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

June, 2024

Durham County Council

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Executive Summary: **Air Quality in Our Area**

Air Quality in Durham

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 year[1].

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 pollution[2].

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.

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. PM_{10} 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

In County Durham, the main pollutant of concern is Nitrogen Dioxide (NO_2), with the primary source being from road vehicle exhaust emissions. Durham County Council (DCC) have declared an air quality management area (AQMA) due to monitored exceedances of the annual mean NO_2 objective. This is located in Durham City, further information regarding the Durham City AQMA is available here: **www.durham.gov.uk/article/3825/Air-quality-in-Durham-City**.

An improvement in air quality has been observed at all sites monitored between 2019 and 2023, discounting 2020 which saw widespread reductions in annual mean NO_2 concentrations compared with 2019 due to the effects of the COVID-19 pandemic, and subsequently an increase was seen in 2021. Concentrations in 2023 were mostly below those recorded in 2022, and in all cases were below those recorded in 2019. The average year-on-year reduction in annual mean NO^2 concentration is 0.9 µg/m³ at background sites, 1.5 µg/m^3 at roadside sites outside the AQMA, and 1.8 µg/m³ at roadside sites within the AQMA.

In addition to the low concentrations seen in 2020, road closures in 2021 were also seen to have an impact on the overall trend. New Elvet Bridge was closed from July 2020 to October 2021, which contributed to low annual mean concentrations at sites located along Church Street, adjacent to New Elvet, which then subsequently increased in 2022, reflecting the increase in traffic within the area as a result of the opening of New Elvet Bridge. No such events are noted to have affected the 2023 data.

The focus of concern in the administrative area is predominantly high concentrations of NO^2 in Durham City, although it is recognised that fine (PM_{10}) and ultra-fine ($PM_{2.5}$) particulate matter can have health effects at concentrations below the National Air Quality Objectives. In January 2023, the Environment Targets (Fine Particulate Matter) (England) Regulations 2023 was published which introduces additional targets relating to $PM_{2.5}$. In particular, a target for the annual mean $PM_{2.5}$ concentration to be no more than 10 µg/m^3 by the end of 2040 was introduced. There will, therefore, also be a focus on ways in which the exposure to this pollutant can be reduced/minimised.

Durham County Council is a unitary authority, and so the single County administrative area encompasses the former districts. The County administration incorporates departments for Community Protection, Planning, Traffic Management, Sustainable Transport and Public Health.

Actions to Improve Air Quality

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

The Environmental Improvement Plan[3] 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 harmful to human health. The Air Quality Strategy[4] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[5] 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 Air Quality Action Plan (AQAP) is currently being updated following the adoption of the County Durham Plan 2020-2035 and the Durham City Sustainable Transport Delivery Plan 2018-2035. A summary of the Actions that have already been adopted in the existing AQAP are presented below.

In 2023 DCC focused on establishing new action measures to replace those presented below. 21 new actions have now been established and incorporated within the revised draft Air Quality Action Plan which supersedes the previous actions. The emphasis going forward will, therefore, be on the progress of the new actions and will subsequently be reported on in future Annual Status Reports. The other key sections in the Council (Traffic Management, Spatial Policy, Climate Change, and Public Health) have been involved through the Air Quality Corporate Steering Group in establishing and progressing the action measures that are incorporated within the revised plan and have accepted responsibility for the actions that apply to their section.

[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

Detailed in the table below is a review of the existing 17 measures in the existing AQAP including the current status of the measure. Several of the existing measures have been reviewed and are proposed to be adopted as new measures in the updated AQAP presented in Table 2.2.

A review of the 17 existing AQAP measures

Action	Summary
Action 1: The introduction of a UTMC or SCOOT system to coordinate traffic through a network of junctions within Durham City and reduce congestion.	Completed
Action 2: The retrofitting of emissions abatement systems on diesel engines on buses using routes within the declared AQMA.	Incorporated with modification into new action.
Action 3: Encourage the operation of hybrid buses using routes within the declared AQMA.	Incorporated with modification into new action.
Action 4: Ensuring the park and ride buses are compliant with the Euro VI emission standard.	Completed
Action 5: The development of cycleways to encourage modal shift across Durham city that link into national and county cycle routes in accordance with the draft Durham City Sustainable Transport Strategy.	Incorporated with modification into new action.
Action 6: The promotion of Smarter Choices with businesses in the city to encourage large employers within the city to implement car sharing and pooling or the use of alternative forms of travel.	Incorporated with modification into new action.
Action 7: To undertake detailed dispersion modelling of air quality emissions from any development growth and infrastructure that may potentially have an impact on air quality within and on the periphery of the declared AQMA.	Study Completed
Action 8: The establishment of the current Air Quality and Planning Guidance Note as a Supplementary Planning Document (SPD). This sets out the requirements on developers when proposing new development within the city and its environs set out in the Local Plan.	Not completed as alternative measure undertaken.
Action 9: The establishment of an Air Quality Strategy that will integrate the strategic policies covering air quality in the Local Plan, the measures detailed within the LTP, the draft Durham City Sustainable Transport Strategy and the carbon reduction strategy in focusing and addressing air quality issues in Durham City.	Not completed due to difficulties keeping the document up to date.

Action	Summary
Action 10: To raise awareness of air quality by undertaking a campaign that will integrate with and will involve other campaigns elsewhere in the Council to improve air quality.	Incorporated with modification into new action.
Action 11: Variable message and car park direction signing system to direct traffic to available parking.	Completed
Action 12: Explore the provision of travel and driver information integrated with the UTMC and to explore the provision of information on air quality through the use of texts, email alerts and social networking.	Completed
Action 13: To explore whether it is viable or not to progress the introduction of variable charges for residential parking permits with preferential rates for low polluting vehicles (with regard to local air quality effects).standard.	Not completed. The introduction of residential parking permits was not considered feasible by Traffic Management.
Action 14: To explore whether it is viable or not to extend existing park and ride routes and /or the provision of further park and ride sites, taking into consideration the emerging County Durham Plan and Sustainable Transport Strategy for Durham City.	Incorporated with modification into new actions.
Action 15: Explore the options for additional highway infrastructure in line with the Durham Sustainable Transport Strategy, considering environmental, financial, and planning considerations to enable the removal of through traffic from the City Centre and contribute to the overall reduction of traffic emissions.	Not completed due to external decisions on the County Durham Plan.
Action 16: To assess the significance of taxi vehicular emissions in Durham City.	Study Completed
Action 17: To work with the Environment and Design Team to complete a Green Infrastructure (GI) feasibility study for the AQMA in Durham City.	Study Completed

Conclusions and Priorities

One exceedance of the annual mean air quality objective for NO_2 was recorded in 2023, located on Gilesgate (DT149). There are three further monitoring sites where there is a risk of exceedance as levels are within ten percent (above 36 µg/m^3) of the annual mean air quality objective – these include DT79, on Sutton Street, DT162, on Gilesgate, and at the Leazes Road Continuous Monitoring Site (CMS). Nearly all locations saw a decrease in concentrations compared to 2022. Increased concentrations compared to 2022 were recorded at two locations in Gilesgate (DT162 and DT164).

The main priority for DCC is to reduce the levels of nitrogen dioxide across the Durham City Air Quality Management Area to achieve and thereafter maintain compliance with the Annual Mean Air Quality Objective (40 µg/m^3). This will be achieved through the implementation of the action measures within the Durham City Air Quality Action Plan and, therefore, the completion of the updated Plan will remain a priority in the short-term. Durham County Council will aim to continue this by ensuring the air quality monitoring network can be used to determine improvements and so the results will be regularly reviewed and can be used to demonstrate consistent compliance. It is anticipated that this revised Air Quality Action Plan will be adopted in 2024 and will cover a period of 5 years. A further review and revision of the plan will be required in 2029.

A review and assessment of levels of $PM_{2.5}$ across the County will be required to determine any locations where there are elevated levels that can be targeted accordingly by further investigation.

There is a planned upgrade of the portable continuous monitors used to measure fractions of Particulate Matter (PM_{10} and $PM_{2.5}$) in Durham City where there are potentially elevated levels of $PM_{2.5}$. These will provide better reliability of data provision and will indicate improvements following the implementation of the action measures and will assist in determining trends in levels of air quality pollutants.

Local Engagement and how to get Involved

DCC has sought to involve the public in helping to improve air quality by establishing and providing information on ways in which they may do so on the website. There are also links provided to access other information on local air quality including the Annual Air Quality Status Report and the Action Plan on the air quality webpages.

The development of the Durham City AQAP has included a significant period of public consultation, during which members of the public and interested stakeholders had the opportunity to steer the AQAP and voice opinions and concerns. A targeted event with participants from resident groups and business organisations was held in November 2023 which invited views on the 21 action measures and suggestions for alternatives. A draft AQAP was submitted to Defra in February 2024. This was followed by a wider public consultation, commenced from the beginning of May 2024 and lasted 8 weeks. The format of the public consultation involved the completion of an online survey that sought views on the action measures and suggestions for alternatives. Such consultation events encourage the public to get involved directly with what the Council is doing to improve air quality.

There is an action measure included in the draft AQAP for an Air Quality Campaign, the detail of which is yet to be determined. It will, however, present further opportunities for engaging with the public and for providing information on ways they can get involved with improving local air quality.

Local Responsibilities and Commitment

This ASR was prepared by AECOM air quality consultants on behalf of the Community Protection Section of Durham County Council with the support of officers within Neighbourhood Services and Climate Change.

This ASR has been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to David Gribben at:

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1 Local Air Quality Management

This report provides an overview of air quality in County Durham 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 the air quality objectives are likely to be achieved or not. 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 Durham County 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 and objectives will be achieved and maintained, and provide dates by which measures will be carried out.

A summary of AQMAs declared by Durham County Council can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within County Durham Appendix D: Map(s) of Monitoring Locations and AQMAs provides a map of the AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation(s) are as follows:

- NO2 annual mean.

Table 2.1 - Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Polluntants and Air Quality Objectives	Description	Is air quality in the AQMA influenced by roads controlled by National High-ways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publi-cation	Web Link to AQAP
Durham City AQMA	Declared 9th May 2011 Amended 2014 Amended 2022	NO_2 Annual Mean	The A690 trunk road west to east through Durham City from Stonebridge roundabout to just beyond the junction of Sunderland Road and Dragon Lane; includes Neville's Cross, Crossgate Peth, Crossgate, Milburngate Bridge, Gilesgate roundabout, Gilesgate (up to junction at Sunderland Road and Dragon Lane) together with sections of Claypath and New Elvet.	No	56.4	42.5	Not Compliant	AQAP for Durham City, June 2016	**www.durham.gov.uk/article/3825/Air-quality-in-Durham-City**

Durham County Council confirm the information on UK-Air regarding their AQMA(s) is up to date.

Durham County Council confirm that all current AQAPs have been submitted to Defra.

2.2 Progress and Impact of Measures to address Air Quality in County Durham

Defra's appraisal of last year's ASR concluded the report is well structured, detailed, and provides the information specified in the Guidance. Alongside this the following comments were raised, which needed addressing in future reports:

- Table 2.1 detailing the AQMA is not in line with those on UK-Air and the LAQM Portal. The second amended date should be checked and updated for consistency in future reporting years. Please contact the LAQM helpdesk if any amendments are required to the Portal.
- Table 2.2 detailing the Progress of Measures within the document does not match the ASR document. With inconsistencies between the discussion of the progress to date and comments/ barriers to implementation.
- The ASR has provided minimal measures to improve $PM_{2.5}$, including reference to the development of the SPD being ceased. It is noted that the ongoing review of the AQAP will include consideration of measures to reduce these emissions. However, there are other measures in Table 2.2 which will help to reduce $PM_{2.5}$ emissions which could be discussed within this section.
- Distance correction has been applied for diffusion tube results but not results at the automatic monitoring site which were above the target criteria of being within 10% of the Air Quality objective (i.e. 36µg/m³). It is acknowledged that 'fall off with distance' has been applied to the diffusion tubes co-located with the automatic monitor. In future reports all monitored concentrations exceeding 36µg/m³ of annual average NO_2 exposure should be distance corrected.
- The formatting within the report makes some sections difficult to follow. The Council should ensure numbering, bullet points and paragraphs are checked prior to the submission of the 2024 ASR.
- In future ASR's, the LA are encouraged to specify that they have completed diffusion tube monitoring in line with the Defra Calendar for clarity.

Considering each comment sequentially:

- The details of the AQMA have been updated on the UK-AIR website and the LAQM portal with the correct dates.
- For this report, progress of measures has been updated where possible. Discussion has been added above Table 2.2 to highlight those measures that have been completed and those with slower progress.
- In this report, information has been provided on the funding of measures and their current status.
- $PM_{2.5}$ is recognised as a pollutant of concern, but no specific measures are proposed to reduce this in the existing AQAP. However, measures that support reduction of $PM_{2.5}$ have been highlighted, and it is explicitly considered in the forthcoming update to the AQAP that will be reported in future ASRs.
- In this report, all monitoring sites with a recorded concentration of above 36µg/m³ have been distance corrected.
- In this report it has been clarified that the diffusion tube monitoring was completed in line with the DEFRA calendar.

Durham County Council's main action during 2023 has been work on the revised AQAP to ensure that the action measures required to achieve and maintain compliance with the air quality objectives are identified and agreed. The AQAP has been submitted in draft form to Defra but has not yet been finalised and adopted. Details of the current draft measures completed, in progress or planned are set out in Table 2.2. 21 measures are included within Table 2.2, with the type of measure and the progress Durham County 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 2.2.

More detail on these measures can be found in the draft Action Plan. Key completed measures are:

- Three schemes within the Strategic Cycling and Walking Delivery Plan were completed in March 2024 (New Inn junction, upgraded active mode route between Newton Hall and Framwellgate Peth, and between County Hall and Sniperley.
- Variable message signs (VMS) have begun to be implemented in the city.
- Policy is in place to screen developments with respect to air quality and impose planning conditions to comply with Policy 21 of the local plan.

The extension of the Sniperley Park & Ride facility is also being progressed.

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

- Adoption of the revised AQAP.
- A review of vehicles operating on bus routes in Durham.
- Development of a protocol for use of Variable Message Signs (VMS)
- Definition of objectives and specific measures to encourage the uptake of electric vehicles.

The principal challenges and barriers to implementation of the AQAP that DCC anticipates facing are ensuring that the measures remain a priority for the relevant teams responsible for delivery in the light of financial pressures, workloads of the teams, and responsibilities in other areas. Further meetings of the Air Quality Corporate Steering Group will be key to monitoring progress on the implementation of the actions.

The main priority for the upcoming year is the revision of the AQAP, its adoption, and the implementation of the new measures.

DCC anticipates that the measures stated above and in Table 2.2 will achieve compliance in the Durham AQMA over the lifetime of the AQAP.

Table 2.2 - Progress on Measures to Improve Air Quality in Draft AQAP

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Investigate Intelligent transport systems in more detail including SCOOT improvements and funding opportunities west of Durham City Centre and implement bus priority measures on the major bus corridors	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	-	2029	-	None	NO	Not Funded	£100k - £500k	Planning	Reduced emissions from congestion may be significant in specific, discrete locations. Benefits would not necessarily include all areas of the AQMA.	Extent of congestion at peak hours	Delayed Action: Action to be reviewed 12 months after the adoption of the AQAP to allow further monitoring to be undertaken and longer-term trends to be assessed.	It was recognised that there are likely to be considerable costs associated with the design stage (Roundabouts & Junctions). Costs have not been confirmed, but would be funded by highways budget.
2	Obtain a better understanding of the freight and delivery fleet operating in Durham, potentially followed by a feasibility study for the introduction of a freight micro-consolidation scheme to serve Durham City to improve air quality from the shipping of goods into and out of the city.	Freight and Delivery Management	Freight Consolidation Centre	-	2026	-	None	NO	Not Funded	£10k - 50k	Planning	The review of the existing delivery fleet will indicate the potential magnitude of opportunity to reduce emissions from light goods vehicles. Undertaking a feasibility study will have minimal impact. However if such a scheme is implemented there will be Targeted benefits at hotspots and city-wide benefits. Benefits may be achieved across the whole city and particularly on routes with high proportions of HGV or LGV traffic, as demonstrated by the source apportionment.	Obtaining a better understanding of the freight and delivery fleet in Durham, and completion of a feasibility study if required.	Delayed Action: The feasibility study to be delayed for 12-months after the adoption of the AQAP, to allow the review to be completed and further monitoring to be undertaken to allow longer term trends to be assessed. It is recognised that many large companies are already adopting EV vehicles.	Costs will be low to produce preliminary study. Implementation will be subject to specification and cost shared with partners.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
3	Use parking policy and a revised pricing strategy for Council owned car parks and Council on street parking to assist in tackling traffic congestion within Durham City by encouraging modal shift to cleaner, more sustainable travel modes. In addition, investigate the introduction of other policies such as emission based car parking charges , to further encourage modal shift.	Traffic Management	Emission based parking or permit charges	-	2029	-	None	NO	Not Funded	£10k - 50k	Planning	Preliminary assessment has indicated that emissions may be reduced by up to 0.8ug/m3, with 6 non-compliant properties becoming compliant	Revenue and utilisation, and / or analytics from app-based parking	Delayed Action: This Action to be delayed 12-months after the adoption of the AQAP to allow further monitoring to be undertaken and longer-term trends to be assessed. To also allow for the outcome of parking policy to be finalised. In the interim, the current car parking policy to be reviewed.	The outcome of the review of parking policy in the city is critical in relation to this option. There is currently free parking in the city after 14:00 and the focus of this action is to encourage the use of the Park & Ride system. If free parking is retained then this would negate the objective. There is an overall concern with regard to the accessibility and engagement of users to adopt pay by phone parking payment, with a significant risk of disenfranchising the most at-risk members of society.
4 (Ranked as Highest Priority Action)	Increase the parking capacity of Durham City Park and Ride sites to help incentivise the use of the Park and Ride service across the City . A stretch Action will be to investigate the feasibility of new sites on routes where there is currently no provision.	Alternatives to private vehicle use	Bus based Park & Ride	-	2026	-	Durham County Council	NO	Funded	£10k - 50k	Planning	Preliminary assessment has indicated that emissions may be reduced by up to 0.8ug/m3, with 6 non-compliant properties becoming compliant The assessment of the Sniperley P&R scheme predicted that the development will have a beneficial impact on concentrations of NO_2, PM_{10} and $PM_{2.5}$ at modelled sensitive receptor locations considered in 2023 and 2037. It was predicted to reduce the number of vehicle trips into the city centre, and therefore will lead to a positive impact on air quality in the Durham City AQMA	Measure usage of the P & R service.	The extension of the Sniperley Park & Ride facility by 260 spaces is anticipated to be complete by July 2024.	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
5	Investigate extending the existing number of days and/or hours of operation of all Park and Ride sites	Alternatives to private vehicle use	Bus based Park & Ride	-	2026	-	None	NO	Not Funded	£10k - 50k	Planning	Benefits may be proportional to the increased uptake of P&R patronage where this leads to reduced parking demand in the city centre.	Completion of investigation and definition of outcome	Investigate opportunity for extended operation of the P&R within 12-months from adoption of the AQAP to determine the economic opportunities / risks and a reasonable operating model in terms of patronage.	
6	Identify opportunities to install complimentary additional services to the Park and Ride service across the City Centre and development sites e.g., cycle storage/micro mobility/bicycles and e-bikes plus improved services at Park and Ride sites such as parcel pick-up and delivery and extending EV charging facilities.	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	-	2026	-	Durham County Council	NO	No approved funding, but there is a live bid for funding for a cycle hub in Durham City which is close to the National Cycle Route.	£10k - 50k	Planning	Benefits may be achieved across the whole city.	Publication of a report on collocation of facilities at the P&R, and feedback from the provider, including consideration given to the provision of multi-modal travel hubs at alternative locations such as the bus or railway station/car parks.	A preliminary study to be completed 12-months after AQAP2 has been adopted and to allow further work to be completed in relation to Actions 4 & 5. There are existing proposals to provide hubs across the city where e-bikes can be provided for travel around the city centre.	No approved funding, but there is a live bid for funding for a cycle hub in Durham City which is close to the National Cycle Route

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
7	Engage further with Park and Ride operators to introduce Zero Emission buses on park and ride routes and implement funding opportunities through liaison with TNE.	Promoting Low Emission Transport	Company Vehicle Procurement -Prioritising uptake of low emission vehicles	-	2026	-	None	NO	Not Funded	£10k - 50k	Planning	Imperceptible effects on local air quality within the AQMA as the action is solely to engage. Potential impacts if ZeV are introduced are: Exhaust emissions from x3 P&R routes operating at x4 buses per hour, 6-days per week may be reduced by: - 0.3 tonnes of NOX per year; and, - 143 tonnes of CO_2 per year (excluding grid generation emissions)	CNo. of ZEV operational	This will be carried out in accordance with the renewal of the contract in October 2024 with a possible extension of 2 years to October 2026. A milestone for this action is to report engagement with P&R operators, and identify potential options within the constraints of the contract programme.	It is recognised that there is opportunity to further reduce emission from the Park and Ride buses although this is subject to contractual agreement.
8	Work with bus operators to track the emissions classification of buses on routes of specific areas of concern, to inform which buses should be operating within the AQMA to provide cleaner exhaust emissions. Stretch Action to identify and implement, where appropriate, any funding streams for retrofitting buses, purchasing hybrids and /or alternatives where they may have the greatest benefits for air quality within Durham	Vehicle Fleet Efficiency	Testing Vehicle Emissions	-	2026	-	Durham County Council	NO	Funded	£10k - 50k	Planning	Effects are subject to the number of bus journeys affected, the technology adopted and the year of adoption, compared to a pre-existing fleet of mixed age and fuel technologies. The maximum predicted impact, were all buses to be immediately converted to zero emissions would be a change from 32 non-compliant properties to 7, with a maximum annual mean NO_2 change of approx. 18 ug/m3 at the junction hotspot of Hallgarth / Church Street.	Changes in bus fleet operation and use of UELV or ZEV	Within 6-months from adoption of the AQAP, a review of the specific vehicles operating on bus routes will be undertaken to determine which may be targeted to reduce emissions	Funding cannot be obtained through a Bus Service Improvement Plan, and so implementation may be subject to commercial restrictions and / or external funding opportunities.

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9	Improve journey quality offer for users at public transport hubs and Durham city bus station with improved vehicles, priority arrangements to further encourage modal shift alongside improved Real Time Passenger information.	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	-	2024	-	Durham County Council	No	Funded	£10k - 50k	Planning	Not possible to quantify as subject to locking-in behavioural change.	Passenger no. and / or satisfaction surveys	No progress to date. A milestone for this action is to report scope of potential investment to be undertaken.	
10	Improve environmental facilities in the Bus Station including Green Wall / Water Harvesting and Photovoltaics	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	-	2026	-	Durham County Council	NO	Funded	£50k - £100k	Planning	Impacts are likely to be relatively Low, despite being demonstrably beneficial. These may be quantified on individual basis.	Report on installation and maintenance	A preliminary study to be completed within 12-months from the AQAP being adopted	
11	Work with major employers in Durham City and assist with the development , implementation and enforcement of workplace travel plans including reporting, evidencing uptake and regular review.	Promoting Travel Alternatives	Encourage / Facilitate home-working	-	2026	-	None	NO	Not Funded	£10k - 50k	Planning	Case studies may indicate potential range of wider benefits. No data on workplace parking, but long-stay parking is 5% of city centre provision, so car-share could be a ~0.5% reduction of car emissions from city-centre trips (if each employee shares a car journey x1 per week = 10% reduction in emissions). Other benefits may be achieved from cross-city traffic where routes lead to major employers.	Reporting from employers based on pro-forma updates quarterly and / or annually	12 months after the adoption of the AQAP2 a strategy will be established on how this action will be delivered e.g. appointment of an officer or re-designation of an existing post	The impact of this action is uncertain following different working patterns adopted by most employees following the Covid pandemic. It was mentioned that an employee has been contracted to be engaged on this type of project. This will be dependent on funding being made available to support a full-time post. Although, the policies in the County Durham Plan support such actions that link in to Travel Plans.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
12	Implement the Strategic Cycling and Walking Delivery Plan 2019-2029	Promoting Travel Alternatives	Promotion of cycling	-	2029	-	Durham County Council	NO	Funded	£10k - 50k	Planning	A potential 25% mode shift may be achievable on a given route dependent on the targeted investment into cycling infrastructure. Outcomes of mode shift may be quantified after implementation.	Reporting progress on Actions	The 3 schemes that are already supported by funding were completed in March 2024. A milestone for this action is to plan and provide high quality cycling and walking networks that are safe and usable for more people. Manage and protect cycling and walking networks to ensure quality of experience for users. Encourage and enable greater participation in cycling and walking across all demographic groups. The overall plan is published here **www.durham.gov.uk/article/11677/Strategic-Cycling-and-Walking-Delivery-Plan-2019-2029**	
13	Use variable message signs (VMS) to provide information regarding air quality.	Public Information	Via other mechanisms	-	2025	-	Durham County Council	NO	Funded	£10k - 50k	Planning	Impacts are likely to be relatively Low, but not possible to quantify.	No. of signs operational and messages posted. Engagement may be measured through surveys	Some signage has already been implemented promote non-car travel in the city. A protocol for posting specific messages relating to emissions and air quality to be defined within 6-months of the AQAP being adopted.	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
14 (Ranked as 2nd Highest Priority Action)	Screen any proposed development in accordance with the latest up to date guidance on air quality. Support any development with air quality and traffic assessments that take into consideration cumulative development, where screening identifies there may be a significant adverse effect on air quality.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	-	2024	-	Durham County Council	NO	Funded	£10k - 50k	Planning	Will inform mitigation and also complement other Actions	Track metrics for no. of assessments triggered, and how many quantify cumulative AQ effects	Policy already in place.	
15 (Ranked as 3rd Highest Priority Action)	Impose conditions that comply with the provision of Policy 21 (Delivering Sustainable Transport) of the County Durham Plan.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	-	2024	-	Durham County Council	NO	Funded	£10k - 50k	Planning	Beneficial with some potential emission reduction proportional to scale of proposed development	Record how Policy 21 is being achieved	Policy already in place.	
16	Define and Implement a Public Awareness Campaign focusing on air quality	Public Information	Other	-	2026	-	None	NO	Not Funded	£10k - 50k	Planning	Low impact but difficult to quantify as involves behavioural change	Measureable will be defined to align to the specific campaign Actions, but may include web metrics or attendance numbers	Specification for the campaign to be defined within 12 months of the AQAP being adopted.	
17	Develop web pages and other forms of social networking to increase awareness of air quality issues and promote behavioural change	Public Information	Via the Internet	-	2026	-	None	NO	Not Funded	£10k - 50k	Planning	Low impact but difficult to quantify as involves behavioural change	Record metrics for engagement; e.g. web traffic.	Define a specification for online services within 12 months of the AQAP being adopted.	
18	Review the licensed vehicle taxi fleet operating in Durham. Subject to the outcome of this review an, update the previous taxi emission study on the Durham Taxi fleet may be required.	Vehicle Fleet Efficiency	Testing Vehicle Emissions	-	2026	-	None	NO	Not Funded	£10k - 50k	Planning	The contribution of taxis to the overall NO2 annual mean concentration around Milburngate Bridge was quantified in a study in 2019 as approximately 1 µg/m^3,. A review will therefore clarify whether this figure has changed significantly and whether further intervention is now required	Completion of a report on the operational taxi fleet age / fuel profile	A review of the taxi licensing fleet operating in Durham City will take place within 12 months of the adoption of AQAP.	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
19	Review the work previously undertaken in relation to green infrastructure within the AQMA, and where practicable implement the recommendations made.	Other	Other	-	2026	-	None	NO	Not Funded	£10k - 50k	Planning	Localised effects subject to the design of individual schemes	Report on instances of implementation of GI and statement on the intended / actual effects.	Complete review within 12 months of AQAP being adopted .	
20	Encourage the uptake of Electric Vehicles (EVs) across the County by supporting the provision of EV charging including fast and rapid charging and EV filling stations where this is appropriate.	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	-	2029	-	Durham County Council	NO	Funded	£10k - 50k	Implementation	Approximately 71% of NOx emissions were predicted to be from cars in 2024. Approx. 1% of cars were predicted to be electric in the future baseline, and therefore any increase in electric cars would be proportional to this scenario. Measure will ensure the breakdown of the of the local fleet is in-line or exceeds, the regional trends and policy aspirations required to support Net Zero.	Report on the implementation of measures. Change in operational car fleet with ANPR compared to projected national uptakes	Currently in Durham County, there are 229 public chargers, including 52 rapid chargers, equivalent to 43.9 per 100k people. Rate of PiV ownership is slightly ahead of the regional average and comparable in terms of the number of chargers per capita; 229 public chargers, inc. 52 rapid, equiv. to 43.9 per 100k people (**https://commonslibrary.parliament.uk/local-authority-data-electric-vehicles-and-charging-points/**)	With 40% terraced housing in County Durham, it will be difficult to allow EV charging cabling on street or to decide which house to put it outside without causing neighbour parking issues.
21	Implementation of a scheme to offer the use of EV vans on a free trial for 2 to 3 weeks to small and medium enterprises to promote the uptake of Electric Vehicles.	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	-	2024	-	Durham County Council	NO	Funded	£10k - 50k	Implementation	With four vans in the scheme, this was predicted to achieve a reduction in emissions of: - <0.1 tonnes of NOX per year; and, - 24 tonnes of CO2 per year (excluding grid generation emissions)	Records of engagement with the scheme, and subsequent feedback from participants.	The Council has purchased four electric vans as part of a try before you buy scheme. The purpose of this project is to allow local businesses to trial the use of an electric van for a short period of time to see how compatible EVs are with their business. The vehicles are currently operated as part of the DCC fleet and the trials are planned to restart again within 12-months.	

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

As detailed in Policy Guidance LAQM.TG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases. DCC is taking the following measures to address $PM_{2.5}$:

The Public Health Outcomes Framework outlines policies which seek to promote health and wellbeing within the population. Indicator D01 is the fraction of mortality attributable to particulate air pollution and can be utilised to establish how a local authority is performing in comparison to the rest of England and their region in terms of improving $PM_{2.5}$ concentrations. County Durham has a value of 4.9% based on the new 2020 method, compared to a regional value of 5.4% and the England value of 5.8%[6].

The ongoing review to the Durham City AQAP will include the consideration of measures to support reducing $PM_{2.5}$ within the area. This will ensure that reducing emissions of $PM_{2.5}$ will remain a key priority of the Council and a factor in future planning development proposals.

Modelling of $PM_{2.5}$ emissions have been carried out for Stage 1 of the revision of the AQAP for Durham City. The source apportionment of $PM_{2.5}$ attributable to different vehicle types has been determined and, therefore, used as a focus for the revised actions. In addition, the DEFRA modelled background levels for $PM_{2.5}$ for Durham City from different sources have also been considered to identify locations where elevated concentrations have been modelled and then to target these, where required, with further investigation carried out such as monitoring at these locations. It is also noted that there may be sources of $PM_{2.5}$ elsewhere across the county that need to be considered and assessed. The background maps (DEFRA) will therefore be used to determine elevated concentrations of $PM_{2.5}$ at locations elsewhere across the County and further assessment involving modelling and/or monitoring implemented where required. The Public Health section of the Local Authority will also be involved in this process to identify areas that are of a public health concern and priority across the County.

The following measures will also contribute to reducing $PM_{2.5}$ concentrations:

- The draft Air Quality Action Plan requires the completion of an air quality assessment to determine the cumulative impacts of new development on air quality. The purpose of the completion of an air quality assessment in support of a planning application is to identify any adverse impacts and, therefore, the requirement for mitigation measures to minimise any impacts of new development on $PM_{2.5}$ emissions.
- In the revised Air Quality Action Plan (AQAP) there are various measures that focus on reducing the volume of traffic on routes through the AQMA (Focus on achieving zero or low emission means of travel and encouraging the use of public transport). The implementation of such actions will, therefore, have a beneficial impact on reducing levels of $PM_{2.5}$ from primary sources such as from road traffic exhausts and from tyre and brake wear.

A further proposed measure is to upgrade the portable continuous monitors to be sited in Durham City. The monitors measure fractions of Particulate Matter (PM_{10} and $PM_{2.5}$) and will provide better reliability of data provision. The measurements of levels of air quality pollutants (NO_2 and PM) will indicate improvements following the implementation of the action measures and will assist in determining trends in levels of air quality pollutants.

In addition, the entire area of Durham City was designated by the former City of Durham Council as a smoke control area, where it is an offence to emit smoke from a chimney, unless DEFRA requirements in relation to authorised fuels and exempt appliances are met.

[6] Office for Health Improvement and Disparities (2023) Public Health Outcomes Framework **www.gov.uk/government/collections/public-health-outcomes-framework**

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

This section sets out the monitoring undertaken within 2023 by Durham County 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

Durham County Council undertook non-automatic (i.e. passive) monitoring of NO_2 at 45 sites during 2023. Table A.2 in Appendix A presents the details of the non-automatic sites.

DT42, DT81 were decommissioned at the end of 2022 due to the annual mean being well below the national objective for the last three years and not likely to exceed the national objective.

During the reporting year, DT150 and DT169 were decommissioned. DT150, was continuously missing or tampered with and was in close proximity to another monitoring location at site 156. DT169 was decommissioned due to the removal of the street furniture the diffusion tube was mounted on combined with consistent annual average data being well below the national objective for the last three years and not likely to exceed the national objective.

DT174 was newly commissioned at the start of the reporting year.

Maps showing the location of the monitoring sites are provided in Appendix D. Diffusion tube monitoring was carried out in line with the Defra Calendar. 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/m^3. 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).

The local bias adjustment factor calculated from the co-location study at Leazes Road is presented in Appendix C. It is recognised the local value is higher than the national value and so contributed to the values presented in this report.

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/m^3, not to be exceeded more than 18 times per year.

One Site in County Durham, DT149, on Gilesgate, exceeded the annual mean objective in 2023 following bias adjustment. This site is located within the Durham City AQMA, and previously reported an exceedance in 2019, 2021, and 2022.

The Leazes Road continuous monitor recorded an annual mean concentration of 39.5 µg/m^3. There were two further diffusion tube locations which recorded an annual mean concentration within 10% of the annual mean objective (DT79, on Sutton Street, and DT162, on Gilesgate), which suggests that there is a risk of exceedance in these locations.

As there were no annual mean exceedances over 60 µg/m^3 recorded by any of the diffusion tubes, there were unlikely to be any exceedances of the 1-hour mean objective across County Durham.

Concentrations in 2023 were mostly below those recorded in 2022. Only two locations recorded increased concentrations compared to 2022, both in Gilesgate (DT162 and DT164).

In all cases concentrations in 2023 were below those recorded in 2019. The average year-on-year reduction in annual mean NO_2 concentration is 0.9 µg/m^3 at background sites, 1.5 µg/m³ at roadside sites outside the AQMA, and 1.8 µg/m³ at roadside sites within the AQMA (discounting 2020 which saw widespread reductions in annual mean NO2 concentrations compared with 2019 due to the effects of the COVID-19 pandemic).

3.2.2 Particulate Matter (PM_{10})

Monitoring for PM_{10} previously undertaken by Durham County Council with an Osiris monitor located at Neville's Cross has been decommissioned within the reporting year.

3.2.3 Particulate Matter ($PM_{2.5}$)

Monitoring for $PM_{2.5}$ previously undertaken by Durham County Council with an Osiris monitor located at Neville's Cross has been decommissioned within the reporting year.

3.2.4 Sulphur Dioxide (SO_2)

Monitoring for SO_2 is not undertaken by Durham County Council.

Appendix A: **Monitoring Results**

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	X OS Grid Ref (Easting)	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)
Leazes Road	Leazes Road	Roadside	427130	542676	NO_2	YES	Chemiluminescent	11	1.5	1.5

Notes:
(1) 0 m 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	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to Kerb of Nearest Road (m) (2)	Tube Co-located with a Continuous Analyser?	Height (m)
23	5 Menceforth Cottages	Roadside	426895	551717	NO_2	Yes (Durham City AQMA)	0.0	1.5	No	3.0
26	Lamp post opp. 1 Blind Lane	Roadside	427411	552670	NO_2	No	15.0	2.0	No	3.0
101	Riverside Cricket Ground	Urban Centre	428211	550438	NO_2	No		1.0	No	3.0
129	1 Menceforth Cottages	Roadside	426910	551708	NO_2	Yes (Durham City AQMA)	0.0	1.5	No	3.0
157	Bridge Street, Pub	Roadside	427477	551650	NO_2	No	0.0	2.0	No	2.0
1	Dragonlane Traffic Lights, Durham	Roadside	429657	543114	NO_2	Yes (Durham City AQMA)	3.0	1.5	No	3.0
8	Highgate North	Roadside	427121	542868	NO_2	Yes (Durham City AQMA)	0.0	5.0	No	3.0
11	Crossgate Traffic Lights	Roadside	426838	542298	NO_2	Yes (Durham City AQMA)	5.0	1.5	No	3.0
12	1 Colpitts Terrace	Roadside	426768	542368	NO_2	Yes (Durham City AQMA)	0.0	2.0	No	3.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to Kerb of Nearest Road (m) (2)	Tube Co-located with a Continuous Analyser?	Height (m)
19	1 Church Street	Roadside	427689	542078	NO_2	Yes (Durham City AQMA)	0.0	2.0	No	3.0
20	80 Gilesgate	Roadside	428385	542740	NO_2	Yes (Durham City AQMA)	0.0	5.0	No	3.0
59	The Sands	Urban Background	427649	542994	NO_2	No	10.0	2.0	No	3.0
70	The Peth Westbound	Roadside	426654	542102	NO_2	Yes (Durham City AQMA)	11.0	1.5	No	3.0
79	Nevilles Cross Bank Eastbound	Roadside	426138	541933	NO_2	Yes (Durham City AQMA)	2.0	1.5	No	3.0
106	5 Belle Vue Terrace, Dragonville	Roadside	429658	543118	NO_2	Yes (Durham City AQMA)	0.0	2.0	No	2.0
115	Auton House (Nevilles Cross Bank Eastbound)	Roadside	426133	541939	NO_2	Yes (Durham City AQMA)	0.0	2.0	No	2.0
116	3 Church Street	Roadside	427686	542072	NO_2	No	0.0	1.5	No	2.0
117	33 Church Street	Roadside	427672	542066	NO_2	No	0.0	1.5	No	2.0
118	Heaviside Road lamp post	Urban Background	428422	542887	NO_2	No	0.0	1.5	No	2.0
130	1 Sutton Street	Roadside	426808	542461	NO_2	Yes (Durham City AQMA)	0.0	1.5	No	2.0
132	7 High St South	Roadside	425352	540650	NO_2	No	0.0	5.0	No	2.0
133	Motorcycle Shop, High Street North	Roadside	425325	540636	NO_2	No	0.0	3.0	No	2.0
136	52 Highgate	Roadside	427133	542767	NO_2	Yes (Durham City AQMA)	0.0	1.5	No	2.0
133	MotorCycle Shop, High Street North	Roadside	425325	540636	NO_2	Yes (Durham City AQMA)	0.0	3.0	No	2.0
136	52 Highgate	Roadside	427133	542767	NO_2	No	0.0	1.5	No	2.0
137	Archery Rise	Roadside	426437	542027	NO_2	Yes (Durham City AQMA)	0.0	1.5	No	2.0
139	5 Church Street	Roadside	427676	542051	NO_2	No	0.0	1.5	No	2.0
140	9 Church Street	Roadside	427663	542014	NO_2	No	0.0	1.5	No	2.0
141	28 Church Street	Roadside	427655	542023	NO_2	No	0.0	1.5	No	2.0
142	29 Church St Lamppost	Roadside	427665	542041	NO_2	No	0.0	1.5	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to Kerb of Nearest Road (m) (2)	Tube Co-located with a Continuous Analyser?	Height (m)
145	Gilesgate Roundabout	Roadside	428180	542699	NO_2	Yes (Durham City AQMA)	0.0	1.5	No	2.0
146	35/36 Sutton Street	Roadside	426796	542458	NO_2	Yes (Durham City AQMA)	0.0	2.0	No	2.0
149	68/68A Gilesgate	Roadside	428272	542715	NO_2	Yes (Durham City AQMA)	0.0	2.5	No	2.0
150	1-2 Durham Road	Roadside	430769	537643	NO_2	No	0.0	2.0	No	2.0
151	6 Sutton Street	Roadside	426809	542489	NO_2	Yes (Durham City AQMA)	0.0	1.5	No	2.0
154	Colpitts Hotel Pub	Roadside	426772	542405	NO_2	Yes (Durham City AQMA)	0.0	1.5	No	2.0
155	75/76 Gilesgate	Roadside	428323	542720	NO_2	Yes (Durham City AQMA)	0.0	2.0	No	2.0
156	Co-op Durham Road	Roadside	430783	537657	NO_2	No	2.0	2.0	No	2.0
162	62 Gilesgate	Roadside	428231	542713	NO_2	No	0.0	1.5	No	2.0
164	1 Booths Bungalows	Roadside	429969	542322	NO_2	No	0.0	1.5	No	2.0
166, 167, 168	Continuous Monitor Leazes Road Roundabout	Roadside	427130	542676	NO_2	Yes (Durham City AQMA)	11.0	1.5	Yes	1.5
169	Providence Row/Claypath Traffic Lights	Kerbside	427614	542689	NO_2	Yes (Durham City AQMA)	6.0	0.5	No	1.5
170	Victoria Inn, Hallgarth Street	Roadside	427739	541985	NO_2	Yes (Durham City AQMA)	0.0	1.5	No	1.5
171	1 Coronation Terrace	Roadside	430017	542339	NO_2	No	0.0	1.5	No	1.5
172	9 Providence Row	Roadside	427586	542820	NO_2	No	0.0	1.5	No	1.5
173	25 Chapel Street, West Auckland	Roadside	418199	526238	NO_2	No	0.0	1.5	No	1.5
174	100 Hallgarth Street	Roadside	427703	542058	NO_2	No	0.5	0.5	No	1.5

Notes:

(1) 0 m 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 NO_2 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
Leazes Road	427130	542676	Roadside	99.6	99.6	**46.4**	35.8	**41**	**40**	39.5

☒ **No - Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

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

☒ **No - Where exceedances of the NO_2 annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2023**

Notes:

The annual mean concentrations are presented as µg/m_3.

Exceedances of the NO_2 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 NO_2 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
23	426895	551717	Roadside	100	100.0	32.9	26.6	32.1	29.5	26.6
26	427411	552670	Roadside	92.3	92.3	38.0	29.8	31.9	32.9	31.3
101	428211	550438	Urban Background	82.7	82.7	10.9	8.8	10.2	10.2	9.6
129	426910	551708	Roadside	92.3	92.3	33.0	26.9	31.4	29.6	27.1
157	427477	551650	Roadside	100	100.0	**40.9**	**32.5**	38.4	36.0	32.4
1	429657	543114	Roadside	100	100.0	36.3	28.4	36.0	33.1	31.0
8	427121	542868	Roadside	100	100.0	38.4	29.5	30.2	34.2	31.9
11	426838	542298	Roadside	92.3	92.3	35.6	31.6	32.7	30.8	29.7

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
12	426768	542368	Roadside	75	75.0	**44.3**	39.7	**42.3**	36.9	32.7
19	427689	542078	Roadside	100	100.0	**44.8**	25.5	26.1	37.1	34.4
20	428385	542740	Roadside	92.3	92.3	39.8	34.8	34.7	36.0	31.9
59	427649	542994	Urban Background	75	75.0	17.5	13.7	13.3	14.2	12.1
70	426654	542102	Roadside	92.3	92.3	**44.0**	34.2	39.0	35.9	35.1
79	426138	541933	Roadside	84.6	84.6	**46.2**	38.3	**44.3**	39.1	36.9
106	429658	543118	Roadside	100	100.0	39.2	26.4	32.0	29.4	28.5
115	426133	541939	Roadside	92.3	100.0	32.3	26.0	30.2	28.2	26.4
116	427686	542072	Roadside	92.3	92.3	**46.7**	28.4	25.1	38.5	35.3
117	427672	542066	Roadside	100	100.0	**44.2**	26.6	25.1	37.3	33.4
118	428422	542887	Urban Background	84.6	84.6	15.6	11.7	12.1	12.0	10.8
130	426808	542461	Roadside	100	100.0	**47.8**	38.8	**46.7**	37.8	34.8
132	425352	540650	Roadside	90.4	90.4	32.6	24.1	29.7	28.6	25.7
133	425325	540636	Roadside	90.4	90.4	32.5	26.4	29.2	30.0	27.2
136	427133	542767	Roadside	100	100.0	32.5	25.3	31.1	29.9	26.8
137	426437	542027	Roadside	100	100.0	37.0	31.0	37.6	35.0	32.6
139	427676	542051	Roadside	100	100.0	39.1	21.7	22.4	31.8	30.6
140	427663	542014	Roadside	90.4	90.4	39.4	22.0	22.2	33.2	31.1
141	427655	542023	Roadside	100	100.0	31.1	17.7	19.1	25.8	25.1
142	427665	542041	Roadside	75	75.0	38.6	21.5	19.9	32.3	30.8
145	428180	542699	Roadside	92.3	92.3	40.9	32.0	38.5	35.4	33.7
146	426796	542458	Roadside	90.4	90.4	35.8	28.9	36.9	33.8	30.2
149	428272	542715	Roadside	100	100.0	48.0	38.8	45.1	44.1	42.5
150	430769	537643	Roadside	100	7.7	31.5	25.2	29.3	29.3	28.9
151	426809	542489	Roadside	92.3	92.3	39.7	34.2	41.0	34.4	31.4
150	430769	537643	Roadside	100	100.0	31.6	31.5	25.2	29.3	29.3

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 2023 (%) (2)	2019	2020	2021	2022	2023
151	426809	542489	Roadside	92.3	92.3	39.0	39.7	34.2	41.0	34.4
154	426772	542405	Roadside	82.7	82.7	44.6	40.9	45.7	38.0	34.8
155	428323	542720	Roadside	75	75.0	**40.9**	34.2	36.4	36.7	35.6
156	430783	537657	Roadside	100	100.0	27.4	21.7	27.9	26.6	24.5
162	428231	542713	Roadside	100	100.0	**46.7**	35.4	**42.6**	38.0	38.3
164	429969	542322	Roadside	100	100.0	22.6	16.4	17.9	16.0	16.2
166, 167, 168	427130	542676	Roadside	100	100.0	**41.8**	32.7	**41.4**	**40.0**	39.0
169	427614	542689	Kerbside	100	40.4	34.2	20.8	24.5	25.5	22.7
170	427739	541985	Roadside	92.3	92.3	25.1	15.3	16.0	19.3	19.3
171	430017	542339	Roadside	92.3	92.3	19.1	17.3	22.7	20.2	18.7
172	427586	542820	Roadside	92.3	90.4	no data	18.0	21.8	21.8	20.5
173	418199	526238	Roadside	92.3	90.4	no data	no data	no data	19.1	18.7
174	427703	542058	Roadside	100	100.0	no data	no data	no data	no data	33.0

☑ **Yes - Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**
☑ **Yes - Diffusion tube data has been bias adjusted.**
☑ **Yes - 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 µg/m^3.
Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.
NO_2 annual means exceeding 60µg/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.
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment (see Table B.1 and Appendix C).
(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 NO_2 Concentrations: Durham County AQMA

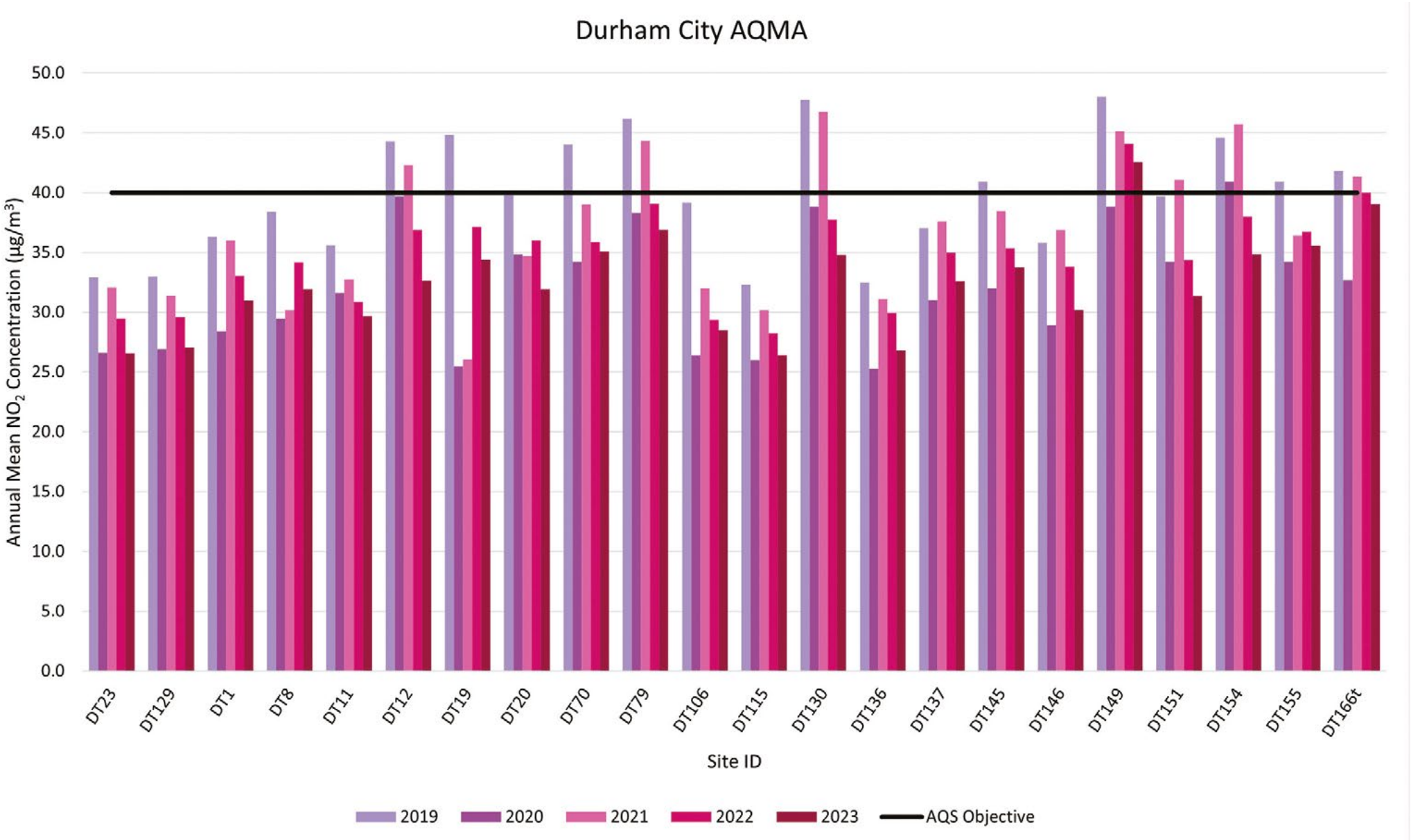


Figure A.2 Trends in Annual Mean NO_2 Concentrations: Church Street and surrounding areas

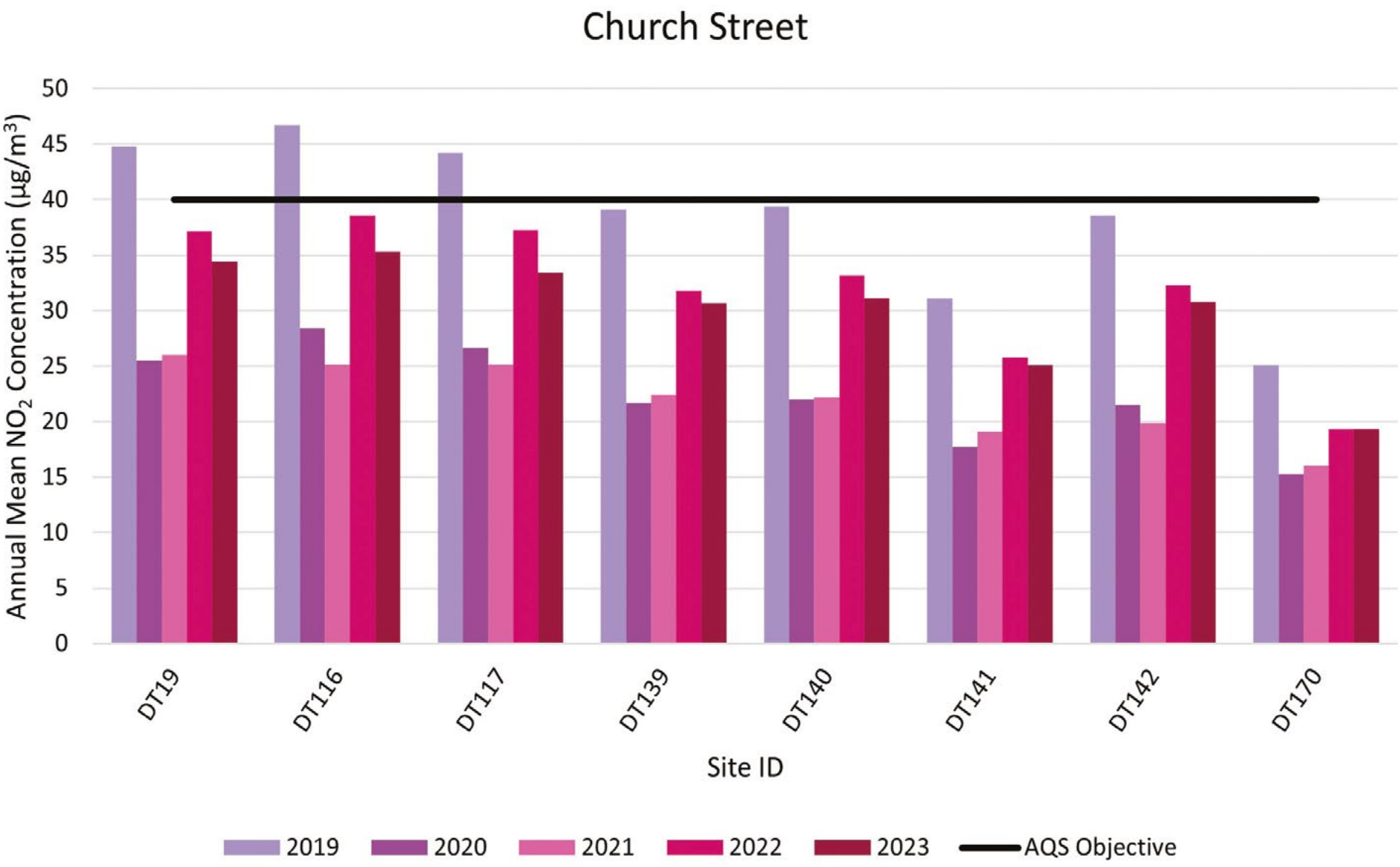


Figure A.3 Trends in Annual Mean NO_2 Concentrations: Sutton Street and surrounding areas

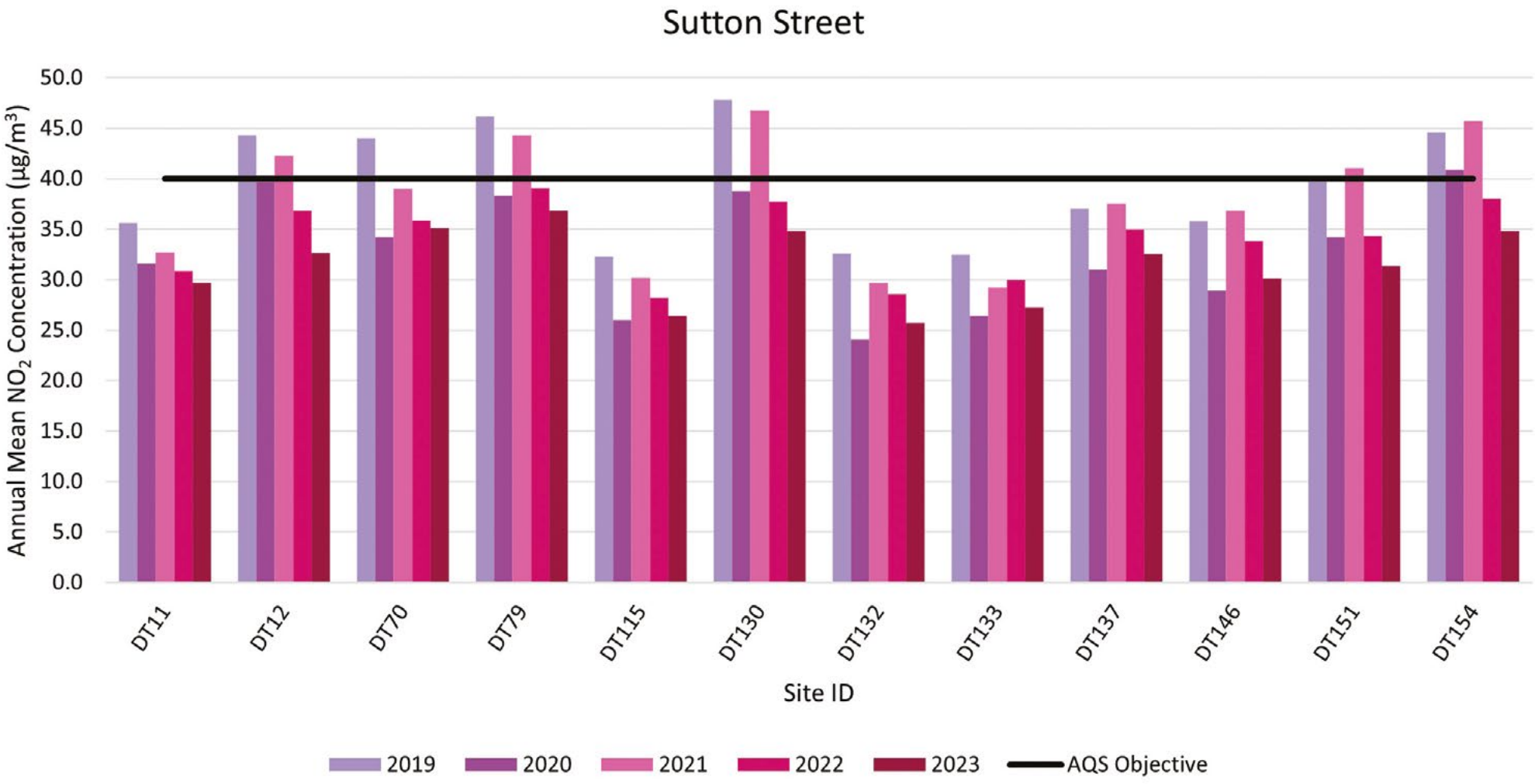


Figure A.4 Trends in Annual Mean NO_2 Concentrations: Gilesgate and surrounding areas

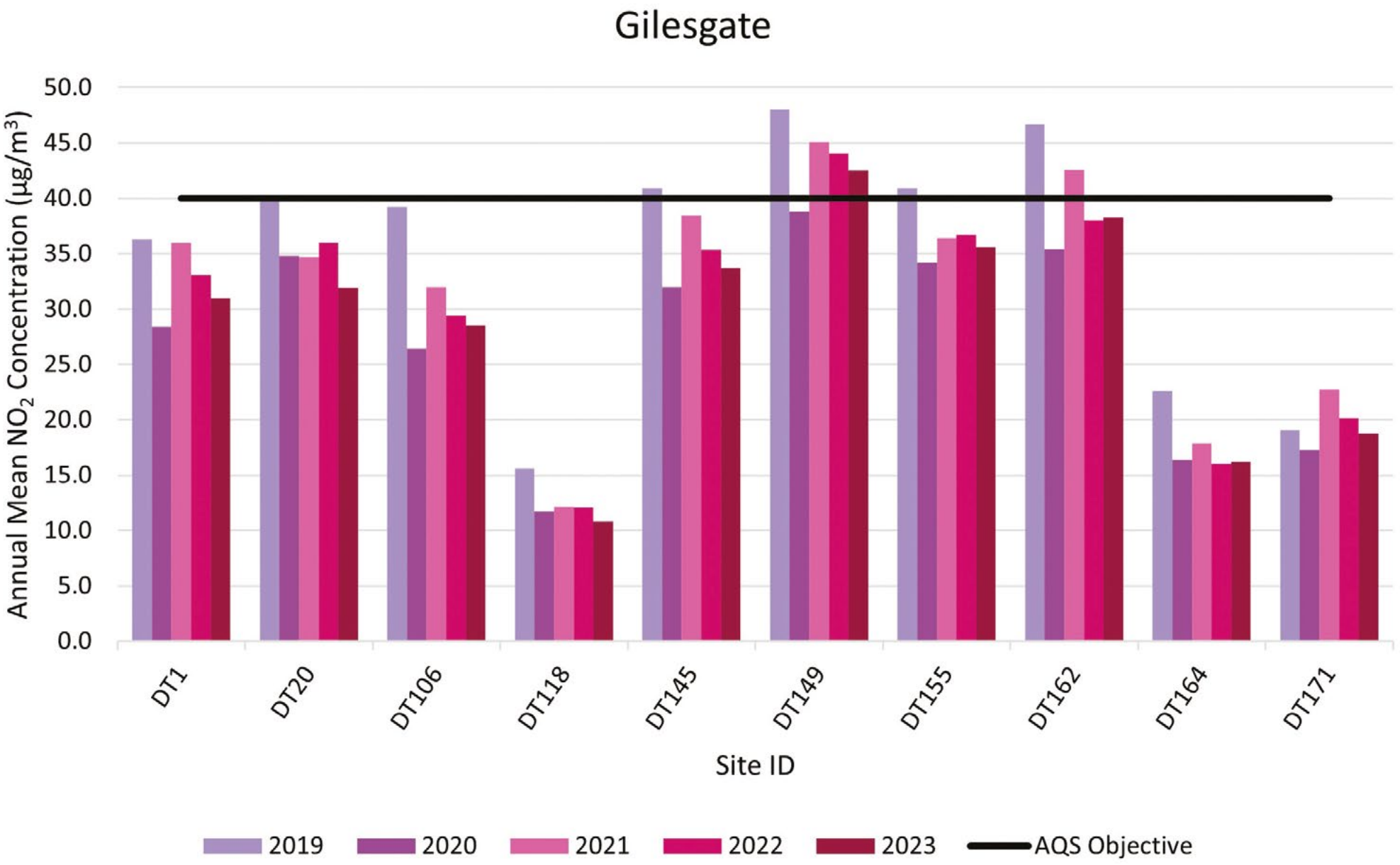


Figure A.5 Trends in Annual Mean NO_2 Concentrations: Durham City Centre

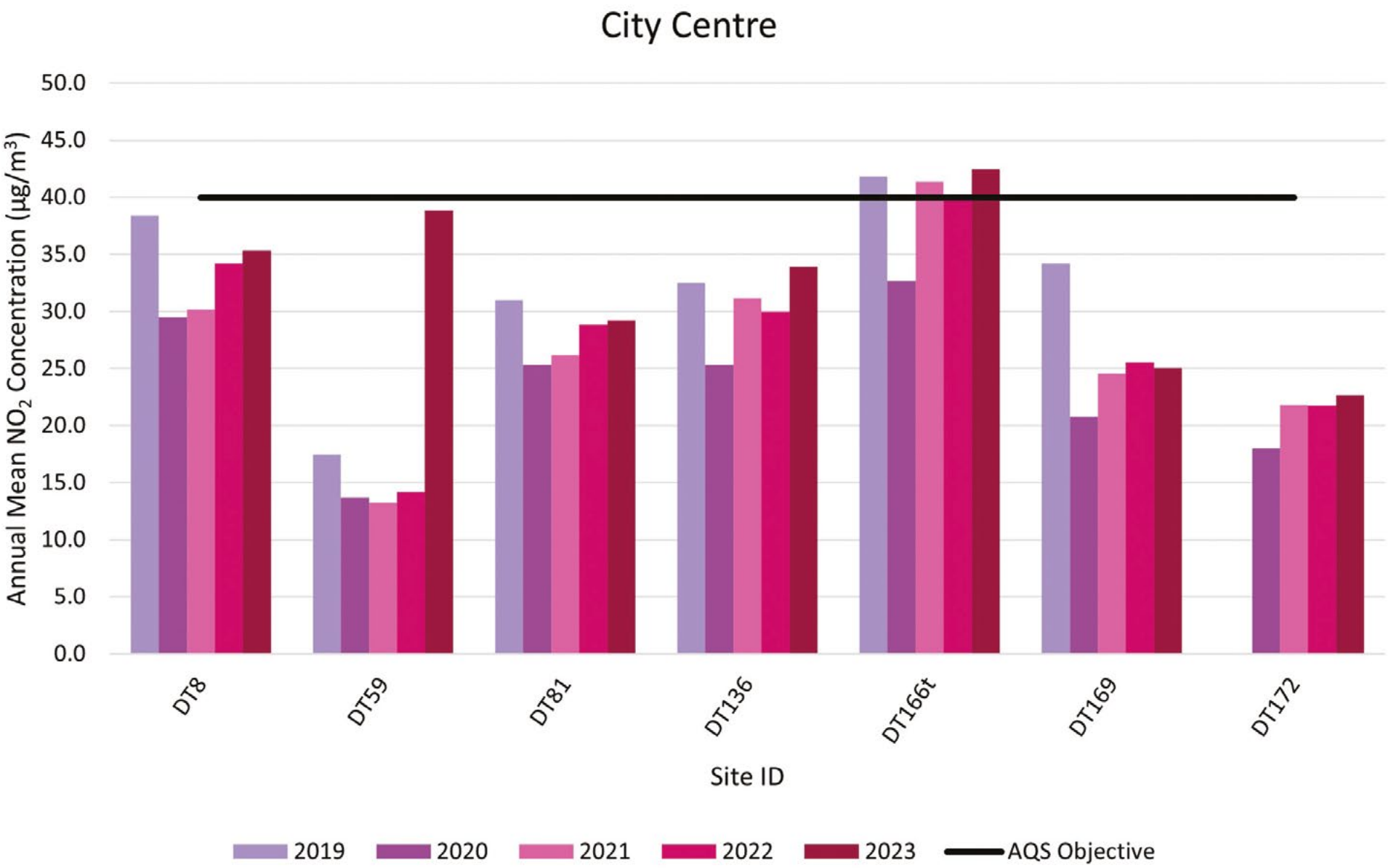


Table A.5 – 1- Hour Mean NO_2 Monitoring Results, Number of 1- Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	Diffusion Tube ID	Diffusion Tube ID	Diffusion Tube ID	Diffusion Tube ID	Diffusion Tube ID
Leazes Road	427130	542676	Roadside	99.6	99.6	0 (119)	0 (151)	0 (153)	0 (138)	0(136)

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

Exceedances of the NO_2 1-hour mean objective (200µg/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%).

Appendix B: **Full Monthly Diffusion Tube Results for 2023**

Table B.1 – NO_2 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 (0.94)	Annual Mean: Distance Corrected to Nearest Exposure
23	426895	551717	34.3	33.1	26.8	32.2	26.9	25.7	24.0	25.4	30.1	30.2	30.3	20.2	28.3	26.6	-
26	427411	552670	36.1	38.4	31.9	36.3	30.4	29.7	29.8	28.3	34.3		36.9	34.2	33.3	31.3	-
101	428211	550438	13.3	10.5	11.2	10.5	7.3	6.5	-	-	8.2	9.1	15.5	9.5	10.2	9.6	-
129	426910	551708	35.6	35.8	29.6	31.8	25.9	23.9	24.3	23.1	27.4	27.2	32.0	-	28.8	27.1	-
157	427477	551650	40.1	39.1	34.1	34.6	30.2	28.5	30.5	28.6	34.8	34.0	39.7	39.9	34.5	32.4	-
1	429657	543114	36.9	36.7	33.8	38.1	34.4	31.8	24.3	27.3	33.7	31.8	37.7	28.9	33.0	31.0	-
8	427121	542868	36.9	37.2	32.0	36.2	39.0	40.3	30.6	32.6	23.8	34.9	34.9	29.3	34.0	31.9	-
11	426838	542298	37.3	38.3	30.3	-	26.4	27.2	25.8	25.9	32.4	33.9	37.3	32.5	31.6	29.7	-
12	426768	542368	40.4	-	-	40.6	36.4	33.9	32.5	30.4	20.8	42.0	-	35.8	34.7	32.7	-
19	427689	542078	39.4	43.0	37.1	40.3	37.7	35.3	31.3	29.3	36.3	36.2	38.0	35.3	36.6	34.4	-
20	428385	542740	-	40.3	34.9	38.6	35.0	35.6	30.2	31.2	18.6	36.3	41.6	31.4	34.0	31.9	-
59	427649	542994	-	17.8	14.2	13.4	11.2	9.0	9.4	9.3	-	-	17.2	14.7	12.9	12.1	-
70	426654	542102	31.4	37.4	33.5	41.9	-	46.8	32.5	36.4	39.6	43.4	36.3	31.6	37.3	35.1	-
79	426138	541933	44.0		41.3	43.5	37.0	33.7	35.3	28.6	39.5	40.0	49.3	-	39.2	36.9	31.7
106	429658	543118	32.8	32.6	31.5	34.6	30.5	29.8	23.5	25.1	31.2	30.3	35.3	26.9	30.3	28.5	-
115	426133	541939	30.4	32.0	29.5	30.9	26.0	24.3	23.1	23.6	28.6	27.7	35.4	25.7	28.1	26.4	-
116	427686	542072	40.3	45.6	40.8	43.5	39.1	37.7	25.4	29.8	38.0	-	36.9	36.0	37.6	35.3	-
117	427672	542066	43.0	45.1	35.0	34.9	35.2	30.8	30.2	26.3	34.2	35.6	39.3	37.3	35.6	33.4	-
118	428422	542887	-	13.4	12.7	10.7	9.0	8.7	8.4	9.3	-	11.7	18.3	12.7	11.5	10.8	-
130	426808	542461	35.3	37.0	37.8	44.3	43.6	42.2	31.5	31.3	22.2	42.7	40.8	35.4	37.0	34.8	-
132	425352	540650	28.4	29.6	30.4	32.3	27.7	24.3	22.2	22.8	29.6	27.6	-	26.1	27.3	25.7	-
133	425325	540636	31.2	33.0	-	31.3	30.8	24.1	24.6	23.7	29.5	28.1	35.1	27.4	29.0	27.2	-
136	427133	542767	32.5	30.2	28.1	30.6	28.3	30.3	14.3	26.9	29.8	30.4	31.6	29.2	28.5	26.8	-

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 (0.94)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
137	426437	542027	36.8	41.7	34.7	36.2	31.4	28.2	29.9	30.6	34.7	36.8	40.5	34.1	34.6	32.6	-	-
139	427676	542051	33.9	35.5	33.5	36.6	34.4	35.1	25.6	24.9	32.8	33.8	34.8	30.4	32.6	30.6	-	-
140	427663	542014	33.0	34.3	34.2	38.7	38.6	36.3	24.6	26.4	34.0	34.6	-	29.2	33.1	31.1	-	-
141	427655	542023	29.9	31.6	28.0	28.5	27.2	26.4	18.7	20.6	26.4	27.1	32.8	22.7	26.7	25.1	-	-
142	427665	542041	39.5	-		36.7	33.7	31.7	26.6	26.0	33.9	35.9	-	30.8	32.7	30.8	-	-
145	428180	542699	-	37.7	35.3	42.1	39.1	36.2	28.3	32.0	34.8	37.2	38.1	34.1	35.9	33.7	-	-
146	426796	542458	40.0	38.0	33.1	35.4	31.4	29.2	29.8	27.7	18.8	36.9	-	32.6	32.1	30.2	-	-
149	428272	542715	36.3	46.5	43.0	58.8	52.4	48.4	39.3	39.7	43.9	46.6	48.4	39.6	45.2	**42.5**	-	-
150	430769	537643	30.8	-	-	-	-	-	-	-	-	-	-	-	30.8	28.9	-	Insufficient data capture
151	426809	542489	37.6	38.3	36.4	40.3	-	34.3	29.0	28.6	18.7	29.3	40.5	34.2	33.4	31.4	-	-
154	426772	542405	42.1	41.6	38.4	41.9	35.8	33.4	-	33.5	22.1	44.1	-	37.2	37.0	34.8	-	-
155	428323	542720	40.9	-	-	41.1	38.3	37.4	34.5	36.0	39.0	40.8	-	33.0	37.9	35.6	-	-
156	430783	537657	25.1	25.5	28.4	31.7	28.5	26.9	19.4	22.6	25.2	27.2	30.7	21.5	26.1	24.5	-	-
162	428231	542713	34.7	38.3	40.0	52.0	50.2	45.6	30.3	35.1	39.4	43.7	46.0	33.3	40.7	38.3	-	-
164	429969	542322	19.7	15.0	16.8	17.5	16.1	16.6	13.5	14.8	20.1	17.9	20.4	18.2	17.2	16.2	-	-
166	427130	542676	42.9	46.4	49.4	48.9	40.2	44.0	38.8	37.3	41.6	40.8	39.2	38.4	-	--	-	Triplicate Site with 166, 167 and 168 - Annual data provided for 168 only
167	427130	542676	43.2	50.2	-	48.1	41.9	39.7	38.1	15.6	41.6	41.4	41.8	36.9	-	-	-	Triplicate Site with 166, 167 and 168 - Annual data provided for 168 only
168	427130	542676	41.3	45.0	-	50.3	39.6	41.1	38.8	34.1	41.0	41.9	39.5	36.8	41.5	39.0	25.4	Triplicate Site with 166, 167 and 168 - Annual data provided for 168 only
169	427614	542689	26.8	25.9	25.9	29.7	27.2	-	-	-	-	-	-	-	27.1	22.7	-	-
170	427739	541985	27.4		23.7	20.0	17.1	14.6	14.5	15.8	21.0	22.5	28.5	20.7	20.5	19.3	-	-
171	430017	542339	25.5	20.4	19.3	20.0	19.0	16.1	18.5	18.4	24.4	22.7	15.1	-	19.9	18.7	-	-
172	427586	542820	25.2	23.5	23.5	24.4	20.9	20.3	18.6		22.7	23.3	15.1	22.5	21.8	20.5	-	-
173	418199	526238	22.9	20.8	18.8	20.2	18.4	-	16.3	17.3	19.0	20.7	25.5	19.2	19.9	18.7	-	-
174	427703	542058	38.8	40.8	32.5	36.4	32.7	33.9	28.4	29.8	35.4	40.1	39.8	32.8	35.1	33.0	-	-

☒ **No - All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1**
☑ **Yes - Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22**
☑ **Yes - Local bias adjustment factor used.**
☒ **No - National bias adjustment factor used**
☑ **Yes - Where applicable, data has been distance corrected for relevant exposure in the final column.**
☑ **Yes - Durham County Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:
Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.
NO2 annual means exceeding 60µg/m^3, 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.
M = Tube was missing
N = Tube was inaccessible
D = Tube was discarded due to being found on ground

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

New or Changed Sources Identified Within County Durham During 2023

During 2023, a hazardous waste incineration plant in County Durham was operational, details of which are provided below. This has been identified as a potential source of emission of air quality pollutants.

Details of potential new emission source Identified in 2023 within County Durham	
Company	Veolia Biopower One UK Limited
Location	Chilton Biomass Plant, Chilton Industrial Estate, Ferryhill, County Durham, DL17 OSD
Permit reference	Permitted as an A1 Installation (Permit Ref: EPR/LP3206SS)
Regulations	Incineration of Non-Hazardous Waste 5.1 A (1)(b) of the Environmental Permitting Regulations 2016 (As Amended) The Incineration of Hazardous Waste in a Waste Incineration Plant or Waste Co-Incineration Plant with a capacity of > 10 tonnes per day. 5.1 A (1) (a) of the Environmental Permitting Regulations 2016 (As Amended)

Additional Air Quality Works Undertaken by County Durham in 2023

Durham County Council has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

The NO_2 diffusion tubes used were supplied and analysed in 2023 by Gradko and analysed using 20% TEA/Water. The same method has been used for many years.

Gradko International Ltd takes part in the AIR-PT and NETCEN accreditation schemes.

Diffusion Tube Annualisation

Of the 45 diffusion tube monitoring sites, one site recorded <75% data capture in 2023 thus requiring annualisation of the results. One site had data capture of <25% so could not be annualised. The data was annualised by comparison to four regional background automatic monitoring stations operated as part of the Defra Automatic Urban and Rural Network (AURN) as per Boxes 7.9 and 7.10 in the Technical Guidance LAQM.TG22. These sites all had a sufficient data capture (>85%), and are listed below:

- Newcastle Centre
- Middlesborough
- Hartlepool St Abbs Walk
- High Muffles

Table C.1 – Annualization Summary (concentrations presented in µg/m3)

Site ID	Annualisation Factor Hartlepool St Abbs Walk	Annualisation Factor High Muffles	Annualisation Factor Middlesborough	Annualisation Factor Newcastle Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
169	0.9076	0.8032	0.9392	0.9047	0.8887	27.1	24.1

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2024 ASR 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/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Durham County Council have applied a Local bias adjustment factor of 0.94 to the 2023 monitoring data. A summary of bias adjustment factors used by Durham County Council over the past five years is presented in Table C.2.

The local bias adjustment factor calculated from the co-location study at Leazes Road was chosen to be applied to the data as it provided a worse-case adjustment (0.94) when compared to the national factor (0.81) and is more consistent with the adjustment factors applied in recent years. Details of this adjustment calculation are shown in Table C.3.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	Local	Not applicable	0.94
2022	Local	Not applicable	0.99
2021	Local	Not applicable	0.98
2020	Local	Not applicable	0.91
2019	National	06/19	0.93

Table C.3 – Local Bias Adjustment Calculation

Local Bias	Local Bias Adjustment Input 1
Periods used to calculate bias	10
Bias Factor A	0.94 (0.89 - 1)
Diffusion Tube Bias B	6% (0% - 12%)
Diffusion Tube Mean (µg/m^3)	42.0
Mean CV (Precision)	2.8%
Automatic Mean (µg/m^3)	39.5
Data Capture	99%
Adjusted Tube Mean (µg/m^3)	39 (37 - 42)

Notes:
A single local bias adjustment factor has been used to bias adjust the 2023 diffusion tube results.

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

DEFRA publishes maps of background pollutant concentrations for each 1km x 1km grid square covering the whole of the UK. The most recent release of the background maps uses 2018 baseline data as the reference year, and provides projections of background concentrations of NO_2, PM_{10} and $PM_{2.5}$ from the year 2023.

In the monitoring year of 2023 there were two monitoring locations within County Durham which required fall of with distance calculations and they are as follows:

- DT79, Located on Sutton Street
- DT166, DT167, DT168, Located in the City Centre.

Table C.4 – non-automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m³)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor
79	1.5	3.5	36.9	9.3	31.7
166, 167, 168	1.5	12.5	39.0	9.7	25.4

QA/QC of Automatic Monitoring

The data management and Local Site Operator (LSO) duties are undertaken by Mr Keith Miller, Durham County Council.

Calibrations are undertaken by Mr Keith Miller, Durham County Council at monthly intervals and serviced by Enviro Technology Services Limited at a frequency of 2 visits per annum.

The data is ratified by Air Quality Data Management ADQM (Mr Geoff Broughton). The DCC website presents automatic monitoring results for Durham County Council at **www.durham.gov.uk/article/3825/Air-quality-in-Durham-City**.

PM^{10} and $PM^{2.5}$ Monitoring Adjustment

Durham County Council does not undertake any monitoring of PM^{10} and $PM^{2.5}$, therefore no adjustment is required.

Automatic Monitoring Annualisation

All automatic monitoring locations within County Durham recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO^2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO_2 concentrations corrected for distance are presented in Table C.5.

Table C.5 – Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m³)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor
Leazes Road	1.5	12.5	39.5	9.7	25.6

Appendix D: **Map(s) of Monitoring Locations and AQMAs**

Figure D.1 Map of Automatic and Non-Automatic Monitoring Sites: County Durham

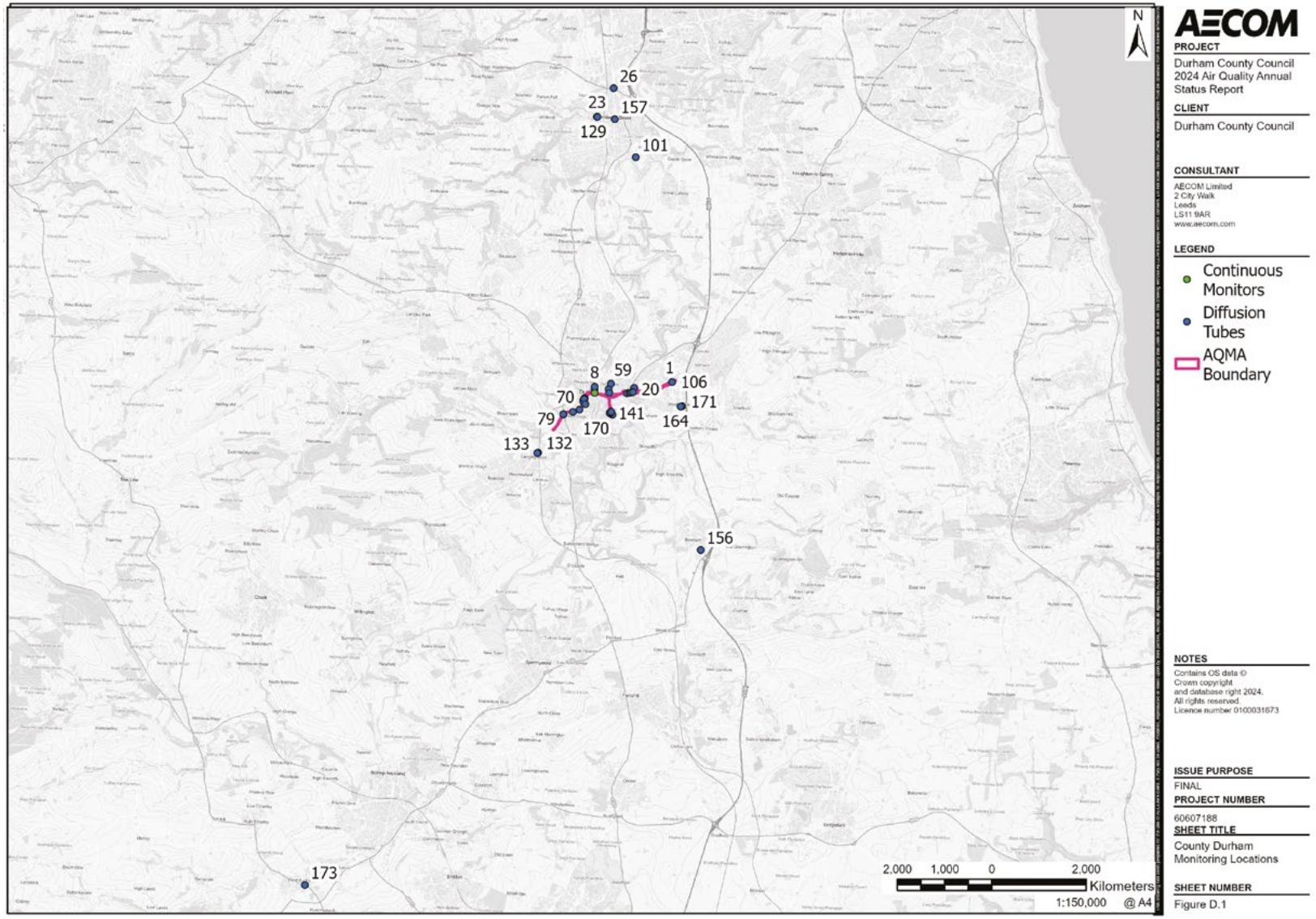


Figure D.2 Map of Non-Automatic Monitoring Sites: Church Street and surrounding areas

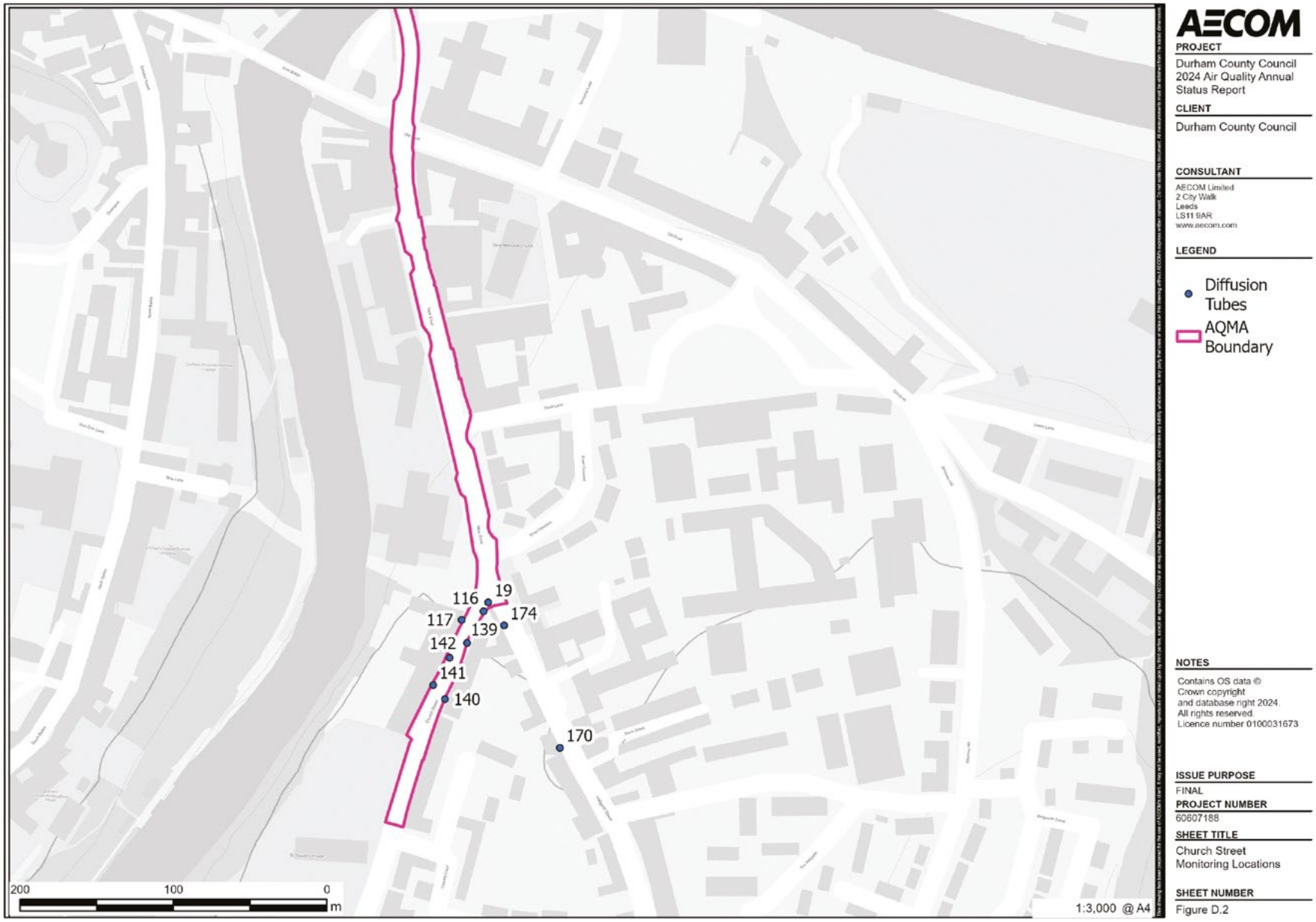


Figure D.3 Map of Non-Automatic Monitoring Sites: Sutton Street and surrounding areas

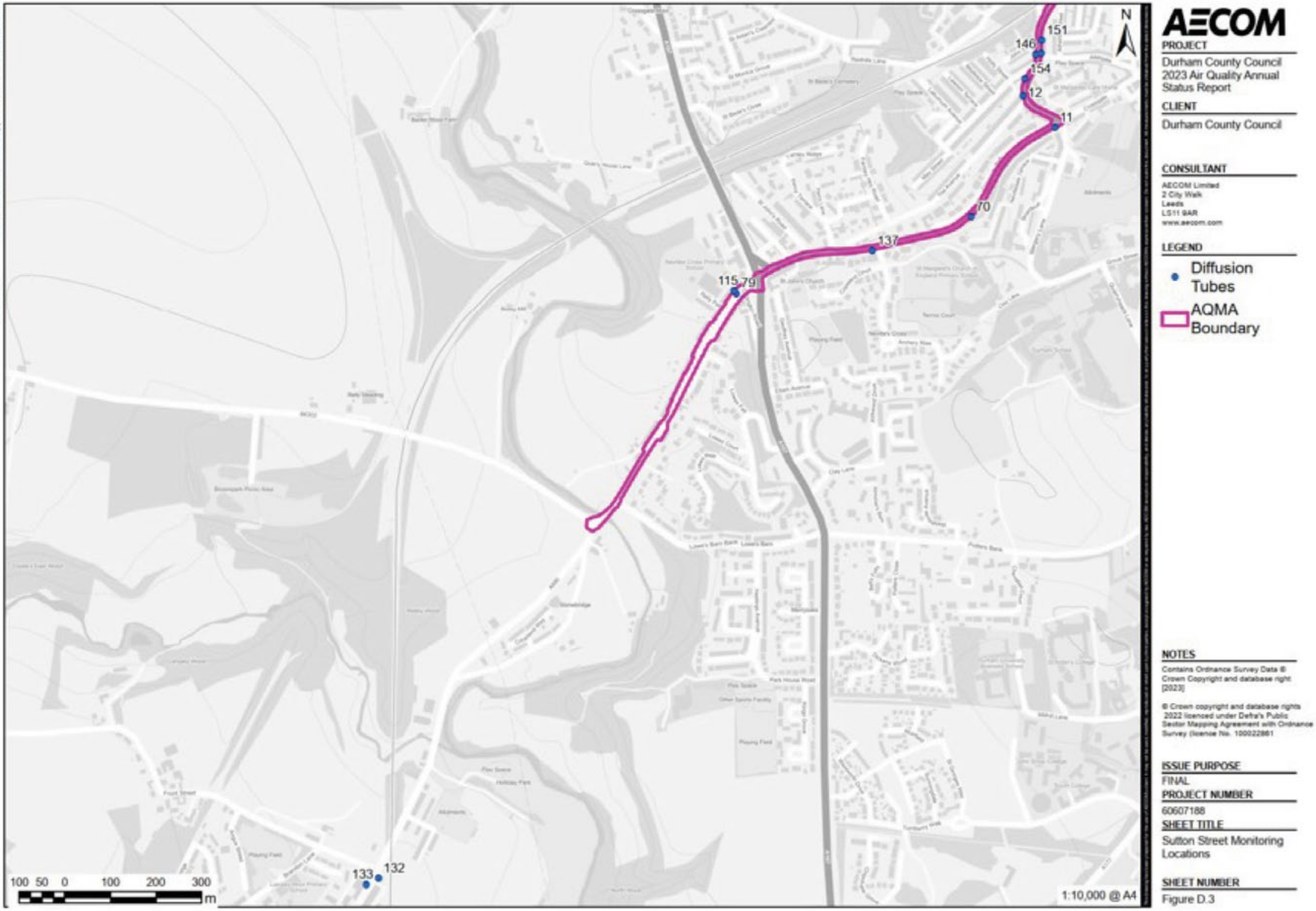


Figure D.4 Map of Non-Automatic Monitoring Sites: Gilesgate and surrounding areas

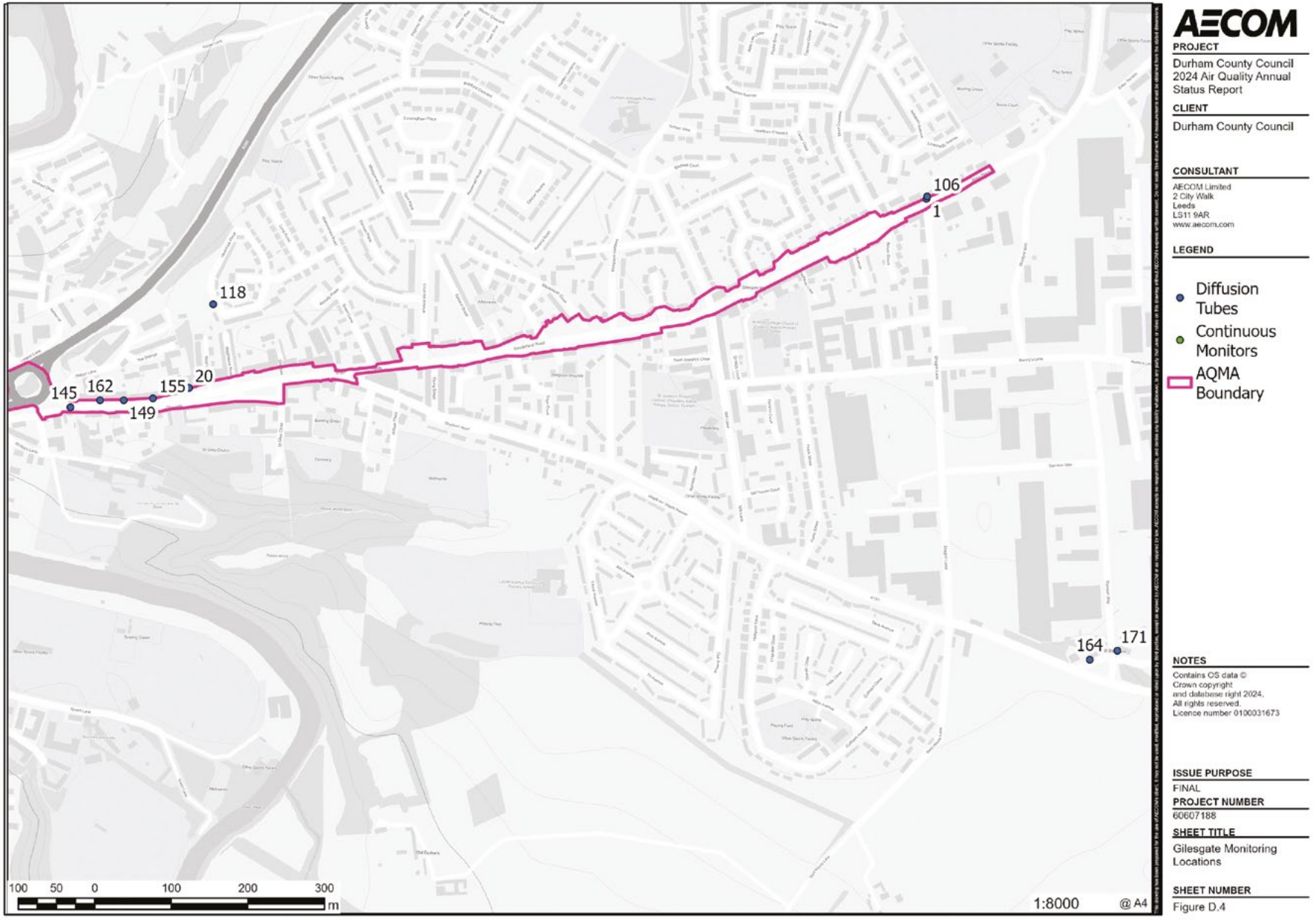
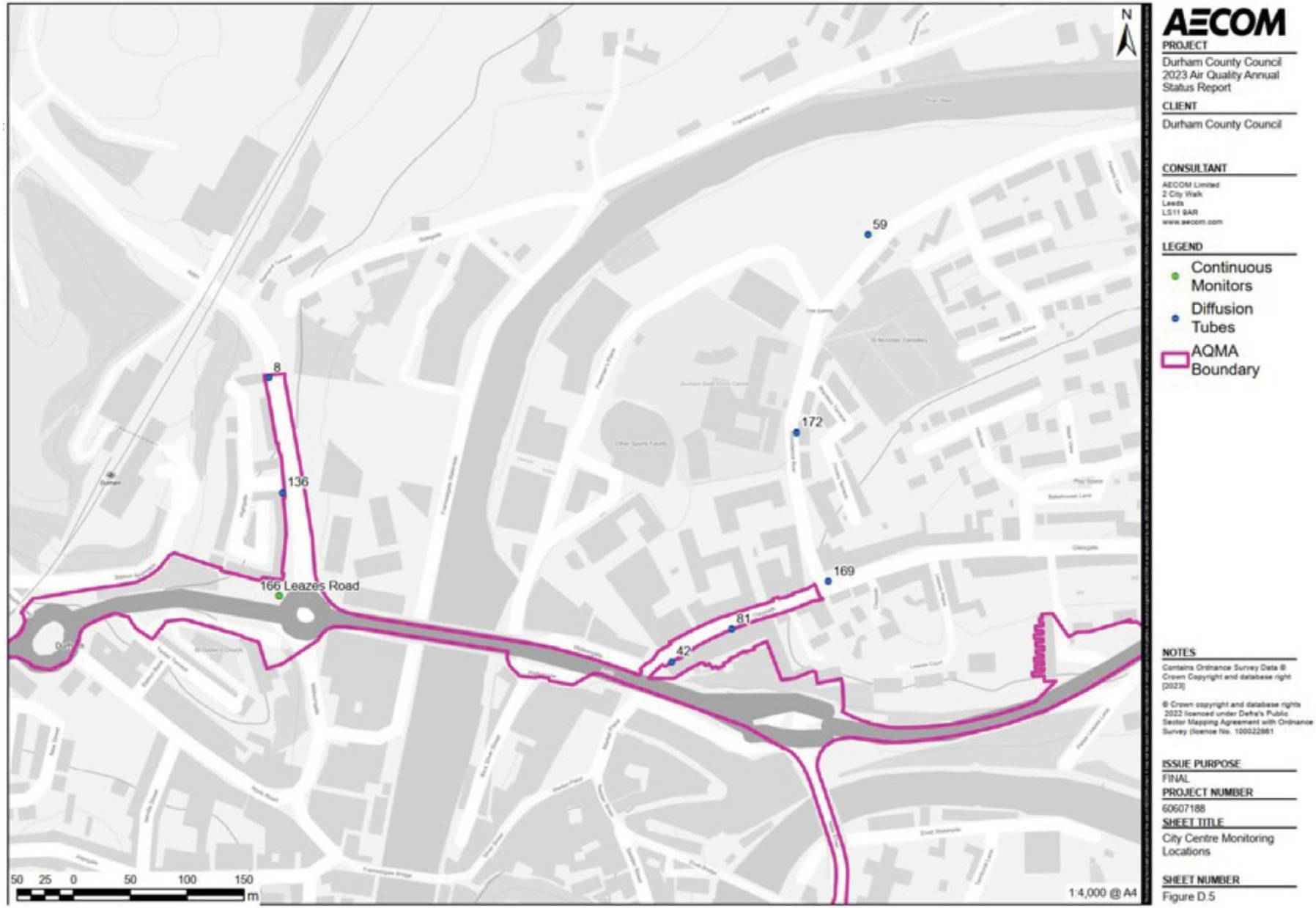


Figure D.5 Map of Non-Automatic Monitoring Sites: City Centre



Appendix E: **Summary of Air Quality Objectives in England**

Table E.1 – Air Quality Objectives in England[7]

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 micrograms of pollutant per cubic metre of air (µg/m^3).

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

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