

2023 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, 2023





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

Air Quality in Durham

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas^{1 2}.

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

In County Durham, the main pollutant of concern is Nitrogen Dioxide (NO₂), 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 NO₂ 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 AQMA was also declared within Chester-le-Street, on the 17th May 2013, and amended on the 20th May 2015, due to an exceedance of the annual mean NO₂ objective. In recent years there have been no exceedances of the air quality objective within the AQMA, and following consultation, this was officially revoked on 19th September 2022.

Air quality across County Durham has been relatively stable for several years, albeit with a reduction in annual mean NO₂ concentrations observed during the COVID-19 pandemic in 2020 and 2021. Concentrations in 2022 partially recovered compared to the previous year, but generally remained below pre-pandemic levels with only one location exceeding the annual mean objective.

No significant new emission sources were identified since the previous ASR, and the most significant source of atmospheric pollution continues to be emissions from road traffic, although it should be noted that there was a nationwide reduction in journeys during the COVID-19 pandemic affecting both monitoring values and public exposure. Traffic levels throughout 2022, following the COVID-19 pandemic, remain slightly lower than pre-pandemic levels, although traffic numbers are more uniform throughout the day, with less distinctive increases in traffic numbers during peak hours.

New Elvet Bridge reopened in October 2021 following a 15-month closure for essential works. During this period, traffic was redirected across the city of Durham. This reopening has allowed traffic to use New Elvet Bridge and has contributed to the concentrations recorded in the surrounding areas, such as along New Elvet.

The focus of concern in the administrative area is predominantly high concentrations of NO₂ in Durham City, although it is recognised that fine (PM₁₀) 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/m³ 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.

¹ Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

³ Defra. Air quality appraisal: damage cost guidance, January 2023

⁴ Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018



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 Plan⁵ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term PM_{2.5} targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce PM_{2.5} in their areas. The Road to Zero⁶ details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The County Durham Plan was adopted in 2020 and outlines a policy framework for development within the County up to the year 2035 including a number of policies relevant to local air quality. These policies include:

- **“Policy 21: Delivering Sustainable Transport - The transport implications of development must be addressed as part of any planning application, where relevant this could include Transport Assessments, Transport Statements and Travel Plans”**
- **“Policy 22: Durham City Sustainable Transport – Encourage modal shift to more sustainable modes of transport by promoting and influencing changes in travel behaviour. Reduce through-traffic from the city centre by encouraging sustainable transport.”**
- **“Policy 31: Amenity and Pollution - Development which has the potential to lead to, or be affected by, unacceptable levels of air quality, inappropriate odours, noise and vibration or other sources of pollution, either individually or cumulatively, will not be permitted including where any identified mitigation cannot reduce the impact on the environment, amenity of people or human health to an acceptable level.”**

The Air Quality Action Plan (AQAP) is currently being updated following the adoption of the County Durham Plan and the Durham City Sustainable Transport Delivery Plan 2018-2035. A summary of the AQAP Actions that have already been adopted is presented below.

| 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. |
| Action 2 | The retrofitting of emissions abatement systems on diesel engines on buses using routes within the declared AQMA. |
| Action 3 | Encourage the operation of hybrid buses using routes within the declared AQMA. |
| Action 4 | Ensuring the park and ride buses are compliant with the Euro VI emission standard. |
| Action 5 | The development of cycle-ways 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. |
| 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. |

⁵ Defra. Environmental Improvement Plan 2023, January 2023

⁶ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018



| Action | Summary |
|------------------|--|
| 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. The outcome of this will enable opportunities to mitigate any detrimental impacts and potential benefits to be identified. |
| 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. |
| 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. |
| 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. |
| Action 11 | Variable message and car park direction signing system to direct traffic to available parking. |
| 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. |
| 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). |
| 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. |
| Action 15 | Explore the options for additional highway infrastructure in line with the Durham Sustainable Transport Strategy, taking into account 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. |
| Action 16 | To assess the significance of taxi vehicular emissions in Durham City. |
| Action 17 | To work with the Environment and Design Team to complete a Green Infrastructure (GI) feasibility study for the AQMA in Durham City. |



DCC has taken forward a number of measures since the previous ASR was published in pursuit of improving local air quality, which can be found in Table 2.2. These include:

- **Action 5** - approval of £2.8 million for safety improvements at the New Inn junction, and the upgrade of the active mode travel routes between Newton Hall and Framwellgate Peth and between County Hall and Sniperley. It is anticipated that these works will be implemented between May 2023 and May 2024.

The Strategic Cycling and Walking Delivery Plan 2019-2029 sets out the Council's commitment to undertake 12 Local Cycling and Walking Infrastructure Plans (LCWIPs). The first three LCWIPs (Chester-le-Street, Durham City and Newton Aycliffe) were adopted in October 2021. The following LCWIPs for Bishop Auckland, Consett, Crook, Peterlee, Seaham, Spennymoor, Shildon and Stanley were adopted the week commencing 12th June 2023. The key outputs of a LCWIP include local walking and cycling network plans, a prioritised programme of improvements and underpinning technical report.

- **Action 11** – There are now 14 variable message signs across Durham City. Information from 4 of the 6 car parks is currently fed into the UTMC system.
- **Action 14** – Funding of £1.8 million has been approved for the extension of park and ride facilities, with a planning application expected to be determined in mid-June 2023.

The Durham City Sustainable Transport Delivery Plan 2018 to 2035 was established for the City in December 2018 in order to set out measures to increase the use of sustainable forms of travel including bus transport, walking and cycling. The plan aims at addressing the existing traffic congestion issues and includes recommendations that support the implementation of some of the actions that have been incorporated in the AQAP. The proposed measures in the Transport Delivery Plan broadly support and complement the actions incorporated in the existing AQAP.

The County Durham Climate Change Strategy and Emergency Response Plan (CERP) 2022-2024 outlines actions to be undertaken by the Council to reduce carbon emissions and reach net zero. Several actions outlined within the CERP will be beneficial to air quality as well as climate change. This includes the expansion of the electric vehicle charging point infrastructure network.

The Durham City Trust has also provided comments in response to the previous consultation on the extension of the AQMA to include a further section of Church St that are relevant to the review and revision of the AQAP. Specifically, it was recognised that the AQMA is very narrowly defined along certain roads, and it was suggested whether there may be an advantage to extending it to incorporate a more comprehensive area of the city, including some green spaces, and so incorporate more non-traffic sources; e.g. wood-burning stoves as a source of PM.

This consultation response also suggested the AQMA may be extended to incorporate the whole of Church Street up to Stockton Road, and that Actions should consider diverting traffic from Church Street to Hallgarth Street, or vice versa. It was commented that an overall reduction in road traffic would be supported, and that whilst this should focus on diesel cars, electric vehicles cannot provide a complete solution because of recent findings that brake dust and tyre particles are significant air-borne pollutants.

Conclusions and Priorities

One exceedance of the annual mean air quality objective was recorded in 2022, located on Gilesgate within the Durham City AQMA. There are still a number of monitoring sites where there is a risk of exceedance as levels are within ten percent (above 36 µg/m³) of the annual mean air quality objective. Some areas across Durham, such as sites along Sutton Street, saw a general decrease in concentrations compared to 2021. Increases in concentrations when compared to 2021 were recorded at locations such as Church Street and Claypath.

The most significant air quality local challenge in the County continues to be the AQMA declared in Durham City, which incorporates a significant proportion of a major east-west route across the city. The AQAP is currently being updated by DCC to include specific measures to improve air quality in the City which, over the short-term, is the priority for the upcoming year. The review will take into consideration the progress of other plans including the County Durham Strategic Cycling and Walking Plan, the Durham City Sustainable Transport Delivery Plan and the Climate Emergency Response Plan.



A review of the existing AQAP is ongoing. Actions are categorised based on the target of each measure, e.g. bus and taxi, active travel, planning, etc. and whilst this is logical in terms of the development of new Actions from zero base, it is proposed that at this stage it may now be simplified further to focus on the key emission sources:

- Cross-city traffic;
- City-centre-destination traffic; and,
- Background emission sources, including regional transport emissions from areas outside the city, and domestic heating and burning.

These may be tackled at two scales:

- Targeted local measures, focussed on specific hotspots; and,
- Strategic measures covering whole sections of a fleet or large geospatial area.

The source apportionment of the road emission sources evidenced that the main emissions from road sources are diesel cars and LGVs along with buses on specific roads.

The source apportionment of background emissions indicates that background contributions include relatively significant proportions of road and domestic emission sources. Regional transport emissions from areas outside the City may be tackled with strategic measures to improve the vehicle fleet and reduce reliance on private cars, whilst domestic emissions may be managed with LAQM tools.

Local Engagement and how to get Involved

The development of the existing Durham City AQAP 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. The consultation focussed on encouraging views to be voiced on proposed low emissions measures. The AQAP has been influenced by the consultation and includes the outcomes from this feedback.

The existing Durham City AQAP includes a number of Actions that will require a high level of public support and buy-in to ensure they are successful, such as:

- Increasing the access to alternative modes of travel to the use of the private motor car.
- Increased use of low emission vehicles.
- Increased use of cycleways as a modal shift across Durham City.
- Adoption of Smarter Choices, including the uptake of car sharing and pooling or the use of alternative forms of travel.

The Council have progressed a campaign to raise the profile of air quality by focussing on ways the public themselves can get involved/participate by making choices that will potentially improve air quality.

Presentations on the progress of the implementation of the action measures are made by officers to Council Committees that oversee the overarching performance objectives set by the Council. Air quality is discussed on an annual basis at the Environment and Sustainable Communities Overview & Scrutiny Committee and at meetings of the Transport Local Policy Group. In addition, air quality has recently been added to the Environment and Climate Change Partnership Board agenda.

This not only raises the profile of air quality both internally and externally but also will maintain the momentum of engagement and involvement of stakeholders and the public following the previous consultation exercise on the Durham City AQMA.



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 and agreement of the following officers and departments:

The ASR was reported to the Air Quality Corporate Steering Group on Friday 16th June 2023 and is supported by the Director of Public Health and the Cabinet Portfolio Member for Environment. The ASR was reported to the Neighbourhood Services and Climate

Change and Corporate Management Teams within the Council on 20th June 2023 and 28th June 2023 respectively. The Management Teams gave approval to the Air Quality Annual Status Report prior to it being submitted.

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 2022. 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

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.

The Chester le Street Air Quality Management Area was officially revoked on 19th September 2022.





Table 2.1 - Declared Air Quality Management Areas

| AQMA Name | Date of Declaration | Pollutants and Air Quality Objectives | Description | Is air quality in the AQMA influenced by roads controlled by National Highways? | Level of Exceedance: Declaration | Level of Exceedance: Current Year | Number of Years Compliant with Air Quality Objective | Name and Date of AQAP Publication | Web Link to AQAP |
|-------------------------|---|--|---|--|---|--|---|--|--|
| Durham City AQMA | Declared 9th May 2011 Amended 2014 Amended 2020 | NO2 Annual Mean | The A690 west to east route through Durham City from the Stonebridge roundabout (Broom Lane), Neville's Cross, the Peth to the Crossgate Lights junction, Alexandra Crescent and Sutton Street to the Framwellgate roundabout, across Milburngate Bridge to Gilesgate to the junction of Dragon Lane and Sunderland Road; A section of Church Street at New Elvet to the junction of Hallgarth and Church Street; and A section of Claypath from Leases Road to the junction with Providence Row. | No | 56.4 | 44.1 | 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.



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

Defra's appraisal of last year's ASR concluded that the report was well structured, followed the latest template and provided the information specified in the guidance, alongside this, the following comments were raised that needed addressing:

- Table 2.1 detailing the AQMA's is not in line with those on UK-Air and the LAQM Portal. It should be noted that the Chester le Street No. 2 AQMA has not been included within the 2022 ASR as the revocation of this AQMA was undertaken in 2020, however, the revocation order states the order will come into effect from the 29th July 2022. Based on this information it is accepted that the details for the Chester le Street No 2 AQMA have not been included in the 2022 ASR. However, it is encouraged for revocation orders to be submitted to Defra as soon as consultation is complete.
- The 2022 ASR states that the comments from the 2021 ASR have been addressed, however one of the key comments in relation to Missing information on: 'Year Measure Introduced', 'Estimated/Actual Completion Year', 'Defra AQ Grant Funding', Funding Status' and 'Estimated Cost of Measure. These were missing in the 2021 ASR and the 2022 ASR states that they have been completed however the columns still contain no additional information.
- Minimal change in the 2022 ASR when compared to the 2021 ASR in Table 2.2 Progress of Measures. Many of the measures still have text referring to the change in 2020-2021, and the majority of measures have had little discussed progression on the comments/barriers to implementation. There is no discussion before Table 2.2 to discuss the measures expected to be completed over the course of the next reporting year or the measures that have had slower progress.
- Not clear from Table 2.2 or text before on the measures currently active or funded as there is data missing in the key columns of the table and no context of ongoing or measures to be completed prior to Table 2.2.
- The ASR has provided minimal measures to improve PM2.5 , Section 2.3 of the report states that the SPD that is proposed to be developed will help to reduce PM2.5 emissions, however Measure 8 in Table 2.2 which references the SPD states that "ongoing update to the AQAP has indicated that further benefits from expanding this Action are unlikely to be achieved at this time". It is therefore unclear if the SPD is going ahead. In addition, there are other measures in Table 2.2 which will help to reduce PM2.5 emissions which have not been discussed.
- There is a reduction in Monitoring sites when compared to the 2021 ASR. 1 less automatic station and 6 less diffusion tube sites. It is however unclear as to the reason there has been a reduction in the monitoring strategy.
- The ASR states that three sites have been used for annualization, Newcastle Centre (UB) Hartlepool St Abbs Walk (UB) and High Muffles (RB). Only these three sites have been used in annualization as there were the only suitable sites with valid data capture in close proximity to Durham. However, Middlesbrough AURN (UB) has over 85% data capture and is closer to Durham than the High Muffles site but has not been referenced in the ASR.
- Table B.1 of the ASR includes the Letters U, M and ML where there is no data, it is however not stated what these letters reference
- Additionally in Table B.1 some diffusion tubes have fluctuations in data which are not justified.
 - 8 – Lower than average December period, after a month where diffusion tube data unavailable,
 - 117 – November period much higher concentration than remaining months.
 - 139, 140 and 141. Much higher concentration between October and November 139 and 140 tube missing in October.



Considering each comment sequentially:

- The revocation order has been sealed and the Chester Le Street AQMA was officially revoked in September 2022, and has therefore not been included within this ASR. The AQMA information on UK-Air has been updated accordingly.
- In this report, the columns have been fully completed.
- 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.
- PM2.5 is recognised as a pollutant of concern but no specific measures are proposed to reduce this. However, measures that support reduction of PM2.5 have been highlighted.
- There is only one automatic monitoring site within Durham County Council, located on Leazes Road. Prior to 2019, this monitoring site was located at Crossgate.
- In this report, the Middlesbrough AURN has been used for annualization.
- In this report, a note has been added following Table B.1 to signify the meaning of the letters U, M, and ML.
- In this report, justification of significant fluctuations in data has been included.
- Durham County Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 17 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 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

Key completed measures are:

- **Action 1** – Introduction of UTMC or SCOOT system to coordinate traffic. This was completed in 2016. It has been proposed that this could be extended across additional junctions but would require additional funding to do so.
- **Action 4** – Ensuring the park and ride buses are compliant with Euro VI emission standard. This was completed in 2016.
- **Action 16** – Assessing the significance of taxi vehicular emissions in Durham City. This was completed in 2019 following an ANPR survey and modelling study.
- **Action 17** – working with the Environment and Design Team to complete a Green Infrastructure Feasibility study. This was completed in 2019.

It is not expected that any further measures are likely to be completed over the course of the next reporting year. An update to the AQAP is ongoing. A baseline study, source apportionment has been completed and an assessment of potential Actions is currently taking place. Once these have been finalised the draft AQAP will need to be submitted to the relevant Council committees followed by public consultation.

The revised AQAP will ensure that new developments and Council measures will be directed towards air quality. Durham County Council's priorities for the coming year are to continue monitoring in the Chester-le-Street area and in the vicinity of the Durham City AQMA to ensure the revocations/revisions made are appropriate.

The principal challenges and barriers to implementation of the current AQAP that Durham County Council anticipates facing are ensuring that there will be funding in the upcoming year to continue the fleet improvements replacing buses with engines with a higher Euro standard as well as adding more hybrid buses as an alternative to 'retrofitting'.



Priority for the improvement of the bus fleet by bus companies at a regional level is taking place throughout the joint Newcastle and Gateshead AQMA.

Progress on some measures has been impacted by the Covid-19 pandemic as implementation and assessment of actions has been made more difficult with people living under national restrictions and the reallocation of Council resources. Progress on the following measures has been slower than expected:

- **Action 2** – Retrofitting of emissions abatement systems of buses used within the AQMA. Priority for the improved bus fleet by bus companies has been within the joint Newcastle and Gateshead Clean Air Zone (CAZ).
- **Action 3** - Encouraging the operation of hybrid buses. Other vehicle renewal has occurred in Arriva, GNE and other bus operator fleets through the cascade of newer buses displacing older buses with earlier Euro emission standards.
- **Action 6** – Promotion of Smarter Travel Choices. National COVID-19 restrictions and the encouragement to work from home has resulted in a significant reduction in the demand to travel.
- **Action 8** – Establishment of current Air Quality and Planning Guidance Note as a Supplementary Planning Document (SPD). The ongoing update to the AQAP has indicated that further benefits from expanding this Action are unlikely to be achieved at this time.
- **Action 11** – Variable messages and signage to direct traffic to available parking. The occupancy of 4 out of 6 car parks is currently fed into the UTMC system. However, additional funding is required for information of the remaining 2 car parks to be fed into the system.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, DCC anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the Durham City AQMA. These additional measures will be guided by the production of the new AQAP due to be completed later in 2023.



Table 2.2 - Progress on Measures to Improve Air Quality

| Measure | 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 Performane Indicator | Progress to Date | Comments / Barriers to Implementation |
|---|--------------------------|---|---------------------------------|---|--|--|------------------------|----------------|---------------------------|---|---|---|---|---|
| 1. The introduction of a UTMC or SCOOT system to coordinate traffic through a network of junctions within Durham City and reduce congestion | Traffic Management | UTC, Congestion management, traffic reduction | 2016 | 2016 | DCC Traffic Management | DCC Traffic Management | NO | Not Funded | Unknown | Completed | 23% average emissions reduction and up to 39% reduction on Claypath. Maximum 13 µg/m ³ N _{o2} decrease near affected junctions. | Monitoring using traffic flow count data at the following locations in accordance with the previous years: (i) A690 Castle Chare (ii) A690 Crossgate Peth (iii) A690 Leazes Road (iv) Carrville Link and (v) Claypath, as well as subjective analysis of the queuing times, and compared with the modelled option to indicate whether the predicted emission reductions may be achieved | The operation of the traffic signalled junctions within Durham City has been synchronised since October 2016 via a UTC system. The additional interaction of the Scoot software is now fully functioning The UTC is therefore operational and coordinating traffic through Durham City. | It has proved difficult to assess any further impact of implementing the SCOOT system due to the reduction in journeys as a result of the COVID-19 pandemic. The UTC could be extended to cover more junctions but is subject to a funding source being identified to fund the infrastructure required. |
| 2. The retrofitting of emissions abatement systems on diesel engines on buses using routes within the declared AQMA | Vehicle Fleet Efficiency | Vehicle Retrofitting programmes | 2016 | No estimated/ actual completion date specified. | Lead: DCC Sustainable Transport Team with support from Bus Companies (Arriva, Go North East) | Lead: DCC Sustainable Transport Team with support from Bus Companies (Arriva, Go North East) | NO | Not Funded | Unknown | Further fleet improvement is targeted for 2020/21 | Up to 25% emissions reduction predicted on North Road, or 4.3 µg/m ³ N _{o2} | The composition of the bus fleets will be reported annually to track the number of vehicles that satisfy each emission standard, as well as new vehicles, those removed from the fleet, or those that have been upgraded or retrofitted with exhaust abatement. | The bus fleet in use on services in Durham AQMA has continued to evolve. The core of the fleet continues to be buses meeting Euro V emission standards, as there had been a lot of investment in new buses in that era and these vehicles still have a few years of life to go. The Council contracts for local services in Durham City now incorporate a requirement for vehicles with a Euro VI engine specification. | The bus companies priority within the region has been the operation of the newest buses within the Clean Air Zone (CAZ) established jointly by Newcastle & Gateshead Metropolitan Borough Councils. |



| Measure | 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. Encourage the operation of hybrid buses using routes within the declared AQMA | Vehicle Fleet Efficiency | Promoting Low Emission Public Transport | 2016 | No estimated/ actual completion date specified. | Lead: DCC Sustainable Transport Team with support from Bus Companies (Arriva, Go North East) | Lead: DCC Sustainable Transport Team with support from Bus Companies (Arriva, Go North East) | NO | Not Funded | Unknown | Further vehicle cascades are targeted and expected to continue, however no key dates have been identified at this stage. | Up to 25% emissions reduction predicted on North Road, or 4.3 µg/m ³ N _{o2} | The number of hybrid and micro-hybrid buses operating in the Durham fleet (as of August 2016) was: 10 Hybrid buses are operating on route 21d 6 Micro-hybrid buses are operating on route 22 20 Micro-hybrid buses are operating on route 20/20a 7 Micro-hybrid buses are operating on route X21 | It is highly likely that any investment in full hybrid buses (especially with a material "full electric" range), or in electric buses, will be dependent on grant funding. Recent grant funding opportunities have been focussed on more metropolitan areas and have required match-funding. Further investment in micro-hybrid buses is anticipated when current mid-life buses fall due for renewal; however, the large investment by both Arriva and GNE in recent years means there are a lot of Euro V buses that are not yet due for renewal | Other vehicle renewal has occurred in Arriva, GNE and other bus operator fleets through the cascade of newer buses displacing older buses with earlier Euro emission standards. The AQAP update indicated further benefits may be achieved were this to be expanded to include geofencing of battery-power operation. |
| 4. Ensuring the park and ride buses are compliant with the Euro VI emission standard | Vehicle Fleet Efficiency | Fleet efficiency and recognition schemes | 2016 | 2016 | DCC Sustainable Transport | DCC Sustainable Transport | NO | Not Funded | Unknown | Completed | Greatest impacts of 39% predicted on Claypath, or 13 µg/m ³ N _{o2} | This Action was completed in 2016 and the park and ride buses have been upgraded to comply with Euro VI | This measure is complete. The Park and Ride buses are compliant with Euro VI emission regulations. Consideration of the type of buses was defined in the contract renewal in September 2021. | No comments or barriers to implementation specified. |



| Measure | 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 Performane Indicator | Progress to Date | Comments / Barriers to Implementation |
|--|---------------------------------------|---------------------------|---|---|---------------------------|---------------------------|------------------------|----------------|---------------------------|----------------|--|---|---|---|
| 5. The development of cycleways to encourage modal shift across Durham city that link into national and county cycle routes in accordance with the Durham City Sustainable Transport Strategy | Transport Planning and Infrastructure | Cycle network | 2019 | No estimated/ actual completion date specified | DCC Sustainable Transport | DCC Sustainable Transport | NO | Partly Funded | Unknown | On-going | Greatest impacts of 7% predicted on most affected roads, or <math><1 \mu\text{g}/\text{m}^3 \text{N}_{\text{O}_2}</math> | The length of new cycle routes and other facilities (such as high quality cycle parking) constructed will be reported annually | The County Durham Strategic Cycling and Walking Plan 2019-2029 has been produced, which can be found online and sets out the actions which will make cycling and walking part of Durham's culture and to make them safe, affordable, enjoyable, everyday modes of transport for everyone. A local Cycling and Walking Infrastructure Plan has been established for Durham City. The Strategic Cycling & Walking Delivery Plan 2019- 2029 sets out the Council's commitment to undertake 12 Local Cycling & Walking Infrastructure Plans (LCWIPs). The first 3 LCWIPs (CLS, Durham City and Newton Aycliffe) were adopted in October 2021. The following LCWIPs for Bishop Auckland, Consett, Crook, Peterlee, Seaham, Spennymoor, Shildon and Stanley were adopted the week commencing 12th June 2023. The key outputs of the LCWIP include local walking & cycling network plans, a prioritised programme of improvements and underpinning technical reports. | An additional 4,372m of cycleways have been added since the previous report which has included the council taking advantage of the government's Covid-19 Active Travel fund grant to build the Pity Me / Framwellgate Moor cycleway . £2.8 million has been approved, made up of DfT TCF and DCC match funding , for the implementation of pedestrian crossing and safety improvements at the New Inn junction, upgraded active mode route between Newton Hall and Framwellgate Peth, and between County Hall and Sniperley. The works are being implemented between May 23 and March 24. |
| 6. The promotion of Smarter Travel 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 | Promoting Travel Alternatives | Workplace Travel Planning | The year that the measure was introduced in the action plan is not specified. | No estimated/ actual completion date specified. | DCC Sustainable Transport | DCC Sustainable Transport | NO | Not Funded | Unknown | On-going. | Greatest impacts of 10% predicted on most affected roads, or $2 \mu\text{g}/\text{m}^3 \text{N}_{\text{O}_2}$ | The Smarter Choices travel planning scheme will initially involve membership and commitment from major employers in the city. This is a key milestone that will enable the establishment of Travel Planning and Car Sharing schemes that can be used as 'best practice' and rolled out with other businesses in the city. | The Council continued to provide support and advice to large employers within the city to promote and encourage more sustainable travel where required but no data is available on the number of companies that have progressed travel planning or car sharing schemes. Engagement with major employers was limited to travel plans required as part of a condition for planning permission and delivery of the Walking Works package of interventions through the Living Streets project. | National Covid-19 restrictions and the requirement for staff to work from home where possible resulted in a change in travel patterns which has lead to a long-term impact on journeys by car and demand for alternative forms of transport. |



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|--|---|--|---------------------------------|------------------------------------|--|--|------------------------|----------------|---------------------------|-----------------------|--|--|---|--|
| 7. To undertake detailed dispersion modelling of air quality emissions from any development growth and infrastructure in and around Durham City as shown in the emerging Local Plan that may potentially have an impact on air quality within and on the periphery of the declared AQMA. The outcome of this will enable opportunities to mitigate any detrimental impacts and potential benefits. | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | 2019 | 2020 | DCC Sustainable Transport with support from DCC Pollution Control | DCC Sustainable Transport with support from DCC Pollution Control | NO | Not Funded | Unknown | On-going | No defined target | The completion of the assessment will have an ongoing point of implementation and so there will not be a definite milestone for completion. Note: The assessment will not determine whether the development or infrastructure is viable or not. The purpose is to identify impacts on air quality. | A detailed dispersion modelling study of the impact of the County Durham Plan was undertaken on emissions of air quality pollutants within and on the periphery of the declared Air Quality Management Area. The completed report was included as a supporting document to the pre-submission draft of the Plan that has been established. Such detailed dispersion modelling did not extend to the locality of the proposed relief roads situated to the west and north of the city, but these will be required in support of any planning applications for these infrastructure developments. The local plan was adopted in 2020 and can be accessed here: www.durham.gov.uk/article/7448/County-Durham-Plan-what-s-happened-so-far . | Detailed strategic-level modelling has been undertaken as part of the ongoing update to the AQAP to determine the future baseline and so further modelling is not proposed at this time.. |
| 8. The establishment of the current Air Quality and Planning Guidance Note as a | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | 2016 | 2023 | Lead: DCC Traffic Management with support from DCC Spatial Planning Team and DCC Pollution Control | Lead: DCC Traffic Management with support from DCC Spatial Planning Team and DCC Pollution Control | NO | Not Funded | Unknown | Not to be progressed. | No defined target | Policy-based Actions will entail a single point of implementation, and so these will have a definite milestone for completion. The establishment of the SPD and AQS, which will initially be published in draft form before being finalised. | This note has been updated to reflect the latest Environmental Protection (UK) and Institute of Air Quality Management (IAQM) Guidance: Planning for Air Quality (January 2017). The progression of this is dependent on the adoption of the County Durham Plan as a Supplementary Planning Document (SPD) will be dependent on policies within the Plan. The Plan was adopted in 2020 and contains a number of policies relating to air quality. Requirements for developers when proposing new developments have been set out in the Planning Validation Checklist which can be accessed here: www.durham.gov.uk/media/3760/Planning-Application-Validation-Checklist/pdf/ | The ongoing update to the AQAP has indicated that further benefits from expanding this Action are unlikely to be achieved and therefore it is not proposed to progress this in the revised AQAP. |



| Measure | 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 Performane Indicator | Progress to Date | Comments / Barriers to Implementation |
|--|---|------------------------|---|---|---|---|------------------------|----------------|---------------------------|----------------------|--|---|---|--|
| 9. The establishment of an Air Quality Strategy that will integrate the strategic policies covering air quality in the emerging Local Plan, the measures detailed within the LTP, the Durham City Sustainable Transport Strategy and the carbon reduction strategy in focusing and addressing air quality issues in Durham City. | Policy Guidance and Development Control | Low Emissions Strategy | The year that the measure was introduced in the action plan is not specified. | No estimated/ actual completion date specified. | Lead: DCC Spatial Planning with support from DCC Pollution Control | Lead: DCC Spatial Planning with support from DCC Pollution Control | NO | Not Funded | Unknown | Not to be progressed | No defined target | The publication of the Strategy is a definite milestone for completion. | - | The ongoing update to the AQAP has indicated that further benefits from expanding this Action are unlikely to be achieved and therefore it is not proposed to progress this in the revised AQAP. |
| 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. | Public Information | Via other mechanisms | 2016 | No estimated/ actual completion date specified. | Lead: DCC Pollution Control support from DCC Spatial Planning, Sustainable Transport and Climate Change | Lead: DCC Pollution Control support from DCC Spatial Planning, Sustainable Transport and Climate Change | NO | Not Funded | Unknown | Completed | No defined target | Publication of air quality documents Marketing material associated with the Smarter Choices programme Access to real-time air quality information on the air quality website. Creation of an LAQM portal that will encompass online tools for the Smarter Choices programme. | A web page on simple ways to help reduce air pollution is available on the Durham Council website detailing 10 measures which can benefit air quality. An air quality campaign was progressed in collaboration with the Living Streets initiative to support alternative modes of travel in preference to the use of private motor vehicles. In addition, events to raise awareness of air quality were held as part of the annual Clean Air Day. The web page detailing ways to reduce air pollution can be found here: www.durham.gov.uk/airquality . | There is no dedicated team at the moment in place within the Council to deal with the Smarter Travel Choice Programme. |



| Measure | 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 Performane Indicator | Progress to Date | Comments / Barriers to Implementation |
|--|--------------------|----------------------|---------------------------------|---|---|---|------------------------|----------------|---------------------------|---|--|---|--|--|
| 11. Variable messages and car park direction signing system to direct traffic to available parking. | Public Information | Via other mechanisms | 2016 | No estimated/ actual completion date specified. | Lead: DCC Pollution Control Team with support from DCC Neighbourhood Communications and Sustainable Transport | Lead: DCC Pollution Control Team with support from DCC Neighbourhood Communications and Sustainable Transport | NO | Not Funded | Unknown | On-going | No defined target | The completion of the variable message signs to display information on parking availability will have a single point of implementation and so there will be a definite milestone for completion. | All signs have now been installed. However, in an update from Traffic Management (6th July 2022), the car park directional signing system is not yet operational. Software development work is also underway to integrate car park occupancy information into the Durham UTMC. The occupancy of 4 out of the 6 car parks in the city is fed into the UTMC system with work to also feed in the information from the remaining 2 car parks. Once the remaining car park occupancy information is fed into the UTMC system then this will be displayed on car park guidance variable message signs. There are currently 14 variable message signs located around Durham City that are used to display traffic information. | To feed information on the occupancy of the remaining 2 car parks into the UTMC system requires funding to support the software development that is required since both of these car parks operate a different system. |
| 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 alert and social networking | Public Information | Via other mechanisms | 2018 | No estimated/ actual completion date specified. | DCC Traffic Management | DCC Traffic Management | NO | Not Funded | Unknown | Integrated with UTMC system in December 2018. | o defined target | Publication of air quality documents Marketing material associated with the Smarter Choices programme Access to real-time air quality information on the air quality website. Creation of an LAQM portal that will encompass online tools for the Smarter Choices programme | Journey time information from the UTMC system is available on the Durham County Council website and information on 'Traffic & Travel' from the UTMC is shown in the form of Variable Message Signs. A project to publish comprehensive 'Traffic & Travel' information on the DCC website is being led by Corporate Communication. Development work has been completed and information on air quality is being fed from the air quality monitors into the UTMC system. However, strategies relating to the use of air quality information have not yet been developed. There are web cameras that are published on the Council's website that provide a snapshot of the condition of the road network. The cameras are positioned around Durham City. | No comments or barriers to implementation specified. |



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|--|-------------------------------------|----------------------------|---------------------------------|---|---|---|------------------------|-------------------|---------------------------|----------------|--|---|--|--|
| 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. | Promoting Low Emission Transport | Priority parking for LEV's | 2020 | 2023 | Lead: DCC Traffic Managerment withh supportt from Pollution Control | Lead: DCC Traffic Managment withh support from Pollution Contrrol | NO | Not funded | Unknown | Completed | No defined target | The completion of the viability assessment will have a single point of implementation and so there will be a definate milestone for completion | This action was deemed too be unfeasible. However, there is a proposed action in the revised AQAP to introduce an alternative parking charges scheme. | No comments or barriers to implementation specified. |
| 14. To explore whether it is viable or not to extend existing park and ride routes and/or the provison of further park and ride sites, taking into consideration the emerging County Durham Plan and Sustainable Transport Strategy for Durham City. | Alternatives to private vehicle use | Bus based Park and Ride | 2020 | No estimated/ actual completion date specified. | Lead: DCC Traffic Management | Lead: DCC Traffic Management | NO | Funding available | Unknown | Completeed | No defined target | The completion of the viability assessment will have a single point of implementation and so there will be a definate milestone for completion. | A number of potential opportunities to expand the Park and Ride have been investigated. A planniing appliction is to be determiined in miid June 2023, with expansion at Sniperley by 260 spaces. A fundiing package has been approved with DfT TCF and DCC match at a cost of £1.8m. Subject to planniing being approved, the scheme will be delivered between July 23 and July 24. | No comments or barriers to implementation specified. |



| Measure | 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 Performane Indicator | Progress to Date | Comments / Barriers to Implementation |
|---|---|--|---------------------------------|------------------------------------|---|---|------------------------|----------------|---------------------------|----------------|--|--|---|--|
| 15. Explore the options for additional highway infastructure in line with the Durham Sustainable Transport Strategy, taking into account environmental financial and planning to enable the removal of through traffic from the City centre and contribute to the overall reduction of traffic emiissiions. | Transport Planning and Infrastructure | Public transport improvements - interchanges stations and services | 2018 | 2020 | Lead: DCC Traffic Management | Lead: DCC Traffic Management | NO | Not Funded | Unknown | Completed | No defined target | The Sustainable Transport Strategy will identify potential highway infrastructure options and these will then be explored further as individual schemes. | The proposed Western and Northern Relief Roads were removed from the County Durham Plan following a pre adoption Examination in Public (EiP). The National Planning Inspector, who chaired the EiP, reported subsequently that he did not agree that there was enough environmental justification for the additional highway infastructure. The Council are therefore monitoring traffic levels across the City as part of our Annual Monitoring of the County Durham Plan. Should traffic levels rise to an unacceptable level and cause issues related to a decrease in air quality, the Council could review the need for additional highway infastructure to remove traffic from the City Centre as part of the next version of the County Durham Plan or as part of a new transport strategy for the City. | No comments or barriers to implementation specified. |
| 16. To assess the signiificance of taxi vehicular emissions in Durham City | Transport Planning and infrastructure | Other | 2019 | 2019 | Lead: DCC Traffic Managment with support from Pollution Control | Lead: DCC Traffic Managment with support from Pollution Control | NO | Not Funded | Unknown | Completed | No defined target | A report has been undertaken and the emissions from taxis have been quantified. | An ANPR survey was undertaken to inform a modelling study examining the contribution of taxis (licenced by DCC) to air pollution in the city of Durham. The study determined that the contribution of taxis was relatively modest and did not require or warrant any further specific intervention. The vehicle fleet data collated during the ANPR survey may be used to inform further air quality modelling work including the ongoing AQAP update | No comments or barriers to implementation specified. |
| 17. To work with the Environment and Design Team to complete a Green Infrastructure (GI) feasibility study for the AQMA in Durham City. | Policy Guidance and Development Control | Other policy | 2019 | 2019 | Environment and Design | Environment and Design | NO | Not Funded | Unknown | Completed | No defined target | The report has been published, but will be reviewed within the updated Air Quality Action Plan. | A report on where GI interventions may be progressed within the declared AQMA has been produced. A review of the literature available on research on the impact of Green Infrastructure (GI) on reducing levels of air quality pollutants was carried out. | No comments or barriers to implementation specified. |



PM2.5 – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of PM2.5 (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM2.5 has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases. DCC is taking the following measures to address PM2.5:

Action 8 of the AQAP defines the establishment and development of the current air quality and planning guidance note as a Supplementary Planning Document (SPD).

The development of the SPD is currently not being taken forward at this time. However, DCC have published a Planning Validation Checklist, which outlines requirements for developers when proposing new developments. This includes the completion of an air quality assessment depending on certain criteria. This checklist ensures that new developments do not have a significant impact on air quality, including with regards to PM2.5 concentrations.

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 you're burning an authorised fuel or using an exempt appliance, e.g. burners or stoves.

The ongoing review to the Durham City AQAP will include the consideration of measures to support reducing PM2.5 within the area. This will ensure that reducing emissions of PM2.5 will remain a key priority of the Council and a factor in future planning development proposals.

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 PM2.5 concentrations. County Durham has a value of 4.4% based on the new 2020 method, compared to a regional value of 4.8% and the England value of 5.5%.



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

This section sets out the monitoring undertaken within 2022 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 2018 and 2022 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Durham County Council undertook automatic (continuous) monitoring at 1 site during 2022. Table A.1 in Appendix A shows the details of the automatic monitoring site. The DCC website presents automatic monitoring results for Durham County Council with automatic monitoring results also available through the UK-Air website.

DCC also conducts various monitoring studies using a range of low-cost (non-reference method) sensors:

- Air quality Mesh Pods measure NO₂, PM₁₀ and PM_{2.5} (using a particle counter). Two of these monitors have been located at sites adjacent to the Gilesgate roundabout and at Crossgate Peth, both within the Durham City AQMA to indicate changes to levels in air quality pollutants following the implementation of measures in the city. Problems have occurred with power supply to both monitors and so due to the caution about the data it has not been presented here.
- Alongside this an Osiris monitor which measures particulates (PM10 and PM2.5) has been operational since October 2019. The Osiris monitor is located on a lamppost on Neville's Cross Bank.
- There is also an I-Gas monitor which measures levels of nitrogen dioxide for indicative purposes located on a lamppost near to the top of Neville's Cross Bank.

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

A review is currently being undertaken of the monitoring strategy in the city with the view of purchasing new monitoring equipment and improving existing QA/QC procedures.

3.1.2 Non-Automatic Monitoring Sites

Durham County Council undertook non-automatic (i.e. passive) monitoring of NO₂ at 48 sites during 2022. 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. annualization and/or distance correction), are included in Appendix C.

Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualization (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.



3.1.3 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 annualization, 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 2022 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.

One site in County Durham, DT149, exceeded the annual mean objective in 2022 following bias adjustment.

This site is located within the Durham City AQMA, and previously reported an exceedance in 2018, 2019, and 2021. NO₂ concentrations within County Durham have increased since 2021 in some areas, such as Church Street and Claypath, due to increased traffic numbers. However, elsewhere in the County, such as along Sutton Street, concentrations have shown a decrease when compared with 2021 concentrations. Despite traffic levels returning closer to pre-COVID levels, less distinctive peaks are present during peak hours, suggesting that there is less congestion leading to lower annual mean concentrations.

No exceedances outside of AQMAs were recorded but there was a general increase in the annual mean concentrations seen across County Durham compared to 2020 in annual-mean NO₂. This was likely due to lower recorded values in 2020 associated with reduced journeys during the Covid-19 pandemic in 2020, so therefore may not be representative of long-term trends in County Durham.

There were no exceedances of the 1-hour mean at the Leazes Road continuous monitor, with an annual mean concentration of 40µg/m³. As no annual means over 60µg/m³ were recorded at any of the diffusion tubes, there were unlikely to be any exceedances of the 1 hour mean objective across County Durham.

It should also be noted that New Elvet Bridge was closed in July 2020 for essential works, which resulted in traffic being diverted to other areas in Durham and therefore lower NO₂ concentrations at locations on Church St, New Elvet occurred during this period. New Elvet Bridge was reopened in October 2021 and concentrations along Church Street and in the surrounding areas of the bridge saw increases in NO₂ concentrations as a result of increased traffic flows, which is important in terms of interpreting the long-term trends in this area pre, during and post-pandemic.

Annual mean NO₂ concentrations were within 10% of the annual mean objective at 9 sites in 2022 that are at residential properties, which suggests that there is a risk of exceedance at these locations. The sites are on Church Street (including DT19, DT116 and DT117), Gilesgate (DT20, DT155, and DT162), Sutton Street (DT130), and on Colpitts Terrace (DT12 and DT154). The majority of these sites saw a decrease in concentrations from 2021 to 2022, with the exception of DT19, DT 116 and DT117 on Church Street which increased in concentrations between 2021 and 2022. These sites are located at residential properties on Church Street, with increasing traffic levels likely as a consequence of the opening of New Elvet Bridge.



3.1.4 Particulate Matter (PM10)

Monitoring for PM10 is undertaken by Durham County Council with an Osiris monitor located at Neville's Cross.

The mean concentration recorded at this site was well below the annual mean objective. The data is reported in Table 3.1 as indicative values for information only as they do not comprise part of the standard LAQM reporting dataset.

Table 3.1: Indicative PM10 Monitoring

| Site Name | Date of Declaration | Annual Mean Concentration $\mu\text{g}/\text{m}^3$ | Annual Data Capture |
|-----------------------|---------------------|--|---------------------|
| Nevilles Cross Osiris | PM10 | 10.06 | 63.0% |

3.1.5 Particulate Matter (PM2.5)

Monitoring for PM2.5 is undertaken by Durham County Council with an Osiris Monitor at Neville's Cross.

The mean concentration recorded at the sites was well below the annual mean objective. The data is reported in Table 3.2 as indicative values for information only as they do not comprise part of the standard LAQM reporting dataset.

Table 3.2: Indicative PM2.5 Monitoring

| Site Name | Date of Declaration | Annual Mean Concentration $\mu\text{g}/\text{m}^3$ | Annual Data Capture |
|-----------------------|---------------------|--|---------------------|
| Nevilles Cross Osiris | PM2.5 | 7.99 | 63.0% |

3.1.6 Sulphur Dioxide (SO2)

Monitoring for SO2 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 | NO2 | 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 | R | 426895 | 551717 | NO2 | Yes | 0.0 | 1.5 | No | 3.0 |
| 26 | Lamp post opp. 1 Blind Lane | R | 427411 | 552670 | NO2 | No | 15.0 | 2.0 | No | 3.0 |
| 101 | Riverside Cricket Ground | UB | 428211 | 550438 | NO2 | No | 0 | 1.0 | No | 3.0 |
| 129 | 1 Menceforth Cottages | R | 426910 | 551708 | NO2 | Yes | 0.0 | 1.5 | No | 3.0 |
| 157 | Bridge St, Pub | R | 427477 | 551650 | NO2 | No | 0.0 | 2.0 | No | 2.0 |
| 1 | Dragonlane Traffic Lights, Durham | R | 429657 | 543114 | NO2 | Yes | 3.0 | 1.5 | No | 3.0 |
| 8 | Highgate North | R | 427121 | 542868 | NO2 | Yes | 0.0 | 5.0 | No | 3.0 |
| 11 | Crossgate Traffic Lights | R | 426838 | 542298 | NO2 | Yes | 5.0 | 1.5 | No | 3.0 |
| 12 | 1 Colpitts Terrace | R | 426768 | 542368 | NO2 | Yes | 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 | R | 427689 | 542078 | NO2 | Yes | 0.0 | 2.0 | No | 3.0 |
| 20 | 80 Gilesgate | R | 428385 | 542740 | NO2 | Yes | 0.0 | 5.0 | No | 3.0 |
| 42 | 97 Claypath | R | 427476 | 542618 | NO2 | Yes | 0.0 | 2.0 | No | 3.0 |
| 59 | The Sands | UB | 427649 | 542994 | NO2 | No | 10.0 | 2.0 | No | 3.0 |
| 70 | The Peth Westbound | R | 426654 | 542102 | NO2 | Yes | 11.0 | 1.5 | No | 3.0 |
| 79 | Nevilles Cross Bank Eastbound | R | 426138 | 541933 | NO2 | Yes | 2.0 | 1.5 | No | 3.0 |
| 81 | 88 Claypath | R | 427529 | 542647 | NO2 | Yes | 0.0 | 2.0 | No | 2.0 |
| 106 | 5 Belle Vue Terrace, Dragonville | R | 429658 | 543118 | NO2 | Yes | 0.0 | 2.0 | No | 2.0 |
| 115 | Auton House (Nevilles Cross Bank | R | 426133 | 541939 | NO2 | Yes | 0.0 | 2.0 | No | 2.0 |
| 116 | 3 Church Street | R | 427686 | 542072 | NO2 | No | 0.0 | 1.5 | No | 2.0 |
| 117 | 33 Church Street | R | 427672 | 542066 | NO2 | No | 0.0 | 1.5 | No | 2.0 |
| 118 | Heaviside Road lamp post | UB | 428422 | 542887 | NO2 | No | 0.0 | 1.5 | No | 2.0 |
| 130 | 1 Sutton Street | R | 426808 | 542461 | NO2 | Yes | 0.0 | 1.5 | No | 2.0 |
| 132 | 7 High Street South | R | 425352 | 540650 | NO2 | No | 0.0 | 5.0 | No | 2.0 |
| 133 | MotorCycle Shop, High St North | R | 425325 | 540636 | NO2 | No | 0.0 | 3.0 | No | 2.0 |
| 136 | 52 Highgate | R | 427133 | 542767 | NO2 | Yes | 0.0 | 1.5 | No | 2.0 |
| 137 | Archery Rise | R | 426437 | 542027 | NO2 | Yes | 0.0 | 1.5 | No | 2.0 |
| 139 | 5 Church Street | R | 427676 | 542051 | NO2 | No | 0.0 | 1.5 | No | 2.0 |
| 140 | 9 Church Street | R | 427663 | 542014 | NO2 | No | 0.0 | 1.5 | No | 2.0 |
| 141 | 28 Church Street | R | 427655 | 542023 | NO2 | No | 0.0 | 1.5 | No | 2.0 |
| 142 | 29 Church St Lampost | R | 427665 | 542041 | NO2 | 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 | R | 428180 | 542699 | NO2 | Yes | 0.0 | 1.5 | No | 2.0 |
| 146 | 35/36 Sutton St | R | 426796 | 542458 | NO2 | Yes | 0.0 | 2.0 | No | 2.0 |
| 149 | 68/68A Gilesgate | R | 428272 | 542715 | NO2 | Yes | 0.0 | 2.5 | No | 2.0 |
| 150 | 1-2 Durham Road | R | 430769 | 537643 | NO2 | No | 0.0 | 2.0 | No | 2.0 |
| 151 | 6 Sutton Street | R | 426809 | 542489 | NO2 | Yes | 0.0 | 1.5 | No | 2.0 |
| 154 | Colpitts Hotel Pub | R | 426772 | 542405 | NO2 | Yes | 0.0 | 1.5 | No | 2.0 |
| 155 | 75/76 Gilesgate | R | 428323 | 542720 | NO2 | Yes | 0.0 | 2.0 | No | 2.0 |
| 156 | Co-op Durham Road | R | 430783 | 537657 | NO2 | No | 2.0 | 2.0 | No | 2.0 |
| 162 | 62 Gilesgate | R | 428231 | 542713 | NO2 | No | 0.0 | 1.5 | No | 2.0 |
| 164 | 1 Booths Bungalows | R | 429969 | 542322 | NO2 | No | 0.0 | 1.5 | No | 2.0 |
| 166, 167, 168 | Continuous Monitor Leazes Road Roundabout | R | 427130 | 542676 | NO2 | Yes | 11.0 | 1.5 | Yes | 1.5 |
| 169 | Providence Row/Claypath Traffic Lights | K | 427614 | 542689 | NO2 | Yes | 6.0 | 0.5 | No | 1.5 |
| 170 | Victoria Inn, Hallgarth Street | R | 427739 | 541985 | NO2 | Yes | 0.0 | 1.5 | No | 1.5 |
| 171 | 1 Coronation Terrace | R | 430017 | 542339 | NO2 | No | 0.0 | 1.5 | No | 1.5 |
| 172 | 9 Providence Row | R | 427586 | 542820 | NO2 | No | 0.0 | 1.5 | No | 1.5 |
| 173 | 25 Chapel Street, West Auckland | R | 418199 | 526238 | NO2 | No | 0.0 | 1.5 | 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.

UB = Urban Background; R = Roadside; K = Kerbside



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 2022 (%) (2) | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------|-------------------------|--------------------------|-----------|--|---------------------------------|---------------------------|-------------|------|-----------|-----------|
| Leazes Road | 427130 | 542676 | Roadside | 99.3 | 99.3 | no monitoring carried out | 46.4 | 35.8 | 41 | 40 |

- ✓ **Yes - 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.**

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)

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2022 (%) (2) | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------|-------------------------|--------------------------|------------------|--|---------------------------------|-------------|-------------|------|------|------|
| 23 | 426895 | 551717 | Roadside | 100 | 100.0 | 34.8 | 32.9 | 26.6 | 32.1 | 29.5 |
| 26 | 427411 | 552670 | Roadside | 92.3 | 92.3 | 42.3 | 38.0 | 29.8 | 31.9 | 32.9 |
| 101 | 428211 | 550438 | Urban Background | 84.6 | 84.6 | 13.1 | 10.9 | 8.8 | 10.2 | 10.2 |
| 129 | 426910 | 551708 | Roadside | 92.3 | 92.3 | 35.3 | 33.0 | 26.9 | 31.4 | 29.6 |
| 157 | 427477 | 551650 | Roadside | 100 | 100.0 | 41.8 | 40.9 | 32.5 | 38.4 | 36.0 |
| 1 | 429657 | 543114 | Roadside | 90.4 | 90.4 | 36.4 | 36.3 | 28.4 | 36.0 | 33.1 |
| 8 | 427121 | 542868 | Roadside | 92.3 | 92.3 | 38.4 | 38.4 | 29.5 | 30.2 | 34.2 |
| 11 | 426838 | 542298 | Roadside | 75 | 75.0 | 33.5 | 35.6 | 31.6 | 32.7 | 30.8 |
| 12 | 426768 | 542368 | Roadside | 84.6 | 84.6 | 44.1 | 44.3 | 39.7 | 42.3 | 36.9 |



| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2022 (%) (2) | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------|-------------------------|--------------------------|------------------|--|---------------------------------|-------------|-------------|------|-------------|-------------|
| 19 | 427689 | 542078 | Roadside | 92.3 | 92.3 | 41.2 | 44.8 | 25.5 | 26.1 | 37.1 |
| 20 | 428385 | 542740 | Roadside | 92.3 | 92.3 | 36.7 | 39.8 | 34.8 | 34.7 | 36.0 |
| 42 | 427476 | 542618 | Roadside | 65.4 | 65.4 | 32.6 | 34.6 | 26.0 | 30.5 | 30.2 |
| 59 | 427649 | 542994 | Urban Background | 92.3 | 92.3 | 16.6 | 17.5 | 13.7 | 13.3 | 14.2 |
| 70 | 426654 | 542102 | Roadside | 84.6 | 84.6 | 45.8 | 44.0 | 34.2 | 39.0 | 35.9 |
| 79 | 426138 | 541933 | Roadside | 84.6 | 84.6 | 48.1 | 46.2 | 38.3 | 44.3 | 39.1 |
| 81 | 427529 | 542647 | Roadside | 75 | 75.0 | 31.6 | 31.0 | 25.3 | 26.2 | 28.8 |
| 106 | 429658 | 543118 | Roadside | 90.4 | 90.4 | 36.3 | 39.2 | 26.4 | 32.0 | 29.4 |
| 115 | 426133 | 541939 | Roadside | 92.3 | 92.3 | 32.2 | 32.3 | 26.0 | 30.2 | 28.2 |
| 116 | 427686 | 542072 | Roadside | 92.3 | 92.3 | 44.2 | 46.7 | 28.4 | 25.1 | 38.5 |
| 117 | 427672 | 542066 | Roadside | 92.3 | 92.3 | 40.1 | 44.2 | 26.6 | 25.1 | 37.3 |
| 118 | 428422 | 542887 | Urban Background | 92.3 | 92.3 | 14.7 | 15.6 | 11.7 | 12.1 | 12.0 |
| 130 | 426808 | 542461 | Roadside | 100 | 100.0 | 46.2 | 47.8 | 38.8 | 46.7 | 37.8 |
| 132 | 425352 | 540650 | Roadside | 100 | 100.0 | 32.9 | 32.6 | 24.1 | 29.7 | 28.6 |
| 133 | 425325 | 540636 | Roadside | 92.3 | 92.3 | 32.8 | 32.5 | 26.4 | 29.2 | 30.0 |
| 136 | 427133 | 542767 | Roadside | 100 | 100.0 | 31.3 | 32.5 | 25.3 | 31.1 | 29.9 |
| 137 | 426437 | 542027 | Roadside | 100 | 100.0 | 37.4 | 37.0 | 31.0 | 37.6 | 35.0 |
| 139 | 427676 | 542051 | Roadside | 84.6 | 84.6 | 36.3 | 39.1 | 21.7 | 22.4 | 31.8 |
| 140 | 427663 | 542014 | Roadside | 92.3 | 92.3 | 37.5 | 39.4 | 22.0 | 22.2 | 33.2 |
| 141 | 427655 | 542023 | Roadside | 100 | 100.0 | 31.9 | 31.1 | 17.7 | 19.1 | 25.8 |
| 142 | 427665 | 542041 | Roadside | 67.3 | 67.3 | 35.4 | 38.6 | 21.5 | 19.9 | 32.3 |
| 145 | 428180 | 542699 | Roadside | 82.7 | 82.7 | 41.6 | 40.9 | 32.0 | 38.5 | 35.4 |
| 146 | 426796 | 542458 | Roadside | 73.1 | 73.1 | 35.4 | 35.8 | 28.9 | 36.9 | 33.8 |
| 149 | 428272 | 542715 | Roadside | 90.4 | 90.4 | 48.2 | 48.0 | 38.8 | 45.1 | 44.1 |
| 150 | 430769 | 537643 | Roadside | 100 | 100.0 | 31.6 | 31.5 | 25.2 | 29.3 | 29.3 |
| 151 | 426809 | 542489 | Roadside | 92.3 | 92.3 | 39.0 | 39.7 | 34.2 | 41.0 | 34.4 |



| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2022 (%) (2) | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------|-------------------------|--------------------------|-----------|--|---------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|------|
| 154 | 426772 | 542405 | Roadside | 92.3 | 92.3 | 43.9 | 44.6 | 40.9 | 45.7 | 38.0 |
| 155 | 428323 | 542720 | Roadside | 82.7 | 82.7 | 45.7 | 40.9 | 34.2 | 36.4 | 36.7 |
| 156 | 430783 | 537657 | Roadside | 92.3 | 92.3 | 30.4 | 27.4 | 21.7 | 27.9 | 26.6 |
| 162 | 428231 | 542713 | Roadside | 82.7 | 82.7 | no monitoring carried out | 46.7 | 35.4 | 42.6 | 38.0 |
| 164 | 429969 | 542322 | Roadside | 100 | 100.0 | no monitoring carried out | 22.6 | 16.4 | 17.9 | 16.0 |
| 166, 167, 168 | 427130 | 542676 | Roadside | 92.3 | 92.3 | no monitoring carried out | 41.8 | 32.7 | 41.4 | 40.0 |
| 169 | 427614 | 542689 | Kerbside | 92.3 | 92.3 | no monitoring carried out | 34.2 | 20.8 | 24.5 | 25.5 |
| 170 | 427739 | 541985 | Roadside | 92.3 | 92.3 | no monitoring carried out | 25.1 | 15.3 | 16.0 | 19.3 |
| 171 | 430017 | 542339 | Roadside | 84.6 | 84.6 | no monitoring carried out | 19.1 | 17.3 | 22.7 | 20.2 |
| 172 | 427586 | 542820 | Roadside | 76.9 | 76.9 | no monitoring carried out | no monitoring carried out | 18.0 | 21.8 | 21.8 |
| 173 | 418199 | 526238 | Roadside | 83.3 | 84.6 | no monitoring carried out | no monitoring carried out | no monitoring carried out | no monitoring carried out | 19.1 |

✓ 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/m³.

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**.

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: Durham County AQMA

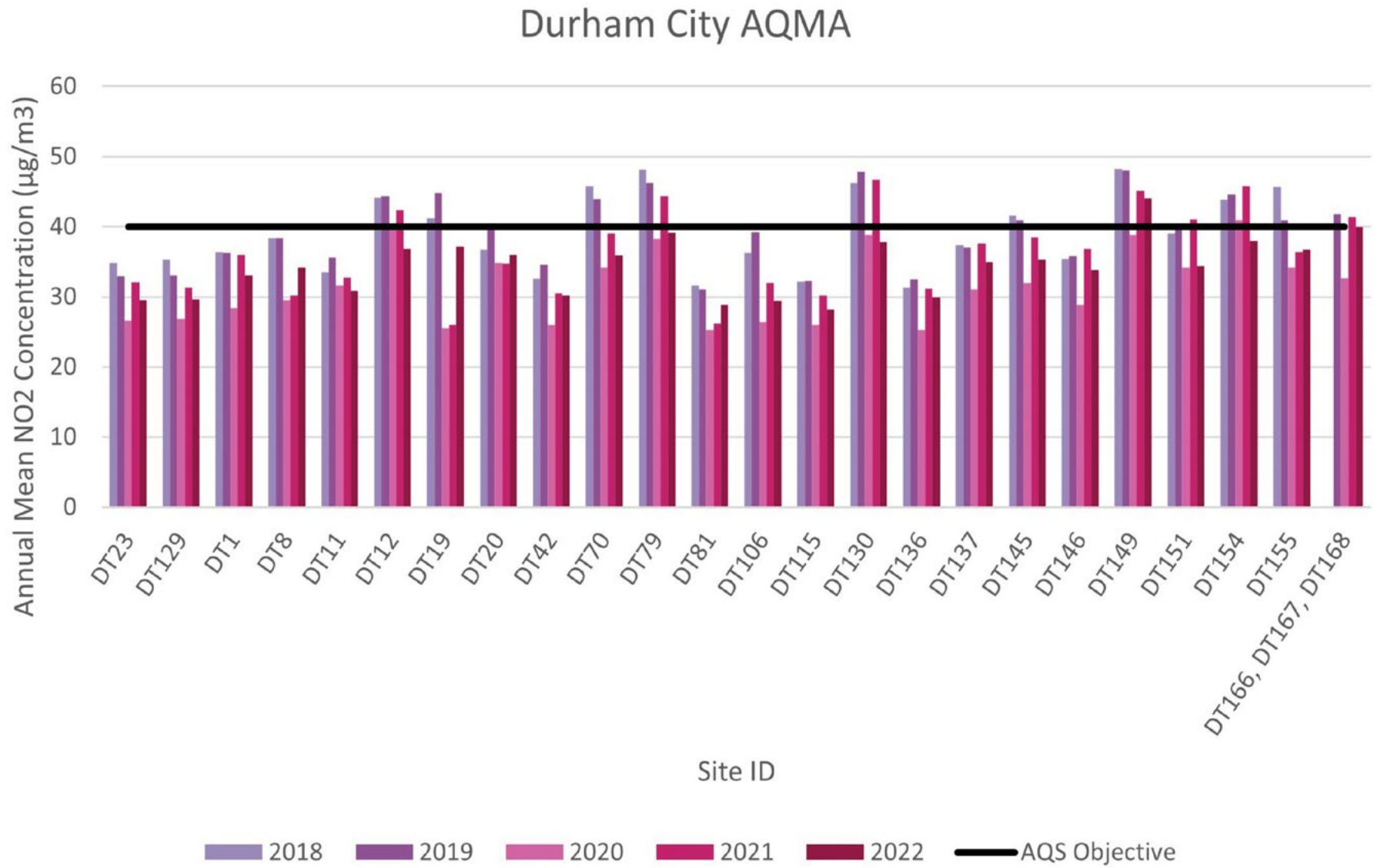




Figure A.2 Trends in Annual Mean NO₂ Concentrations: Church Street and surrounding areas

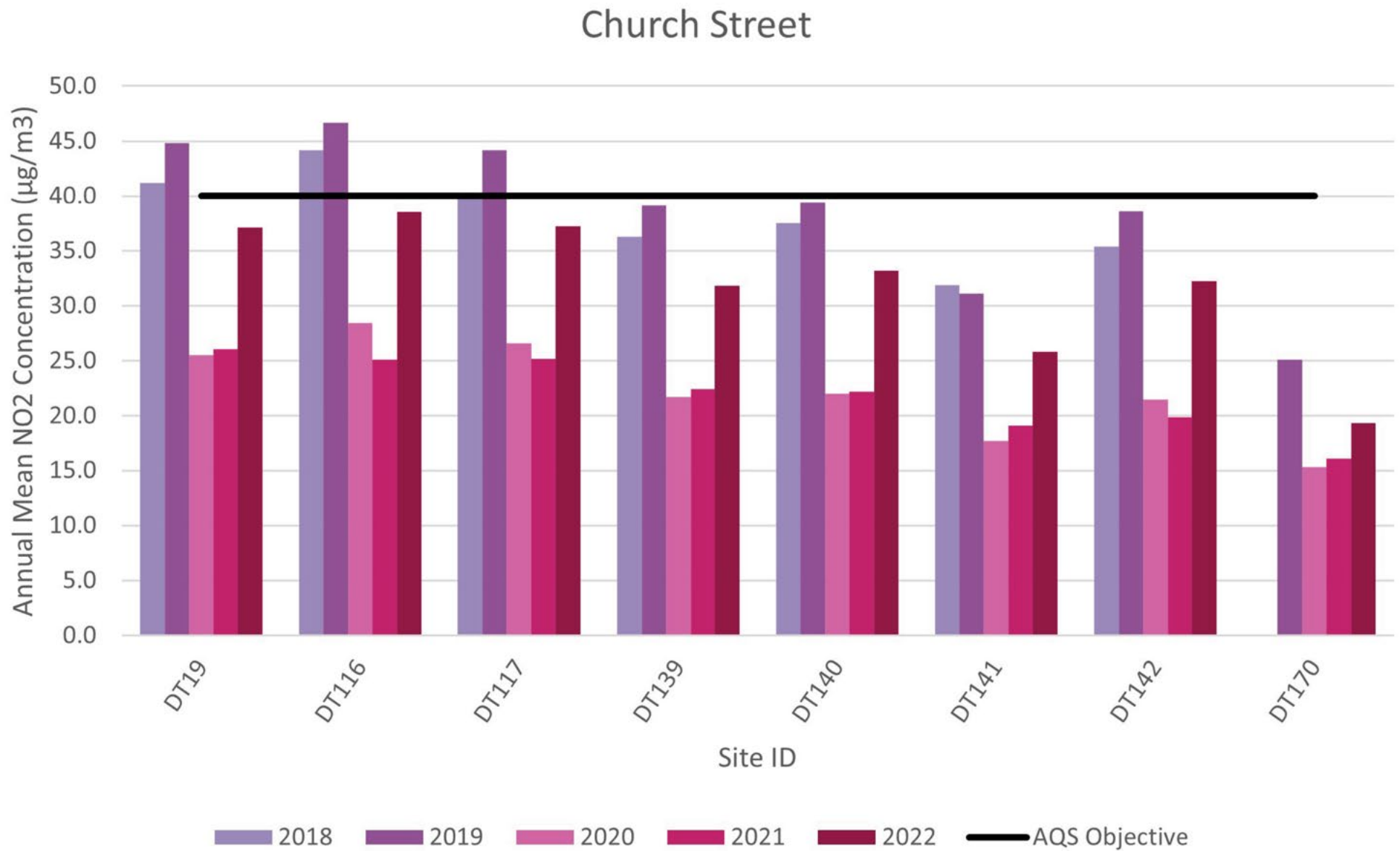




Figure A.3 Trends in Annual Mean NO₂ Concentrations: Sutton Street and surrounding areas

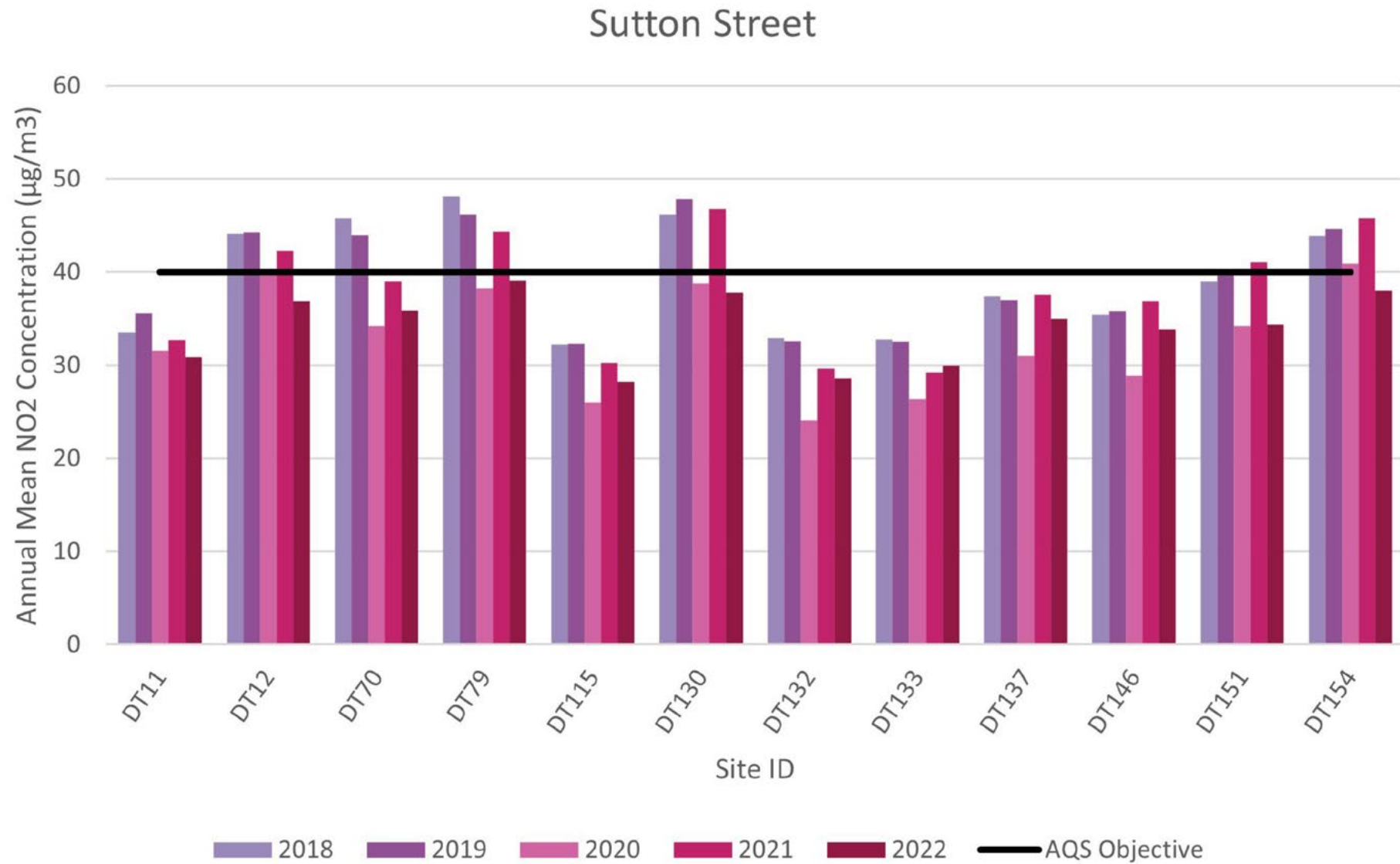




Figure A.4 Trends in Annual Mean NO₂ Concentrations: Gilesgate and surrounding areas

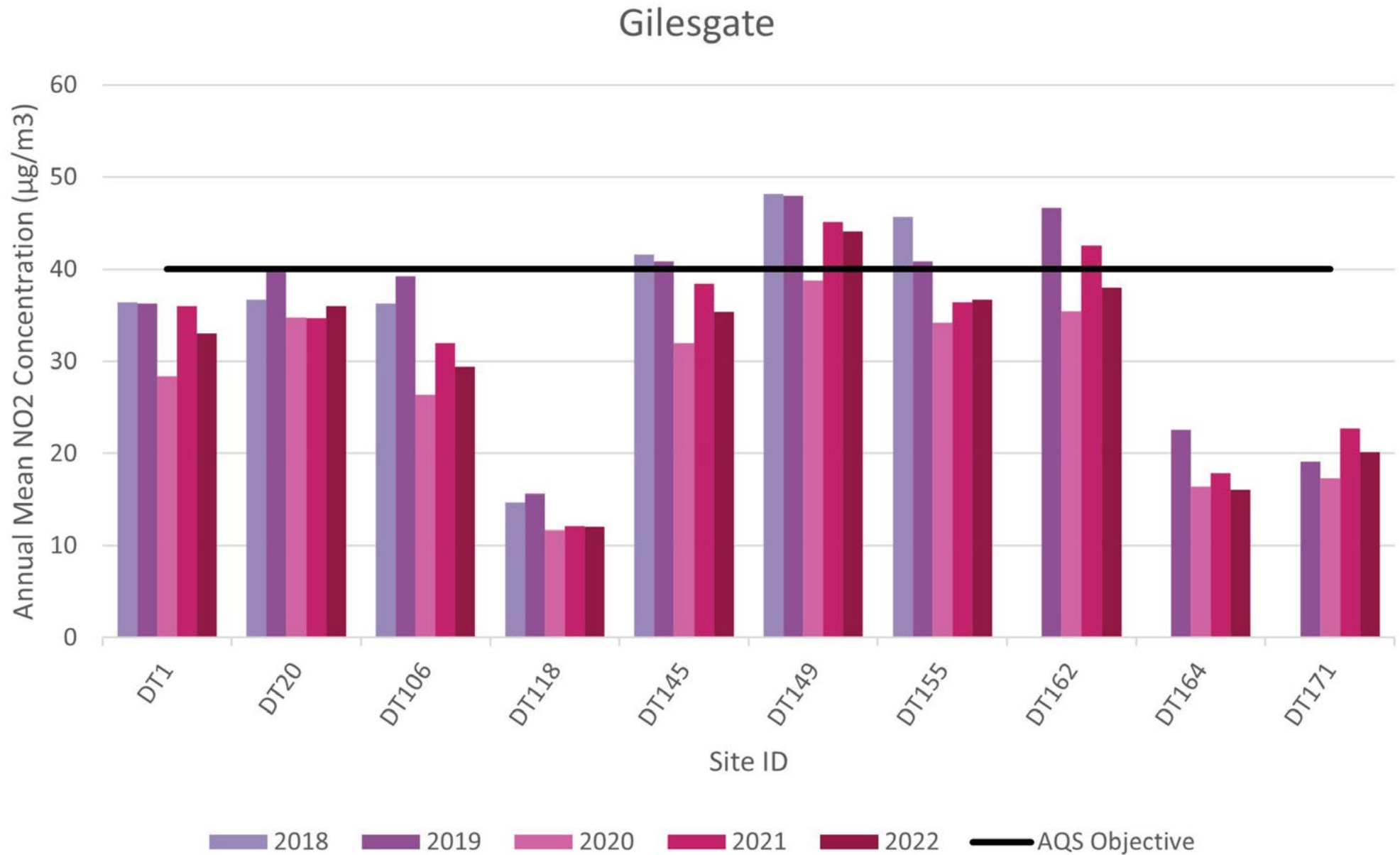




Figure A.5 Trends in Annual Mean NO₂ Concentrations: Durham City Centre

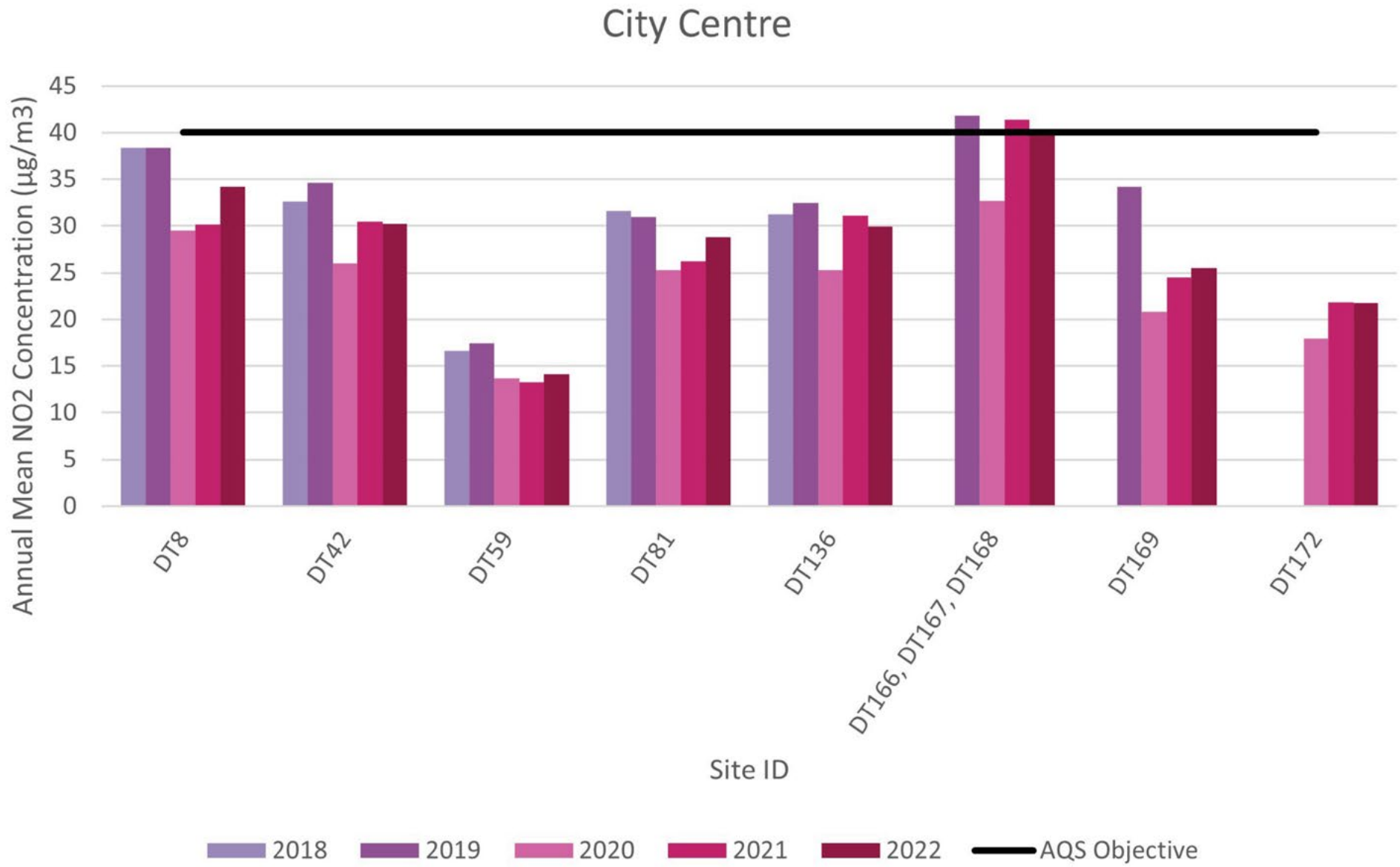




Figure A.6 Trends in Annual Mean NO₂ Concentrations: Outer City

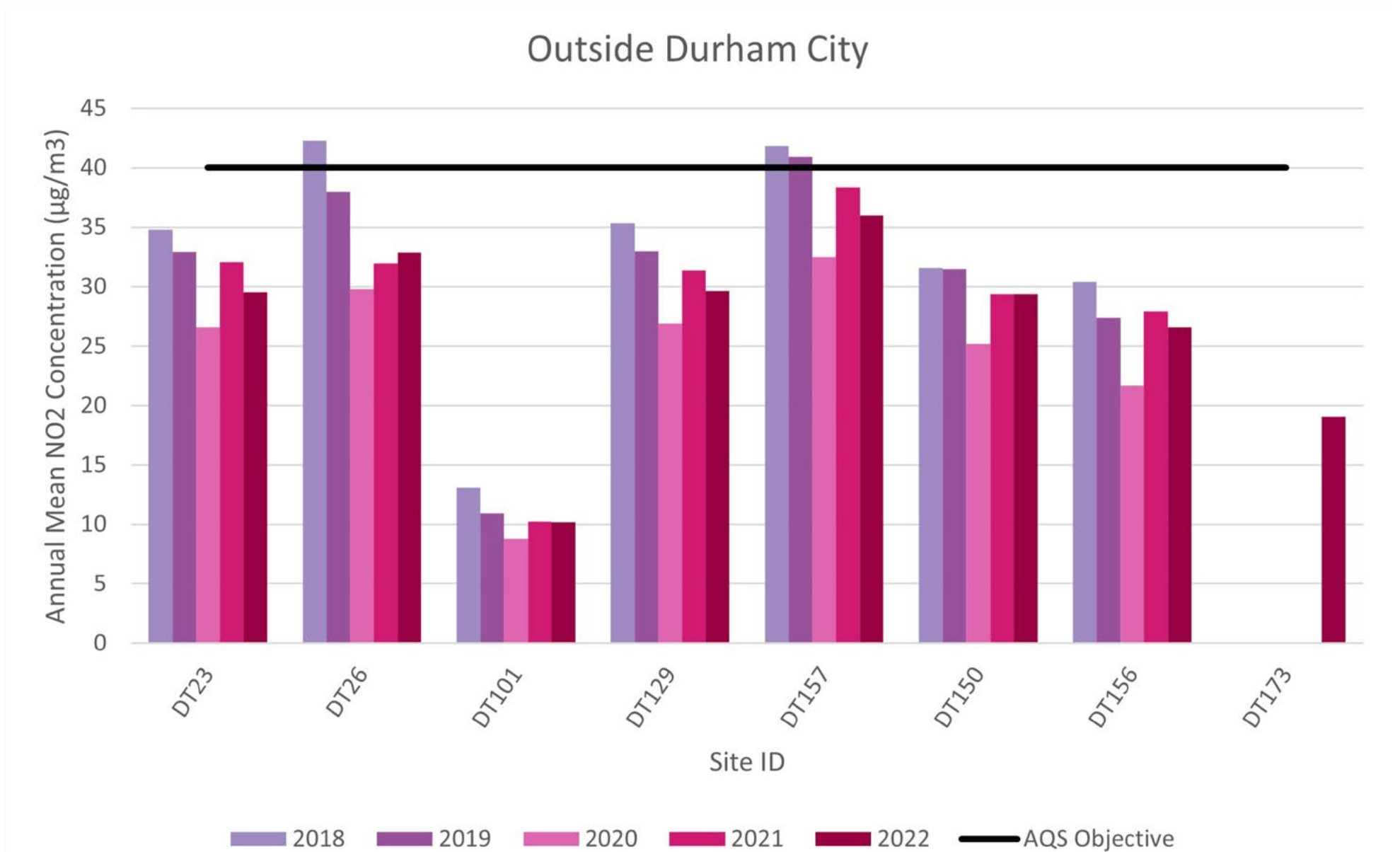




Table A.5 – 1- Hour Mean NO₂ Monitoring Results, Number of 1- Hour Means > 200µg/m³

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2022 (%) (2) | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------|-------------------------|--------------------------|-----------|--|---------------------------------|---------------------------|---------|---------|---------|---------|
| Leazes Road | 427130 | 542676 | Roadside | 99.3 | 99.3 | no monitoring carried out | 0 (119) | 0 (151) | 0 (153) | 0 (138) |

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%).



Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO₂ 2022 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 (0.99) |
|-------|-------------------------|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------------|--|
| 23 | 426895 | 551717 | 36.7 | 27.6 | 32.6 | 27.3 | 24.3 | 21.9 | 27.1 | 26.5 | 30.8 | 31.9 | 34.5 | 36.5 | 29.8 | 29.5 |
| 26 | 427411 | 552670 | M | 32.0 | 39.7 | 29.0 | 30.1 | 26.1 | 28.4 | 29.5 | 34.6 | 36.9 | 41.4 | 37.9 | 33.2 | 32.9 |
| 101 | 428211 | 550438 | 11.6 | 7.6 | 14.3 | 8.5 | 5.8 | N | N | 7.4 | 9.9 | 8.6 | 14.0 | 15.3 | 10.3 | 10.2 |
| 129 | 426910 | 551708 | M | 33.7 | 34.3 | 26.7 | 24.0 | 23.6 | 26.6 | 26.0 | 30.1 | 33.7 | 33.2 | 37.0 | 29.9 | 29.6 |
| 157 | 427477 | 551650 | 46.7 | 35.9 | 42.9 | 31.9 | 28.9 | 30.2 | 34.3 | 32.7 | 34.8 | 36.8 | 42.2 | 39.7 | 36.4 | 36.0 |
| 1 | 429657 | 543114 | 39.5 | 28.7 | 41.3 | M | 28.2 | 25.9 | 27.8 | 32.3 | 36.1 | 31.4 | 37.3 | 39.1 | 33.4 | 33.1 |
| 8 | 427121 | 542868 | 38.4 | M | 33.0 | 34.9 | 34.2 | 29.9 | 32.8 | 37.0 | 40.1 | 35.3 | 31.4 | 32.8 | 34.5 | 34.2 |
| 11 | 426838 | 542298 | M | M | 34.5 | M | 26.8 | 25.9 | 27.3 | 28.3 | 30.9 | 34.8 | 35.3 | 36.7 | 31.2 | 30.8 |
| 12 | 426768 | 542368 | M | M | 44.3 | 35.6 | 33.3 | 27.4 | 30.3 | 32.2 | 39.5 | 39.7 | 43.9 | 46.2 | 37.2 | 36.9 |
| 19 | 427689 | 542078 | 41.0 | M | 44.1 | 34.1 | 32.9 | 36.7 | 33.6 | 31.6 | 36.0 | 41.6 | 41.7 | 39.2 | 37.5 | 37.1 |
| 20 | 428385 | 542740 | M | 35.8 | 33.4 | 36.0 | 35.1 | 33.0 | 36.3 | 37.3 | 40.9 | 38.1 | 32.7 | 41.3 | 36.4 | 36.0 |
| 42 | 427476 | 542618 | M | M | 35.9 | M | 25.3 | 24.5 | 25.5 | 27.6 | 29.2 | 32.8 | 34.3 | M | 29.4 | 30.2 |
| 59 | 427649 | 542994 | M | 15.1 | 17.2 | 12.2 | 12.6 | 9.8 | 9.9 | 9.9 | 12.1 | 16.3 | 21.1 | 21.0 | 14.3 | 14.2 |
| 70 | 426654 | 542102 | M | 30.3 | M | 41.4 | 24.6 | 34.6 | 37.3 | 45.2 | 44.7 | 37.6 | 31.8 | 34.8 | 36.2 | 35.9 |
| 79 | 426138 | 541933 | M | 39.4 | 46.8 | 38.7 | 36.3 | 32.1 | 36.3 | 41.4 | 42.3 | 40.8 | M | 40.8 | 39.5 | 39.1 |
| 81 | 427529 | 542647 | 33.5 | M | M | M | 24.8 | 23.7 | 24.4 | 23.9 | 32.5 | 31.1 | 36.6 | 31.7 | 29.1 | 28.8 |
| 106 | 429658 | 543118 | 34.8 | 23.0 | 34.8 | 30.1 | 25.9 | 26.3 | 26.1 | 29.2 | 33.6 | M | 30.1 | 32.8 | 29.7 | 29.4 |
| 115 | 426133 | 541939 | 35.2 | 24.7 | 32.5 | 29.4 | 25.2 | 23.5 | D | 26.0 | 31.0 | 26.9 | 28.6 | 30.7 | 28.5 | 28.2 |
| 116 | 427686 | 542072 | 43.1 | 40.2 | 43.4 | 33.8 | 35.0 | 39.6 | 34.6 | 33.8 | 39.4 | 45.6 | M | 39.8 | 38.9 | 38.5 |
| 117 | 427672 | 542066 | 44.8 | 44.4 | 39.1 | 33.7 | 34.2 | 39.6 | 32.9 | 30.8 | 35.3 | 40.5 | M | 38.7 | 37.6 | 37.3 |
| 118 | 428422 | 542887 | M | 11.9 | 16.9 | 11.6 | 8.1 | 7.8 | 8.0 | 10.3 | 12.4 | 12.5 | 16.8 | 17.7 | 12.2 | 12.0 |
| 130 | 426808 | 542461 | 42.4 | 29.4 | 48.2 | 41.2 | 33.9 | 28.6 | 30.8 | 39.4 | 44.4 | 37.6 | 42.6 | 39.3 | 38.1 | 37.8 |
| 132 | 425352 | 540650 | 34.4 | 25.1 | 34.7 | 27.6 | 23.5 | 21.9 | 26.6 | 27.0 | 30.4 | 29.7 | 35.5 | 29.8 | 28.9 | 28.6 |



| 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 (0.99) |
|-------|-------------------------|--------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|---|---|
| 133 | 425325 | 540636 | 36.2 | 26.0 | 31.8 | 28.2 | 23.2 | 23.3 | D | 31.0 | 34.2 | 31.6 | 33.5 | 33.9 | 30.3 | 30.0 |
| 136 | 427133 | 542767 | 33.2 | 28.8 | 32.7 | 31.7 | 27.5 | 28.8 | 27.4 | 29.3 | 31.2 | 32.3 | 28.6 | 31.5 | 30.2 | 29.9 |
| 137 | 426437 | 542027 | 45.3 | 33.1 | 39.6 | 35.3 | 29.7 | 28.9 | 29.3 | 31.4 | 42.5 | 33.5 | 33.9 | 41.4 | 35.3 | 35.0 |
| 139 | 427676 | 542051 | M | 30.9 | 36.7 | 32.8 | 31.2 | 30.5 | 28.4 | 29.5 | 33.6 | 33.2 | M | 34.8 | 32.1 | 31.8 |
| 140 | 427663 | 542014 | 37.4 | 28.1 | 41.4 | 34.5 | 30.6 | 29.8 | 29.4 | 30.7 | 35.8 | 35.0 | M | 36.0 | 33.5 | 33.2 |
| 141 | 427655 | 542023 | 32.8 | 23.1 | 27.1 | 27.7 | 24.4 | 22.9 | 20.4 | 24.0 | 28.7 | 26.7 | 27.0 | 27.9 | 26.1 | 25.8 |
| 142 | 427665 | 542041 | M | M | 35.8 | 34.6 | M | 32.3 | 28.0 | 31.1 | 36.3 | 35.1 | M | 35.1 | 33.5 | 32.3 |
| 145 | 428180 | 542699 | 43.8 | M | 37.9 | M | 33.0 | 28.4 | 29.8 | 36.0 | 41.3 | 33.9 | 35.7 | 37.6 | 35.7 | 35.4 |
| 146 | 426796 | 542458 | M | 34.7 | 38.5 | 31.0 | M | 28.9 | 29.0 | 30.4 | 35.6 | M | 37.2 | 42.3 | 34.2 | 33.8 |
| 149 | 428272 | 542715 | 48.0 | 34.5 | 50.8 | M | 41.9 | 39.2 | 41.1 | 46.3 | 54.0 | 44.4 | 43.0 | 46.5 | 44.5 | 44.1 |
| 150 | 430769 | 537643 | 38.7 | 21.7 | 37.5 | 33.7 | 22.3 | 19.5 | 23.0 | 30.7 | 33.9 | 27.5 | 32.3 | 34.9 | 29.6 | 29.3 |
| 151 | 426809 | 542489 | M | 33.3 | 43.6 | 35.8 | 30.6 | 28.7 | 29.9 | 30.4 | 37.3 | 36.2 | 40.9 | 35.2 | 34.7 | 34.4 |
| 154 | 426772 | 542405 | M | 36.0 | 45.4 | 35.5 | 33.0 | 32.8 | 32.3 | 35.2 | 40.6 | 41.2 | 45.8 | 44.8 | 38.4 | 38.0 |
| 155 | 428323 | 542720 | 39.4 | M | 35.5 | 37.5 | 31.7 | 34.7 | 35.8 | 37.6 | 44.1 | 39.3 | 35.3 | M | 37.1 | 36.7 |
| 156 | 430783 | 537657 | 33.4 | 20.4 | 34.6 | 29.3 | 19.2 | 18.2 | 21.9 | M | 30.1 | 25.5 | 32.0 | 31.0 | 26.9 | 26.6 |
| 162 | 428231 | 542713 | 37.5 | M | 40.8 | M | 36.5 | 30.0 | 35.2 | 46.1 | 49.2 | 36.2 | 34.7 | 38.1 | 38.4 | 38.0 |
| 164 | 429969 | 542322 | 19.0 | 11.4 | 21.3 | 16.7 | 11.8 | 10.8 | 12.9 | 14.8 | 18.4 | 16.1 | 20.4 | 20.6 | 16.2 | 16.0 |
| 166 | 427130 | 542676 | 45.5 | 39.9 | 44.3 | 44.5 | 39.4 | M | 39.9 | 40.5 | M | 41.3 | 38.3 | 39.2 | Annual Data Provided for Monitoring Location 168 only | Annual Data Provided for Monitoring Location 168 only |
| 167 | 427130 | 542676 | 45.6 | 36.6 | 40.5 | 44.3 | 36.8 | 38.1 | 39.0 | 40.5 | M | 43.6 | 37.7 | 39.5 | Annual Data Provided for Monitoring Location 168 only | Annual Data Provided for Monitoring Location 168 only |
| 168 | 427130 | 542676 | 41.7 | 38.5 | 39.9 | 43.0 | 38.9 | 37.3 | 37.5 | 41.7 | M | 43.1 | 38.3 | 39.9 | 40.4 | 40.0 |
| 169 | 427614 | 542689 | 28.1 | 22.0 | 29.9 | 24.7 | 22.5 | 20.8 | 20.0 | D | 28.6 | 28.4 | 29.5 | 29.0 | 25.8 | 25.5 |
| 170 | 427739 | 541985 | M | 19.1 | 24.0 | 19.0 | 14.7 | 13.5 | 13.6 | 14.9 | 21.1 | 21.6 | 25.0 | 28.4 | 19.5 | 19.3 |
| 171 | 430017 | 542339 | M | 18.8 | 25.4 | 18.3 | 15.9 | 17.2 | 18.0 | 17.8 | 21.6 | 25.9 | M | 24.5 | 20.4 | 20.2 |
| 172 | 427586 | 542820 | M | 21.5 | M | 20.5 | 17.6 | M | 17.5 | 19.4 | 22.8 | 25.1 | 27.4 | 26.1 | 22.0 | 21.8 |
| 173 | 418199 | 526238 | Start | 20.1 | M | 19.6 | 14.9 | 16.1 | 16.9 | 18.7 | 21.2 | 19.6 | 22.2 | 23.6 | 19.3 | 19.1 |



Table B.2 – Corrected Annual NO₂ Mean Results (µg/m³) at the Nearest Receptor that is Representative of Exposure

| Durham ID | Calculated Annual Mean at the Nearest Receptor |
|---|--|
| DT 79 | 33.4 |
| DT166, DT167 & DT168 Triplicate Diffusion Tubes located at the Continuous Air Quality Analyser | 26.4 |

- No - All erroneous data has not been removed from the NO₂ 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 not used.**
- Yes - Where applicable, data has been distance corrected for relevant exposure in the final column.**
- Yes - Durham County Council confirm that all 2022 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.

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 2022

Durham County Council has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by County Durham during 2022

Durham County Council has not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

The NO₂ diffusion tubes used were supplied and analysed in 2022 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 48 diffusion tube monitoring sites, 2 recorded <75% data capture in 2022, thus requiring annualization of the results. All sites had a data capture of >25%. 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
- Middlesbrough
- Hartlepool St Abbs Walk
- Sunderland Silksworth



Table C.1 – Annualization Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

| Site ID | Annualisation Factor Hartlepool St Abbs Walk | Annualisation Factor Middlesborough | Annualisation Factor Newcastle Centre | Annualisation Factor Sunderland Silksworth | Average Annualisation Factor | Raw Data Annual Mean | Annualised Annual Mean |
|---------|--|-------------------------------------|---------------------------------------|--|------------------------------|----------------------|------------------------|
| 42 | 1.0924 | 1.1301 | 1.0017 | 0.9270 | 1.0378 | 29.4 | 30.5 |
| 142 | 1.0501 | 0.9930 | 0.9677 | 0.8769 | 0.9719 | 33.5 | 32.6 |



Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 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/NO₂ 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 0.99 to the 2022 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 (0.99) when compared to the national factor (0.83), and is more consistent with the adjustment factors applied in recent years although it is recognised it is higher than the national value and so contributed to the values presented in this report. Details of this adjustment 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 |
|-----------------|-------------------|--|-------------------|
| 2022 | Local | not applicable | 0.99 |
| 2021 | Local | not applicable | 0.98 |
| 2020 | Local | not applicable | 0.91 |
| 2019 | National | 09/20 | 0.93 |
| 2018 | National | 06/19 | 0.93 |

Table C.3 – Local Bias Adjustment Calculation

| Local Bias | Local Bias Adjustment Input 1 |
|--|-------------------------------|
| Periods used to calculate bias | 11 |
| Bias Factor A | 0.99 (0.93 - 1.06) |
| Bias Factor B | 1% (-6% - 7%) |
| Diffusion Tube Mean (µg/m ³) | 1 |
| Mean CV (Precision) | 40.4 |
| Automatic Mean (µg/m ³) | 2.9% |
| Data Capture | 92.3% |
| Adjusted Tube Mean (µg/m ³) | 40.1 |

Notes:

A single local bias adjustment factor has been used to bias adjust the 2022 diffusion tube results.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.



In the monitoring year of 2022, two monitoring locations within County Durham required fall-off-with-distance calculations, and they are as follows:

- DT79, Nevilles Cross Bank Eastbound
- DT166, DT167, DT168, Leazes Road Roundabout Triplicate (co-located with continuous monitor)

These are both located within the Durham City AQMA, and the output from the Diffusion Tube Data Processing Tool can be found in Table C.4. Distance correction is undertaken for sites where the annual mean concentration is greater than 36µg/m³ and the monitoring site is not located at a point of relevant exposure.

Table C.4 – NO₂ 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 | 39.1 | 8.4 | 33.4 |
| 166, 167, 168 | 1.5 | 12.5 | 40.0 | 11.9 | 26.9 |

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.

PM¹⁰ and PM^{2.5} Monitoring Adjustment

The type of PM₁₀/PM_{2.5} monitor(s) utilised within County Durham do not require the application of a correction factor.

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 annualization.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

No automatic NO₂ monitoring locations within County Durham required distance correction during 2022.



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

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

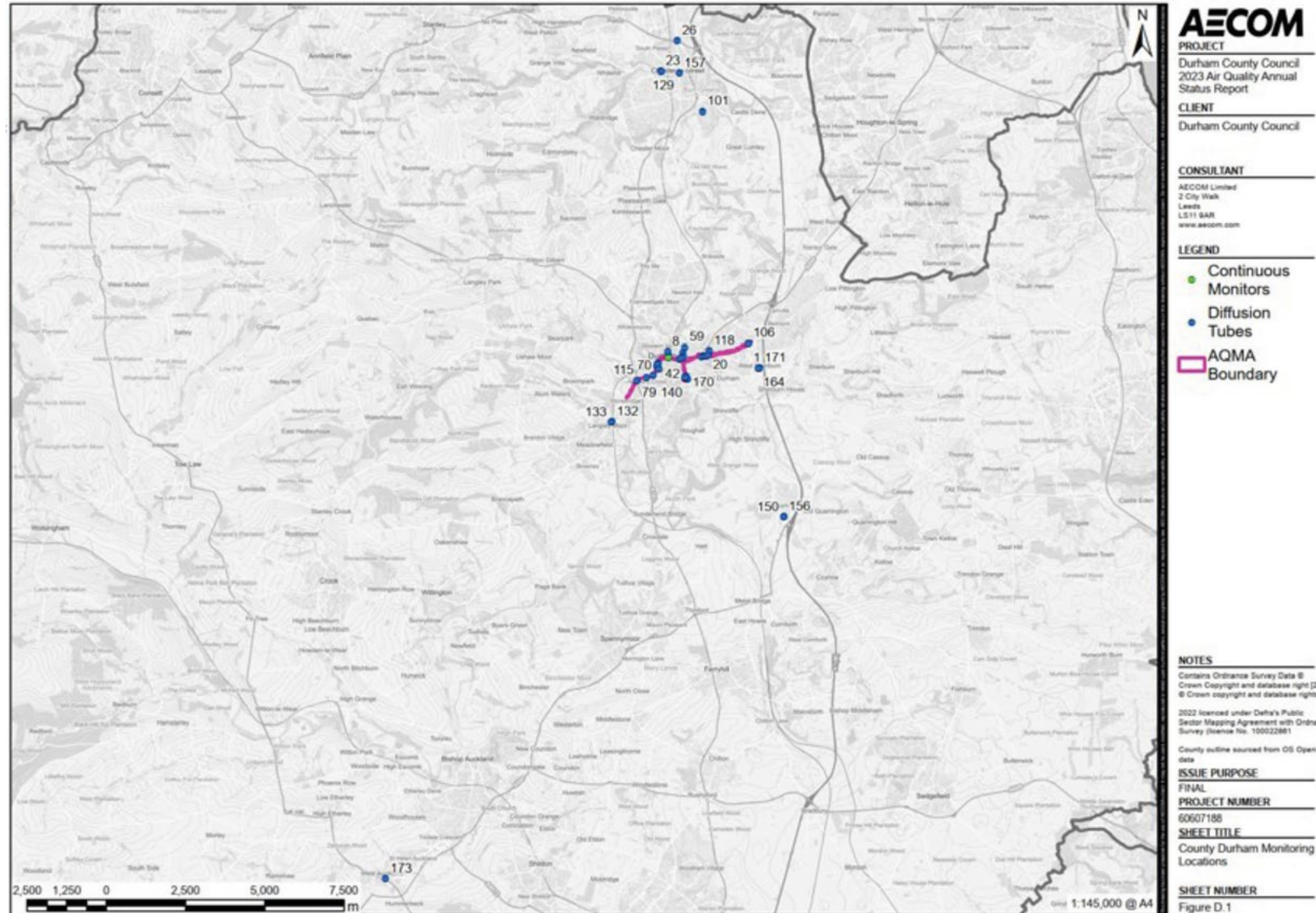




Figure D.2 Map of Non-Automatic Monitoring Sites: Church Street and surrounding areas

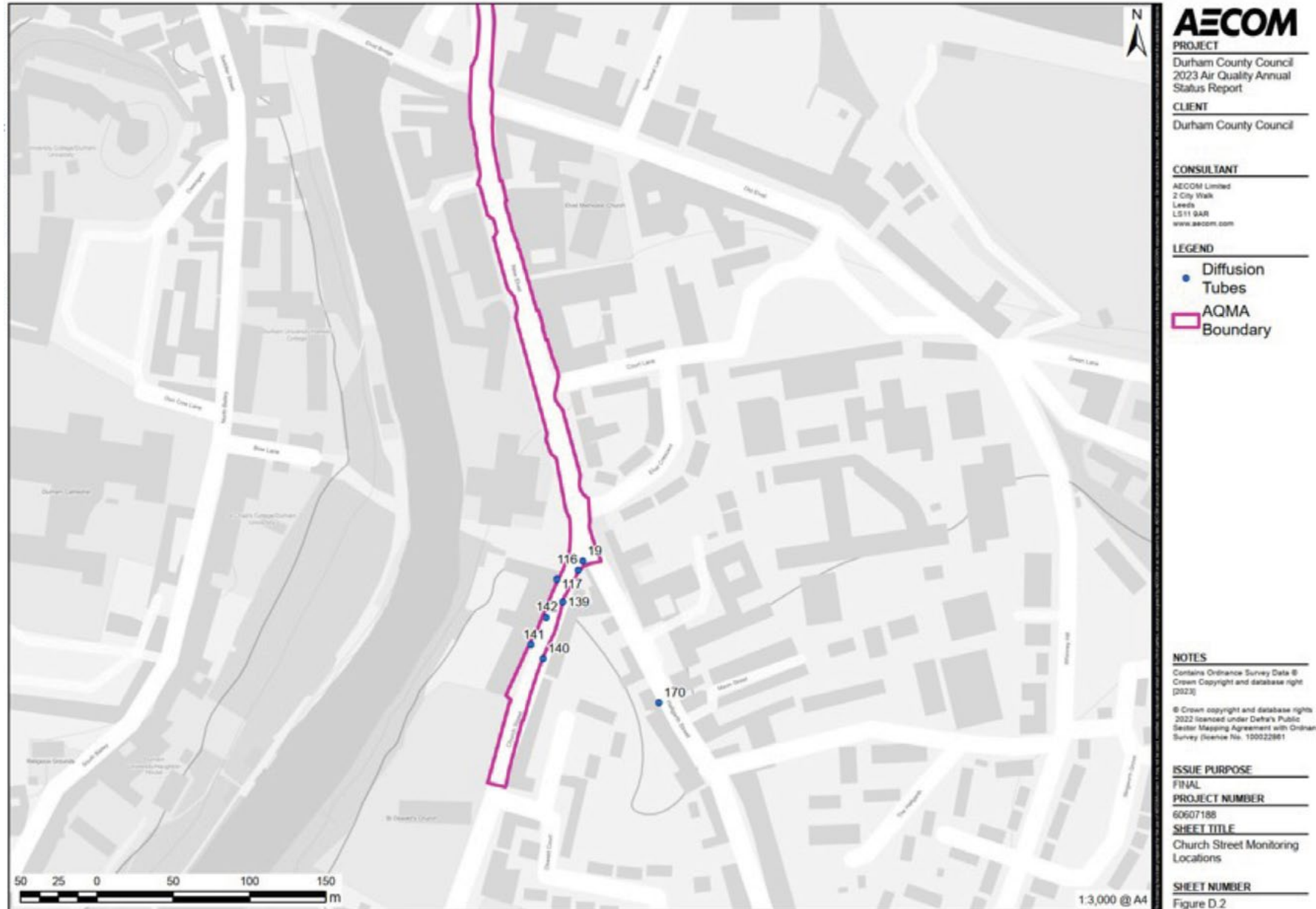




Figure D.3 Map of Non-Automatic Monitoring Sites: Sutton Street and surrounding areas

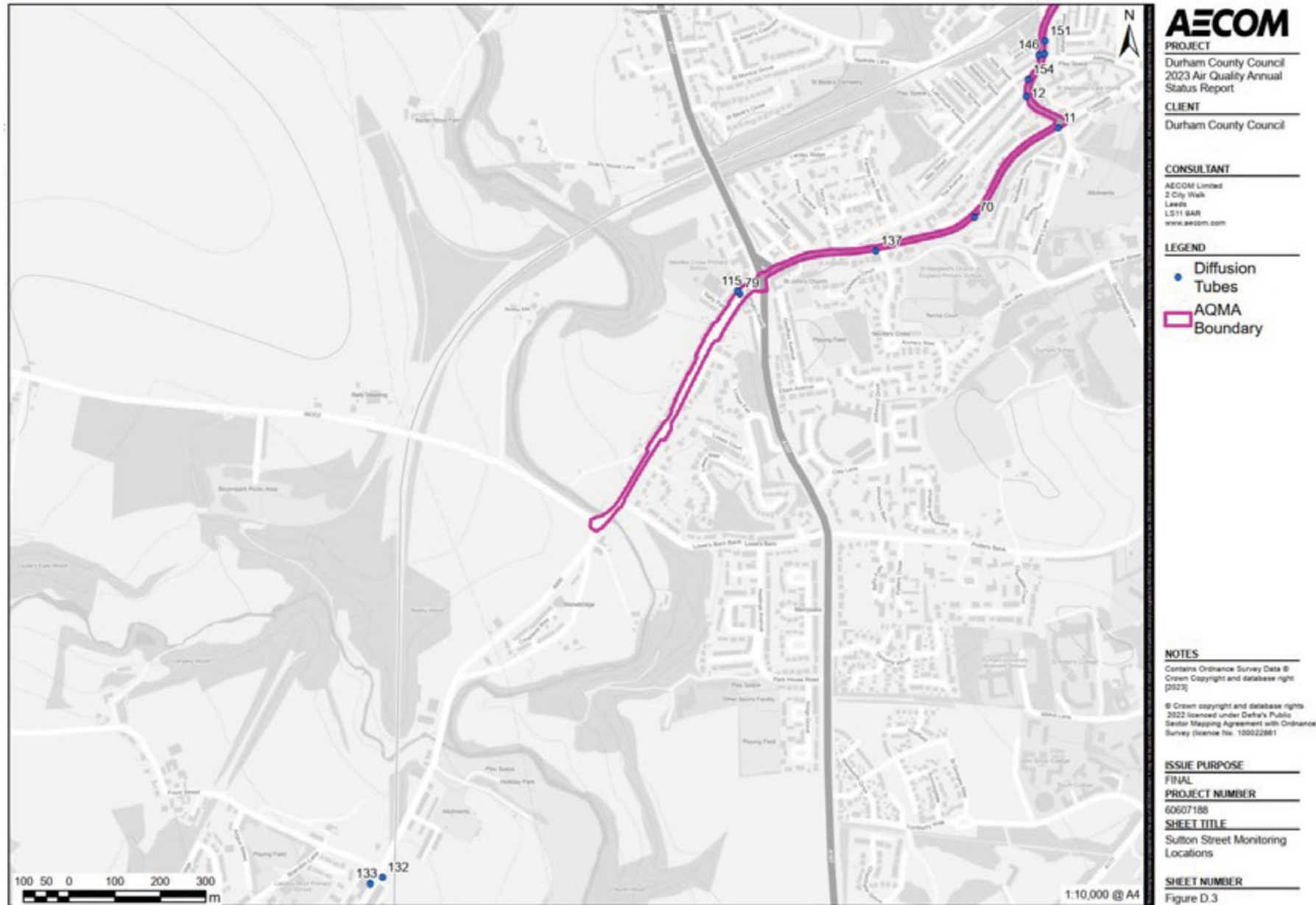




Figure D.4 Map of Non-Automatic Monitoring Sites: Gilesgate and surrounding areas

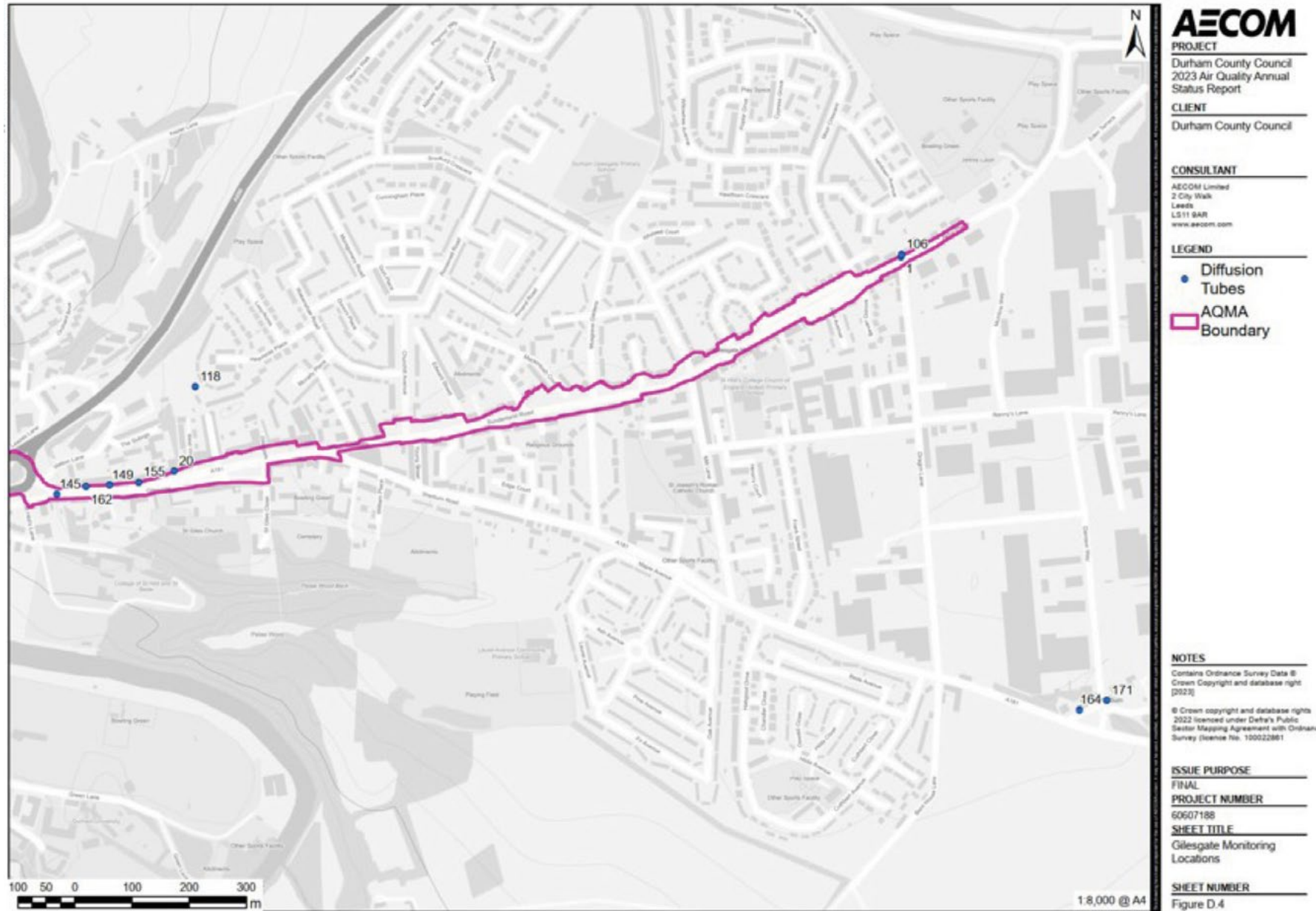
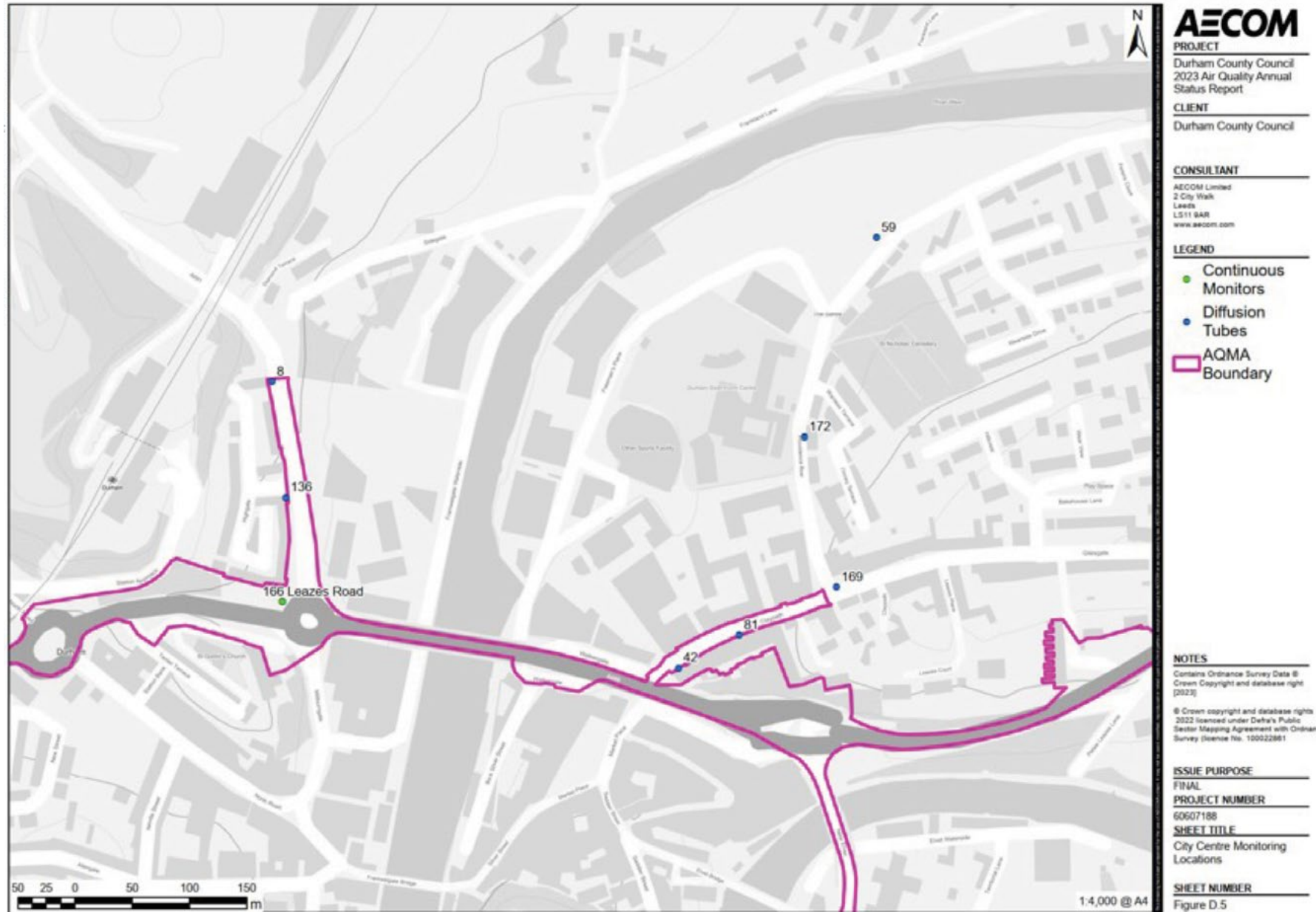




Figure D.5 Map of Non-Automatic Monitoring Sites: City Centre





Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁸

| 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 |
| Particulate Matter (PM ^{2.5}) | A target exposure level of 10 µg/m ³ to be achieved by 2040. | Annual mean |
| Particulate Matter (PM ^{2.5}) | A 35 percent reduction in the average population exposure by 2040. (Baseline: A comparison with the measured level between 2016 and 2018.) | Population Exposure Reduction Target |
| 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 |



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 |
| S _{O2} | 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.
- Public Health Outcomes Framework. 2023. Published by Office for Health and Improvement & Disparities. Available at: fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/1/gid/1000043/pat/6/par/E1200001/ati/302/are/E06000047/yr/3/cid/4/tbm/1