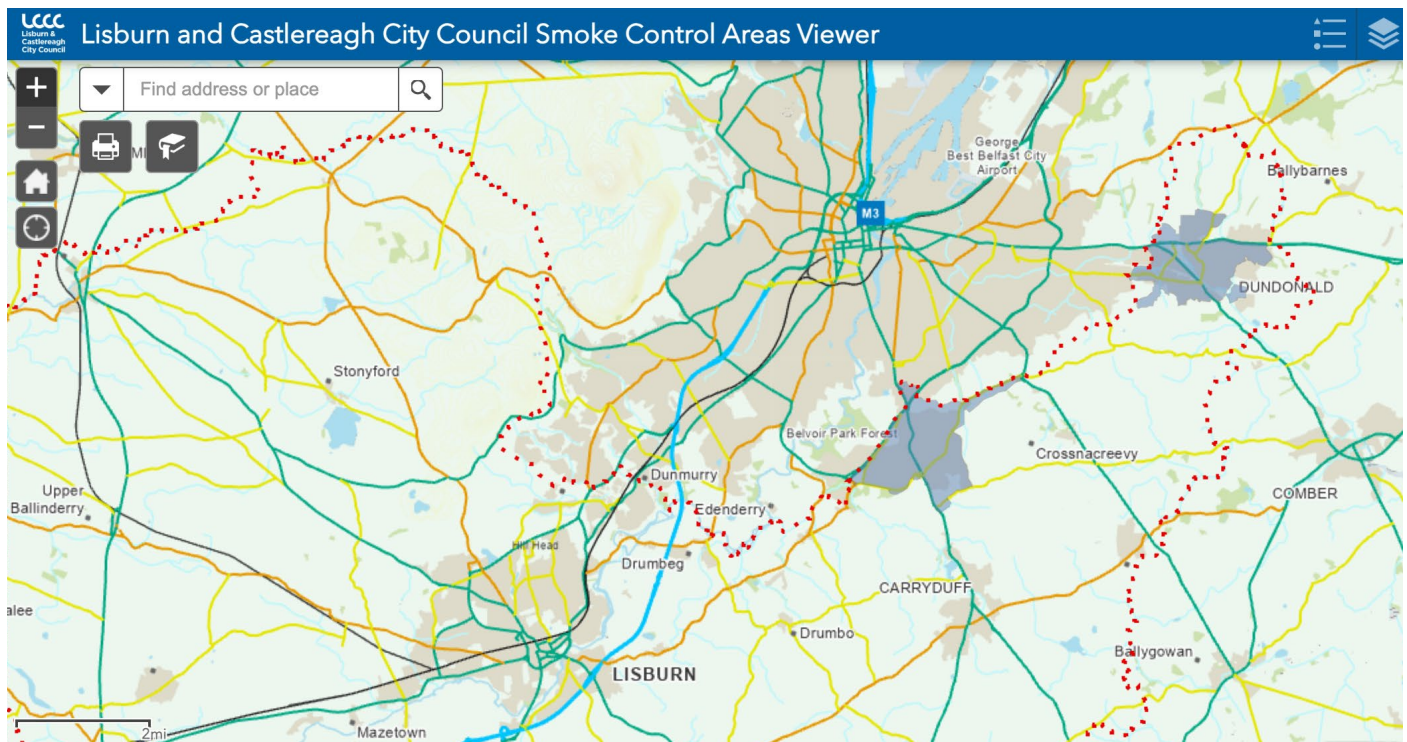
Belfast City Council (<https://www.belfastcity.gov.uk/bins-recycling-environment/environment/pollution/pollution#143-4>): almost all of the Council area is designated as an SCA except the rural periphery of the city, to the southwest, north and the docks area. This is because these areas are mostly either unpopulated or sparsely populated.

Causeway Coast and Glens has designated the whole of the Ballysally Estate, Coleraine, as an SCA (<https://causewaycoastandglens.gov.uk/live/health-and-built-environment/environment-health-and-well-being/environmental-protection/air-quality-management>).

Derry City and Strabane has three SCAs, in Strabane, Newtownstewart and Castlederg, shown on their interactive map at <https://dcsdc.maps.arcgis.com/apps/webappviewer/index.html?id=dfd758a2714a4c7aab28f46254b4a378>. They also provide a leaflet with information on SCAs at <https://www.derrystrabane.com/getmedia/d3ab2675-8d59-4667-8f9b-0271ae24699e/SmokeControl-Leaflet-latest.pdf>.

Lisburn and Castlereagh provides an interactive map with address lookup, at <https://lisburn.maps.arcgis.com/apps/webappviewer/index.html?id=0879cc00d2a94749b6ab333b5c4ea0ab>. Figure 6.4 shows this: the SCAs are shown shaded in grey.

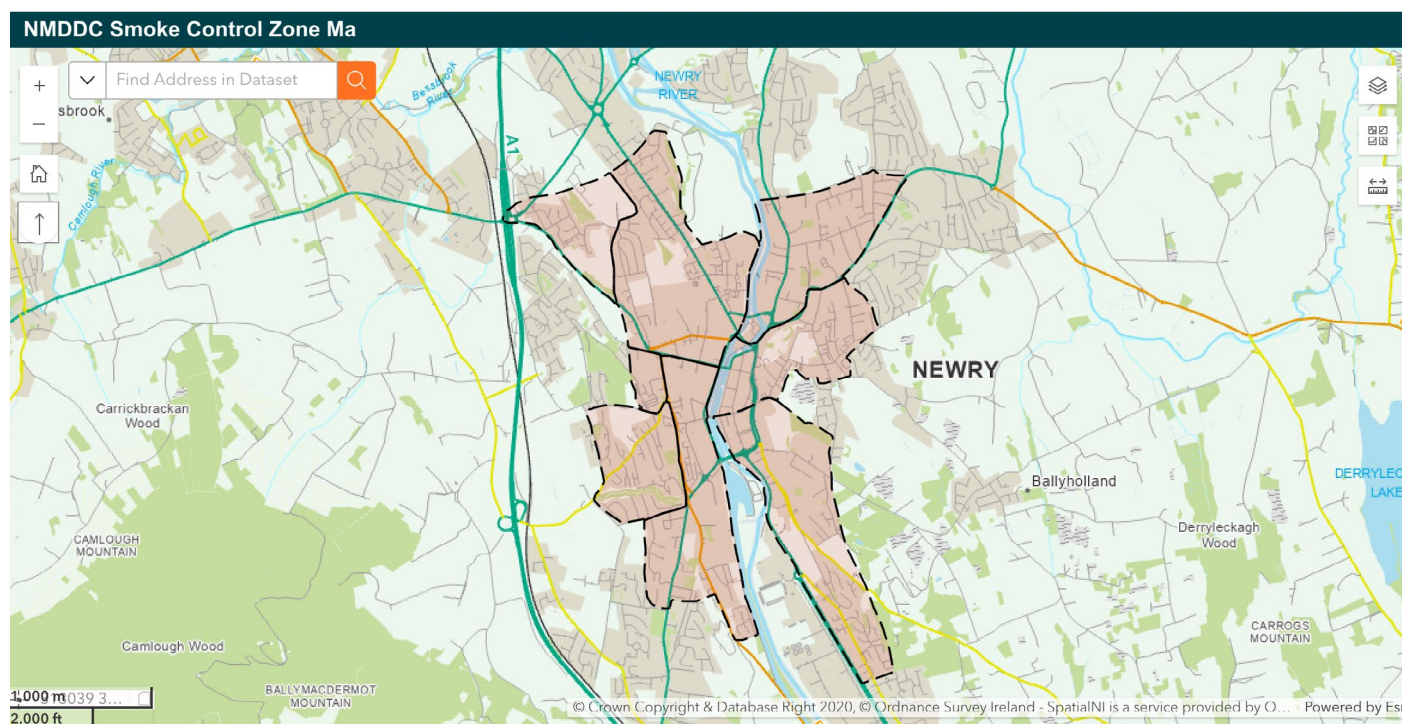
Figure 6.4: Lisburn and Castlereagh's Interactive Smoke Control Area Map



Newry, Mourne and Down DC provides an interactive map with address lookup at <https://experience.arcgis.com/experience/6395d4e90d5c4d67b4bcbf6cef5673a6>

(Figure 6.5). The SCAs are indicated by the shaded areas.

Figure 6.5: Newry, Mourne and Down's Interactive Smoke Control Area Map



Wood Burning Stoves

As mentioned above, wood burning stoves have increased in popularity in recent years and are now a significant source of urban air pollution. If you have a wood burning stove or open fire, it is important to follow Defra guidance¹² to avoid creating harmful pollution:

- If you do not rely on the stove as your home's main heat source, consider burning less.
- If buying wood to burn, ensure it is labelled and sold as being suitable to burn.
- Burning damp or unseasoned wood creates smoke and particulate pollution. Only burn wood which has been seasoned and is dry (20% moisture or less). A moisture meter can be used to check.
- Do not burn household rubbish or waste wood (such as old fence panels or furniture), which may emit harmful or toxic fumes into your home and neighbourhood.
- Use the stove only as recommended by the manufacturer.
- Regularly maintain and service your wood-burning stove (e.g. annually).
- Get your chimney swept regularly.

If you are thinking of getting a wood burning stove, ask yourself whether it is really necessary. If so, consider getting an Ecodesign compliant stove. (All new stoves sold in the UK must now be Ecodesign compliant.)

¹² Defra guidance on open fires and wood-burning stoves: https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1901291307_Ready_to_Burn_Web.pdf#:~:text=In%20smoke%20control%20areas%2C%20you%20can%20only%20burn,appear%20on%20the%20list%20of%20Defra%20exempt%20appliances

Where to Find Out More About Air Quality

The Northern Ireland Air Quality website at www.airqualityni.co.uk provides information covering all aspects of air pollution in Northern Ireland.

DAERA's website at <https://www.daera-ni.gov.uk> provides links to information on a range of environmental issues including biodiversity, waste and pollution.

DAERA's 'Protect the Environment' web page at <https://www.daera-ni.gov.uk/topics/protect-environment> covers air quality, climate change and local environmental issues including noise.

National and local air quality forecasts are available from:

- The Defra UK Air Information Resource (UK-AIR) - <http://uk-air.defra.gov.uk>
- The Northern Ireland Air Quality website - <https://www.airqualityni.co.uk>
- The Environmental Protection Agency (Ireland) Air Quality website - <https://www.airquality.ie>

Download the Northern Ireland Air app for iPhone and Android, keeping you updated about air pollution in Northern Ireland - <https://www.airqualityni.co.uk/stay-informed>

The app provides:

- Easy access to the latest pollution levels from the monitoring sites
- A colour-coded map showing the pollution forecasts

- Approved health advice based on the pollution levels
- Opportunity to subscribe to free alerts when moderate, high and very high pollution is forecast.

DAERA, in conjunction with Department of Health, provides the "Air Aware" SMS subscription service. This service allows members of the public to receive SMS text alerts when periods of high air pollution are forecast or occurring in Northern Ireland. The service is targeted at those with chronic health conditions such as heart disease and lung disease, who may be affected by air quality. The service can be initiated by texting 'AIR' to **07984405722**.

For information on air quality issues in your local area please contact the Environmental Health Department of your district council: <https://www.nidirect.gov.uk/contacts/local-councils-in-northern-ireland>

Funded via the Carrier Bag Levy by:



Department of
**Agriculture, Environment
and Rural Affairs**

An Roinn

**Talmhaíochta, Comhshaoil
agus Gnóthaí Tuaithe**

Department o'

**Fairmin, Environment
an' Kintra Matthers**

www.daera-ni.gov.uk



This report has been produced by Ricardo on behalf of the Department of Agriculture, Environment and Rural Affairs



Air Aware

Do you suffer from a chronic illness that affects your breathing?

You can receive alerts FREE to your mobile phone to let you know when air pollution levels are high.

**Just text Air to 079 8440 5722
or download the Northern Ireland Air App**

If you use regular treatment for respiratory problems and think your breathing may be affected by air pollution levels, consider adjusting your treatment as you would do for a normal increase in symptoms. If this is not effective, consult your doctor.

You may wish to consider avoiding busy, congested streets and not participating in strenuous outdoor activity on days when air pollution levels are high.

If you suffer from a heart condition and notice a change in your symptoms, you should seek medical advice as you normally would.



For more information visit: www.airqualityni.co.uk

Text messages to the service will be charged at your normal standard rate. Alerts are received free of charge. To opt out, text STOPAIR to 079 8440 5722



Department of
**Agriculture, Environment
and Rural Affairs**

An Roinn

**Talmhaíochta, Comhshaoil
agus Gnóthaí Tuaithe**

Department of

**Fairmin, Environment
an' Kintra Matthers**

www.daera-ni.gov.uk



Department of
Health

An Roinn Sláinte

Mánnystre O Poustle

www.health-ni.gov.uk