

Nottingham City Council

# 2025 Air Quality Annual Status Report (ASR)

## In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021

Date: November 2025

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## Local Responsibilities and Commitment

This ASR was prepared by the Communities, Environment and Residents Services Directorate, Environmental Health and Public Protection service of Nottingham City Council with the support and agreement of the following officers and departments:

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This ASR has been reviewed by Nottingham City Council's Director of Public Health, Lucy Hubber, to confirm that it meets the statutory requirements and the recommendations are in accord with the Nottingham and Nottinghamshire Air Quality Strategy.

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# Executive Summary: Air Quality in Our Area

## Air Quality in Nottingham City Council's administrative area

Air quality is the term used to describe how polluted the air we breathe is.

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Low-income communities are also disproportionately impacted by poor air quality, exacerbating health and social inequalities.

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

**Table ES 1 - Description of Key Pollutants**

| Pollutant | Description |
|---|---|
| Nitrogen Dioxide ($NO_2$) | Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation. |
| Sulphur Dioxide ($SO_2$) | Sulphur dioxide ($SO_2$) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil. |
| Particulate Matter ($PM_{10}$ and $PM_{2.5}$) | Particulate matter is everything in the air that is not a gas.<br>Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes.<br>$PM_{10}$ refers to particles under 10 micrometres. Fine particulate matter or $PM_{2.5}$ are particles under 2.5 micrometres. |

In Nottingham City the pollutant of concern is nitrogen dioxide ($NO_2$). The main sources of urban $NO_2$ are natural gas fired heating/hot water systems and boilers (industrial, commercial and domestic sources) and motor vehicles.

The largest local contributors to ambient concentrations of particulate matter ($PM_{10}$, $PM_{2.5}$, $PM_{0.1}$) are road transport; diesel engine vehicles, tyre, brake, and road surface wear, and the burning of solid fuels such as coal-based smokeless fuels and wood.

Air quality modelling (DEFRA 2017) indicates that the majority of Nottingham's fine particulate air pollution ($PM_{2.5}$ and smaller) comes from sources outside the Nottingham City administrative area (and the Greater Nottingham conurbation) and contains a proportion of secondary particles formed by chemical reactions between air pollutants such as ammonia, sulphur dioxide and nitrogen dioxide.

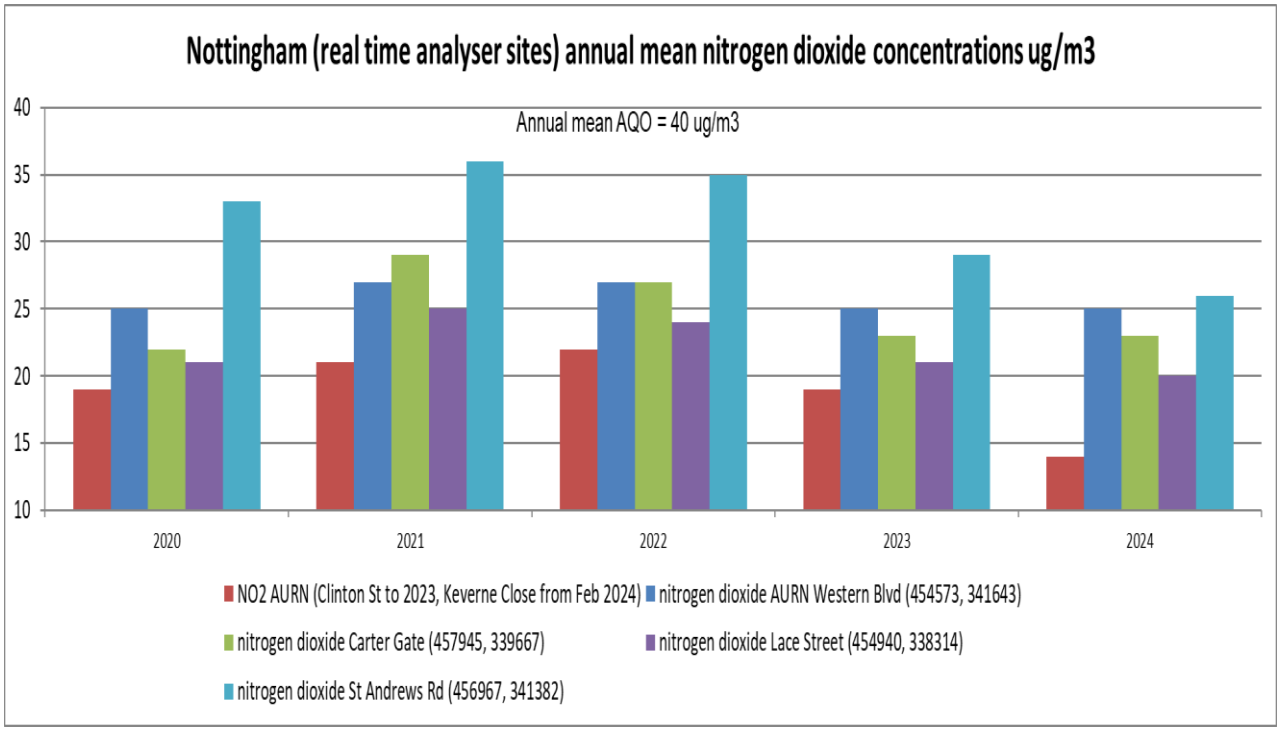
**Air Quality Monitoring data 2024**

Nottingham has an AQMA for $NO_2$ and is required to carry out $NO_2$ monitoring. It uses real time analysers and nitrogen dioxide diffusion tubes to do this.

DEFRA operates two AURN stations (for the Nottingham 'Agglomeration'), monitoring a range of pollutants of concern.

Monitoring data from Nottingham City Council's own 3 RTAs and the Clinton Street East and Western Boulevard AURN stations show $NO_2$ concentrations were below the annual mean air quality objective of 40 *u*g/m$^3$

Figure 1.



In 2024 Nottingham City Council's network of 50 diffusion tubes (38 individual locations), although only indicative of $NO_2$ concentrations, recorded annual mean (bias adjusted and annualised) concentrations of less than 40 *u*g/m$^3$.

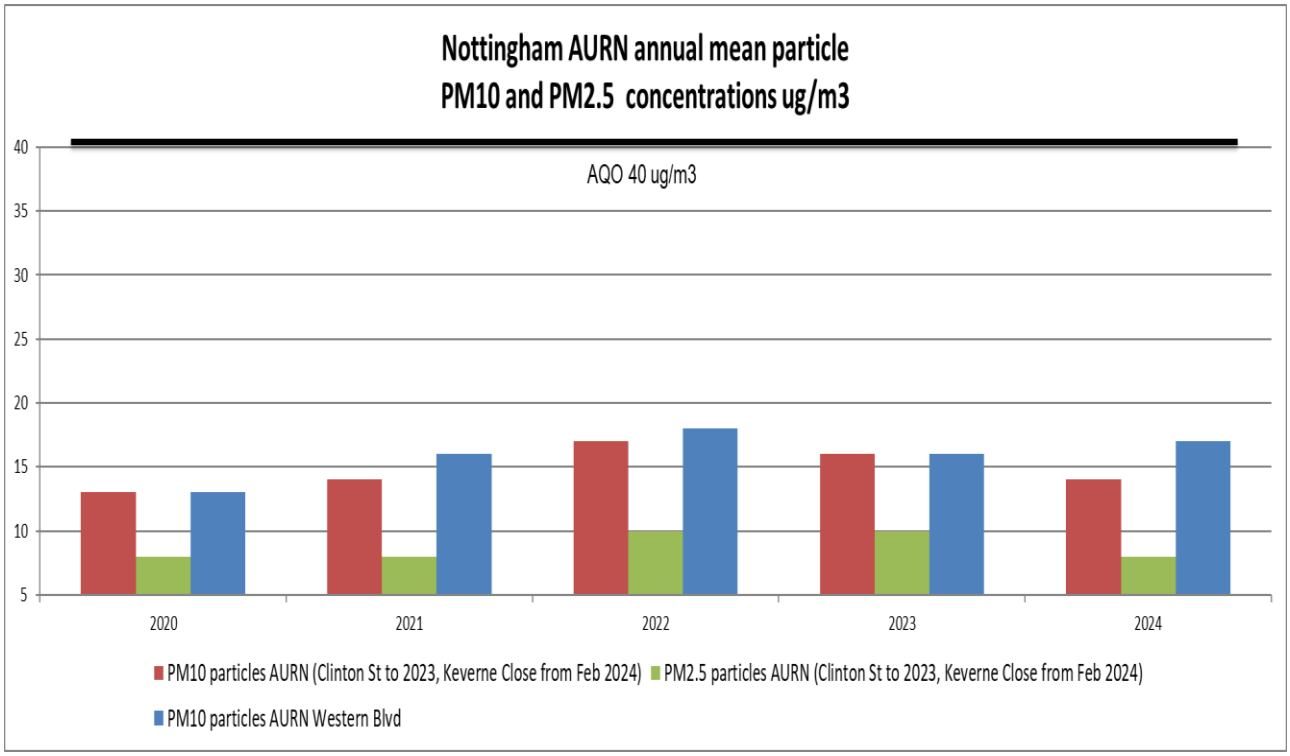
**Particle monitoring data**

DEFRA operates two AURN stations (for the Nottingham 'Agglomeration'), monitoring a range of pollutants of concern, including $PM_{10}$ and $PM_{2.5}$. The Clinton Street East/Keverne Close and Western Boulevard AURN stations show $PM_{10}$ concentrations were below the annual mean air quality objective of 40 *u*g/m$^3$ (Figure 2.).

$PM_{2.5}$ does not have any AQOs. However, the Environmental Targets (fine particulate matter) (England) Regulations 2023 set two PM2.5 targets for England, to be met by 2040. https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update_20230403.pdf

$PM_{2.5}$ did not exceed the 2040 $PM_{2.5}$ Annual Mean Concentration Target of 10 ug/m$^3$.

Figure 2.



## Actions to Improve Air Quality

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

### Local actions to improve Air Quality

The combustion of carbon containing fuels (e.g. natural gas, petrol, diesel, liquified petroleum gas (LPG), wood) in air produces water vapour, carbon dioxide, the oxides of nitrogen ($NO_X$); nitrogen oxide (NO) and nitrogen dioxide ($NO_2$), and particles (PM). Thus, strategies and action to reduce local $CO_2$ emissions will also reduce emissions of $NO_X$ and, in the case of solid and liquid hydrocarbon-based fuels, particles.

In October 2025 Nottingham City Council published its Council Plan 2025-29. https://committee.nottinghamcity.gov.uk/documents/s168761/Enc.%201%20for%20Our%20Council%20Plan%202025-29.pdf

It summarises a range of priorities and outlines policies and strategies to improve health and well-being and have a direct impact on air quality in Nottingham and the larger conurbation.

### Carbon Neutral Nottingham Action Plan

This plan builds on Nottingham's ambition to become carbon neutral by 2028, known as CN28. It is underpinned by the Nottingham Carbon Neutral Charter which sets out high-level objectives in order to achieve a resilient and carbon neutral Nottingham.

Nottingham's approach to sustainable carbon neutrality will integrate carbon reduction with sustainability and an ambition to identify and realise multiple benefits, termed co-benefits.

Co-benefits are deliberate or incidental positive outcomes across a range of other areas in addition to the central aim of an intervention. An example of a co-benefit is moving towards more active travel to tackle air-quality also has benefits for health from exercise and mental wellbeing and reducing carbon emissions.

The approach encompasses all current and foreseeable emission sources and will reduce or negate entirely the combustion of carbon-based fuels and, in turn, will reduce or negate emissions of NOx/$NO_2$ and particles and other combustion by-products.

https://www.nottinghamcity.gov.uk/cn2028

**Carbon Neutral Supplementary Planning Document (draft)**

In accordance with the Council's agreed Action Plan to pursue Carbon Neutrality by 2028, Planning Policy is currently preparing a supplementary planning document to provide detailed guidance on the range of measures possible to reduce Carbon in new residential and commercial development proposals. It will supplement existing Planning Policies as contained in the Nottingham City Aligned Core Strategy (2014) and the Local Plan Part 2 and highlight the Councils agreed targets.

Taking into consideration the policy context and best practice examples, it is anticipated that this SPD will firstly; provide guidance in relation to energy efficiency, renewable energy and sustainable design and construction and secondly; present a Carbon Neutrality checklist for applicants to demonstrate compliance with the policy approach.

**Nottingham Local Plan Part 1 and 2**

Nottingham City Council has been working to improve air quality by reducing emissions of CO2, NOx/NO2 and particles (PM10, PM2.5) by increasing energy efficiency across Nottingham City Council and Nottingham City Homes building stock and investing in alternative energy generation.

Nottingham City Council's Land and Planning Policies Development Plan Document (Local Plan Part 2) was adopted in January 2020.

It supports the wider Broxtowe Borough, Gedling Borough and Nottingham City Aligned Core Strategy. The Core Strategy details policies and objectives) of which the majority directly address or contribute towards improving air quality e.g.

i) Environmentally responsible development addressing climate change

ii) High quality new housing

v) Regeneration

viii) Health and wellbeing

x) Excellent transport systems and reducing the need to travel

xi) Protecting and improving natural assets

xii) Timely and viable infrastructure

https://www.nottinghamcity.gov.uk/information-for-business/planning-and-building-control/planning-policy/the-local-plan-and-planning-policy/the-adopted-local-plan/

**Local Plan to Improve Air Quality in Nottingham (Action plan to reduce NO2 concentrations in locations at risk of infraction of EU limit values).**

The main element of this air quality action plan, which was the retrofit of approximately 185 Euro V emission standard Nottingham City Transport buses with NO2 abatement technology to bring them up to Euro VI emission standard and the accelerated introduction of lower NO2 emissions Bio-gas buses, was substantially completed by February 2020.

https://www.nottinghaminsight.org.uk/d/aBFPtBx

A significant proportion of the buses operating on the roads where infraction of the EU limit $NO_2$ annual mean was predicted were upgraded by August 2019. The reduction in NOx/$NO_2$ emissions and ambient $NO_2$ concentrations were calculated, submitted to and provisionally accepted by DEFRA in August 2019.

The second element of the plan, Nottingham City Council's revised Hackney Carriage and Private Hire Vehicle Strategy 2017-2020 designed to transition the fleet to Euro VI compliant taxis from January 2020, and for a minimum of 40% of the HC and 25% of the Private Hire fleet to be Ultra Low Emission Vehicles has been implemented.

**The process for reviewing compliance with the ministerial direction continues.**

**Nottinghamshire Air Quality Strategy**

In November 2019 Nottingham and Nottinghamshire completed the review of their joint Air Quality Strategy and each Council's respective Health and Wellbeing Boards subsequently approved them in 2020. The two versions of the Strategy, an interactive webpage and the more detailed strategy document, are available to download from each Council's website (search on-line for Nottingham and Nottinghamshire Air Quality Strategy).

https://www.nottinghamshireinsight.org.uk/themes/air-quality/

The strategy draws together work by local authorities, police, fire and rescue services, NHS trusts, Environment Agency and National Highways (formerly Highways England) to develop, promote and support activity within their own organisations and complement each other to reduce harmful emissions from their activity, estate, staff and customers/service users.

https://www.nottinghaminsight.org.uk/f/5ab131c6-d61b-4cea-b407-de704be9ac17

and search for 'Air Quality Strategy for Nottingham and Nottinghamshire 2020-2030'.

**Clear Zone**

Nottingham's Clear Zone encompasses the roads immediately surrounding the Old Market Square and linking it to Upper Parliament Street, Maid Marian Way, Victoria Street and Pelham Street.

It limits access to the zone to certain vehicles and for limited times.

Benefits include an improved the pedestrian environment encouraging more people to come to the city centre for shopping and leisure.

**Local Transport Programme**

Our vision and objectives for transport are set out in the Local Transport Plan (LTP). This is then used as the basis for bidding for funding from the Government and other sources.

Our current funded local transport programmes includes:

Transforming Cities – Working in partnership with Derby City Council, Derbyshire County Council and Nottinghamshire County Council to improve access to employment opportunities and promote sustainable travel. The programme supports the delivery of multiple active travel schemes, public transport infrastructure improvements and measures to encourage the take up of cleaner vehicles.

Bus Service Improvement Plan – Working in partnership with Nottinghamshire County Council to think holistically about how to improve our bus network with innovative ticketing and greener buses.

Future Transport Zones – Developing innovative transport solutions and trialling new initiatives to help shape the future of greener, more sustainable transport.

Levelling Up Fund – Improving streets and local town centres and make walking and cycling easier and safer.

Active Travel Fund – Projects to encourage walking, wheeling and cycling.

# Conclusions and Priorities

2024's real time monitoring shows concentrations of $SO_2$, $NO_2$ concentrations and $PM_{10}$ remain below their AQOs. Indicative monitoring by diffusion tubes also show $NO_2$ concentrations were also below the annual mean AQO.

**Priorities to improve air quality**

The local (and conurbation wide) priority to improve air quality continues to be how to reduce levels of nitrogen dioxide and identify and implement practicable measures to reduce particle emissions and concentrations in the Nottingham City administrative area.

The LAQM Portal requires Council's to list their top 3 measures to improve air quality. Nottingham City Council's are:-

1. Engagement: The City & County Councils with Boroughs and District Councils have agreed a plan to engage and communicate a shared vision to their communities. Priorities are for awareness raising to higher risk groups, people working with higher risk groups and promoting local, national and international awareness raising campaigns at an individual and organisational level.

2. Complete its Electric bus project: First component: as older (retrofitted) diesel vehicles come to the end of their life they are being replaced by even cleaner fully battery electric vehicles. This investment is going into both the electrification of the Trent Bridge Depot that is the base for the company's electric fleet and where all the infrastructure to charge the vehicles has been installed.

The second component is the purchase of 68 brand new battery electric Yutong buses from November 2023 onwards being rolled out in phases. The order includes 48 single decker and 20 double decker buses. 24 of the single decker buses are already in service with all remaining buses to be delivered during 2025/26.

3. In accordance with the Council's agreed Action Plan to pursue Carbon Neutrality by 2028, Planning Policy is currently preparing a supplementary planning document to provide detailed guidance on the range of measures possible to reduce Carbon in new residential developments.

The local priorities and challenges to improve air quality in Nottingham and reduce emissions are:

i. Raising local awareness of air pollution and its health impacts, and build and sustain commitment to reduce emissions and exposure,

ii. Maintain activity to deliver Nottingham's ambition to become Carbon Neutral by 2028, thereby reducing emission of $NO_2$ and particles,

iii. Continue to roll-out/improve energy efficiency in Nottingham City Council's housing stock, as and when funding permits,

iv. Promote energy efficiency and the transition to/installation of alternative technologies that significantly reduce/negate $NO_2$/$NO_x$ emissions in the commercial/industrial sector,

v. Sustainable transport – continue to implement programme of local transport measures that contribute to deliver more integrated transport in Nottingham including active travel, public transport and encouraging the take up of cleaner vehicles.

vi. Continue work with Nottingham's taxi companies to introduce low and zero emission vehicles.

vii. Integrate East Midlands Air Quality Network Air Quality and Emission Mitigation guidance as Supplementary Planning Guidance in the Local Plan.

viii. Further develop plans and secure funding for extension of Nottingham's Tram network (lines 4 and 5),

ix. Continue to work with major private and public sector employers to review vehicle use to reduce emissions,

x. Identify opportunities and secure further funding to transition Nottingham City Council commercial vehicle fleet to ULEV,

xi. Identify and implement practicable local solutions to reduce particle emissions and concentrations.

## How to get Involved

### What is the Council doing to reduce emissions?

Nottingham City Council is concerned about air pollution, climate change, and air quality and recognises that these issues are complex and interlinked.

The Council's strategies and action on climate change and public transport have reduced $CO_2$ emissions and air pollution in the Nottingham City administrative area, but the Council recognises it is necessary to go further to reduce emissions from the range of sources that generate particles and nitrogen dioxide and adversely impact on health.

### Health and Wellbeing Board

This group comprises Nottingham City Council and a large number of organisations, including Primary Health Care commissioners and providers, Registered Social Landlords, and third sector organisations.

http://www.healthynottingham.co.uk/

In September 2020 the Board approved the revised Nottingham and Nottinghamshire Air Quality Strategy. https://www.nottinghamshireinsight.org.uk/d/aaJK0SBf

(copy and paste into web browser to download)

### Nottingham Green Partnership

Nottingham Green Partnership is a wide range of organisations in the public, private and voluntary sectors that are working together to reduce the city's environmental impact. It recognises the environmental issues that affect Nottingham and its citizens and aims to deliver actions that will reduce our reliance on fossil fuels, increase resilience and improve quality of life.

### What can I do to improve air quality?

When burned in air, carbon containing fuels e.g. wood and fossil fuels, emit carbon dioxide, nitrogen oxides (NOx) – nitrogen oxide (NO) and nitrogen dioxide ($NO_2$), and particles (including $PM_{10}$ and $PM_{2.5}$). Although it does not affect local air quality, carbon dioxide is a greenhouse gas and contributes to climate change. Nitrogen dioxide and particles adversely affect local air quality therefore reducing emissions of these pollutants will improve air quality.

**Measures that reduce emissions of air pollution and thereby improve air quality:**

**Travel choices: walking, cycling, public transport, and journey/travel planning**

Walking and cycling, also known as 'active travel', have mental and physical health benefits in addition to reducing air pollution. Follow the links below for more information:

Walking in Nottingham: https://www.nottinghamcity.gov.uk/leisure-and-culture/parks-and-open-spaces/walking-in-nottingham-and-parks/

Rights of Way - Nottingham City Council

Highways register - Nottingham City Council

Cycling in Nottingham: http://www.transportnottingham.com/cycling/

Travel Well Active Travel Social Prescribing project Travel Well – Transport Nottingham

Local Cycling and Walking Infrastructure Plan https://www.transportnottingham.com/article/lcwip/

Nottingham has a high-quality public transport network located within the City, including the NET tram network as well as an established bus network.

Nottingham NET: http://www.thetram.net/

Nottingham City Transport: https://www.nctx.co.uk/

Trent Barton: https://www.trentbarton.co.uk/

Stagecoach: https://stagecoachbus.com

Zero Emission Bus Regional Areas project Multi-Million Pound Investment in 78 New Electric Buses for Nottingham City Transport - Nottingham City Transport (nctx.co.uk)

Transforming Cities – Transport Nottingham

Low Emission Vehicle Initiative fund Turning The Council's Fleet Green – Transport Nottingham.

Nottingham Car club: https://www.transportnottingham.com/driving/car-club/

A car club is a membership scheme that offers pay-as-you-go basis car rental, At the end of the journey you return your car to its dedicated on-street car club parking space. Nottingham currently has a network for 14 car club vehicles in 11 locations.

**Energy efficiency:**

We use energy in the form of electricity or natural gas to heat our homes, cook and power electrical equipment. Insulating our homes and using energy efficient appliances reduces energy consumption and emissions, both at power stations and locally from domestic gas boilers and gas cookers.

Visit http://www.energysavingtrust.org.uk/ for ideas on home to save energy and money.

**Clean Air Day**

Clean Air day, organised by global action plan, is the UK's largest air pollution campaign Nottingham City Council, together with other Cities and organisations across the UK, promotes Clean Air Day. The aim of the day was to raise awareness about air pollution, what people can do, and publicise via social media what people did, to reduce emissions and their exposure to air pollution.

Please visit https://www.cleanairday.org.uk/ for more information.

Although promoted as a single 'Clean Air Day', the event is to highlight the year-round issue of air pollution and its effects on health, enable Citizens identify what they can do on Clean Air Day and in the future to reduce personal exposure to air pollution, reduce emissions, and improve air quality.

**World Car Free Day**

Nottingham City Council continues to promote this world-wide annual event. This year WCFD is on Monday 22rd September 2025 and, if resources allow, Nottingham City Council intends to promote the day.

https://www.livingstreets.org.uk/get-involved/world-car-free-day/

https://www.twinkl.co.uk/event/world-carfree-day-2025#:~:text=Taking%20place%20on%20the%2022nd,of%20cars%20on%20the%20environment

For more information about air pollution and air quality in Nottingham please visit:-

**https://nottinghaminsight.org.uk/f/63682/Library/Environment/Air-Quality/**

# Table of Contents


Local Responsibilities and Commitment ..... i

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

Air Quality in Nottingham City Council ..... ii

Actions to Improve Air Quality ..... v

Conclusions and Priorities ..... ix

How to get Involved ..... xii

**1 Local Air Quality Management ..... 177**

**2 Actions to Improve Air Quality ..... 18**

**2.1 Air Quality Management Areas ..... 18**

**2.2 Progress and Impact of Measures to address Air Quality in Nottingham City Council ..... 20**

**2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations ..... 26**

**3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance ..... 28**

**3.1 Summary of Monitoring Undertaken ..... 28**

3.1.1 Automatic Monitoring Sites ..... 28

3.1.2 Non-Automatic Monitoring Sites ..... 28

**3.2 Individual Pollutants ..... 29**

3.2.1 Nitrogen Dioxide ($NO_2$) ..... 29

3.2.2 Particulate Matter ($PM_{10}$) ..... 32

3.2.3 Particulate Matter ($PM_{2.5}$) ..... 32

3.2.4 Sulphur Dioxide ($SO_2$) ..... 33

**Appendix A: Monitoring Results ..... 34**

**Appendix B: Full Monthly Diffusion Tube Results for 2024 ..... 53**

**Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC ..... 56**

New or Changed Sources Identified Within Nottingham City Council During 2024 ..... 56

Additional Air Quality Works Undertaken by Nottingham City Council During 2024 ..... 56

QA/QC of Diffusion Tube Monitoring ..... 56

Diffusion Tube Annualisation ..... 57

Diffusion Tube Bias Adjustment Factors ..... 57

$NO_2$ Fall-off with Distance from the Road ..... 60

QA/QC of Automatic Monitoring ..... 60

$PM_{10}$ and $PM_{2.5}$ Monitoring Adjustment ..... 61

Automatic Monitoring Annualisation ..... 61

$NO_2$ Fall-off with Distance from the Road ..... 60

Appendix D: Map(s) of Monitoring Locations and AQMAs .....62
Appendix E: Summary of Air Quality Objectives in England .....65
Appendix F: Ministerial Direction .....65
Appendix G: Electrochemical Cell real time analyser locations .....65

Glossary of Terms .....71
References .....72
References: Nottingham's geography and weather ..... 72

## Figures

Figure 1 – Nitrogen Dioxide concentrations ..... iii

Figure 2 – $PM_{10}$ and $PM_{2.5}$ concentrations ..... iv

Figure 3 – Nottingham's geographic location ..... 73

Figure A.1 – Trends in Annual Mean $NO_2$ Concentrations ..... 45

Figure A.3 – Trends in Annual Mean $PM_{10}$ Concentrations ..... 48

Figure A.5 – Trends in Annual Mean $PM_{2.5}$ Concentrations ..... 51

Figure D.1 – Map of Non-Automatic Monitoring Site ..... 62

## Tables

Table 2.1 – Declared Air Quality Management Areas ..... 19

Table 2.2 – Progress on Measures to Improve Air Quality ..... 22

Table A.1 – Details of Automatic Monitoring Sites ..... 34

Table A.2 – Details of Non-Automatic Monitoring Sites ..... 35

Table A.3 – Annual Mean $NO_2$ Monitoring Results: Automatic Monitoring (µg/m$^3$) ..... 39

Table A.4 – Annual Mean $NO_2$ Monitoring Results: Non-Automatic Monitoring (µg/m$^3$) ..... 41

Table A.5 – 1-Hour Mean $NO_2$ Monitoring Results, No. of 1-Hour Means > 200µg/m$^3$ ..... 46

Table A.6 – Annual Mean $PM_{10}$ Monitoring Results (µg/m$^3$) ..... 47

Table A.7 – 24-Hour Mean $PM_{10}$ Results, No. of $PM_{10}$ 24-Hour Means > 50µg/m$^3$ ..... 49

Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m$^3$) ..... 50

Table A.9 – $SO_2$ 2024 Monitoring Results, Number of Relevant Instances ..... 52

Table B.1 – $NO_2$ 2024 Diffusion Tube Results (µg/m$^3$) ..... 53

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Table C.2 – Bias Adjustment Factor ..... 59

Table C.3 – Local Bias Adjustment Calculation ..... 59

Table E.1 – Air Quality Objectives in England ..... 65

# 1 Local Air Quality Management

This report provides an overview of air quality in Nottingham City Council's administrative area during 2024. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

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

The statutory air quality objectives applicable to LAQM in England are presented in Table E.2.

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

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

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

# 2 Actions to Improve Air Quality

## 2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained and provide dates by which measures will be carried out.

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

The air quality objectives pertinent to the current AQMA designation are as follows:

- $NO_2$ annual mean; 40 *u*g/$m^3$

A local Air Quality Strategy is in place to prevent and reduce polluting activities. The Local Air Quality Strategy is available at https://nottinghaminsight.org.uk/d/aaJK0SBf

2024 was the first year that annualised and bias adjusted diffusion tube monitoring data indicated that the annual mean air quality objective for nitrogen dioxide was not exceeded.

Instructions given in current Defra Technical Guidance (LAQM TG-22) states: The revocation of an AQMA should be considered following three consecutive years of compliance, 10% below the relevant objective at the point of exposure.

In order to reduce the measurement uncertainty associated with diffusion tubes the diffusion tube monitoring network was reviewed at the end of 2024 and additional monitoring and triplicate tube sites established in 2025 at those locations with the highest annual mean $NO_2$ concentrations. This will assist with future comparison of DT data with the AQO and to demonstrate the revocation criteria above is met.

**Table 2.1 – Declared Air Quality Management Areas**

| AQMA Name | Date of Declaration | Pollutants and Air Quality Objectives | One Line Description | Is air quality in the AQMA influenced by roads controlled by Highways England? | Level of Exceedance: Declaration | Level of Exceedance: Current Year | Number of Years Compliant with Air Quality Objective | Name and Date of AQAP Publication | Web Link to AQAP |
|---|---|---|---|---|---|---|---|---|---|
| AQMA 'No.2' | Declared 2002, amended 2019. | $NO_2$ Annual Mean (40 *u*g/m$^3$) | **The entire administrative area of Nottingham City Council.** | NO | 42 *u*g/m$^3$<br><br>(at AQMS RTA site Dunkirk – no longer operated)<br><br>47 *u*g/m$^3$ (DT 46 Queens Road) | **No exceedance measured at real time analysers in 2024.**<br><br>**39 *u*g/m$^3$ (DT 46 Queens Road)** | **0**<br><br>(LAQM TG22 para 3.57: when using indicative monitoring compliance may only be considered achieved after 3 consecutive years monitoring lower than 36 *u*g/m$^3$) | LTP Implementation Plan 2010 2015-18, 2016-19, 2017-20, 2018-21 and 2019-22 | https://nottinghamshireinsight.org.uk/search?q=air+quality+action+plan<br><br>https://nottinghamshireinsight.org.uk/search?q=local+transport+plans |

☒ Nottingham City Council **confirm the information on UK-Air regarding their AQMA is up to date.**

☒ Nottingham City Council **confirm that all current AQAPs have been submitted to Defra.**

## 2.2 Progress and Impact of Measures to address Air Quality in Nottingham City Council

Defra's appraisal of last year's ASR (2024) may be downloaded by pasting the link below into a web browser https://nottinghaminsight.org.uk/d/ac63rwPg

Defra's appraisal of last year's ASR noted that 'This original report was rejected in July 2024. All issues identified in the original appraisal have been sufficiently rectified, and the report is considered acceptable.' Concluding: 'On the basis of the evidence provided by the local authority the conclusions reached in the report are accepted for all sources and pollutants.'

The following main comments were made:

1. Although the Council has stated that AQMA No.2 has been compliant for 6 years, monitoring data suggests that there was an exceedance at Site 46 in 2023. If it is not a relevant exceedance under LAQM guidance, this needs to be explained in the ASR. Otherwise, it is misleading to state that NCC is compliant. If this is a relevant exceedance, NCC should amend the reported years of compliance in the ASR.
   **NCC - has amended Table 2.1 to show that they are not compliant with the AQO. It can be seen from Table A.2 that site 46 is 0 metres from relevant receptors and therefore can be considered to be located at relevant exposure.**
2. Table 2.1 lists five individual AQMAs (all named AQMA No.2) with different exceedance and compliance statistics. It is unclear whether NCC has five individual AQMAs or one AQMA that encompasses the entire administrative boundary. NCC must amend Table 2.1 to show clearly the current declared AQMAs within the Council and notify the LAQM Helpdesk should the information on the LAQM Portal need updating.
   **NCC – The extra rows in Table 2.1 have been removed.**

Nottingham City Council has taken forward a number of direct measures during the current reporting year of 2024 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 10 measures are included within Table 2.2, with the type of measure and the progress Nottingham City Council have made during the reporting year of 2024 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 plans within nottinghaminsight.org.uk :-

https://www.nottinghaminsight.org.uk/search?q=transport

https://www.nottinghaminsight.org.uk/f/aAXNRad

The Nottingham Local Transport Plan now encompasses 2011 to 2026:

https://www.nottinghaminsight.org.uk/d/aapQXtBh

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Nottingham City Council anticipates that further additional measures not yet identified or prescribed will be required in subsequent years to achieve compliance and enable the revocation of Nottingham City AQMA No. 2.

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

| Measure No. | Measure Title | Category | Classification | Year Measure Introduced in AQAP | Estimated / Actual Completion Date | Organisations Involved | Funding Source | 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 | Engagement | Other | | | | | | | | The City & County Councils with Boroughs and District Councils have agreed a plan to engage and communicate to our communities with a shared vision. The groups priorities are for awareness raising to higher risk groups, people working with higher risk groups and promoting local, national and internation awareness raising campaigns at and individual and organisational level. | | | | |
| 2 | Electric bus project | Promoting Low Emission Transport | | | | | | | | Electric bus project: older (retrofitted) diesel vehic replaced by even cleaner fully battery electric veh electrification of the Trent Bridge Depot that is the where all the infrastructure to charge the vehicles<br><br>The second component is the purchase of 68 brar November 2023 onwards being rolled out in phase double decker buses. 24 of the single decker buse buses to be delivered during 2025/26 | | | | |
| 3 | Carbon Neutral Supplementary Planning Document | Other | | | | | | | | In accordance with the Council's agreed Action Plan to pursue Carbon Neutrality by 2028, Planning Policy is currently preparing a supplementary planning document to provide detailed guidance on the range of measures possible to reduce Carbon in new residential developments. | | | | |
| 4 | Zero Emission Bus Regional Area | Promoting Low Emission Transport | Public Vehicle Procurement - Prioritising uptake of low emission vehicles | 2022 | 2026 | Nottingham City Council, Nottingham City Transport | Department For Transport | Funded | >£10 million | Implementation | Replacement of Euro6 buses with new zero emission vehicles | 1 | Zero Emission Bus Regional Area | Promoting Low Emission Transport |
| 5 | Transforming Cities Fund – Cycle corridor improvements | Promoting Travel Alternatives | Promotion of cycling | 2020 | 2025 | Nottingham City Council | Department For Transport | Funded | >£10 million | Completed | Mode shift from car to active travel | 2 | Transforming Cities Fund – Cycle corridor improvements | Promoting Travel Alternatives |

| Measure No. | Measure Title | Category | Classification | Year Measure Introduced in AQAP | Estimated / Actual Completion Date | Organisations Involved | Funding Source | Funding Status | Estimated Cost of Measure | Measure Status | Reduction in Pollutant / Emission from Measure | Key Performance Indicator | Progress to Date | Comments / Barriers to Implementation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Transforming Cities Fund – Bus station improvements | Transport Planning and Infrastructure | Public transport improvements-interchanges stations and services | 2020 | 2023 | Nottingham City Council | Department For Transport | Funded | £1m - £10m | Completed | Encouraging greater bus use | 3 | Transforming Cities Fund – Bus station improvements | Transport Planning and Infrastructure |
| 7 | E-bike and e-scooter hire services | Alternatives to private vehicle use | Other | 2020 | 2026 | Nottingham City Council, Lime (e-bike), Dott (e-scooter) | Department For Transport | Funded | £1m - £10m | Implementation | Mode shift from car to active travel<br>Low level reduction | Increased active travel usage | E-bike service launched April 2023.<br>E-scooter hire relaunched March 2025 | Services operating as concession contracts. Funding used to provide dedicated parking.<br>E-scooter trial timescales set by Government. Currently due to run until 31 May 2026 |
| 8 | Provision of electric vehicle charge points in hubs and car parks | Promoting Low Emission Transport | Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging | 2020 | 2025 | Nottingham City Council, BP Pulse | Department For Transport | Funded | £1m - £10m | Implementation | Encouraging take up of electric vehicles<br>Medium level impact | Reduction of air pollution and CO2 emissions from road traffic | 100 sockets installed through the Transforming Cities Fund<br>32 sockets provided through Levelling Up Fund | Further 10 sockets to be installed summer 2025.<br>Delivered under existing BP Pulse Concession contract, which runs until 2028 |
| 9 | Future Transport Zone - | Transport Planning and | Other | 2020 | 2026 | Nottingham City Council, Trafi, | Department For Transport | Funded | £1m - £10m | Implementation | Encourage take up of sustainable transport modes<br>Medium level impact | Reduced vehicle | Procurement complete | App platform to go live |

| Measure No. | Measure Title | Category | Classification | Year Measure Introduced in AQAP | Estimated / Actual Completion Date | Organisations Involved | Funding Source | Funding Status | Estimated Cost of Measure | Measure Status | Reduction in Pollutant / Emission from Measure | Key Performance Indicator | Progress to Date | Comments / Barriers to Implementation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mobility as a service | Infrastructure | | | | Public Transport Operators | | | | | | emissions | | June 2025 |
| 10 | Future Transport Zone - Data Platform | Transport Planning and Infrastructure | Other | 2020 | 2026 | Nottingham City Council, Vivacity, Alchera Technologies Ltd | Department For Transport | Funded | £1m - £10m | Implementation | Improve efficiency of transport network<br>Low level impact | Reduced vehicle emissions | AI sensor network rolled out across Nottingham.<br>Contract for Data Hub awarded May 2025 | Work on data hub to commence now provider has been confirmed |
| 11 | Workplace Travel Service | Promoting Travel Alternatives | Other | 2018 | 2027 | Local Businesses | Department For Transport | Funded | £1m - £10m | Implementation | Encourage take up of sustainable transport modes<br>Low level impact | Increase in uptake of electric vehicles and active travel measures | 87 grants awarded through the Transforming Cities Fund.<br>18 grants awarded to date under current Local Transport Plan funded programme | Capital grants to support Nottingham businesses for greener transport schemes including EV charging, pool ebikes and cycle parking |
| 12 | Active Travel Fund – Cycle Corridor improvements | Promoting Travel Alternatives | Promotion of cycling | 2022 | 2026 | Nottingham City Council | Active Travel England | Funded | £1m - £10m | Implementation | Encourage take up of sustainable transport modes<br>Low level impact | Increase in number of journeys by bike | 2.4km (1.2km in each direction) delivered on St Anns Well Road.<br>0.64km delivered on Porchester Road | 0.65km to be delivered as Porchester Road Phase 2 |
| 13 | Provision of electric vehicle charge points on | Promoting Low Emission Transport | Procuring alternative Refuelling infrastructure to promote Low | 2023 | 2029 | Nottingham City Council.<br>Chargepoint Operator | Department For Transport (Low Emission Vehicle | Funded | £1m - £10m | Implementation | Encouraging take up of electric vehicles<br>Medium level impact | Reduction of air pollution and CO2 emissions from | Out to tender. Contract award expected late 2025 | Proposed delivery of 860 sockets across 280 sites |

| Measure No. | Measure Title | Category | Classification | Year Measure Introduced in AQAP | Estimated / Actual Completion Date | Organisations Involved | Funding Source | Funding Status | Estimated Cost of Measure | Measure Status | Reduction in Pollutant / Emission from Measure | Key Performance Indicator | Progress to Date | Comments / Barriers to Implementation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Highway locations | | Emission Vehicles, EV recharging, Gas fuel recharging | | | to be confirmed | Infrastructure) | | | | | road traffic | | |

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[2], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter ($PM_{2.5}$)). There is clear evidence that $PM_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Nottingham City Council is implementing the following measures to address PM2.5:

Existing measures are focused on: -

i. reducing emissions from transport by constraining traffic growth and encouraging and facilitating walking, cycling and the use of public transport and

ii. on-going regulatory activity re Permitted Processes, ensuring compliance with the City's existing Smoke Control Orders, discouraging bonfires and uncontrolled burning, and ensuring construction and demolition activity implement dust minimisation measures.

Additional measures being considered include: -

i. Reducing emissions from non-vehicle fixed and mobile sources.
ii. Consolidating and amending the City's Smoke Control Orders to include emissions from Canal and other boats with solid fuel heating systems

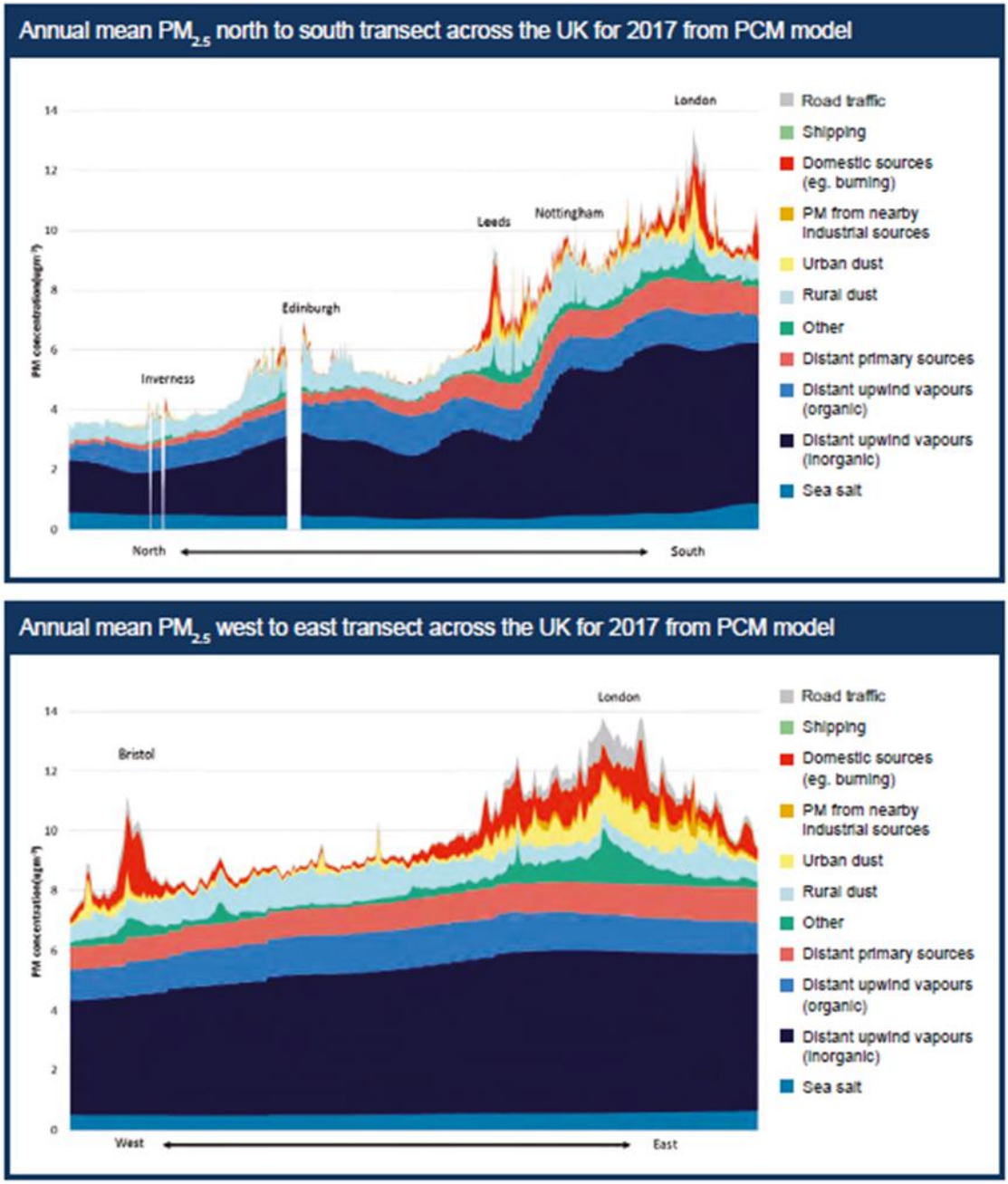
It should be noted that the UK Governments Air Quality Strategy (May 2019) details $PM_{2.5}$ source contribution to annual mean concentrations across the UK, highlighting a number of cities that fall on the chosen transect line, including Nottingham. (Figure 5).

The PCM model indicates that as much as 80% of Nottingham's $PM_{2.5}$ levels come from distant primary sources and distant upwind vapours e.g. industrial, commercial and agricultural sources outside the City's boundary. Therefore, any action by Nottingham City Council will only have a small impact on $PM_{2.5}$ levels.

[2] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

Figure 5

These images show how particulate matter from across the country can build up in the atmosphere as 'background pollution' and the role that this can play in combination with local sources in areas with a pollution challenge.






29

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

This section sets out the monitoring undertaken within 2024 by Nottingham City Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2020 and 2024 to allow monitoring trends to be identified and discussed.

## 3.1 Summary of Monitoring Undertaken

### 3.1.1 Automatic Monitoring Sites

Nottingham City Council undertook automatic (continuous) monitoring at three sites during 2024.

Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at https://uk-air.defra.gov.uk/data/data_selector

The https://nottinghamaqm.net/ page presents automatic monitoring results for Nottingham City Council, 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. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

Nottingham City Council deployed 18 electrochemical cell analysers at locations near to diffusion tube monitoring sites with the highest monitored concentrations of NO2. However, as electrochemical cell analysers are not currently approved by DEFRA as a reference measurement technique data from these analysers is presented in appendix G rather than included in table A.1.

### 3.1.2 Non-Automatic Monitoring Sites

Nottingham City Council undertook non- automatic (i.e. passive) monitoring of $NO_2$ at **38** sites during 2024. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

The diffusion tube monitoring network was reviewed at the end of 2024 and a number of sites identified as no longer necessary (as they consistently indicated a bias adjusted annual mean $NO_2$ concentration less than 30 *u*g/m$^3$). However, additional monitoring and triplicate tube sites were established in 2025. Their monitoring data will be reported in next year's ASR.

## 3.2 Individual Pollutants

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

### 3.2.1 Nitrogen Dioxide ($NO_2$)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored $NO_2$ annual mean concentrations for the past five years with the air quality objective of 40µg/m$^3$. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2024 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored $NO_2$ hourly mean concentrations for the past five years with the air quality objective of 200µg/m$^3$, not to be exceeded more than 18 times per year.

**2024's monitoring did not record exceedances of either the annual mean or 1-hr air quality objectives at any real time monitoring site, or exposure adjusted location.**

2024 was the first year that annualised and bias adjusted diffusion tube monitoring data indicated that the annual mean air quality objective for nitrogen dioxide was not exceeded in the Nottingham City Council administrative area.

Instructions given in current Defra Technical Guidance (LAQM TG-22) states: The revocation of an AQMA should only be considered following three consecutive years of compliance, 10% below the relevant objective at the point of exposure.

In order to reduce the measurement uncertainty associated with diffusion tubes the diffusion tube monitoring network was reviewed at the end of 2024 and additional monitoring (triplicate tube) sites established in 2025 at those locations with the highest annual mean $NO_2$ concentrations. This will assist with future comparison of DT data with the AQO and to demonstrate when the revocation criteria above has been met.

Note; During 2024 Nottingham City Council deployed 18 electrochemical cell real time analysers (ECRTA - monitoring a range of pollutants of concern including $NO_2$) at locations across the city where diffusion tubes indicated exceedances of the AQO in 2022 (including the A6008 Upper Parliament Street).

The ECRTA units provide data with very high temporal resolution (e.g. concentrations are recorded every minute, rather than calculated as a monthly average in the case of diffusion tubes). The units will provide data with higher accuracy and precision than that achievable with diffusion tubes. The locations of the units is reported in Appendix G. The data has not been processed for presentation in this report. It is available at: https://www.nottinghaminsight.org.uk/Document-Library/Document-Library/aAXJ0MT

**The Local Plan to Improve Air Quality in Nottingham**

In December 2015 the Department for Environment Food and Rural Affairs (DEFRA) released draft plans to improve air quality in the UK “Tackling Nitrogen Dioxide in our towns and cities”. The document also contained the results of DEFRA’s analysis, which concluded that concentrations of Nitrogen Dioxide ($NO_2$) in six UK cities, including Nottingham, were above the legal levels set by the EU First Daughter Directive on air quality (99/30/EC) and the UK Air Quality Strategy 2000. The document concluded that modelled levels of $NO_2$ (in Nottingham) along the Ring Road and around Crown Island would exceed the legal limit of 40µg/$m^3$ until (and including) 2023 without additional action being taken.

The document identified road traffic as a major source of $NO_2$ and, as a result, DEFRA required Nottingham City Council to prepare a plan aimed at reducing the level of Nitrogen Dioxide in the city. The plan was expected to consider the implementation of a Clean Air Zone, which would charge a fee for the most polluting vehicles to enter the zone. The aim of this approach was to reduce concentrations of Nitrogen Dioxide such that they would be brought into compliance with the Air Quality Directive in the shortest possible time and by the year 2020 at the latest.

Nottingham City Council's Local Plan to Improve Air Quality (and supporting business case) was submitted to government in September 2018.

https://nottinghaminsight.org.uk/Document-Library/Document-Library/aBFyzqe

The plan was accepted and a Ministerial Direction (dated 20th November 2018) received to implement the plan (Appendix F).

The main element of this air quality action plan, which was the retrofit of approximately 185 Euro V emission standard Nottingham City Transport buses with NO2 abatement technology to bring them up to Euro VI emission standard and the accelerated introduction of lower NO2 emissions Bio-gas buses, was substantially completed by February 2020.

https://www.nottinghaminsight.org.uk/d/aBFPtBx

A significant proportion of the buses operating on the roads where infraction of the EU limit NO2 annual mean was predicted were upgraded by August 2019. The reduction in NOx/NO2 emissions and ambient NO2 concentrations were calculated, submitted to and, provisionally accepted by, DEFRA in August 2019.

The second element of the plan, Nottingham City Council's revised Hackney Carriage and Private Hire Vehicle Strategy 2017-2020 designed to transition the fleet to Euro VI compliant taxi's from January 2020, and for a minimum of 40% of the HC and 25% of the Private Hire fleet to be Ultra Low Emission Vehicles has been implemented.

To assess compliance with Local Plans DEFRA set up a new diffusion tube monitoring network: the United Kingdom Urban Nitrogen Dioxide Monitoring Network 'UUNN'.

https://uk-air.defra.gov.uk/networks/network-info?view=UUNN

In September 2021 Nottingham City Council was informed that diffusion tube monitoring on the A6008 Upper Parliament Street (part of the UUNN) recorded an Annual Average NO2 concentration of 44 $ug/m^3$.

The process for reviewing compliance with the ministerial direction started in 2024 and, at the time of submission of this ASR, continues.

### 3.2.2 Particulate Matter ($PM_{10}$)

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored $PM_{10}$ annual mean concentrations for the past five years with the air quality objective of 40$\mu g/m^3$.

Table A.7 in Appendix A compares the ratified continuous monitored $PM_{10}$ daily mean concentrations for the past five years with the air quality objective of 50$\mu g/m^3$, not to be exceeded more than 35 times per year.

**2024 monitoring data from the AURN Kenmore Gardens and the AURN Western Boulevard stations show both the annual mean and 24-hour air quality objectives continue to be met.**

Note: In January 2024 the DEFRA funded AURN station was relocated from Clinton Street East to Kenmore Gardens, St Anns, a site more representative of an 'urban background' and exposure.

### 3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

Note: Computer dispersion modelling undertaken for DEFRA apportions approximately 80% of $PM_{2.5}$ pollution to sources outside Nottingham City.

**Public Health Outcomes Framework**

The Public Health Outcomes Framework sets out a vision for public health, that is to

**'Improve and protect the nation's health, and improve the health of the poorest fastest'**

For details of the policy behind the framework, see our further information.

The framework focuses on two high level outcomes to be achieved across the public health system and beyond:

**1. Increased healthy life expectancy**

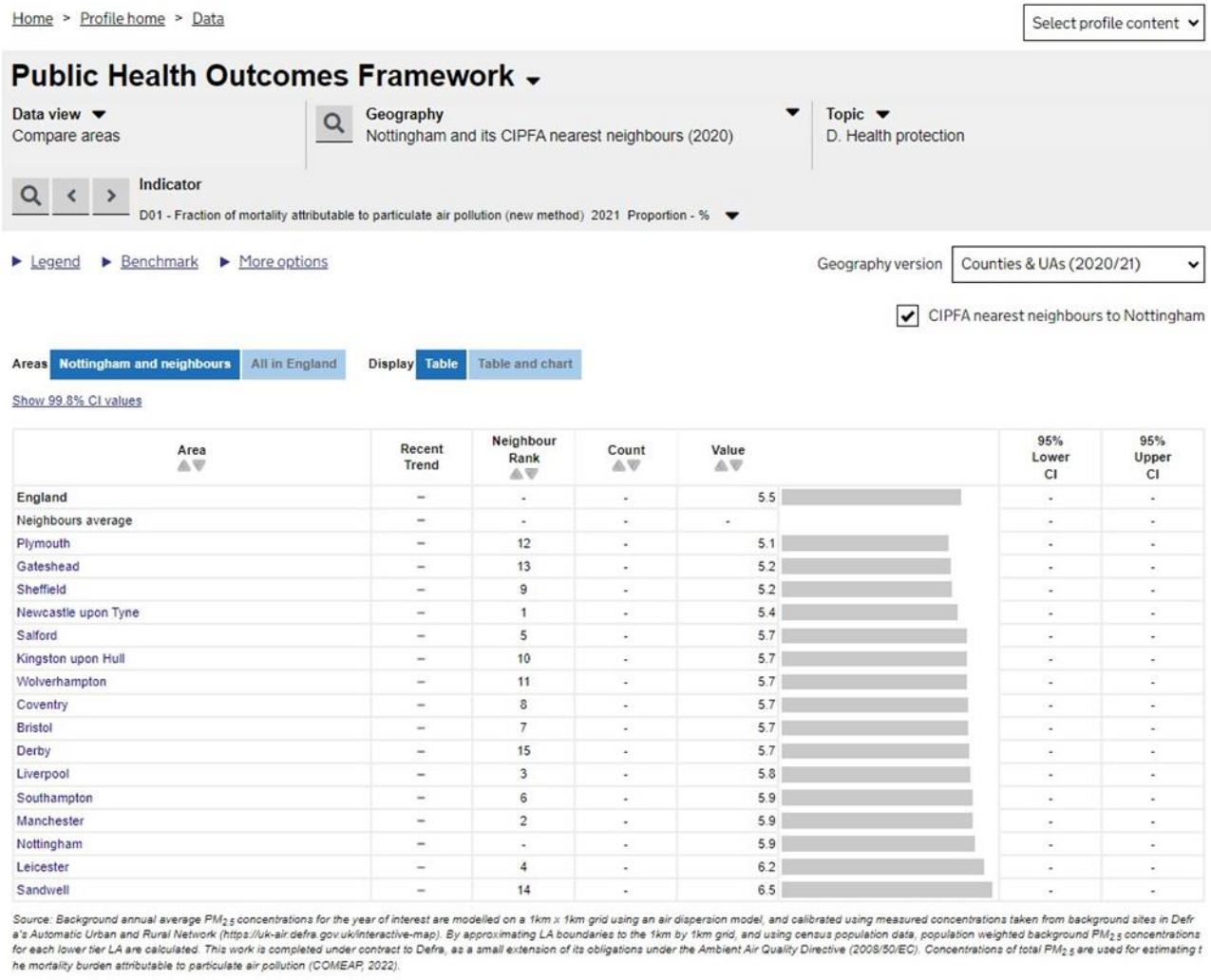
**2. Reduced differences in life expectancy and healthy life expectancy between communities**

The nature of public health is such that marked improvements in these outcomes will take years, sometimes even decades.

With respect to the overarching indicator 'Health Protection' there is an indicator for $PM_{2.5}$:

**Indicator D01 – Fraction of mortality attributable to particulate air pollution**

https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#gid/1000043



Home > Profile home > Data

Select profile content

**Public Health Outcomes Framework**

Data view: Compare areas | Geography: Nottingham and its CIPFA nearest neighbours (2020) | Topic: D. Health protection

Indicator: D01 - Fraction of mortality attributable to particulate air pollution (new method) 2021 Proportion - %

Legend | Benchmark | More options

Geography version: Counties & UAs (2020/21)

CIPFA nearest neighbours to Nottingham

Areas: Nottingham and neighbours | All in England

Display: Table | Table and chart

Show 99.8% CI values

| Area | Recent Trend | Neighbour Rank | Count | Value | 95% Lower CI | 95% Upper CI |
|---|---|---|---|---|---|---|
| England | – | - | - | 5.5 | - | - |
| Neighbours average | – | - | - | - | - | - |
| Plymouth | – | 12 | - | 5.1 | - | - |
| Gateshead | – | 13 | - | 5.2 | - | - |
| Sheffield | – | 9 | - | 5.2 | - | - |
| Newcastle upon Tyne | – | 1 | - | 5.4 | - | - |
| Salford | – | 5 | - | 5.7 | - | - |
| Kingston upon Hull | – | 10 | - | 5.7 | - | - |
| Wolverhampton | – | 11 | - | 5.7 | - | - |
| Coventry | – | 8 | - | 5.7 | - | - |
| Bristol | – | 7 | - | 5.7 | - | - |
| Derby | – | 15 | - | 5.7 | - | - |
| Liverpool | – | 3 | - | 5.8 | - | - |
| Southampton | – | 6 | - | 5.9 | - | - |
| Manchester | – | 2 | - | 5.9 | - | - |
| Nottingham | – | - | - | 5.9 | - | - |
| Leicester | – | 4 | - | 6.2 | - | - |
| Sandwell | – | 14 | - | 6.5 | - | - |

*Source: Background annual average $PM_{2.5}$ concentrations for the year of interest are modelled on a 1km x 1km grid using an air dispersion model, and calibrated using measured concentrations taken from background sites in Defra's Automatic Urban and Rural Network (https://uk-air.defra.gov.uk/interactive-map). By approximating LA boundaries to the 1km by 1km grid, and using census population data, population weighted background $PM_{2.5}$ concentrations for each lower tier LA are calculated. This work is completed under contract to Defra, as a small extension of its obligations under the Ambient Air Quality Directive (2008/50/EC). Concentrations of total $PM_{2.5}$ are used for estimating the mortality burden attributable to particulate air pollution (COMEAP, 2022).*

### 3.2.4 Sulphur Dioxide ($SO_2$)

Table A.9 in Appendix A compares the ratified continuous monitored $SO_2$ concentrations for 2024 with the air quality objectives for $SO_2$.

**There were no exceedances of any of the three air quality objectives**

# 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? (1) | Monitoring Technique | Distance to Relevant Exposure (m) (2) | Distance to kerb of nearest road (m) (1) | Inlet Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CG $NO_x$ | Carter Gate | Roadside | 457945 | 339667 | $NO_2$ NO $NO_x$ | Y | Nottingham No. 2 | Chemiluminescent | 12 | 4 | 2.5 |
| LS $NO_x$ | Lace Street | Roadside | 454940 | 338314 | $NO_2$ NO $NO_x$ | Y | Nottingham No. 2 | Chemiluminescent | 3 | 9 | 1.5 |
| SA $NO_x$ | St. Andrews Road | Roadside | 456967 | 341382 | $NO_2$ NO $NO_x$ | Y | Nottingham No. 2 | Chemiluminescent | 12 | 13 | 1.5 |
| KG AURN | Kenmore Gardens | Urban background | 457958 | 340577 | $PM_{2.5}$, $PM_{10}$<br>$NO_2$, NO, $NO_x$<br>$O_3$<br>$SO_2$ | Y | Nottingham No. 2 | FDMS, FDMS<br>Chemiluminescent<br>Ultra Violet Absorption (UVA)<br>Ultra Violet Fluorescence (UVF) | N/A | 35 | 3 |
| WB AURN | Western Boulevard | Kerbside | 454573 | 341643 | $PM_{10}$ $NO_2$ | Y | Nottingham No. 2 | FDMS Chemiluminescent | 15 | 1 | 2.5 |

**Notes:**

(1) N/A if not applicable

(2) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

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

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 564 Derby Road | Roadside | 454522 | 338938 | $NO_2$ | Nottingham No.2 | 0.0 | 23.0 | No | 2.5 |
| 4 | 121 Beeston Rd | Roadside | 454782 | 338146 | $NO_2$ | Nottingham No.2 | 0.0 | 10.0 | No | 2.5 |
| 5 | 87 Abbey Street | Roadside | 455153 | 338510 | $NO_2$ | Nottingham No 2 | 0.0 | 5.0 | No | 2.5 |
| 6 | 4 Western Blvd | Roadside | 454466 | 340111 | $NO_2$ | Nottingham No.2 | 0.0 | 17.0 | No | 2.5 |
| 12 | Bentinck Rd - Sch | Roadside | 455808 | 340799 | $NO_2$ | Nottingham No.2 | 0.0 | 6.0 | No | 2.5 |
| 13 | 238 Ilkeston Road | Roadside | 455435 | 340136 | $NO_2$ | Nottingham No. 2 | 0.0 | 3.0 | No | 2.5 |
| 16 | 1-6 Castle Gardens | Roadside | 455870 | 339133 | $NO_2$ | Nottingham No.2 | 0.0 | 3.0 | No | 2.5 |
| 17 | 215 Castle Boulevard | Roadside | 455955 | 339129 | $NO_2$ | Nottingham No.2 | 0.0 | 5.0 | No | 2.5 |
| 19 | 87 Castle Blvd | Roadside | 456853 | 339303 | $NO_2$ | Nottingham No. 2 | 0.0 | 4.0 | No | 2.5 |
| 21 | Salutation Inn Maid Marian Way | Roadside | 457083 | 339637 | $NO_2$ | Nottingham No.2 | 0.0 | 3.0 | No | 2.5 |
| 24, 25, 26 | St Andrew's Rd T | Roadside | 456967 | 341382 | $NO_2$ | Nottingham No.2 | 12.0 | 16.0 | Yes | 1.5 |

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 27 | 21 Cartergate | Roadside | 457963 | 339681 | $NO_2$ | Nottingham No. 2 | 0.0 | 8.0 | No | 2.5 |
| 28 | Riverbank PH Trent Bridge | Roadside | 458060 | 338276 | $NO_2$ | Nottingham No.2 | 0.0 | 2.0 | No | 2.5 |
| 30 | LP 53890 Manvers Street | Roadside | 458079 | 339887 | $NO_2$ | Nottingham No.2 | 0.0 | 3.0 | No | 2.5 |
| 31 | 134 Middleton Boulevard | Roadside | 454367 | 339946 | $NO_2$ | Nottingham No 2 | 0.0 | 17.0 | No | 2.5 |
| 33 | Lace Street NOx RTA | Roadside | 454941 | 338314 | $NO_2$ | Nottingham No.2 | 0.0 | 9.0 | Yes | 1.5 |
| 35 | Lampost 70 Wollaton Road | Roadside | 454587 | 340088 | $NO_2$ | Nottingham No.2 | 10.0 | 3.0 | No | 2.5 |
| 40 | Lampost Middleton Boulevard/Crown Island | Roadside | 454321 | 339931 | $NO_2$ | Nottingham No. 2 | 15.0 | 5.0 | No | 2.5 |
| 43 | 328 Derby Road | Roadside | 455453 | 339595 | $NO_2$ | Nottingham No.2 | 6.0 | 3.0 | No | 2.5 |
| 44 | Parking Post Cliff Road | Roadside | 457775 | 339530 | $NO_2$ | Nottingham No.2 | 4.0 | 17.0 | No | 2.5 |
| 46 | Hicking Building Queens Road | Roadside | 457781 | 339123 | $NO_2$ | Nottingham No. 2 | 0.0 | 3.0 | No | 2.5 |
| 47 | Carrington Road/Railway Station (Sheriffs Way) | Roadside | 457406 | 339153 | $NO_2$ | Nottingham No.2 | 23.0 | 1.0 | No | 2.5 |

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 49 | 2 Castle Boulevard | Roadside | 457150 | 339384 | $NO_2$ | Nottingham No.2 | 0.0 | 4.0 | No | 2.5 |
| 50 | A52 Clifton Boulevard | Roadside | 455713 | 337838 | $NO_2$ | Nottingham No 2 | 0.0 | 3.0 | No | 2.5 |
| 51 | Trent Street | Roadside | 457528 | 339339 | $NO_2$ | Nottingham No.2 | 0.0 | 2.0 | No | 2.5 |
| 52 | Lamppost Crown Public House | Roadside | 454386 | 340087 | $NO_2$ | Nottingham No.2 | 0.0 | 3.0 | No | 2.5 |
| 53 | 3 Bayard Court | Roadside | 454243 | 340057 | $NO_2$ | Nottingham No 2 | 0.0 | 3.0 | No | 2.5 |
| 55 | 40 Horwood Drive | Roadside | 456441 | 336131 | $NO_2$ | Nottingham No.2 | 4.0 | 2.0 | No | 2.5 |
| 56 | Mountford House Nursery (Lampost outside) | Kerbside | 457064 | 342128 | $NO_2$ | Nottingham No.2 | 10.0 | 1.0 | No | 2.5 |
| 57 | Stepping Stones Retirement Park | Roadside | 456265 | 336414 | $NO_2$ | Nottingham No 2 | 0.0 | 35.0 | No | 2.5 |
| 10, 58, 59 | 565 Valley Road | Roadside | 455528 | 342828 | $NO_2$ | Nottingham No.2 | 0.0 | 7.0 | No | 2.5 |
| 20, 60, 61 | 13 Canning Terrace | Roadside | 456399 | 340191 | $NO_2$ | Nottingham No.2 | 0.0 | 5.0 | No | 2.5 |
| 22, 62, 63 | Alfreton Road LP 80A01 in front of Beyts Takeaway | Roadside | 456156 | 340383 | $NO_2$ | Nottingham No 2 | 0.0 | 3.0 | No | 2.5 |
| 29, 64, 65 | 346 Meadow Lane | Roadside | 458459 | 339011 | $NO_2$ | Nottingham No.2 | 0.0 | 3.0 | No | 2.5 |

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| 54, 66, 67 | Trafford gardens play area | Roadside | 454493 | 341505 | $NO_2$ | Nottingham No.2 | 0.0 | 3.0 | No | 2.5 |
| 68 | Clifton Lane KL409 | Roadside | 455538 | 335731 | $NO_2$ | Nottingham No. 2 | 0.0 | 4.0 | No | 2.5 |
| 69 | Sturgeon Avenue 14S309 | Roadside | 455529 | 335701 | $NO_2$ | Nottingham No. 2 | 5.0 | 10.0 | No | 2.5 |
| 70 | Ilkeston Road LP | Roadside | 455622 | 340142 | $NO_2$ | Nottingham No. 2 | 0.0 | 4.0 | No | 2.5 |

**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 $NO_2$ Monitoring Results: Automatic Monitoring (µg/m$^3$)

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2024 (%) (2) | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| CG $NO_x$ | 457954 | 339667 | Roadside | 67 | 67 | 23 | 29 | 27 | 23 | 20 |
| LS $NO_x$ | 454940 | 338314 | Roadside | 99 | 99 | 23 | 25 | 24 | 21 | 23 |
| SA $NO_x$ | 456967 | 341382 | Roadside | 93 | 93 | 34 | 36 | 35 | 29 | 26 |
| KC AURN | 457437 | 340049 | Urban Background | 81 | 81 | 19 | 21 | 22 | 19 | 14 |
| WB AURN | 454573 | 341643 | Roadside | 99 | 99 | 25 | 27 | 27 | 25 | 23 |

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

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

☒ **Where exceedances of the $NO_2$ annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2024.**

**Notes:**

The annual mean concentrations are presented as µg/m$^3$.

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

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Table A.4 – Annual Mean $NO_2$ Monitoring Results: Non-Automatic Monitoring (µg/m$^3$)

| Diffusion Tube ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2024 (%) (2) | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 454522 | 338938 | Roadside | | 90.6 | 27.2 | 25.9 | 27.1 | 21.0 | 20.9 |
| 4 | 454782 | 338146 | Roadside | | 100.0 | 28.2 | 29.6 | 27.6 | 24.2 | 19.5 |
| 5 | 455153 | 338510 | Roadside | | 100.0 | 32.9 | 33.2 | 33.3 | 27.1 | 23.0 |
| 6 | 454466 | 340111 | Roadside | | 100.0 | 30.3 | 29.8 | 31.0 | 26.4 | 22.5 |
| 12 | 455808 | 340799 | Roadside | | 75.0 | 37.9 | 31.9 | 37.2 | 28.6 | 25.8 |
| 13 | 455435 | 340136 | Roadside | | 100.0 | 35.7 | 37.1 | 35.0 | 28.1 | 23.0 |
| 16 | 455870 | 339133 | Roadside | | 100.0 | 34.9 | 33.7 | 32.4 | 27.0 | 22.5 |
| 17 | 455955 | 339129 | Roadside | | 100.0 | 37.2 | 32.9 | 35.5 | 27.4 | 22.2 |
| 19 | 456853 | 339303 | Roadside | | 100.0 | 28.2 | 25.4 | 25.0 | 20.5 | 17.2 |
| 21 | 457083 | 339637 | Roadside | | 100.0 | 29.6 | 38.5 | 36.6 | 30.4 | 26.8 |

| 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 2024 (%) (2) | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| 24, 25, 26 | 456967 | 341382 | Roadside | | 100.0 | 35.2 | 35.5 | 35.5 | 28.4 | 25.2 |
| 27 | 457963 | 339681 | Roadside | | 90.6 | 36.8 | 35.5 | 35.1 | 30.0 | 26.3 |
| 28 | 458060 | 338276 | Roadside | | 92.5 | 31.8 | 32.2 | 32.2 | 27.9 | 23.1 |
| 30 | 458079 | 339887 | Roadside | | 92.5 | **40.7** | **41.4** | **41.0** | 35.6 | 33.1 |
| 31 | 454367 | 339946 | Roadside | | 90.6 | 27.2 | 27.7 | 28.0 | 24.5 | 20.3 |
| 33 | 454941 | 338314 | Roadside | | 100.0 | 32.3 | 31.6 | 31.0 | 25.6 | 22.8 |
| 35 | 454587 | 340088 | Roadside | | 100.0 | 35.2 | 36.3 | 34.7 | 30.1 | 25.1 |
| 40 | 454321 | 339931 | Roadside | | 100.0 | 29.3 | 32.1 | 32.2 | 26.7 | 23.1 |
| 43 | 455453 | 339595 | Roadside | | 100.0 | 27.1 | 30.4 | 30.8 | 24.5 | 21.5 |
| 44 | 457775 | 339530 | Roadside | | 84.9 | 32.6 | 30.2 | 32.1 | 26.9 | 24.0 |
| 46 | 457781 | 339123 | Roadside | | 84.9 | **47.8** | **58.5** | **57.1** | **46.9** | 39.3 |
| 47 | 457406 | 339153 | Roadside | | 100.0 | 39.3 | **42.6** | **44.7** | 39.1 | 34.7 |

| Diffusion Tube ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2024 (%) (2) | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| 49 | 457150 | 339384 | Roadside | | 100.0 | 37.7 | 39.2 | **45.4** | 34.9 | 29.6 |
| 50 | 455713 | 337838 | Roadside | | 90.6 | **42.1** | **46.8** | **45.9** | 34.1 | 34.3 |
| 51 | 457528 | 339339 | Roadside | | 100.0 | 30.9 | 29.3 | 31.3 | 25.3 | 21.3 |
| 52 | 454386 | 340087 | Roadside | | 100.0 | 34.5 | 37.7 | **40.5** | 33.8 | 27.5 |
| 53 | 454243 | 340057 | Roadside | | 75.0 | 27.2 | 26.1 | 27.7 | 22.6 | 18.8 |
| 55 | 456441 | 336131 | Roadside | | 100.0 | 22.6 | 27.8 | 26.3 | 22.9 | 19.8 |
| 56 | 457064 | 342128 | Kerbside | | 100.0 | **41.4** | **45.1** | **42.8** | 31.4 | 28.6 |
| 57 | 456265 | 336414 | Roadside | | 83.0 | 22.7 | 24.6 | 23.9 | 20.3 | 17.0 |
| 10, 58, 59 | 455528 | 342828 | Roadside | | 100.0 | 38.2 | **41.8** | 39.6 | 34.1 | 29.9 |
| 20, 60, 61 | 456399 | 340191 | Roadside | | 92.5 | 39.6 | **43.1** | **42.4** | 35.4 | 31.4 |
| 22, 62, 63 | 456156 | 340383 | Roadside | | 100.0 | 31.3 | 33.5 | 34.2 | 26.7 | 25.9 |
| 29, 64, 65 | 458459 | 339011 | Roadside | | 100.0 | **41.9** | **46.4** | **43.4** | 37.4 | 31.9 |

| 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 2024 (%) (2) | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| 54, 66, 67 | 454493 | 341505 | Roadside | | 100.0 | 36.1 | 37.1 | 38.5 | 31.5 | 27.1 |
| 68 | 455538 | 335731 | Roadside | | 100.0 | 33.7 | 35.8 | 34.9 | 29.0 | 27.4 |
| 69 | 455529 | 335701 | Roadside | | 100.0 | 29.4 | 31.0 | 30.4 | 25.5 | 22.5 |
| 70 | 455622 | 340142 | Roadside | | 92.5 | - | - | - | 32.9 | 31.0 |

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Diffusion tube data has been bias adjusted (local bias adjustment applied - calculated ).**

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

**Notes:**

The annual mean concentrations are presented as $\mu g/m^3$.

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

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

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

## Figure A.1 – Trends in Annual Mean $NO_2$ Concentrations

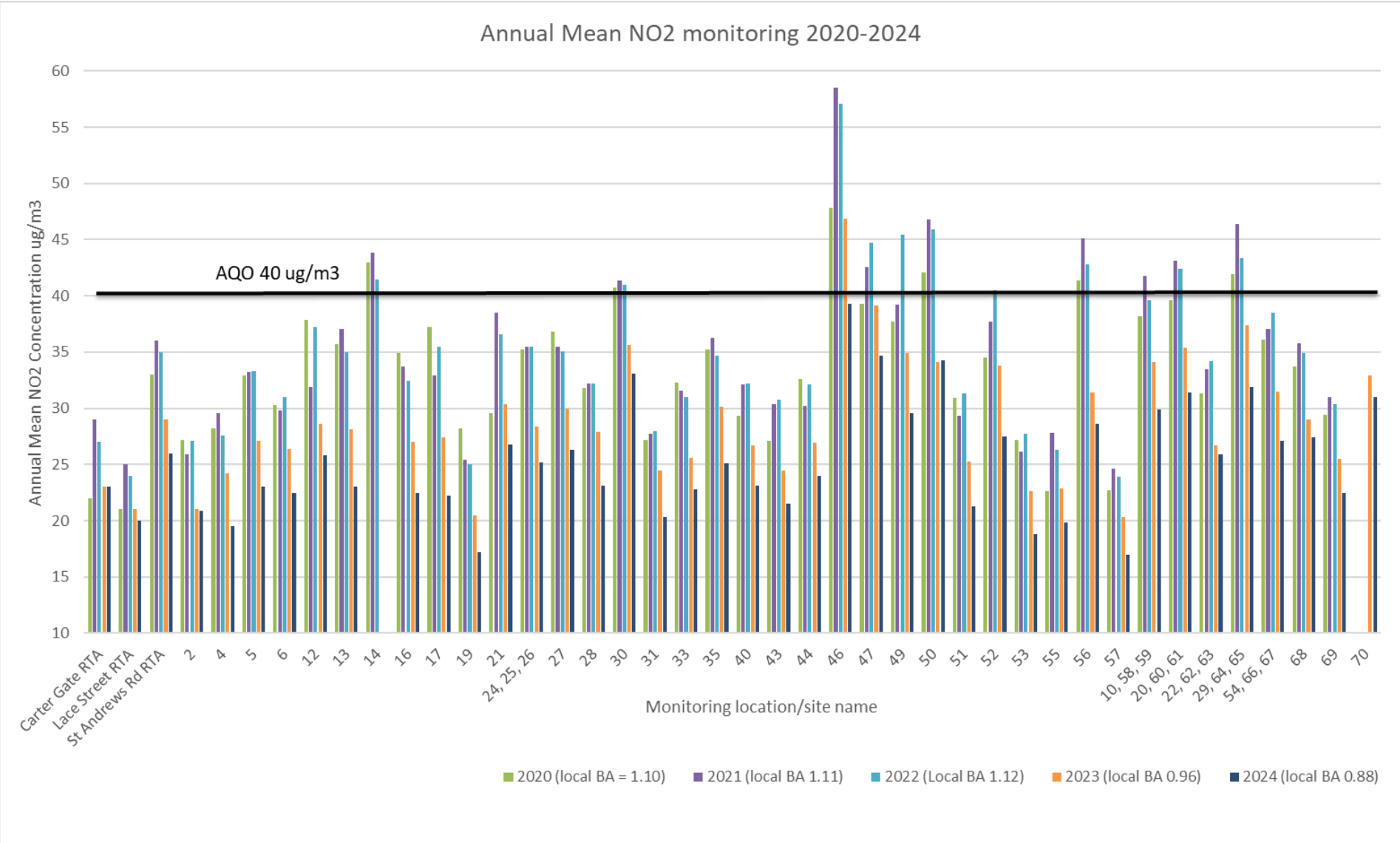


**Table A.5 – 1-Hour Mean $NO_2$ Monitoring Results, Number of 1-Hour Means > 200µg/m$^3$**

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2024 (%) (2) | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| CG $NO_x$ | 457945 | 339667 | Roadside | 67 | 67 | 0 | 0 | 0 | 0 | 0 (74) |
| LS $NO_x$ | 454940 | 338314 | Roadside | 99 | 99 | 0 | 0 | 0 | 0 | 0 |
| SA $NO_x$ | 456967 | 341382 | Roadside | 93 | 93 | 0 | 0 | 0 | 0 | 0 |
| KC AURN | 457437 | 340049 | Urban Background | 81 | 81 | 0 | 0 | 0 | 0 | 0 |
| WB AURN | 454573 | 341643 | Roadside | 99 | 99 | 0 | 0 | 0 | 0 | 0 |

**Notes:**

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

Exceedances of the $NO_2$ 1-hour mean objective (200µg/m$^3$ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Note DEFRA's AURN $NO_2$ monitoring data (Nottingham City sites) are reported to assist the reader.

## Table A.6 – Annual Mean $PM_{10}$ Monitoring Results ($\mu g/m^3$)

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2024 (%) (2) | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| KC AURN | 457437 | 340049 | Urban Background | 91 | 91 | 15 | 14 | 17 | 16 | 14 |
| WB AURN | 454573 | 341643 | Roadside | 91 | 91 | 16 | 16 | 18 | 16 | 16 |

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

**Notes:**

The annual mean concentrations are presented as $\mu g/m^3$.

Exceedances of the $PM_{10}$ annual mean objective of 40$\mu g/m^3$ are shown in **bold**.

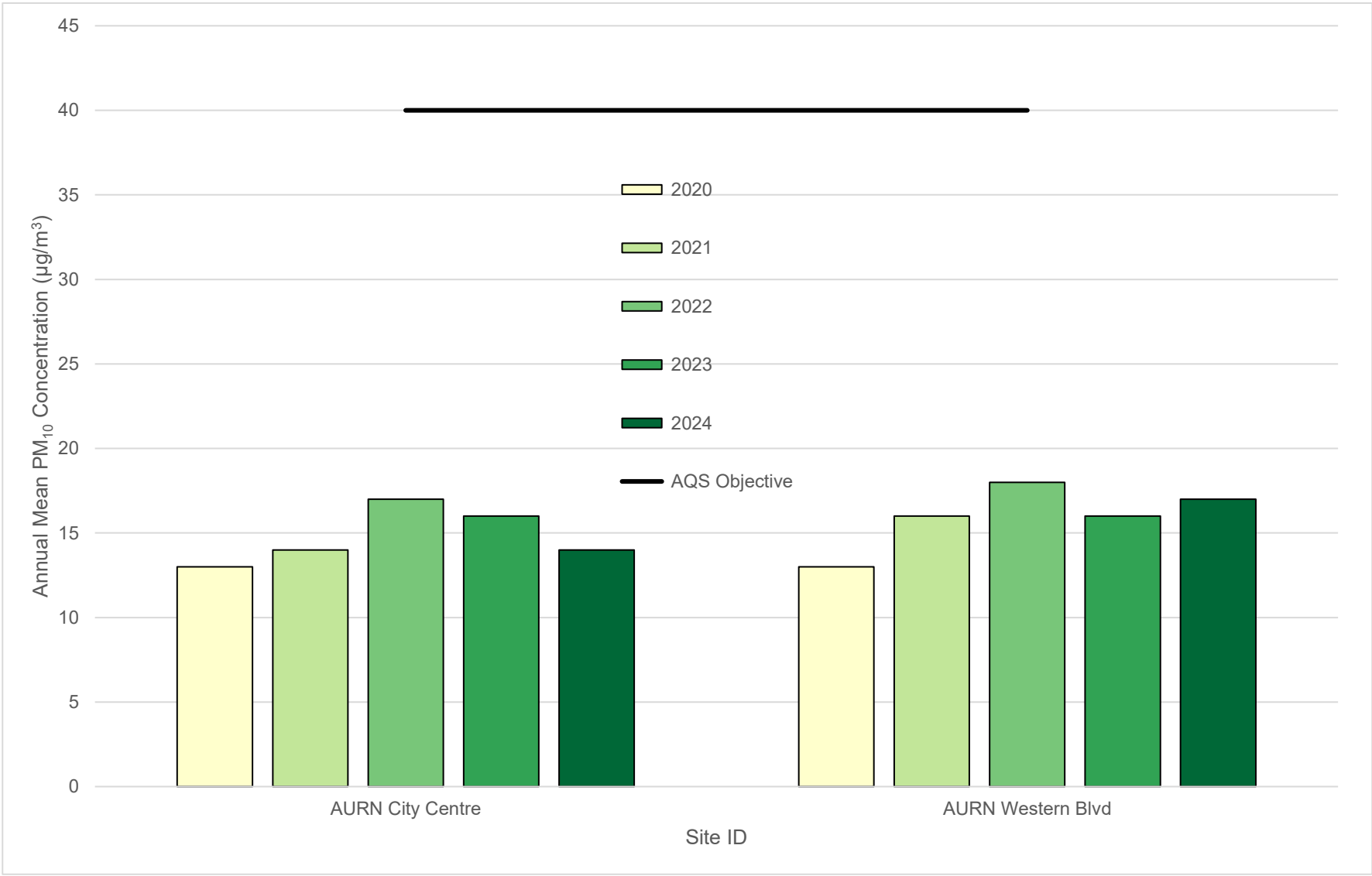
All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

Note: Nottingham City Council does not undertake PM10 monitoring. Data from DEFRA AURN sites located in the Nottingham City administrative area and reported here to assist the reader understand why Nottingham does not require an AQMA for $PM_{10}$.

## Figure A.2 – Trends in Annual Mean $PM_{10}$ Concentrations



## Table A.7 – 24-Hour Mean $PM_{10}$ Monitoring Results, Number of $PM_{10}$ 24-Hour Means > 50µg/m$^3$

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2024 (%) (2) | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| KC AURN | 457437 | 340049 | Urban Background | | 100 | 0 | 1 | 6 | 0 | 1 |
| WB AURN | 454573 | 341643 | Roadside | | 94 | 3 | 1 | 5 | 0 | 1 |

**Notes:**

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m$^3$ have been recorded.

Exceedances of the $PM_{10}$ 24-hour mean objective (50µg/m$^3$ 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%).

Note: Nottingham City Council does not undertake $PM_{10}$ monitoring. Data from DEFRA AURN sites located in the city and reported here to assist the reader understand why Nottingham does not require an AQMA for $PM_{10}$.

## Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results ($\mu g/m^3$)

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2024 (%) (2) | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| KC AURN | 457437 | 340049 | Urban Background | | 91 | 9 | 8 | 10 | 10 | 8 |

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

**Notes:**

The annual mean concentrations are presented as $\mu g/m^3$.

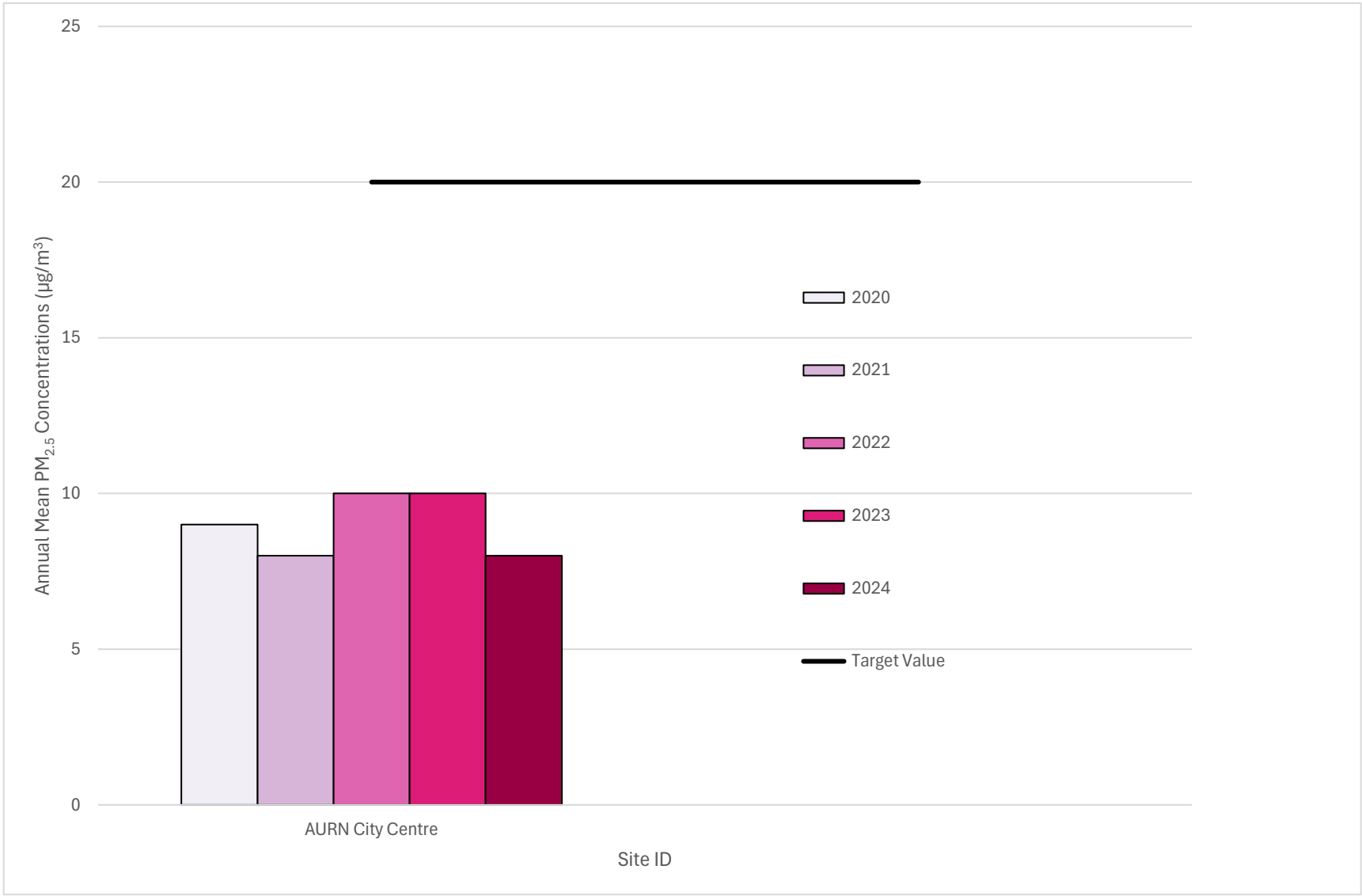
All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

Note: Nottingham City Council does not undertake $PM_{2.5}$ monitoring. Data from DEFRA AURN sites located in the city and reported here to assist the reader understand why Nottingham does not require an AQMA for $PM_{2.5}$.

## Figure A.3 – Trends in Annual Mean $PM_{2.5}$ Concentrations



## Table A.9 – $SO_2$ 2024 Monitoring Results, Number of Relevant Instances

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2024 (%) (2) | Number of 15-minute Means > 266µg/m$^3$ | Number of 1-hour Means > 350µg/m$^3$ | Number of 24-hour Means > 125µg/m$^3$ |
|---|---|---|---|---|---|---|---|---|
| KC AURN | 457437 | 340049 | Urban Background | | 88 | 0 | 0 | 0 |

**Notes:**

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

Exceedances of the $SO_2$ 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%).

Note: Nottingham City Council does not undertake $SO_2$ monitoring. Data from DEFRA AURN sites located in the City and reported here to assist the reader understand why Nottingham does not require an AQMA for $SO_2$.

# Appendix B: Full Monthly Diffusion Tube Results for 2024

## Table B.1 – $NO_2$ 2024 Diffusion Tube Results ($\mu g/m^3$)

| 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 (local BA 0.88) | Annual Mean: Distance Corrected to Nearest Exposure | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 454522 | 338938 | 26.7 | 27.0 | 23.3 | 18.7 | - | 34.0 | 18.5 | 17.6 | 16.0 | 24.1 | 29.9 | 23.8 | 23.6 | 20.9 | | |
| 4 | 454782 | 338146 | 28.9 | 26.6 | 23.6 | 19.1 | 19.8 | 17.3 | 18.4 | 17.2 | 18.7 | 25.4 | 31.5 | 18.7 | 22.1 | 19.5 | - | |
| 5 | 455153 | 338510 | 31.6 | 31.9 | 28.0 | 23.5 | 21.9 | 21.1 | 22.1 | 20.3 | 20.7 | 29.9 | 33.6 | 26.9 | 25.9 | 23.0 | - | |
| 6 | 454466 | 340111 | 29.9 | 30.4 | 24.3 | 22.8 | 20.5 | 22.3 | 23.8 | 21.2 | 20.8 | 25.3 | 33.1 | 31.2 | 25.5 | 22.5 | - | |
| 10 | 455533 | 342826 | 34.5 | 34.9 | 32.3 | 30.8 | 29.9 | 29.4 | 30.6 | 29.7 | 38.7 | 32.8 | 43.2 | 32.8 | - | - | - | Triplicate Site with 10, 58 and 59 - Annual data provided for 59 only |
| 12 | 455808 | 340799 | 30.9 | 33.2 | - | 25.5 | 27.0 | - | 23.4 | - | 27.4 | 32.2 | 36.7 | 26.3 | 29.2 | 25.8 | - | |
| 13 | 455435 | 340136 | 29.6 | 29.8 | 28.0 | 24.0 | 26.0 | 19.5 | 19.7 | 20.7 | 29.2 | 27.6 | 33.7 | 24.2 | 26.0 | 23.0 | - | |
| 16 | 455870 | 339133 | 30.7 | 30.3 | 25.8 | 21.6 | 22.5 | 21.0 | 21.7 | 19.6 | 23.6 | 27.8 | 34.0 | 26.2 | 25.4 | 22.5 | - | |
| 17 | 455955 | 339129 | 30.1 | 31.9 | 26.7 | 21.9 | 23.5 | 23.2 | 24.4 | 24.6 | 24.0 | 27.8 | 34.8 | 8.6 | 25.1 | 22.2 | - | |
| 19 | 456853 | 339303 | 24.9 | 26.4 | 21.0 | 16.7 | 17.1 | 13.5 | 14.2 | 13.4 | 16.9 | 22.5 | 27.9 | 19.3 | 19.5 | 17.2 | - | |
| 20 | 456399 | 340191 | 37.5 | 35.8 | 33.2 | 32.7 | 36.1 | 29.5 | - | 29.8 | 38.6 | 37.4 | 42.1 | 32.0 | - | - | - | Triplicate Site with 20, 60 and 61 - Annual data provided for 61 only |
| 21 | 457083 | 339637 | 33.4 | 32.4 | 29.2 | 29.6 | 30.2 | 27.3 | 27.4 | 23.7 | 32.2 | 31.1 | 38.7 | 28.8 | 30.3 | 26.8 | - | |
| 22 | 456156 | 340383 | 31.7 | 32.3 | 27.2 | 28.0 | 29.4 | 23.4 | 23.3 | 24.2 | 35.1 | 28.8 | 34.7 | 25.5 | - | - | - | Triplicate Site with 22, 62 and 63 - Annual data provided for 63 only |
| 24 | 456967 | 341382 | 33.8 | 32.6 | 28.2 | 28.2 | 22.4 | 32.8 | 27.3 | 25.5 | 28.2 | 25.5 | 35.1 | 28.5 | - | - | - | Triplicate Site with 24, 25 and 26 - Annual data provided for 26 only |
| 25 | 456967 | 341382 | 32.8 | 30.7 | 26.7 | 28.5 | 22.4 | 32.0 | 25.7 | 27.5 | 23.3 | 24.0 | 35.7 | 26.5 | - | - | - | Triplicate Site with 24, 25 and 26 - Annual data provided for 26 only |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | 456967 | 341382 | 31.8 | 33.9 | 27.1 | 28.6 | 22.7 | 32.0 | 26.0 | 27.3 | 22.3 | 25.6 | 35.2 | 28.5 | 28.5 | 25.2 | - | Triplicate Site with 24, 25 and 26 - Annual data provided for 26 only |
| 27 | 457963 | 339681 | 36.2 | - | 30.7 | 28.4 | 28.7 | 25.4 | 27.4 | 26.2 | 24.5 | 29.7 | 37.9 | 31.6 | 29.7 | 26.3 | - | |
| 28 | 458060 | 338276 | - | 28.6 | 22.3 | 22.5 | 24.8 | 22.2 | 24.2 | 20.3 | 32.0 | 30.4 | 34.5 | 26.1 | 26.2 | 23.1 | - | |
| 29 | 458459 | 339011 | 40.0 | 37.9 | 36.4 | 32.7 | 34.5 | 30.8 | 32.3 | 29.3 | 37.6 | 39.5 | 41.3 | 33.7 | - | - | - | Triplicate Site with 29, 64 and 65 - Annual data provided for 65 only |
| 30 | 458079 | 339887 | 39.1 | 36.6 | 34.2 | 34.2 | 32.9 | - | 56.6 | 31.4 | 39.2 | 33.0 | 39.1 | 35.3 | 37.4 | 33.1 | - | |
| 31 | 454367 | 339946 | 28.7 | - | 23.4 | 19.9 | 19.9 | 21.0 | 19.2 | 19.9 | 22.1 | 23.6 | 29.2 | 24.7 | 22.9 | 20.3 | - | |
| 33 | 454941 | 338314 | 29.9 | 31.1 | 27.0 | 22.8 | 23.5 | 19.3 | 20.2 | 19.9 | 23.6 | 30.4 | 34.8 | 27.3 | 25.8 | 22.8 | - | |
| 35 | 454587 | 340088 | 34.2 | 32.0 | 26.5 | 26.2 | 24.0 | 25.0 | 26.2 | 24.7 | 26.4 | 27.4 | 35.9 | 31.5 | 28.3 | 25.1 | - | |
| 40 | 454321 | 339931 | 31.6 | 26.1 | 26.9 | 24.7 | 27.4 | 19.2 | 21.3 | 17.6 | 31.1 | 27.7 | 33.4 | 26.3 | 26.1 | 23.1 | - | |
| 43 | 455453 | 339595 | 29.6 | 28.7 | 28.9 | 20.4 | 23.1 | 15.3 | 16.8 | 18.4 | 21.3 | 30.9 | 34.6 | 23.3 | 24.3 | 21.5 | - | |
| 44 | 457775 | 339530 | 31.4 | 32.9 | 28.6 | 23.2 | 21.4 | - | - | 19.3 | 24.7 | 29.1 | 35.1 | 25.9 | 27.2 | 24.0 | - | |
| 46 | 457781 | 339123 | 46.0 | 50.0 | 42.8 | 42.6 | 42.1 | 44.4 | 50.2 | 41.5 | - | 44.3 | - | 40.2 | 44.4 | 39.3 | - | |
| 47 | 457406 | 339153 | 40.8 | 45.2 | 42.0 | 35.4 | 37.8 | 31.7 | 36.0 | 38.7 | 38.9 | 35.9 | 49.5 | 38.5 | 39.2 | 34.7 | - | |
| 49 | 457150 | 339384 | 40.5 | 38.2 | 31.8 | 31.8 | 31.1 | 30.5 | 30.2 | 28.6 | 35.8 | 33.8 | 37.0 | 32.7 | 33.5 | 29.6 | - | |
| 50 | 455713 | 337838 | 44.2 | - | 35.9 | 37.2 | 33.6 | 36.8 | 36.2 | 31.0 | 40.4 | 41.2 | 52.0 | 38.3 | 38.8 | 34.3 | - | |
| 51 | 457528 | 339339 | 28.6 | 28.8 | 27.7 | 21.3 | 19.9 | 17.8 | 19.9 | 19.9 | 19.6 | 28.1 | 34.6 | 22.9 | 24.1 | 21.3 | - | |
| 52 | 454386 | 340087 | 35.1 | 36.7 | 34.2 | 29.2 | 29.4 | 27.3 | 27.5 | 28.0 | 27.7 | 36.2 | 33.4 | 27.5 | 31.0 | 27.5 | - | |
| 53 | 454243 | 340057 | 27.7 | - | - | - | 20.2 | 15.3 | 16.9 | 16.6 | 18.0 | 25.7 | 28.9 | 21.8 | 21.2 | 18.8 | - | |
| 54 | 454493 | 341505 | 38.6 | 36.6 | - | 26.8 | 25.2 | 28.8 | 27.6 | 25.5 | 28.4 | 31.4 | 38.6 | 30.2 | - | - | - | Triplicate Site with 54, 66 and 67 - Annual data provided for 67 only |
| 55 | 456441 | 336131 | 25.0 | 25.8 | 21.2 | 19.6 | 16.7 | 19.6 | 33.3 | 17.7 | 18.8 | 23.0 | 30.2 | 17.1 | 22.3 | 19.8 | - | |
| 56 | 457064 | 342128 | 37.6 | 37.5 | 30.6 | 28.9 | 25.8 | 30.7 | 29.6 | 30.3 | 25.7 | 34.3 | 42.8 | 34.0 | 32.3 | 28.6 | - | |
| 57 | 456265 | 336414 | 29.7 | - | - | 16.8 | 18.6 | 13.1 | 15.7 | 13.5 | 19.0 | 21.0 | 25.1 | 19.8 | 19.2 | 17.0 | - | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 58 | 455528 | 342828 | 38.4 | 35.6 | 34.3 | 33.5 | 32.3 | 31.6 | 32.0 | 28.4 | 40.1 | 35.8 | 41.3 | 33.4 | - | - | - | Triplicate Site with 10, 58 and 59 - Annual data provided for 59 only |
| 59 | 455528 | 342828 | 36.8 | 35.5 | 33.2 | 29.6 | 33.3 | 28.6 | 31.6 | 28.1 | 36.2 | 33.2 | 39.1 | 35.3 | 33.8 | 29.9 | - | Triplicate Site with 10, 58 and 59 - Annual data provided for 59 only |
| 60 | 456399 | 340191 | 38.3 | 40.5 | 34.2 | 34.9 | 38.3 | 31.1 | - | 29.7 | 39.2 | 35.6 | 39.0 | 30.9 | - | - | - | Triplicate Site with 20, 60 and 61 - Annual data provided for 61 only |
| 61 | 456399 | 340191 | 36.2 | 38.5 | 35.5 | 34.7 | 36.5 | 32.0 | - | 29.3 | 41.4 | 37.0 | 41.0 | 32.8 | 35.5 | 31.4 | - | Triplicate Site with 20, 60 and 61 - Annual data provided for 61 only |
| 62 | 456156 | 340383 | 32.8 | 33.9 | 27.9 | 28.5 | 30.9 | 23.8 | 24.2 | 23.8 | 34.5 | 32.8 | 38.5 | 24.9 | - | - | - | Triplicate Site with 22, 62 and 63 - Annual data provided for 63 only |
| 63 | 456156 | 340383 | 33.0 | 32.3 | 27.6 | 28.9 | 32.5 | 23.7 | 24.1 | 23.5 | 29.4 | 32.0 | 41.0 | 26.3 | 29.3 | 25.9 | - | Triplicate Site with 22, 62 and 63 - Annual data provided for 63 only |
| 64 | 458459 | 339011 | 42.5 | 39.4 | 38.9 | 34.6 | 36.7 | 29.8 | 32.5 | 30.1 | 38.7 | 38.4 | 45.4 | 35.9 | - | - | - | Triplicate Site with 29, 64 and 65 - Annual data provided for 65 only |
| 65 | 458459 | 339011 | 42.8 | 39.4 | 37.7 | 32.5 | 36.5 | 31.5 | 16.6 | 30.7 | 39.5 | 40.9 | 46.5 | 35.0 | 36.1 | 31.9 | - | Triplicate Site with 29, 64 and 65 - Annual data provided for 65 only |
| 66 | 454493 | 341505 | 40.4 | 36.7 | 28.4 | 29.1 | 25.7 | 31.7 | 28.4 | 27.8 | 27.2 | 27.4 | 37.6 | 33.2 | - | - | - | Triplicate Site with 54, 66 and 67 - Annual data provided for 67 only |
| 67 | 454493 | 341505 | 37.8 | 36.3 | 27.0 | 25.6 | 25.3 | 30.5 | 28.0 | 27.9 | 30.5 | 25.3 | 40.8 | 30.2 | 30.7 | 27.1 | - | Triplicate Site with 54, 66 and 67 - Annual data provided for 67 only |
| 68 | 455538 | 335731 | 39.6 | 33.1 | 26.6 | 29.2 | 28.6 | 29.8 | 26.1 | 23.6 | 33.9 | 28.0 | 37.8 | 35.2 | 31.0 | 27.4 | - | |
| 69 | 455529 | 335701 | 30.1 | 28.3 | 21.8 | 23.7 | 23.2 | 21.7 | 21.6 | 25.9 | 28.2 | 22.3 | 32.8 | 25.7 | 25.4 | 22.5 | - | |
| 70 | 455622 | 340142 | 37.7 | 37.5 | 31.3 | 29.6 | 31.3 | - | 49.0 | 27.6 | 34.6 | 33.6 | 39.5 | 33.1 | 35.0 | 31.0 | - | |

☒ **All erroneous data has been removed from the $NO_2$ diffusion tube dataset presented in Table B.1.**

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Local bias adjustment factor used.**

☐ **National bias adjustment factor used.**

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

☒ Nottingham City Council **confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

**Notes:**

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

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

See Appendix C for details on bias adjustment and annualisation.

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

## New or Changed Sources Identified Within Nottingham City Council During 2024

Nottingham City Council has not identified any new major or significant sources likely to significantly impact on air quality within the reporting year of 2024.

## Additional Air Quality Works Undertaken by Nottingham City Council During 2024

None in addition to those reported in Table 2.2.

## QA/QC of Diffusion Tube Monitoring

Gradko International supply and analyse Nottingham City Council's diffusion tubes. The tubes use 20% TEA in water. The organisation is UKAS accredited and is assessed annually for compliance to ISO 17025 and participates in other proficiency schemes.

Gradko have confirmed that their procedures follow the guidance issued on behalf of Defra (AEA Energy & Environment, Feb 2008) relating to the preparation, extraction, analysis and calculation procedures for passive $NO_2$ diffusion tubes

Gradko participate in a number of QA/QC monitoring systems to demonstrate satisfactory performance including the Workplace Analysis Scheme for Proficiency (WASP) programme to ensure uniformity in data throughout the year.

Precision vs Accuracy (Bias)

A further aspect of QA/QC for a laboratory is the reproducibility of results i.e. precision. Precision should not be confused with accuracy. Diffusion tube precision can be described as the ability of a measurement to be consistently reproduced, i.e. how similar the results of duplicate or triplicate tubes are to each other.

Accuracy represents the ability of the measurement to represent the 'true' value, which for the monitoring results, is defined as the results from the automatic analysers. When averaged over a number of sets of results bias can be evident. This represents the overall

tendency of the diffusion tubes to depart from the ‘true’ value, i.e. to systematically over-or under-read when compared against the reference method.

Once identified, bias can be adjusted for to improve the accuracy of diffusion tube results. This is done using bias adjustment factors which have been found to be specific to a laboratory and tube preparation method. See Appendix A subsection A-1 above.

Unlike bias, poor precision cannot be adjusted for. It can only be improved by careful handling of the tubes in both the laboratory and the field.

The LAQM website provides a link to the summary of precision results for individual laboratories https://laqm.defra.gov.uk/air-quality/air-quality-assessment/precision-and-accuracy/

The 2024 precision rating for Gradko supplied/analyzed diffusion tubes was ‘good’. This precision reflects the laboratory’s performance/consistency in preparing and analyzing the tubes, as well as the subsequent handling of the tubes in the field.

### Diffusion Tube Annualisation

All diffusion tube monitoring locations within Nottingham City Council’s administrative area recorded data capture of more 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.

### Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2025 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from $NO_x$/$NO_2$ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Nottingham City Council used the Diffusion Tube Data Processing Tool v5.4 to calculate a local bias adjustment.

Fig Local Bias Adjustment Output tab (generated within the DTDT v5.4)

## Local Bias Adjustment Outputs - Information Only

| | STEP 3a Local Bias Adjustment Input 1 |
|---|---|
| Periods used to calculate bias | 10 |
| Bias Adjustment Factor A | 0.88 (0.84 - 0.93) |
| Diffusion Tube Bias B | 13% (7% - 19%) |
| | |
| Diffusion Tube Mean (µg/m$^3$) | 29.2 |
| Mean CV (Precision) | 2.6% |
| | |
| Automatic Mean (µg/m$^3$) (for periods used to calculate bias) | 25.8 |
| Data Capture (for periods used to calculate bias) | 98% |
| Overall Data Capture | 91% |
| Adjusted Tube Mean (µg/m$^3$) | 26 (25 - 27) |

| | |
|---|---|
| Overall Diffusion Tube Precision | Good Overall Precision |
| Overall Continuous Monitor Data Capture | Good Overall Data Capture |

| | |
|---|---|
| Local Bias Adjustment Factor | 0.88 |

Fig STEP 3a Local Bias Adjustment 1 (input information and excerpt of date&time start)

Enter data into the pink cells

i) Enter co-located diffusion tube period means

| Period | $NO_2$ Period Mean (µg/m$^3$) | | | Triplicate Mean | Standard Deviation | Coefficient of Variation (CV) | 95% CI of Mean | Data Quality Check |
|---|---|---|---|---|---|---|---|---|
| | Tube 1 | Tube 2 | Tube 3 | | | | | |
| 1 | 33.8 | 32.8 | 31.8 | 32.8 | 1.0 | 3% | 2.6 | Good |
| 2 | 32.6 | 30.7 | 33.9 | 32.4 | 1.6 | 5% | 3.9 | Good |
| 3 | 28.2 | 26.7 | 27.1 | 27.3 | 0.8 | 3% | 1.9 | Good |
| 4 | 28.2 | 28.5 | 28.6 | 28.5 | 0.2 | 1% | 0.5 | Good |
| 5 | 22.4 | 22.4 | 22.7 | 22.5 | 0.2 | 1% | 0.4 | Good |
| 6 | 32.8 | 32.0 | 32.0 | 32.2 | 0.5 | 1% | 1.2 | Good |
| 7 | 27.3 | 25.7 | 26.0 | 26.3 | 0.9 | 3% | 2.2 | Good |
| 8 | 25.5 | 27.5 | 27.3 | 26.8 | 1.1 | 4% | 2.7 | Good |
| 9 | 28.2 | 23.3 | 22.3 | 24.6 | 3.2 | 13% | 7.9 | Good |
| 10 | 25.5 | 24.0 | 25.6 | 25.0 | 0.9 | 4% | 2.2 | Good |
| 11 | 35.1 | 35.7 | 35.2 | 35.3 | 0.3 | 1% | 0.9 | Good |
| 12 | 28.5 | 26.5 | 28.5 | 27.8 | 1.2 | 4% | 2.9 | Good |
| | | | | | | | | Good Overall Precision |

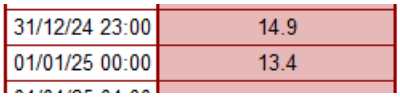
ii) Enter co-located continuous monitor hourly monitoring dat

| | |
|---|---|
| Start Date | 01/01/2024 |
| Start Time | 01:00 |

| Date & Time | $NO_2$ Hourly Concentrations (µg/m$^3$) |
|---|---|
| 01/01/24 01:00 | 13.6 |
| 01/01/24 02:00 | 15.3 |
| 01/01/24 03:00 | 8 |
| 01/01/24 04:00 | 6.7 |
| 01/01/24 05:00 | 5.5 |
| 01/01/24 06:00 | 5.5 |
| 01/01/24 07:00 | 5.2 |
| 01/01/24 08:00 | 5 |
| 01/01/24 09:00 | 7.3 |
| 01/01/24 10:00 | 5.9 |

| Period | Period Mean | Data Capture (%) | Data Quality Check |
|---|---|---|---|
| 1 | 33.4 | 99.4% | Good |
| 2 | 30.6 | 99.5% | Good |
| 3 | 21.9 | 99.3% | Good |
| 4 | 23.7 | 99.9% | Good |
| 5 | 20.7 | 100.0% | Good |
| 6 | 26.5 | 99.9% | Good |
| 7 | 24.5 | 99.9% | Good |
| 8 | 23.2 | 99.8% | Good |
| 9 | 21.4 | 68.8% | Poor Data Capture |
| 10 | 27.5 | 58.5% | Poor Data Capture |
| 11 | 30.1 | 99.9% | Good |
| 12 | 23.4 | 78.6% | Good |
| | | | Good Overall Data Capture |

Fig STEP 3a Local Bias Adjustment 1 (excerpt of date&time end)



| | |
|---|---|
| 31/12/24 23:00 | 14.9 |
| 01/01/25 00:00 | 13.4 |

Nottingham City Council have applied a local bias adjustment factor of 0.88 to the 2024 monitoring data. A summary of bias adjustment factors used by Nottingham City Council over the past five years is presented in Table C.1.

**Table C.1 – Bias Adjustment Factor**

| Monitoring Year | Local or National | If National, Version of National Spreadsheet | Adjustment Factor |
|---|---|---|---|
| **2024** | Local | - | 0.88 |
| **2023** | Local | - | 0.96 |
| **2022** | Local | - | 1.12 |
| **2021** | Local | - | 1.11 |
| **2020** | Local | - | 1.08 |

**Table C.2 – Local Bias Adjustment Calculation**

| | Local Bias Adjustment Input 1 |
|---|---|
| **Periods used to calculate bias** | 10 |
| **Bias Factor A** | 0.88 (0.84-0.93) |
| **Bias Factor B** | 13% (7% - 19%) |
| **Diffusion Tube Mean (µg/m$^3$)** | 29.2 |
| **Mean CV (Precision)** | 2.6% |
| **Automatic Mean (µg/m$^3$) (for periods used to calculate bias)** | 25.8 |
| **Data Capture (for periods used to calculate bias.** | 98% |
| **Overall Data Capture** | 91% |
| **Adjusted Tube Mean (µg/m$^3$)** | 35 (33 – 37) |

**Notes:** A single local bias adjustment factor has been used to bias adjust the 2024 diffusion tube results.

### $NO_2$ Fall-off with Distance from the Road

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

The ASR template instructions state; '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.' **Thus, no diffusion tube $NO_2$ monitoring locations within Nottingham City Council required distance correction during 2024.**

## QA/QC of Automatic Monitoring

AURN Sites

The analysers at the AURN sites are subject to a four weekly calibration regime. The calibrations are undertaken by an Environment Agency trained local site operator (LSO) and conducted in accordance with the Local Site Operators' Manual.

CG NOx, LS NOx and SA NOx Sites

At Nottingham City Council's CG NOx, LS NOx and SA NOx sites calibrations are carried out fortnightly. The calibrations, using zero air and span gases, are undertaken by the LSOs that prior to 2016 were also the LSOs for the City Centre AURN site. Calibrations are conducted using the same principles and procedures as given in the AURN LSO Manual.

The equipment is fully serviced every six months by Matts Monitors Ltd, Stroud.
http://www.mattsmonitors.co.uk/servicing-and-calibration.html

**Calibration Gas Traceability**

AURN Site

Please visit the DEFRA site https://uk-air.defra.gov.uk/networks/ for more information.

CG $NO_x$, LS $NO_x$ and SA $NO_x$ Sites

Calibration gases used in the CG $NO_x$, LS $NO_x$ and SA $NO_x$ monitoring sites are supplied by Matts Monitors Ltd. The gases are supplied with a certificate of analysis.

**Data Collection and Processing**

AURN Site

Please visit https://uk-air.defra.gov.uk/data/ for more information.

CG $NO_x$, LS $NO_x$ and SA $NO_x$ Sites

During 2024 data collection, validation and ratification was carried out by Air Quality Data Management Ltd http://www.aqdm.co.uk/

## $PM_{10}$ and $PM_{2.5}$ Monitoring Adjustment

Nottingham City Council does not operate its own $PM_{10}$ or $PM_{2.5}$ particulate monitoring equipment.

Monitoring data from two DEFRA operated sites are reported.

## Automatic Monitoring Annualisation

Nottingham City Council does not operate its own $PM_{10}$ or $PM_{2.5}$ particulate monitoring equipment.

Monitoring data from two DEFRA operated sites are reported (both greater than 75% recorded data capture therefore it was not required to annualise any monitoring data. In addition

## $NO_2$ Fall-off with Distance from the Road

None of the automatic $NO_2$ monitoring locations operated by Nottingham City Council required distance correction during 2024.

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

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

From https://maps.nottinghamcity.gov.uk/insightmapping/#

To view Nottingham City Council's monitoring site locations:-

1. Using Google Chrome or Microsoft Edge web browser navigate to: - https://maps.nottinghamcity.gov.uk/insightmapping/#
2. On the left-hand menu column select 'Layers',
3. Select the '+' of the 'Environment' folder
4. Select Air Quality Monitoring Stations (Live)
5. Use the + button the map to zoom in (- to zoom out) if sites cannot be distinguished

Figure D.1 Map of Nottingham City Non-Automatic (pink circle) and Automatic (purple square) Monitoring Sites

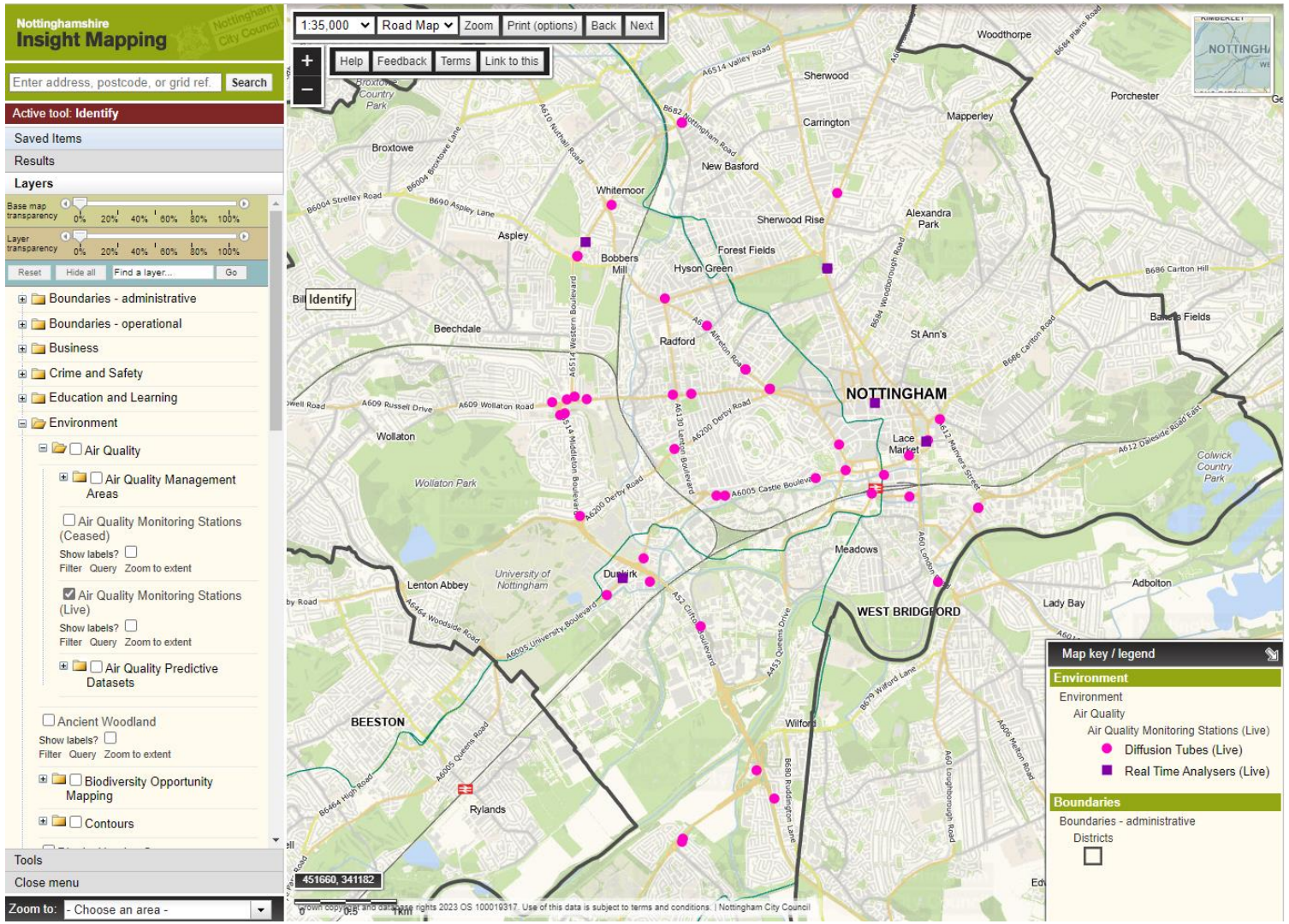
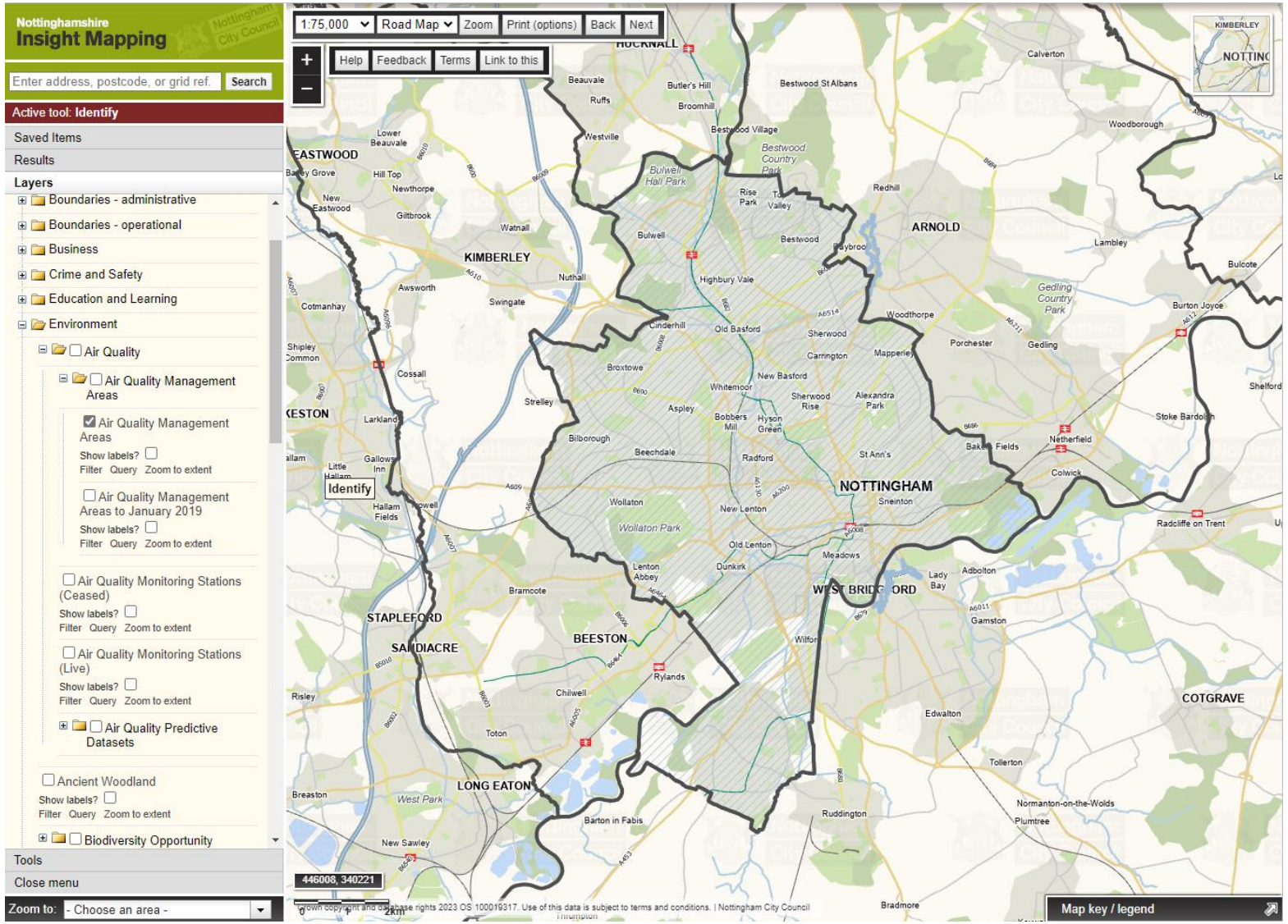


Figure D.2 Map of Nottingham No.2 Air Quality Management Area for nitrogen dioxide (city-wide)



# Appendix E: Summary of Air Quality Objectives in England

## Table E.2 – Air Quality Objectives in England[3]

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

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

# Appendix F: Ministerial Direction

MINISTERIAL DIRECTION

## ENVIRONMENT ACT 1995

### Environment Act 1995 (Nottingham City Council) Air Quality Direction 2018

The Secretary of State, in exercise of the power conferred by section 85(5) of the Environment Act 1995([1]), gives the following direction.

In accordance with section 85(6) a copy of this direction will be published in the London Gazette.

The Secretary of State makes this direction having determined that it is necessary in order to meet obligations placed upon the UK under the EU Ambient Air Quality Directive([2]).

**Citation, commencement and application**

**1.**—(1) This direction may be cited as the Environment Act 1995 (Nottingham City Council) Air Quality Direction 2018 and comes into force on 21 November 2018.

(2) This direction applies to Nottingham City Council.

**Interpretation**

**2.** In this direction—

"local plan for $NO_2$ compliance" means the detailed scheme (excluding any associated mitigation measures) which Nottingham City Council identified as part of the AQP to deliver compliance with the legal limit value for nitrogen dioxide in the shortest possible time that was approved by the Secretary of State on 20 November 2018 and is summarised in Schedule 1;

"the authority" means Nottingham City Council;

"AQP" means the UK plan for tackling roadside nitrogen dioxide concentrations 2017, drawn up by the Secretary of State in accordance with regulation 26(1) of the Air Quality Standards Regulations 2010([3]);

**Duty to implement the approved local plan for $NO_2$ compliance**

**3.**—(1) The authority must take steps to implement the local plan for $NO_2$ compliance for the area for which it is responsible.

(2) The authority must ensure that the local plan for $NO_2$ compliance is implemented so that—

(a) compliance with the legal limit value for nitrogen dioxide is achieved in the shortest possible time, and by 2019 at the latest;

(b) exposure to levels above the legal limit for nitrogen dioxide are reduced as quickly as possible.

(1) 1995 c25.
(2) 2008/50/EC OJ No. L 152, 11.06.08, p.1.
(3) S.I. 2010/1001. A copy of the plan is available at: https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017.

**Variation, revocation or suspension**

**4.** The authority must not vary, revoke or suspend its implementation of the local plan for $NO_2$ compliance pursuant to paragraph 3, without the prior written consent of the Secretary of State.

**Guidance**

**5.** The authority, in taking steps under this direction, must have regard to relevant guidance issued by the Secretary of State.

Thérèse Coffey MP
Parliamentary Under Secretary of State for the Environment
Department for the Environment Food & Rural Affairs

20 November 2018

## SCHEDULE 1

Paragraph 2

### Summary of local plan for $NO_2$ compliance measures

| *Measures description* | *Deadlines* |
|---|---|
| Clean Bus Technology Fund bus retrofit programme | To be implemented as soon as possible and at least in time to bring forward compliance to 2019 |
| Updating the taxi licensing policy (as set out in the Age and Emissions Policy) | To be implemented as soon as possible and at least in time to bring forward compliance to 2019 |

**EXPLANATORY NOTE**

*(This note is not part of the direction)*

This direction directs Nottingham City Council to implement its local plan for NO2 compliance, in connection with duties in respect of air quality under Part 4 of the Environment Act 1995 and as part of the UK plan for tackling roadside nitrogen dioxide concentrations 2017. The local plan for $NO_2$ compliance was approved by the Secretary of State on 20 November 2018, and it must now be implementation to ensure compliance with the legal limit value for nitrogen dioxide is achieved in Nottingham in the shortest possible time. Under section 85(7) of the Environment Act it is the duty of a local authority to comply with a direction given to it. A copy of this direction is available at for inspection at Seacole Building, 2 Marsham Street, London, SW1P 4DF.

# Appendix G: ECC RTA locations

| Sensor | Lighting Column | Lat Long | Easting | Northing | Location Description | | Closest Diffusion tube no. | Easting | Northing |
|---|---|---|---|---|---|---|---|---|---|
| **1471** | 57M49 | 52.9532, -1.1369 | 458081 | 339878 | A612 Manvers Street South of Southwell Rd | | 30 | 458076 | 339890 |
| **1473** | 123M38 | 52.9744, -1.1512 | 457099 | 342218 | A60 Mansfield Rd South of Yew Tree Avenue | | 56 | 457064 | 342128 |
| **1474*** | 22L195 | 52.9545, -1.1405 | 457839 | 340024 | A60 Lower Parliament Street | | 27 | 457959 | 339681 |
| **1475** | 1AD64 | 52.9548, -1.1562 | 456786 | 340037 | Derby Rd North of Maid Marian Way | | 61 | 456399 | 340191 |
| **1476** | 10S150 | 52.9565, -1.1516 | 457120 | 340247 | A6008 South Sherwood Street | | 61 | 456399 | 340191 |
| **1477** | 35I2 | 52.9561, -1.1750 | 455532 | 340136 | A609 Ilkeston Rd East of Lenton Boulevard | | 70 | 455552 | 340138 |
| **1478** | 116V6 | 52.9801, -1.1742 | 455536 | 342846 | A6514 Valley Rd South West of B682 Nottingham Rd | | 58 | 455533 | 342826 |
| **1522*** | 10W224 | 52.9557, -1.1575 | 456696 | 340120 | Wollaton Street | | 61 | 456399 | 340191 |

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| **1556** | 4H280 | 52.9627, -1.1512 | 457122 | 340926 | Mansfield Rd South of Huntingdon Street | | 24 | 456967 | 341382 |
| **1559** | 23M12 | 52.9513, -1.1514 | 457086 | 339627 | St Nicholas Street | | 21 | 457092 | 339641 |
| **1560** | 48M49 | 52.9518, -1.1363 | 458144 | 339706 | A612 Manvers Street North of Pennyfoot Street | | 30 | 458081 | 339896 |
| **1561** | 100W217 | 52.9554, -1.1918 | 454393 | 340098 | A6514 Crown Island | | 52 | 454386 | 340087 |
| **1568** | 115M38 | 52.9730, -1.1520 | 457043 | 342075 | A60 Mansfield Rd North of A611 Hucknall Rd | | 56 | 457064 | 342128 |
| **1569** | 93A61 | 52.9564, -1.1624 | 456373 | 340204 | A610 Alfreton Rd/Canning Circus | | 61 | 456399 | 340191 |
| **1570*** | 7Q10 | 52.9464, -1.1419 | 457752 | 339137 | Queens Rd West of A60 London Road | | 46 | 457729 | 339122 |
| **1575*** | 18Q10 | 52.9466, -1.1462 | 457484 | 339127 | Queens Rd East of Carrington Street | | 47 | 457402 | 339145 |
| **1576** | 68M38 | 52.9671, -1.1534 | 456954 | 341415 | A60 mansfield Rd South of Gregory Boulevard (St Andrews Road Site) | | 24 | 456967 | 341382 |

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|---|---|---|---|---|---|---|---|---|---|
| **1577** | 25M108 | 52.9452, -1.1316 | 458446 | 338996 | Meadow Lane Southwest of A612 Manvers Street | | 65 | 458460 | 339013 |

# 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 |
| LAQM | Local Air Quality Management |
| $NO_2$ | Nitrogen Dioxide |
| $NO_x$ | Nitrogen Oxides |
| $PM_{10}$ | Airborne particulate matter with an aerodynamic diameter of 10µm or less |
| $PM_{2.5}$ | Airborne particulate matter with an aerodynamic diameter of 2.5µm or less |
| QA/QC | Quality Assurance and Quality Control |
| $SO_2$ | Sulphur Dioxide |
| | |

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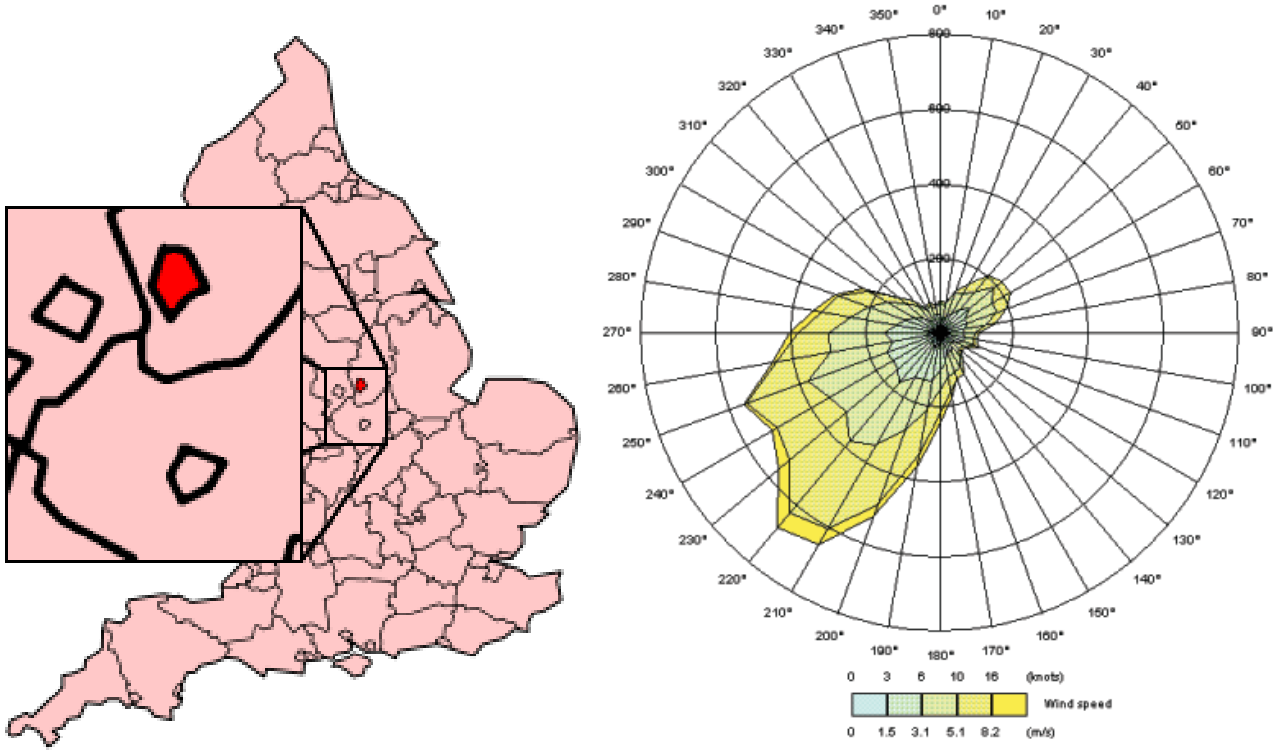
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  **https://www.nottinghaminsight.org.uk/d/aXx6DuH**

**Nottingham's geography and weather.**

A location's air quality is affected by both local and distant emissions, from a wide range of sources, seasonal and day-to-day weather conditions, and the prevailing wind direction.

Nottingham's location in England means it does not experience daily coastal sea-breeze effects and is therefore subject to the wind direction of the air masses moving across the UK. The wind rose (Figure 9) is typical of data measured at Watnall meteorological station on the western edge of the Nottingham conurbation) shows the wind direction with the greatest frequency as the large lobe at $220^0$. This 'prevailing wind' direction is roughly from the southwest. Thus, Nottingham's air quality is significantly influenced by sources ranged in an arc from the west-south-west to the south-south-west.

Figure 6: Nottingham City Council's geographic location in England and example Windrose (Watnall)




Nottingham is surrounded by agricultural land, the M1 motorway bounds Nottingham to the west, and the very large urban industrial conurbation of the West Midlands is approximately 40 miles to its southwest (Figure 10). Emissions from agricultural activity outside the conurbation as well as those from closer and more distant domestic,

commercial, industrial and transport sources outside Nottingham contribute to the levels of NO2 and particles measured in Nottingham.

Figure 7: Nottingham City Council's geographic location (detailed)

