# *Nuneaton and Bedworth Borough Council*
# *Annual Status Report 2020*

*Bureau Veritas*

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Nuneaton & Bedworth

# 2020 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the
Environment Act 1995
Local Air Quality Management

August 2020

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|---|---|
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# Executive Summary: Air Quality in Our Area

## Air Quality in Nuneaton and Bedworth Borough Council

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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

The main sources of air pollution within Nuneaton and Bedworth are from road traffic sources contributing to elevated concentrations of $NO_2$, $PM_{10}$ and $PM_{2.5}$. Currently there are two designated Air Quality Management Areas (AQMAs) in the Borough, both have been declared in relation to exceedances of the annual mean Air Quality Strategy (AQS) objective for $NO_2$ and both are surrounding busy roads and interchanges within Nuneaton.

The boundaries of the two AQMAs can be viewed online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=189, details are provided in Table 2.1 and boundary maps are presented in Figure D.1~~Figure D.1~~ and Figure D.2~~Figure D.2~~.

An Air Quality Action Plan (AQAP) has been completed due to the AQMA designations within Nuneaton and Bedworth, this outlines measures to be completed in order to achieve compliance with annual mean AQS objective for $NO_2$, thus improving air quality within the AQMAs and also the Borough as a whole. Many of the measures have been set up with input and support from Warwickshire County Council (WCC), most of the action plan measures are transport-based measures that aim to reduce road traffic emissions to achieve improvements in air quality.

## Actions to Improve Air Quality

The AQAP for Nuneaton and Bedworth is the main action to drive a reduction in air pollution within the Borough. The measures set out within the AQAP have been

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

developed as actions to help Nuneaton and Bedworth work towards achieving compliance with the $NO_2$ annual mean AQS objective.

In addition, the Warwickshire Local Transport Plan 2011-2026, which came into effect on the 1st April 2011, includes a high level of consideration throughout the plan in relation to the reconfiguration of roads, sustainable transport plans and modes of transport, alternative modes of transport to private vehicles and to overall reduce the impact of the transport system on air quality within the local area.

The Nuneaton and Bedworth Air Quality Supplementary Planning Document was published in 2019. This document sets out requirements for developers to complete Air Quality Assessments as part of the planning process. It also introduces 'Damage Costs assessments' whereby developers are required to either include measures to mitigate emissions or to contribute to offsite measures where this cannot be achieved.

## Conclusions and Priorities

Within Nuneaton and Bedworth, concentrations of $NO_2$ remain above the annual mean AQS objective level at two diffusion tube monitoring sites, both of the sites are located within the designated Midland Road/Corporation Street AQMA (sites NB29 and NB 30). These sites have shown exceedances of the AQS annual mean objective in previous years but concentrations have declined since peak concentrations were recorded in 2008 and 2009.

Leicester Road Gyratory AQMA has not recorded levels within 10% of the AQO since 2016. Revocation of Leicester Road Gyratory AQMA remains under consideration following recommendation by Defra upon review of the 2019 ASR. However, there has been substantial growth in house building to the north side of Nuneaton which will likely impact on the road network within the Leicester Road Gyratory AQMA. Monitoring will continue within the AQMA for at least another year to see if the developments adversely affect the concentrations before making a decision.

The priority for Nuneaton and Bedworth for the coming year is to progress the measures set out within the AQAP and review the requirement for an updated AQAP, which have been designed to address these elevated concentrations, with the overall goal of ensuring pollution levels are below the AQS objectives. Monitoring of $NO_2$ is to continue so that any changes in concentration can be identified and progress in the implementation of the AQAP measures can be quantified.

As stated above, the Warwickshire Local Transport Plan aims to reduce the impact of transport on local air quality, cooperation with all the Districts and Boroughs within Warwickshire is essential for this to be achieved. The plan was developed with engagement with a wide range of stakeholders including community groups and organisations.

## Local Engagement and How to get Involved

The main source of air pollution within Nuneaton and Bedworth originates from road traffic emissions. Therefore the best way for members of the public to help improve air quality within the Borough is to adjust their normal travel patterns, moving to more sustainable methods of transport. As cited in the 2019 ASR, online tools are also available to help you plan your journey, including Warwickshire County Council's car share database (https://carsharewarwickshire.liftshare.com/default.asp ), the 'Choose How You Move' website https://www.warwickshire.gov.uk/activetravel , Twitter https://twitter.com/ChooseMoveCW and Facebook page https://www.facebook.com/ChooseMoveCW/ ,walkit.com and cyclestreets.net.

The following are suggested alternatives to private travel that are given within the AQAP measures that would contribute to improving the air quality within the Borough:

- Use public transport where available – This reduces the number of private vehicles in operation, thereby reducing pollutant concentration through the number of vehicles and reducing congestion
- Walk or cycle if your journey allows – From choosing to walk or cycle for your journey the number of vehicles is reduced and also there is the added benefit of keeping fit and healthy. In addition, many of the cycle routes are off-road meaning you are not in close proximity to emissions from road traffic sources
- Car/lift sharing – Where a number of individuals are making similar journeys, such as travelling to work or to school, car sharing reduces the number of vehicles on the road and therefore the amount of emissions being released. This can be promoted via travel plans through the workplace and within schools and
- Alternative fuel / more efficient vehicles – Choosing a vehicle that meets the specific needs of the owner. Fully electric, hybrid fuel and more fuel efficient

cars are available and all have different levels benefits by reducing the amount of emissions being released.

- Home working – Choosing to work from home can help to alleviate congestion on the roads during peak times and therefore reduce the amount of emissions being released.

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# 1 Local Air Quality Management

This report provides an overview of air quality in Nuneaton and Bedworth Borough Council during 2019. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Nuneaton and Bedworth Borough Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

# 2 Actions to Improve Air Quality

## 2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of the AQMAs declared by Nuneaton and Bedworth can be found in Table 2.1, with further information related to declared or revoked AQMAs, including maps of AQMA boundaries available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=189. Alternatively, see Appendix D: Maps of Monitoring Locations and AQMAsAppendix D: Maps of Monitoring Locations and AQMAs, which provides for a map of air quality monitoring locations in relation to the AQMAs.

Due to a number of exceedances of the AQS annual mean objective for $NO_2$ being recorded within the existing Midland Road/Corporation Street AQMA (AQMA 2), it is recommended that the AQMA remain designated. An update to the Air Quality Action Plan is planned but has been delayed as a result of Covid-19 restrictions. Once drafted, the updated Air Quality Action Plan will be required to go through a consultation process.

Leicester Road Gyratory AQMA has not recorded levels within 10% of the AQO since 2016. Revocation of Leicester Road Gyratory AQMA remains under consideration following recommendation by Defra upon review of the 2019 ASR. However, there has been substantial growth in house building to the north side of Nuneaton which will likely impact on the road network within the Leicester Road Gyratory AQMA. Monitoring will continue within the AQMA for at least another year to see if the developments adversely affect the concentrations before making a decision.

## Table 2.1 – Declared Air Quality Management Areas

| AQMA Name | Date of Declaration | Pollutants and Air Quality Objectives | City / Town | One Line Description | Is air quality in the AQMA influenced by roads controlled by Highways England? | Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure) | | | | Action Plan | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | At Declaration | | Now | | Name | Date of Publication | Link |
| AQMA 1 – Leicester Rd Gyratory, Nuneaton | 01/03/2007 | $NO_2$ annual mean | Nuneaton | An area of Nuneaton centred on the Leicester Road Gyratory system and incorporating sections of the Leicester, Old Hinckley and Weddington Roads. | NO | 41 | µg/m³ | 31.4 | µg/m³ | Nuneaton and Bedworth Borough Council, Air Quality Action Plan | 2011 | https://www.nuneatonandbedworth.gov.uk/downloads/file/2521/nuneaton_and_bedworth_air_quality_action_plan |
| AQMA 2 – Midland Road / Corporation Street, Nuneaton | 01/10/2009 | $NO_2$ annual mean | Nuneaton | Centred on Midland Road, Central Avenue and Corporation Street but also includes parts of Manor Court Road. | NO | 55 | µg/m³ | 42.9 | µg/m³ | Nuneaton and Bedworth Borough Council, Air Quality Action Plan | 2011 | https://www.nuneatonandbedworth.gov.uk/downloads/file/2521/nuneaton_and_bedworth_air_quality_action_plan |

☒ **Nuneaton and Bedworth Borough Council confirm the information on UK-Air regarding their AQMA(s) is up to date**

## 2.2 Progress and Impact of Measures to address Air Quality in Nuneaton and Bedworth Borough Council

Defra's appraisal of last year's ASR concluded the following. Comments are provided in green where considered relevant:

1. Trends are presented and discussed and a robust comparison with air quality objectives is provided.
2. The diffusion tube and AQMA mapping is comprehensive and demonstrates the monitoring network.
3. The Council is proposing to revoke the Leicester Road Gyratory AQMA (AQMA 1), following sustained compliance (with all concentrations <35 µg/$m^3$) since 2016, with an assessment underway to determine the most appropriate approach. This is supported and progress made with this action should be reported on in next year's ASR.

   The 'assessment' referred to is based on review of monitoring in light of highways changes at Bridge Grove.
4. There were only very minor updates to Table 2.2 (Progress against Action Plan measures), the council should ensure that this is kept up to date with any progress made in the next year.
5. QA/QC of the data was considered to be thorough a national bias adjustment factor used for the non-automatic network; annualisation and distance correction were not required in 2018.
6. However, data capture data displayed in Table A.2 appears to have not been updated since 2017, for example diffusion tube is reported as having a data capture of 58% (value for 2017) which does not match up with Table B.1.
7. The report included measures to address $PM_{2.5}$ and links to the Public Health Outcomes Frameworks. This is encouraged to be continued in future ASRs.
8. Priorities for 2019 were identified, which is welcomed. Progress made on these priorities should be reported on in next year's report.

   The priorities for 2019 were to progress measures within the Air Quality Action Plan. Additional measures have been put in place to ease congestion within the borough, see Table 2.2 below.

9. Comments from the previous appraisal have been included and addressed, which is welcomed.

Revocation of the Leicester Road Gyratory AQMA remains under consideration. Concentrations remain below 34µg/m³ within the Leicester Road Gyratory AQMA. There has been a substantial growth in house building to the north side of Nuneaton which impact on the road network within the AQMA. Monitoring will continue within the AQMA for at least another year to see if the developments adversely affect the concentrations before making a decision to revoke though it is hoped that this can be achieved.

Nuneaton and Bedworth Borough Council has taken forward a number of direct measures during the current reporting year of 2019 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in the current AQAP that is available at https://www.nuneatonandbedworth.gov.uk/downloads/file/2521/nuneaton_and_bedworth_air_quality_action_plan.

Whilst the measures stated in Table 2.2 will help to contribute towards compliance, Nuneaton and Bedworth Borough Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Midland Road/Corporation Street AQMA. The measures have been ordered in accordance with predicted reduction in concentrations of $NO_2$.

## Table 2.2 – Progress on Measures to Improve Air Quality

| Measure No. | Measure | EU Category | EU Classification | Date Measure Introduced | Organisations involved | Funding Source | Key Performance Indicator | Reduction in Pollutant / Emission from Measure | Progress to Date | Estimated / Actual Completion Date | Comments / Barriers to implementation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Identify and bring forward traffic management improvements in Nuneaton Town Centre, particularly where they will benefit the two AQMAs. | Traffic Management | Strategic Highways Improvements and Road User Charging | Ongoing | WCC / N&BBC | WCC / N&BBC | Traffic Counts | 1 - 2 µg/m³ | WCC are assessing transport implications of Borough Plan growth proposals and have identified a number of transport schemes[1] to mitigate the traffic growth impacts across the Borough including in the town centre. The town centre transport schemes link to the Transforming Nuneaton Town Centre scheme. A business case was submitted to Coventry and Warwickshire Local Enterprise Partnership as part of Growth Deal 3. The bid was successful and a significant sum has been secured towards developing the scheme. Funding will also be sought through S106/CIL contributions. WCC is submitting a bid to the National Productivity and Investment Fund for the A47 between Leicester Rd Bridge and Eastboro Way/Long Shoot[2]. This scheme aims to address congestion issues, remove pinch points and provide pedestrian and cycle facilities | On-going | Funding availability |
| 2 | Continue to work with WCC and other partners to deliver improvements in emissions where practicable. | Promoting Low Emission Transport / Vehicle Fleet Efficiency | Other | Ongoing | WCC / N&BBC / Public Transport Operators | WCC / N&BBC / Public Transport Operators | - | 1 - 2 µg/m³ | Through capital investment arising from the MIRA Enterprise Zone, Arriva Midlands has funded the provision of four new vehicles to operate on the Service 66 (Nuneaton - MIRA - Hinckley) bus route. It is possible that further funding opportunities to secure the improvement of local bus fleets will arise in response to recent changes to legislation, e.g. The Bus Services Bill. Warwickshire Electric Vehicle Infrastructure Strategy now in place.. Warwickshire On-street Residential EV Charging Scheme proposed | On-going | Availability of funding |
| 3 | Identify measures to reduce the impact of HGV movements within the area. | Freight and Delivery Management / Traffic Management | Route Management / Traffic Reduction | Ongoing | WCC / N&BBC | WCC / N&BBC | Traffic Counts | 0.2 - 0.5 µg/m³ | The county-wide Lorry Map is kept under regular review by the County Council. The presence of important 'A' and 'B' roads such as the A444 and B4114 within the AQMAs mean that it is difficult to direct HGV and HDV traffic away from them. | On-going | Alternative routes availability |
| 4 | Increase uptake and implementation of School and Workplace Travel Plans. | Promoting Travel Alternatives | School and Workplace Travel Plans | Ongoing | WCC / N&BBC | WCC / N&BBC | Usage figures | 0.2 - 0.5 µg/m³ | On-going as opportunities arise, and through the development process. | On-going | None |
| 5 | Develop, implement and monitor the N&BBC Travel Plan. Explore potential for a Car Club in Nuneaton. | Alternatives to Private Vehicle Use / Promoting Travel Alternatives | Car Clubs / Personalised Travel Planning | Ongoing | N&BBC | N&BBC | Usage figures | 0 - 0.2 µg/m³ | Travel Plan in place. Implementation and on-going monitoring arrangements to be agreed. | On-going | None |
| 5 | Include planning policies within the Borough Plan that seek to improve air quality, sustainable transport links and secure Travel Plan agreements. Identify as part of the Borough Plan Infrastructure Delivery Plan specific infrastructure required within the AQMAs or that could relieve the AQMAs. These can then be prioritised alongside the | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | 2019 | N&BBC | N&BBC | - | 0 - 0.2 µg/m³ | The published Local Plan has allowed N&BBC to identify schemes and initiatives to improve sustainable transport provision and improve the management of traffic on the network. These will be pursued as funding streams become available. Policy HS2 of the published Local Plan is specific to Air Quality. The Nuneaton and Bedworth Borough Council Infrastructure Delivery Plan contains schemes which have been identified through the Strategic Transport Assessment. The Council has also completed assessments of the impact of the Borough Plan on Air Quality within the Borough. | On-going | Availability of funding |

| Measure No. | Measure | EU Category | EU Classification | Date Measure Introduced | Organisations involved | Funding Source | Key Performance Indicator | Reduction in Pollutant / Emission from Measure | Progress to Date | Estimated / Actual Completion Date | Comments / Barriers to implementation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Borough's other infrastructure demands for external funding and developer. | | | | | | | | | | |
| 6 | Encourage developers to take part in pre-application discussions to ensure air quality is considered when formulating a planning application. Developers should ensure good design as a part of their proposals and actively endorse travel planning to minimise and mitigate the impacts of new development upon the AQMA. Where appropriate, development proposals should be accompanied by air quality assessments. | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | 2011 | N&BBC | N&BBC | - | 0 - 0.2 µg/m$^3$ | The published Local Plan has allowed N&BBC to identify schemes and initiatives to improve sustainable transport provision and improve the management of traffic on the network. These will be pursued as funding streams become available. Policy HS2 of the published Local Plan is specific to Air Quality. The Nuneaton and Bedworth Borough Council Infrastructure Delivery Plan contains schemes which have been identified through the Strategic Transport Assessment. The Council has also completed assessments of the impact of the Borough Plan on Air Quality within the Borough.~~The Borough Plan evidence has allowed WCC to identify schemes and initiatives to improve sustainable transport provision and improve the management of traffic on the network. These will be pursued as funding streams become available. The Transforming Nuneaton Town he Borough Plan includes an updated and clearer policy on air quality. To support this, Air Quality Guidance for Developers has been produced to show when an Impact Assessment is needed and the potential mitigation measures to be expected. The Borough Plan includes an updated and clearer policy on air quality. To support this, Air Quality Guidance for Developers has been produced to show when an Impact Assessment is needed and the potential mitigation measures to be expected. Centre Scheme and the A47 corridor schemes aim to reduce the level of delay within the identified area. The Nuneaton and Bedworth Borough Council Infrastructure Delivery Plan contains schemes which have been identified through the Strategic Transport Assessment. The Council has also completed assessments of the impact of the Borough Plan on Air Quality within the Borough[3].~~ | On-going | Availability of funding |
| 8 | Continue to work with Public Health, WCC and the Warwickshire District Authorities on air quality and travel awareness campaigns to raise the profile of air quality in the Borough and County-wide. | Public Information | Other | Ongoing | WCC / N&BBC / Warwickshire local authorities | WCC / N&BBC / Warwickshire local authorities | Website visitor numbers / Members registration for Car Share | 0 - 0.2 µg/m$^3$ | WCC promote sustainable travel modes via their website www.warwickshire.gov.uk/activetravel showing: WCC car share database, Nuneaton cycle guide, public transport maps and timetables. | On-going | None |
| 8 | Continue to work together with partners to promote and implement energy efficiency measures in the Borough | Promoting Low Emission Plant | Other | Ongoing | N&BBC Department of Energy and Climate Change (DECC) under the Green Deal Communities scheme | N&BBC Department of Energy and Climate Change (DECC) under the Green Deal Communities scheme | Number of completed renovations | 0 - 0.2 µg/m$^3$ | 2015-16 saw the completion of 61 external wall insulations, 491 central heating systems replacements and 32 loft insulations to properties. To date, a total of 336 properties benefitted from external wall insulation. Energy efficiency measures now being promoted via the Energy Company Obligation (ECO) : Help to Heat programme and the national Local Authority Flexible Eligibility scheme | On-going | Grant funding of £2.1 million now exhausted. Availability of future funding |
| 9 | Continue to enforce industrial pollution control and nuisance legislation to minimise | Environmental Permits | Other | Ongoing | N&BBC | N&BBC | Number of inspections | 0 - 0.2 µg/m$^3$ | N&BBC continue a high rate of inspections of industrial installations. | On-going | None |

| Measure No. | Measure | EU Category | EU Classification | Date Measure Introduced | Organisations involved | Funding Source | Key Performance Indicator | Reduction in Pollutant / Emission from Measure | Progress to Date | Estimated / Actual Completion Date | Comments / Barriers to implementation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | pollutant emissions from these sources | | | | | | | | | | |
| 10 | Continue the commitment to undertake air quality monitoring within the Borough to ensure a high standard of data is achieved to assess against air quality objectives. | Policy Guidance and Development Control | Other | Ongoing | N&BBC | N&BBC | Data capture | 0 µg/m³ | Monitoring continues across the Borough – data capture for 20178 was good at all passive locations | On-going | None |
| 11 | Make details of the air quality measures and annual reports available on the website to ensure accessibility to the consultation and implementation process. | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | Ongoing | N&BBC | N&BBC | - | 0 µg/m³ | To be uploaded to website annually at the appropriate time. | On-going | None |
| 12 | Production of Air Quality Supplementary Planning Document (SPD) as part of the 'Air Quality Alliance' made up of Public Health, Planning, Environmental Health and Transport Planners. | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | 2019 | N&BBC and Coventry City Council | N&BBC and Coventry City Council | Air Quality Assessments for Planning Applications | n/a | Air Quality SPD available to download here: https://www.nuneatonandbedworth.gov.uk/download/downloads/id/3446/air_quality_spd_2019.pdf . Air Quality assessments of certain scale require completion of Damage Costs Calculations putting an obligation on developers to offset increases in emissions with commensurate mitigation. | 2019 | None |
| 13 | Demolition of Old Hinckley Road Rail Bridge to ease congestion | Transport Planning and Infrastructure | Public transport improvements-interchanges stations and services | 2020 | N&BBC/WCC | N& BBC and S106 Contributions | Monitoring data | n/a | It is hoped that the demolition of the rail bridge has eased congestion. Works were completed shortly before restrictions were put in place due to the Covid-19 pandemic. | 2020 | Completed |
| 14 | Potential for additional Electric Buses within Nuneaton | Promoting Low Emission Transport | Company Vehicle Procurement - Prioritising uptake of low emission vehicles | 2019 | Transport for West Midlands, N&BBC | A Better Deal for Bus Users programme' | Additional Low Emissions Vehicles in Bus Fleet | n/a | A bid has been made for Electric buses within Nuneaton and Leamington | On-going | None |

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

The current Defra background maps for Nuneaton and Bedworth (2017 based[4]) show that all background concentrations of $PM_{2.5}$ are far below the 2020 annual mean AQS objective of 25 µg/m$^3$ for $PM_{2.5}$. The highest concentration is predicted to be 12.2µg/m$^3$ within the 1 x 1km grid square with the centroid grid reference of 435500, 285500. This is an area close to the M6 and A444 that encompasses residential and light industrial units.

The Public Health Outcomes Framework data tool[5] compiled by Public Heath England quantifies the mortality burden of $PM_{2.5}$ within England on a county and local authority scale. The 2018 fraction of mortality attributable to $PM_{2.5}$ pollution across England is 5.2%, the fraction within Nuneaton and Bedworth is the same as the national average.

Nuneaton and Bedworth are working to reduce emissions of air pollution across the Borough, with many of the measures designed to reduce emissions of $NO_2$ also impacting the emissions of $PM_{10}$ and $PM_{2.5}$. The following pollutant emission reduction measures included within Nuneaton and Bedworth's existing AQAP are also likely to reduce emissions of $PM_{2.5}$:

- Traffic management improvements, including reduction of HGV movements;
- Improved integration of public transport, including improvements for bus , rail and community transport infrastructure;
- Increase uptake and implementation of School Travel Plans, Workplace Travel Plans and the Nuneaton and Bedworth Borough Council Travel Planning Policy;

[4] Defra Background Mapping data for local authorities (2017-based), available online at https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html
[5] Public Health Outcomes Framework, Public Health England. data tool available online at https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/0/gid/1000043/pat/6/par/E12000005/ati/201/are/E07000219/iid/30101/age/230/sex/4/cid/4/page-options/ine-vo-0_ine-yo-1:2018:-1:-1_ine-ct-2_ine-pt-0_map-ao-4_car-do-0_cin-ci-4_tre-ao-0_ovw-do-0

- Improve sustainable transport links, improvements for pedestrians and cyclists, endorse travel planning and promoting a Car Club; and
- Promote and implement energy efficiency measures across the Borough.

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

## 3.1 Summary of Monitoring Undertaken

This section sets out what monitoring has taken place and how it compares with objectives.

### 3.1.1 Automatic Monitoring Sites

Nuneaton and Bedworth no longer undertake automatic (continuous) monitoring. Due to the continued general decline and stabilisation in $NO_2$ concentrations within AQMA 1 to below the AQS objective, a decision was made to decommission the automatic monitoring station at the end of 2016. The automatic monitoring station does retain the facility to be brought back into use and monitoring recommenced if sufficient evidence warrants this. Co-located duplicate monitoring recorded an $NO_2$ concentration of 29.4µg/m³ at this site in 2019.

### 3.1.2 Non-Automatic Monitoring Sites

Nuneaton and Bedworth Borough Council undertook non-automatic (passive) monitoring of $NO_2$ at 38 sites during 2019. Table A.1 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are included in Appendix C.

Monitoring is no longer undertaken at NB05, which was situated at a nursing home. The nursing home is no longer in operation and therefore the diffusion tube site was considered to be no longer required. There was one new site, NB52, added in 2019 as a result of an air quality assessment undertaken for a planning application identified a potential exceedance at Bridge Street.

## 3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias[6], "annualisation" (where the data capture falls below 75%), and distance correction[7]. Further details on adjustments are provided in Appendix C.

### 3.2.1 Nitrogen Dioxide ($NO_2$)

Table A.2 in Appendix A compares the ratified and adjusted monitored $NO_2$ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m$^3$. Note that the concentration data presented in Table A.2 represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B. Table 3.1 below provides a summary of measured exceedances (bias adjusted) of the annual mean objective that were recorded for 2019. During 2019 there were two exceedances of the AQS annual mean objective for $NO_2$, both were at locations within existing AQMA 2.

**Table 3.1 – Summary of Measured Annual Mean $NO_2$ Exceedances**

| Site ID | Within AQMA Y/N | 2019 Bias Adjusted Annual Mean Concentration (µg/m$^3$) |
|---|---|---|
| NB29 | Yes - Midland Road / Corporation Street AQMA | **41.4** |
| NB30 | Yes - Midland Road / Corporation Street AQMA | **42.9** |

These two monitoring sites on Midland Road within AQMA 2 were also the only two locations to monitor and exceedance of the AQS objective in 2018. Both NB29 and NB30 are located at relevant exposure locations.

Table A.3 presents the annual mean $NO_2$ concentrations recorded at all diffusion tube locations since 2015, outwith and within the designated AQMAs. None of the monitoring sites reported the highest recorded annual mean $NO_2$ concentration in 2019, apart from NB30 and NB51, which recorded their highest value since 2015. Of the 38 monitoring sites, 22 sites recorded lower concentrations in 2019 than 2018.

[6] https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html
[7] Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

Due to two exceedances of the AQS annual mean objective for $NO_2$ being recorded within the existing Midland Road/Corporation Street AQMA (AQMA 2), it is recommended that this AQMA remain designated.

The highest concentration reported in the Leicester Road Gyratory AQMA (AQMA 1) in 2019 was 31.4µg/m³. This is a 0.2µg/m³ from the 2018 concentration at the same location.

No monitoring site recorded higher than 60µg/m³ of $NO_2$ during 2019 indicating that any exceedance of the $NO_2$ 1-hour mean objective of 200µg/m³ is unlikely to be exceeded.

# Appendix A: Monitoring Results

## Table A.1 – Details of Non-Automatic Monitoring Sites

| Site ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Tube collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| AQM | AQMonitor, Leicester Rd | Roadside | 436844 | 292251 | $NO_2$ | YES | 1.5 | 4.2 | NO | 1.3 |
| NB02 | 5 Conifer Close | Urban Background | 436427 | 287646 | $NO_2$ | NO | N/A | N/A | NO | 2.1 |
| NB04 | Leisure Ctr 72 Coventry Rd | Suburban | 435793 | 286545 | $NO_2$ | NO | 0 | 3.6 | NO | 3.2 |
| NB06 | Tudor Ct Bowling Green Ln | Roadside | 434313 | 285292 | $NO_2$ | NO | 11 | 0.9 | NO | 2.9 |
| NB07 | 115 Newtown Rd Bedworth | Roadside | 435345 | 286992 | $NO_2$ | NO | 6 | 4.4 | NO | 2.4 |
| NB09 | Church, Manor Ct Rd | Roadside | 435634 | 292280 | $NO_2$ | YES | 1.5 | 2.2 | NO | 2.4 |
| NB15 | Bridge Grove, Leicester Rd | Roadside | 436883 | 292302 | $NO_2$ | YES | 8 | 1.4 | NO | 2.3 |
| NB17 | Balti Hut, Bond Gate | Roadside | 436393 | 291987 | $NO_2$ | NO | 0 | 1.3 | NO | 2.3 |
| NB18 | Wheat St | Roadside | 436525 | 291863 | $NO_2$ | NO | 23 | 4 | NO | 2.3 |
| NB20 | 17 Old Hinckley Rd | Roadside | 436604 | 292202 | $NO_2$ | YES | 0 | 6.9 | NO | 2 |
| NB21 | 36 Old Hinckley Rd | Roadside | 436691 | 292271 | $NO_2$ | YES | 0 | 8.6 | NO | 2 |
| NB22 | 62 Old Hinckley Rd | Roadside | 436810 | 292306 | $NO_2$ | YES | 0 | 8.8 | NO | 1.9 |

| Site ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Tube collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| NB23 | 46 Leicester Rd Nuneaton | Roadside | 436841 | 292280 | $NO_2$ | YES | 0 | 4.5 | NO | 2.1 |
| NB24 | Lodge, 31 Leicester Rd | Roadside | 436812 | 292196 | $NO_2$ | YES | 0 | 11 | NO | 2.2 |
| NB25 | 25 Central Avenue | Roadside | 435814 | 292274 | $NO_2$ | YES | 0 | 6.4 | NO | 2.1 |
| NB26 | 26 Central Avenue | Roadside | 435759 | 292311 | $NO_2$ | YES | 0 | 4.6 | NO | 2.1 |
| NB27 | 90 Corporation St | Roadside | 435959 | 292098 | $NO_2$ | YES | 0 | 4.8 | NO | 2.4 |
| NB28 | 138 Corporation St | Roadside | 435893 | 292205 | $NO_2$ | YES | 0 | 4.7 | NO | 2.1 |
| NB29 | 16 Midland Road | Roadside | 435626 | 292343 | $NO_2$ | YES | 0 | 4 | NO | 2.1 |
| NB30 | 52 Midland Road | Roadside | 435554 | 292378 | $NO_2$ | YES | 0 | 3.8 | NO | 2.1 |
| NB31 | 376 Longford Road | Roadside | 435146 | 284563 | $NO_2$ | NO | 0 | 12.7 | NO | 2.5 |
| NB35 | 60 Watling St | Roadside | 439268 | 293457 | $NO_2$ | NO | 0 | 11.7 | NO | 1.9 |
| NB36 | 78 Coventry Rd Exhall | Roadside | 435217 | 285246 | $NO_2$ | NO | 0 | 2.3 | NO | 2.3 |
| NB37 | 19 Croft Road Nuneaton | Roadside | 435051 | 291594 | $NO_2$ | NO | 0 | 5.8 | NO | 2 |
| NB38 | 115 Highfield Rd | Roadside | 437198 | 290732 | $NO_2$ | NO | 0 | 7.2 | NO | 1.8 |
| NB41 | 11 Newtown Rd (salon) | Roadside | 435619 | 287042 | $NO_2$ | NO | 0 | 4.8 | NO | 2 |
| NB42 | 18 George Street Bedworth | Roadside | 435655 | 287135 | $NO_2$ | NO | 0 | 8.3 | NO | 1.8 |
| NB43 | 43 Hanover Glebe | Roadside | 436303 | 290796 | $NO_2$ | NO | 0 | 11.6 | NO | 2 |
| NB44 | 503 Heath End Rd | Roadside | 434298 | 290930 | $NO_2$ | NO | 2 | 2.3 | NO | 2.2 |

| Site ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Tube collocated with a Continuous Analyser? | Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| NB45 | 80 Heath End Rd | Roadside | 435593 | 290728 | $NO_2$ | NO | 4.6 | 2.5 | NO | 2.4 |
| NB46 | 30 Bermuda Rd | Roadside | 435135 | 290583 | $NO_2$ | NO | 0 | 9.2 | NO | 2 |
| NB47 | 6 The Bridleway | Roadside | 435452 | 290087 | $NO_2$ | NO | 0 | 4.6 | NO | 2 |
| NB48 | 288 Heath End Rd | Roadside | 435066 | 290689 | $NO_2$ | NO | 0 | 8.5 | NO | 2.1 |
| NB49 | Co-op Coventry Rd | Roadside | 435231 | 285236 | $NO_2$ | NO | 0 | 4.2 | NO | 2.5 |
| NB50 | 66 Coventry Rd Exhall | Roadside | 435201 | 285198 | $NO_2$ | NO | 0 | 8.3 | NO | 2.3 |
| NB51 | Abbey Green School | Roadside | 435638 | 292357 | $NO_2$ | YES | 0 | 5 | NO | 2.2 |
| NB52 | Bridge St, Mower Shop | Roadside | 436147 | 290868 | $NO_2$ | NO | 3 | 7.2 | NO | 2.2 |

**Notes:**

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

(2) N/A if not applicable.

## Table A.2 – Annual Mean $NO_2$ Monitoring Results

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Monitoring Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2019 (%) (2) | $NO_2$ Annual Mean Concentration (µg/m$^3$) (3) (4) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2015 | 2016 | 2017 | 2018 | 2019 |
| AQM | 436844 | 292251 | Roadside | Diffusion Tube | 100.0% | 100.0% | 32.4 | 30.4 | 30.6 | 29.9 | 30.5 |
| AQM | 436844 | 292251 | Roadside | Diffusion Tube | 66.7% | 66.7% | | | | | |
| NB01 | 435974 | 291304 | Urban Background | Diffusion Tube | 100.0% | 100.0% | 20.2 | 20.4 | 19.2 | 18.5 | 19.5 |
| NB02 | 436427 | 287646 | Urban Background | Diffusion Tube | 100.0% | 100.0% | 19.6 | 19.2 | 19.2 | 18.1 | 19.1 |
| NB04 | 435793 | 286545 | Suburban | Diffusion Tube | 100.0% | 100.0% | 33.3 | 34.7 | 34.3 | 30.9 | 30.4 |
| NB06 | 434313 | 285292 | Roadside | Diffusion Tube | 100.0% | 100.0% | 34.6 | 34.9 | 25.7 | 32.0 | 31.4 |
| NB07 | 435345 | 286992 | Roadside | Diffusion Tube | 100.0% | 100.0% | 31.9 | 31.9 | 27.5 | 32.1 | 31.2 |
| NB09 | 435634 | 292280 | Roadside | Diffusion Tube | 100.0% | 100.0% | 29.5 | 30.3 | 27.4 | 28.5 | 30.3 |
| NB15 | 436883 | 292302 | Roadside | Diffusion Tube | 100.0% | 100.0% | 30.3 | 29.8 | 23.7 | 29.2 | 27.2 |
| NB17 | 436393 | 291987 | Roadside | Diffusion Tube | 100.0% | 100.0% | 33.4 | 32.5 | 30.9 | 29.3 | 28.7 |
| NB18 | 436525 | 291863 | Roadside | Diffusion Tube | 100.0% | 100.0% | 31.9 | 32.8 | 26.3 | 32.9 | 32.0 |
| NB20 | 436604 | 292202 | Roadside | Diffusion Tube | 83.3% | 83.3% | 25.9 | 28.5 | 27.2 | 27.7 | 27.1 |
| NB21 | 436691 | 292271 | Roadside | Diffusion Tube | 100.0% | 100.0% | 29.4 | 30.0 | 29.6 | 27.9 | 27.3 |
| NB22 | 436810 | 292306 | Roadside | Diffusion Tube | 100.0% | 100.0% | 25.2 | 24.9 | 25.2 | 24.9 | 25.1 |

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Monitoring Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2019 (%) (2) | $NO_2$ Annual Mean Concentration ($\mu g/m^3$) (3) (4) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2015 | 2016 | 2017 | 2018 | 2019 |
| NB23 | 436841 | 292280 | Roadside | Diffusion Tube | 100.0% | 100.0% | 32.0 | 32.9 | 33.3 | 31.2 | 31.4 |
| NB24 | 436812 | 292196 | Roadside | Diffusion Tube | 100.0% | 100.0% | 23.3 | 24.5 | 24.3 | 24.4 | 24.1 |
| NB25 | 435814 | 292274 | Roadside | Diffusion Tube | 100.0% | 100.0% | 31.7 | 32.2 | 32.1 | 31.1 | 30.9 |
| NB26 | 435759 | 292311 | Roadside | Diffusion Tube | 100.0% | 100.0% | 29.6 | 31.4 | 29.5 | 29.8 | 28.9 |
| NB27 | 435959 | 292098 | Roadside | Diffusion Tube | 100.0% | 100.0% | **40.3** | 39.9 | **40.6** | 36.6 | 36.4 |
| NB28 | 435893 | 292205 | Roadside | Diffusion Tube | 100.0% | 100.0% | 36.3 | 36.7 | 37.2 | 35.2 | 36.1 |
| NB29 | 435626 | 292343 | Roadside | Diffusion Tube | 100.0% | 100.0% | **43.0** | **43.8** | **44.6** | **41.0** | **41.4** |
| NB30 | 435554 | 292378 | Roadside | Diffusion Tube | 100.0% | 100.0% | **41.4** | **40.0** | 39.3 | **41.1** | **42.9** |
| NB31 | 435146 | 284563 | Roadside | Diffusion Tube | 100.0% | 100.0% | 33.4 | 34.3 | 32.1 | 30.2 | 29.4 |
| NB35 | 439268 | 293457 | Roadside | Diffusion Tube | 100.0% | 100.0% | 24.8 | 24.8 | 23.2 | 22.9 | 23.2 |
| NB36 | 435217 | 285246 | Roadside | Diffusion Tube | 100.0% | 100.0% | 36.5 | 37.6 | 36.8 | 33.8 | 33.7 |
| NB37 | 435051 | 291594 | Roadside | Diffusion Tube | 100.0% | 100.0% | 31.8 | 33.0 | 31.9 | 31.3 | 32.6 |
| NB38 | 437198 | 290732 | Roadside | Diffusion Tube | 100.0% | 100.0% | 27.4 | 30.5 | 30.0 | 28.9 | 27.7 |
| NB41 | 435619 | 287042 | Roadside | Diffusion Tube | 100.0% | 100.0% | 32.1 | 31.2 | 32.8 | 32.4 | 30.8 |
| NB42 | 435655 | 287135 | Roadside | Diffusion Tube | 100.0% | 100.0% | 28.2 | 28.1 | 26.2 | 25.0 | 27.0 |

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Monitoring Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2019 (%) (2) | $NO_2$ Annual Mean Concentration ($\mu g/m^3$) (3) (4) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2015 | 2016 | 2017 | 2018 | 2019 |
| NB43 | 436303 | 290796 | Roadside | Diffusion Tube | 100.0% | 100.0% | 27.4 | 26.9 | 26.3 | 26.7 | 25.3 |
| NB44 | 434298 | 290930 | Roadside | Diffusion Tube | 91.7% | 91.7% | 30.1 | 30.5 | 27.1 | 30.0 | 29.6 |
| NB45 | 435593 | 290728 | Roadside | Diffusion Tube | 100.0% | 100.0% | 26.3 | 29.6 | 28.1 | 34.8 | 33.0 |
| NB46 | 435135 | 290583 | Roadside | Diffusion Tube | 100.0% | 100.0% | - | 19.8 | 18.7 | 19.8 | 18.3 |
| NB47 | 435452 | 290087 | Roadside | Diffusion Tube | 100.0% | 100.0% | - | 18.9 | 18.6 | 19.1 | 18.2 |
| NB48 | 435066 | 290689 | Roadside | Diffusion Tube | 100.0% | 100.0% | - | 25.2 | 25.6 | 23.2 | 23.0 |
| NB49 | 435231 | 285236 | Roadside | Diffusion Tube | 100.0% | 100.0% | - | - | 32.4 | 29.2 | 29.4 |
| NB50 | 435201 | 285198 | Roadside | Diffusion Tube | 100.0% | 100.0% | - | - | 32.7 | 30.6 | 31.2 |
| NB51 | 435638 | 292357 | Roadside | Diffusion Tube | 91.7% | 91.7% | - | - | 26.3 | 26.5 | 27.7 |
| NB52 | 436147 | 290868 | Roadside | Diffusion Tube | 100.0% | 83.3% | - | - | - | - | 32.4 |

☒ **Diffusion tube data has been bias corrected**

☒ **Annualisation has been conducted where data capture is <75%**

☒ **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 adjustment**

**Notes:**

Exceedances of the $NO_2$ annual mean objective of $40\mu g/m^3$ are shown in **bold**.

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

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

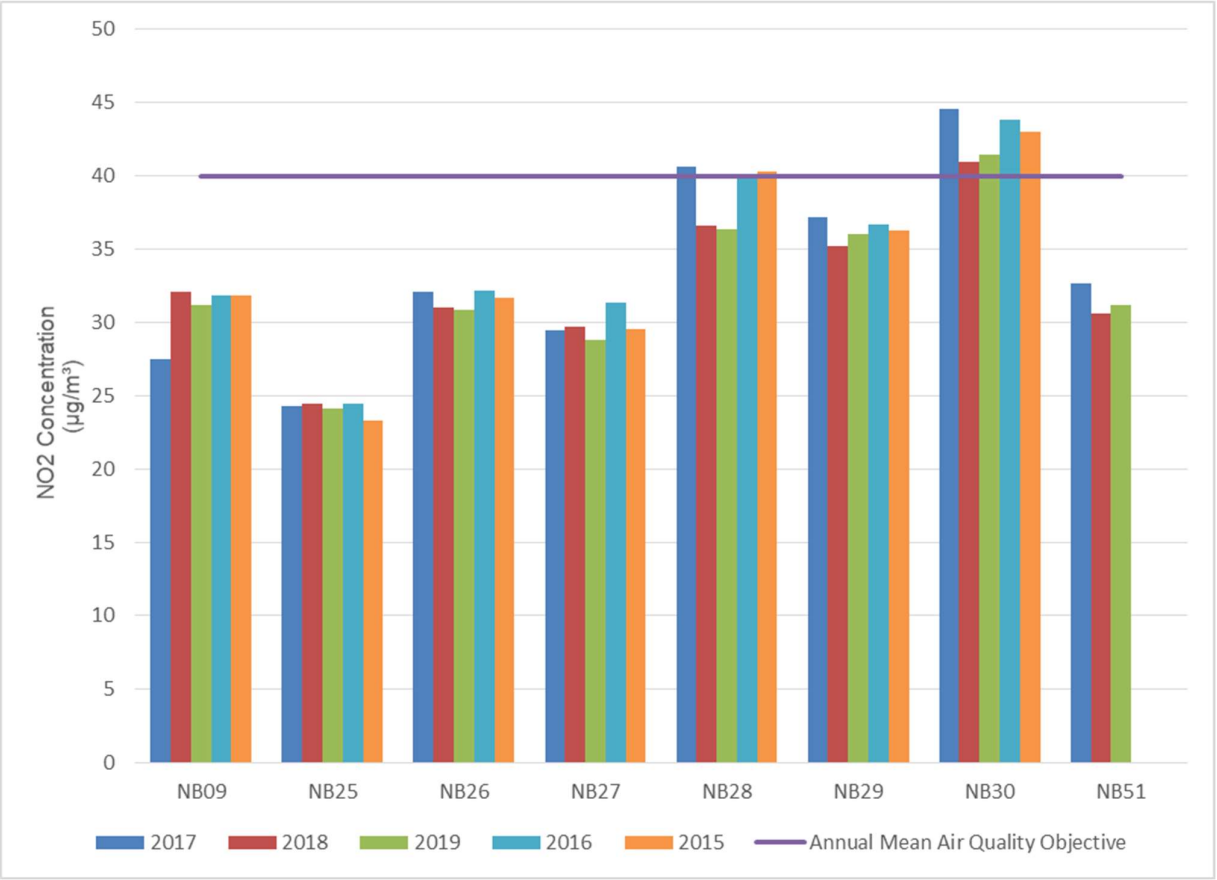
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

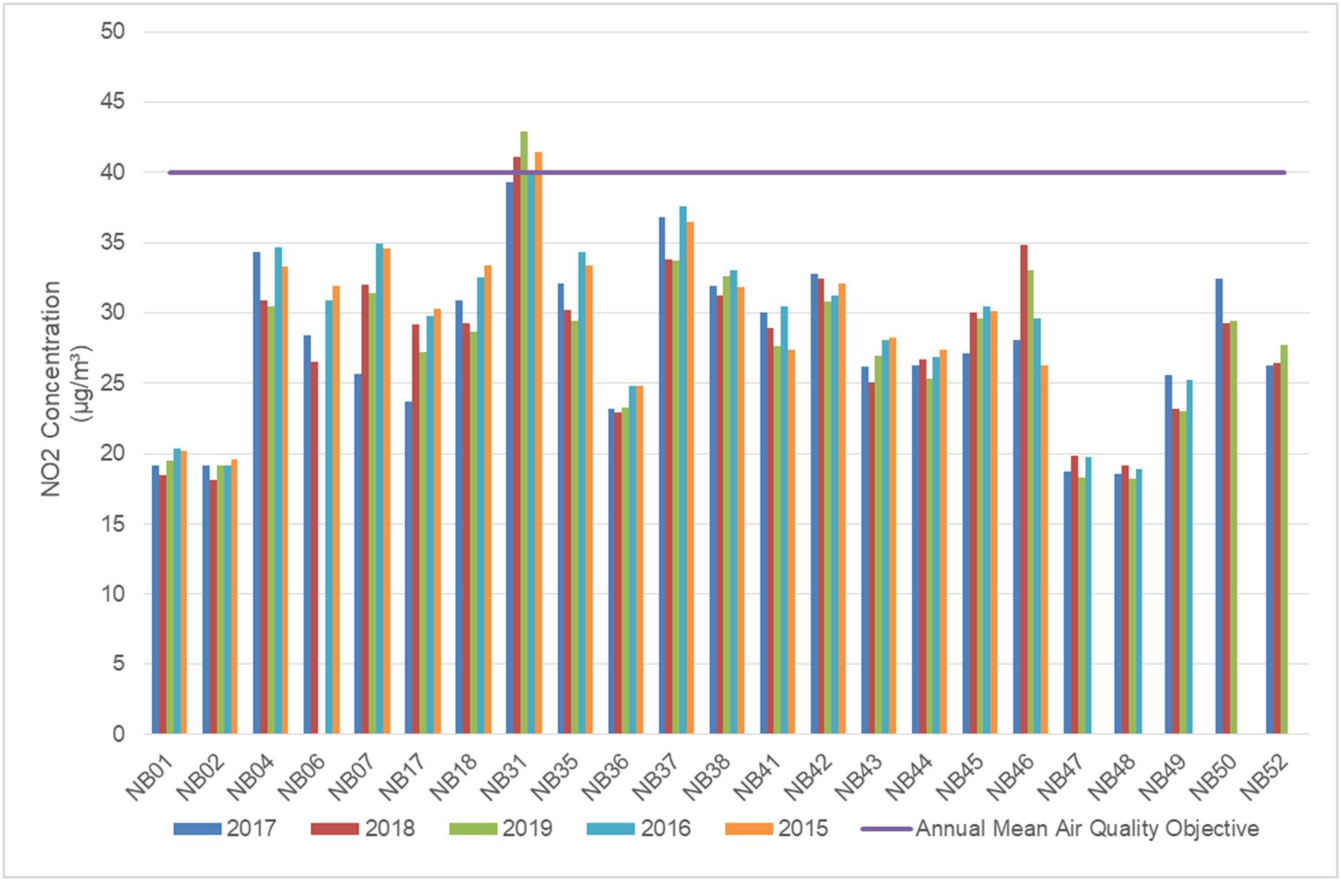
(4) Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

**Figure A.1 – Trends in Annual Mean $NO_2$ Concentrations – Leicester Road Gyratory AQMA 1**

**Figure A.2 – Trends in Annual Mean $NO_2$ Concentrations – Midland Road/Corporation Street AQMA 2**



## Figure A.3 – Trends in Annual Mean $NO_2$ Concentrations – Outside of AQMAs



# Appendix B: Full Monthly Diffusion Tube Results for 2019

## Table B.1 - NO2 Monthly Diffusion Tube Results - 2019

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | $NO_2$ Mean Concentrations (µg/m$^3$) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Mean | | |
| | | | | | | | | | | | | | | | Raw Data | Bias Adjusted (0.92) and Annualised (1) | Distance Corrected to Nearest Exposure (2) |
| AQM | 436844 | 292251 | 43.4 | 40.2 | 31.5 | 30.3 | 27.5 | 25.0 | 27.5 | 31.9 | 32.1 | 32.2 | 36.6 | 40.3 | 33.2 | 30.5 | |
| AQM | 436844 | 292251 | 42.2 | 42.0 | 31.4 | 30.6 | 27.3 | | | | | 34.8 | 34.5 | 38.3 | | | |
| NB01 | 435974 | 291304 | 32.0 | 28.3 | 18.2 | 19.8 | 14.6 | 16.4 | 14.1 | 14.7 | 18.9 | 18.9 | 32.2 | 26.7 | 21.2 | 19.5 | |
| NB02 | 436427 | 287646 | 33.3 | 29.5 | 19.1 | 16.8 | 13.8 | 15.3 | 12.5 | 13.8 | 17.0 | 22.3 | 30.3 | 25.7 | 20.8 | 19.1 | |
| NB04 | 435793 | 286545 | 40.6 | 38.9 | 30.4 | 35.7 | 29.9 | 32.3 | 15.4 | 28.7 | 33.5 | 36.0 | 44.6 | 31.1 | 33.1 | 30.4 | |
| NB06 | 434313 | 285292 | 44.7 | 36.1 | 28.9 | 27.3 | 29.0 | 29.3 | 30.5 | 33.1 | 33.1 | 32.1 | 44.1 | 41.2 | 34.1 | 31.4 | |
| NB07 | 435345 | 286992 | 41.3 | 37.6 | 29.8 | 38.0 | 27.5 | 28.4 | 24.1 | 26.8 | 33.4 | 38.7 | 45.4 | 36.4 | 32.9 | 30.3 | |
| NB09 | 435634 | 292280 | 41.3 | 44.1 | 29.3 | 31.4 | 26.5 | 27.4 | 26.2 | 22.0 | 32.1 | 36.5 | 43.7 | 34.2 | 29.6 | 27.2 | |
| NB15 | 436883 | 292302 | 41.5 | 42.2 | 26.5 | 27.1 | 24.5 | 22.2 | 23.5 | 23.5 | 28.1 | 28.9 | 37.1 | 29.7 | 31.2 | 28.7 | |
| NB17 | 436393 | 291987 | 39.6 | 39.6 | 27.6 | 34.0 | 27.3 | 29.1 | 22.6 | 21.1 | 28.5 | 28.5 | 42.9 | 33.0 | 34.8 | 32.0 | |
| NB18 | 436525 | 291863 | 45.4 | 43.0 | 37.5 | 25.7 | 26.9 | 28.1 | 26.6 | 29.5 | 36.1 | 34.8 | 45.7 | 37.7 | 29.4 | 27.1 | |
| NB20 | 436604 | 292202 | 36.5 | 33.9 | 28.2 | 34.2 | 25.0 | 25.0 | 20.7 | 23.9 | 27.8 | 28.6 | 39.3 | 29.9 | 29.7 | 27.3 | |
| NB21 | 436691 | 292271 | 35.9 | 37.5 | 27.3 | 28.5 | 26.5 | 28.8 | 21.4 | 27.8 | 30.0 | 33.0 | | | 27.3 | 25.1 | |
| NB22 | 436810 | 292306 | 33.9 | 37.4 | 23.1 | 26.3 | 21.6 | 23.3 | 18.1 | 21.8 | 24.8 | 30.0 | 32.5 | 34.4 | 34.1 | 31.4 | |
| NB23 | 436841 | 292280 | 42.6 | 40.1 | 35.3 | 25.2 | 29.2 | 33.3 | 28.8 | 31.4 | 32.7 | 35.0 | 38.1 | 37.4 | 26.2 | 24.1 | |
| NB24 | 436812 | 292196 | 35.9 | 31.4 | 25.0 | 22.6 | 22.1 | 22.4 | 19.9 | 21.3 | 23.7 | 28.0 | 33.0 | 29.5 | 33.5 | 30.9 | |
| NB25 | 435814 | 292274 | 43.3 | 38.4 | 33.8 | 25.4 | 27.4 | 30.5 | 27.4 | 32.8 | 32.1 | 33.6 | 38.1 | 39.5 | 31.4 | 28.9 | |

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | $NO_2$ Mean Concentrations (µg/m$^3$) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Mean | | |
| | | | | | | | | | | | | | | | Raw Data | Bias Adjusted (0.92) and Annualised (1) | Distance Corrected to Nearest Exposure (2) |
| NB26 | 435759 | 292311 | 39.8 | 31.9 | 28.9 | 35.4 | 27.2 | 27.7 | 24.7 | 22.6 | 28.1 | 34.8 | 43.0 | 32.3 | 39.6 | 36.4 | |
| NB27 | 435959 | 292098 | 44.4 | 48.0 | 40.0 | 37.6 | 39.5 | 22.9 | 35.6 | 36.5 | 38.2 | 42.2 | 48.2 | 41.9 | 39.2 | 36.1 | |
| NB28 | 435893 | 292205 | 44.7 | 49.4 | 31.9 | 31.7 | 36.6 | 36.7 | 32.5 | 33.5 | 40.3 | 43.7 | 45.5 | 44.2 | 45.1 | **41.4** | |
| NB29 | 435626 | 292343 | 56.5 | 50.1 | 43.5 | 41.2 | 26.6 | 49.0 | 42.2 | 46.3 | 44.3 | 40.6 | 49.6 | 50.8 | 46.6 | **42.9** | |
| NB30 | 435554 | 292378 | 53.4 | 53.2 | 45.8 | 44.4 | 41.5 | 42.3 | 42.2 | 39.3 | 45.9 | 46.1 | 52.2 | 53.5 | 32.0 | 29.4 | |
| NB31 | 435146 | 284563 | 43.5 | 36.9 | 27.4 | 33.3 | 30.3 | 29.9 | 25.0 | 19.3 | 32.1 | 30.0 | 45.1 | 31.2 | 25.3 | 23.2 | |
| NB35 | 439268 | 293457 | 32.7 | 32.5 | 23.4 | 25.8 | 21.8 | 20.7 | 19.2 | 18.8 | 23.5 | 26.0 | 32.9 | 25.9 | 36.7 | 33.7 | |
| NB36 | 435217 | 285246 | 46.5 | 51.8 | 31.1 | 31.5 | 28.2 | 29.3 | 28.3 | 33.4 | 38.5 | 39.4 | 44.0 | 38.4 | 35.4 | 32.6 | |
| NB37 | 435051 | 291594 | 45.6 | 35.9 | 32.9 | 32.8 | 34.4 | 31.3 | 30.1 | 26.1 | 37.7 | 36.2 | 45.6 | 36.8 | 33.9 | 31.2 | |
| NB38 | 437198 | 290732 | 41.5 | 34.7 | 28.8 | 26.5 | 23.3 | 20.7 | 20.7 | 28.5 | 28.0 | 33.1 | 39.7 | 35.4 | 30.1 | 27.7 | |
| NB41 | 435619 | 287042 | 37.3 | 35.3 | 29.2 | 44.7 | 30.9 | 34.5 | 25.7 | 23.4 | 32.6 | 33.8 | 47.3 | 27.3 | 33.5 | 30.8 | |
| NB42 | 435655 | 287135 | 35.6 | 37.7 | 24.3 | 37.5 | 25.1 | 24.9 | 20.2 | 21.9 | 25.4 | 29.9 | 35.8 | 33.6 | 29.3 | 27.0 | |
| NB43 | 436303 | 290796 | 38.1 | 31.6 | 25.7 | 29.8 | 23.4 | 25.6 | 20.5 | 18.2 | 26.4 | 26.3 | 36.0 | 28.6 | 27.5 | 25.3 | |
| NB44 | 434298 | 290930 | 40.9 | 33.0 | 27.4 | 36.7 | 30.9 | 30.1 | 24.7 | | 33.0 | 33.4 | 43.7 | 19.9 | 32.1 | 29.6 | |
| NB45 | 435593 | 290728 | 44.5 | 43.5 | 31.1 | 35.2 | 33.3 | 31.6 | 25.5 | 28.8 | 30.6 | 35.2 | 50.0 | 41.3 | 35.9 | 33.0 | |
| NB46 | 435135 | 290583 | 27.2 | 24.4 | 15.5 | 22.2 | 15.2 | 16.1 | 13.8 | 11.6 | 18.3 | 20.6 | 32.5 | 21.1 | 19.9 | 18.3 | |
| NB47 | 435452 | 290087 | 27.6 | 23.8 | 16.0 | 22.8 | 13.5 | 15.9 | 12.3 | 12.1 | 18.3 | 23.9 | 30.1 | 21.7 | 19.8 | 18.2 | |
| NB48 | 435066 | 290689 | 31.1 | 31.2 | 23.0 | 23.8 | 19.4 | 21.4 | 19.6 | 18.2 | 24.7 | 24.9 | 33.1 | 29.7 | 25.0 | 23.0 | |
| NB49 | 435231 | 285236 | 42.6 | 39.7 | 25.2 | 26.4 | 25.4 | 28.3 | 24.3 | 30.2 | 31.5 | 33.7 | 41.8 | 35.1 | 32.0 | 29.4 | |
| NB50 | 435201 | 285198 | 47.5 | 40.2 | 29.1 | 26.2 | 26.1 | 30.3 | 25.2 | 30.9 | 30.7 | 39.7 | 41.6 | 39.9 | 33.9 | 31.2 | |
| NB51 | 435638 | 292357 | 43.6 | 38.2 | 26.1 | 27.8 | 22.7 | 35.0 | 21.4 | 22.5 | 22.0 | | 38.4 | 33.9 | 30.2 | 27.7 | |

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | $NO_2$ Mean Concentrations (µg/m$^3$) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Mean | | |
| | | | | | | | | | | | | | | | Raw Data | Bias Adjusted (0.92) and Annualised (1) | Distance Corrected to Nearest Exposure (2) |
| NB52 | 436147 | 290868 | | | 29.8 | 39.0 | 30.1 | 36.3 | 25.2 | 30.8 | 35.2 | 39.6 | 44.4 | 42.2 | 35.3 | 32.4 | |

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☒ **Annualisation has been conducted where data capture is <75%**

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

**Notes:**

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

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

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance correction not required as no tubes within 10% of AQO at sites not representative of exposure.

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

## Diffusion Tube Monitoring Data

The diffusion tube data has been corrected using a bias adjustment factor, which is an estimate of the difference between diffusion tube concentration and continuous monitoring, the latter assumed to be a more accurate method of monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from $NO_x/NO_2$ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method. With regard to the application of a bias adjustment factor for diffusion tubes, the Defra Technical Guidance LAQM.TG(16) and the LAQM Helpdesk recommend the use of a local bias adjustment factor where available and relevant to diffusion tube sites.

## Diffusion Tube Bias Adjustment Factors

At the end of 2016, the roadside automatic monitoring station located at Leicester Road was decommissioned, hence Nuneaton and Bedworth Borough Council does not currently undertake any automatic monitoring to derive a local bias adjustment factor. Nuneaton and Bedworth Borough Council diffusion tube monitoring is analysed using the 20% TEA in water method by Gradko. As a result of this the national bias adjustment factor approach was taken and calculated to be 0.92 (based on 30 studies) as derived from the national bias adjustment calculator (Spreadsheet Version Number: 06/20). The spreadsheet is shown below in Figure C.4.

The previous five years have used the below bias adjustment factors:

### Table C.1 Previous Years' Bias Adjustment Factors

| Year | Local or National | Bias Adjustment Factor |
|---|---|---|
| 2015 | National | 0.91 |
| 2016 | National | 0.88 |
| 2017 | National | 0.94 |
| 2018 | National | 0.89 |
| 2019 | National | 0.93 |

The National Bias Adjustment factor of 0.92 was applied to the 2019 monitoring data which is considered consistent with previous years' reporting.

## Figure C.4 Bias Adjustment

**National Diffusion Tube Bias Adjustment Factor Spreadsheet** — Spreadsheet Version Number: 06/20

Follow the steps below in the correct order to show the results of relevant co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of September 2020

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

**Step 1:** Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

**Step 2:** Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

**Step 3:** Select a Year from the Drop-Down List

If a year is not shown, we have no data[2]

**Step 4:**

Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution.
Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

| Analysed By[1] | Method (To undo your selection, choose (All) from the pop-up list) | Year[2] (To undo your selection, choose (All)) | Site Type | Local Authority | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) (µgm⁻³) | Automatic Monitor Mean Conc. (Cm) (µgm⁻³) | Bias (B) | Tube Precision | Bias Adjustment Factor (A) (Cm/Dm) |
|---|---|---|---|---|---|---|---|---|---|---|
| Gradko | 20% TEA in water | 2019 | R | Blackburn with darwen Borough Council | 10 | 29 | 21 | 36.9% | G | 0.73 |
| Gradko | 20% TEA in water | 2019 | R | Cheshire West and Chester | 12 | 39 | 38 | 2.0% | G | 0.98 |
| Gradko | 20% TEA in water | 2019 | R | Cheshire West and Chester | 11 | 34 | 34 | -2.1% | G | 1.02 |
| Gradko | 20% TEA in water | 2019 | R | Gedling Borough Council | 12 | 32 | 30 | 7.3% | G | 0.93 |
| Gradko | 20% TEA in water | 2019 | R | NOTTINGHAM CITY COUNCIL | 10 | 37 | 40 | -7.0% | G | 1.07 |
| Gradko | 20% TEA in water | 2019 | R | Bedford Borough Council | 11 | 29 | 29 | -1.0% | G | 1.01 |
| Gradko | 20% TEA in water | 2019 | R | Bedford Borough Council | 12 | 37 | 32 | 13.0% | G | 0.89 |
| Gradko | 20% TEA in water | 2019 | KS | Marylebone Road Intercomparison | 12 | 85 | 65 | 30.1% | G | 0.77 |
| Gradko | 20% TEA in water | 2019 | R | Borough Council of King's Lynn and West Nc | 9 | 27 | 21 | 28.4% | G | 0.78 |
| Gradko | 20% TEA in water | 2019 | R | Lancaster City Council | 13 | 40 | 34 | 16.4% | G | 0.86 |
| Gradko | 20% TEA in water | 2019 | R | Lancaster City Council | 12 | 31 | 31 | 1.6% | G | 0.98 |
| Gradko | 20% TEA in Water | 2019 | R | Monmouthshire County Council | 12 | 39 | 39 | 1.3% | G | 0.99 |
| Gradko | 20% TEA in water | 2019 | R | Dudley MBC | 12 | 33 | 32 | 4.5% | G | 0.96 |
| Gradko | 20% TEA in water | 2019 | R | Dudley MBC | 12 | 44 | 42 | 3.9% | G | 0.96 |
| Gradko | 20% TEA in water | 2019 | UB | Dudley MBC | 12 | 23 | 19 | 19.8% | G | 0.83 |
| Gradko | 20% TEA in water | 2019 | UB | Eastleigh Borough Council | 12 | 24 | 26 | -7.1% | G | 1.08 |
| Gradko | 20% TEA in water | 2019 | R | Gateshead Council | 12 | 34 | 27 | 23.7% | P | 0.81 |
| Gradko | 20% TEA in water | 2019 | R | Gateshead Council | 11 | 40 | 44 | -10.5% | G | 1.12 |
| Gradko | 20% TEA in water | 2019 | R | Gateshead Council | 10 | 32 | 34 | -7.2% | G | 1.08 |
| Gradko | 20% TEA in water | 2019 | R | Gateshead Council | 12 | 30 | 25 | 18.1% | G | 0.85 |
| Gradko | 20% TEA in water | 2019 | R | Thurrock Borough Council | 12 | 29 | 24 | 21.6% | G | 0.82 |
| Gradko | 20% TEA in water | 2019 | R | Brighton & Hove City Council | 11 | 45 | 46 | -1.3% | G | 1.01 |
| Gradko | 20% TEA in water | 2019 | R | Belfast City Council | 12 | 40 | 33 | 21.0% | G | 0.83 |
| Gradko | 20% TEA in water | 2019 | R | Belfast City Council | 12 | 44 | 45 | -2.2% | G | 1.02 |
| Gradko | 20% TEA in water | 2019 | R | Belfast City Council | 12 | 28 | 26 | 5.4% | G | 0.95 |
| Gradko | 20% TEA in water | 2019 | UB | Southampton City Council | 12 | 30 | 28 | 8.6% | G | 0.92 |
| Gradko | 20% TEA in water | 2019 | UB | Liverpool City Council | 12 | 20 | 19 | 1.7% | G | 0.98 |
| Gradko | 20% TEA in water | 2019 | R | Ards and North Down Borough Council | 12 | 33 | 25 | 31.1% | G | 0.76 |
| Gradko | 20% TEA in water | 2019 | R | Eastleigh Borough Council | 12 | 25 | 26 | -3.3% | G | 1.03 |
| Gradko | 20% TEA in water | 2019 | R | Lisburn & Castlereagh City Council | 12 | 28 | 22 | 28.3% | G | 0.78 |
| Gradko | 20% TEA in water | 2019 | | **Overall Factor[3] (30 studies)** | | | | Use | | 0.92 |

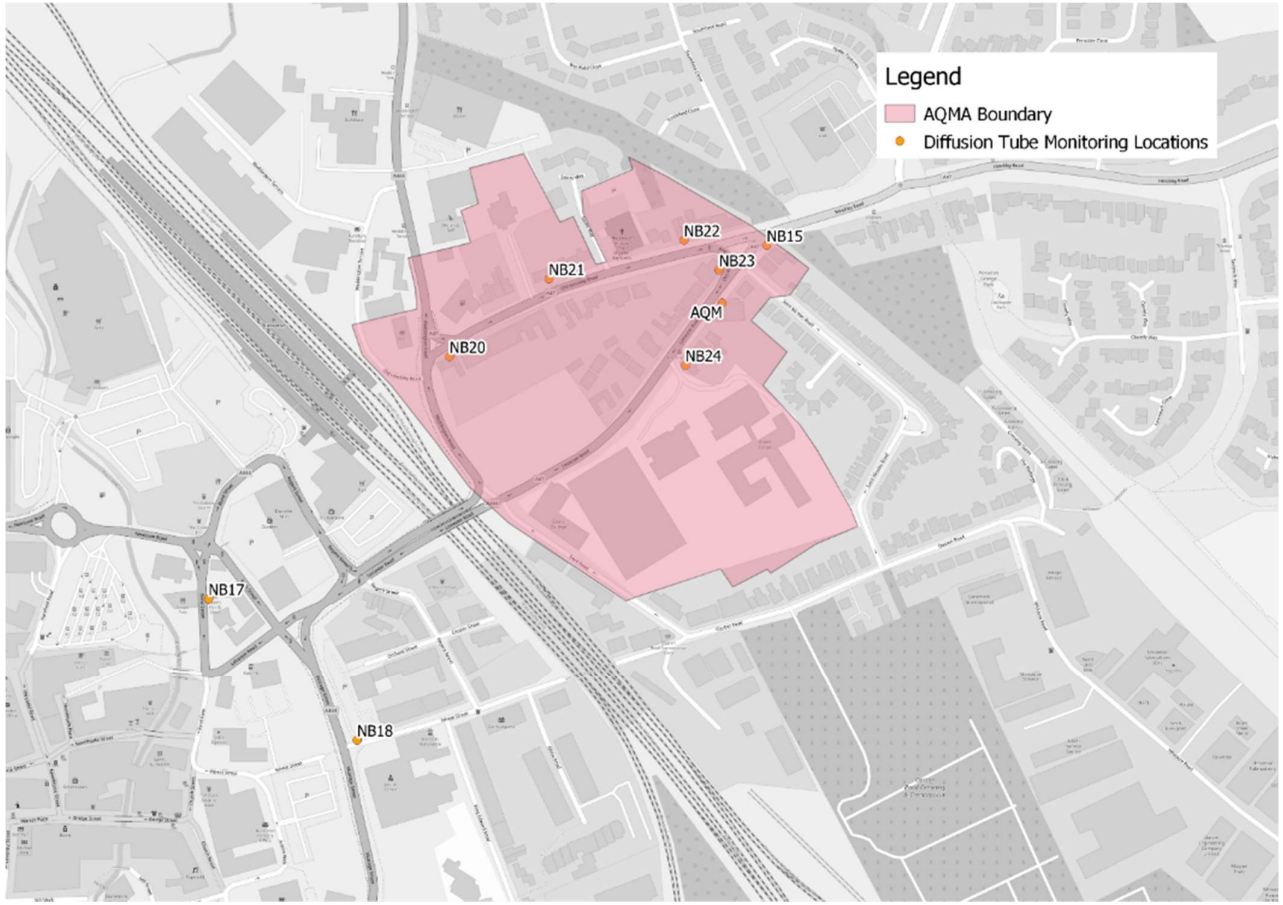
## QA/QC of Diffusion Tube Monitoring

The diffusion tubes for 2019 were supplied and analysed by Gradko using the 20% TEA in water preparation method. All results have been bias adjusted where required before being presented in Table A.3. Gradko is a UKAS accredited laboratory and participates in the new AIR-PT Scheme (a continuation of the Workplace Analysis Scheme for Proficiency (WASP)) for $NO_2$ tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring $NO_2$ concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance In the latest available AIR-PT results, AIR-PT Rounds 24 to 34 (January 2018 to November 2019), AIR-PT Rounds 22 to 33 (September 2017 to August 2019), AIR-PT Rounds 21 to 31 (July 2017 to May 2019) and AIR-PT Rounds 19 to 30 (April 2017 to February 2019). Gradko has scored 100% on all results in 2019 apart from AirPT AR030 (Jan - Feb 2019) which scored 75%. The percentage score reflects the results deemed to be satisfactory based upon the z-score of < ± 2. All Local Authority co-location studies in 2019 were rated as 'good' (tubes are considered to have "good"

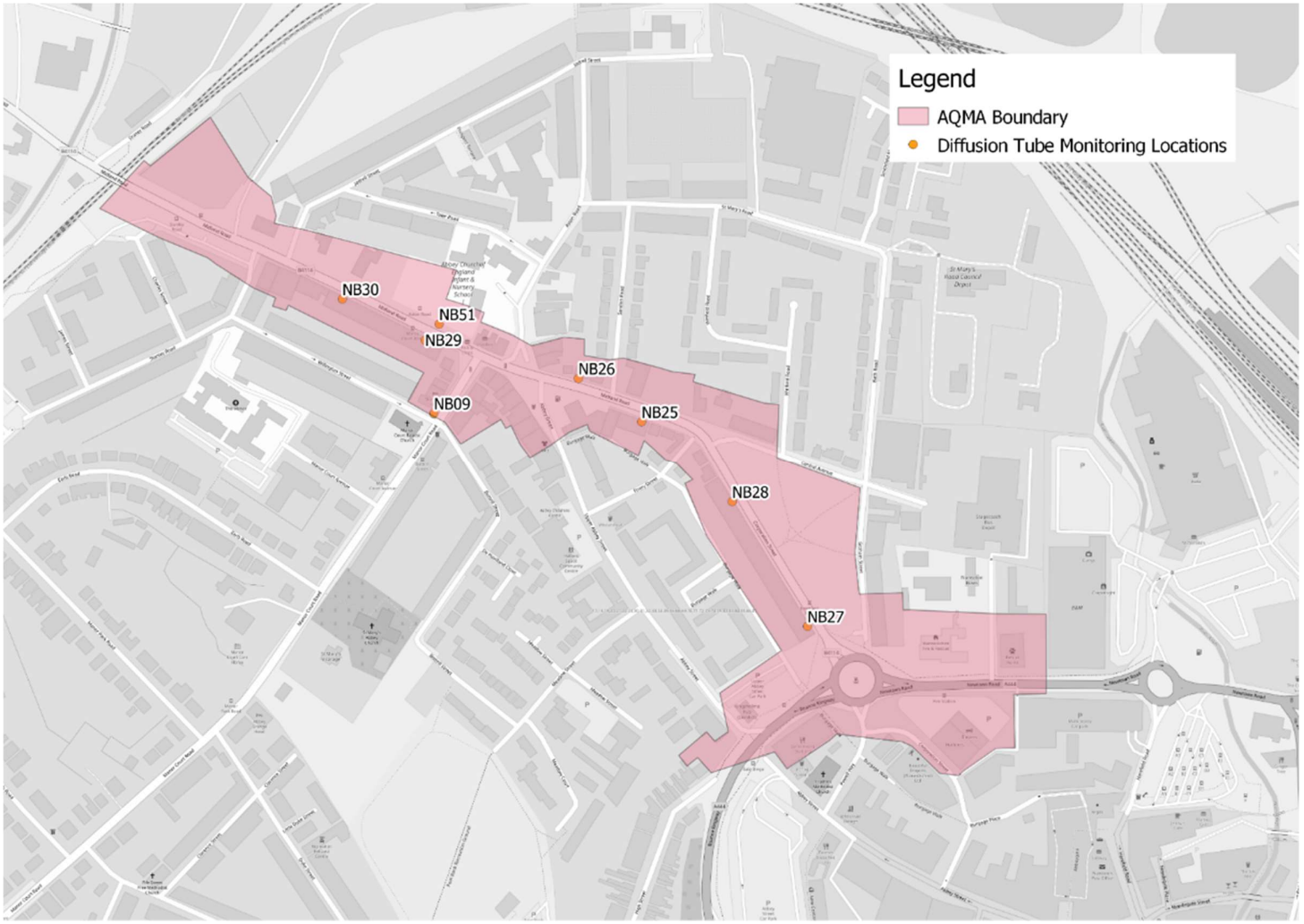
precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%).

# Appendix D: Maps of Monitoring Locations and AQMAs

## Figure D.1 Monitoring Locations - Leicester Road Gyratory AQMA (AQMA 1)



## Figure D.2 Monitoring Locations - Midland Road/Corporation Street AQMA (AQMA 2)



## Figure D.3 Monitoring Locations - South Nuneaton

## Figure D.4 Monitoring Location NB35

## Figure D.5 Monitoring Locations - Bedworth

# Appendix E: Summary of Air Quality Objectives in England

### Table E.1 – Air Quality Objectives in England

| Pollutant | Air Quality Objective[8] | |
|---|---|---|
| | Concentration | Measured as |
| Nitrogen Dioxide ($NO_2$) | 200 µg/m$^3$ not to be exceeded more than 18 times a year | 1-hour mean |
| | 40 µg/m$^3$ | Annual mean |
| Particulate Matter ($PM_{10}$) | 50 µg/m$^3$, not to be exceeded more than 35 times a year | 24-hour mean |
| | 40 µg/m$^3$ | Annual mean |
| Sulphur Dioxide ($SO_2$) | 350 µg/m$^3$, not to be exceeded more than 24 times a year | 1-hour mean |
| | 125 µg/m$^3$, not to be exceeded more than 3 times a year | 24-hour mean |
| | 266 µg/m$^3$, not to be exceeded more than 35 times a year | 15-minute mean |

[8] The units are in microgrammes of pollutant per cubic metre of air (µg/m$^3$).

# Glossary of Terms

| Abbreviation | Description |
|---|---|
| AQAP | Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values' |
| AQMA | Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives |
| ASR | Air quality Annual Status Report |
| Defra | Department for Environment, Food and Rural Affairs |
| DMRB | Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England |
| 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 (micrometres or microns) or less |
| $PM_{2.5}$ | Airborne particulate matter with an aerodynamic diameter of 2.5µm or less |
| QA/QC | Quality Assurance and Quality Control |
| $SO_2$ | Sulphur Dioxide |
| WCC | Warwickshire County Council |
| N&BBC | Nuneaton and Bedworth Borough Council |

# References


- Local Air Quality Management Technical Guidance LAQM.TG(16). February 2018. 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.PG(16). May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- National Diffusion Tube Bias Adjustment Spreadsheet, version 03/19 published in March 2019.
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- Nuneaton and Bedworth Borough Council 2019 Annual Status Report.
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