Annual Progress Report (APR)

2025 Air Quality Annual Progress Report (APR) for Aberdeen City Council

In fulfilment of Part IV of the Environment Act 1995, as amended by the Environment Act 2021

Local Air Quality Management

June 2025

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Executive Summary: Air Quality in Our Area

Air Quality in Aberdeen City

The Annual Progress Report has been undertaken to fulfil Aberdeen City Council's duty to annually review and assess air quality. The report provides the latest monitoring results and discusses the implications for air quality management in Aberdeen.

The main pollutants of concern in Aberdeen City are nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$), related to road traffic emissions.

The NO_2 annual mean objective of 40 µg/m^3 was only exceeded at one monitoring location across the whole city in 2024.

Trends in NO_2 levels suggest that air quality continues to improve across the city.

There were no exceedances of the NO_2 one hour objective at any of the monitoring locations, nor were there any exceedances of the annual or 24-hour mean PM_{10} objectives. There were also no exceedances of the $PM_{2.5}$ annual mean objective.

The Anderson Drive and Wellington Road Air Quality Management Areas (AQMAs) were reviewed in 2024 and the decision was taken to revoke both areas, due to improving air quality and continued compliance with the objective levels for NO_2 and PM_{10}. Both AQMAs were officially revoked on 1 February 2025.

The City Centre AQMA was also reviewed in 2024, with the decision taken to remove the PM_{10} annual mean and 24-hour mean from the order, due to continued compliance with the objective levels. This amendment was brought into force on 1 February 2025.

The City Centre AQMA remains valid for the NO_2 annual mean objective. Recently established traffic management amendments have resulted in a significant improvement in air quality at city centre locations, together with the enforcement of the Low Emission Zone (LEZ) commencing on 1 June 2024. Monitoring will continue to determine whether the objective continues to be met. The Air Quality Action Plan 2011 has been updated and is due to be published in 2025.

Actions to Improve Air Quality

The main action to improve air quality in 2024 was the commencement of the enforcement of the Low Emission Zone (LEZ) in the city centre from 1 June 2024. The LEZ was introduced on 31 May 2022, with a two-year grace period to allow residents, businesses and visitors time to adapt to the change. The LEZ, coupled with the recent traffic management changes in the City Centre and South College Street improvements, is reducing the volume of traffic travelling through the city centre core, ensuring the vehicles that do pass through do so as efficiently and cleanly as possible, and that sustainable alternatives to the private car are prioritised.

Data from the Aberdeen Walking and Cycling Index (2023) shows that 49% of Aberdeen residents who responded to the Sustrans survey walk or wheel at least five days a week and 16% of residents cycle at least once a week. Approximately 50% of respondents would like to walk, wheel, and cycle more.

Implementation of the City Centre and Beach Masterplan has continued, with construction works commencing on the transformation of Central Union Street to give more space to people walking, wheeling and cycling (including the implementation of segregated cycle facilities), and to prioritise public transport. The installation of new infrastructure on Craigshaw Drive and South College Street also provide more facilities for safe walking, wheeling, and cycling within the city.

Further infrastructure initiatives, such as the implementation of additional cycle parking facilities, bicycle maintenance stations, and electric vehicle (EV) charging points have continued throughout the city, alongside behaviour change initiatives such as I Bike Schools and Bikeability Scotland training

Work continues on the development of a revised Local Transport Strategy and a Regional Active Travel Network for future implementation. Development of the Business Case for Aberdeen Rapid Transit (ART), envisaged as a high-speed high-capacity mass transit solution for the region, is also continuing.

Local Priorities and Challenges

One of the main priorities for Aberdeen City Council remains encouraging and facilitating a modal shift from the private car to cleaner, greener and more sustainable forms of transport.

Accordingly, priorities for the coming year are:

- Further development of a revised Local Transport Strategy;
- Progression of the ART Business Case;
- Adoption of the Regional Active Travel Network Review;
- Greater focus on tackling the issue of the school run and the accompanying vehicular pollution and congestion this causes;
- Development of a School Streets pilot in the City;
- Completion of a Strategic Car Parking Review;
- Completion of a revised Council Travel Plan;
- Continued roll-out of cycle parking in high-density residential areas;
- Procurement of a regional EV partner to lead on the future development of V charging infrastructure;
- Ongoing expansion of the Aberdeen Car Club and EV Charging network.

Some of the main challenges facing Aberdeen City Council remain public acceptability of traffic management measures, and the difficulties in encouraging modal shift from the private car to more sustainable forms of transport.

How to Get Involved

Aberdeen City Council is in the process of revising the Local Transport Strategy (LTS) and accompanying Air Quality Action Plan (AQAP). A draft will be reported to the relevant committee later in 2025 and if approved, will then go out for public consultation.

Further information on the Local Transport Strategy, City Centre and Beach Masterplan, Low Emission Zone, Car Club, and electric vehicle charge points is available at the following websites:

Local Transport Strategy

City Centre Masterplan

Low Emission Zone

Car Club

Electric vehicle charging points in Aberdeen City

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1 Local Air Quality Management

This report provides an overview of air quality in Aberdeen City during 2024. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Progress Report (APR) summarises the work being undertaken by Aberdeen City Council to improve air quality and any progress that has been made.

Table 1.1 – Summary of Air Quality Objectives in Scotland

Pollutant	Air Quality Objective Concentration	Air Quality Objective Measured as	Date to be Achieved by
Nitrogen dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen dioxide (NO_2)	40 µg/m^3	Annual mean	31.12.2005
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
Particulate Matter (PM_{10})	18 µg/m^3	Annual mean	31.12.2010
Particulate Matter ($PM_{2.5}$)	10 µg/m^3	Annual mean	31.12.2021
Sulphur dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO_2)	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO_2)	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	3.25 µg/m^3	Running annual mean	31.12.2010
1,3 Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mg/m^3	Running 8-Hour mean	31.12.2003

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare publish and implement an Air Quality Action Plan (AQAP) within the shortest possible time and no later than 12 months of the date of AQMA Designation Order. The AQAP must set out measures the local authority intends to put in place in pursuit of the objectives within the shortest possible time. Measures should be provided with milestones and a final date for completion. The action plan itself should have a timescale for completion and for revocation of the AQMA. Where measures to reduce air pollution may require a longer timescale an action plan shall be reviewed and republished within five years of initial publication and then five-yearly thereafter.

A summary of AQMAs declared by Aberdeen City Council can be found in Table 2.1 . Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at the AQMA webpage.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Description	Action Plan
City Centre	NO_2 annual mean PM_{10} annual mean & 24 hour mean	Aberdeen	Declared 2001, extended in 2003. PM_{10} included in 2005 & 2011. Amended 2018. An area encompassing several properties Union St, King St, Market St, Holburn St and Victoria Road.	Air Quality Action Plan 2011
Anderson Drive	NO_2 annual mean PM_{10} annual mean	Aberdeen	Declared in 2008, amended 2011 and 2018. Pockets of exceedances at residential properties along Anderson Drive and Auchmill Road.	Air Quality Action Plan 2011

Wellington Road	NO_2 annual mean PM_{10} annual mean & 24 hour mean	Aberdeen	Declared 2008. Residential properties along Wellington Road (Queen Elizabeth II Bridge to Balnagask Rd)	Air Quality Action Plan 2011

The Anderson Drive and Wellington Road AQMAs were reviewed in 2024 and the decision was taken to revoke both areas, due to improving air quality and continued compliance with the objective levels for NO_2 and PM_{10}. Both AQMAs were officially revoked on 1 February 2025.

The City Centre AQMA was also reviewed in 2024, with the decision taken to remove the PM_{10} annual mean and 24-hour mean from the order, due to continued compliance with the objective levels. This amendment was brought into force on 1 February 2025.

The City Centre AQMA remains valid for the NO_2 annual mean objective.

2.3 Implementation of Air Quality Action Plan(s) and/or measures to address air quality

In order to ensure that local authorities implement the measures within an action plan by the timescales stated within that plan, the Scottish Government expects authorities to submit updates on progress through the APR process. Aberdeen City Council has taken forward a number of measures within the action plan during the current reporting year of 2024 in pursuit of improving local air quality and meeting the air quality objectives within the shortest possible time. Details of all measures completed, in progress or planned are set out in Table 2.2. More detail on these measures can be found in the air quality Action Plan relating to each AQMA.

Key completed measures for this reporting year are:

- Enforcement of LEZ scheme – reduction of non-compliant traffic in the City Centre AQMA
- Continued delivery of additional cycle parking facilities and bicycle maintenance stations
- Continued roll-out of EV charging points

- Continued delivery of a travel behaviour change programme, including I Bike Schools and I Bike Communities programmes, which look to improve cycling levels amongst school children and in surrounding communities
- Work continues on the development of a revised Local Transport Strategy and a Regional Active Travel Network for future implementation. Development of the Business Case for Aberdeen Rapid Transit (ART), envisaged as a high-speed high-capacity mass transit solution for the region, is also continuing.

Aberdeen City Council expects the following measures to be completed over the course of the next reporting year:

- Completion of Strategic Car Parking Review
- Completion of second phase of residential cycle parking in high-density areas
- Adoption of revised Council Travel Plan
- Regional EV Procurement Exercise
- Ongoing expansion of the Aberdeen Car Club and EV Charging network

Aberdeen City Council has identified the following new measures since the last reporting year:

- A school streets pilot to evaluate if this could be a scalable exercise to reduce pollution and vehicular congestion at the school gates
- A comprehensive and pro-active travel behaviour exercise with all schools to implement measures to facilitate more sustainable travel on the school journey

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Expected/Actual Completion year	Organisations Involved	Measure Status	Funding Status	Key Milestones	Progress	Barriers to implementation
1.1	Increase bus use	Alternatives to private vehicle use	Ongoing	Aberdeen City Council	Ongoing	SG & Nestrans Grant funded	Bus Priority Infrastructure and city centre traffic management measures	Bus priority infrastructure installed together with other complimentary traffic management measures.	Local opposition
1.2	Improve cycling and walking provision	Alternatives to private vehicle use	Ongoing	Aberdeen City Council	Ongoing enforcement	Fully funded by SG Grant for Implementation. Self-financing on an ongoing basis	Commencement of enforcement of LEZ – 01 June 2024 3rd phase of residential cycle parking project in progress	Central Union Street works ongoing and bus priority implemented in city centre Ongoing	Local opposition
1.3	Travel Plans	Promoting travel alternatives	Ongoing	Aberdeen City Council	Ongoing	Internal funding	Staff Travel Plan consultation completed	Work Ongoing	May be resistance to plan if not properly explained
1.4	Improve public awareness of air quality issues	Public Information	Ongoing	Aberdeen City Council,	Ongoing	SG Grants	Marketing Campaign undertaken in 2024	Ongoing	
1.5	Car Clubs/Carpool Schemes	Promoting low emission transport	Ongoing	Aberdeen City Council	Ongoing	SG Grants	Ongoing	Ongoing	

1.6	Rail Improvements	Alternatives to private vehicle use	Ongoing	Nestrans, SG	Ongoing	Partly Funded (Nestrans, SG, City Region Deal – typically annual)	Ongoing	Ongoing	New rail stations will be extremely costly and challenging to deliver.
1.7	Rail Freight	Freight and delivery management	Ongoing	Nestrans, SG	Ongoing	Partly funded	Ongoing	Ongoing	Progression dependant on Transport Scotland's Aberdeen to Central Belt improvement project.
2.1	Green vehicle procurement and fuel/charging infrastructure	Promote low emission transport	Ongoing	ACC, SG	Ongoing	Partly funded (ACC, SG – typically annually)	Ongoing	Ongoing	
2.2	Emissions Testing and Idling Enforcement	Public Information	Ongoing	ACC	Ongoing	Not funded	Ongoing	Ongoing	
2.3	Taxis	Vehicle Fleet efficiency	Ongoing	Transport Scotland	Ongoing	Fully funded (Transport Scotland – annually)	Ongoing	Ongoing	Taxi fleet is still to be fully upgraded
2.4	Low Emission Zone	Environmental Permits	Ongoing	ACC, Transport Scotland	Ongoing	Self-funded through PCN charges	Ongoing	Ongoing	Still some public resistance to the LEZ
3.1	Road Building/Junction Alterations	Transport Planning and infrastructure	Ongoing	ACC, Transport Scotland, Nestrans	Ongoing	Partially funded (ACC, Transport Scotland, Nestrans – typically annually)	Ongoing	Ongoing	
4.1	Intelligent Transport System (ITS)	Traffic Management	Ongoing	ACC, Transport Scotland, Nestrans	Ongoing	Partially funded (ACC, Transport Scotland, Nestrans – typically annually)	Ongoing	Ongoing	

4.2	High Occupancy Vehicle (HOV) Lane	Traffic Management	Complete	ACC	Complete	Not funded	Studies indicated that HOV lanes would not be appropriate.	Complete	
4.3	Freight and Commercial Vehicle Access	Freight and delivery management	Ongoing	ACC	Ongoing	Not funded	2025 - Completion of Union Street Central Streetscape Improvements	Ongoing	Challenges around accommodating competing demands within finite and busy urban space
5.1	Produce Planning Guidance	Policy guidance and development control	Ongoing	ACC	Ongoing	Not funded (Not required)	Adoption of a new Aberdeen Local Development Plan with supporting guidance on Transport and Accessibility and Air Quality	Ongoing	
5.2	Integration of AQAP with LTS and RTS	Policy guidance and development control	Ongoing	ACC	Ongoing	Not funded (not required)	LTS and associated AQAP currently being revised	Ongoing	
5.3	Integration of AQAP with Health and Transport Action Plan (HTAP)	Policy guidance and Development Control	Ongoing	ACC, Nestrans NHSG	Ongoing	Not funded (not required)	Ongoing	Ongoing	
5.4	Roads Hierarchy	Transport Planning and infrastructure	Complete	ACC	Complete	Fully Funded (Nestrans annually)	Formal programme of road reclassification approved in 2020	Complete	
5.5	Car Parking Policies	Policy guidance and development control	Ongoing	ACC	Ongoing	Partially funded (Nestrans annually)	Car Parking Framework being progressed	Ongoing	
5.6	National Lobbying	Transport planning and infrastructure	Ongoing	ACC, Nestrans, Transport Scotland	Ongoing	Partially funded (Transport Scotland annually)	Grants for carbon reduction and LEZ compliance for buses, taxis and HGV's	Ongoing	Challenges around wider public acceptability of some policies

							Grants available for home and workplace EV charging facilities through Energy Saving Trust		

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how local concentrations of the main air pollutants compare with the objectives.

Aberdeen City Council undertook automatic (continuous) monitoring at six sites during 2024. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at the Air Quality in Scotland website.

Maps showing the location of the monitoring sites are provided in Appendix E. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

The Union Street and Market Street continuous monitoring sites are on busy city centre roads and are representative of population exposure for NO_2, PM_{10} and $PM_{2.5}$. Union Street is the city's main street with a number of shops and restaurants on the ground level and some commercial premises and flats on the 1st, 2nd and 3rd floors. Almost all the city's bus routes pass along at least part of Union Street and the inside lane of both sides of the road are designated bus lanes. Bus priority measures were installed in June 2022 between the Bridge Street and Market Street junctions of Union Street allowing access to local buses, cycles and emergency vehicles only. In August 2023, additional bus priority measures were introduced within the City Centre AQMA on Bridge Street, Guild Street and Market Street.

Market Street is adjacent to Aberdeen North Harbour and has a high proportion of HGVs travelling between the north-east of Scotland, the Harbour and locations to the south of Aberdeen. The street is used by pedestrians travelling to the city centre from residential properties to the south of the river Dee, visiting the Union Square retail park (which includes the bus and train stations) and people working around the Harbour area. There

are a small number of 1st, 2nd and 3rd floor flats. Emissions from Aberdeen North Harbour also contribute to the pollution on Market Street.

The Anderson Drive site is 4m from the kerb and is not representative of population exposure as residential properties are set back 10-20m from the kerb. Similarly, the site at Wellington Road is around 3-4m closer to the kerb than residential properties in the area. The nearest properties are 10m from the King Street site, however the location is typical of flatted properties close to the kerb at other locations on King Street. Errol Park is representative of typical residential properties close to the city centre but not adjacent to a major road and provides urban background data.

The automatic monitoring sites at Union Street, Market Street, Wellington Road and Anderson Drive are located within AQMAs.

The King Street site is not located within an AQMA but is relatively close to the city centre in an area of high traffic flow.

3.1.2 Non-Automatic Monitoring Sites

Aberdeen City Council undertook non-automatic (passive) monitoring of NO_2 at 60 sites during 2024. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix E and at www.scottishairquality.scot/latest. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

Diffusion tubes on Market Street, Union Street, Bridge Street and the majority of those on Holburn Street and King Street within the city centre are at building façade and are representative of population exposure. Some of the tubes out with the city centre are at roadside locations with the façade of the nearest relevant property 5-20m back from the roadside.

3.1.3 Other Monitoring Activities

There were no other monitoring activities undertaken during 2024.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for annualisation and bias. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40 µg/m^3 at automatic monitoring sites.

Table A.4 in Appendix A compares the adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40 µg/m^3 at non automatic monitoring sites.

For diffusion tubes, the full 2024 dataset of monthly mean values is provided in Appendix B.

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200 µg/m^3, not to be exceeded more than 18 times per year.

There are 6 continuous monitoring sites measuring NO_2 levels in Aberdeen City. Monitoring locations are shown in Figure D.1: Trend in NO_2 Annual Mean Concentration (µg/m^3) Continuous Monitoring Sites 2020-2024.

Monitored NO_2 levels at all automatic monitoring sites continue to be below the annual mean air quality objective of 40 µg/m^3. The trend in NO_2 levels over the last 5 years is shown in Figure D.1: Trend in NO_2 Annual Mean Concentration (µg/m^3) Continuous Monitoring Sites 2020-2024. NO_2 levels have been decreasing since 2015, and levels at all automatic monitoring sites have been below the objective level since 2018. The graph in Figure D.2: Trend in NO_2 Annual Mean Concentration (µg/m^3) Continuous Monitoring Sites 2020-2024 shows the annual average concentration at each automatic monitoring location since 2020.

The graph in Figure D.3: De-seasonalised NO_2 trends at each Continuous Monitoring Site 2020-2024 plots the overall de-seasonalised trend at all sites from 2020.

Automatic monitoring of NO_2 at Anderson Drive required to be annualised due to poor data capture, caused by equipment breakdown. Details of the annualisation process are in Appendix C.

In relation to diffusion tubes, duplicate and triplicate tube monitoring locations were assessed for precision using the precision accuracy bias spreadsheet available on the SAQD website. Adjustments made, due to poor precision, are detailed in Table C.4, Appendix C.

No new diffusion tube locations were introduced in 2024.

Diffusion tube DT18 was removed due to difficulties in obtaining a secure location. A new location was identified at the end of the study period, which will be included in the 2025 report. DT70, DT71, DT72, DT75 and DT85 have been included the city survey since 2017 as part of monitoring prior to the operation of an energy from waste facility in the locale. The facility became fully operational in 2023, and no change in monitoring results at these locations has occurred thorughout the monitoring period. The decision was therefore taken to remove these tubes from the city survey in June/July 2024, providing only 5 or 6 periods of data. Due to low data capture from all 6 diffusion tubes, the data has therefore been annualised for these locations. Details of the annualisation process are in Appendix C.

There has been one measured exceedance (43.2 µg/m^3) of the annual mean air quality objective of 40 µg/m^3 , at DT93. This site is located on Bridge Street, a busy city centre street, at façade. This is within the City Centre AQMA. The closure of central Union Street to allow for active travel improvements and urban realm upgrades has resulted in permitted traffic – and several main bus routes – being rerouted along Bridge Street. Also, the street is naturally on an incline, and these rerouted vehicles idling waiting for traffic light changes could account for this increase in NO^2 measured since 2023. This location was previously above the objective in 2022, when the measured level was 48 µg/m^3. Another site, DT102, located further south, on the opposite side of Bridge Street, where traffic is moving downhill, also previously exceeded the objective level in 2022, but measured 32.4 µg/m^3 in 2024.

DT9, a location of previous exceedance along another busy city centre road, Market Street, remained under the objective level and decreased slightly on 2023's measurement, to 30.5 µg/m^3.

The city centre low emission zone (LEZ) was introduced in May 2022 and enforcement commenced from 1 June 2024, with drivers of non-compliant vehicles entering the zone being fined. A map of the Aberdeen LEZ is provided in Figure D.4. Data will require to be monitored over a longer period, however early indications are that the LEZ is another contributing factor to continued improvements to NO_2 levels within the City Centre AQMA.

Although there has been no data capture at the Anderson Drive continuous air quality monitoring station since June, in the 20 years the station has been operational, there has been no exceedance of the NO_2 air quality objective recorded. Annual mean concentrations of NO_2 have progressively reduced over the last 7 years and are substantially below the air quality objectives. Non-continuous monitoring locations (DT8, DT45, DT98 and DT100) in the Anderson Drive AQMA also returned measurements well below the objective level, and continued the downward trend seen since 2018. The 1-hour NO_2 concentration of $200ugm^{-3}$ (not to be exceeded more than 18 times per year) has not been exceeded on any occasion. All this data provides assurance that revoking the Anderson Drive AQMA is the correct course of action.

Similarly, no exceedance of any of the NO_2 air quality objectives have been recorded at the Wellington Road continuous air quality monitoring station since 2016. Non-continuous monitoring locations within the Wellington Road AQMA (DT6, DT7 and DT36) also all returned results comfortably under the objective level, and continued the downward trend seen since 2016. Annual mean concentrations of NO_2 have progressively reduced over the last 7 years and have been substantially below the air quality objectives since 2020. The 1-hour NO_2 objective of $200ugm^{-3}$ (not to be exceeded more than 18 times per year) has not been exceeded on any occasion. Again, the combined data provided further evidence to justify the revocation of the Wellington Road AQMA.

Urban background monitoring locations continued to measure very low amounts of NO^2 (under 10 ugm^{-3} at DT14, DT64, DT71, DT72 and DT103) and consideration towards their continued inclusion in the city survey will be taken in 2025.

Generally, levels recorded in 2024 are marginally lower than the previous year – a trend that has continued now for several years.

3.2.2 Particulate Matter (PM_{10})

Table A.6 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 18 µg/m^3.

Corrected (correction factor of 0.909) and uncorrected results are reported, in accordance with the Equivalence study to investigate particulate matter monitoring in Scotland using the Fidas 200, published by Ricardo Energy & Environment for the Scottish Government in May 2023.

There are 6 continuous monitoring sites measuring PM_{10} levels in Aberdeen City. Monitoring locations are shown in Figure E. 1.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50 µg/m^3, not to be exceeded more than seven times per year.

No exceedances of the annual mean or 24-hour mean objective were recorded at any of the continuous monitoring sites. Concentrations at measurement locations across the city are comparable to annual monitoring data since 2016. Roadside measurements are similar to urban background levels measured at Erroll Park.

The trend over the last 5 years is shown in Figure D.7. The graph in Figure D.6 shows the annual average PM_{10} annual levels measured at each automatic site since 2020.

The graph in Figure D.7, plots the overall de-seasonalised trend at all sites from 2019.

All three AQMAs in Aberdeen City – City Centre, Anderson Drive and Wellington Road – were reviewed in 2024, and the decision was taken to proceed with the revocation process of both Anderson Drive and Wellington Road AQMAs. The City Centre AQMA was also amended to remove the PM_{10} annual mean and 24-hour mean from the order, due to improving air quality and continued compliance with the objective levels. All three changes came into force on 1 Ferbuary 2025.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A compares the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years with the air quality objective of 10 µg/m^3.

Corrected (correction factor of 1.06) and uncorrected results are reported, in accordance with the Equivalence study to investigate particulate matter monitoring in Scotland using the Fidas 200, published by Ricardo Energy & Environment for the Scottish Government in May 2023.

There are 6 continuous monitoring sites measuring $PM_{2.5}$ levels in Aberdeen City. No exceedances of the annual mean were recorded at any of the continuous monitoring sites. No exceedances of the objective have been recorded at any site since 2016.

3.2.4 Sulphur Dioxide (SO_2)

No monitoring of sulphur dioxide was carried out in 2024 as previous assessments did not predict a likelihood of exceedance of the objectives and there has been no significant change in local emissions.

3.2.5 Carbon Monoxide, Lead and 1,3-Butadiene

No monitoring of Carbon Monoxide, Lead and 1,3-Butadiene was carried out in 2024 as previous assessments did not predict a likelihood of exceedances of the objectives and there has been no significant change in local emissions.

4 New Local Developments

4.1 Road Traffic Sources

Union Street Central Upgrading Works

Major works upgrading the Union Street Central area – between Market Street and Bridge Street – to include more pavement space and dedicated cycle lanes along the main street in the city centre commenced in April 2024. Eligible traffic – including most major bus routes through the city centre – has been rerouted down Market Street, along Guild Street, back up Bridge Street, before rejoining Union Street during the road closure to allow for the works. These works are the largest upgrade to Union Street in decades, and are expected to complete in spring 2026. This section of Union Street will thereafter be open to pedestrians, bicycles, local buses and taxis, with limited service access for deliveries.

4.2 Other Transport Sources

Other transport sources include:

- Airports
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m
- Ports for shipping

There were no new transport sources in Aberdeen City in 2024.

4.3 Industrial Sources

Industrial Sources include:

- **Industrial installations**: new or proposed installations for which an air quality assessment has been carried out
- **Industrial installations**: existing installations where emissions have increased substantially, or new relevant exposure has been introduced

- **Industrial installations**: new or significantly changed installations with no previous air quality assessment. Major fuel storage depots storing petrol
- Petrol stations
- Poultry farms

The Scottish Environmental Protection Agency (SEPA) are the licensing and enforcement authority for different types of industrial installation and have identified the following new sources:

Authorisation No	Authorisation Level	Authorisation Activity	Status Date	Site
WML/L/5008461	WML	Waste - Other Waste Storage and Treatment Sites	09/12/2024	NORM Solutions, Greenwell Road, East Tullos Industrial Estate, Aberdeen, AB12 3AX

4.4 Commercial and Domestic Sources

Commercial and domestic sources include:

- Biomass combustion plant – individual installations
- Areas where the combined impact of several biomass combustion sources may be relevant
- Areas where domestic solid fuel burning may be relevant
- Combined Heat and Power (CHP) plant

There were no new commercial and domestic sources in Aberdeen City in 2024.

4.5 New Developments with Fugitive or Uncontrolled Sources

New Source in 2024	Detail
Landfill sites	No new sources in 2024
Quarries	No new sources in 2024
Waste transfer stations etc.	No new sources in 2024
Unmade haulage roads on industrial sites	No new sources in 2024
Other potential sources of fugitive particulate matter emissions.	No new sources in 2024

5 Planning Applications

This section identifies any major planning applications under consideration in 2024 that might affect air quality with a summary detailed in Table 5.1. Details of planning application can be viewed on the Aberdeen City Council website.

Table 5.1: Planning Applications in 2024 that may affect Air Quality

Planning Application	Application No.	Air Quality Impacts
Industrial and Commercial Energy Transition Development on land around Aberdeen South Harbour	231371	The detailed planning application was approved in 2024. The application is for an energy Transition Zone including mixed developments comprising of approx. 55,000 sqm of land for business, general industrial, storage and distribution usage, along with associated provision of road infrastructure and active travel connections. Environmental Health requested the submission of an Air Quality Impact Assessment to assess the air quality impacts during the construction and operational phase of the proposal due to potential changes in road traffic movements associated with the cumulative developments and the Proposed Development itself. Emissions during the construction phase, including the site development, HGV movements, staff arrival/departure and vans delivering goods were predicted to have a negligible impact on air quality. Similarly, detailed dispersion modelling of the operational phase predicted the increase in traffic on the local network will have a negligible impact on air quality in the area.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

Data from all continuous automatic monitoring sites was below the NO_2 annual mean objective of 40 µg/m^3. NO_2 levels at all automatic monitoring sites have been below the objective level since 2018. Trends in NO_2 levels suggest that air quality continues to improve across the city.

There was a single exceedance of the NO_2 objective level at one non-automatic monitoring location in the city centre. All other 59 locations recorded measurements below the NO_2 annual mean objective of 40 µg/m^3.

There were no exceedances of the NO_2 one hour mean objective at any of the automatic sites. Diffusion tube data also recorded no sites with an annual mean >60ugm^{-3}, suggesting exceedances of the 1-hour objective were very unlikely across the city.

The annual mean and 24-hour PM_{10} objectives were met at all monitoring locations and the concentrations at measurement locations across the city are comparable to annual monitoring data since 2016.

No exceedances of the $PM_{2.5}$ annual mean were recorded at the 6 continuous monitoring sites.

Due to continued improvements in air quality and compliance with objectives across a number of years, the revocation process for the Anderson Drive and Wellington Road AQMAs commenced in 2024. Both AQMAs were revoked on 1 February 2025.

The City Centre AQMA was also amended to remove the PM_{10} annual mean and 24-hour mean from the order, due to continued compliance with the objective levels. This came into force on 1 February 2025.

The City Centre AQMA remains valid for the NO_2 annual mean objective. Traffic management changes established in 2023 have resulted in a significant improvement in air quality at city centre locations, and it is anticipated further improvement will be observed with the enforcement of the LEZ. Monitoring will continue to determine whether

the objective continues to be met in future years and if revocation of the AQMA should be considered.

6.2 Conclusions relating to New Local Developments

The upgrading works to Union Street in the city centre – coupled with traffic movement restrictions implemented in 2022 and 2023 – have significantly reduced traffic flow and improved air quality across the core city centre area. Once reopened, what was once a main thoroughfare for traffic, only eligible traffic will be permitted access, which will continue to support improvements in air quality. There were no other new developments likely to affect air quality.

6.3 Proposed Actions

1. Revoke the Anderson Drive and Wellington Road AQMAs and amend the City Centre AQMA.
2. Review monitoring within the current AQMAs in light of the revocations and amendment.
3. Continued implementation of the Actions within the Air Quality Action Plan 2011.
4. Complete consultation on the updated Air Quality Action Plan.
5. Publish the updated Air Quality Action Plan.
6. Report on the first full year since enforcement of the LEZ commenced and review outcomes.
7. Review non-continuous monitoring locations, and consider removal of consistently low measured diffusion tube locations.
8. Submit the next air quality Annual Progress Report.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
CM1	Union Street	Roadside	X393656	Y805967	PM_{10}, $PM_{2.5}$ NO_2 (NO, NO_x)	YES City Centre	Fidas 200 Chemiluminescence	2	2	2.5
CM2	Market Street	Roadside	X394560	Y805677	PM_{10}, $PM_{2.5}$ NO_2 (NO, NO_x)	YES City Centre	Fidas 200 Chemiluminescence	0	2	1.5
CM3	Anderson Drive	Roadside	X392506	Y804186	PM_{10}, NO_2 (NO, NO_x)	YES Anderson Drive	Fidas 200 Chemiluminescence	10	6	1.5
CM4	Wellington Road	Roadside	X394395	Y804779	PM_{10}, $PM_{2.5}$ NO_2 (NO, NO_x)	YES Wellington Road	Fidas 200 Chemiluminescence	5	4	1.5
CM5	King Street	Roadside	X394333	Y808770	PM_{10}, $PM_{2.5}$ NO_2 (NO, NO_x)	NO	Fidas 200 Chemiluminescence	10	3	1.5
CM6	Erroll Park	Urban Background	X394365	Y807396	PM_{10}, $PM_{2.5}$, O_3, NO_2 (NO, NO_x)	NO	Fidas 200 Chemiluminescence	N/A	N/A	1.5

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a Continuous Analyser?	Tube Height (m)
DT4	38 Ellon Rd	Roadside	394652	809714	NO2	NO	7	3	N	2.3
DT5	520 King St	Roadside	394236	808066	NO2	NO	9	0.1	N	2.6
DT6	86 Victoria Rd Torry	Roadside	394764	805197	NO2	NO	0	3	N	2.3
DT7	Wellington Rd/Kerloch Pl	Roadside	394411	804407	NO2	YES Wellington Rd	0	3	N	2.4
DT8	107 Anderson Dr	Roadside	392337	804340	NO2	YES Anderson Dr	14	3	N	2.3
DT9	39 Market St	Roadside	394264	806146	NO2	YES City Centre	0	3	N	2.1
DT10	184 Market St	Roadside	394530	805708	NO2	YES City Centre	0	3	N	2.6
DT11	105 King St	Roadside	394406	806637	NO2	YES City Centre	0	3	N	2.2

DT12	40 Union St	Roadside	394285	806285	NO2	YES City Centre	0	3	N	2.4
DT13	Music Hall, Union St	Roadside	393777	806030	NO2	YES City Centre	0	6	N	2.6
DT14	Dyce Primary Gordon Ter	Urban background	389046	812794	NO2	NO	N/A	N/A	N	2
DT16	1 Trinity Quay	Roadside	394336	806097	NO2	YES City Centre	0	5	N	2.5
DT18	14 Holburn St	Roadside	393305	805734	NO2	YES City Centre	0	3	N	2.6
DT19	468 Union St	Roadside	393386	805826	NO2	YES City Centre	0	3	N	2.4
DT20	212 King St	Roadside	394400	806842	NO2	NO	0	4	N	2.3
DT21	26 King St	Roadside	394449	806453	NO2	YES City Centre	0	4	N	2.4
DT22	104 King St	Roadside	394425	806634	NO2	YES City Centre	0	4	N	2.3

DT25	21 Holburn St	Roadside	393332	805748	NO2	YES City Centre	0	3	N	2.4
DT29	469 Union St	Roadside	393400	805811	NO2	YES City Centre	0	3	N	2.4
DT30	335 Union St	Roadside	393619	805919	NO2	YES City Centre	0	5	N	2.5
DT33	16 East North St	Roadside	394505	806531	NO2	YES City Centre	0	4	N	2.3
DT36	115 Menzies Rd/Wellington Rd	Roadside	394403	804799	NO2	YES Wellington Rd	14	4	N	2.4
DT39	819 Gt Northern Rd	Roadside	391293	809136	NO2	YES Anderson Dr	0	3	N	2.4
DT40	852 Fullerton Ct (facade)	Facade	391353	809158	NO2	YES Anderson Dr	0	7	N	2.5
DT41	852 Fullerton Ct (roadside)	Roadside	391352	809151	NO2	YES Anderson Dr	7	0.1	N	2.3
DT45	111 South Anderson Dr	Facade	392311	804349	NO2	YES Anderson Dr	0	13	N	1.9

DT47	Powis Terrace	Roadside	393368	807511	NO2	NO	5	0.1	N	2.5
DT49	142 Gt. Northern Road	Roadside	392969	808460	NO2	NO	11	3	N	2.4
DT63	93 Berryden Road	Roadside	393034	807392	NO2	NO	11	2	N	2.4
DT64	102 Picktillum Place	Urban Background	393025	807828	NO2	NO	N/A	N/A	N	2.5
DT67	37 Inverurie Rd	Roadside	389756	809583	NO2	NO	6	3	N	2.5
DT70	Kirkhill Place Tullos Primary	Urban Background	395476	804452	NO2	NO	N/A	N/A	N	2.4
DT71	Tullos Hill	Urban Background	395431	803410	NO2	NO	N/A	N/A	N	2.6
DT72	North Loirston Souter Head Road Cove Allotments	Urban Background	394988	801940	NO2	NO	N/A	N/A	N	2.5
DT73	61 Skene Square	Facade	393458	806768	NO2	NO	0	6	N	2.4

DT74	5 Caroline Place	Roadside	393350	806922	NO2	NO	5	3	N	2.6
DT75	Pentland Close	Urban Background	395964	805132	NO2	NO	N/A	N/A	N	2.6
DT77	27 Skene Square	Roadside	393524	806701	NO2	NO	0	5	N	2.4
DT80	27 Rosemount Place	Roadside	393410	806674	NO2	NO	0	4	N	2.6
DT81	131 Rosemount Place	Roadside	393044	806537	NO2	NO	0	2	N	2.5
DT82	7 Virginia Street	Roadside	394466	806248	NO2	YES City Centre	0	8	N	2.5
DT85	Tullos Place	Urban Background	395216	804724	NO2	NO	N/A	N/A	N	2.4
DT88	31 St Clement St	Roadside	395118	806164	NO2	NO	0	1	N	2.4
DT90	4 Westburn Road	Facade	393290	806942	NO2	NO	N/A	3	N	2.5

DT91	155 Hutcheon Street	Facade	393367	806941	NO2	NO	N/A	2	N	2.5
DT92	52 Guild Street	Facade	394184	806001	NO2	YES City Centre	N/A	3	N	2.5
DT93	6 Bridge Street	Facade	393920	806049	NO2	YES City Centre	N/A	3	N	2.5
DT94	8 Midstocket Road	Facade	392607	806502	NO2	NO	N/A	2	N	2.4
DT95	283 Rosemount Place	Facade	392680	806500	NO2	NO	N/A	3	N	2.5
DT96	64 Skene Street	Facade	393543	806315	NO2	NO	N/A	3	N	2.4
DT97	73 Skene Street	Facade	393557	806309	NO2	NO	N/A	3	N	2.4
DT98	5 Anderson Drive	Roadside	391973	804775	NO2	YES Anderson Drive	3	2	N	2.4
DT99	36 Spring Gardens	Facade	394047	806909	NO2	NO	N/A	3	N	2.5

DT100	537 North Anderson Drive	Roadside	391441	808897	NO2	YES Anderson Drive	2	4	N	2.4
DT101	13 Manor Avenue	Roadside	391361	808923	NO2	NO	10	5	N	2.7
DT102	19 Bridge Street	Facade	393971	805996	NO2	YES City Centre	N/A	2	N	2.4
DT103	Northfield Swimming Pool	Urban Background	390796	808123	NO2	NO	N/A	N/A	N	2.3
DT104	134 South College St	Roadside	394170	805189	NO2	NO	3	2	N	2.4
DT105	69 Affleck St	Roadside	394096	805625	NO2	NO	1	2	N	2.5
DT106	37 Union St	Facade	394303	806270	NO2	YES City Centre	0	4	N	2.4
CL1	Union Street	Roadside	393656	805967	NO2	YES City Centre	2	2	Y	2.5
CL2	Market Street	Roadside	394560	805677	NO2	YES City Centre	0	2	Y	1.5

CL3	Anderson Drive	Roadside	392506	804186	NO2	YES Anderson Dr	10	6	Y	1.5
CL4	Wellington Road	Roadside	394395	804779	NO2	YES Wellington Rd	5	4	Y	1.5
CL5	King Street	Roadside	394333	808770	NO2	NO	10	3	Y	1.5
CL6	Erroll Park	Urban Background	394365	807396	NO2	NO	N/A	N/A	Y	3

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
CM1	X393656	Y805967	Roadside		99.0	24	25	26.6	24.5	23.1
CM2	X394560	Y805677	Roadside		99.6	22	27	23.4	24.1	22.2
CM3	X392506	Y804186	Roadside		39.5	12	13	11.6	11.3	13
CM4	X394395	Y804779	Roadside		99.2	25	28	24.5	23.6	24.3
CM5	X394333	Y808770	Roadside		99.8	16	17	15.5	14.7	14.5
CM6	X394365	Y807396	Urban Background		99.6	N/A	21	16.5	14.7	13.9

Notes:

Exceedances of the NO_2 annual mean objective of 40 µg/m^3 are shown in bold.

NO_2 annual means exceeding 60 µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT4	394652	809714	Roadside		92	19	20	19	17.5	16.1
DT5	394236	808066	Roadside		100	20	20	20	16.9	16.8
DT6	394764	805197	Roadside		100	21	21	20	19.0	17.5
DT7	394411	804407	Roadside		100	22	23	21	20.4	18.4
DT8	392337	804340	Roadside		100	31	32	29	23.4	20.5
DT9	394264	806146	Roadside		100	**42**	**42**	38	32.8	30.5
DT10	394530	805708	Roadside		100	33	37	35	34.0	30.3
DT11	394406	806637	Roadside		100	34	32	37	33.2	32.3
DT12	394285	806285	Roadside		92	26	32	36	31.0	32.7
DT13	393777	806030	Roadside		92	22	25	27	24.9	23.3
DT14	389046	812794	Urban background		100	6	7	6	6.0	4.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT16	394336	806097	Roadside		100	27	34	31	29.2	24.6
DT18	393305	805734	Roadside		92	25	26	26	26.3	25.6
DT19	393386	805826	Roadside		100	27	26	28	25.9	22.8
DT20	394400	806842	Roadside		100	21	21	21	18.8	19.3
DT21	394449	806453	Roadside		100	23	24	26	23.4	26.0
DT22	394425	806634	Roadside		100	24	25	26	24.1	22.4
DT25	393332	805748	Roadside		100	26	22	25	26.6	26.0
DT29	393400	805811	Roadside		100	28	29	31	29.3	26.1
DT30	393619	805919	Roadside		100	24	24	29	26.8	24.6
DT33	394505	806531	Roadside		100	29	28	30	27.3	24.2
DT36	394403	804799	Roadside		100	29	30	29	28.4	27.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT39	391293	809136	Roadside		100	27	25	24	20.7	18.1
DT40	391353	809158	Facade		100	19	19	18	15.3	14.9
DT41	391352	809151	Roadside		92	27	24	24	24.0	17.8
DT45	392311	804349	Facade		100	16	17	15	15.5	16.1
DT47	393368	807511	Roadside		100	30	29	32	29.6	27.6
DT49	392969	808460	Roadside		83	22	22	20	18.9	17.1
DT63	393034	807392	Roadside		92	16	17	17	14.9	13.5
DT64	393025	807828	Urban Background		100	11	12	11	10.3	8.5
DT67	389756	809583	Roadside		92	21	21	21	20.3	17.5
DT70	395476	804452	Urban Background		100	10	12	11	11.9	10.5
DT71	395431	803410	Urban Background		100	7	8	7	7.0	7.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT72	394988	801940	Urban Background		100	5	6	5	5.0	5.2
DT73	393458	806768	Facade		83	29	30	29	23.8	21.5
DT74	393350	806922	Roadside		100	23	27	26	23.2	19.7
DT75	395964	805132	Urban Background		100	12	15	13	14.2	13.6
DT77	393524	806701	Roadside		100	27	23	27	24.9	19.8
DT80	393410	806674	Roadside		100	14	19	15	15.9	12.7
DT81	393044	806537	Roadside		100	16	15	20	19.6	17.3
DT82	394466	806248	Roadside		100	32	34	36	34.3	31.3
DT85	395216	804724	Urban Background		100	11	13	10	10.7	10.4
DT88	395118	806164	Roadside		100	29	26	29	27.1	27.4
DT90	393290	806942	Facade		100	20	19	17	16.5	13.8

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT91	393367	806941	Facade		100	36	30	31	28.9	25.0
DT92	394184	806001	Facade		100	n/a	n/a	38	31.9	30.7
DT93	393920	806049	Facade		100	n/a	n/a	**48**	35.5	43.2
DT94	392607	806502	Facade		100	n/a	n/a	19	18.4	17.8
DT95	392680	806500	Facade		100	n/a	n/a	18	16.7	14.6
DT96	393543	806315	Facade		100	n/a	n/a	17	17.5	15.5
DT97	393557	806309	Facade		83	n/a	n/a	20	20.0	16.8
DT98	391973	804775	Roadside		100	n/a	n/a	34	31.5	25.1
DT99	394047	806909	Facade		100	n/a	n/a	17	16.4	14.9
DT100	391441	808897	Roadside		100	n/a	n/a	17	15.0	12.9
DT101	391361	808923	Roadside		100	n/a	n/a	18	15.1	13.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
DT102	393971	805996	Facade		100	n/a	n/a	**48**	36.5	32.4
DT103	390796	808123	Urban Background		100	n/a	n/a	10	7.5	6.1
DT104	394170	805189	Roadside		83	n/a	n/a	n/a	20.8	18.9
DT105	394096	805625	Roadside		100	n/a	n/a	n/a	22.9	24.6
DT106	394303	806270	Facade		25	n/a	n/a	n/a	25.0	32.6

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Diffusion tube data has been bias adjusted.**

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.**

Notes:

Exceedances of the NO_2 annual mean objective of 40 µg/m^3 are shown in bold.

NO_2 annual means exceeding 60 µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG(22) if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(3) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(4) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200 µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
CM1	X393656	Y805967	Roadside		99.0	0	0	0	0	0
CM2	X394560	Y805677	Roadside		99.6	0	0	0	0	0
CM3	X392506	Y804186	Roadside		39.5	0 (78)	0	0	0 (71.9)	0 (68)
CM4	X394395	Y804779	Roadside		99.2	0	0	0	0 (97.1)	0
CM5	X394333	Y808770	Roadside		99.8	0	0	0	0	0
CM6	X394365	Y807396	Urban Background		99.6	-	0 (82)	0	0	0

Notes:

Exceedances of the NO_2 1-hour mean objective (200 µg/m^3 not to be exceeded more than 18 times/year) are shown in bold.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.6 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
CM1	X393656	Y805967	Roadside		100	10	11	13 (14.3)	12.9 (14.1)	12.3 (13.5)
CM2	X394560	Y805677	Roadside		100	10	11	12.7 (14)	11.9 (13.1)	12.0 (13.2)
CM3	X392506	Y804186	Roadside		99	9	9	10.1 (11.1)	9.4 (10.4)	9.2 (10.1)
CM4	X394395	Y804779	Roadside		99	14	12	10.6 (11.6)	12 (13.1)	11.2 (12.3)
CM5	X394333	Y808770	Roadside		100	11	12	13 (14.3)	12.1 (13.3)	11.7 (12.8)
CM6	X394365	Y807396	Urban Background		100	-	9.5	11.3 (12.4)	10.2 (11.2)	11.0 (12.1)

Notes:

Exceedances of the PM_{10} annual mean objective of 18 µg/m^3 are shown in bold.

All means have been "annualised" as per LAQM.TG(22), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Corrected results as recommended by Ricardo for the Scottish Government report in brackets.

Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50 µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
CM1	X393656	Y805967	Roadside		100	0 (21)	0 (23)	2	2	0
CM2	X394560	Y805677	Roadside		100	0	0	4	1	0
CM3	X392506	Y804186	Roadside		99	0	0	1	0	0
CM4	X394395	Y804779	Roadside		99	0	0	0 (27)	0	0
CM5	X394333	Y808770	Roadside		100	0	0 (31)	3	3	2
CM6	X394365	Y807396	Urban Background		100	-	1 (21)	2	2	2

Notes:

Exceedances of the PM_{10} 24-hour mean objective (50 µg/m^3 not to be exceeded more than seven times/year) are shown in bold.

If the period of valid data is less than 85%, the 98.1st percentile of 24-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
CM1	X393656	Y805967	Roadside		100	5	6	7.1 (7.5)	6.6 (6.9)	6.6 (7.0)
CM2	X394560	Y805677	Roadside		100	5	5	6.4 (6.8)	5.7 (6.0)	6.1 (6.4)
CM3	X392506	Y804186	Roadside		99	-	5	5.6 (6.0)	5.1 (5.4)	5.2 (5.5)
CM4	X394395	Y804779	Roadside		99	6	6	5.2 (5.5)	5.6 (6.0)	5.8 (6.1)
CM5	X394333	Y808770	Roadside		100	6	6	6.5 (6.9)	5.8 (6.1)	5.9 (6.3)
CM6	X394365	Y807396	Urban Background		100	-	5	6 (6.3)	5.2 (5.5)	5.5 (5.8)

Notes:

Exceedances of the $PM_{2.5}$ annual mean objective of 10 µg/m^3 are shown in bold.

All means have been "annualised" as per LAQM.TG(22), valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Corrected results as recommended by Ricardo for the Scottish Government report in brackets.

Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 Monthly Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT4	394652	809714	27	31	21	15	16	16	17	20	16	25	25	25	21.2	16.1	n/a	
DT5	394236	808066	29	30	21	19.5	17	16	16.5	16	19	25	28.5	27.5	22.1	16.8	n/a	
DT6	394764	805197	26	16.5	30		35	17.5	19.5	15.5	25	21	21.5	25.5	23.0	17.5	n/a	
DT7	394411	804407	28	28	26	26	33	19	19	17	21	25	23	26	24.3	18.4	n/a	
DT8	392337	804340	18	35	39	25	23	22	22	5	32	33	32	38	27.0	20.5	n/a	
DT9	394264	806146	31	42	46.5	34.5	58.5	33	35	33.5	42	48.5	41	35.5	40.1	30.5	n/a	
DT10	394530	805708	45	52.5	51	42.5	48	18	31.5	30.5	42	35	39	44	39.9	30.3	n/a	
DT11	394406	806637	50	51	43	34	39	38	37	43.5	35.5	45.5	50.5	43.5	42.5	32.3	n/a	
DT12	394285	806285	42	47	41	41	48	38	37	36	44	47	51	44	43.0	32.7	n/a	
DT13	393777	806030	34	35	41	30	37	23	21	23	28	31	32	33	30.7	23.3	n/a	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT14	389046	812794	11	10	6	5	5	5	5	5	5	8	11	5	6.8	4.9	n/a	
DT16	394336	806097	32	45.5	43.5	29.5	48	23	24.5	24.5	29	31	29.5	29	32.4	24.6	n/a	
DT18	393305	805734	43	43.5	34.5			23	23						33.4	25.6	n/a	
DT19	393386	805826	36	40	35.5	27.5	34.5	15	21.5	20	37.5	27.5	32	33.5	30.0	22.8	n/a	
DT20	394400	806842	42		26.5	18.5	24	18.5	21.5	23	18	28.5	27.5	31	25.4	19.3	n/a	
DT21	394449	806453	31	35.5	34.5	26.5	37	27	30.5	54	27.5	35	35.5	36	34.2	26.0	n/a	
DT22	394425	806634	30	34	35	25	33.5	24.5	27.5	27	25.5	31.5	29.5	30.5	29.5	22.4	n/a	
DT25	393332	805748	31	40	45	32	52	22	28	26	36	35	31	32	34.2	26.0	n/a	
DT29	393400	805811	36	46	44	31	39	22	27	30	31	35	35	36	34.3	26.1	n/a	
DT30	393619	805919	37	41	39	29	37	22	26	27	28	34	33	35	32.3	24.6	n/a	
DT33	394505	806531	38	41	39.5	26.5	32	28.5	5	34	26	37	36.5	37.5	31.8	24.2	n/a	
DT36	394403	804799	34	38.5	47	36	55.5	27	31	25.5	42	33	31	33	36.1	27.5	n/a	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT39	391293	809136	28	32	27	19	26	19	18	20	22	23	28	24	23.8	18.1	n/a	
DT40	391353	809158		35	18	12	14	15	12	14	23	20	32	21	19.6	14.9	n/a	
DT41	391352	809151	35	25	19	18	21	22	19	23	14	28	26	31	23.4	17.8	n/a	
DT45	392311	804349	33	18	42	15	37	11	12	18	16	18	15	19	21.2	16.1	n/a	
DT47	393368	807511	42	45	46	33	40	26	26	34	31	34	38	40	36.3	27.6	n/a	
DT49	392969	808460	27	29	27	17	24	16	16	15		23	27	26	22.5	17.1	n/a	
DT63	393034	807392	20	25	22	14	20	12	13	13	14	18	20	22	17.8	13.5	n/a	
DT64	393025	807828	14	18	15.5	8.5	13	7	8	7.5	8	11	5	23.5	11.6	8.5	n/a	
DT67	389756	809583	27	28	28	20	27	18	18	16	24	20	25	25	23.0	17.5	n/a	
DT70	395476	804452	12	16	15.6	13.3	16.6	10							13.9	10.5	n/a	
DT71	395431	803410	13	9	10.6	8.3	12.3	4.6							9.6	7.3	n/a	
DT72	394988	801940	9	7.3	6.6	5.5	8	5							6.9	5.2	n/a	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT73	393458	806768	37	36	31	29	32	17	21	24	25	29	31	27	28.3	21.5	n/a	
DT74	393350	806922	27	33	34	24	36	20	19	19	26	21	26	26	25.9	19.7	n/a	
DT75	395964	805132	28	16.6	16	16	14.3	17.3							18.0	13.6	n/a	
DT77	393524	806701	32	40	29	22	27	19	18	21	22	27	27	29	26.1	19.8	n/a	
DT80	393410	806674	19	22	18	17	18	11	15	12	16	14	22	17	16.8	12.7	n/a	
DT81	393044	806537	27	36	25	18	23	17	15	19	19	22	26	26	22.8	17.3	n/a	
DT82	394466	806248	46	51	40.5	40.5	44.5	37	36	41	32.5	43	41.5	40	41.1	31.3	n/a	
DT85	395216	804724	16	13.3	16.6	14.6	21.6	9.3							15.2	10.4	n/a	
DT88	395118	806164	48	46	34	26	28	29	27	37	26	44	45	42	36.0	27.4	n/a	
DT90	393290	806942	18	26	23	16	27	13	12	12	18	19	17	17	18.2	13.8	n/a	
DT91	393367	806941	41	43	35	24	33	26	24	32	27	35	38	37	32.9	25.0	n/a	
DT92	394184	806001	37	43	51	37	58	33	34	35	39	44	34	40	40.4	30.7	n/a	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT93	393920	806049	48	59	58	39	63	51	48	61	52	71	74	58	56.8	43.2	n/a	
DT94	392607	806502	26	27	27	24	29	18	21	15	25	19	25	25	23.4	17.8	n/a	
DT95	392680	806500	26	27	20	13	18	15	16	16	16	21	24	19	19.3	14.6	n/a	
DT96	393543	806315	26	27	30	19	22	15	14	12	20	18	21	21	20.4	15.5	n/a	
DT97	393557	806309	25	31	25	19	28	16	17	16	21	22	22	24	22.2	16.8	n/a	
DT98	391973	804775	38	34	23	26	43	18	32	35	35	38	36	38	33.0	25.1	n/a	
DT99	394047	806909	23	23	23	18	24	14	16	14	18	20	20	22	19.6	14.9	n/a	
DT100	391441	808897	18	20	21	14	22	12	14	12	17	15	18	20	16.9	12.9	n/a	
DT101	391361	808923	22	21	19	15	21	13	14	10	18	17	18	22	17.5	13.3	n/a	
DT102	393971	805996	34	42	50	47	62	35	34	35	46	43	48	36	42.7	32.4	n/a	
DT103	390796	808123	11	10	11	6	11	5	6	6	7	9	8	10	8.3	6.1	n/a	
DT104	394170	805189	27	32	35			18	20	17	25		22	28	24.9	18.9	n/a	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT105	394096	805625	35	42	52	34	42	22	23	20	32	30	28	29	32.4	24.6	n/a	
DT106	394303	806270	39	51	46	39	50.5	35.5	38		39	48	47.5	39	43.0	32.6	n/a	

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1**.

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Local bias adjustment factor used.**

☐ **National bias adjustment factor used.**

☐ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☒ **Aberdeen City Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**.

Notes:

Exceedances of the NO_2 annual mean objective of 40 µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60 µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

New or Changed Sources Identified Within Aberdeen City Council During 2024

Aberdeen City Council has not identified any new sources relating to air quality within the reporting year of 2024.

Additional Air Quality Works Undertaken by Aberdeen City Council During 2024

Aberdeen City Council has not completed any additional works within the reporting year of 2024.

QA/QC of Diffusion Tube Monitoring

Diffusion tube monitoring is carried out in accordance with the procedures contained in the guidance 'Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users' and LAQM.TG-August- 22-v1.0.

All tubes, other than those co-located at the continuous analysers are attached to lampposts/downpipes at a height of approximately 2 meters above ground level and exposed for 4 to 5 weeks in line with the Defra calendar of exposure periods.

Co-located tubes are in triplicate close to the analyser air intake. All exposure times are recorded. Unexposed field samples are submitted to the laboratory with each batch of exposed tubes.

Diffusion tubes are provided by Gradko International and analysed by Aberdeen City Council's Scientific Services Laboratory. The preparation technique is 20% tri-ethanolamine in water.

Aberdeen Scientific Services Laboratory is UKAS accredited for the analysis of diffusion tubes.

UKAS completed their annual assessment of the laboratory in January 2025 to ensure laboratory guidance is being implemented. No problems were identified.

The laboratory participates in the Laboratory of the Government Chemist (LGC) AIR PT scheme. During 2023 the Laboratory participated in all available rounds and all results submitted were satisfactory (z-score < ±2).

The laboratory also participates in the nitrogen dioxide "inter comparison" exercise, managed by the National Physical Laboratory. During 2024, the Laboratory participated in all available rounds. The annual summary (produced by AEA Energy & Environment) has not yet been released for 2024, however the previous report indicated that all results were classified as "Good".

Diffusion Tube Annualisation

Annualisation of data was carried out in accordance with LAQM (TG22), where data capture was less than 75% but greater than 25% for the following diffusion tube locations in 2024:

- Diffusion tube DT18
- Diffusion tube DT70
- Diffusion tube DT71
- Diffusion tube DT72
- Diffusion tube DT75
- Diffusion tube DT85

Two urban background continuous monitoring sites that form part of the national monitoring network have been used to carry out annualisation of the diffusion tube site:

- Aberdeen Erroll Park
- Dundee Mains Loan

Mains Loan is within a 55-mile radius of the monitoring locations in Aberdeen. There are no other background monitoring sites available. Valid data capture for Erroll Park and Mains Loan is above 85% in 2024.

The DEFRA Diffusion Tube Data Processing Tool v5.4 was used to calculate the annualisation factor. An annualization summary is presented in Table C.2.

Diffusion Tube Bias Adjustment Factors

Aberdeen City Council have applied a local bias adjustment factor of 0.76 (roadside) and 0.73 (background) to the 2024 monitoring data. A summary of bias adjustment factors used by Aberdeen City Council over the past five years is presented in Table C.1.

Aberdeen City Council operates a co-location study at all automatic monitoring sites across the city. All results are submitted to the national bias adjustment factors (NBAFS). The National Physics Laboratory (NPL) have advised that due to the low data capture at Anderson Drive, it has been discounted from the June version of the database. The national diffusion tube bias adjustment factor spreadsheet version 04/25 advises to use 0.76 for Aberdeen City. Although the Aberdeen Scientific Services Laboratory undertakes the analysis of diffusion tubes from neighbouring authorities, Aberdeen City Council is the only authority with continuous monitoring stations that can be used to calculate bias adjustment factors.

Accordingly, a locally derived bias factor based on the co-located tubes at all the Aberdeen continuous monitoring stations was used to adjust diffusion tube measurements at the other locations across the city. This process was considered appropriate due to the lack of other co-located studies using the laboratory for tube analysis, the remote location of Aberdeen from other conurbations and the good QA/QC performance of the laboratory.

Triplicate diffusion tubes are located adjacent to continuous monitor air analyser inlets. Tubes are exposed in 4-week periods throughout the year. Diffusion tubes are provided by Gradko International and analysed by Aberdeen City Council's Public Analyst. The preparation technique is 20% tri-ethanolamine in water. All automatic monitoring sites have been used in the study.

In accordance with LAQM (TG22) the local bias factor adjustment tool, downloaded from the DEFRA Local Air Quality Management website (Diffusion Tube Data Processing Tool v5.4), is used to calculate bias adjustment factors and the precision and accuracy of the triplicate co-located tubes. Table C.3 summarises the bias adjustment factors. Only data with good precision has been used (coefficient of variation smaller than 20%).

Erroll Park is an urban background site while the other sites are roadside.

LAQM (TG22) advises the value of a local co-location study (and the subsequent bias adjustment) will be improved if the concentrations being measured are similar to those in

the wider survey. Therefore, separate bias adjustment has been derived for roadside and background.

In accordance with LAQM (TG22), Bias B values of all roadside continuous monitoring locations were averaged for the roadside locations and the inverse derived to obtain a bias adjustment factor of **0.76**. Table C.4 summarises the calculation. Due to Anderson Drive having only 6 periods of data, it has been discounted from the calculation.

A separate adjustment factor is derived for background sites using the Bias A, from Erroll Park, of **0.73**.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor Roadside	Adjustment Factor Urban Background
2024	Local	-	0.76	0.73
2023	Local	-	0.73	0.74
2022	Local	-	0.75	0.73
2021	Local	-	0.76	0.80
2020	Local	-	0.79	0.71

NO_2 Fall-off with Distance from the Road

Distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36 µg/m^3 and the monitoring site is not located at a point of relevant exposure (taking the limitations of the calculator into account).

No diffusion tube NO_2 monitoring locations within Aberdeen City Council required distance correction during 2024.

QA/QC of Automatic Monitoring

All equipment is subject to the QA/QC procedures recommended in LAQM (TG22). Equipment is serviced at 6 monthly intervals. The service contract includes call outs to site for repairs and the routine replacement of consumables. Local Site Operator duties are carried out by Aberdeen City Council Protective Services Officers.

The Erroll Park, Union Street and Wellington Road sites are part of the UK's Automatic Urban Network. All sites are part of the Scottish Government data reporting process and subject to independent audit by Ricardo AEA (RAEA) at 6 monthly intervals. Data validation and ratification is also performed by RAEA.

The analysers perform daily automatic calibrations which are used to assess the routine performance of the analysers and any long-term response drift. Manual calibrations are performed by trained Council officers every two weeks (4 weeks in 2024 due to national shortage of calibration gas) using a calibration mixture traceable to national standards. These calibrations act as a check on the operation of the analysers and enable determination of the instrument response factors used to calculate the concentration of NO_2.

Data is checked daily (Monday-Friday). Should a problem be identified either by Council officers or by RAEA the site is visited immediately and, if necessary, a further manual calibration is performed. Data considered suspect is deleted. Records are kept of instrument breakdowns, services and audits and any local activities or meteorological conditions that may influence readings.

Live and historical data is available on the Air Quality in Scotland website.

Historical data is also available on the Aberdeen City Council website.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

FIDAS PM_{10} is corrected by dividing by 0.909.

FIDAS $PM_{2.5}$ is corrected by multiplying by 1.06.

For completeness, as recommended from the report compiled by Ricardo Energy & Environment for the Scottish Government, both the corrected and uncorrected results, as reported on the SAQD website, are reported.

Automatic Monitoring Annualisation

Annualisation is required for any automatic monitoring site with data capture less than 75% but greater than 25%.

Annualisation of data was carried out in accordance with LAQM TG22 where there was insufficient data capture for Anderson Drive NO_2 (CM3).

Erroll Park and Dundee Mains Loan were the urban background continuous monitoring sites – that also form part of the national monitoring network – used to carry out annualisation.

Mains Loan is within a 55-mile radius of the monitoring locations in Aberdeen. There are no other background monitoring sites available. Valid data capture for Erroll Park and Mains Loan is above 85% in 2024.

The annualisation factor derived from Erroll Park and Mains Loan for NO_2 data in 2024 were used to annualise the Aberdeen automatic sites data capture less than 75% but greater than 25%.

An annualisation summary is provided in Table C.2.

NO_2 Fall-off with Distance from the Road

Distance correction should be considered at any automatic monitoring site where the annual mean concentration is greater than 36µg/m^3 and the monitoring site is not located at a point of relevant exposure.

No automatic NO_2 monitoring locations within Aberdeen City required distance correction during 2024. All roadside automatic monitoring sites not at point of exposure identified in Table A.3 recorded annual mean concentrations below 36µg/m^3 and therefore do require distance correction.

Table C.2 – Diffusion Tube Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Erroll Park	Annualisation Factor Mains Loan	Annualisation Factor Site 3	Annualisation Factor Site 4	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
DT18	1.004	1.019	-	-	1.012	33.4	33.8	
DT70	1.046	1.007	-	-	1.027	13.9	14.3	
DT71	1.046	1.007	-	-	1.027	9.6	9.9	
DT72	1.046	1.007	-	-	1.027	6.9	7.1	
DT75	1.046	1.007	-	-	1.027	18.0	18.5	
DT85	0.970	0.908	-	-	0.939	15.0	14.0	
CM1	0.959	0.902	-	-	0.93	15.6	14.55	Factors for NO_2 due to low data capture

Table C.3 – Local Bias Adjustment Calculations

	Local Bias Adjustment Union St (CM1) Roadside	Local Bias Adjustment Market St (CM2) Roadside	Local Bias Adjustment Wellington Rd (CM4) Roadside	Local Bias Adjustment King St (CM5) Roadside	Local Bias Adjustment Erroll Park (CM6) Urban Background
Periods used to calculate bias	13	13	13	13	13
Bias Factor A	0.75 (0.73 – 0.78)	0.7 (0.66 – 0.74)	0.77 (0.69 – 0.88)	0.83 (0.78 – 0.88)	0.73 (0.7 – 0.76)
Bias Factor B	33% (28% - 37%)	44% (35% - 53%)	29% (13% - 45%)	21% (14% - 28%)	37% (32%-42%)
Diffusion Tube Mean (µg/m^3)	31	32	32	17	19
Mean CV (Precision)	2	4	4	5	4
Automatic Mean (µg/m^3)	23	22	25	14	14
Data Capture	100%	100%	99%	100%	100%
Adjusted Tube Mean (µg/m^3)	23 (22 – 24)	22 (21 – 24)	25 (22 – 28)	14 (13 – 15)	14 (13 – 14)

Notes:

A combined local bias adjustment factor of 0.76 has been used to bias adjust the 2024 roadside diffusion tube results. The calculation is presented in Table C.4.

A single local bias adjustment factor of 0.73 has been used to bias adjust the 2024 urban background diffusion tube results.

Table C.4 – Combined Local Bias Adjustment Factor Calculation (Roadside)

Automatic roadside monitoring site	Bias B (%)
King Street	21
Market Street	44
Union Street	33
Wellington Road	29
Mean Bias B	31.75
Factor + 1	1.3175
Inverse	**0.76**

Appendix D: Supporting Information Charts

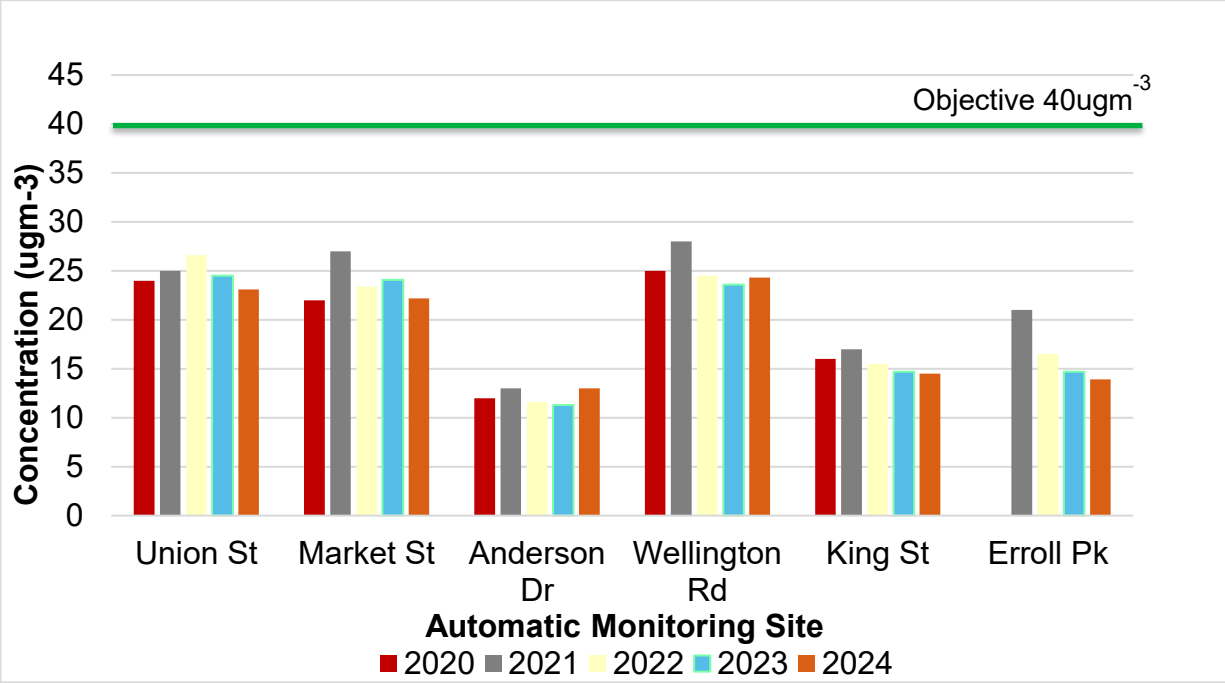

Figure D.1: Trend in NO_2 Annual Mean Concentration (µg/m^3) Continuous Monitoring Sites 2020-2024

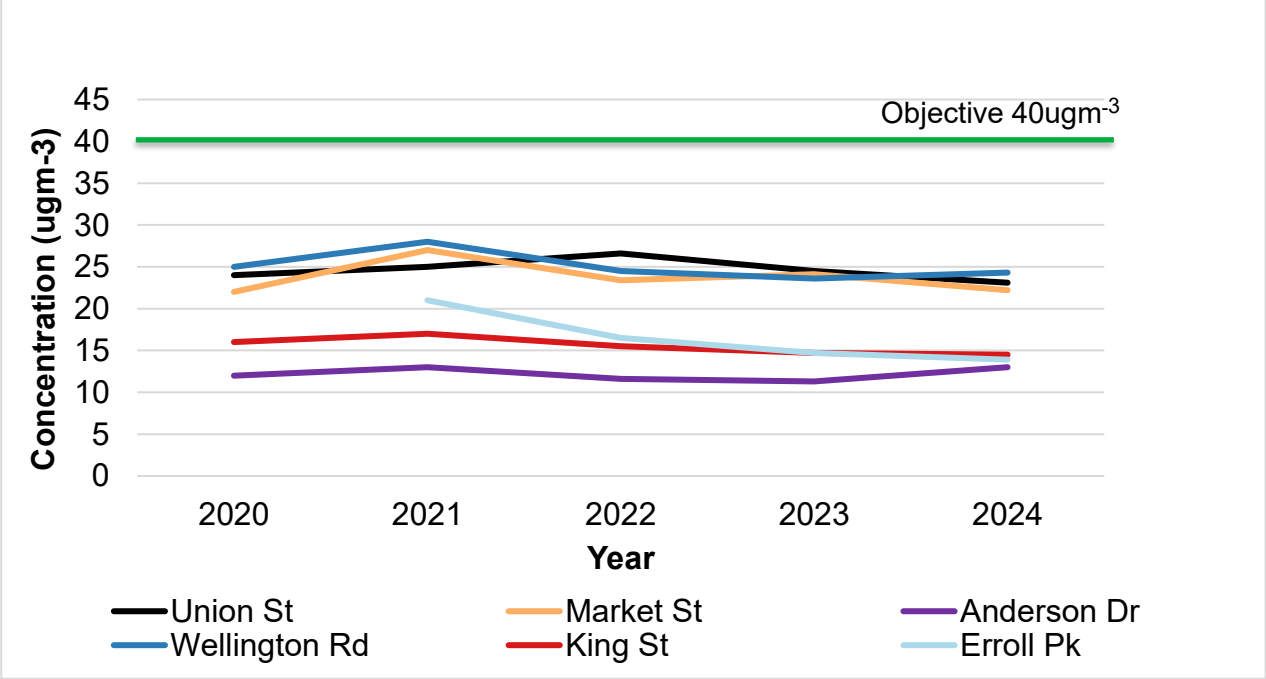

Figure D.2: Trend in NO_2 Annual Mean Concentration (µg/m^3) Continuous Monitoring Sites 2020-2024

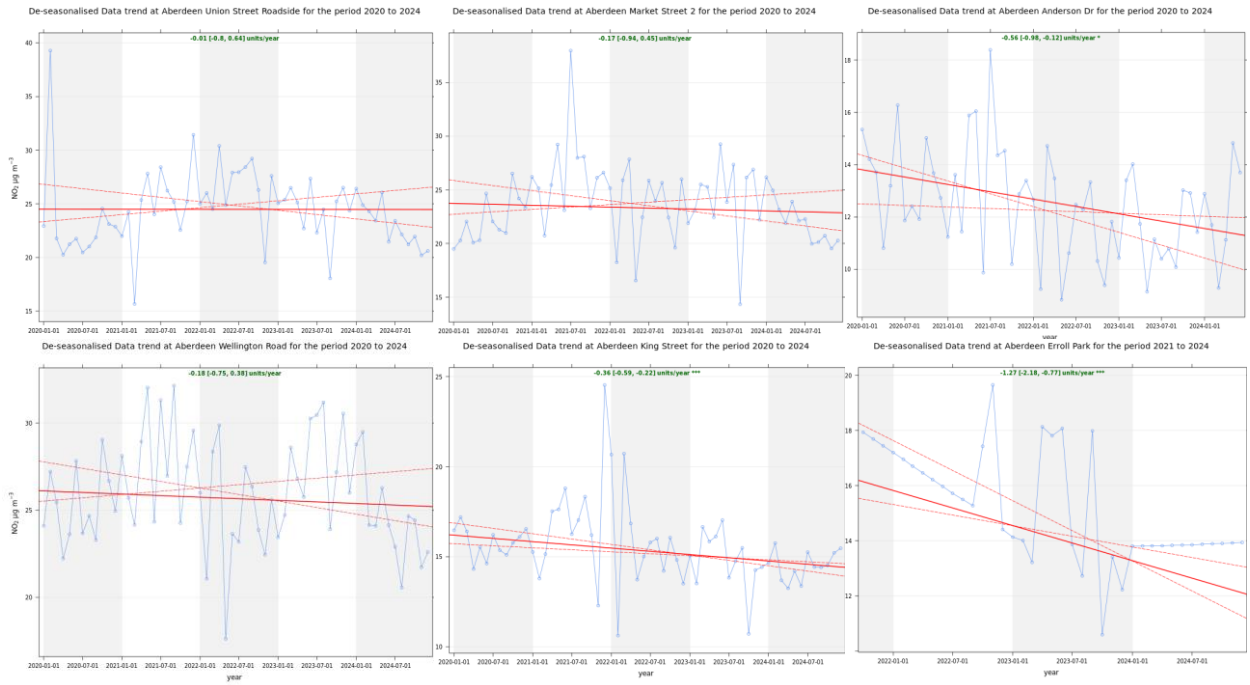

Figure D.3: De-seasonalised NO_2 trends at each Continuous Monitoring Site 2020-2024

Source: (Ricardo Energy & Environment)

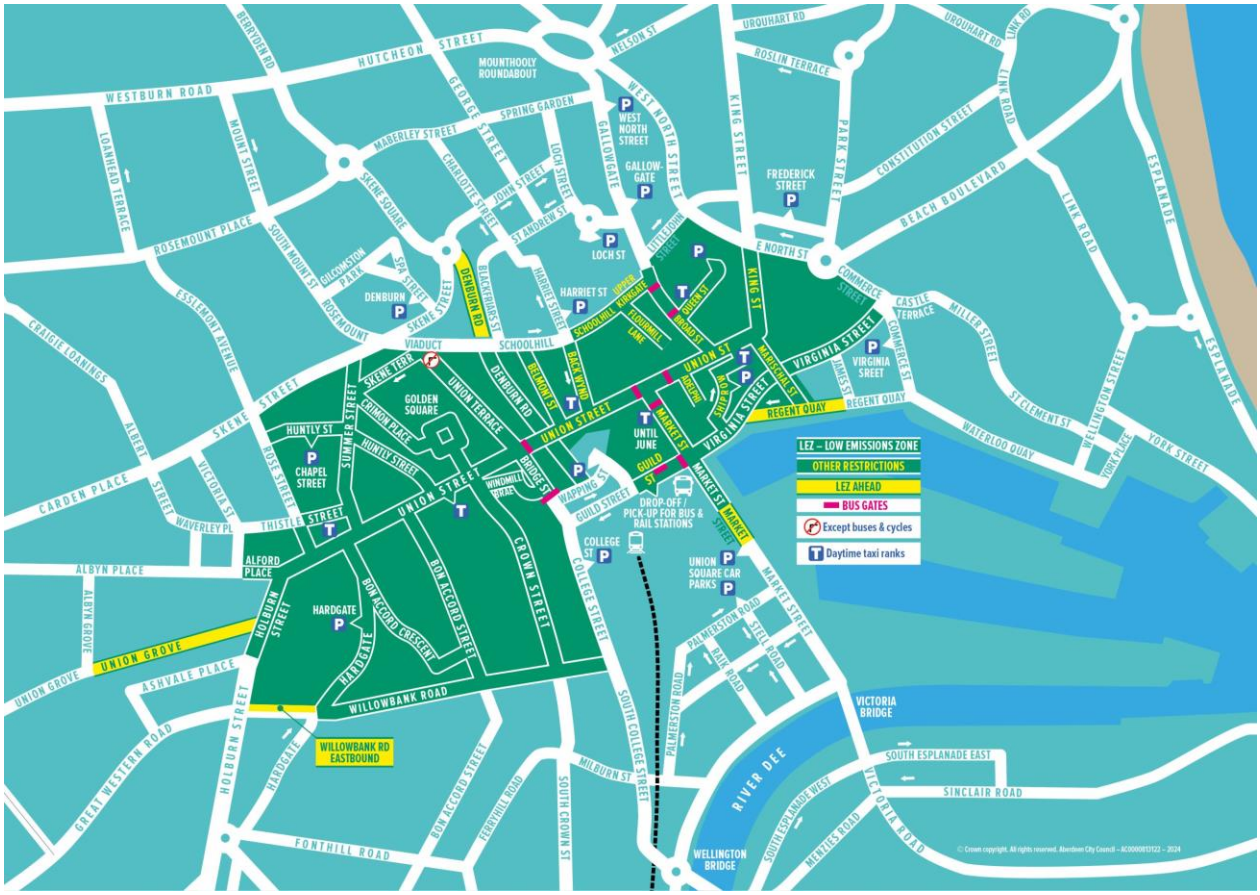

Figure D.4: Map of the Low Emission Zone (LEZ) in Aberdeen city centre

Source: (Getabout)

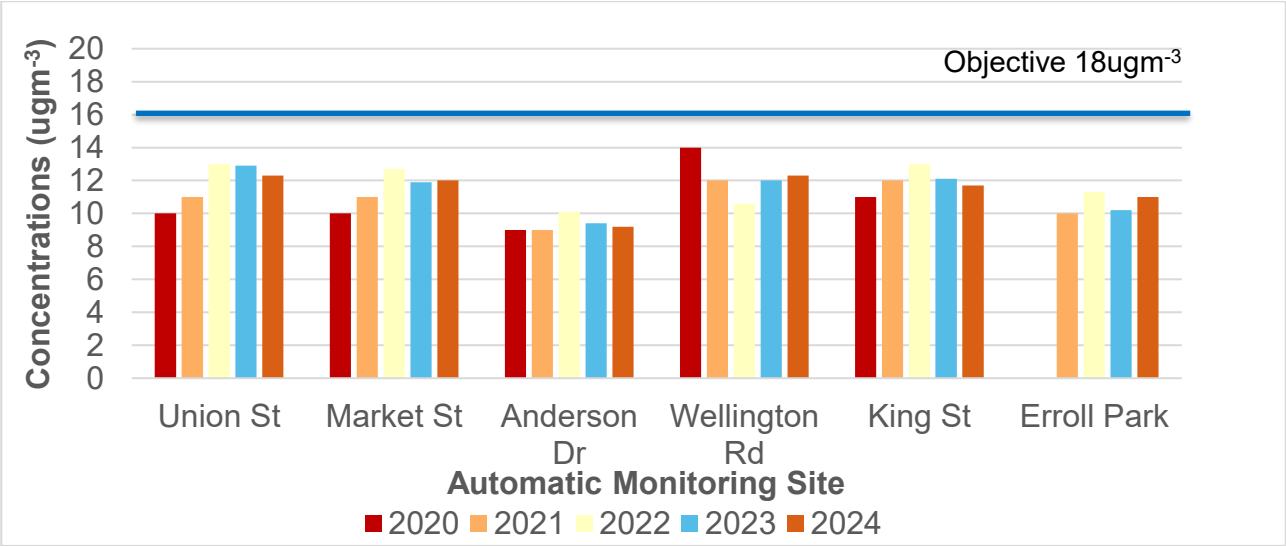

Figure D.5: Trend in PM_{10} Annual Mean Concentration (µg/m^3) at each Continuous Monitoring Sites 2020-2024

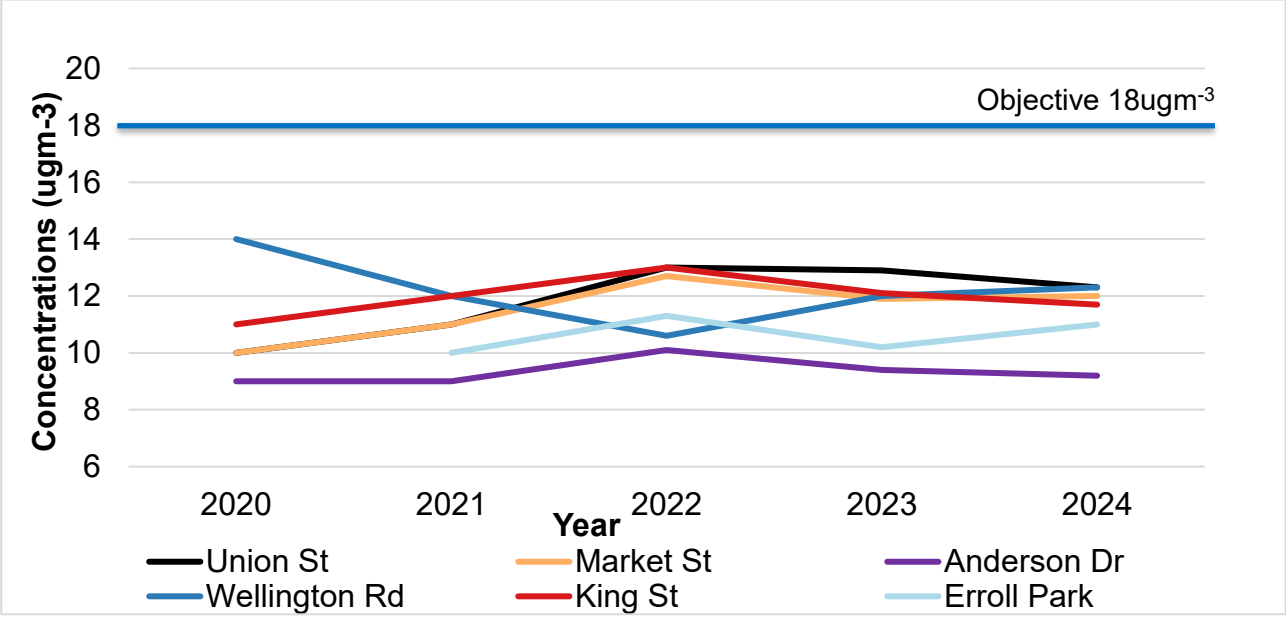

Figure D.6: Trend in PM_{10} Annual Mean Concentration (µg/m^3) at each Continuous Monitoring Sites 2020-2024

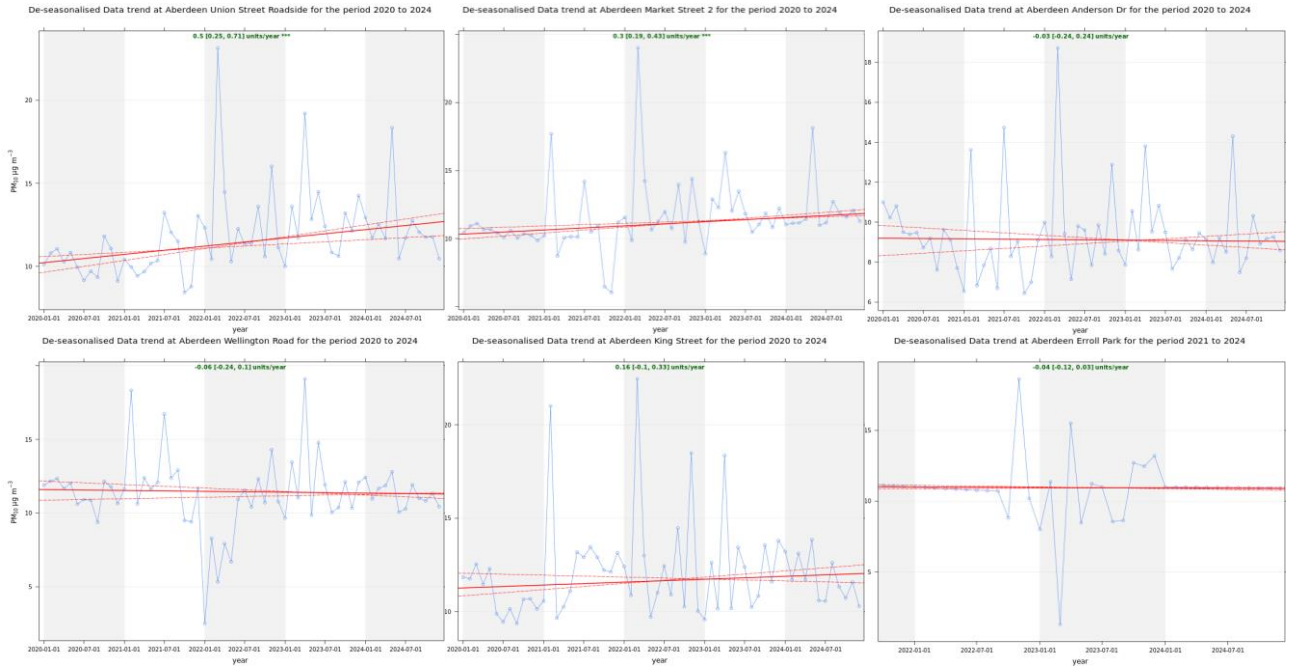

Figure D.7: De-seasonalised PM_{10} trends at each Continuous Monitoring Site 2020-2024

Source: (Ricardo Energy & Environment)

Appendix E: Monitoring Locations

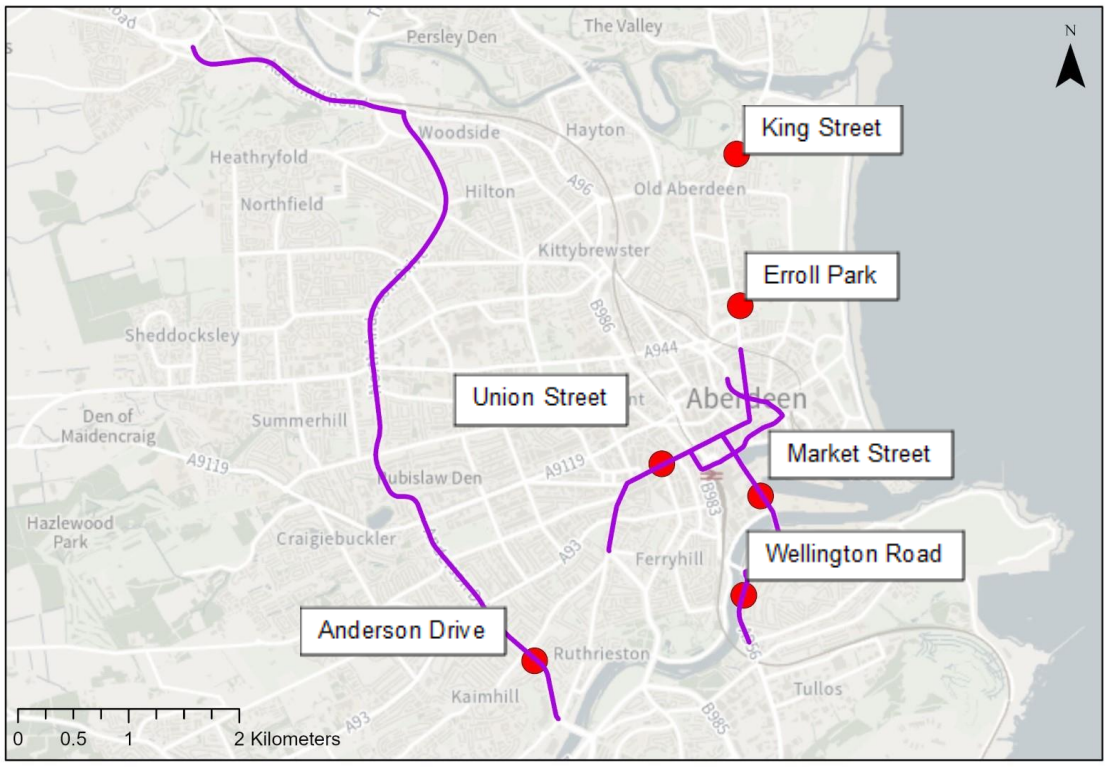

Figure E. 1: Aberdeen City AQMAs and Automatic Monitoring Locations

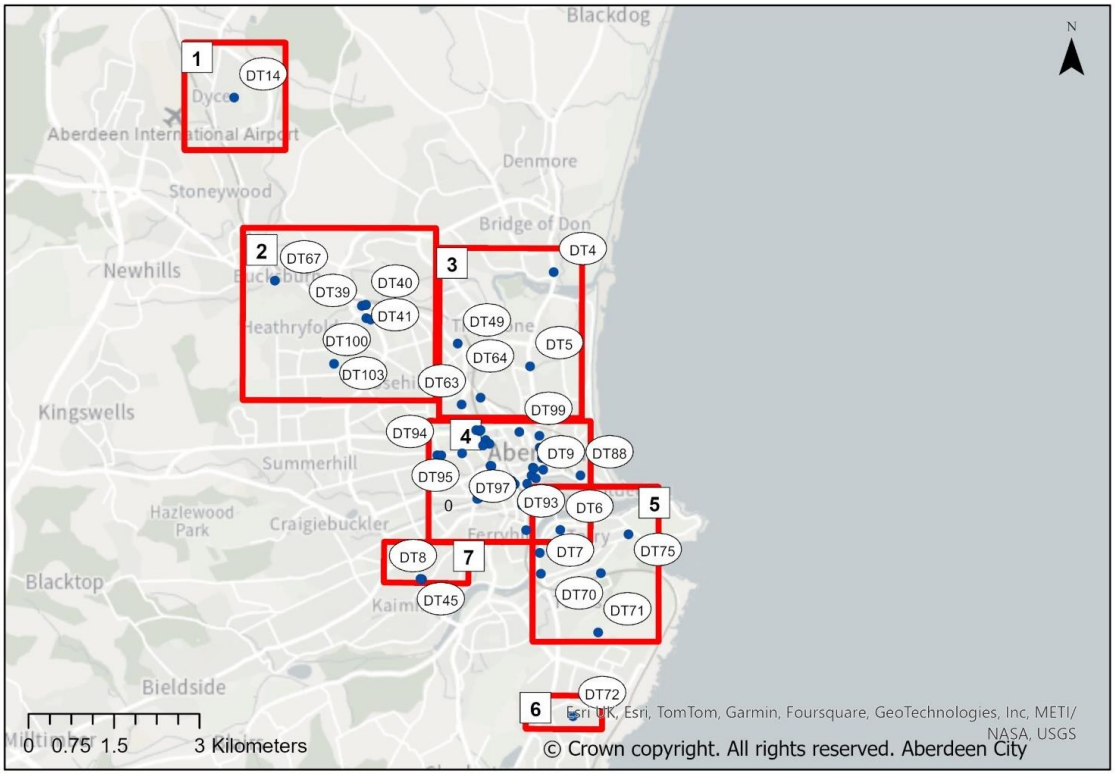

Figure E. 2: Aberdeen City-wide diffusion tube locations, separated into Plates 1-7

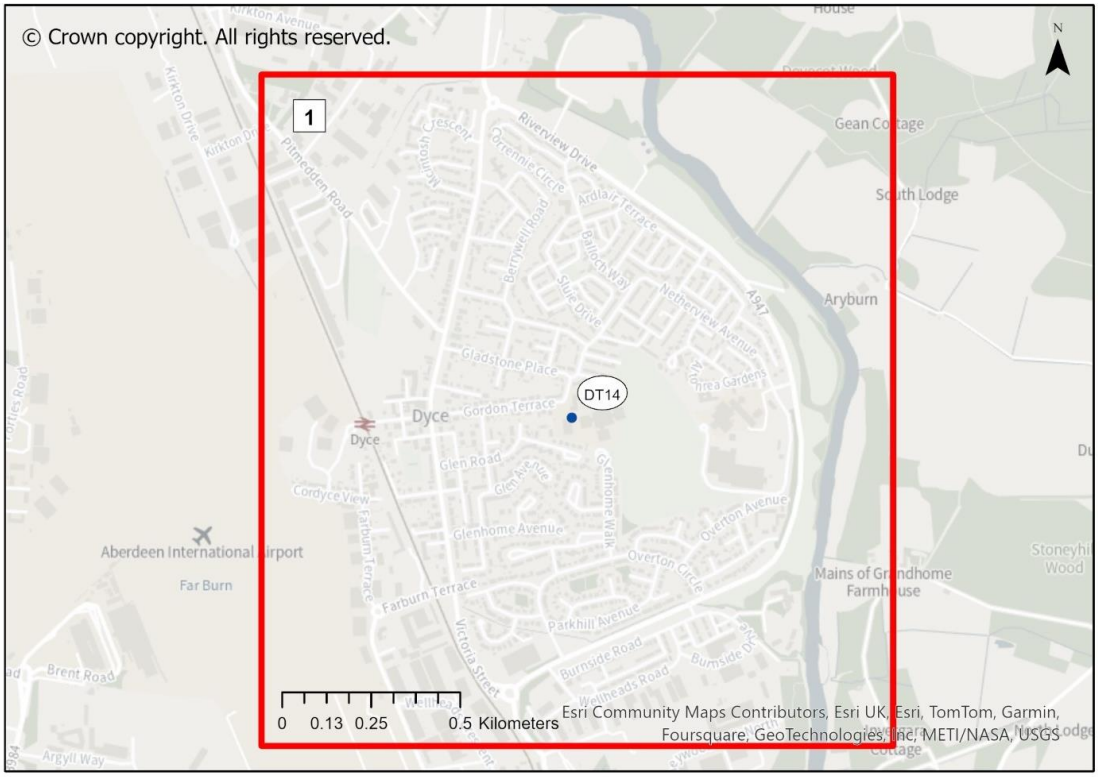

Figure E. 3: Plate 1 – Diffusion tube locations, Dyce

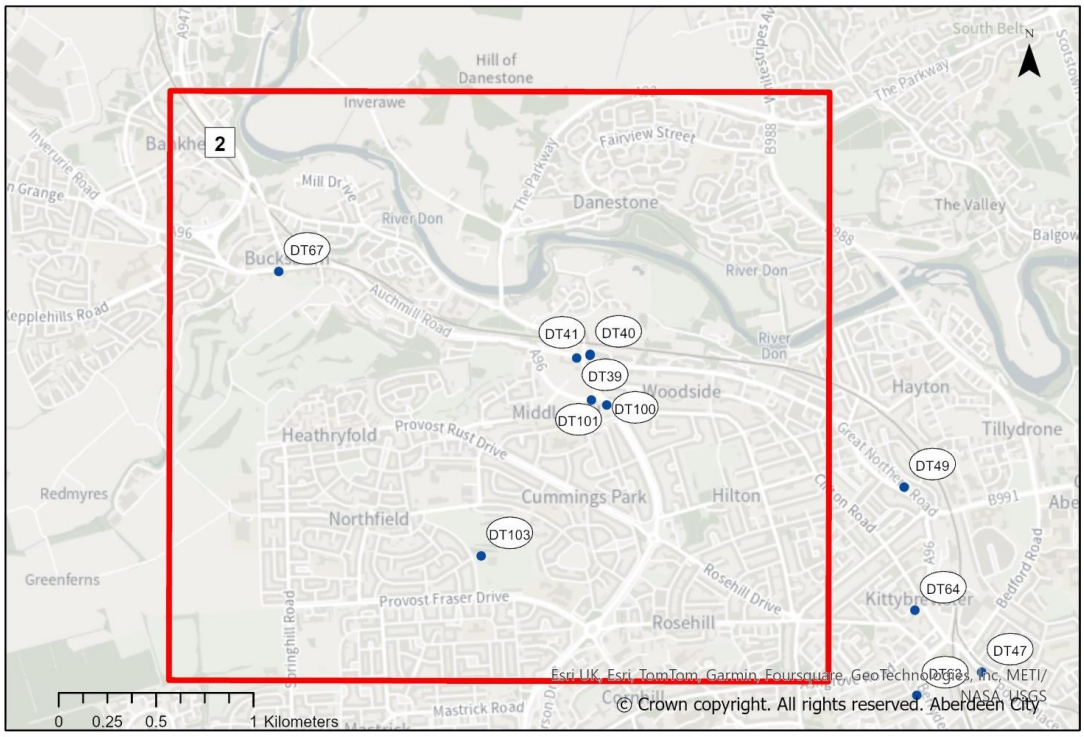

Figure E. 4: Plate 2 – Diffusion tube locations, Bucksburn

Figure E. 5: Plate 3 – Diffusion tube locations, Seaton/Kittybrewster

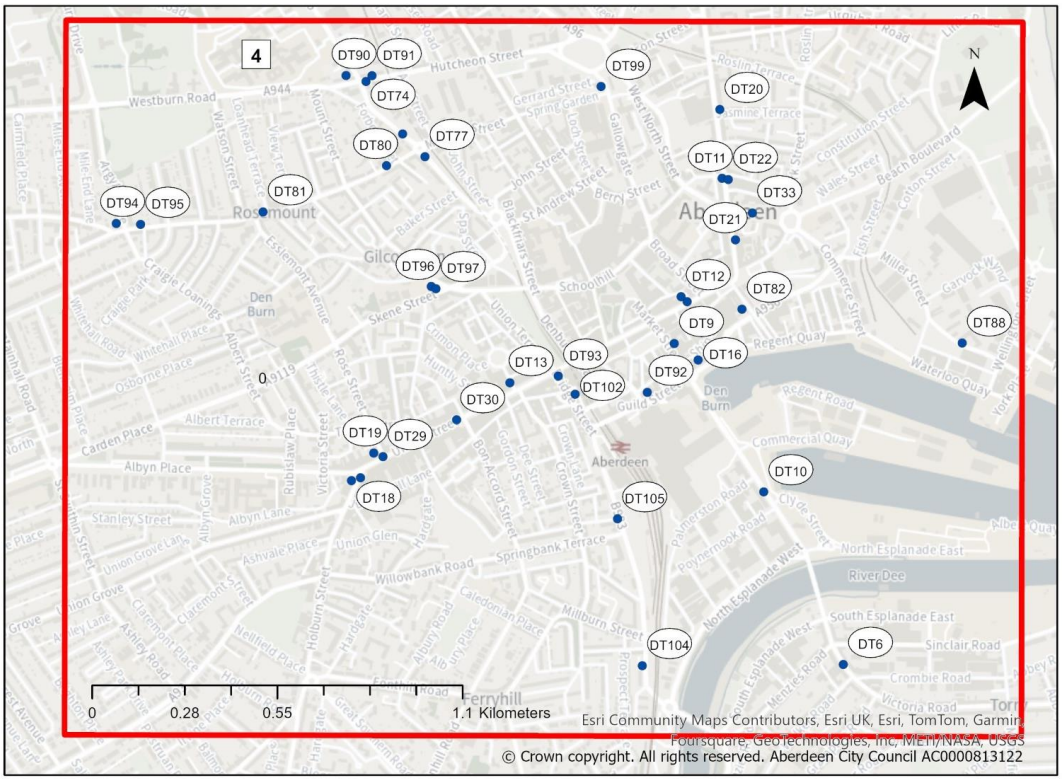

Figure E. 6: Plate 4 – Diffusion tube locations, City Centre

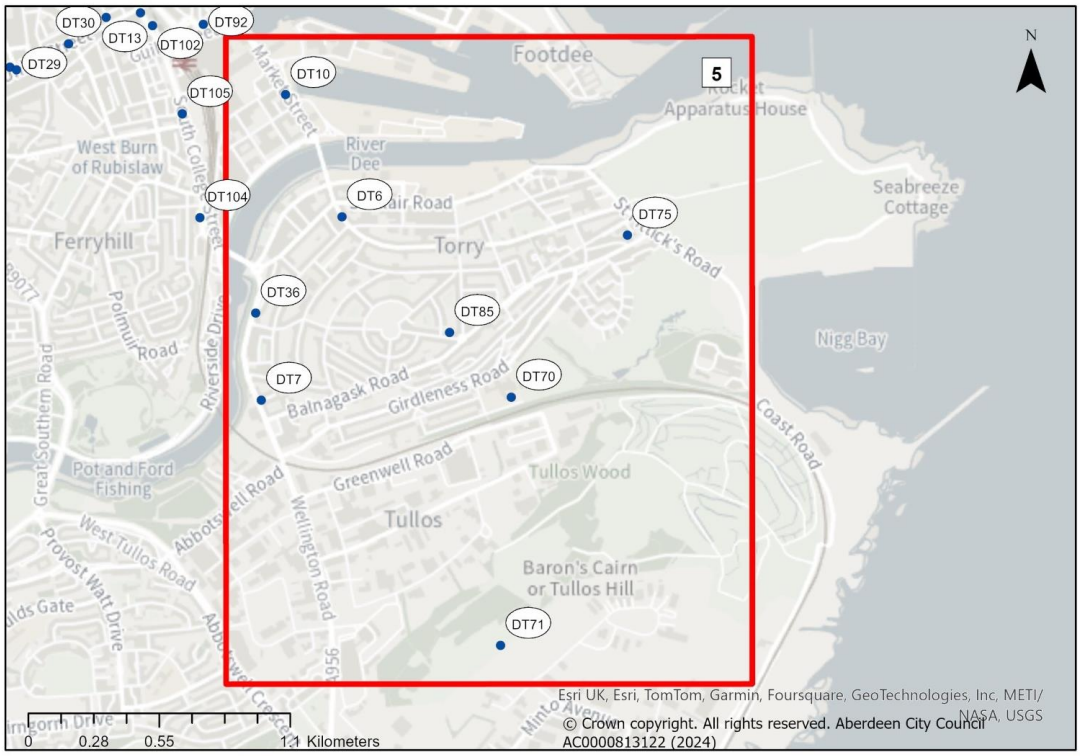

Figure E. 7: Plate 5 – Diffusion tube locations, Torry

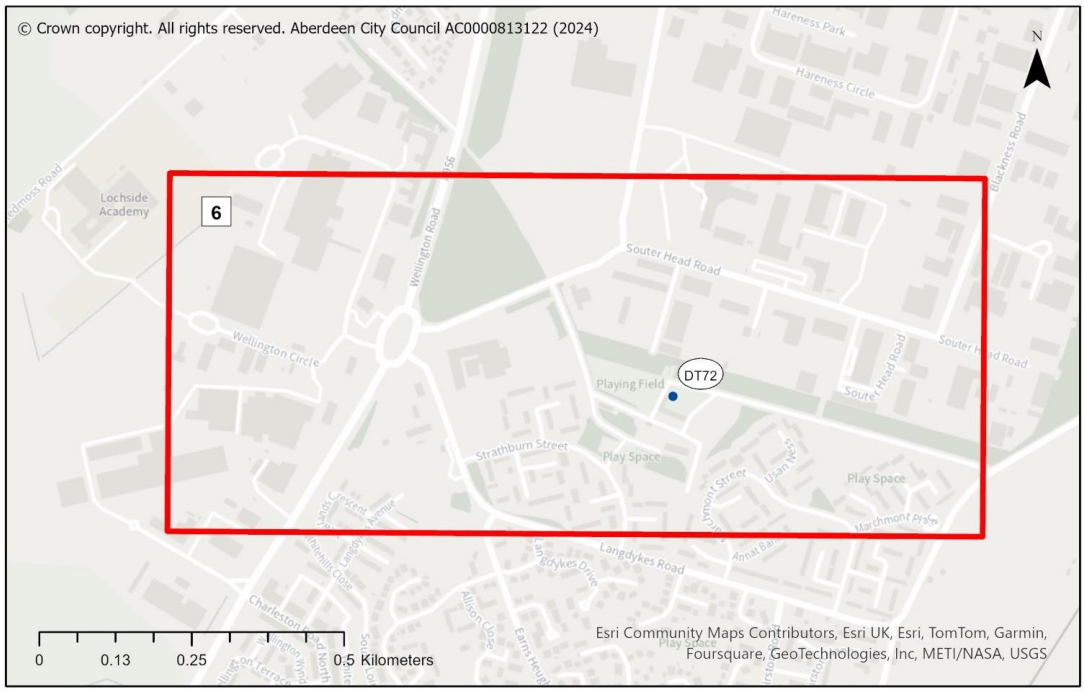

Figure E. 8: Plate 6 – Diffusion tube locations, Cove

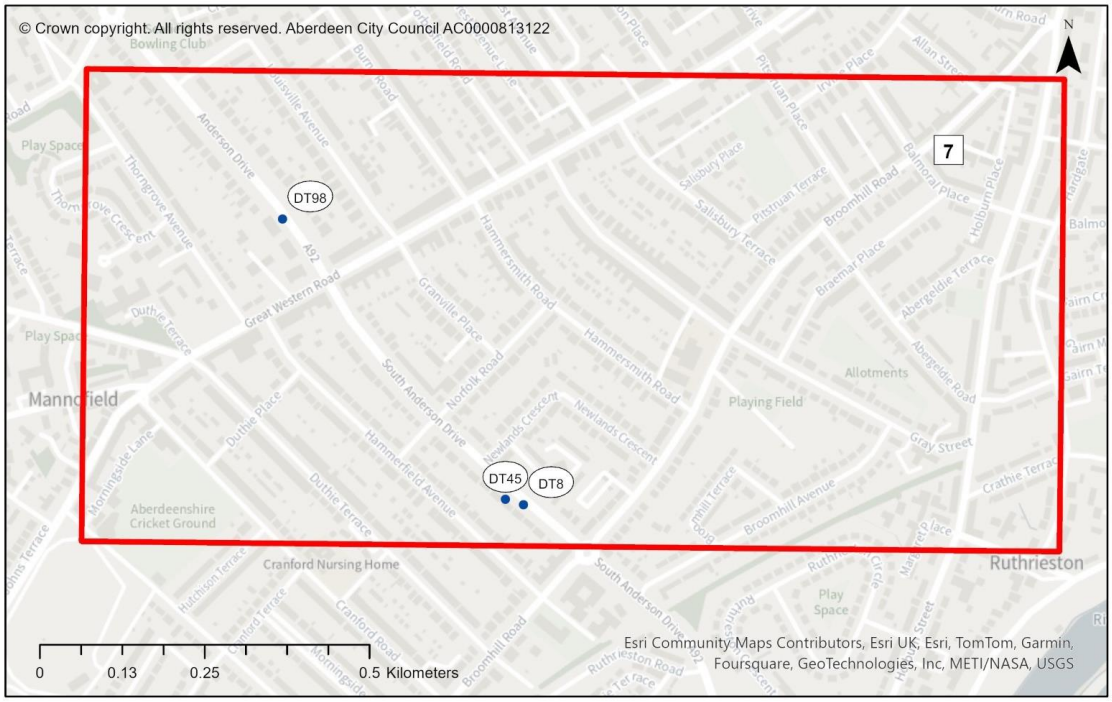

Figure E. 9: Plate 7 – Diffusion tube locations, Anderson Drive

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
DT	Diffusion Tube
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
LEZ	Low Emission Zone
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

1. Environment Act 1995
2. The Air Quality (Scotland) Regulations 2000
3. The Air Quality (Scotland) (Amendment) Regulations 2001
4. Local Air Quality Management Technical Guidance LAQM (TG22), DEFRA, August 2022
5. Local Air Quality Management Policy Guidance, (PG) (S) (23), The Scottish Government, March 2023
6. Aberdeen City Council Action Plan, March 2011
7. Aberdeen Walk and Cycling Index 2023, Sustrans, March 2024
7. 2024 Air Quality Annual Progress Report (APR) for Aberdeen City Council, June 2024
8. Equivalence study to investigate Particulate Matter monitoring in Scotland using the Fidas 200 report for Scottish Government, Ricardo, May 2023