[Borough Name] Air Quality Annual Status Report for 2021

Date of publication: [Date]

|  |
| --- |
| **INSTRUCTIONS – Please Read**  This is the full Annual Status Report for submission to the GLA by 31st May 2022.  This summary report, compiled and published in 2022, reports on air quality in your borough during 2021.  The Red text indicates where boroughs need to fill in information.  The Blue text specifies instructions and/or placeholders’ further information.  The following list is provided to assist local authorities in understanding the most frequent issues noted by the GLA during the ASR appraisal process:   * Outdated national bias adjustment factor used – If a national factor is to be used the most up to date [National Bias Adjustment Spreadsheet](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/) should be used to source the relevant bias adjustment factor. * Incorrect methodology used to complete annualisation – The [LAQM annualisation tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/annualisation-tool/) should be used to complete annualisation. * Erroneous monthly diffusion tube data included within annual mean calculations; data should be removed as per Chapter 4 of LLAQM.TG19 * Distance correction – should only be completed for monitoring sites where the concentration is greater than 36µg m-3 and the receptor is not located at a point of relevant exposure * Insufficient detail provided regarding the progress of action plan measures, completion of Table J * Monitoring and AQMA maps – these should be clear and accurate   When completing the annual report, the local authority should ensure all these points have been completed, where relevant, correctly to reduce the likelihood of report rejection at the appraisal stage.  **This box and all instructions should be deleted when the document is finished.** |



|  |
| --- |
| **ACCESSIBILTY INSTRUCTIONS**  This 2021 reporting template has been developed to comply with the [Accessibility Regulations (2018)](https://www.legislation.gov.uk/uksi/2018/952/made). Instructions are provided throughout the template as a steer to ensuring that the completed ASR remains compliant with Accessibility Regulations, with the key points to adhere to summarised as follows:   * Make hyperlinks accessible - the text used for hyperlinks should describe where people will go if they click that link * Follow the template heading styles - important to define the content hierarchy and use the correct heading style at the right time * Avoid using ‘tab’ or ‘enter’ to create spaces between text/sections, utilise page/section breaks * Use the tables within the template. If any additional tables are required, ensure these are formatted correctly and a summary of the table is provided within the accompanying text (N.B. alt text added to tables does not save if the document is converted to a pdf):   + Ensure the top row is selected as the ‘header row’   + Avoid the use of merged or split cells   + The table should read logically from left to right and top to bottom * When inserting trend graphs/charts ensure that colour combinations relevant to colour blindness are avoided * Add alt text to charts or pictures inserted within the report that do not have a corresponding summary written directly above or below the chart * Text should be aligned to the left and not justified   If saving the document as a PDF it is recommended that the ‘Create bookmarks using’ option with the sub-option of ‘Headings’ is selected. Although not an explicit requirement in terms of accessibility, this will ensure your document is easy to read and navigate.  **Delete this box when the document is finished** |

This report provides a detailed overview of air quality in [Borough Name] during 2021. It has been produced to meet the requirements of the London Local Air Quality Management (LLAQM) statutory process[[1]](#footnote-1).

**Contact details:**

AQ officer/department contact details to be added

**Contents**

|  |
| --- |
| **INSTRUCTIONS**  This is the start of main body of the ASR, which should contain all the detailed technical information.  Please:   * Update Table of Contents and List of Tables and List of Figures on completion of report (select within text below> right click > update field>Update Entire Table) * If any figures are added please add a List of Figures matching the existing format * Include hyperlinks in the PDF version   **Delete this box when the document is finished** |

[Abbreviations 7](#_Toc95382067)

[1. Air Quality Monitoring 9](#_Toc95382068)

[1.1 Locations 9](#_Toc95382069)

[1.2 Comparison of Monitoring Results with AQOs 11](#_Toc95382070)

[2. Action to Improve Air Quality 19](#_Toc95382071)

[2.1 Air Quality Action Plan Progress 19](#_Toc95382072)

[3. Planning Update and Other New Sources of Emissions 21](#_Toc95382073)

[3.1 New or significantly changed industrial or other sources 22](#_Toc95382074)

[4. Additional Activities to Improve Air Quality 23](#_Toc95382075)

[4.1 London Borough of [Borough Name] Fleet 23](#_Toc95382076)

[4.2 NRMM Enforcement Project 23](#_Toc95382077)

[4.2 Air Quality Alerts 23](#_Toc95382078)

[Appendix A Details of Monitoring Site Quality QA/QC 24](#_Toc95382079)

[A.1 Automatic Monitoring Sites 24](#_Toc95382080)

[A.2 Diffusion Tubes 24](#_Toc95382081)

[A.3 Adjustments to the Ratified Monitoring Data 26](#_Toc95382082)

[Appendix B Full Monthly Diffusion Tube Results for 2021 30](#_Toc95382083)

**Tables**

[Table A. Summary of National Air Quality Standards and Objectives 8](#_Toc95382118)

[Table B. Details of Automatic Monitoring Sites for 2021 9](#_Toc95382119)

[Table C. Details of Non-Automatic Monitoring Sites for 2021 10](#_Toc95382120)

[Table D. Annual Mean NO2 Ratified and Bias-adjusted Monitoring Results 11](#_Toc95382121)

[Table E. NO2 Automatic Monitoring Results: Comparison with 1-hour Mean Objective, Number of 1-Hour Means > 200 μg m-3 (If available. If not, this section can be deleted) 13](#_Toc95382122)

[Table F. Annual Mean PM10 Automatic Monitoring Results (μg m-3) (If available. If not, this section can be deleted) 14](#_Toc95382123)

[Table G. PM10 Automatic Monitoring Results: Comparison with 24-Hour Mean Objective, Number of PM10 24-Hour Means > 50 μg m-3 (If available. If not, this section can be deleted) 15](#_Toc95382124)

[Table H. Annual Mean PM2.5 Automatic Monitoring Results (μg m-3) (If available. If not, this section can be deleted) 16](#_Toc95382125)

[Table I. 2021 SO2 Automatic Monitoring Results: Comparison with Objectives (If available. If not, this section can be deleted) 17](#_Toc95382126)

[Table J. Delivery of Air Quality Action Plan Measures 19](#_Toc95382127)

[Table K. Planning requirements met by planning applications in [Borough Name] in 2021 21](#_Toc95382128)

[Table L. Bias Adjustment Factor 25](#_Toc95382129)

[Table M. Short-Term to Long-Term Monitoring Data Adjustment 27](#_Toc95382130)

[Table N. NO2 Fall off With Distance Calculations 28](#_Toc95382131)

[Table O. NO2 Diffusion Tube Results 30](#_Toc95382132)

# Abbreviations

| **Abbreviation** | **Description** |
| --- | --- |
| AQAP | Air Quality Action Plan |
| AQMA | Air Quality Management Area |
| AQO | Air Quality Objective |
| BEB | Buildings Emission Benchmark |
| CAB | Cleaner Air Borough |
| EV | Electric Vehicle |
| GLA | Greater London Authority |
| LAEI | London Atmospheric Emissions Inventory |
| LAQM | Local Air Quality Management |
| LLAQM | London Local Air Quality Management |
| NRMM | Non-Road Mobile Machinery |
| PM10 | Particulate matter less than 10 micron in diameter |
| PM2.5 | Particulate matter less than 2.5 micron in diameter |
| TEB | Transport Emissions Benchmark |
| TfL | Transport for London |
|  |  |

Table A. Summary of National Air Quality Standards and Objectives

| **Pollutant** | **Standard / Objective (UK)** | **Averaging Period** | **Date(1)** |
| --- | --- | --- | --- |
| Nitrogen dioxide (NO2) | 200 μg m-3 not to be exceeded more than 18 times a year | 1-hour mean | 31 Dec 2005 |
| Nitrogen dioxide (NO2) | 40 μg m-3 | Annual mean | 31 Dec 2005 |
| Particles (PM10) | 50 μg m-3 not to be exceeded more than 35 times a year | 24-hour mean | 31 Dec 2004 |
| Particles (PM10) | 40 μg m-3 | Annual mean | 31 Dec 2004 |
| Particles (PM2.5) | 20 μg m-3 | Annual mean | 2021 |
| Particles (PM2.5) | Target of 15% reduction in concentration at urban background locations | 3-year mean | Between 2010 and 2021 |
| Sulphur dioxide (SO2) | 266 μg m-3 not to be exceeded more than 35 times a year | 15-minute mean | 31 Dec 2005 |
| Sulphur dioxide (SO2) | 350 μg m-3 not to be exceeded more than 24 times a year | 1-hour mean | 31 Dec 2004 |
| Sulphur dioxide (SO2) | 125 μg m-3 mot to be exceeded more than 3 times a year | 24-hour mean | 31 Dec 2004 |

**Notes:**

(1) Date by which to be achieved by and maintained thereafter

# Air Quality Monitoring

|  |
| --- |
| **INSTRUCTIONS**  Within this section it is obligatory to complete all tables with monitoring data if you have monitors for the specified pollutants. It is not obligatory to include narrative on trends or any graphs, although you are encouraged to do so if you wish.  **Delete this box when the document is finished** |

1.1 Locations

Table B. Details of Automatic Monitoring Sites for 2021

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Site ID** | **Site Name** | **X (m)** | **Y (m)** | **Site Type** | **In AQMA? If so, which AQMA?** | **Distance to Relevant Exposure (m)** | **Distance to Kerb of Nearest Road (N/A if not applicable) (m)** | **Inlet height (m)** | **Pollutants monitored** | **Monitoring technique** |
| A1 (example) | XX | 500500 | 100100 | Roadside | Y/N | 10 | 10 | 1.5 | NO2, PM10 | Chemiluminescent;  FDMS |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |

Table C. Details of Non-Automatic Monitoring Sites for 2021

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Site ID** | **Site Name** | **X (m)** | **Y (m)** | **Site Type** | **In AQMA? If so, which AQMA?** | **Distance to Relevant Exposure (m)** | **Distance to Kerb of Nearest Road (N/A if not applicable) (m)** | **Inlet height (m)** | **Pollutants monitored** | **Tube co-located with an automatic monitor.**  **(Y/N)** |
| DT1 (example) | High Street | 500500 | 100100 | Roadside | Y/N | 10 | 10 | 1.5 | NO2 | Y/N |
|  |  |  |  |  |  |  |  |  |  |  |

1.2 Comparison of Monitoring Results with AQOs

The results presented are after adjustments for “annualisation” and for distance to a location of relevant public exposure (if required), the details of which are described in [Appendix A](#_Appendix_A_Details).

Table D. Annual Mean NO2 Ratified and Bias-adjusted Monitoring Results

| **Site ID** | **Site type** | **Valid data capture for monitoring period %(a)** | **Valid data capture 2021 %(b)** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A1 (example) | Automatic | 95 | 95 | **61.0** | **48.1** | **45.0** | **44.1** | **43.2** | 35.1 | 26.3 |
| A2 (example) | Diffusion tube |  |  |  |  |  |  |  |  |  |

**Notes:**

The annual mean concentrations are presented as μg m-3.

Exceedances of the NO2 annual mean AQO of 40 μg m-3 are shown in **bold**.

NO2 annual means in excess of 60 μg m-3, indicating a potential exceedance of the NO2 hourly mean AQS objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias.

All means have been “annualised” in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.

Results have been distance corrected where applicable.

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

(b) data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

Option to include some narrative on the 7-year trend here. If trend charts are added ensure these adhere to accessibility regulations.

Table E. NO2 Automatic Monitoring Results: Comparison with 1-hour Mean Objective, Number of 1-Hour Means > 200 μg m-3 (If available. If not, this section can be deleted)

| **Site ID** | **Valid data capture for monitoring period %(a)** | **Valid data capture 2021 %(b)** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A1 (example) | 95 | 95 | 10 | **19** | 11 | 12 | 15 | **19** | 11 |
| A2 (example) | 65 | 65 | - | - | - | - | 15 (185) | **25** | **16 (275)** |

**Notes**

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

Exceedance of the NO2 short term AQO of 200 μg m-3 over the permitted 18 hours per 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.

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

(b) Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

Option to include some narrative on the 7-year trend here. If trend charts are added ensure these adhere to accessibility regulations.

Table F. Annual Mean PM10 Automatic Monitoring Results (μg m-3) (If available. If not, this section can be deleted)

| **Site ID** | **Valid data capture for monitoring period %(a)** | **Valid data capture 2021 %(b)** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A1 (Example) | 95 | 95 | 35 | 37 | 35 | 37 | 35 | 37 | **41** |

**Notes**

The annual mean concentrations are presented as μg m-3.

Exceedances of the PM10 annual mean AQO of 40 μg m-3 are shown in **bold**.

All means have been “annualised” in accordance with LLAQM Technical Guidance, if valid data capture is less than 75% and more than 25%.

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

(b) Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

Option to include some narrative on the 7-year trend here. If trend charts are added ensure these adhere to accessibility regulations.

Table G. PM10 Automatic Monitoring Results: Comparison with 24-Hour Mean Objective, Number of PM10 24-Hour Means > 50 μg m-3 (If available. If not, this section can be deleted)

| **Site ID** | **Valid data capture for monitoring period %(a)** | **Valid data capture 2021 %(b)** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A1 (Example) | 95 | 95 | 10 | **36** | 10 | **36** | 10 | **36** | 11 |
| A2 (Example) | 65 | 65 | - | - | - | - | 28 **(52)** | **38** | 28 (30) |

**Notes**

Exceedances of the PM10 24-hour mean objective (50 μg m-3 over the permitted 35 days per year) are shown in **bold.**

Where the period of valid data is less than 85% of a full year, the 90.4th percentile is provided in brackets.

(a) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

(b) data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

Option to include some narrative on the 7-year trend here. If trend charts are added ensure these adhere to accessibility regulations.

Table H. Annual Mean PM2.5 Automatic Monitoring Results (μg m-3) (If available. If not, this section can be deleted)

| **Site ID** | **Valid data capture for monitoring period %(a)** | **Valid data capture 2021 %(b)** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A1 (Example) | 95 | 95 | - | - | - | - | **26** | 19 | 18 |

**Notes**

The annual mean concentrations are presented as μg m-3.

Exceedances of the PM2.5 annual mean AQO of 20 μg m-3 are shown in **bold**.

All means have been “annualised” in accordance with LLAQM Technical Guidance, if valid data capture is less than 75% and more than 25%.

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

(b) Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

Option to include some narrative on the 7-year trend here. If trend charts are added ensure these adhere to accessibility regulations.

Table I. 2021 SO2 Automatic Monitoring Results: Comparison with Objectives (If available. If not, this section can be deleted)

|  |
| --- |
| **INSTRUCTIONS**  The table should address whether there are:   * >35 15-minute means greater than 266 μg m-3? (Or if the period of valid data is less than 85% of a full year, is the 99.9th percentile of 15-minute means greater than this value) * >24 1-hour means greater than 350 μg m-3? (Or if the period of valid data is less than 85% of a full year, is the 99.7th percentile of 1-hour means greater than this value?) * >3 24-hour means greater than 125 μg m-3? (Or if the period of valid data is less than 85% of a full year, is the 99.2th percentile of 24-hour means greater than this value?)   Ensure that the monitoring site locations are representative of relevant public exposure.  Exceedances of the relevant SO2 AQOs objectives (or relevant percentiles if data capture is less than 85% for a full year) should be highlighted in **bold.**  **Delete this box when the document is finished** |

| **Site ID** | **Valid data capture for monitoring period %(a)** | **Valid data capture 2021 %(b)** | **Number of 15-minute means > 266 μg m-3** | **Number of 1-hour mean > 350 μg m-3** | **Number 24-hour mean > 125 μg m-3** |
| --- | --- | --- | --- | --- | --- |
| A1 (Example) | 95 | 95 | 10 | **1** | 0 |
| A2 (Example) | 65 | 65 | 1 | 0 | 0 |

**Notes**

Results are presented as the number of instances where monitored concentrations are greater than the objective concentration.

Exceedances of the SO2 objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year).

If the period of valid data is less than 85%, the relevant percentiles are provided in brackets.

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

(b) Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

Results for only 2021 are presented in Table I, but there is the option to include some narrative on the 7-year trend here. If trend charts are added ensure these adhere to accessibility regulations.

# Action to Improve Air Quality

2.1 Air Quality Action Plan Progress

Table J provides a brief summary of [Borough Name] progress against the Air Quality Action Plan, showing progress made this year. New projects which commenced in 2021 are shown at the bottom of the table (where applicable).

Table J. Delivery of Air Quality Action Plan Measures

|  |
| --- |
| **INSTRUCTIONS**  Please complete the table below or add your own table if preferred. Reporting on progress against your action plan is mandatory.  Table J has been updated to include the ‘Theme’ of the AQAP measures as depicted within the LLAQM Borough Air Quality Action Matrix. Please complete this column referencing each AQAP to the relevant ‘Theme’. The matrix is available [here](https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/working-london-boroughs).  If you have any new actions related to the new PM2.5 role, please include them in the table below, if you have any new policies, objectives or targets related to PM2.5 please include some brief narrative about them here.  **Delete this box when the document is finished** |

| **Measure** | **LLAQM Action Matrix Theme** | **Action** | **Progress**   * Emissions/Concentration data * Benefits * Negative impacts / Complaints   <Include emissions data and KPIs where possible. Please include recently completed projects as well as any new projects (which have commenced since you last reviewed your AQAP)> |
| --- | --- | --- | --- |
| 1.1 | Monitoring and other core statutory duties | Undertake short-term monitoring survey using low-cost sensors to provide diurnal NO2 monitoring concentrations. |  |
| 2.1 | Emissions from developments and buildings | Completing spot checks on construction sites within the borough. |  |
| 3.1 | Public health and awareness raising | Promoting walking and cycling within all schools within the borough. |  |
| 4.1 | Delivery servicing and freight | Reducing emissions from deliveries to local businesses and residents. |  |
| 5.1 | Borough fleet | Reducing emissions from council fleets. |  |
| 6.1 | Localised solutions | Expanding and improving green infrastructure. |  |
| 7.1 | Cleaner transport | Using parking policy to reduce pollution emissions. |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# Planning Update and Other New Sources of Emissions

|  |
| --- |
| **INSTRUCTIONS**  This section is mandatory.  For the questions relating to Planning Applications it simply requires totals of the numbers of conditions that have been formally recommended for incoming Planning Applications. No further detail is required and it is not necessary to provide any detail on whether the application was accepted or whether the development has commenced.  However, For NRMM, in addition to including information on the number of Planning conditions, please also include basic enforcement information, as per the example below.  **Delete this box when the document is finished** |

Table K. Planning requirements met by planning applications in [Borough Name] in 2021

| **Condition** | **Number**  <Please complete all fields in this column with the total numbers> |
| --- | --- |
| Number of planning applications where an air quality impact assessment was reviewed for air quality impacts |  |
| Number of planning applications required to monitor for construction dust |  |
| Number of CHPs/Biomass boilers refused on air quality grounds |  |
| Number of CHPs/Biomass boilers subject to GLA emissions limits and/or other restrictions to reduce emissions |  |
| Number of developments required to install Ultra-Low NOx boilers |  |
| Number of developments where an AQ Neutral building and/or transport assessments undertaken |  |
| Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation |  |
| Number of planning applications with S106 agreements including other requirements to improve air quality |  |
| Number of planning applications with CIL payments that include a contribution to improve air quality |  |
| **NRMM: Central Activity Zone and Canary Wharf**  Number of conditions related to NRMM included.  Number of developments registered and compliant.  Please include confirmation that you have checked that the development has been registered with the GLA through the relevant [NRMM website](https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/nrmm) and that all NRMM used on-site is compliant with Stage IIIB of the Directive and/or exemptions to the policy. | e.g.  12 conditions included  6 registered and compliant  2 unregistered/uncompliant and being chased. |
| **NRMM: Greater London (excluding Central Activity Zone and Canary Wharf)**  Number of conditions related to NRMM included.  Number of developments registered and compliant.  Please include confirmation that you have checked that the development has been registered through the [NRMM webpage](https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/nrmm) and that all NRMM used on-site is compliant with Stage IIIA of the Directive and/or exemptions to the policy. | e.g.  12 conditions included  6 registered and compliant  2 unregistered/uncompliant and being chased. |

If possible (this is not mandatory, but would be very much appreciated), please briefly describe the processes you have in place to ensure that all relevant planning applications are reviewed and any air quality conditions, including NRMM conditions, are enforced.

3.1 New or significantly changed industrial or other sources

Please list any new sources here. Or state “No new sources identified” if relevant.

# Additional Activities to Improve Air Quality

4.1 London Borough of [Borough Name] Fleet

Please provide details of how many a) zero emission and b) zero emission capable vehicles there are within the borough’s fleet, and what percentage of the fleet these represent.

4.2 NRMM Enforcement Project

Please confirm that the borough is continuing to support the NRMM Enforcement project in 2022 – 23.

4.2 Air Quality Alerts

Please provide details as to whether the borough support [*air*TEXT](https://www.airtext.info/) or, if not, which other direct alerts service is supported.

# Appendix A Details of Monitoring Site Quality QA/QC

A.1 Automatic Monitoring Sites

Describe briefly the frequency of routine calibrations and periodic site audits and who carries these out (LA or contractor) (if applicable). Are there any issues to be highlighted?

PM10 Monitoring Adjustment

Please describe any adjustments made to Particulate Matter monitoring data e.g. correction factors applied to BAM data or use of VCM to correct TEOM data.

A.2 Diffusion Tubes

Details of QA/QC for diffusion tubes should include:

* Lab supplying and analysing the tubes
* Preparation method used
* Confirmation that the lab follows the procedures set out in the Practical Guidance
* Results of laboratory [precision](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/precision-and-accuracy/) and [AIR-PT](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/qa-qc-framework/) results
* Bias adjustment factor from the [National Bias Adjustment Factor Spreadsheet](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/). Please ensure you confirm the version of the database used (this can be found in the upper right-hand part of the spreadsheet)
* Whether the Local Authority has compared the diffusion tubes with the reference method in a co-location study (details of this can be included as a sub-section or appendix)
* The bias adjustment factor being applied to the annual means from the diffusion tubes
* Where this came from – i.e. local co-location

Information on QA/QC for diffusion tubes can be found on the [LAQM website](https://laqm.defra.gov.uk/annual-reporting/).

Give the bias adjustment factors for the previous years included in the body of the report – but do not give the full calculation for the previous years.

Factor from Local Co-location Studies (if available)

Provide annual means and bias for each site – including type of site location.

Local authorities are encouraged to share co-location information with other authorities. The questionnaire for adding your own co-location study to the database is available on the [LAQM website](https://laqm.defra.gov.uk/air-quality/annual-reporting/co-location-data/).

Please complete and return the co-location questionnaire to ensure your monitoring data is considered for inclusion in the database of bias adjustment factors provided by the LAQM Helpdesk. This should be done as soon as possible to ensure the database is updated in advance of report submission.

Discussion of Choice of Factor to Use

If both local and national Bias Adjustment Factors are available please state which has been used and the reasons for the choice, also describing the impact of this choice (e.g. whether the factor used is conservative). Complete Table L with a history of adjustment factors used to help support and expand upon the choice of factor used.

Table L. Bias Adjustment Factor

|  |  |  |  |
| --- | --- | --- | --- |
| Year | Local or National | If National, Version of National Spreadsheet | Adjustment Factor |
| 2021 | National | 06/22 | 1.08 |
| 2020 | National | 09/21 | 1.07 |
| 2019 | National | 06/20 | 1.05 |
| 2018 | National | 03/19 | 1.01 |
| 2017 | Local | - | 0.88 |
| 2016 | Local | - | 0.88 |
| 2015 | Local | - | 0.88 |

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

Where data capture is less than 75% and greater than 25% of a full calendar year (between 3 and 9 months), the mean should be “annualised” – i.e. adjusted using the methodology outlined in LLAQM.TG(19) before being compared to annual mean objectives.

It is recommended that Table M is completed using the outputs from the LAQM [annualisation tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/annualisation-tool/). The tool should be used to ensure the correct methodology for the annualisation off diffusion tubes is utilised.

If the LAQM data processing tool as not been used please enter the relevant data into the table below or replace this table with one presenting the relevant details of annualisation.

Distance Adjustment

If an exceedance is measured at a monitoring site which is not representative of public exposure, use the procedure specified in LLAQM.TG(19) to estimate the concentration at the nearest receptor and describe the process followed here. It is recommended that Table N is completed using the outputs from the [NO2 fall off with distance tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/no2-falloff/).

Table M. Short-Term to Long-Term Monitoring Data Adjustment

|  |
| --- |
| **INSTRUCTIONS**  Both automatic and non-automatic annualisation results should be included within Table M.  For diffusion tube annualisation please enter the annualisation outputs from the LAQM annualisation tool within the table below. The [annualisation tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/annualisation-tool/) should be used to ensure the correct methodology for annualisation is utilised. If the LAQM data processing tool as not been used please enter the relevant data into the table below or replace this table with one presenting the relevant details of annualisation.  If less than four background sites have been used to annualise the relevant boxes can be left blank or a dash added (-). Any relevant comments should be added within the comments column.  This table should be deleted if annualisation has not been required at any site.  **Delete this box when the document is finished** |

| Site ID | Annualisation Factor Site 1 Name | Annualisation Factor Site 2 Name | Annualisation Factor Site 3 Name | Annualisation Factor Site 4 Name | Average Annualisation Factor | Raw Data Annual Mean (µg m-3) | Annualised Annual Mean (µg m-3) | Comments |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A1 (Example) |  |  |  |  |  |  |  |  |
| A2 (Example) |  |  |  |  |  |  |  |  |

Table N. NO2 Fall off With Distance Calculations

|  |
| --- |
| **INSTRUCTIONS**  Please enter the outputs from the LAQM [NO2 Fall-Off with Distance Calculator](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/no2-falloff/) within the table below. The calculator should be used to ensure the correct methodology for NO2 concentration fall off.  The limitations tab within the calculator should be referred to ensure only relevant sites are included within the calculator.  Please ensure the correct distances are utilised within the calculator:   * The distance from monitoring site to kerb is presented within Table B and Table C (Distance to kerb of nearest road) * The distance from receptor to kerb is the sum of Distance to kerb of nearest road and Distance from monitoring site to Relevant Exposure from Table B and Table C.   Any comments output from the calculator should be added within the comments column.  This table should be deleted if distance correction has not been completed at any site.  **Delete this box when the document is finished** |

| Site ID | Distance (m): Monitoring Site to Kerb | Distance (m): Receptor to Kerb | Monitored Concentration (Annualised and Bias Adjusted (µg m-3) | Background Concentration (µg m-3) | Concentration Predicted at Receptor (µg m-3) | Comments |
| --- | --- | --- | --- | --- | --- | --- |
| A1 (Example) |  |  |  |  |  |  |
| A2 (Example) |  |  |  |  |  |  |

# Appendix B Full Monthly Diffusion Tube Results for 2021

Table O. NO2 Diffusion Tube Results

|  |
| --- |
| **INSTRUCTIONS**  Please fill in Table O with details of NO2 diffusion tube monitoring results.  This should contain:   * Full month by month raw data (state if different exposure periods from the suggested [monitoring calendar](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-monitoring-calendar/) available via the LAQM website. * The raw data annual mean * The bias adjusted annual mean – This should also be an annualised annual mean if data capture is below 75% but greater than 25%.   The following erroneous data should have been excluded when processing the monthly diffusion tube data for the monitoring year, therefore should not be included within Table O:   * Results that have been identified as contaminated during analysis, e.g. insect(s) or dirt contained within the tube * Extreme low or high concentrations as detailed within Chapter 4, Part 2: NOx and NO2 Monitoring of the [Technical Guidance LLAQM.TG16](https://laqm.defra.gov.uk/guidance/) * Results from tubes that have been exposed past the laboratory’s use by date   **Please delete this box when the document is finished** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Site ID** | **Valid data capture for monitoring period %(a)** | **Valid data capture 2021 %(b)** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **June** | **Jul** | **Aug** | **Sept** | **Oct** | **Nov** | **Dec** | **Annual mean – raw data** | **Annual mean – bias adjusted** |
| DT1 | 95 | 95 | 26.2 | **42.1** | XX | XX | XX | XX | XX | 26.3 | XX | XX | XX | XX | XX | XX |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Notes**

Concentrations are presented as μg m-3.

Exceedances of the NO2 annual mean AQO of 40 μg m-3 are shown in **bold**.

NO2 annual means in excess of 60 μg m-3, indicating a potential exceedance of the NO2 hourly mean AQS objective are shown in **bold and underlined**.

All means have been “annualised” in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.

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

(b) data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

1. LLAQM Policy and Technical Guidance 2019 (LLAQM.TG(19)) [↑](#footnote-ref-1)