

Halton Council

2024 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995
Local Air Quality Management, as amended by the
Environment Act 2021

Date: April 2024

Halton Council

Information	Details
Local Authority Officer	Halton Borough Council
Department	Public Health
Address	Town Hall, Heath Road, Runcorn, WA7 5TD
Telephone	0151 511 7283/7595
E-mail	Environmental.Protection@halton.gov.uk
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Executive Summary: Air Quality in Our Area

Air Quality in Halton

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year¹.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution².

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

Table ES 1 - Description of Key Pollutants

Pollutant	Description
Nitrogen Dioxide (NO ₂)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO ₂)	Sulphur dioxide (SO ₂) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM ₁₀ and PM _{2.5})	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM₁₀ refers to particles under 10 micrometres. Fine particulate matter or PM_{2.5} are particles under 2.5 micrometres.

¹ UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

² Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

Halton Borough Council is a largely urban area that straddles the river Mersey and consists of two main centres, Runcorn and Widnes. The Borough's history is strongly linked to the chemical industries of the early and mid-20th Century and continues to play host to large industrial complexes. Regeneration over the past 20 years has seen new industry and commerce move into the Borough; in particular, the waste and haulage sectors have replaced some of the more traditional industries. In addition, housing developments have started to spread across the more rural fringes of the Borough.

In 2011, Halton Borough Council declared 2 air quality management areas in Widnes Town Centre due to minor exceedances of the annual air quality objective for NO₂ on some of the diffusion tube data. The diffusion tubes are at roadside locations and the exceedances were in relation to local traffic congestion at road junctions.

The Borough is home to The Silver Jubilee Bridge, (SJB) which is one of the major crossings of the river Mersey. Historically this resulted in congestion at the access points to the SJB. However, in 2017 the second Mersey crossing was opened which has greatly improved the flow of traffic throughout the Borough.

Environmental Health works closely with the Planning and Development and the Highways Divisions of the Council in relation to new developments and transport schemes. There is also close working with local officers of the Environmental Agency with regards some of the larger industries in the Borough. Sitting within the Public Health Department and reporting to the Director for Public Health the Environmental Health has a clear and ongoing relationship with the wider public health objectives in relation to air quality.

Halton is a member of the Merseyside and Cheshire Air Quality Technical Group, which reports to the Environmental Health Chief Officers.

Since the declaration of the AQMAs in Widnes 2011, a number of developments have resulted in a significant improvement in air quality. These include improvements in vehicle emission technology and the opening of the Mersey Gateway Bridge in 2017. This resulted in reduced traffic congestion in Widnes town centre and the levels of NO₂ have consistently fallen to below the air quality objective levels. The Air Quality Management Areas in Halton were revoked in November 2023.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan³ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter (PM_{2.5}), the pollutant of most harm to human health. The Air Quality Strategy⁴ provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero⁵ details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The Council has introduced several measures aimed at improving air quality. The two air quality management areas were declared in relation to traffic emissions and therefore the actions identified to improve air quality are mostly related to transport.

Sustainable modal shifts in transport:

HBC continues to work on a number of projects designed to influence residents' choice of transport across the Borough and beyond. The Council has been working in partnership with the Department for Transport (DfT) and British Cycling to secure funding for projects that encourage travel by alternatives to the car. Money has been invested in extending cycle routes along key corridors, promoting travel alternatives and bus route improvements to reduce congestion.

³ Defra. Environmental Improvement Plan 2023, January 2023

⁴ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

⁵ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

Cycling and Walking Activities Active Halton campaign:

This public health campaign aims to encourage people who live, work and study in Halton to be more active. The campaign promotes cycling, walking, and running.

<https://activehalton.co.uk/what-is-active-halton/>

Improvement of road network:

The junction at Milton Road and Kingsway was widened for the inclusion of a second lane. This has allowed a better flow of traffic and data indicates that this, together with more strategic actions and improvements in engine technology, has had the intended impact of reducing the levels of NO₂ in the former Air Quality Management (AQMA) 2 to the point where the Council was able to revoke the AQMA.

Liverpool City Region (LCR)

Halton Borough Council continues to work within the wider city region to assess challenges across boundaries.

Liverpool City Region Air Quality

Halton Borough Council is working with the other Councils in the Liverpool City Region to assess and react to Air Quality. The main output was the combined authority action plan.

<https://www.liverpoolcityregion-ca.gov.uk/improving-our-air-quality>

The Objectives of the Action Plan are:

1. To support the Liverpool City Region's local authorities in their mandate to reduce harmful atmospheric emissions to within statutory levels in the shortest possible time, as a minimum, and preferably, to better and exceed these minimum target standards. This is in tandem to achieving the net zero carbon target by 2040.
2. To support the local authorities in the revocation of Air Quality Management Areas in the shortest possible time.
3. To avoid the need to declare new Air Quality Management Areas across the city region in respect of nitrogen dioxide emissions or any other harmful pollutants.

The action plan is divided into four main sections:-

1. Actions by the Combined Authority
2. Recommended actions to local authorities and our partners
3. Actions for the LCR's residents, communities and businesses.

4. Recommended actions to Central Government and its agencies

Liverpool City Region Hydrogen Bus Project

The Liverpool City Region Combined Authority is part of a consortium that has been awarded £6.4m from the Office for Low Emission Vehicles to trial hydrogen buses. The bid includes the creation of a new hydrogen refuelling station at the BOC plant in St Helens, which produces hydrogen for industrial customers in the region and further afield. Up to 25 hydrogen-powered, buses to be funded with the first trial. The buses emit nothing but water, so will contribute to improving air quality and a zero-carbon economy.

<https://www.liverpoolcityregion-ca.gov.uk/liverpool-city-region-launches-6-4m-hydrogen-bus-project/>

Public Information

Air Quality website continues after its launch in November 2019. It is a public information website for the Liverpool City Region

<https://letscleartheairlcr.co.uk/>

Conclusions and Priorities

As part of the Liverpool City Region (LCR) Halton Borough Council recognises the need to address air quality beyond borough boundaries. Halton Council is therefore committed to working with the other LCR authorities to address emissions across the region with particular reference to transport and travel planning. We are working with LCR to maintain a regional emission inventory to better understand the sources of pollution and how to reduce it, improves emissions from buses and increase the number of electric vehicle charging points.

Halton Council within its Delivery and Allocations Local Plan has included sections on

Sustainable Development and Climate Change

Managing Pollution and Risk.

<https://www3.halton.gov.uk/Documents/planning/planning%20policy/newdalp/DALP%20Adopted.pdf>

The AQMAs were declared on the basis of small exceedances in the diffusion tube data. The exceedances were not consistently replicated by the real time analysers that had been located in the AQMAs.

The indication is that Halton Borough Council is in compliance with all the air quality objectives. Monitoring of the air quality in the AQMAs demonstrates that the drop in NO₂ concentrations identified prior to the Covid pandemic has continued and none of the diffusion tubes demonstrate a continued exceedance of the air quality objective in the annual concentration of NO₂. It is therefore a priority for 2024 that Halton Council continues the development of its Air Quality Strategy for the Borough.

Halton's Public Health Team along with Environmental Health are collaborating on a PhD study by Manchester Metropolitan University examining Fine Particulate Matter in Halton with the aim of developing a screening tool to help local authorities identify P.M 2.5 hotspots.

Local Engagement and How to get Involved

There is great scope for members of the public, businesses, voluntary organisations and neighbouring authorities to play an important role in dealing with air quality issues within the Borough.

There are a number of things the public can do to help improve air quality in their area.

These include:

- Not burning garden or domestic waste. This not only releases pollutants into the atmosphere, it can also cause a nuisance to neighbours. All waste should be either disposed of correctly or recycled. [haltoncouncilwaste](https://www.haltoncouncilwaste.co.uk/)
- Reducing the use of cars and consideration of cycling, walking or using public transport more. 55% of car journeys are less than five miles, many of these trips could be walked or made by bike or public transport.
- Car sharing. When two or more people share a car and travel together, it allows people to benefit from the convenience of the car, sharing travel costs, whilst helping to reduce congestion and air pollution.
- Taking an 'eco-driving' approach when driving. This can save money in reduced fuel costs as well as reduce emissions of air pollutants and influence climate change.

Examples of 'eco-driving' approach:

- Regular maintenance and servicing of vehicle according to the manufacturers schedule to maintain the engine's efficiency.

- Making sure tyres are inflated to the manufacturer's recommended pressures. Under-inflated tyres create more rolling resistance and so use more fuel.
- Removing unused roof racks or roof boxes to reduce wind resistance and not overloading vehicle or carrying unnecessary weight. Reducing use of air conditioning which increases fuel consumption.
- Avoid warming up the car while stationary this can consume more fuel and increase pollution. By starting to drive immediately, the engine will reach its working temperature quicker.
- Avoiding unnecessary idling of car engine when in traffic or waiting to pick up people.
- Driving smoothly and avoiding sharp acceleration and harsh braking.

Maintaining a steady speed, using the highest gear possible as soon as possible (between 2000rpm and 2500rpm) to keep the engine working most efficiently. The greater the speed, the greater the fuel consumption and pollution. For example, driving at 70mph uses up to 9% more fuel than at 60mph and up to 15% more than at 50mph.

- Using a lower emissions, hybrid or electric vehicle or high efficiency petrol vehicle.
- Avoid driving during the morning and evening peak times as levels of congestion and therefore air pollution will be highest.
- If stationary in a traffic jam, traffic lights or at a pelican crossing for example for over 30 seconds, switch off engine to reduce air pollution.

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Protection Team of Halton Council with the support and agreement of the following officers and departments:

Sean Jackson Isobel Mason Stephen Burrows (Halton Environmental Health)
Jonathan Farmer Chris Sharpes Rebecca Taylor (Halton Highways)
Andrew Evans (Halton Planning)
Liverpool City Region & Cheshire Air Quality Technical Group

This ASR has been signed off by Ifeoma Onyia (Director of Public Health)

If you have any comments on this ASR please send them to

Sean Jackson

Halton Borough Council
Runcorn Town Hall
Heath Road
Runcorn
Cheshire
WA7 5TD

Telephone 0151 511 7283

Environmental.Protection@halton.gov.uk

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1 Local Air Quality Management

This report provides an overview of air quality in Halton Council during 2023. 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 order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Halton Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

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 should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained and provide dates by which measures will be carried out.

Halton Council currently does not have any declared AQMAs. A local Air Quality Strategy is under development to prevent and reduce polluting activities.

2.2 Progress and Impact of Measures to address Air Quality in Halton

Defra's appraisal of last year's ASR concluded

	Comments from 2023 ASR Appraisal	HBC Response
1	Table 2.2 shows the Council's measure to improve air quality. However, the Council should also consider including funding source, funding status and estimated cost of measures in the table.	Noted
2	Tables for PM ₁₀ , PM _{2.5} and SO ₂ were included but have no results. Hence the Council can remove these.	Noted
	As of the publication of this ASR, the Council's AQMAs have been revoked and hence the Table 2.1 and the text in the report should be amended thereafter	Noted & addressed in the 2024 ASR.
4	As the Council has no AQMAs – there's a requirement of an Air Quality Strategy. It is welcomed that the Council is working towards developing this.	Noted
5	In Table A.4 a few table lines are missing, which could cause some confusion when reading the table. In this case, the Council can highlight no data with a "-".	Noted & addressed in the 2024 ASR
6	It is welcomed that the Council shows the monitoring locations of diffusion tube sites and automatic analysers on the same map. However, the maps included in the ASR could benefit from a scale bar and a north-arrow to make it easier	Noted & addressed in the 2024 ASR

	for the reader. Additionally on the maps of the individual diffusion tubes it is not clear where each tube is located. Perhaps a coloured dot could make it easier.	
7	It is welcomed that the comments from the 2022 ASR appraisal have been included within the 2023 ASR, and that these have been responded to.	Noted
8	Details of measures to address PM2.5 for the upcoming year have been included.	Noted

Halton Council has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1. 2023 measures are included within Table 2.1, with the type of measure and the progress Halton Council have made during the reporting year of **2023** presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.1.

More detail on these measures can be found in their respective Action Plans and Local Transport Plan Key completed measures are:

- Continuation of Connective EV Charging placed within areas of terraced properties
- Electric Vehicle Charging Strategy Halton Borough Council

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

Halton Electric Vehicle Strategy and Action Plan

Halton's priorities for the coming year are:

Continuing the Development of the Air Quality Strategy for Halton

Research PhD study by Manchester Metropolitan University examining Fine Particulate Matter in Halton

Halton Council worked to implement these measures in partnership with the following stakeholders during 2023:

- Environment Agency
- Liverpool City Region & Cheshire Air Quality Technical Group (AQTECH).
- Manchester Metropolitan University

The principal challenges and barriers to implementation that Halton Council anticipates facing are funding and resource challenges.

Progress on the following measures has been slower than expected due to:

Staffing issues

Whilst the measures stated above and in Table 2.1 will help to contribute towards compliance, Halton Council anticipates that further additional measures not yet prescribed will be required in subsequent years to maintain compliance and this will be addressed within the Air Quality Strategy.

Table 2.1 – Progress on Measures to Improve Air Quality

	Measure	Policy	Target Area	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Highway Improvements Around AQMA	Transport Planning And Infrastructure	Other	HBC	2016	Complete	Reduction in NO2 levels to below objective standards	NO2 Particulates	Levels of NO2 Reduced	Complete	AQMAs revoked
2	Travel Plans	Promoting Travel Alternatives	Workplace Travel Plans	HBC	Annual Programme	Ongoing	Sustainable modal shift	NO2 Particulates	Levels of NO2 Reduced	Ongoing	General benefit in air quality and health
3	Improvement Of Cycle Network	Promotion Of Travel Alternatives	Promoting Cycling	HBC	2016	Ongoing	Sustainable modal shift	NO2 Particulates	Levels of NO2 Reduced	Ongoing	General benefit in air quality and health
4	Low Emission Strategy	Policy Guidance	Low Emissions Strategy	HBC/LCR	Ongoing	Ceased	Number of Bus conversion	NO2 Particulates	Levels of NO2 Reduced	Ceased	Gov funding ceased
5	Private Sector EV Investment	Policy Guidance	Low Emission Strategy	HBC/LCR	Ongoing	Ongoing	Sustainable modal shift	NO2 Particulates	29 residential charging points installed	Ongoing	Privately Funded via Planning Conditions
6	LCR Air Quality Task Group	Transport Planning And Infrastructure	Other	LCR	Ongoing	Ongoing	Reduction in NO2 PM10 across City Region	NO2 Particulates	Ongoing	Ongoing	Hydrogen Bus Project
7	Sustainable Travel Promotions	Promoting Travel Alternatives	Promoting of cycling/walking bike use	HBC	2016	Ongoing	Reduction in car reliance/modal shift	Across the Borough	Ongoing	Ongoing	Travel guidance for access to employment and skills
8	Improve Council Fleet	Vehicle Fleet Efficiency	HBC	HBC	2015	Ongoing	Improved efficiency of Council vehicles	Across the Borough	Ongoing	Ongoing improvements	All HBC Fleet is now Euro 6/introduction of EVs to fleet
9	Promotion Of Travel Alternatives	Promoting Cycling	Community	HBC	2019	Ongoing	Reduction in trips under 5 miles	Across Borough	Ongoing	Partner with LCR	Cycle Promoting
10	Better Buses Area	Promoting Travel Alternatives	Bus route improvements	HBC	2019	Complete	Reduce journey times and relieve congestion	Across Borough	Complete	2024	Increased bus use
11	Introduction of £2 bus fares across the Borough	Promoting Travel Alternatives	Promotion of bus routes	HBC	2023	Ongoing	Reduction in car reliance/modal shift	Across Borough	Ongoing	Ongoing	Increased bus use
12	Emerging Halton Local Walking/Cycling Infrastructure plan	Promoting Travel Alternatives	Promoting active travel	HBC	2023	Ongoing	Reduction in car reliance/modal shift	Across Borough	Ongoing	Ongoing	
13	Halton's EV Infrastructure strategy 15 year plan for the Borough	Promoting alternative fuels	Increasing use of electric vehicles	HBC	2023	Ongoing	Reduction in use of fossil fuels	Across Borough	Ongoing	2038	
14	Bikeability courses for all year 5/6 pupils	Promoting travel alternatives	Promoting active travel	HBC	Ongoing	Ongoing	Reduction in car reliance/modal shift	Across Borough	Ongoing	Ongoing	

2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy⁶, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM_{2.5}). There is clear evidence that PM_{2.5} (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Halton Council is taking the following measures to address PM_{2.5}

Although PM_{2.5} is not included in the Local Air Quality (England) Regulations 2000 (“the Regs”) Halton Borough Council has in the past monitored PM_{2.5}. The monitor was located downwind of energy from waste plant and was installed in compliance with planning consent for the plant. It was located on Runcorn Hill to the southwest of the Borough. The data from this station indicated that the annual average was 10µg/m³, and below the objective (see Table A.7) and hence the monitoring has been discontinued.

Halton Council measure The Public Health Outcome Framework for PM_{2.5}, within Public Health. This outcome indicator is the percentage of mortality in adults over 30 attributed to particulate air pollution (new method). The attributable fraction in England in 2022 was 5.8%, whilst for the North West this is lower, at 5.6% and in Halton at 5.7%.

It is anticipated that the measures outlined in Table 2.2 above will contribute to the management of PM_{2.5} within the Borough. The fact that the Environmental Health Team sits within the Director of Public Health’s Directorate at Halton Borough Council means the dialogue regarding health and particulate matter is ongoing and policies relating to air quality are fully co-ordinated with the related health planning. Halton’s Public Health along with Environmental Health have commissioned a PhD study by Manchester Metropolitan University examining Fine Particulate Matter in Halton

The entire Borough is designated as a Smoke Control area. Environmental Protection Officers give out advice and information to residents on DEFRA approved exempt appliances and the correct fuels to use. Environmental Health respond to complaints about commercial premises using burning as a method of waste disposal and respond to nuisance

⁶ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

complaints about neighbours' consistently burning waste under the Environmental Protection Act 1990.

All permitted premises and planning applications are encouraged to utilise gas-fired boilers instead of diesel-powered boilers to reduce the PM_{2.5} and PM₁₀ emissions. As a statutory consultee on planning applications, we ask for dust management plans to limit the amount of dust on site, and to stop burning of any waste arising.

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2023 by Halton Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Halton Council undertook no automatic (continuous) monitoring at any sites during 2023 as they have been decommissioned due to their age and revoking of AQM's

However, Table A.1 in Appendix A shows the details of the automatic monitoring sites in previous years.

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

NO₂ monitor at one site (Milton Road) transferred to the Environment Agency within their national network defra.gov.uk/interactive-map

Halton Borough Council publishes information about the monitors and data within the website airqualityengland

3.1.2 Non-Automatic Monitoring Sites

Halton Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 15 sites during 2023. Table A.2 in Appendix A presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D.

Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

All diffusion tubes monitoring results were below the annual mean for nitrogen dioxide, unfortunately, there are no results for Halton's automatic monitoring stations as they have been decommissioned due to their age and revoking of AQM's. The last five years diffusion tube results indicate a reduction in levels, with a large reduction 2020 due to Covid, as there was less car use within Halton. A similar trend can be noted with automatic monitoring as consistently over the previous five years levels are well below air quality objectives both the annual , hourly mean.

3.2.2 Particulate Matter (PM₁₀)

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 40µg/m³.

Table A.7 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

Unfortunately, there are no results for Halton's automatic monitoring PM₁₀ stations as they have been decommissioned due to their age and revoking of AQM's. Levels of the annual mean have remained consistent low 20's µg/m³ with a greater reduction in 2020 due to Covid, as there was less car use within Halton. The rise in the daily mean in 2021 due to an increase in home burning and a period of dry weather.

3.2.3 Particulate Matter (PM_{2.5})

No monitoring undertaken.

Using DEFRA background maps the average PM_{2.5} in Halton is 8.2 µg/m³

However, the projections in the 2018 reference year background maps and associated tools are based on assumptions, which were current before the Covid-19 outbreak in the UK. In consequence, these tools do not reflect short or longer-term impacts on emissions in 2020 and beyond resulting from behavioural change during the national or local lockdowns.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
HBC1	Marzahn Way	Roadside	352042	386285	NO ₂ , PM ₁₀	AMQA1	Chemiluminescent; Beta Attenuation	8	1	2
HBC2	Milton Road	Roadside	351358	385621	PM ₁₀	AMQA2	BetaAttenuation	15	2	2

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
4	Milton Road4	Roadside	351343	385625	NO2	no	4.0	2.0	No	2.0
5	Milton Road5	Roadside	351382	385648	NO2	no	3.0	2.0	No	2.0
6	Milton Road6	Roadside	351418	385661	NO2	no	3.0	2.5	No	2.0
9	Peelhouse Lane9	Roadside	352078	386306	NO2	no	2.0	1.0	No	2.0
10	Peelhouse Lane 10	Roadside	352044	386290	NO2	no	2.0	1.0	No	2.0
11	Clifton Road	Urban Background	351729	381024	NO2	no	10.0	1.0	No	2.0
12	Deacon Road12	Roadside	351748	386112	NO2	no	6.0	1.0	No	2.0
13	Deacon Road13	Roadside	351767	386088	NO2	no	3.0	2.0	No	2.0
2	Clifton Rd	Urban Background	351674	381054	NO2	no	20.0	1.0	No	2.0
3	Cronton Lane3	Roadside	350883	388377	NO2	no	10.0	1.0	No	2.0
1	Cronton Lane1	Roadside	350953	388363	NO2	no	20.0	2.0	No	2.0
8	Birchfield Rd	Roadside	351319	386636	NO2	no	3.0	2.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
16	Highfield Road	Roadside	351307	386586	NO2	no	2.0	2.0	No	2.0
14	Northwhich Road1	Roadside	357051	379435	NO2	no	10.0	1.0	No	2.0
15	Northwich Rd	Roadside	356996	379449	NO2	no	10.0	1.0	No	2.0

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.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
HBC1	352042	386285	Roadside	N/A	N/A	27	24	31.2	N/A	N/A

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

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

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.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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 NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

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 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
4	351343	385625	Roadside	76.9	76.9	31.3	25.1	30.1	29.8	26.4
5	351382	385648	Roadside	76.9	76.9	32.5	26.2	32.5	31.9	28.1
6	351418	385661	Roadside	76.9	76.9	26.4	23.7	29.5	27.1	23.1
9	352078	386306	Roadside	76.9	76.9	30.0	23.8	26.2	24.9	22.9
10	352044	386290	Roadside	76.9	76.9	37.5	30.9	34.8	33.4	32.2
11	352038	386316	Urban Background	76.9	76.9	-	-	23.6	16.8	15.5
12	351748	386112	Roadside	76.9	76.9	27.2	21.2	23.8	23.5	21.8
13	351767	386088	Roadside	76.9	76.9	28.1	22.0	24.8	23.2	23.9
2	351674	381054	Urban Background	76.9	76.9	-	-	24.7	17.2	15.8
3	350883	388377	Roadside	76.9	76.9	-	22.8	26.5	23.0	22.3
1	350953	388363	Roadside	76.9	76.9	-	20.2	23.9	18.7	20.0
8	351319	386636	Roadside	76.9	76.9	21.8	18.2	21.0	20.0	19.2

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 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
16	351307	386586	Roadside	76.9	76.9	22.9	17.3	23.0	20.8	20.1
14	357051	379435	Roadside	76.9	76.9	-	-	-	17.7	17.8
15	356996	379449	Roadside	76.9	76.9	-	-	-	18.9	15.8

☒ 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:

The annual mean concentrations are presented as $\mu\text{g}/\text{m}^3$.

Exceedances of the NO₂ annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 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.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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%).

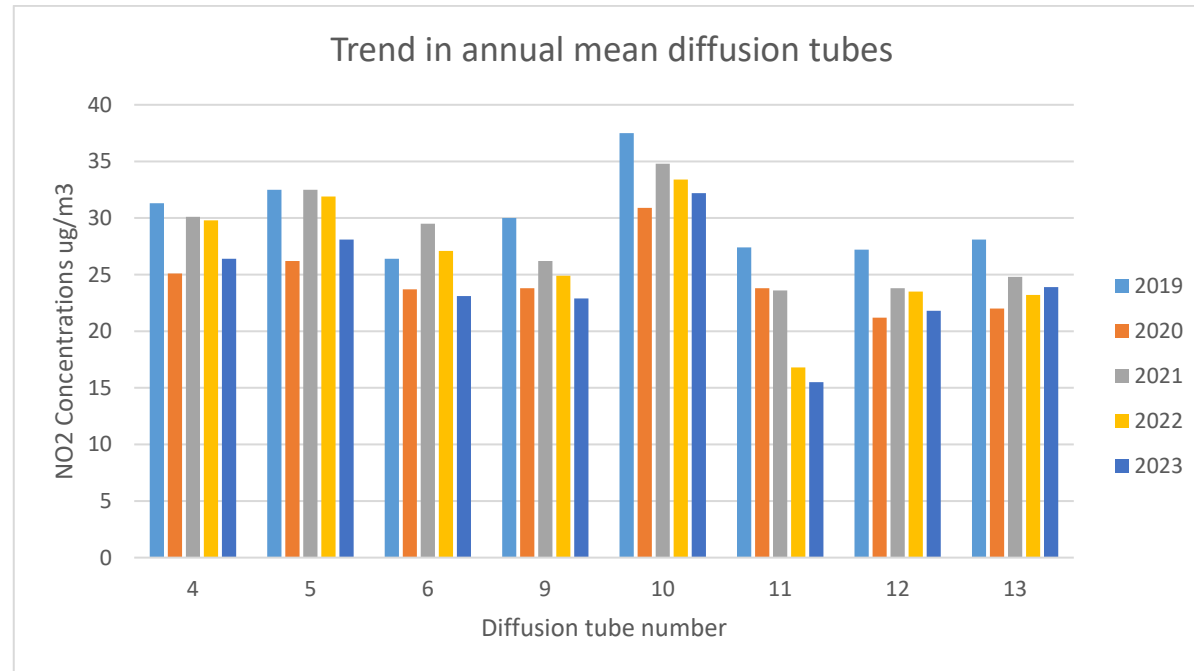
Figure A.1 – Trends in Annual Mean NO₂ Concentrations for Diffusion Tubes**Air Quality Objective Nitrogen Dioxide (NO₂) annual mean 40µg/m³**

Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
HBC1	352042	386285	Roadside	N/A	N/A	0	0	2	N/A	N/A
HBC2	351358	385621	Roadside	N/A	N/A	0	0	N/A	N/A	N/A

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ 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 PM₁₀ Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
HBC1	352042	386285	Roadside	-	-	22	22	23.06	N/A	N/A
HBC2	351358	385621	Roadside	-	-	18	21	23.64	N/A	N/A

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

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%).

Figure A.2 – Trends in Annual Mean PM10 Concentrations at Milton Road and Marzahn Way monitors ($\mu\text{g}/\text{m}^3$)

Air Quality Objective Particulate Matter (PM10) Annual Mean $40\mu\text{g}/\text{m}^3$

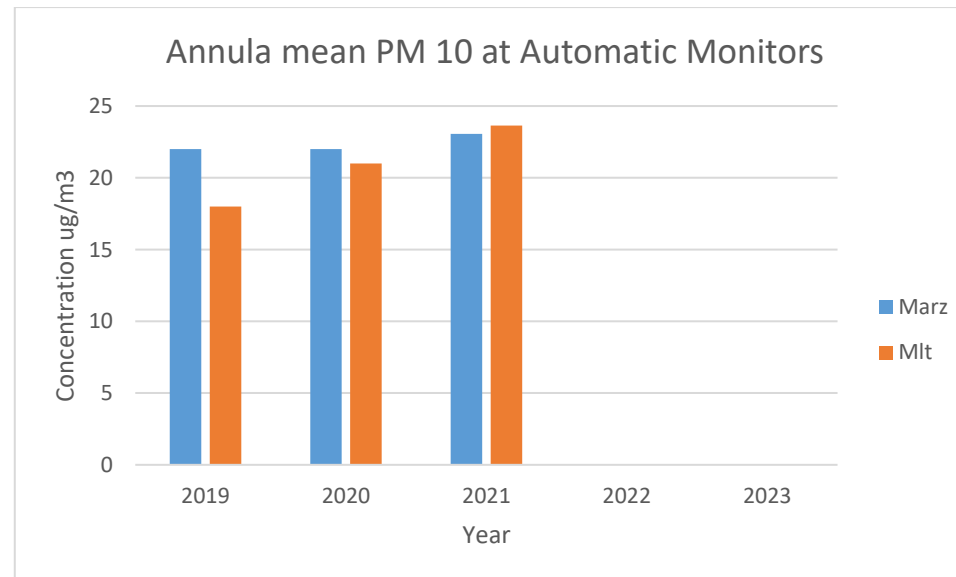


Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
HBC1	352042	386285	Roadside	n/a	n/a	9	6(34)	24	N/A	N/A
HBC2	351358	385621	Roadside	n/a	n/a	5	4(34)	22	N/A	N/A

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m³ have been recorded.

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

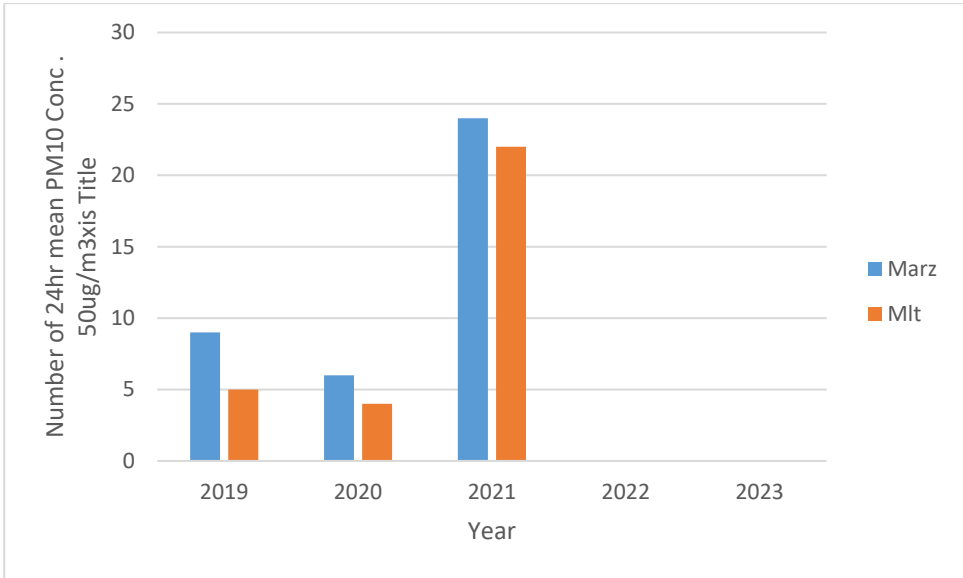
If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

(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%).

Figure A.3 – Trends in Number of 24-Hour Mean PM₁₀ Results > 50µg/m³

Air Quality Objective: Concentration 50µg/m³, not to be exceeded more than 35 times a year



Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO₂ 2023 Diffusion Tube Results (µg/m³)

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 0.77	Annual Mean: Distance Corrected to Nearest Exposure	Comment
4	351343	385625	38.4	39.6	33.8		29.1	32.5	29.7	36.8			47.0	22.0	34.3	26.4		
5	351382	385648	43.2	37.1	31.1		32.8	35.9	31.5	36.1			46.7	33.7	36.5	28.1		
6	351418	385661	36.6	33.1	34.3		24.7	31.2	24.6	32.5			22.3	30.2	29.9	23.1		
9	352078	386306	33.0	32.7	26.6		22.9	28.0	28.4	29.3			34.2	32.0	29.7	22.9		
10	352044	386290	42.1	49.9	43.3		31.6	43.1	31.6	43.6			49.3	41.5	41.8	32.2		
11	351729	381024	24.0	22.4	17.9		15.2	18.6	14.7	16.8			31.3	20.8	20.2	15.5		
12	351748	386112	31.0	35.2	29.3		26.7	26.5	22.7	26.5			30.4	26.8	28.3	21.8		
13	351767	386088	34.1	34.7	30.1		26.8	29.9	23.3	28.4			40.4	31.1	31.0	23.9		
2	350896	380810	23.7	20.4	17.7		17.3	19.1	16.0	18.0			31.1	20.8	20.5	15.8		
3	351042	380684	38.1	32.2	26.3		20.8	27.3	20.9	25.1			39.9	29.9	28.9	22.3		
1	351054	385388	26.5	31.8	25.1		21.4	23.5	14.9	23.1			38.8	29.0	26.0	20.0		
8	351379	381458	33.9	31.7	21.7		17.5	21.6	16.4	25.0			30.0	27.0	25.0	19.2		
16	351079	385438	32.6	27.8	25.4		21.0	19.4	18.8	24.3			38.7	27.0	26.1	20.1		
14	357051	379435	21.6	31.3	21.0		14.6	19.7	17.8	17.2			39.1	25.7	23.1	17.8		
15	356996	379449	11.1	26.1	19.5		19.4	30.7	1.0	22.3			29.8	25.2	20.6	15.8		

- ☒ All erroneous data has been removed from the NO₂ 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
- ☒ Halton Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.
NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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 Halton Council During 2023

Halton Council has not identified any new sources relating to air quality within the reporting year of 2023.

Additional Air Quality Works Undertaken by Halton Council During 2023

Halton's Public Health along with Environmental Health have commissioned a PhD study by Manchester Metropolitan University examining Fine Particulate Matter in Halton within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

Diffusion Tubes

Diffusion Tube monitoring is carried out as required by;

Diffusion Tubes for Ambient NO₂ Monitoring: Practical Guidance for Laboratories and Users issued by DEFRA.

The monitoring has been completed in adherence with the 2023 Diffusion Tube Monitoring Calendar.

Further guidance and adjustment factor is also used

LAQM Support Pages provided by Defra and the Devolved Administrations.

laqm.defra.gov.uk

The complete data sets of the NO₂ diffusion tube survey undertaken by Halton

Borough Council in 2023 is provided in Appendix B, Table B1.

SOCOTEC Didcot was used as both supplier and laboratory to analyse the diffusion tubes, which were 50% TEA in acetone.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Halton Council recorded data capture of 75% therefore it was not required to annualise any monitoring data.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Halton Council have applied a national bias adjustment factor of 0.77 to the 2023 monitoring data. A summary of bias adjustment factors used by Halton Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.77
2022	National	09/23	0.76
2021	National	03/21	0.78
2020	National	10/21	0.76
2019	National	10/18	0.75

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within Halton Council required distance correction during 2023.

QA/QC of Automatic Monitoring

When operating all of the Council's automatic continuous analysers are of the approved type as recommended in LAQM TG1 (00) Review and Assessment; Monitoring Air Quality and LAQM TG4 (00) Review and Assessment; Pollutant specific Guidance.

The Council's automatic monitoring stations are operated and run by officers trained in all aspects of the monitoring processes including routine site operations, field calibrations and data ratification. All instruments used have a daily automatic calibration within the operating system, which is serviced every six months under a contract from ESU 1 to ensure correct operation.

Routine Site Operations

The Council's monitoring sites have a programme of routine operational checks and programmed fortnightly site visits which include: -

- Daily communications checks on lines, data transfer and analyser operation;
- Daily checks of data quality; Repairs of faulty equipment under arrangements with the equipment suppliers;
- Fortnightly site inspections of the equipment's operational status, site safety, security and calibration checks;
- Planned six monthly servicing and re-calibration of all analysers by equipment suppliers under contract to the council.

All analysers are maintained in accordance with the manufacturers' instructions. The six monthly full service and re-calibration is conducted under servicing contracts with ESU 1. Results of the servicing, calibrations and repairs are fully documented and stored centrally. Routine maintenance of equipment is also conducted during regular two-weekly site visits where all associated equipment such as sample lines, modem, and the electrical system are examined and sample inlet filters are changed. Any faults, repairs or changes made to the equipment are also recorded and stored centrally.

Calibration Methods

The calibration procedures for the councils NO₂, continuous analysers include a two point zero/span calibration check being performed at regular fortnightly intervals. The methodology for the calibration procedure is derived from the

suppliers and manufactures handbooks and is as follows:

Pre-calibration check – the site condition and status of the analyser is recorded prior to the zero/span check being conducted;

Zero check – the response of the analyser to the absence of the gas being monitored;

Span check – the response of the analyser to the presence of the gas of a known concentration;

Post calibration check – the site condition and status of the analyser upon completion of all checks.

Each analyser's zero/span check is fully documented with records being kept centrally. The documentation then forms a record of analyser response over time and is used for data ratification and for scaling the data gathered for zero and span drift

The gases used for calibration checks are purchased from Air Liquide UK which is traceable through European Accreditation DIN EN 45001 & DIN EN ISO 9001. The tolerances of the nitrogen dioxide and nitric oxide mixes being typically + or – 5%. Due to high usage rates it is normal for the gases to be exhausted well before their respective stability time limits are reached, the bottles being changed when pressure falls below 300 psi. The BAM analyser is operated and calibrated in accordance with the manufacturers and suppliers information.

Data Validation and Ratification

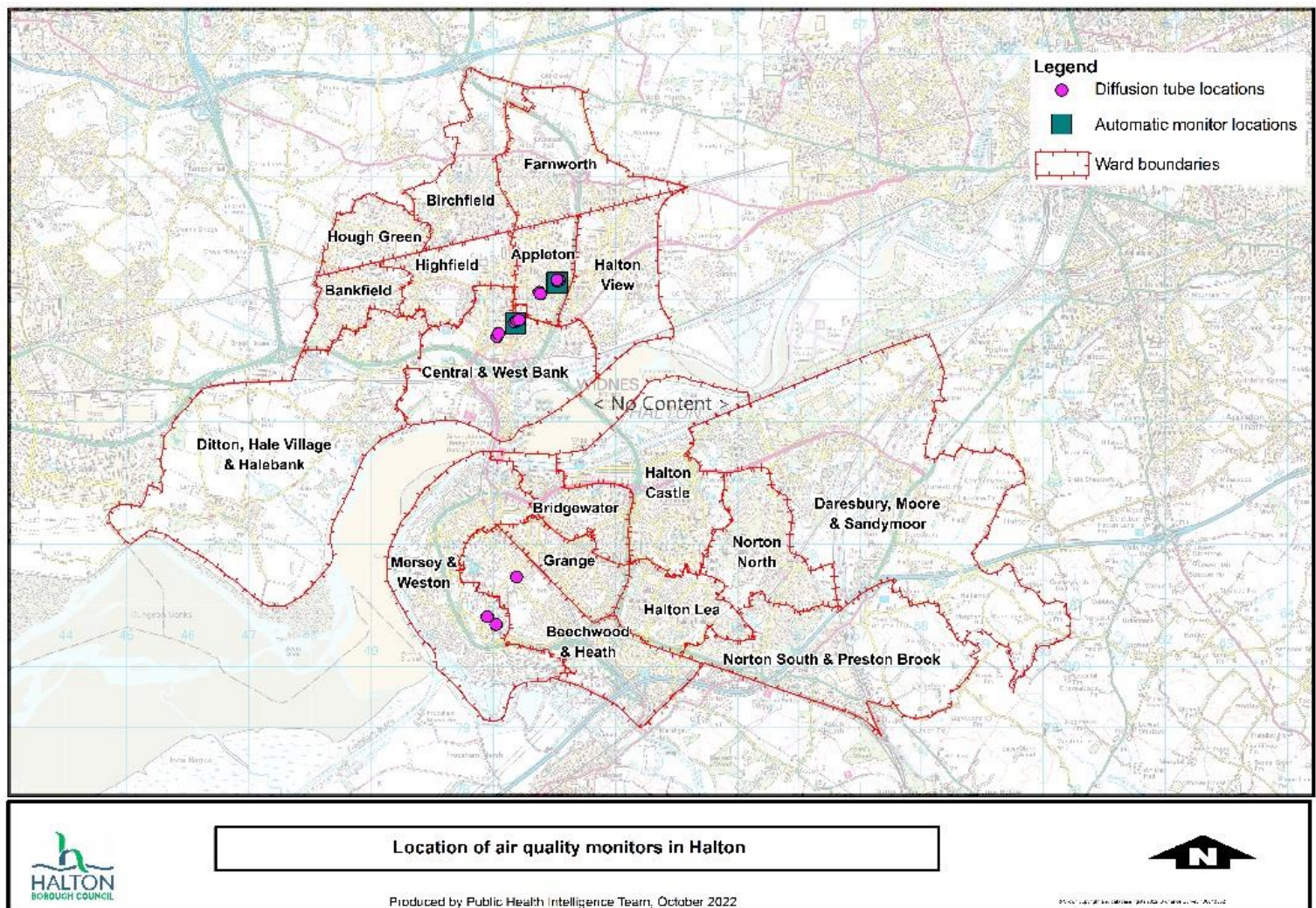
All data collected is thoroughly scrutinised by visual examination to ensure that there is no spurious and unusual measurements. The dedicated software used for handling the data allows data to be edited but ensures that raw data is always maintained. Air Quality Data Management team also check the information to ensure no errors occur.

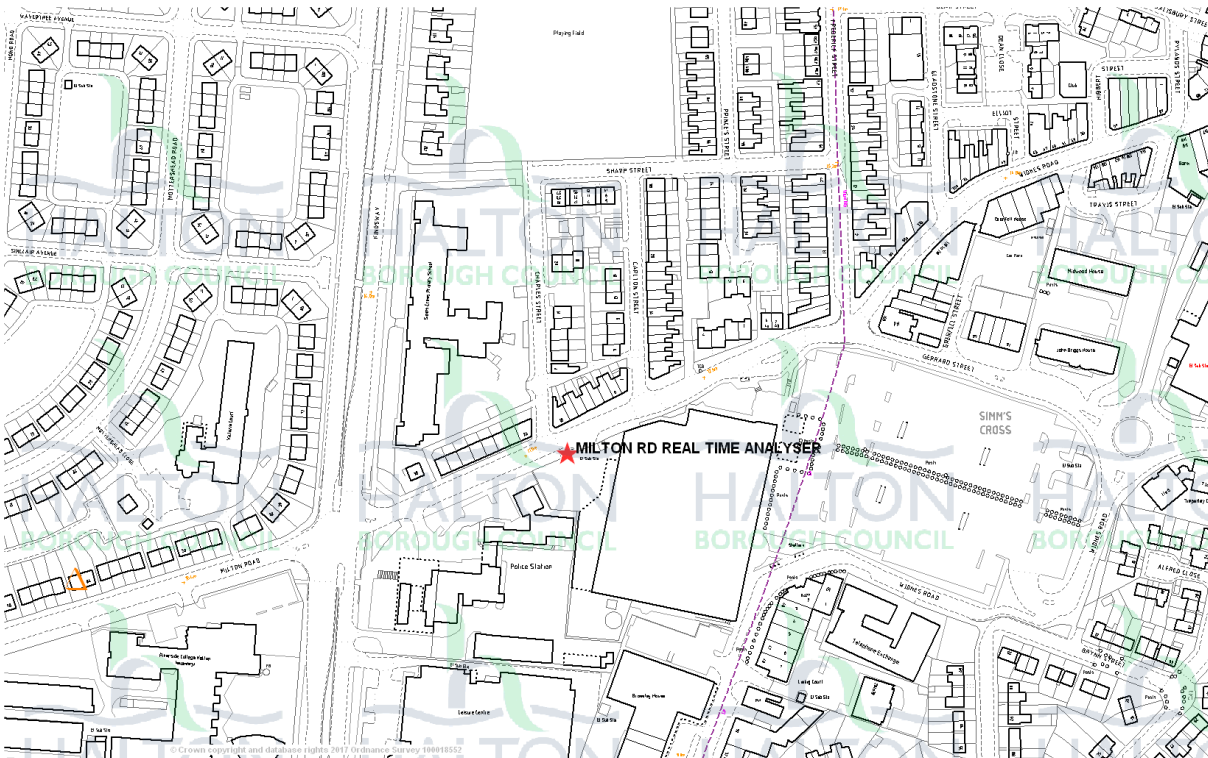
PM10 and PM2.5 Monitoring Adjustment

The type of PM10 monitors utilised within Halton Council did not required the application of adjustment factor.

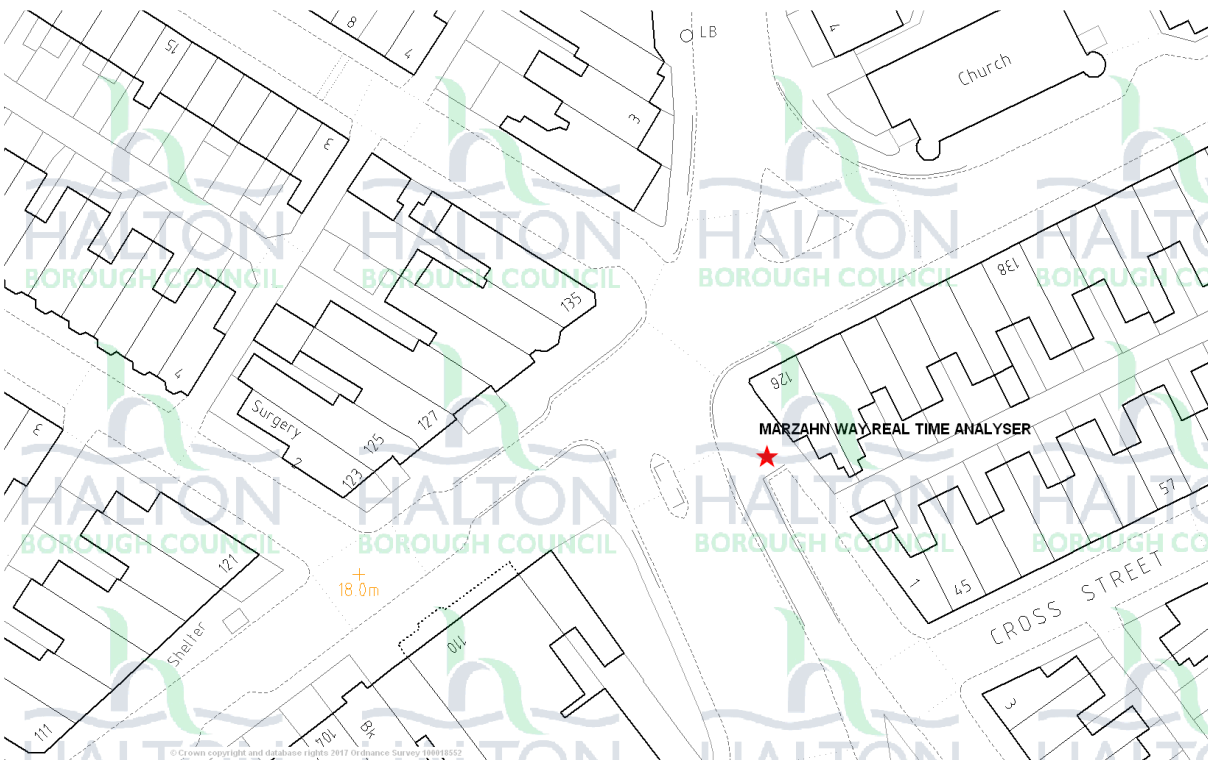
Appendix D: Map(s) of Monitoring Locations

Map of Halton Air Quality monitoring Sites





Milton Road Automatic Monitor



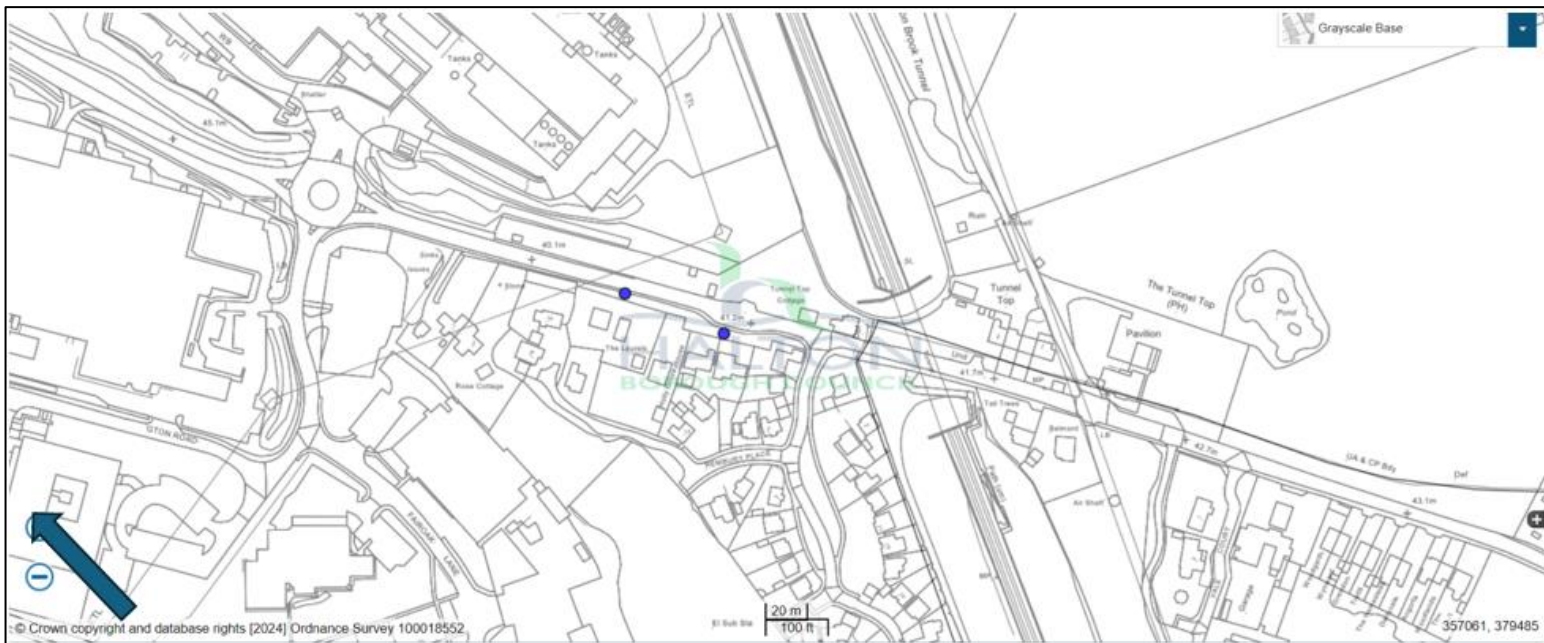
Marzahn Way Automatic Monitor



Deacon Road Diffusion Tubes



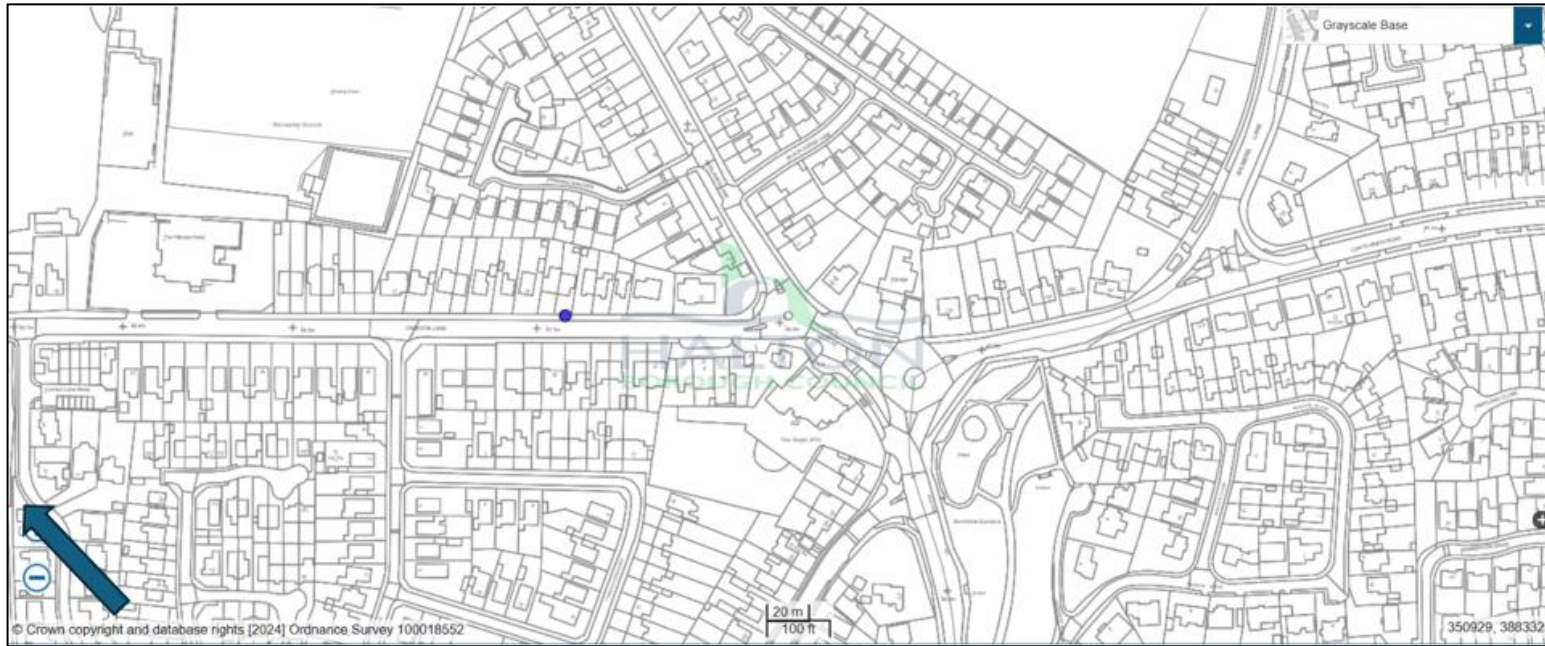
Milton Road Diffusion Tubes



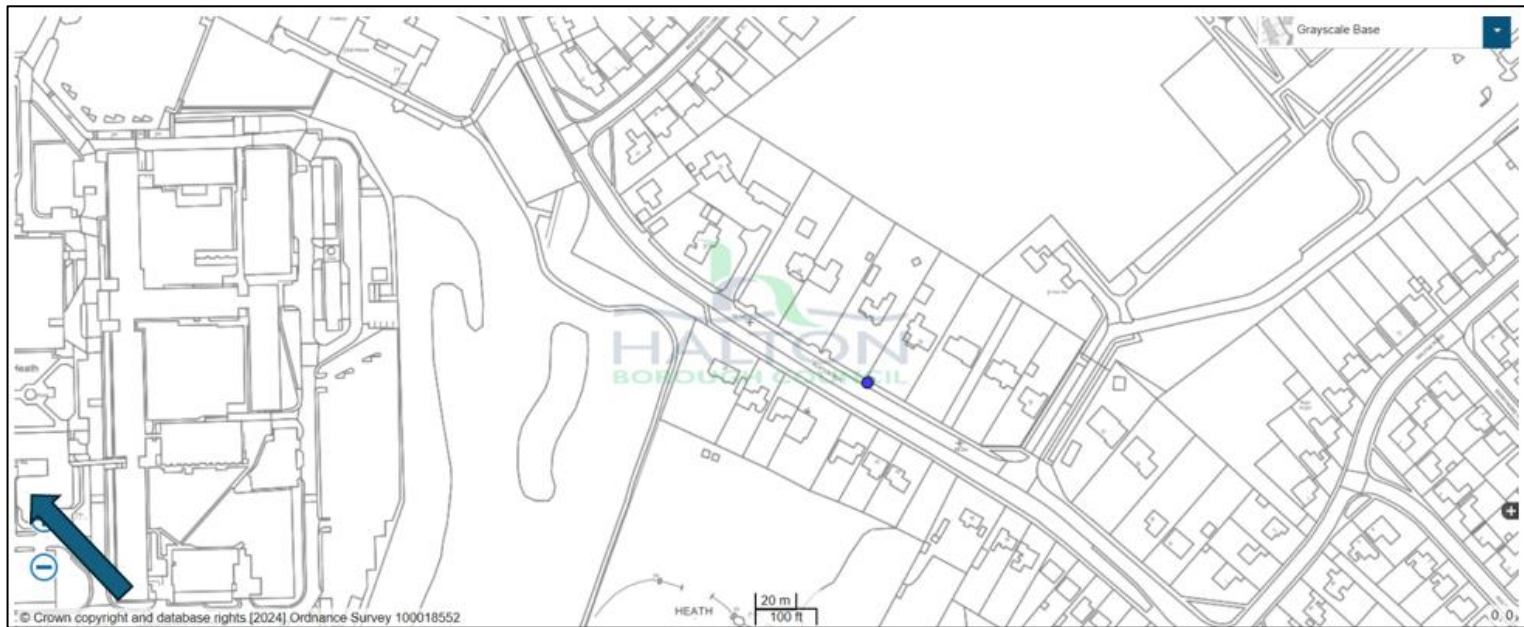
Northwich Road Diffusion Tubes



Highfield Road Diffusion Tubes



Cronton Lane Diffusion Tubes



Clifton Road Diffusion Tubes



Peelhouse Lane Diffusion Tubes

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO ₂)	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO ₂)	40µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM ₁₀)	40µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO ₂)	125µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO ₂)	266µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority 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
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm 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

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.
- Liverpool City Region Office <https://www.liverpoolcityregion-ca.gov.uk/>
- <https://www.gov.uk/government/publications/clean-air-strategy-2019>
- <https://www.merseytravel.gov.uk/>
- <https://www.airqualityengland.co.uk/>
- [Background Maps | LAQM \(defra.gov.uk\)](https://www.defra.gov.uk/air-quality/background-maps/)