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| **INSTRUCTIONS – PLEASE READ**  This is the Annual Status Report (ASR) for submission to Defra by **30 June** of each calendar year.  This template is divided into two main sections. The first, entitled “Overview of Air Quality in Our Area” provides a public-facing summary and should contain a brief overview of the state of local air quality. The rest of the document should contain the detailed technical information supporting the conclusions presented in this summary.  Whilst use of this template is mandatory, this approach does not preclude the flexibility to provide detailed or extra analysis where this has taken place. For instance, appendices may be adjoined to the ASR.  **PLEASE NOTE:**  There is a mandatory requirement for local authorities to submit their NO2 diffusion tube data to the [LAQM Portal](https://www.laqmportal.co.uk/login) via the Diffusion Tube Data Entry System (DTDES) upload facility. This submission should be completed once all monitoring data for 2021 has been processed. The [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/) has been developed to assist local authorities in processing NO2 diffusion tube monitoring data. It provides an output table which can be directly uploaded via the DTDES. If not using the processing tool, a [template](https://laqm.defra.gov.uk/air-quality/annual-reporting/annual-status-report-templates-england-exc-london/) for submitting the data is available from the LAQM website.   * [LAQM Portal](https://laqm.defra.gov.uk/laqm-portal/) * [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/)   To avoid duplication of works, there is no longer a requirement to submit electronic copies of ASR tables A.2, A.4 and B.1 relating to diffusion tubes as part of the separate ASR Excel template data return. This data will be accessible to Defra through the LAQM Portal. **Note, there is still a requirement to submit all other data tables electronically as part of the separate ASR Excel template data return.**  Local authorities are required to submit the Excel file with all relevant tables completed via the LAQM Portal, in addition to a MS Word or PDF copy of the completed ASR.  **It is advised that local authorities complete the Excel based tables first, before then copying the relevant completed tables in to the Word ASR template, as any inconsistencies between data tables may result in the submission being rejected.** If particular tables are not relevant to the local authority, the reasons as to why should be indicated via the drop-down menus at the top of each Table tab.  Where a conglomerate of authorities work together on air quality management, it is permissible to submit a single ASR on behalf of all the authorities, subject to Defra notification and approval.  Blue boxes provide instructions and/or further information to help local authorities complete the report. These boxes should be **deleted** before submitting the report.  Red text indicates an example or where the local authority needs to fill in information. Once the required information has been completed the font colour should be amended to match that of the body text.  **Delete this box when the document is finished** |

[Insert Local Authority Logo Here]

2022 Air Quality Annual Status Report (ASR)

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

Date: June, 2022

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| **ACCESSIBILTY INSTRUCTIONS**  This 2022 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.  Further guidance in terms of publishing accessible documents can be found through the following on the [.gov.uk website](https://www.gov.uk/guidance/publishing-accessible-documents). If the ASR is to be published on your authority website, it is recommended that the ASR is checked by your content team to ensure compliance.  **Delete this box when the document is finished** |

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| Information | <Local Authority Name> Details |
| **Local Authority Officer** | Enter Name(s) Here |
| **Department** | Enter Department Name |
| **Address** | Enter Address |
| **Telephone** | Enter Telephone |
| **E-mail** | Enter Email Address |
| **Report Reference Number** | Enter Report Reference |
| **Date** | Enter Date of Report |

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| **INSTRUCTIONS**  Please update the header information on this page.  The following list is provided to assist local authorities in understanding the most frequent issues noted by Defra during the ASR appraisal process:   * Outdated national bias adjustment factor used – if a national factor is to be used please ensure the relevant factor from the most up to date version of the [National Bias Adjustment Factor Spreadsheet](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/) is adopted. * Incorrect methodology used to complete annualisation – the [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/) can be used to complete annualisation to minimise the likelihood of processing errors and can export files suitable for upload to the [LAQM Portal](https://www.laqmportal.co.uk/login). The [Annualisation Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/annualisation-tool/) is also still available. * Erroneous monthly diffusion tube data included within annual mean calculations - data should be removed as per Chapter 7: NOx and NO2 Monitoring, NO2 by Diffusion Tubes of [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) * Distance correction - should only be completed for monitoring sites where the concentration is greater than 36µg/m3 and the receptor is not located at a point of relevant exposure * Insufficient detail provided regarding the progress of action plan measures - insufficient detail provided within Table 2.2 * Monitoring and AQMA maps - these should be clear and accurate   Adequately addressing the above points will minimise the likelihood of your report being rejected at the appraisal stage.  **Delete this box when the document is finished** |

# Executive Summary: Air Quality in Our Area

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| **INSTRUCTIONS**  Please summarise the main findings and conclusions of the report here. This should include (but is not limited to, as could include other information you consider important):   * Key news/headlines about how you’ve improved air quality in your area * Current challenges/priorities for addressing air quality in your area * How the public is or can get involved – e.g. walk, don’t drive; anti-idling, car sharing etc. * 1-2 pictures of air quality initiatives in your area, if possible   This section is designed to inform those living and working in your area about the state of local air quality. It is intended to be understood by those not familiar with the technical details of LAQM. Local authorities are (as a minimum) mandated to make this section available on their website to help promote air quality locally.  This summary should also briefly outline progress on the actions that you and others, including the public, are taking or should take to improve air quality and associated health impacts. This is an opportunity to indicate whether any changes are required to your Action Plans.  Any supplementary information related to air quality that the public may find useful can also be included here.  **Delete this box when the document is finished** |

## Air Quality in <Local Authority Name>

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[[1]](#footnote-2),[[2]](#footnote-3).

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[[3]](#footnote-4), with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[[4]](#footnote-5).

Include a brief summary of the main air quality issues in your local area – what are the main pollutants of concern, **what are the observed trends shown by the latest monitoring data (e.g. are levels going up or down?) and are these in line with national trends**, where are the current AQMAs or hotspots (including a link to your [AQMA webpage](https://uk-air.defra.gov.uk/aqma/list)), any new major sources of emissions. Include the introduction of any new AQMAs, Action Plans or strategies. Briefly explain how your local authority works to manage local air quality and how you work with your partners, e.g. County Council, Public Health, Environment Agency.

## Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[[5]](#footnote-6) sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero[[6]](#footnote-7) sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Include a brief summary of core actions (and in particular good practice examples, success stories or lessons learned) to target sources of pollution within your area over the past reporting year. Has the implementation of measures or any recent actions resulted in a change in monitoring concentrations? Detail which partnership organisations you are collaborating with to achieve delivery of actions. Indicate any quantitative improvements from actions taken (if known) and include a summary of progress on any grant funded projects.

## Conclusions and Priorities

Summarise the conclusions from this year’s ASR, and the main actions to be taken moving forward. This can include, but is not limited to, discussion of the following:

* Were exceedances identified, within and outside of existing AQMAs?
* What were the significant trends?
* Are all monitoring results within existing AQMAs below the air quality objective, such that it may be appropriate to revoke the AQMA?
* Are there any monitoring results in excess of the air quality objectives outside of any existing AQMAs, therefore leading to either an AQMA amendment or the designation of a new AQMA?
* Are there any new developments that will have an impact on air quality moving forward?

Is there a need to update the Air Quality Action Plan? It should be made clear what the priorities are for the local authority in addressing air quality for the coming year and briefly set out any challenges anticipated.

## Local Engagement and How to get Involved

Include text that addresses how the local authority has engaged with decision makers and the public and what the current level of interest and understanding is. Also include a brief note on how the public can help improve air quality in your area, any action groups, and where they can obtain further information.

## Local Responsibilities and Commitment

This ASR was prepared by the <Environmental Health Department> of <Local Authority Name> Council with the support and agreement of the following officers and departments:

List officers/departments involved in the preparation of the ASR

This ASR has been approved by:

<Details of high level Council members who have approved the ASR (This could also include support from County Councils or from National Highways where appropriate) e.g. Head of Transport Planning, Head of Public Health, with e-signature>.

<Amend as appropriate> This ASR has/has not been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to <report author> at:

Address

Telephone

Email

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# Local Air Quality Management

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| **INSTRUCTIONS**  The following section is a summary of the LAQM regime in England. Please update your Local Authority’s name and the year as appropriate.  **Delete this box when the document is finished** |

This report provides an overview of air quality in <Local Authority Name> during <year>. 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 <Local Authority Name> to improve air quality and any progress that has been made.

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

# Actions to Improve Air Quality

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| **INSTRUCTIONS**  This section provides information relating to AQMAs (Section 2.1), and actions to improve air quality in these areas/in general (Sections 2.2 and 2.3).  Details and maps of AQMAs should be available on [UK Air](https://uk-air.defra.gov.uk/aqma/list).  **Please make sure you review the maps and associated information on the website and ensure these are accurate and up-to-date**. **If the AQMA maps should need updating, please submit the required changes via the** [**LAQM Portal**](https://laqm.defra.gov.uk/laqm-portal/)**. For declarations and amendments, an up-to-date shapefile of the AQMA(s) will be required as part of the submission.**  Please fill out Table 2.1 with additional information pertaining to each AQMA in your area and ensure the table is summarised within the text.  An additional map including all monitoring locations relative to these AQMA(s) must also be included in [Appendix D](#_Appendix_E:_Map(s)), so that monitoring results within each AQMA can be easily identified. Even if no AQMA has been declared, a map of monitoring locations should be included in [Appendix D](#_Appendix_E:_Map(s)).  If one or more AQMAs have been declared and an AQAP has been published, please provide in Section 2.2 details on progress made to implement each of the AQAP measures. Please also indicate when any relevant AQAPs were developed and/or most recently updated in Table 2.1. Where an AQAP is in development, please indicate if this is currently within its draft or final stage, providing an anticipated publication date.  If no AQMA is declared, but a relevant document such as an Air Quality Strategy has been prepared, you should provide details within the free text and provide link(s) to the relevant document(s).  If action on air quality is being addressed through other plans, e.g. through the development and implementation of Local NO2 Plans, Local Transport Plans or climate change strategies, please indicate here with links and any progress.  If any information does not fit within Table 2.2, please provide further information below the table including:   * Key actions completed, in progress or planned since last year, and outcomes in terms of benefits for air quality * Any difficulties encountered / why measures have not been progressed, and if measures have slipped, how this will be addressed * Forecast progress up to next year’s ASR * An indication of main funding sources for the measures, e.g. if the local authority has acquired a Defra Air Quality Grant   Local authorities in England no longer have a mandatory requirement to report on 1,3-Butadiene, Benzene, Carbon Monoxide and Lead, but if you have decided to report on these pollutants then state clearly which pollutant(s) and why.  In Section 2.2, please also indicate what conclusions have been brought forward from last year’s appraisal and actioned in this ASR.  In Section 2.3, local authorities are now asked to work towards reducing levels of PM2.5 (fine particulates). You should use this section to briefly set out how your authority has decided to do this, why and what measures are being taken – further information is provided in LAQM policy and technical guidance.  **Delete this box when the document is finished** |

## Air Quality Management Areas

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

**Amend the following as necessary:**

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

* NO2 annual mean;
* PM10 24-hour mean;
* …

Or:

<Local Authority Name> currently does not have any declared AQMAs.

Add text if necessary: We propose to declare a new AQMA in <x> area due to exceedances of the <NO2 annual mean/PM10 24-hour mean/…> air quality objective(s) (see monitoring/additional information section).

Add text if necessary: We propose to amend <AQMA Name> (see monitoring/additional section).

Add text if necessary: We propose to revoke <AQMA Name> (see monitoring/additional section).

Table 2.1 – Declared Air Quality Management Areas

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| **INSTRUCTIONS**  Please fill in Table 2.1 as per the following:   * AQMA Name = Official declared name of AQMA. * Date of Declaration = The date of the original declaration, and of any subsequent amendments. Revoked AQMAs do not require inclusion within Table 2.1, however they may be discussed within Section 2.1. * Pollutants and Air Quality Objectives = The pollutant for which the AQMA is declared, and the objective for that pollutant against which it is declared. If an AQMA is declared for multiple pollutants and/or objectives, please include details of each pollutant/objective on a new row. * One Line Description = A brief description of the characteristics and location of the AQMA. * Is air quality within the AQMA influenced by National Highways roads? = Yes/No. This may include emissions from Motorways, Urban Expressways, Dual carriageways, major trunk roads. * Level of Exceedance = Highest pollutant concentration and/or number of exceedances at point of relevant exposure, i.e. following NO2 fall off with distance correction (if applicable). The units presented should be relevant to the AQMA designation, i.e. for an AQMA designated for 1-hour the units should be hours (x hours were concentrations exceeded 200µg/m3):   + At Declaration – Monitored/modelled information that led to a declaration.   + Now – Latest Monitored/modelled information of current situation in AQMA for that pollutant. * Name of AQAP and Date of Designation = Name/Title of action plan and the date it was published. * Web Link to AQAP = Where relevant, include a link to where the public can attain this plan. Ensure this hyperlink is completed to meet accessibility standards.   **Delete this box when the document is finished** |

| AQMA Name | Date of Declaration | Pollutants and Air Quality Objectives | One Line Description | Is air quality in the AQMA influenced by roads controlled by National Highways? | Level of Exceedance: Declaration | Level of Exceedance: Current Year | | Name and Date of AQAP Publication | Web Link to AQAP |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AQMA Name 1 | Declared <Date>, Amended <Date> | Select | E.g. An area encompassing a number of properties at the junction of road 1 and road 2. | YES/NO | 50µg/m3 | | 42µg/m3 | E.g. AQAP for AQMA 1, May 2010 | Visit the AQAP for AQMA Name 1 |
| AQMA Name 2 | Declared <Date>, Amended <Date> | Select | E.g. An area encompassing a number of properties at the junction of road 1 and road 2. | YES/NO | 25 Hours | | 19 Hours | E.g. AQAP for AQMA 2, May 2015 | Visit the AQAP for AQMA Name 2 |
| AQMA Name 3 | Declared <Date>, Amended <Date> | Select | E.g. An area encompassing residential properties near <industrial facility>. The AQMA was further extended in April 2013 to include residential properties along road name 2. | YES/NO | 65 Days | | 35 Days | E.g. AQAP for AQMA 3, May 2021 | Visit the AQAP for AQMA Name 3 |

**CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE**

**<Local Authority> confirm the information on UK-Air regarding their AQMA(s) is up to date (confirm by selecting in box).**

**<Local Authority> confirm that all current AQAPs have been submitted to Defra (confirm by selecting in box).**

## Progress and Impact of Measures to address Air Quality in <Local Authority Name>

Defra’s appraisal of last year’s ASR concluded <Insert main comments from previous appraisal and indicate how these have been addressed this year. This can be inserted as a bullet point list with responses detailed>.

<Local Authority Name> has taken forward a number of direct measures during the current reporting year of <Year> in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. <xx> measures are included within Table 2.2, with the type of measure and the progress <Local Authority Name> have made during the reporting year of <Year> presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans <insert names of other plans or strategies if appropriate>. Key completed measures are: <set out bullet of main measures below and any key outcomes from these – keep text brief>.

Amend as appropriate:

<Local Authority Name> expects the following measures to be completed over the course of the next reporting year: <set out measures and brief explanation of expected impact of these measures>. <Local Authority Name>’s priorities for the coming year are <set out briefly with explanation>.

<Local Authority Name> worked to implement these measures in partnership with the following stakeholders during 2021:

* E.g. Neighbouring local authorities;
* The Highways Authority;
* etc

The principal challenges and barriers to implementation that <Local Authority Name> anticipates facing are <set out briefly with explanation>.

Progress on the following measures has been slower than expected due to: <insert explanation>.

Delete as appropriate:

<Local Authority Name> anticipates that the measures stated above and in Table 2.2 will achieve compliance in <AQMA Name(s)>.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, <Local Authority Name> anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of <AQMA Name(s)>.

Table 2.2 – Progress on Measures to Improve Air Quality

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| **INSTRUCTIONS**  Please fill in Table 2.2 (Progress on Measures to Improve Air Quality) below to reflect each measure implemented as per the following:   * Measure = Detail the name of the measure * Category = Select the Measure Category from the available options (detailed below) * Classification = Select the Measure Classification from the available options (detailed below) * Year Measure Introduced = Input the year the measure was initially developed, select between 2012 - 2022 * Estimated / Actual Completion Year = Input the estimated/actual completion year for the measure, select between 2021 - 2032 * Organisation(s) Involved = List the organisations that are involved with the delivery of the measure, e.g. Local Authority/County Council/AQ Alliance/Community Group/Private Company * Funding Source = Detail where the funding for the measure is to/has been sourced from * Defra AQ Grant Funding = Has funding from the Defra AQ Grant been secured for the measure, Yes/No * Funding Status = Select from Funded/Not Funded/Partially Funded * Estimated Cost of Measure = Select from < £10k/£10k - £50k/£50k - £100k/£100k - £500k/£500k - £1m/£1m - £10m/ > £10m * Measure Status = Select from Aborted/Planning/Implementation/Completed * Reduction in Pollutant / Emission from Measure = Provide an estimate in terms of concentration or emission reduction that is predicted to occur due to the measure being implemented. This can also relate to the area where the measure is designed to impact upon, e.g. significantly reduce the levels of Heavy Good Vehicles * Key Performance Indicator = Detail how the success of the measure is to be constantly presented and reviewed * Progress to Date = Provide a summary of the progress for implementing the measure * Barriers to Implementation = Provide details of any barriers that have been experienced during the implementation of the measure   **The expected efficacy of measures should be clearly provided. This may be presented either by listing measures in rank order (i.e. the most effective measure first, least effective measure last) or through the adoption of a colour-coded approach (e.g. measures highlighted green most effective, red least effective, etc).**  An ASR Excel template is provided to assist in the production of this table and must be electronically submitted as part of the ASR submission process.  The “Measure Category” and “Measure Classification” columns should be populated based on the following options, to be consistent with the National Air Quality Plans:   |  |  | | --- | --- | | **Measure Category** | **Measure Classification** | | Alternatives to private vehicle use | Bus based Park & Ride | | Car & lift sharing schemes | | Car Clubs | | Rail based Park & Ride | | Other | | Environmental Permits | Introduction/increase of environment charges through permit systems and economic instruments | | Introduction/increase of environmental funding through permit systems and economic instruments | | Large Combustion Plant Permits and National Plans going beyond BAT | | Measures to reduce pollution through IPPC Permits going beyond BAT | | Other measure through permit systems and economic instruments | | Tradable permit system through permit systems and economic instruments | | Other | | Freight and Delivery Management | Delivery and Service plans | | Freight Consolidation Centre | | Freight Partnerships for city centre deliveries | | Quiet & out of hours delivery | | Route Management Plans/ Strategic routing strategy for HGV's | | Other | | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | | Low Emissions Strategy | | Other policy | | Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality | | Sustainable Procurement Guidance | | Promoting Low Emission Plant | Emission control equipment for small and medium sized stationary combustion sources / replacement of combustion sources | | Low Emission Fuels for stationary and mobile sources in Public Procurement | | Other measure for low emission fuels for stationary and mobile sources | | Public Procurement of stationary combustion sources | | Regulations for fuel quality for low emission fuels for stationary and mobile sources | | Shift to installations using low emission fuels for stationary and mobile sources | | Other Policy | | Promoting Low Emission Transport | Company Vehicle Procurement -Prioritising uptake of low emission vehicles | | Low Emission Zone (LEZ) | | Priority parking for LEVs | | Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging | | Public Vehicle Procurement -Prioritising uptake of low emission vehicles | | Taxi emission incentives | | Taxi Licensing conditions | | Other | | Promoting Travel Alternatives | Encourage / Facilitate home-working | | Intensive active travel campaign & infrastructure | | Personalised Travel Planning | | Promote use of rail and inland waterways | | Promotion of cycling | | Promotion of walking | | School Travel Plans | | Workplace Travel Planning | | Other | | Public Information | Via leaflets | | Via other mechanisms | | Via radio | | Via television | | Via the Internet | | Other | | Traffic Management | Anti-idling enforcement | | Emission based parking or permit charges | | Reduction of speed limits, 20mph zones | | Road User Charging (RUC)/ Congestion charging | | Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane | | Testing Vehicle Emissions | | UTC, Congestion management, traffic reduction | | Workplace Parking Levy, Parking Enforcement on highway | | Other | | Transport Planning and Infrastructure | Bus route improvements | | Cycle network | | Public cycle hire scheme | | Public transport improvements-interchanges stations and services | | Other | | Vehicle Fleet Efficiency | Driver training and ECO driving aids | | Fleet efficiency and recognition schemes | | Promoting Low Emission Public Transport | | Testing Vehicle Emissions | | Vehicle Retrofitting programmes | | Other |   **Delete this box when the document is finished** |

| Measure No. | Measure | Category | Classification | Year Measure Introduced | Estimated / Actual Completion Year | Organisations Involved | Funding Source | Defra AQ Grant Funding | Funding Status | Estimated Cost of Measure | Measure Status | Reduction in Pollutant / Emission from Measure | Key Performance Indicator | Progress to Date | Comments / Barriers to Implementation |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Title | Select from the available categories | Select from the available classifications | 2019 | 2019 | Local Authority Environmental Health, Local Authority Transport Dept, . | Developers & highway infrastructure funding | No | Fully funded | £100k - £500k | Implemented | 2% | % of x.. | Funding secured, planning phase | Lengthy Timescale |
| 2 | Title | Select from the available categories | Select from the available classifications | - | 2022 | Local Authority Environmental Health, Local Authority Transport Dept. | Defra and LA | Yes | Partially funded | £15000 - £20000 | Planning | 0.2µg/m3 | # of y.. | Implementation on-going | Funding |
| 3 | Title | Select from the available categories | Select from the available classifications | - | - | Local Authority Environmental Health, Local Authority Transport Dept. | N/A | No | - | > £1m | Discontinued | Reduced vehicle emissions | Measured Concentration at z… | Implementation on-going | First phase successful, second phase on-going |

**CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE**

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

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| --- |
| **INSTRUCTIONS**  Briefly set out how you have chosen to interpret the requirement to work towards reducing PM2.5 in your local area as set out in LAQM Policy Guidance and why. This can include information regarding any smoke control areas in your local area, and measures being implemented within these.  Please then set down any measures that you are taking or planning and whether they have links to the Public Health Outcomes Framework. This information is accessible through the [Public Health Outcomes Framework](https://fingertips.phe.org.uk/profile/public-health-outcomes-framework).  Further guidance is available under the PM2.5 and Action Planning section of [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/technical-guidance/index.html) (Chapter 2).  In the absence of PM2.5 monitoring, and where a local authority carries out PM10 monitoring, it is recommended to consult Chapter 7: Estimating PM2.5 from PM10 measurements of [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/technical-guidance/index.html) in order to include an estimate of PM2.5 concentrations.  In the absence of PM2.5 monitoring and where a local authority does not undertake PM10 monitoring, the current [Defra background mapping resource](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/background-maps/) should be used to provide maximum background annual mean PM2.5 concentrations within the Local Authority.  **Delete this box when the document is finished** |

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM2.5 (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM2.5 has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

<Local Authority Name> is taking the following measures to address PM2.5: <insert text – include whether new or existing measures (please refer to specific number of measures in the Progress Report on Action Plans in the section above) that may also be addressing other pollutants as well and any partnership working. Can also include information regarding Smoke Control Areas.>

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

|  |
| --- |
| **INSTRUCTIONS**  Please include a brief summary of monitoring data in this section, with an explanation of any changes in the past 12 months and if those changes have led to the declaration of an AQMA, a decision to amend or revoke an AQMA, or informed an appropriate local strategy.  Also include the level of exceedance in comparison with national objectives. The tabular details should be supplied in an Appendix and/or link. In addition, local authorities should consider adding a graph to demonstrate historic trends in the monitoring data.  **To improve transparency, local authorities with AQMAs may wish to consider aligning the presentation of monitoring information in this section with the individual AQMAs.**  If changes have led to a decision to declare an AQMA, please indicate whether you are moving to immediate declaration (i.e. Fast Track AQMA declaration) or whether you have decided to seek additional evidence before declaration; and indicate what that is and the timescales (taking into account LAQM Guidance). Any additional evidence supporting the declaration should be provided in [Appendix C.](#_Appendix_C:_Supporting)  If any change to your monitoring strategy has been made during the past 12 months or is planned, briefly set out here and explain why.  Please ensure that at least one clearly labelled map of all monitoring locations within any AQMA (showing the AQMA boundary), is included in [Appendix D](#_Appendix_E:_Map(s)) with monitoring site IDs consistent with those provided in the relevant tables in [Appendix A](#_Appendix_A:_Monitoring) Table A.1 Table A.3 and should be populated to include the details of all automatic (continuous) monitoring only. Table A.2 and Table A.4 should be populated to include the details of all non-automatic monitoring only.  Local automatic (continuous) monitoring site data is now available from Defra’s UK-Air website for most local authorities. More information on the available data and how to add your automatic monitoring data is available on [UK Air](https://uk-air.defra.gov.uk/networks/network-info?view=nondefraaqmon).  **Delete this box when the document is finished** |

This section sets out the monitoring undertaken within <Year> by <Local Authority Name> and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

## Summary of Monitoring Undertaken

### Automatic Monitoring Sites

<Local Authority Name> undertook automatic (continuous) monitoring at <X> sites during <year>. Table A.1 in [Appendix A](#_Appendix_A:_Monitoring) shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The <please insert hyperlink> page presents automatic monitoring results for <Local Authority Name>, with automatic monitoring results also available through the [UK-Air website](https://uk-air.defra.gov.uk/interactive-map) .

Maps showing the location of the monitoring sites are provided in [Appendix D](#_Appendix_E:_Map(s)). Further details on how the monitors are calibrated and how the data has been adjusted are included in [Appendix C](#_Appendix_C:_Supporting).

### Non-Automatic Monitoring Sites

<Local Authority Name> undertook non- automatic (i.e. passive) monitoring of NO2 at <X> sites during <Year>. Table A.2 in [Appendix A](#_Appendix_A:_Monitoring) presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in <Appendix D/or external; link>. 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](#_Appendix_C:_Supporting).

## Individual Pollutants

|  |
| --- |
| **INSTRUCTIONS**  It is recommended to include trend data over a five-year period, showing any increasing or decreasing trends (five years data is usually considered the minimum necessary to identify a significant trend). Trend graph figure captions for each pollutant have been included. Any apparent trends in this data should be discussed. When trends/results are presented in a graph, please indicate clearly in the graph the relevant objectives for that pollutant so that conclusions can be drawn easily by members of the public. Charts should be presented using a colour-blind friendly palette and Alt text would need to be added to each chart to ensure compliance with [Accessibility Regulations](https://www.gov.uk/guidance/publishing-accessible-documents).  **Delete this box when the document is finished** |

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

### Nitrogen Dioxide (NO2)

|  |
| --- |
| **INSTRUCTIONS**  Comment on whether there are exceedances of the air quality objectives for NO2 and whether they occur within or outside AQMAs.  Guidance presented in Chapter 7: NOx and NO2 Monitoring, NO2 by Diffusion Tubes of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed for the calculation of both annual mean concentration and 1-hour concentrations.  If a concentration is above or within 10% of the annual mean air quality objective for NO2 but was measured at a monitoring site which is not representative of public exposure, please use the procedure specified in Chapter 7: Fall-off in NO2 Concentrations with Distance from the Road of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/)LAQM.TG16 to estimate the concentration at the nearest receptor, and discuss these results.  To help with consistency of approach to processing diffusion tube monitoring data a specific [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/) has been developed which should be used to process all diffusion tube data. The tool has been developed to calculate annual mean concentrations for the diffusion tube monthly data entered and amalgamates the following individual LAQM processing tools:   * Annualisation tool; * Precision and accuracy tool – calculation of local bias; and * NO2 fall off with distance calculator.   In regard to diffusion tube data to include within the ASR, the data for following tables can be output from the relevant tabs tool in the same format as within the ASR:   * Table A.2 – Tab: Table A.2 * Table A.4 – Tab: Table A.4 * Table B.1 – Tab: Annual Results Summary * Table C.2 – Tab: Annualisation Summary * Table C.3 – Tab: Step 3 - Bias Adjustment * Table C.4 – Tab: Step 4 - Fall off with Distance   Any questions relating to the use of the tool should be directed to the LAQM Helpdesk.  Note, there is a requirement for local authorities to submit their NO2 diffusion tube data to the [LAQM Portal](https://www.laqmportal.co.uk/login) via the DTDES upload facility. The [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/) has been developed to assist local authorities in processing NO2 diffusion tube monitoring data. It provides an output table which can be directly uploaded via the DTDES.  Any questions relating to the use of any LAQM tool should be directed to the LAQM Helpdesk.  Table A.3 should be populated to include all relevant automatic monitoring (continuous) data. Table A.4 in [Appendix A](#_Appendix_A:_Monitoring), and Table B.1 of [Appendix B: Full Monthly Diffusion Tube Results for 2021](#_Appendix_B:_Full) should be populated to include all relevant non-automatic monitoring data.  **Please provide coordinates in OSGB36 National Grid Eastings and Northings format, e.g. 123456, 123456.** **Please ensure the Site IDs and Coordinates match those provided in Table A.1 and Table A.2.**  State clearly that all monitoring data presented has been properly ratified and corrected for bias where applicable. This should also include consideration and discussion of relevance to fall-off with distance correction that has been completed to the nearest receptor, if required. **Note, distance corrected concentration data should be included in Table B.1 only.**  **Note, the concentration values entered in Table A.3, Table A.4 and illustrated in Figure A.1 should be those at the location of the monitoring site (bias adjusted and annualised, as required), not those following any fall-off with distance correction.**  Comment on whether the information led to the declaration, amendment or revocation of an AQMA, including the main points/trends coming out of the data – e.g. where are the exceedances, areas of concern or areas where concentrations have decreased.  Please ensure that results are labelled so that it is possible to link monitoring locations relative to each AQMA in clearly labelled maps in [Appendix D](#_Appendix_E:_Map(s)).  **Delete this box when the document is finished** |

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

For diffusion tubes, the full <most recent year of data> dataset of monthly mean values is provided in [Appendix B](#_Appendix_B:_Full). Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

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

Briefly describe any exceedances of the air quality objectives here, relating to both annual mean and 1-hour (where applicable) objectives. Detail where monitored exceedances are located - are these within a current AQMA, close to an AQMA boundary or located away from any current AQMA(s). What are the conclusions of the monitoring following the most recent results - will there be any changes to exisiting AQMAs or the declaration of a new AQMA? Are there any proposed changes to the monitoring network?

Where relevant, consider annual means greater than 60µg/m3, which indicates that an exceedance of the 1-hour mean objective is also likely at these sites.

### Particulate Matter (PM10)

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| --- |
| **INSTRUCTIONS**  If PM10 monitoring is available, then provide tables of results.  Guidance presented in Chapter 7: Particulate Matter Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed for the calculation of both annual mean concentration and 24-hour mean concentrations.  Comment on whether there are exceedances of the air quality objectives for PM10 and whether they occur within or outside AQMAs.  Also flag if there are concentrations above the air quality objectives for PM10 measured at monitoring sites which are not representative of public exposure.  Monitoring data should be included in Table A.6 and Table A.7 in [Appendix A](#_Appendix_A:_Monitoring).  **Please provide coordinates in OSGB36 National Grid Eastings and Northings format, e.g. 123456, 123456.** **Ensure the Site IDs and Coordinates match those provided in Table A.1.**  Comment on whether the information led to the declaration, amendment or revocation of an AQMA, including the main points/trends coming out of the data – e.g. where are the exceedances, areas of concern, or areas where concentrations have decreased.  State clearly that all monitoring data presented has been properly ratified.  If your authority does not monitor PM10, please delete this section.  **Delete this box when the document is finished** |

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

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

Briefly describe any exceedances of the air quality objectives here, relating to both annual mean and 24-hour (where applicable) objectives. Detail where monitored exceedances are located - are these within a current AQMA, close to an AQMA boundary or located away from any current AQMA(s). What are the conclusions of the monitoring following the most recent results - will there be any changes to exisiting AQMAs or the declaration of a new AQMA? Are there any proposed changes to the monitoring network?

### Particulate Matter (PM2.5)

|  |
| --- |
| **INSTRUCTIONS**  PM2.5 is the pollutant which has the biggest impact on public health and on which the Public Health Outcomes Framework (PHOF) indicator is based. Therefore, although not covered by the LAQM regulations, if you carry out monitoring of PM2.5 please report details here.  In the absence of PM2.5 monitoring, and where a local authority carries out PM10 monitoring, it is recommended to consult Chapter 7: Estimating PM2.5 from PM10 Measurements of [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) in order to include an estimate of PM2.5 concentrations.  Monitoring data should be included in Table A.8 in [Appendix A](#_Appendix_A:_Monitoring).  **Please provide coordinates in OSGB36 National Grid Eastings and Northings format, e.g. 123456, 123456.** **Ensure the Site IDs and Coordinates match those provided in Table A.1.**  State clearly that all monitoring data presented has been properly ratified.  If you use other methods to evaluate local PM2.5, rather than local monitoring, please delete this section.  **Delete this box when the document is finished** |

Table A.8 in [Appendix A](#_Appendix_A:_Monitoring) presents the ratified and adjusted monitored PM2.5 annual mean concentrations for the past five years.

Briefly describe the concentration results here.

### Sulphur Dioxide (SO2)

|  |
| --- |
| **INSTRUCTIONS**  If SO2 monitoring is undertaken then provide a table of results.  Comment on whether there are exceedances of the air quality objectives for SO2 and whether they occur within or outside AQMAs.  Flag if there are concentrations above the air quality objectives for SO2 measured at monitoring sites which are not representative of public exposure.  Monitoring data should be included in Table A.9 in [Appendix A](#_Appendix_A:_Monitoring).  **Please provide coordinates in OSGB36 National Grid Eastings and Northings format, e.g. 123456, 123456.** **Ensure the Site IDs and Coordinates match those provided in Table A.1.**  Comment on whether the information led to the declaration, amendment or revocation of an AQMA, including the main points/trends coming out of the data – e.g. where are the exceedances, areas of concern or areas where concentrations have decreased.  State clearly that all monitoring data presented has been properly ratified.  If you don’t monitor SO2, please delete this section.  **Delete this box when the document is finished** |

Table A.9 in [Appendix A](#_Appendix_A:_Monitoring) compares the ratified continuous monitored SO2 concentrations for <Year> with the air quality objectives for SO2.

Briefly describe any exceedances of the air quality objectives here, relating to the 24-hour, 1-hour and 15-minute (where applicable) objectives. Detail where an monitored exceedances are located - are these within a current AQMA, close to an AQMA boundary or located away from any current AQMA(s). What are the conclusions of the monitoring following the most recent results - will there be any changes to exisiting AQMAs or the declaration of a new AQMA? Are there any proposed changes to the monitoring network?

# Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

| Site ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA?  Which AQMA? | Monitoring Technique | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Inlet Height (m) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CM1 | Name 1 | Roadside | 666555 | 333444 | NO2, PM10 | YES/NO  AQMA 1 | Chemiluminescent; FDMS | 2.5 | 1 | 2 |
| CM2 | Name 2 | Urban Background | 777444 | 333555 | NO2 | YES/NO  AQMA 2 | Chemiluminescent | 25 | N/A | 1.8 |

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**Notes:**

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

(2) N/A if not applicable

Table A.2 – Details of Non-Automatic Monitoring Sites

|  |
| --- |
| **INSTRUCTIONS**  To help with consistency of approach to processing diffusion tube monitoring data a specific [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/) has been developed. It is recommended that this tool is used to process all diffusion tube data.  The tool is available for download from the [LAQM website](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/). Any questions relating to the use of the tool should be directed to the LAQM Helpdesk.  The tab Table A.2 from the Diffusion Tube Data Processing Tool aligns with the diffusion tube data reporting requirements of Table A.2; therefore the data can be easily copied. If the Diffusion Tube Data Processing Tool has not been utilised, please copy across from any alternative calculation spreadsheet or populate manually.  **Delete this box when the document is finished** |

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| DT1 | Name 1 | Roadside | 666555 | 333444 | NO2 | YES/NO  AQMA 1 | 2.5 | 1 | No | 2 |
| DT2 | Name 2 | Urban Background | 777444 | 333555 | NO2 | YES/NO  AQMA 2 | 25 | N/A | No | 1.8 |

**CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM LAQM DATA PROCESSING TOOL (IF UTILISED)**

**Notes:**

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

(2) N/A if not applicable.

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

|  |
| --- |
| **INSTRUCTIONS**  Populate Table A.3 with all automatic annual mean NO2 monitoring results over the past five years.  **If there are no automatic NO2 monitors in operation within your local authority, please delete this table.**  Guidance presented in Chapter 7: NOx and NO2 Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed for the calculation of annual mean concentrations.  Concentrations should be annualised (where required) and bias adjusted, but **NOT** distance corrected.  Concentrations should be presented within Table A.3, and throughout the report to one decimal place (1 dp).  Any exceedances of the NO2 annual mean objective of 40µg/m3 should be presented in **BOLD**.  When completing the Data Capture values the following should be adhered to:   * Valid data capture for monitoring period – This should be the data capture for the period within the calendar year for which monitoring was undertaken. In certain cases, monitoring may only have been undertaken for part of the year, e.g. monitoring that began in January and ran until June (six months) before finishing - if results were returned for all six months this would equate to 100% data capture. * Valid data capture 2021 – This is the data capture based upon the calendar year. For the example given above this would result in a 50% data capture within 2021.   **Delete this box when the document is finished** |

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CM1 | 666555 | 333444 | Roadside | 98 | 98 | 15.5 | 18.8 | 19.9 | 20.5 | 18.5 |
| CM2 | 777444 | 333555 | Urban Background | 89 | 89 | 15.5 | 18.8 | 19.9 | 20.5 | 18.5 |

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**Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).**

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

**Notes:**

The annual mean concentrations are presented as µg/m3.

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

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See [Appendix C](#_Appendix_C:_Supporting) for details.

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

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

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

Table A.4 – Annual Mean NO2 Monitoring Results: Non-Automatic Monitoring (µg/m3)

|  |
| --- |
| **INSTRUCTIONS**  Populate Table A.4 with all diffusion tube (non-automatic) annual mean NO2 monitoring results over the past five years.  It is recommended that the [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/) is used to process all diffusion tube data, the tool is available for download from the [LAQM website.](https://laqm.defra.gov.uk/) The tab Table A.4 from the Diffusion Tube Data Processing Tool aligns with the diffusion tube data requirements of Table A.4 therefore the data can be easily copied. If the tool has not been utilised, please copy across from any working spreadsheet or populate manually.  Guidance presented in Chapter 7: NOx and NO2 Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed for the calculation of annual mean concentrations, both automatic and using diffusion tubes.  Concentrations should be annualised (where required) and bias adjusted, but **NOT** distance corrected.  Concentrations should be presented within Table A.4, and throughout the report to one decimal place (1 dp).  Any exceedances of the NO2 annual mean objective of 40µg/m3 should be presented in **BOLD**.  Any NO2 annual means that exceed 60µg/m3, indicating a potential exceedance of the NO2 1-hour mean objective are shown in **BOLD** and **UNDERLINED**.  When completing the Data Capture values the following should be adhered to:   * Valid data capture for monitoring period – This should be the data capture for the period within the calendar year for which monitoring was undertaken. In certain cases, monitoring may only have been undertaken for part of the year, e.g. monitoring that began in January and ran until June (six months) before finishing - if results were returned for all six months this would equate to 100% data capture. * Valid data capture 2021 – This is the data capture based upon the calendar year. For the example given above this would result in a 50% data capture within 2021.   **Delete this box when the document is finished** |

| Diffusion Tube ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| DT1 | 666555 | 333444 | Roadside | 100 | 75 | 15.5 | 18.8 | 19.9 | 20.5 | **45.2** |
| DT2 | 777444 | 333555 | Urban Background | 100 | 100 | 15.5 | 18.8 | 19.9 | 20.5 | **65.5** |

**CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM LAQM DATA PROCESSING TOOL (IF UTILISED)**

**Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).**

**Diffusion tube data has been bias adjusted (confirm by selecting in box).**

**Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction (confirm by selecting in box).**

**Notes:**

The annual mean concentrations are presented as µg/m3.

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

NO2 annual means exceeding 60µg/m3, indicating a potential exceedance of the NO2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See [Appendix C](#_Appendix_C:_Supporting) for details.

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

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

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

Figure A.1 – Trends in Annual Mean NO2 Concentrations

|  |
| --- |
| **INSTRUCTIONS**  An Example Trend Chart is presented below. Trend charts should be inserted for results for all pollutants monitored and all relevant air quality objectives.  It is recommended that where AQMA(s) are present, separate charts are provided for each AQMA.  Sites outside of AQMAs are also to be shown. It is preferable that these are presented by grouped geographical areas.  The concentrations presented should be those presented in Table A.3 and Table A.4, annualised and bias adjusted where required, but **NOT** distance corrected.  To comply with Accessibility Regulations each chart must have a summary note attached to them using the alt-text function. To add alt text right click on an image and select **Edit Alt Text…** and insert a brief description of the chart, e.g. *Figure A.1 presents NO2 annual mean concentrations for sites DT1 to DT10 between years 2016 to 2021. There are no exceedances of the annual mean objective in 2021 and there is a general trend of reduction experienced across the sites.*  The presentation of trend charts should take account of readers who are colour blind, with suitable colour-blind friendly pallets chosen. The following colour combinations should be avoided:   * green/red * green/brown * blue/purple * green/blue * light green/yellow * blue/grey * green/grey * green/black * red/amber/green   The website [ColorBrewer](https://colorbrewer2.org/) provides colour-blind safe information regarding palettes, and allows the definition of a 5-class palette that would be applicable to a trend chart with five years of monitoring data.  All subsequent trend charts included in the ASR should follow the instructions as presented above.  **Delete this box when the document is finished** |

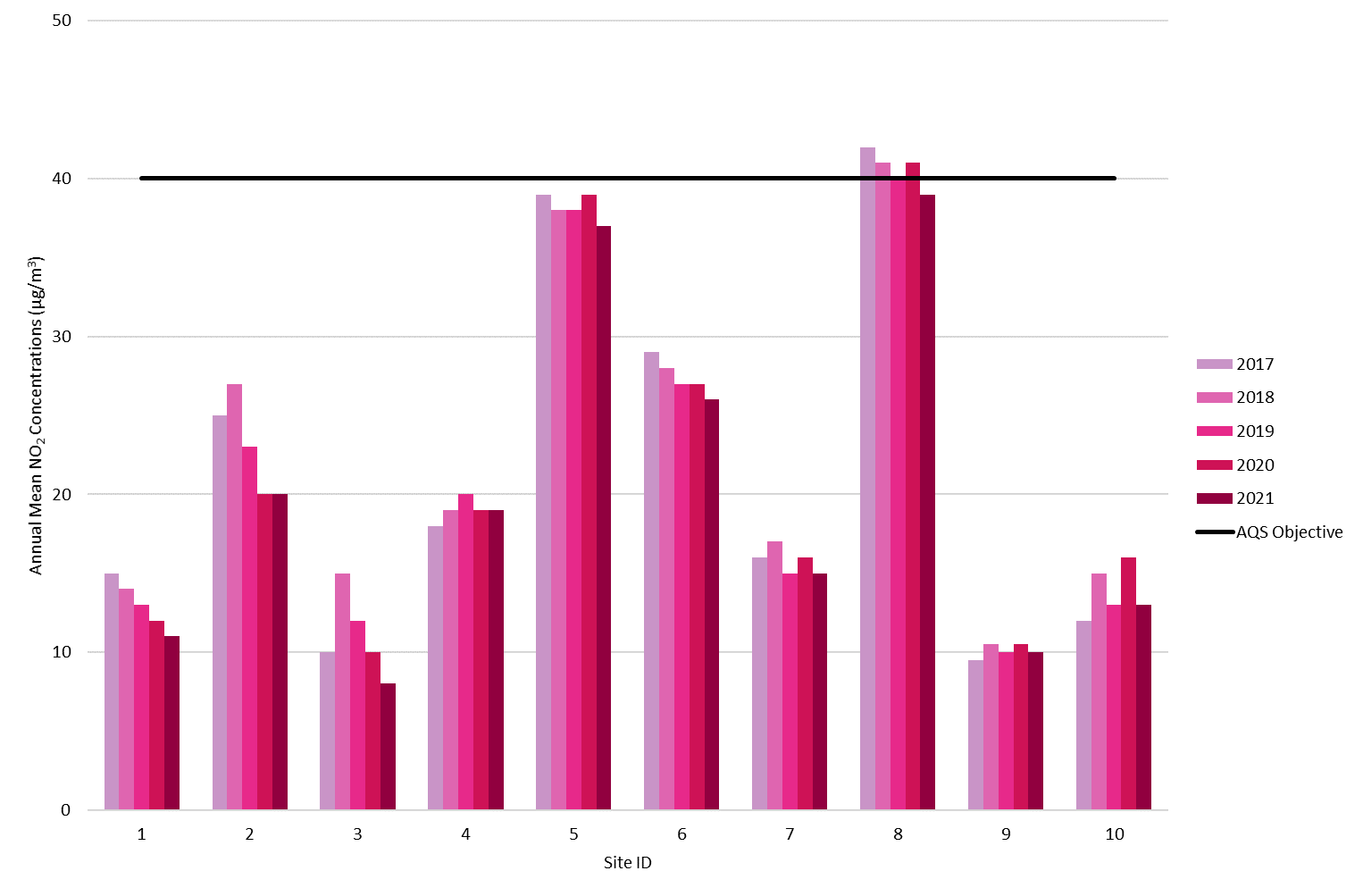


Table A.5 – 1-Hour Mean NO2 Monitoring Results, Number of 1-Hour Means > 200µg/m3

|  |
| --- |
| **INSTRUCTIONS**  Populate Table A.5 with all relevant 1-hour mean NO2 automatic monitoring completed over the past five years.  Guidance presented in Chapter 7: NOx and NO2 Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed for the calculation of 1-hour mean concentrations.  The number of 1-hour periods with concentrations greater than 200µg/m3 should be presented as whole numbers, aside from any percentile values that should be presented to 1 dp.  Exceedances of the NO2 1-hour mean objective (200µg/m3 not to be exceeded more than 18 times/year) are shown in **BOLD**. Any values presented within Table A.5 that are equal to or above 19 should therefore be shown in **BOLD**.  When completing the Data Capture values the following should be adhered to:   * Valid data capture for monitoring period – This should be the data capture for the period within the calendar year for which monitoring was undertaken. In certain cases, monitoring may only have been undertaken for part of the year, e.g. monitoring that began in January and ran until June (six months) before finishing - if results were returned for all six months this would equate to 100% data capture. * Valid data capture 2021 – This is the data capture based upon the calendar year. For the example given above this would result in a 50% data capture within 2021.   If the **VALID DATA Capture 2021** is less than 85%, the 99.8th percentile of 1-hour means should be presented in brackets. This can be calculated following the procedure as detailed in Chapter 7: NOx and NO2 Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/).  **Delete this box when the document is finished** |

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CM1 | 666555 | 333444 | Roadside | 100 | 50 | 19 | 11 | 18 | **19** | **30** |
| CM2 | 777444 | 333555 | Urban Background | 65 | 65 | - | - | 15 (185) | **25** | **16 (275)** |

**CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE**

**Notes:**

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

Exceedances of the NO2 1-hour mean objective (200µg/m3 not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

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

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

Figure A.2 – Trends in Number of NO2 1-Hour Means > 200µg/m3

< Example Trend Chart illustrated below. Delete section if not required>

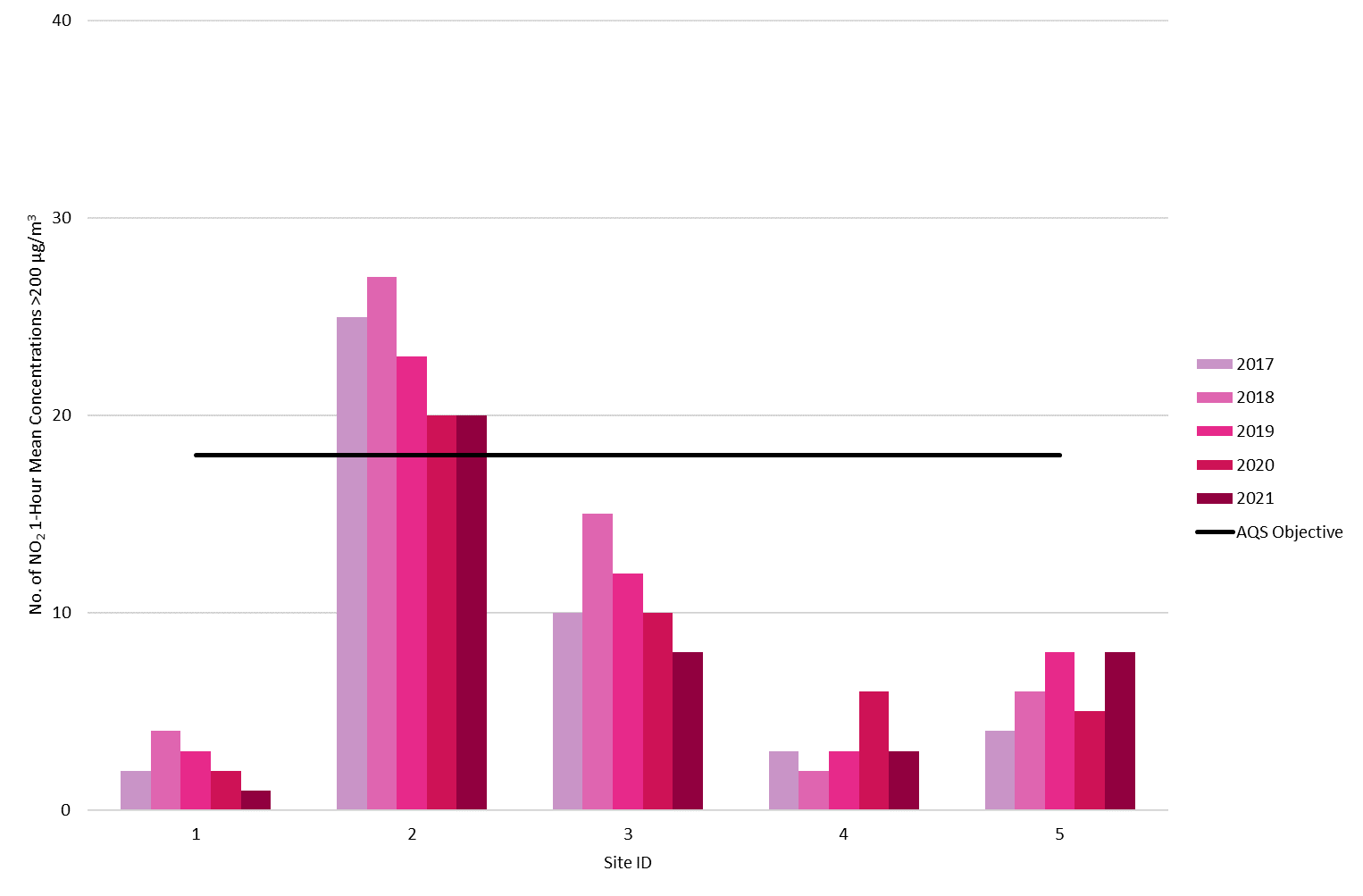


Table A.6 – Annual Mean PM10 Monitoring Results (µg/m3)

|  |
| --- |
| **INSTRUCTIONS**  Populate Table A.6 with all automatic annual mean PM10 monitoring results for the past five years.  Guidance presented in Chapter 7: Particulate Matter Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed for the calculation of the annual mean; for both PM10 and PM2.5, the annual mean can be calculated by averaging all of the valid 1-hour mean data values for the calendar year.  Concentrations should be annualised (where required).  Concentrations should be presented within Table A.6, and throughout the report to one decimal place (1 dp).  Any exceedances of the PM10 annual mean objective of 40µg/m3 should be presented in **BOLD**.  When completing the Data Capture values the following should be adhered to:   * Valid data capture for monitoring period – This should be the data capture for the period within the calendar year for which monitoring was undertaken. In certain cases, monitoring may only have been undertaken for part of the year, e.g. monitoring that began in January and ran until June (six months) before finishing - if results were returned for all six months this would equate to 100% data capture. * Valid data capture 2021 – This is the data capture based upon the calendar year. For the example given above this would result in a 50% data capture within 2021.   **Delete this box when the document is finished** |

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CM1 | 666555 | 333444 | Roadside | 100 | 80 | 61.0 | 48.1 | 44.1 | 43.2 | 41.4 |
| CM2 | 777444 | 333555 | Urban Background | 65 | 65 | 27.0 | 28.2 | 31.5 | 27.8 | 30.5 |

**CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE**

**Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).**

**Notes:**

The annual mean concentrations are presented as µg/m3.

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

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See [Appendix C](#_Appendix_C:_Supporting) for details.

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

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

Figure A.3 – Trends in Annual Mean PM10 Concentrations

< Example Trend Chart illustrated below. Delete section if not required>



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

|  |
| --- |
| **INSTRUCTIONS**  Populate Table A.7 with all relevant 24-hour mean PM10 automatic monitoring completed for the past five years.  Guidance presented in Chapter 7: Particulate Matter Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed for the calculation of 24-hour period means.  The number of 24-hour periods greater than 50µg/m3 should be presented as whole numbers, aside from any percentile values that should be presented to 1 dp.  Exceedances of the PM10 24-hour mean objective (50µg/m3 not to be exceeded more than 35 times/year) are shown in **BOLD**. Any values presented within Table A.7 equal to or above 36 should therefore be shown in **BOLD**.  When completing the Data Capture values the following should be adhered to:   * Valid data capture for monitoring period – This should be the data capture for the period within the calendar year for which monitoring was undertaken. In certain cases, monitoring may only have been undertaken for part of the year, e.g. monitoring that began in January and ran until June (six months) before finishing - if results were returned for all six months this would equate to 100% data capture. * Valid data capture 2021 – This is the data capture based upon the calendar year. For the example given above this would result in a 50% data capture within 2021.   If the **VALID DATA Capture 2021** is less than 85%, the 90.4th percentile of 1-hour means should be presented in brackets. This can be calculated following the procedure as detailed in Chapter 7: Particulate Matter Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/technical-guidance/index.html).  **Delete this box when the document is finished** |

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CM1 | 666555 | 333444 | Roadside | 100 | 80 | **42** | **36** | 35 | 34 | 30 |
| CM2 | 777444 | 333555 | Urban Background | 65 | 65 | - | - | **28 (52)** | 38 | 28 (30) |

**CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE**

**Notes:**

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

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

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

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

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

Figure A.4 – Trends in Number of 24-Hour Mean PM10 Results > 50µg/m3

<Example Trend Chart illustrated below. Delete section if not required>

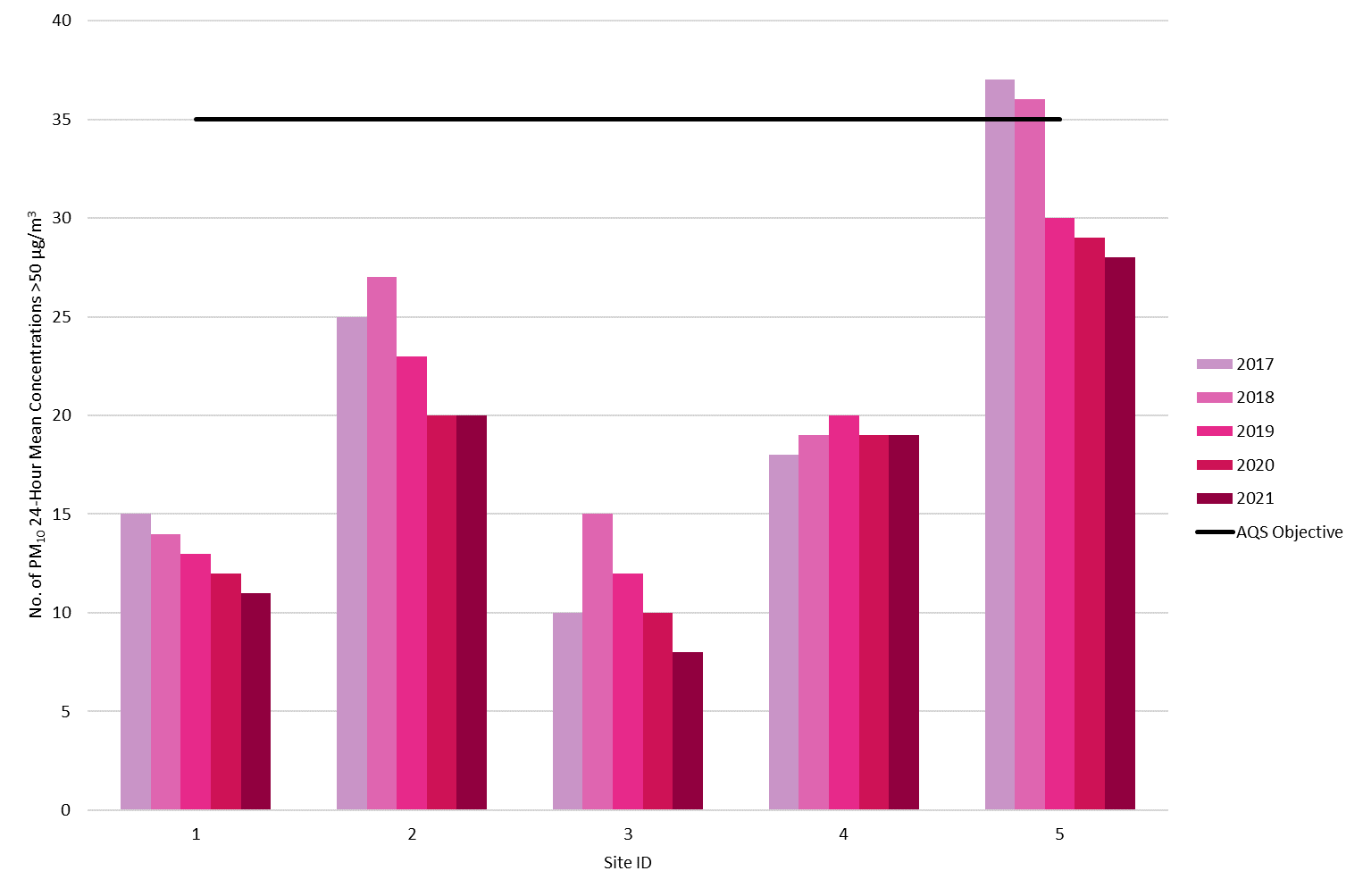


Table A.8 – Annual Mean PM2.5 Monitoring Results (µg/m3)

|  |
| --- |
| **INSTRUCTIONS**  Populate Table A.8 with all automatic annual mean PM2.5 monitoring results for the past five years.  Guidance presented in Chapter 7: Particulate Matter Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed for the calculation of the annual mean; for both PM10 and PM2.5, the annual mean can be calculated by averaging all of the valid 1-hour mean data values for the calendar year.  Concentrations should be annualised (where required).  Concentrations should be presented within Table A.8, and throughout the report to one decimal place (1 dp).  When completing the Data Capture values the following should be adhered to:   * Valid data capture for monitoring period – This should be the data capture for the period within the calendar year for which monitoring was undertaken. In certain cases, monitoring may only have been undertaken for part of the year, e.g. monitoring that began in January and ran until June (six months) before finishing - if results were returned for all six months this would equate to 100% data capture. * Valid data capture 2021 – This is the data capture based upon the calendar year. For the example given above this would result in a 50% data capture within 2021.   **Delete this box when the document is finished** |

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | 2017 | 2018 | 2019 | 2020 | 2021 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CM1 | 666555 | 333444 | Roadside | 100 | 80 |  |  |  |  |  |
| CM2 | 777444 | 333555 | Urban Background | 65 | 65 |  |  |  |  |  |

**CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE**

**Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).**

**Notes:**

The annual mean concentrations are presented as µg/m3.

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See [Appendix C](#_Appendix_C:_Supporting) for details.

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

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

Figure A.5 – Trends in Annual Mean PM2.5 Concentrations

<Example Trend Chart provided below. Delete section if not required>

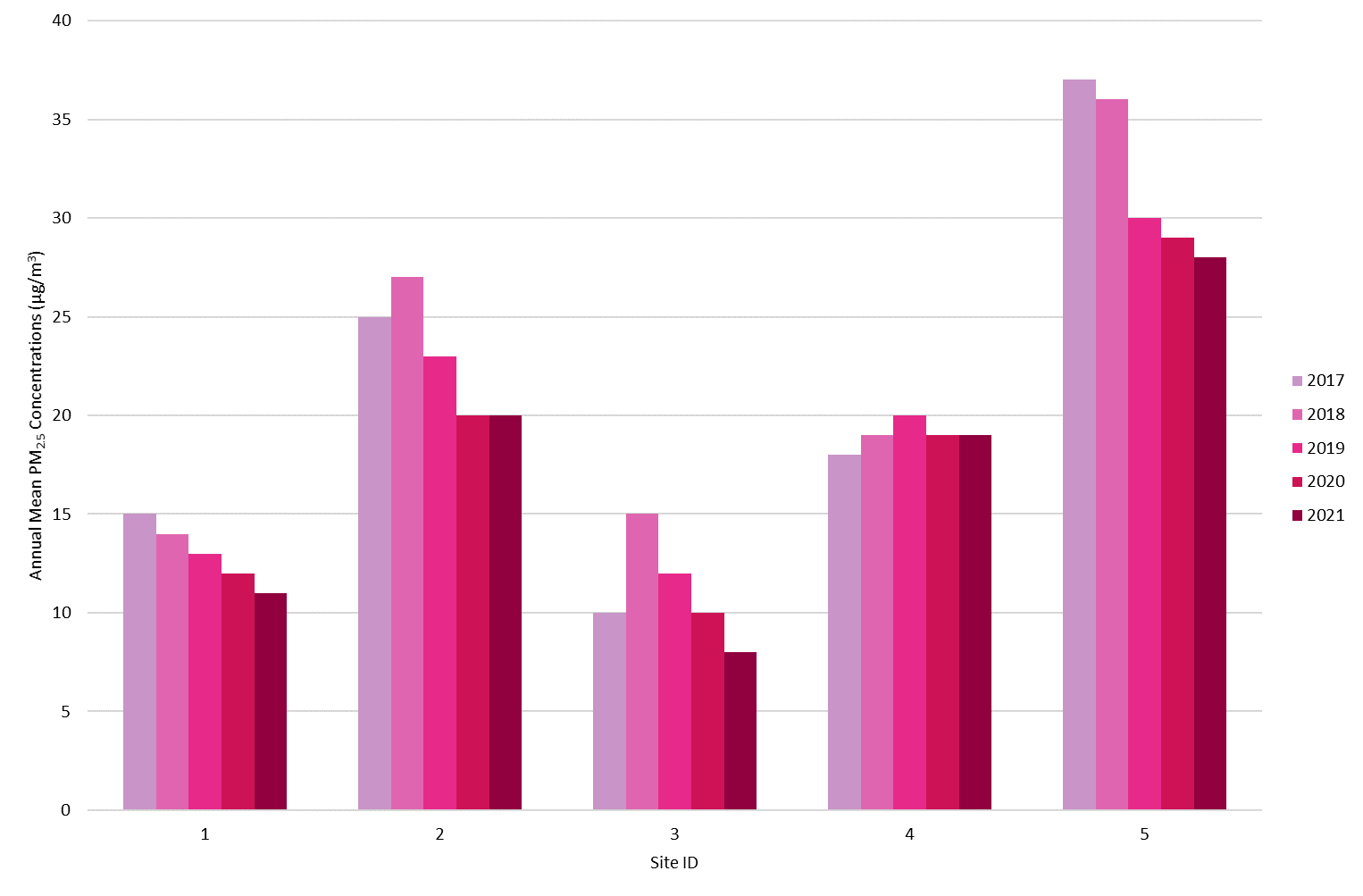


Table A.9 – SO2 2021 Monitoring Results, Number of Relevant Instances

|  |
| --- |
| **INSTRUCTIONS**  Populate Table A.9 with all relevant SO2 automatic monitoring completed within 2021.  Guidance presented in Chapter 7: SO2 Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed for the calculation of concentrations for the relevant averaging period.  The number of periods greater than the relevant objectives should be presented as whole numbers, aside from any percentile values that should be presented to 1 dp.  Exceedances of any of the objectives should be shown in **BOLD**. The relevant objectives are as follows:   * 15-minute, 266µg/m3, 35 permitted exceedances per year * 1-hour, 350µg/m3,24 permitted exceedances per year * 24-hour, 150µg/m3, 3 permitted exceedances per year   When completing the Data Capture values the following should be adhered to:   * Valid data capture for monitoring period – This should be the data capture for the period within the calendar year for which monitoring was undertaken. In certain cases, monitoring may only have been undertaken for part of the year, e.g. monitoring that began in January and ran until June (six months) before finishing - if results were returned for all six months this would equate to 100% data capture. * Valid data capture 2021 – This is the data capture based upon the calendar year. For the example given above this would result in a 50% data capture within 2021.   If the period of **VALID DATA** is less than 85%, the relevant percentile calculation should be presented in brackets. The relevant percentiles for SO2 objectives are as follows:   * 15-minute, 99.9th percentile * 1-hour, 99.7th percentile * 24-hour, 33.2nd percentile   These can be calculated following the procedure as detailed in Chapter 7: SO2 Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/technical-guidance/index.html).  **Delete this box when the document is finished** |

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2021 (%) (2) | Number of 15-minute Means > 266µg/m3 | Number of 1-hour Means > 350µg/m3 | Number of 24-hour Means > 125µg/m3 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CM1 | 666555 | 333444 | Roadside | 100 | 80 | 4 | 1 | 0 |
| CM2 | 777444 | 333555 | Urban Background | 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.

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

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

# Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO2 2021 Diffusion Tube Results (µg/m3)

|  |
| --- |
| **INSTRUCTIONS**  Please fill in Table B.1 with details of NO2 diffusion tube monitoring results.  It is recommended that the [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/) is used to process all diffusion tube data. The tab **Annual Results Summary** from the Diffusion Tube Data Processing Tool aligns with the diffusion tube data requirements of Table B.1 therefore the data can be easily copied. If the tool has not been utilised, please copy across from any working spreadsheet or populate manually.  This table should contain:   * Full month by month raw data (state if different exposure periods from the suggested calendar available via the [LAQM website](https://laqm.defra.gov.uk/) * 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 distance corrected annual mean – If the location is not relevant to public exposure and the concentration is greater than 36µg/m3. If the monitoring location is relevant to annual mean public exposure, please leave the final column blank or add a dash (-).   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 B.1:   * 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 7: NOx and NO2 Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) * Results from tubes that have been exposed past the laboratory’s use by date   **Ensure the Diffusion Tube (DT) IDs and Coordinates match those provided in Table A.2.**  **Please delete this box when the document is finished** |

| DT ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Mean: Raw Data | Annual Mean: Annualised and Bias Adjusted (x.x) | Annual Mean: Distance Corrected to Nearest Exposure | Comment |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| DT1 | 666555 | 333444 | 36.0 | 42.1 | - | - | 59.1 | 52.9 | - | 47.0 | 55.0 | 38.4 | 45.2 | 46.8 | **46.9** | **44.9** | 25.9 |  |
| DT2 | 777444 | 333555 | 35.7 | 23.3 | 19.7 | 17.1 | 18.2 | 19.5 | 25.7 | 17.0 | 27.0 | 19.0 | 33.0 | 27.6 | 23.6 | 21.6 | - |  |

**CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM LAQM DATA PROCESSING TOOL (IF UTILISED)**

**All erroneous data has been removed from the NO2 diffusion tube dataset presented in Table B.1** **(confirm by selecting in box).**

**Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).**

**Local bias adjustment factor used (confirm by selecting in box).**

**National bias adjustment factor used (confirm by selecting in box).**

**Where applicable, data has been distance corrected for relevant exposure in the final column (confirm by selecting in box).**

**<Local Authority> confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System** **(confirm by selecting in box).**

**Notes:**

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

NO2 annual means exceeding 60µg/m3, indicating a potential exceedance of the NO2 1-hour mean objective are shown in **bold and underlined**.

See [Appendix C](#_Appendix_C:_Supporting) for details on bias adjustment and annualisation.

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

|  |
| --- |
| **INSTRUCTIONS**  Please include here any additional information required to support the ASR. Subheadings have been provided as prompts for which information may be required. This may include:   * Indication, if necessary, of any significant changes to sources, and therefore any screening assessment of identified new or changed sources of pollution based on LAQM screening tools, etc (see Chapter 7: Screening Tools and Methodology in [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/)). Outline whether this has resulted / will result in any change to monitoring or a Fast Track AQMA declaration. * A summary of any additional studies/evidence for support of action plan measures, detailed dispersion modelling of emissions, or results of monitoring campaigns carried out to determine whether an AQMA needs to be declared, amended or revoked. Any additional studies should be included as a further Appendix to the annual report. * QA/QC on monitoring data, including bias adjustments, annualisation and fall-off with distance correction, as appropriate:   + Discussion and justification on the choice of bias adjustment factor applied for diffusion tubes (i.e. local vs national), with reference to previous years’ choices of bias factors, giving due consideration to the discussion in Chapter 7 of [Technical Guidance LAQM.TG16.](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/)   + Discussion on the annualisation process, which is provided in Chapter 7 of [Technical Guidance LAQM.TG16.](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/)   + Details of distance correction using the diffusion tube data processing/ NO2 fall off with distance calculator as discussed in Chapter 7 of [Technical Guidance LAQM.TG16.](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) **Distance correction is an important point to consider if your monitoring sites are not representative of public exposure, e.g. if located at roadside or kerbside, but with façades of nearest properties set back further from the road.** * Please include calculations within the tables provided as found within the relevant LAQM tools; particularly regarding bias adjustments, annualisation and fall-off with distance correction, where appropriate. **Failure to provide clear and auditable details is likely to result in the rejection of the report.**   **Delete this box when the document is finished** |

## New or Changed Sources Identified Within <Local Authority Name> During <Year>

Detail any new sources within your authority that have been identified with a potential to impact air quality. This may include sources that are operational, have planning permission granted or have been identified at an earlier stage of the planning process. Sources may include additional road traffic, static or standby plant, biomass or industrial processes, etc.

Or:

<Local Authority Name> has not identified any new sources relating to air quality within the reporting year of <Year>.

## Additional Air Quality Works Undertaken by <Local Authority Name> During <Year>

Provide a summary of any supporting evidence or additional studies that has been completed during the reporting year relating to the development of action plan measures or the declaration, amendment or revocation of an AQMA. If an additional study has been completed, please provide the report as an additional appendix.

Or:

<Local Authority Name> has not completed any additional works within the reporting year of <Year>.

## QA/QC of Diffusion Tube Monitoring

Within this section provide details relating to the following aspects of non-automatic (i.e. passive) monitoring using diffusion tubes:

* The supplier used for diffusion tubes within 2021 and the method of preparation, e.g. 20% TEA in water;
* Information on the diffusion tube supplier; any accreditation held, analysis procedure followed, participation in analysis schemes (e.g. AIR-PT) and most recent results, inclusion in the annual field inter-comparison exercise and associated result;
* If the diffusion tube supplier has been changed part way through the year (if so provide the previous two points for both suppliers);
* State whether or not the monitoring has been completed in adherence with the 2021 Diffusion Tube Monitoring Calendar, providing commentary of any divergences as necessary.

The additional subsections should be used to provide QA/QC details of the data processing methodologies applied to diffusion tube monitoring data, specifically in relation to annualisation, bias adjustment and fall-off-with-distance calculations.

If you do not undertake diffusion tube monitoring, please delete this section.

### Diffusion Tube Annualisation

If annualisation was required for any non-automatic monitoring sites, the sites requiring annualisation should be clearly defined along with details of the calculation method undertaken provided in Table C.2. Annualisation is required for any site with data capture less than 75% but greater than 25%.

Or:

All diffusion tube monitoring locations within <Local Authority Name> recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

### Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the <Year> ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NOx/NO2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

<Local Authority Name> have applied a <national/local> bias adjustment factor of <insert factor> to the <Year> monitoring data. A summary of bias adjustment factors used by <Local Authority Name> over the past five years is presented in Table C.1.

Provide discussion in relation to the bias adjustment factor chosen; a national factor or a local factor.

* If a national factor has been used, please state as per Table C.1 which version of the national spreadsheet the factor has been taken from and also the number of studies applicable to the factor.
* If a local factor has been used, please advise at which site(s) the co-location study has been completed at and present the details in Table C.2.
* If more than one co-location study has been utilised to derive a local factor, please provide the calculations that have been completed within the body of text. These should be completed in line with guidance provided within LAQM.TG16 Chapter 7: NOx and NO2 Monitoring, NO2 by Diffusion Tubes.

Table C.1 – Bias Adjustment Factor

|  |
| --- |
| **INSTRUCTIONS**  Please complete the following table detailing the bias adjustment factors used to adjust the data presented in Table A.4 and Table B.1. If a national factor has been used, please detail the version of the [National Bias Adjustment Factor Spreadsheet](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/) that has been used (detailed in the top-right corner of each revision of the spreadsheet). If a local factor has been derived, please leave this column blank or insert a dash (-).  **Delete this box when the document is finished** |

|  |  |  |  |
| --- | --- | --- | --- |
| Monitoring Year | Local or National | If National, Version of National Spreadsheet | Adjustment Factor |
| **2021** | Local | - | 0.88 |
| **2020** | National | 09/19 | 1.01 |
| **2019** | National | 06/18 | 1.05 |
| **2018** | National | 09/17 | 1.07 |
| **2017** | National | 06/16 | 1.08 |

### NO2 Fall-off with Distance from the Road

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

If fall-off-with-distance calculations were required for any non-automaticmonitoring sites, a summary of the sites should be provided here and the output data from the LAQM NO2 fall-off with distance calculator, or output from the Diffusion Tube Data Processing Tool should be presented in Table C.4. Distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36µg/m3 and the monitoring site is not located at a point of relevant exposure (taking the limitations of the calculator into account).

Or:

No diffusion tube NO2 monitoring locations within <Local Authority Name> required distance correction during <Year>.

## QA/QC of Automatic Monitoring

Within this section details relating to the following should be included:

* Who completes the data management and Local Site Operator (LSO) duties for any automatic monitoring sites within the authority;
* Details on the frequency of calibrations, audit/servicing;
* Ratification process, and if the monitoring data presented within the ASR is provisional or ratified;
* If live/historic data is available through a website.

### PM10 and PM2.5 Monitoring Adjustment

If PM10/PM2.5 monitoring is completed within your authority, where applicable please detail any correction factors applied to the data before it is published (e.g. using the Volatile Correction Model (VCM) or a specific correction factor). Correction factors as detailed within LAQM.TG16 Chapter 7: Particulate Matter Monitoring.

Or:

The type of <PM10/PM2.5> monitor(s) utilised within <Local Authority Name> do not required the application of a correction factor.

Please delete this section if no PM10/PM2.5 monitoring is not completed within your authority.

### Automatic Monitoring Annualisation

If annualisation was required for any automatic monitoring sites a summary of the sites should be provided here and the annualisation data should be presented in Table C.2. Annualisation is required for any site with data capture less than 75% but greater than 25%.

Or:

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

Please delete this section if no automatic monitoring is completed within your authority.

### NO2 Fall-off with Distance from the Road

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

If fall-off-with-distance calculations were required for automaticmonitoring sites, a summary of the sites should be provided here and the output data from the LAQM NO2 fall-off with distance calculator should be presented in Table C.4. Distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36µg/m3 and the monitoring site is not located at a point of relevant exposure (taking the limitations of the calculator into account).

Or:

No automatic NO2 monitoring locations within <Local Authority Name> required distance correction during <Year>.

|  |
| --- |
| **INSTRUCTIONS**  The structure of the following QA/QC tables are consistent with those output by the [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/). It is therefore recommended that this tool is used to aid transparency of calculations and associated QA/QC pertaining to the processing of diffusion tube data.  However, it is acknowledged that not all local authorities will initially use the processing tool due to having many years of experience in processing the data within their authority using existing LAQM tools and methods. This also includes automatic monitoring data, for which the Diffusion Tube Data Processing Tool does not currently support. Therefore, in these instances please align these tables to present equivalent details, text and/or tabulated data, to support any calculations completed.  If you have any queries relating to the data that you should present, please contact the LAQM Helpdesk.  **Delete this box when the document is finished** |

Table C.2 – Annualisation Summary (concentrations presented in µg/m3)

|  |
| --- |
| **INSTRUCTIONS**  Both automatic and non-automatic annualisation results should be included within Table C.2.  For diffusion tube annualisation the [Annualisation Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/annualisation-tool/) or the [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/) can be used to complete annualisation. Either tool should be used to ensure the correct methodology for annualisation is utilised. Table C.2 has the same structure as the **Annualisation Summary** tab within both tools, therefore the required data can easily be copied.  If a LAQM tool has not been used for diffusion tube annualisation, please enter the relevant data into the table below or replace this table with one presenting the relevant details for annualisation.  Currently there is no LAQM tool to process annualisation for automatic monitoring, therefore guidance as per Chapter 7: NOx and NO2 Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed and the results presented within Table C.2.  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 | Annualised Annual Mean | Comments |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| DT1 |  |  |  |  |  |  |  |  |
| DT2 |  |  |  |  |  |  |  |  |

Table C.3 – Local Bias Adjustment Calculation

|  |
| --- |
| **INSTRUCTIONS**  Please complete Table C.3 if a local bias adjustment factor has been calculated.  For the calculation of a local bias adjustment factor the [Diffusion Tube Precision Accuracy Bias Spreadsheet](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/local-bias/) or the [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/) can be used to complete the calculations. Either tool should be used to ensure the correct methodology for bias calculation is utilised. Table C.3 has the same structure as the **Local Bias Adjustment Outputs** tab within the LAQM Diffusion Tube Data Processing Tool, therefore the required data can be easily copied. If the  [Diffusion Tube Precision Accuracy Bias Spreadsheet](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/local-bias/) has been utilised, please enter the relevant data into Table C.3. Alternatively, replace this table with one presenting the equivalent data of the local bias calculation and consider adding a screenshot of the completed **Precision & Accuracy** tab for clarity.  If a local factor from more than one local co-location study has been calculated without utilising the Diffusion Tube Data Processing Tool, guidance to average the bias B values as per Chapter 7: NOx and NO2 Monitoring of the [Technical Guidance LAQM.TG16](https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/) should be followed.  The table has been set up to take account of a maximum of five local co-location studies. If less than five sites have been utilised the relevant boxes can be left blank or a dash added (-). If more than five sites have been utilised, please add any additional columns to the table.  This table should be deleted if a local bias adjustment factor has not been calculated.  **Delete this box when the document is finished** |

|  | Local Bias Adjustment Input 1 | Local Bias Adjustment Input 2 | Local Bias Adjustment Input 3 | Local Bias Adjustment Input 4 | Local Bias Adjustment Input 5 |
| --- | --- | --- | --- | --- | --- |
| **Periods used to calculate bias** | 12 |  |  |  |  |
| **Bias Factor A** | 1.13 (1.06 – 1.21) |  |  |  |  |
| **Bias Factor B** | -12% (-17% - -6%) |  |  |  |  |
| **Diffusion Tube Mean (µg/m3)** | 30.9 |  |  |  |  |
| **Mean CV (Precision)** | 0.0% |  |  |  |  |
| **Automatic Mean (µg/m3)** | 35.0 |  |  |  |  |
| **Data Capture** | 100% |  |  |  |  |
| **Adjusted Tube Mean (µg/m3)** | 35 (33 – 37) |  |  |  |  |

**Notes:**

A single local bias adjustment factor has been used to bias adjust the 2021 diffusion tube results.

Or:

A combined local bias adjustment factor of <enter combined factor> has been used to bias adjust the 2021 diffusion tube results.

Table C.4 – NO2 Fall off With Distance Calculations (concentrations presented in µg/m3)

|  |
| --- |
| **INSTRUCTIONS**  Both automatic and non-automatic distance corrected results should be included within Table C.4.  For distance correction of NO2 monitoring the [NO2 Fall-Off with Distance Calculator](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/no2-falloff/) or the [Diffusion Tube Data Processing Tool](https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/) can be used to complete the calculations. Either tool should be used to ensure the correct methodology for NO2 concentration fall off is utilised. Table C.4 has the same structure as the output tabs as follows, therefore the required data can easily be copied:   * NO2 Fall-Off with Distance Calculator – **Calculator - Multiple Tubes** * Diffusion Tube Data Processing Tool – **Step 4 - Fall off with Distance**   The Limitations / Important Notes 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 A.1 and Table A.2 (Distance to kerb of nearest road) * The distance from receptor to kerb is the sum of Distance to kerb of nearest road and Distance to Relevant Exposure from Table A.1 and/or Table A.2   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 | Background Concentration | Concentration Predicted at Receptor | Comments |
| --- | --- | --- | --- | --- | --- | --- |
| DT1 |  |  |  |  |  |  |
| DT2 |  |  |  |  |  |  |

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

|  |
| --- |
| **INSTRUCTIONS**  Please include here one or more clear map(s) that show the location of all monitoring sites in relation to any AQMA(s) and, if appropriate, the local authority boundary, ensuring that monitoring positions are clearly labelled using the Site IDs and the mapped coordinates correspond to those presented in Table A.1 and in Table A.2 of [Appendix A](#_Appendix_A:_Monitoring).  As for all charts within the annual report alt text should be added to comply with accessibility regulations.  **Delete this box when the document is finished** |

Figure D.1 – Map of Non-Automatic Monitoring Site

Add required maps here <Example map template provided below>



# Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[[7]](#footnote-8)

| Pollutant | Air Quality Objective: Concentration | Air Quality Objective: Measured as |
| --- | --- | --- |
| Nitrogen Dioxide (NO2) | 200µg/m3 not to be exceeded more than 18 times a year | 1-hour mean |
| Nitrogen Dioxide (NO2) | 40µg/m3 | Annual mean |
| Particulate Matter (PM10) | 50µg/m3, not to be exceeded more than 35 times a year | 24-hour mean |
| Particulate Matter (PM10) | 40µg/m3 | Annual mean |
| Sulphur Dioxide (SO2) | 350µg/m3, not to be exceeded more than 24 times a year | 1-hour mean |
| Sulphur Dioxide (SO2) | 125µg/m3, not to be exceeded more than 3 times a year | 24-hour mean |
| Sulphur Dioxide (SO2) | 266µg/m3, not to be exceeded more than 35 times a year | 15-minute mean |

# Glossary of Terms

| Abbreviation | Description |
| --- | --- |
| AQAP | Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values’ |
| AQMA | Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives |
| ASR | Annual Status Report |
| Defra | Department for Environment, Food and Rural Affairs |
| DMRB | Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways |
| EU | European Union |
| FDMS | Filter Dynamics Measurement System |
| LAQM | Local Air Quality Management |
| NO2 | Nitrogen Dioxide |
| NOx | Nitrogen Oxides |
| PM10 | Airborne particulate matter with an aerodynamic diameter of 10µm or less |
| PM2.5 | Airborne particulate matter with an aerodynamic diameter of 2.5µm or less |
| QA/QC | Quality Assurance and Quality Control |
| SO2 | Sulphur Dioxide |
|  |  |

# References

* Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. 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.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.

Add additional references here

1. Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017 [↑](#footnote-ref-2)
2. Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006 [↑](#footnote-ref-3)
3. Defra. Air quality appraisal: damage cost guidance, July 2021 [↑](#footnote-ref-4)
4. Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018 [↑](#footnote-ref-5)
5. Defra. Clean Air Strategy, 2019 [↑](#footnote-ref-6)
6. DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018 [↑](#footnote-ref-7)
7. The units are in microgrammes of pollutant per cubic metre of air (µg/m3). [↑](#footnote-ref-8)