

Nottingham City Council

2023 Air Quality Annual Status Report (ASR)

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

Date: June 2023

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Executive Summary: Air Quality in Our Area

Air Quality in Nottingham City Council's administrative area

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

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

Air pollution is defined as a mixture of gases and particles that have been emitted into the atmosphere by natural and human-made processes.

The combustion of fossil and other carbon-based fuels such as coal, gas, petrol, diesel and wood are the most significant sources of the key pollutants of concern: nitrogen oxides, particles and sulphur dioxide, and also carbon dioxide, a key greenhouse gas.

In Nottingham the main sources of urban nitrogen dioxide (NO_2) are natural gas fired heating/hot water systems and boilers (industrial, commercial and domestic sources) and motor vehicles. Furthermore, in some locations in Nottingham, particularly near busy roads, diffusion tube monitoring indicates concentrations of NO2 might exceed the annual mean Air Quality Objective (AQO) of 40 ug/m3.

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.

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

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

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

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

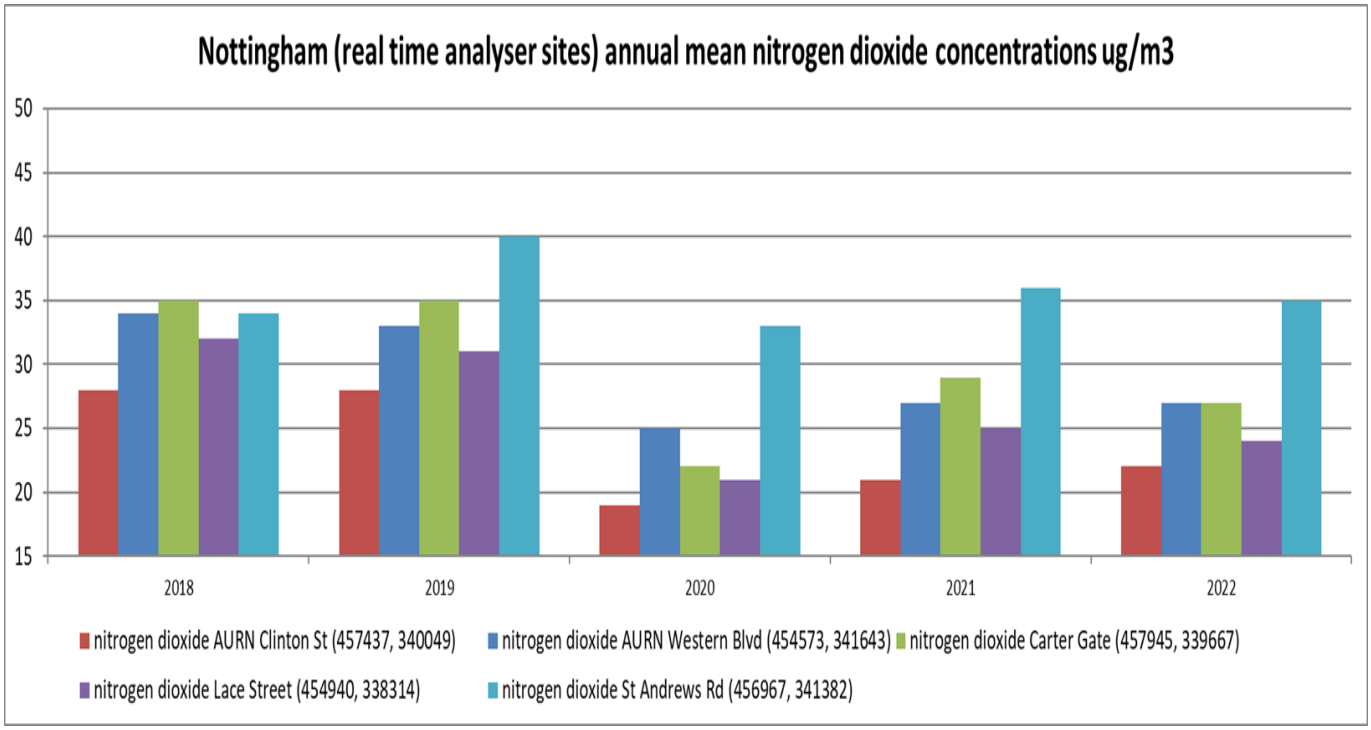
Air quality modelling (DEFRA 2017) indicates that the majority of Nottingham's fine particulate air pollution ($PM_{2.5}$ and smaller) comes from sources outside the City, and contains a proportion of secondary particles formed by chemical reactions between air pollutants such as ammonia, sulphur dioxide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

Air Quality Monitoring data 2022

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 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 ug/m3 (Figure 1.)

Figure 1



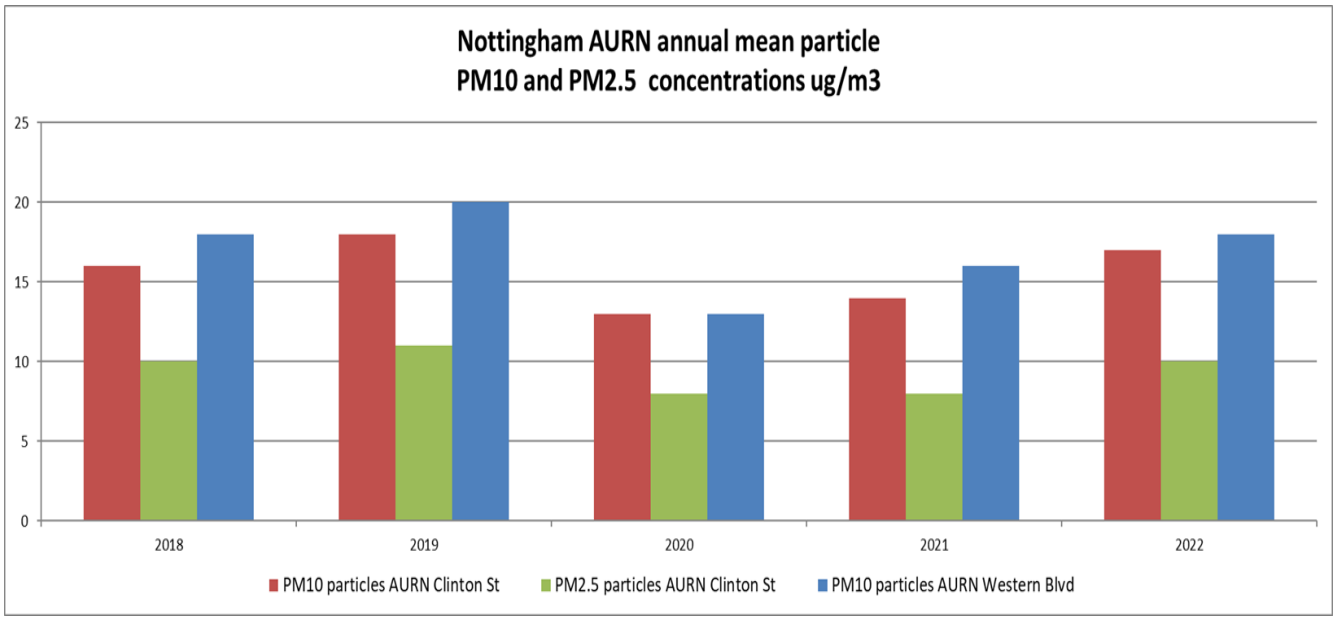
During 2020 and part of 2021 action to prevent/minimise transmission of Covid-19 (including 'lockdowns') reduced emissions from road transport and other commercial activity, particularly the office, retail, leisure and hospitality sector, a significant proportion of the commercial activity in Nottingham's city centre.

In 2022 Nottingham'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 over 40 ug/m^3 at 10 sites, compared to 6 sites in 2021.

Particle monitoring data

DEFRA operates two AURN stations (for the Nottingham 'Agglomeration'), monitoring a range of pollutants of concern, including PM10 and PM2.5. The Clinton Street East and Western Boulevard AURN stations show PM10 concentrations were below the annual mean air quality objective of 40 ug/m^3 (Figure 2.). As of 2022 PM2.5 did not have an AQO.

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.

The Environmental Improvement Plan[5] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term $PM_{2.5}$ targets. The National Air Quality Strategy provides more information on local authorities' responsibilities to work towards these new targets and reduce $PM_{2.5}$ in their areas. The Road to Zero[6] details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air

[5] Defra. Environmental Improvement Plan 2023, January 2023

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

Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

To raise the profile of air quality issues and its impact on health a Joint Strategic Needs Assessment was undertaken in 2015 resulting in the Air Quality and Health chapter of the JSNA. The chapter identified the key health issues, links to the Public Health Outcome Framework indicators (originally 3.01, now D01) and opportunities and synergies from links to a range of activities with improved health outcomes that reduce emissions of air pollution. The chapter was updated in 2019.

https://nottinghaminsight.org.uk/search?q=JSNA%20air%20quality

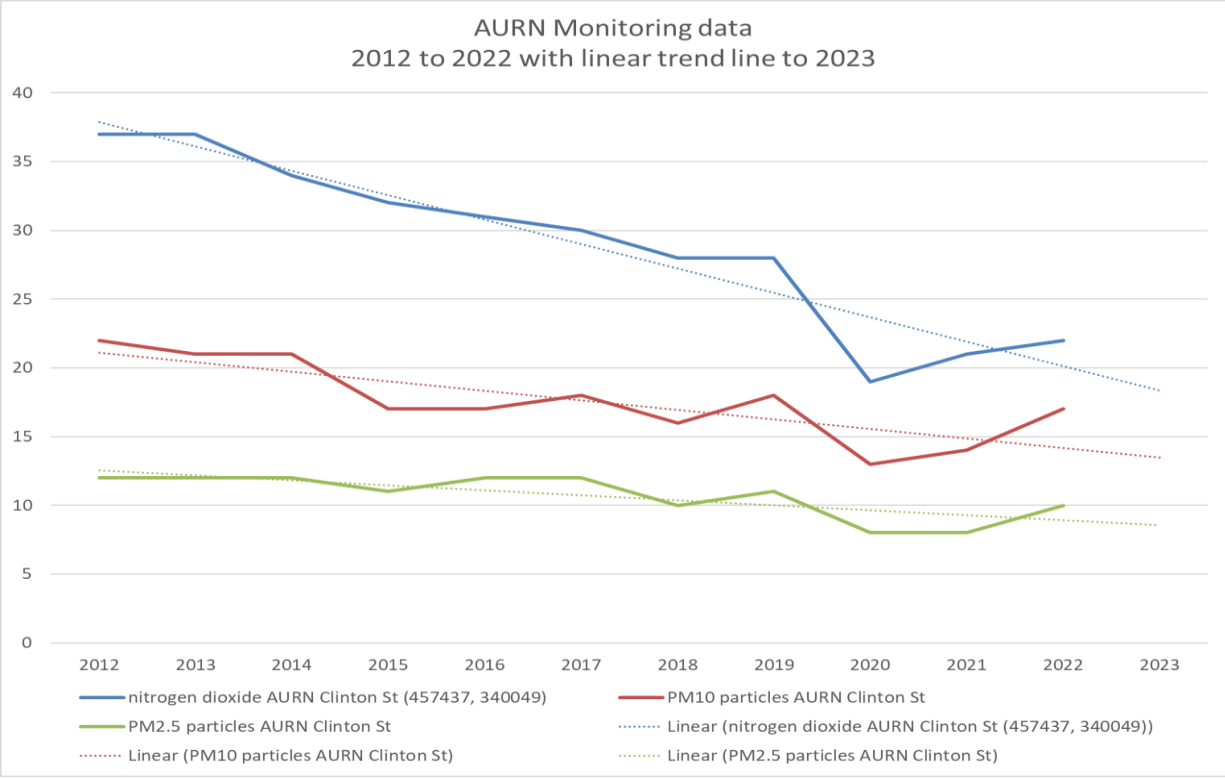
Nottingham City Council pledge to reduce air pollution (2018-2023)

Nottingham City Council committed to improving air quality by cutting Nitrogen Dioxide and particulate pollution by 20% compared to 2018 (average concentrations of DEFRAs City Centre and Western Boulevard AURN sites) page 17:

https://www.nottinghamcity.gov.uk/media/3372996/full-strategic-council-plan-2021-23.pdf

Although levels dropped sharply in 2020, and only slightly increased in 2021 (due to covid-19 measures and its impact on the economy), when compared to 2018 2022 NO_2 levels were 22% lower, PM_{10} levels were 6% higher and $PM_{2.5}$ levels unchanged (Figure 3).

Figure 3.



In 2023 Nottingham City Council published its Strategic Council Plan 2023-27

https://www.nottinghamcity.gov.uk/media/3377077/enc-1-for-strategic-council-plan-2023-2027.pdf

and remains committed to monitoring and improving 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, oxides of nitrogen NO and NO_2 (NO_x), and particles. 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.

Nottingham City Council aims to achieve this by the range of strategies, plans and activity outlined below.

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 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.

The process for reviewing compliance with the ministerial direction started in 2023.

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).

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'

Air Quality and Emissions Mitigation – Guidance for Developers 2019 (draft)

Nottingham City Council is working to transpose the draft supplementary planning document, developed in partnership with East Midlands Air Quality Network, into an easy

to follow guide and menu for developers in Nottingham to use. The guidance will enable developers to develop sites whilst minimising air pollution and carbon emissions from the development over its lifetime.

Paste the link https://www.nottinghaminsight.org.uk/d/aavR2kmH into a web browser to download the document.

Carbon Neutral Action Plan

This plan builds on Nottingham 2028 Carbon Neutral Charter by setting out high-level objectives in order to achieve a resilient and carbon neutral Nottingham by 2028.

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/NO2 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 achieve 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.

Clear Zone (in development)

Although Nottingham City was not required to introduce a Clean Air Zone it has continued to review practicable options and measures to encourage and facilitate the switch to ultra-low emission vehicles travelling through and operating in the City Centre. This project is still in development. The City Centre Clear Zone will be modified to ensure only the cleanest vehicles will be able to access the city centre by introducing a permit scheme with emissions-based criteria.

Benefits include:

- Encourage the uptake of cleaner vehicles that service the heart of the city centre
- Support the Council's Plan to reduce the level of NO2 in the City and moving towards Carbon Neutral City 2028
- Improve the pedestrian environment, more people wanting to come to the city centre for shopping and leisure
- Reducing illegal trading practices by private hire vehicles; increasing bus punctuality and reducing congestion
- Improve bus journey times and reliability by reducing unnecessary traffic in the City Centre

Go Ultra Low Nottingham programme

Through our Go Ultra Low Nottingham project we are helping to support uptake for electric cars and other low emission vehicles across the city. Our vision is for Nottingham to become an exemplar for low emission vehicles, spanning private cars, vans, buses, taxis and commercial fleets as a core part of our sustainable transport system.

Nottingham has been named one of the UK's first Go Ultra Low Cities. £6.1m funding awarded by the Office for Low Emission Vehicles has introduced a range of innovative projects to support the uptake in Ultra Low Emission Vehicles (ULEVs).

Electric Vehicle Projects - Nottingham's way of improving electric car usage (transportnottingham.com)

Nottingham - Derby Access Fund

A comprehensive package of sustainable travel behaviour change measures to support capital infrastructure investment in Nottingham and Derby building on local good practice.

Objectives:

Improve air quality to support the introduction of Clean Air Zones or similar restricted vehicular access areas.

Embed sustainable and active travel cultures in our businesses and communities

Improve access to work and jobs

https://www.nottinghamshire.gov.uk/media/117257/nottinghamderbyaccessfundbid.pdf

https://www.nottinghaminsight.org.uk/search?q=Nottingham+Derby+Access+fund

Conclusions and Priorities

Air pollution remains a concern to Nottingham City Council, it's citizens and businesses.

2022's monitoring shows an increase in NO_2 concentrations and PM_{10} at all automatic real-time monitoring locations. However, all 'pollutants of concern' monitored by real time analysers remained below the relevant air quality objective for their relevant pollutant.

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 City area.

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 City Council's ambition to be 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. Go Ultra Low Nottingham – continues to secure funding to promote and support a range of initiatives and projects to facilitate the take-up of Ultra Low Emission Vehicles (ULEV) in Nottingham,

vi. Complete the feasibility study into a low emission/ clear zone for the City Centre and identify/secure funding for implementation,

vii. Encourage all bus operators to implement a retrofit or replacement programme for older polluting buses,

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

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

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

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

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

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

xiv. Enforce the Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002, and issue Fixed Penalty Notices to drivers unnecessarily idling a stationary vehicles' engine,

Nottingham City Council's Air Quality Action Plan

The Plan is currently in draft form, although many elements of the plan have been implemented, or are in the process of being implemented.

2022 diffusion tube monitoring indicates locations where the nitrogen dioxide annual mean air quality objective of 40 ug/m3 is not being achieved (even when taking into account the uncertainty inherent with the use of Palmes-type NO2 diffusion tubes). It is therefore proposed to review the Air Quality Action Plan Autumn-Winter 2023 and publish an updated plan in 2024.

Local Engagement and 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 City, but the Council recognises it is necessary to go much further to reduce emissions from the range of sources that generate particles and nitrogen dioxide and 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.

The partnership celebrated 31 years of co-operation in June 2023.

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/events-markets-parks-and-museums/parks-and-open-spaces/a-walk-in-the-park/

Rights of Way - Nottingham City Council

Highways register - Nottingham City Council

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

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

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

On the 15th June 2023 Nottingham, together with other Cities and organisations across the UK, participated in the seventh (National) 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 Friday 22rd September 2023 and, if resources allow, Nottingham City Council intends to promote the day.

https://www.livingstreets.org.uk/about-us/our-work-in-action/world-car-free-day

For more information, comment, or raise your concerns about air pollution and air quality please visit

https://www.nottinghamcity.gov.uk/information-for-business/environmental-health-and-safer-housing/environmental-health-and-safer-places/

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:

Chris Carter (Head of Transport Strategy, Growth and City Development)

Tim Bellenger (Transport Strategy Manager)

Chris Common (Carbon Neutral Policy Manager)

Tracey Lamming (Public Health Principal)

This ASR has not been signed off by Nottingham City Council's Director of Public Health.

If you have any comments on this ASR please address them to Richard Taylor at:

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1 Local Air Quality Management

This report provides an overview of air quality in the City of Nottingham during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in 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 the City of Nottingham to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

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 for NO_2 can be found in **Error! Reference source not found.**. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=188

Further information detailing declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/maps/

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

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

Figure 2 – Nottingham City Council AQMA No. 2.

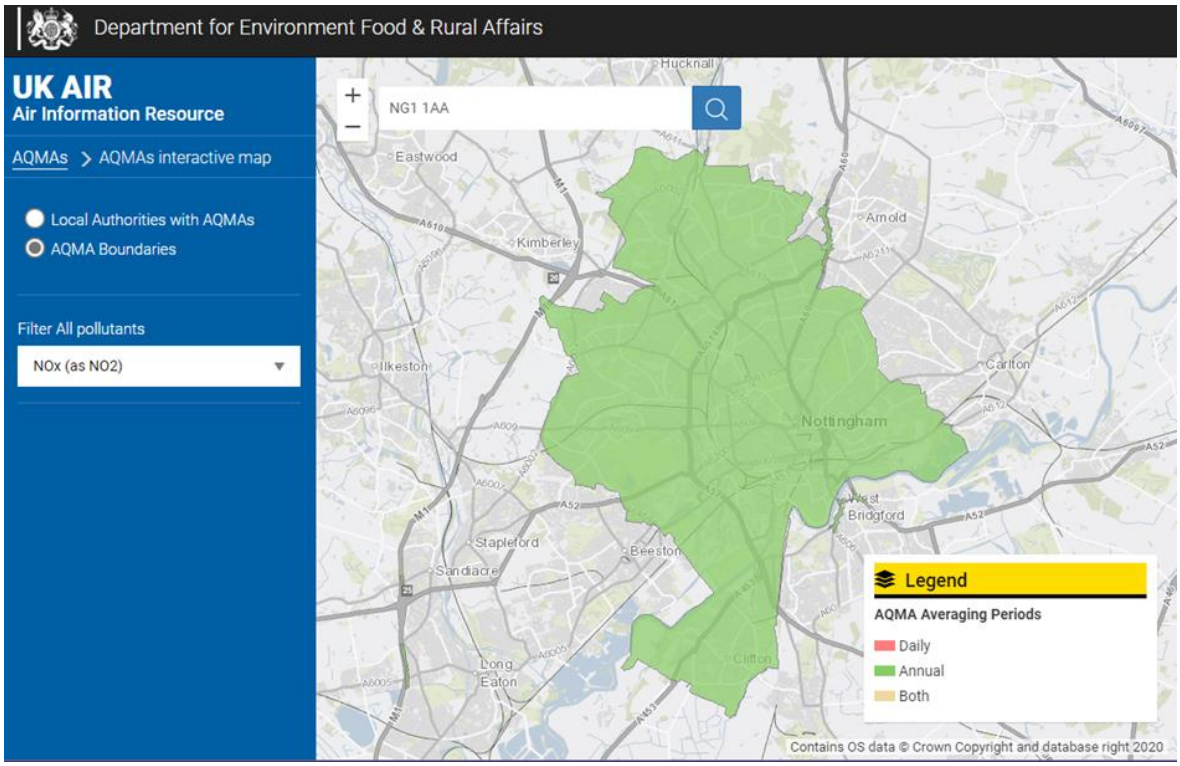


Table 2.1 – Declared Air Quality Management Areas

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.	NO2 Annual Mean (40 ug/m3)	Encompassing the entire administrative area of Nottingham City Council.	NO	41 (St Andrew's Road)	**35 ug/m3** **No exceedance**	**5 years**	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 https://nottinghamshireinsight.org.uk/search?q=local+transport+plans
AQMA No.2	Declared 2002, amended 2019.	NO2 Annual Mean (40 ug/m3)	As above	NO	44 (Carter Gate)	**27 ug/m3** **No exceedance**	**5 Years**	As above	As above
AQMA No.2	Declared 2002, amended 2019.	NO2 Annual Mean (40 ug/m3)	As above	NO	42 (Lace Street)	**24 ug/m3** **No exceedance**	**9 years**	As above	As above

AQMA No.2	Declared 2002, amended 2019.	NO2 Annual Mean (40 ug/m3)	As above	NO	33 (AURN Clinton Street)	**22 ug/m3** **No exceedance**	**12 years**	As above	As above
AQMA No.2	Declared 2002, amended 2019.	NO2 Annual Mean (40 ug/m3)	As above	NO	39 (AURN Western Boulevard)	**27 ug/m3** **No exceedance**	**7 years**	As above	As above

☒ **Nottingham City Council confirm the information on UK-Air regarding their AQMA(s) 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 the City of Nottingham

Defra's appraisal of last year's ASR may be downloaded by pasting the link below into a web browser

https://nottinghamshireinsight.org.uk/d/abAmNaNk

In summary it concluded 'On the basis of the evidence provided by the local authority the conclusions reached are acceptable for all sources and pollutants. Following the completion of this report, Nottingham City Council should submit an Annual Status Report in 2022.' [sic]

The following comments were made:

1. Trends in NO_2, PM_{10} and $PM_{2.5}$ concentrations from automatic monitoring stations are clearly presented in figures A.1, A.3 and A.5. But there are no figures provided for the non-automatic NO_2 monitoring results. Equally, the discussion on the trends is limited for both automatic and non-automatic concentrations.

NCC – This will be addressed/more fully discussed in the 2023 ASR.

2. The local bias adjustment factor was used for the non-automatic monitoring QA/QC process. There were three triplicate co-located sites within the Council however only one was used to calculate the local bias adjustment factor. Equally, there was no justification provided for the choice of using the local bias adjustment factor rather than the national.

NCC – There is only one triplicate site co-located with a real time analyser and thus suitable for calculating a local bias adjustment factor. The use of the local bias adjustment factor is justified based on TG22 box 7-13.

3. No analysis methodology was provided for the diffusion tubes in the QA/QC process.

NCC - The analysis methodology used by Gradko International may be viewed at:-

https://www.gradko.com/environmental/environmental-products/nitrogen-dioxide-diffusion-tubes.shtml

and downloaded as

https://www.gradko.com/environmental/environmental-resources/technical-resources/technical-data-sheets/nitrogen-dioxide-technical-data-sheet.pdf

4. This Annual Status Report included no discussion of the appraisal comments from 2021.

Appraisal comments from 2021:

1. Please could the Council correct an error in the text of the report. It was stated that there were four exceedances of the annual mean NO2 AQO, when there were six monitored exceedances.

Please also then state that when distance correcting for relevant exposure, one of the sites becomes compliant with the objective.

NCC – Noted. Not corrected in the 2021 report.

6. The Council's detailed consideration of its approach for tackling PM2.5, including a summary of targeted measures and analysis of source apportionment is welcomed. The Council could still consider referring specifically to the Public Health Outcomes Frameworks indicator D01: Fraction of mortality attributable to particulate air pollution, and through collective actions, local authorities all making small reductions will help to reduce local/regional background particulate concentrations.

NCC – noted. Already identified in the Nottingham and Nottinghamshire Air Quality Strategy 2020-2030.

7. Please could the Council where possible provide estimates of costs for air quality measures in Table 2.2, and remove missing/incomplete entries from the table unless they can be filled in entirely, in order to ensure full transparency to the public regarding the actions taken to tackle air quality.

NCC – Estimates of costs are provided when available and provided. Incomplete entries will remain as these still show measures being implemented or complete.

5. The maps showing the locations of monitoring sites and the AQMA could have been created rather than screenshotted from an online map in order to show the monitoring locations more clearly. No map at all was provided for the locations of the automatic monitoring sites.

NCC – This will be addressed in the 2023 ASR

Nottingham City Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Over 50 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 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans:-

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

Local Transport Plan Implementation Plan 2019-2022

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

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	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
NCC017	Nottingham City park and Ride sites	Alternatives to private vehicle use	Bus based Park & Ride	2019	2019	Nottingham City Council	Developers & highway infrastructure funding				Completed	Reduced vehicle emissions		Implemented and operational	
NCC018	Nottingham City Council staff car share	Alternatives to private vehicle use	Car & lift sharing schemes	-	2021	Nottingham City Council	N/A				Completed	Reduced vehicle emissions		Implemented and operational	
NCC019	Nottingham City Council Car Club	Alternatives to private vehicle use	Car Clubs	2014	2020	Nottingham City Council, Enterprise Car Hire	N/A				Completed	Reduced vehicle emissions		Implemented and operational	
NCC020	Nottingham City Park and Ride sites	Alternatives to private vehicle use	Rail based Park & Ride			Network Rail, Nottingham Express transit					Completed	Reduced vehicle emissions		Implemented and operational	
NCC021a	Nottingham City Electric Scooter rental trial	Alternatives to private vehicle use	Other	2020	2024	Nottingham City Council, Superpedestrian scooters					Planning			Trials ongoing	Misuse, pavement clutter affecting sight impaired.
NCC022	Air Quality Strategy for Nottingham and Nottinghamshire 2020-2030	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2020	2030	Nottingham City Council, Nottinghamshire County, Borough and District Councils. NCity and County Health and Wellbeing	LA base budgets				Completed				

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
						Board memebers									
NCC023	Draft East Midlands Air Quality Network Air Quality and Emissions Mitigation Guidance for Developers	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2019		East Midlands Air Quality Network (East Midlands LAs - Env H, Planning & Transport, Public H, PHE	LA base budgets				Planning				
NCC024	Nottingham City Centre Clear Zone	Promoting Low Emission Transport	Low Emission Zone (LEZ)			Nottingham City Council								Feasibility studies being conducted	Funding to implement, enforcement
NCC028	Broadmarsh Car park dedicated EV charging spaces/floor	Promoting Low Emission Transport	Priority parking for LEVs	2020	2021	Nottingham City Council	DfT							Facility installed	
NCC002	Go Ultra Low Nottingham Programme	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2015	2020	Led by Nottingham City Council. OLEV grant funding (Go Ultra Low Programme)	DfT						Project specific outputs	Project complete	Project complete but many initiatives being continued through FTZ and TCF (see below)
NCC025	Fleet Strategy	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2018		Led by Nottingham City Council	NCC, DEFRA				https://www.nottinghamevservices.co.uk/fleet/			Ongoing	

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
NCC011	CAZ additional measures	Promoting Low Emission Transport	Taxi emission incentives	2019	2021	Led by Nottingham City Council. Joint Air Quality Unit /	DEFRA						% Euro 6 and % ULEV private hire vehicles operating to strategy	Project complete	
NCC011a	City of Nottingham Age and specification Policies Relating to Hackney Carriage and Private Hire Vehicles	Promoting Low Emission Transport	Taxi Licensing conditions	2018	2021	Led by Nottingham City Council. Joint Air Quality Unit /							Policy specific outputs	Project complete	
NCC016a	Electric Van Experience	Promoting Low Emission Transport	Other	2020		Nottingham City Council, local businesses	National Highways						Increase in uptake of Evs attributable to the intervention	Project underway	
	Workplace Travel Service	Promoting Travel Alternatives	Increase the number of businesses using Electric vehicles	2018	2024	Local businesses	DfT								
NCC001	DEFRA Air Quality funding	Promoting Low Emission Transport	Other		2020/2021	Led by Nottingham City Council. Joint Air Quality Unit /	DEFRA						Project specific outputs	Initial works underway	-
NCC00N	Covid-19 response Future Hybrid working project	Promoting Travel Alternatives	Encourage / Facilitate home-working		2021/2022	Nottingham City Council	NCC							Implemented as part of Covid-19 response.	Likely to achieve 40-60% reduction in office space requirements. Will reduce commuting using all modes.

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
NCC024	NCC Active travel Fund Measures	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure				DEFRA DfT				https://www.transportnottingham.com/projects/emergency-active-travel-fund-covid-19-measures/		Up lift in number journeys by bike and on foot attributable to the intervention	ongoing	
NCC09a	Smarter Travel Hubs / Continuity Fund	Promoting Travel Alternatives	Personalised Travel Planning	2021	2022	Nottingham City Council. DfT grant funding (Capability Fund)									
NCC030	Nottingham Station Hub	Promoting Travel Alternatives	Promote use of rail and inland waterways	2018		Nottingham City Council, Network Rail					Operational			Completed	
NCC030a	Transport Interchange and Integration	Promoting Travel Alternatives	Promote use of rail and inland waterways	2018			Midlands Connect,								
NCC09b	Smarter Travel Hubs / Continuity Fund	Promoting Travel Alternatives	Promotion of cycling	2021	2022	Nottingham City Council. DfT grant funding (Capability Fund)									
NCC09c	Smarter Travel Hubs / Continuity Fund	Promoting Travel Alternatives	Promotion of walking	2021	2022	Nottingham City Council. DfT grant funding (Capability Fund)									

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
NCC09d	Smarter Travel Hubs / Continuity Fund	Promoting Travel Alternatives	School Travel Plans	2021	2022	Nottingham City Council. DfT grant funding (Capability Fund)									
NCC09e	Smarter Travel Hubs / Continuity Fund	Promoting Travel Alternatives	Workplace Travel Planning	2021	2022	Nottingham City Council. DfT grant funding (Capability Fund)									
NCC013	DfT Active Travel Measures	Promoting Travel Alternatives	Other	2020	2021	NCC, DfT	DfT				Increase in Active travel			Project underway	
NCC031	Aq data sharing	Public Information	Via the Internet	2018		NCC, AQMS	None				AQ information available on websites				
NCC032	Air Quality news	Public Information	Other	2018		NCC	None				Regular AQ updates and alerts on EH Twitter feed.				
NCC033	Anti-idling signs and campaigns	Traffic Management	Anti-idling enforcement	2019		NCC	None				Signage to discourage idling in identified problem areas				
		Traffic Management	Emission based parking or permit charges												
NCC024	NCC Active Travel Fund Measures	Traffic Management	Reduction of speed limits, 20mph zones		2023	NCC	DfT				Service user survey completed				
NCC007	Southside Transport Strategy (Broadmarsh)	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management,	2014/15 - 2015/16	2016 - 2023		Nottingham City Council. Funding from Local Growth Fund, LTP and prudential borrowing							Works to demolish car park finished in 2018. Further road space works planned to take place in	Large-scale regeneration project. High number of dependencies for the works

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
			Selective vehicle priority, bus priority, high vehicle occupancy lane											future years	
NCC0nn	Real Time camera enabled UTC	Traffic Management	UTC, Congestion management, traffic reduction			Nottingham City Council					Operational				
NCC003	Nottingham Workplace Parking Levy (WPL)	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2011	2012 – ONWARDS to 2037	Nottingham City Council	WPL liable businesses				operational		Congestion Constraint and mode shift to more sustainable modes of transport due toWPL Package		
NCC010	Nottingham Enterprise Zone Sustainable Transport Package	Transport Planning and Infrastructure	Cycle network	2016-17	2018-21	Nottingham City Council. Funding from Local Growth Fund and developer contributions.					Operational		Mode shift to more sustainable modes of transport due to intervention	Completed	Delay to original scheme due to Network design refinements
NCC026	Nottingham Citycard cycles	Transport Planning and Infrastructure	Public cycle hire scheme	2015	2018	Nottingham City Council	WPL, DfT				Operational			Operational	https://www.transportnottingham.com/cycling/hire-a-bike/

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
NCC004	Midland Mainline Enhancements	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2016-17	2016-2023	Network Rail								Awaiting introduction of new rolling stock	Electrification cancelled. Uncertainty relating to enhancements on Midland Mainline. New rolling stock may contribute to improving air quality.
NCC012	CAZ additional measures	Transport Planning and Infrastructure	Other	2018	Oct-21	Nottingham City Transport	DEFRA					1-6 ug/m3 City wide effect. Most pronounced in City Centre due to concentration of routes.		NCT Retrofit Project now complete, council now working other operators	NCT Retrofit now complete, Council now working with other operators to ensure their fleets meet the highest emission standards.
NCC014	Future Transport Zone - e-mobillity hubs	Transport and Planning Infrastructure	Mobility hubs better use of data and electric vehicles	2020	2024		DfT			£1 million - £10 million	Implementation	Reduced vehice emissions	Mode shift to more sustainable modes of transport due to intervention	Project underway	
NCC014	Future Transport Zone - Mobility as a service	Transport Planning and Infrastructure	Mobility as a service	2020	2024	Bus, tram and train operetors	DfT			£1 million - £10 million	Implementation	Reduced vehice emissions	Mode shift to more sustainable modes of transport due to intervention	Project underway	
NCC014	Future Transport Zone - Data Platform	Transport Planning and Infrastructure	Mobility hubs better use of data and electric vehicles	2020	2024	Nottingham County Council	DfT			£1 million - £10 million	Implementation	Reduced vehice emissions	Mode shift to more sustainable modes of transport due to intervention	Project underway	The link between the KPI and the intervention is in most cases indirect as better data informs other interventions however better information wil also enable better transport choices directly

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
NCC015	Transforming Cities Fund	Transport and Planning Infrastructure	Other	2020	2023		DfT						Mode shift to more sustainable modes of transpor and improved accessibillity to jobs and services due to intervention	Project underway	Increase active travel and public transport use
NCC026	NCC CAZ additional measures	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport												
NCC027		Vehicle Fleet Efficiency	Testing Vehicle Emissions												
NCC021b	Leveling up fund	Alternatives to private vehicle use	Other	2022	2024	NCC	DfT	NO	Funded	> £10 million	Implementation		evidenceof mode swict away from ICE powered vehicles and improved accessibillity attributable to the interventions	Ongoing	Streets for People / LED lighting upgrade / School Streets / Community Electric Vehicle Charging Poitnts

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
NCC021c	Active Travel Fund	Alternatives to private vehicle use	Other	2022	2025	NCC	Active Travel England	NO	Funded	£1 million - £10 million	Implementation		Up lift in number journeys by bike and on foot attributable to the intervention	Ongoing	St.Ann's Well Road and Porchester Road Cycle and Walking Schemes / Active Travel Social Prescribing
NCC016b	Bus Service Improvement Plan	Promoting Low Emission Transport	Other	2022	2025	NCC	DfT	NO	Funded	£1 million - £10 million	Implementation			Ongoing	Bus Priority Schemes / Traffic Light Priority for Buses / Pinch Point relief / Fares package
NCC016c	Zero Emission Bus Regional Area	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2022	2027	NCC	DfT	NO	Funded	> £10 million	Implementation			Ongoing	68 Electric buses for Nottingham City Transport
NCC016d	Low Emission Vehicle Infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2022	2027	NCC	DfT	NO	Funded		Implementation			Ongoing	Expansion of public EV charging network

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

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

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

Existing measures are focused on:-

i. reducing emissions from transport by constraining traffic growth and encouraging/facilitating walking, cycling and 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/demolition activity implement dust minimisation measures.

Additional measures being considered include: -

i. Reducing emissions from non-vehicle fixed and mobile sources and

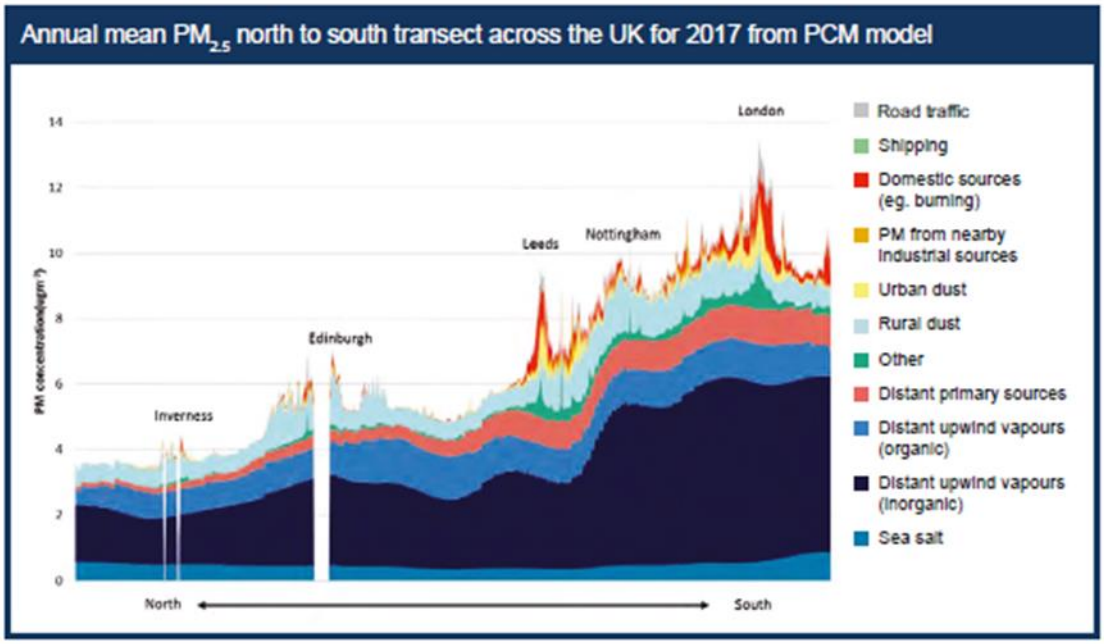
ii. Planting to reduce weathering/entrainment of soil/surface particles and increasing green surface area for adsorption/impingement/entrapment of particles by foliage.

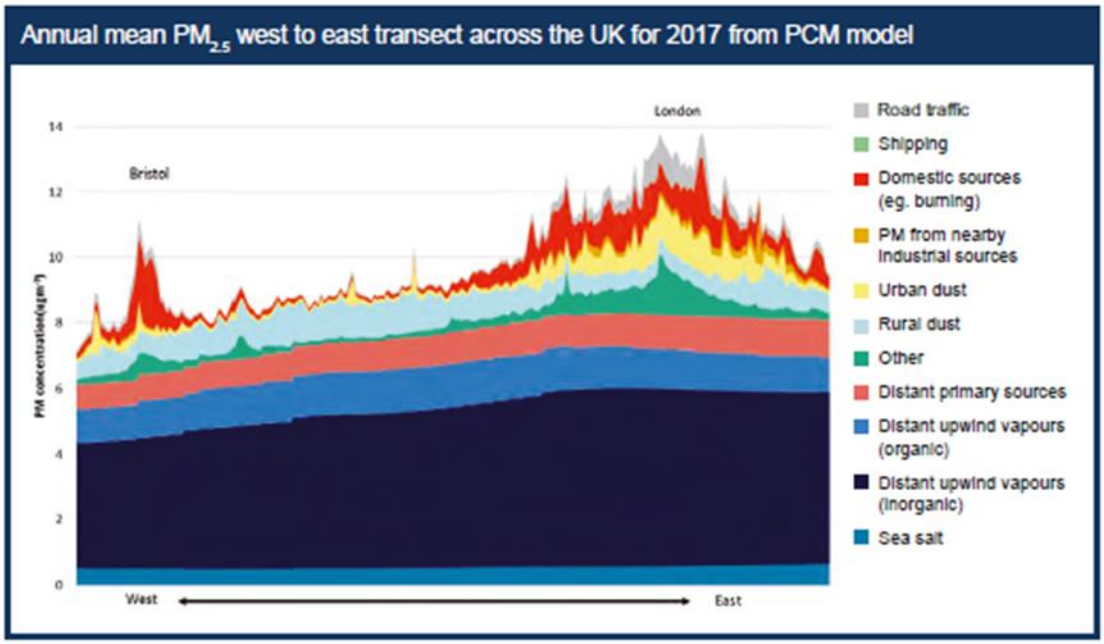
It should be noted that the UK Governments Air Quality Strategy (May 2019) details PM2.5 source contribution to annual mean concentrations across the UK, highlighting a number of cities that fall on the chosen transect line, including Nottingham. (Figure 5).

The PCM model indicates that as much as 80% of Nottingham's PM2.5 levels come from distant primary sources and distant upwind vapours e.g. industrial, commercial and agricultural sources outside the City's boundary and therefore any action by Nottingham City Council will only have a small impact on PM2.5 levels.

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.







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

This section sets out the monitoring undertaken within 2022 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 2018 and 2022 (and in some cases 2008-2022) 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 2022.

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?network=nondefraaqmon

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.

3.1.2 Non-Automatic Monitoring Sites

Nottingham City Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 38 sites during 2022. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

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/m3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2022 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored 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.

2022's monitoring shows an increase in the number of diffusion tube monitoring sites exceeding the annual mean air quality objective (when applying the local bias adjustment factor) increasing from 6 to 10, and an increase in monitored NO_2 concentrations at the 3 real time analyser sites. **However, all RTA sites remained below the NO_2 annual mean air quality objective of 40 ug/m3.**

No changes are proposed to the diffusion tube network for 2023.

During 2023 20 electro-chemical cell NO2 units will be deployed and co-located with a number of diffusion tubes, and the use of diffusion tubes will be reviewed in 2024.

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.

A Clean Air Zone (CAZ) defines the area where targeted action is taken to improve air quality to improve health benefits while supporting economic growth. A key objective of a mandated Clean Air Zone scheme is to reduce the levels of Nitrogen Dioxide concentrations to levels of 40µg/m3 compliant with EU directive 2008/50/EC.

The national 2015 plan was challenged in the High Court by Client Earth and in October 2016, and the high court ruled that the plan was not sufficient to meet the aims of the Air Quality Directive. The High Court then quashed the plan and ordered that DEFRA produce a revised plan. Subsequently, in May 2017, Government released its Clean Air Zone Framework. This outlined four classes of Clean Air Zone, each of which charge non-compliant vehicles of different types for entry into each classified Zone. Vehicles would be compliant, and therefore not charged to enter the Zone, depending on their emission standard (i.e. Euro 6 or higher for Diesel, or Euro 4 or higher for petrol).

- Class A – Buses and Taxis (inc private hire)
- Class B – Buses, Taxis & HGV's
- Class C – Buses, Taxis, HGV's and light vans
- Class D – Buses, Taxis, HGV's, light vans and private motor cars

In July 2017 DEFRA and the Department for Transport (DfT) jointly released the “UK Plan for Tackling Roadside Nitrogen Dioxide Emissions”. This plan again named Nottingham and a number of other Local Authorities areas as having persistently high levels of Nitrogen Dioxide. Shortly after the release of the plan, the Secretary of State for Environment directed that Nottingham City Council produce a local plan, to be submitted by 15th September 2018.

Government strongly advised that, when preparing, their plans Local Authorities should consider all measures aimed at achieving compliance with the directive, with charging for access into Clean Air Zones considered necessary only if other measures failed to achieve compliance.

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.

The process for reviewing compliance with the ministerial direction started in 2023.

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 *u*g/m^3.

In 2021 and 2022 Nottingham City Council's diffusion tube monitoring network also recorded exceedances of the nitrogen dioxide annual mean air quality objective of 40 *u*g/m^3 (in 6 and 10 locations respectively).

In 2022 Nottingham City Council received grant funding to acquire, and is currently deploying, 20 electrochemical cell real time analysers (ECRTA) at locations across the City where diffusion tubes continue to indicate exceedances of the AQO (including the A6008 Upper Parliament Street).

The ECRTA units are able to 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) and with higher confidence in the accuracy and precision than that achievable with diffusion tubes.

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 40µg/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 50µg/m^3, not to be exceeded more than 35 times per year.

2022 monitoring data from the AURN Clinton Street East and the AURN Western Boulevard stations show both the annual mean and 24-hour air quality objectives continue to be met.

At the time of writing (June 2023) activity is in progress to relocate the DEFRA funded AURN station at Clinton Street East to a new site, more representative of an 'urban background' and exposure. The relocation is likely to be completed late 2023.

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.

At the time of writing (June 2023) activity is in progress to install a second DEFRA funded AURN $PM_{2.5}$ monitoring site, representative of an 'urban background' and exposure. The site is likely to be operational from the end of 2023.

Note: Computer dispersion modelling undertaken for DEFRA apportions approximately 80% of PM2.5 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 PM2.5: **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 2022 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?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
CG NOx	Carter Gate	Roadside	457945	339667	NO2 NO NOx	Y	Chemiluminescent	12	4	2.5
LS NOx	Lace Street	Roadside	454940	338314	NO2 NO NOx	Y	Chemiluminescent	3	9	1.5
SA NOx	St. Andrews Road	Roadside	456967	341382	NO2 NO NOx	Y	Chemiluminescent	12	13	1.5
CC AURN	Clinton St East.	Urban background	457437	340049	PM2.5,PM10 NO2, NO, NOx O3 SO2	N	FDMS, FDMS Chemiluminescent Ultra Violet Absorption (UVA) Ultra Violet Fluorescence (UVF)	N/A	35	3

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
WB AURN	Western Boulevard	Kerbside	454573	341643	PM10 NO2	NO	FDMS Chemiluminescent	15	1	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.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	454520	338931	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	23.0	No	2.5
4	121 Beeston Rd	Roadside	454784	338146	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	10.0	No	2.5
5	87 Abbey Street	Roadside	455146	338511	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	5.0	No	2.5
6	4 Western Blvd	Roadside	454466	340111	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	17.0	No	2.5
12	Alfreton Road LP (Bentinck Rd - Sch)	Roadside	455774	340812	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	6.0	No	2.5
13	238 Ilkeston Road	Roadside	455439	340131	NO2	Nottingham No.2 Air Quality Management Area 2019	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)
14	Ilkeston Road LP	Kerbside	455622	340142	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	4.0	No	2.5
16	1-6 Castle Gardens	Roadside	455870	339133	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	3.0	No	2.5
17	215 Castle Boulevard	Roadside	455955	339129	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	5.0	No	2.5
19	87 Castle Blvd	Roadside	456853	339303	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	4.0	No	2.5
21	Salutation Inn Maid Marian Way	Roadside	457083	339637	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	3.0	No	2.5
24, 25, 26	St Andrew's Rd T	Roadside	456967	341382	NO2	Nottingham No.2 Air Quality Management Area 2019	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	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	8.0	No	2.5
28	Riverbank PH Trent Bridge	Roadside	458060	338276	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	2.0	No	2.5
30	LP 53890 Manvers Street	Roadside	458079	339887	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	3.0	No	2.5
31	134 Middleton Boulevard	Roadside	454367	339946	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	17.0	No	2.5
33	Lace Street NOx RTA	Roadside	454941	338314	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	9.0	Yes	1.5
35	Lampost 70 Wollaton Road	Roadside	454587	340088	NO2	Nottingham No.2 Air Quality Management Area 2019	10.0	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)
40	Lampost Middleton Boulevard/Crown Island	Roadside	454321	339931	NO2	Nottingham No.2 Air Quality Management Area 2019	15.0	5.0	No	2.5
43	328 Derby Road	Roadside	455453	339595	NO2	Nottingham No.2 Air Quality Management Area 2019	6.0	3.0	No	2.5
44	Parking Post Cliff Road	Roadside	457775	339530	NO2	Nottingham No.2 Air Quality Management Area 2019	4.0	17.0	No	2.5
46	Hicking Building Queens Road	Roadside	457781	339123	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	3.0	No	2.5
47	Carrington Road/Railway Station (Sheriffs Way)	Roadside	457406	339153	NO2	Nottingham No.2 Air Quality Management Area 2019	23.0	1.0	No	2.5
49	2 Castle Boulevard	Roadside	457150	339384	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	4.0	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)
50	A52 Clifton Boulevard	Roadside	455713	337838	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	3.0	No	2.5
51	Trent Street	Roadside	457528	339339	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	2.0	No	2.5
52	Lamppost Crown Public House	Roadside	454386	340087	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	3.0	No	2.5
53	3 Bayard Court	Roadside	454243	340057	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	3.0	No	2.5
55	40 Horwood Drive	Roadside	456441	336131	NO2	Nottingham No.2 Air Quality Management Area 2019	4.0	2.0	No	2.5
56	Mountford House Nursery (Lampost outside)	Kerbside	457064	342128	NO2	Nottingham No.2 Air Quality Management Area 2019	10.0	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)
57	Stepping Stones Retirement Park	Roadside	456265	336414	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	35.0	No	2.5
10, 58, 59	565 Valley Road	Roadside	455528	342828	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	7.0	No	2.5
20, 60, 61	13 Canning Terrace	Roadside	456399	340191	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	5.0	No	2.5
22, 62, 63	Alfreton Road LP 80A01 in front of Beyts Takeaway	Roadside	456156	340383	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	3.0	No	2.5
29, 64, 65	346 Meadow Lane	Roadside	458459	339011	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	3.0	No	2.5
54, 66, 67	Trafford gardens play area	Roadside	454493	341505	NO2	Nottingham No.2 Air Quality Management Area 2019	0.0	3.0	No	2.5
68	Clifton Lane KL409	Roadside	455538	335731	NO2	Nottingham No.2 Air Quality	0.0	4.0	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)
						Management Area 2019				
69	Sturgeon Avenue 14S309	Roadside	455529	335701	NO2	Nottingham No.2 Air Quality Management Area 2019	5.0	10.0	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 2022 (%) (2)	2018	2019	2020	2021	2022
CG NOx	457945	339667	Roadside		98.7	35	35	23	29	27
LS NOx	454940	338314	Roadside		95.6	32	31	23	25	24
SA NOx	456967	341382	Roadside		89.4	34	**40**	34	36	35
AURN CC	457437	340049	Urban Background		99	28	28	19	21	22
AURN WB	454573	341643	Roadside		99	34	33	25	27	27

☒ **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.**

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 2022 (%) [2]	2018	2019	2020	2021	2022
2	454520	338931	Roadside		100.0	26.7	29.5	27.2	25.9	27.1
4	454784	338146	Roadside		100.0	32.4	35.0	28.2	29.6	27.6
5	455146	338511	Roadside		100.0	30.1	31.5	32.9	33.2	33.3
6	454466	340111	Roadside		100.0	29.1	33.1	30.3	29.8	31.0
12	455774	340812	Roadside		84.6	32.7	34.9	37.9	31.9	37.2
13	455439	340131	Roadside		92.3	33.2	35.4	35.7	37.1	35.0
14	455622	340142	Kerbside		90.4	**45.9**	**46.4**	**43.0**	**43.9**	**41.5**
16	455870	339133	Roadside		100.0	36.3	**40.3**	34.9	33.7	32.4
17	455955	339129	Roadside		100.0	37.7	38.5	37.2	32.9	35.5
19	456853	339303	Roadside		100.0	32.0	33.2	28.2	25.4	25.0
21	457083	339637	Roadside		100.0	**42.9**	**43.5**	29.6	38.5	36.6
24, 25, 26	456967	341382	Roadside		100.0	35.5	38.0	35.2	35.5	35.5
27	457963	339681	Roadside		100.0	**40.0**	**42.3**	36.8	35.5	35.1

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 2022 (%) [2]	2018	2019	2020	2021	2022
28	458060	338276	Roadside		92.3	35.5	35.8	31.8	32.2	32.2
30	458079	339887	Roadside		100.0	**43.5**	**42.3**	**40.7**	**41.4**	**41.0**
31	454367	339946	Roadside		100.0	27.4	29.5	27.2	27.7	28.0
33	454941	338314	Roadside		100.0	33.7	36.3	32.3	31.6	31.0
35	454587	340088	Roadside		100.0	**42.2**	39.8	35.2	36.3	34.7
40	454321	339931	Roadside		100.0	36.9	35.8	29.3	32.1	32.2
43	455453	339595	Roadside		73.1	28.3	28.9	27.1	30.4	30.8
44	457775	339530	Roadside		92.3	38.6	39.5	32.6	30.2	32.1
46	457781	339123	Roadside		100.0	**48.3**	**52.9**	**47.8**	**58.5**	**57.1**
47	457406	339153	Roadside		84.6	38.9	**48.9**	39.3	**42.6**	**44.7**
49	457150	339384	Roadside		90.4	**45.9**	38.0	37.7	39.2	**45.4**
50	455713	337838	Roadside		100.0	**50.9**	**54.9**	**42.1**	**46.8**	**45.9**
51	457528	339339	Roadside		100.0	37.6	37.0	30.9	29.3	31.3
52	454386	340087	Roadside		100.0		**40.8**	34.5	37.7	**40.5**

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 2022 (%) [2]	2018	2019	2020	2021	2022
53	454243	340057	Roadside		100.0		34.3	27.2	26.1	27.7
55	456441	336131	Roadside		100.0		31.3	22.6	27.8	26.3
56	457064	342128	Kerbside		75.0		**52.3**	**41.4**	**45.1**	**42.8**
57	456265	336414	Roadside		90.4		27.5	22.7	24.6	23.9
10, 58, 59	455528	342828	Roadside		100.0	39.4	**40.1**	38.2	**41.8**	39.6
20, 60, 61	456399	340191	Roadside		100.0	**49.6**	**49.0**	39.6	**43.1**	**42.4**
22, 62, 63	456156	340383	Roadside		100.0	**43.7**	**40.5**	31.3	33.5	34.2
29, 64, 65	458459	339011	Roadside		100.0	**44.6**	**45.2**	**41.9**	**46.4**	**43.4**
54, 66, 67	454493	341505	Roadside		100.0		**42.7**	36.1	37.1	38.5
68	455538	335731	Roadside		90.4			33.7	35.8	34.9
69	455529	335701	Roadside		100.0			29.4	31.0	30.4

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

☒ **Diffusion tube data has been bias adjusted.**

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

Notes:

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

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**.

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

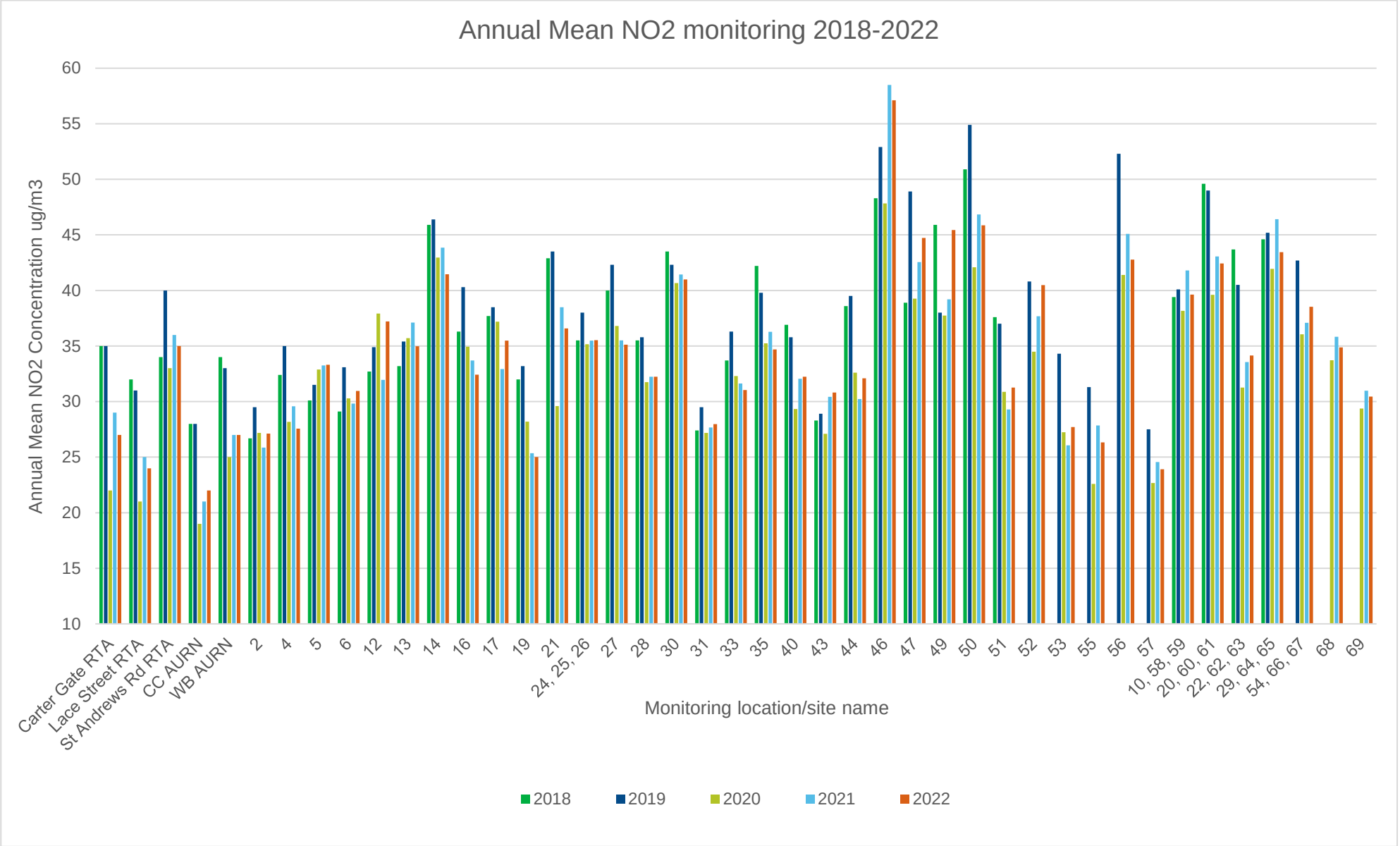


Figure A.1.1 – Trends in Annual Mean No2 Concentrations at real time analyser sites 2018-2022

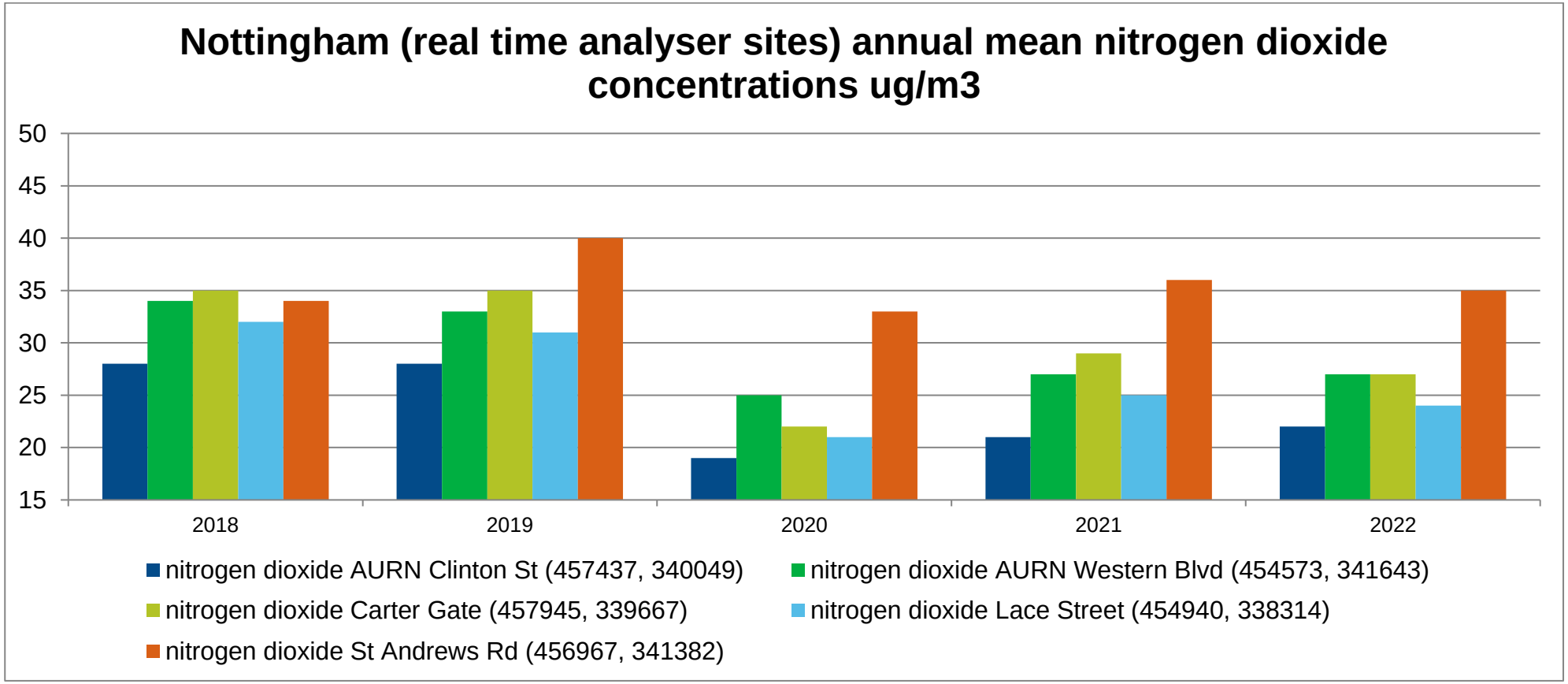


Figure A.1.2 – Trends in Annual Mean No2 Concentrations at real time analyser sites 2015-2022

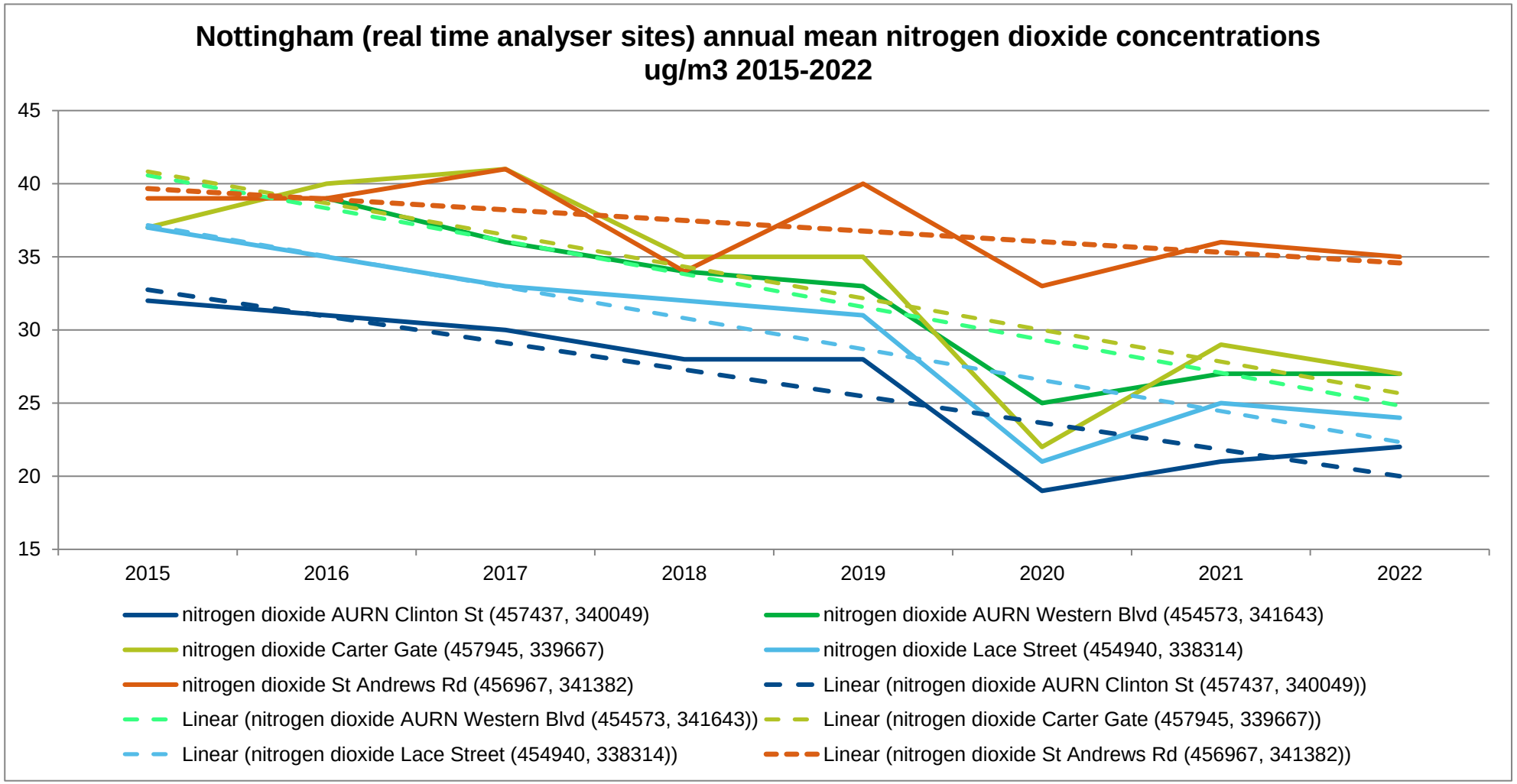


Figure A.1.3 – Trends in Annual Mean No2 Concentrations at real time analyser sites 2008-2022

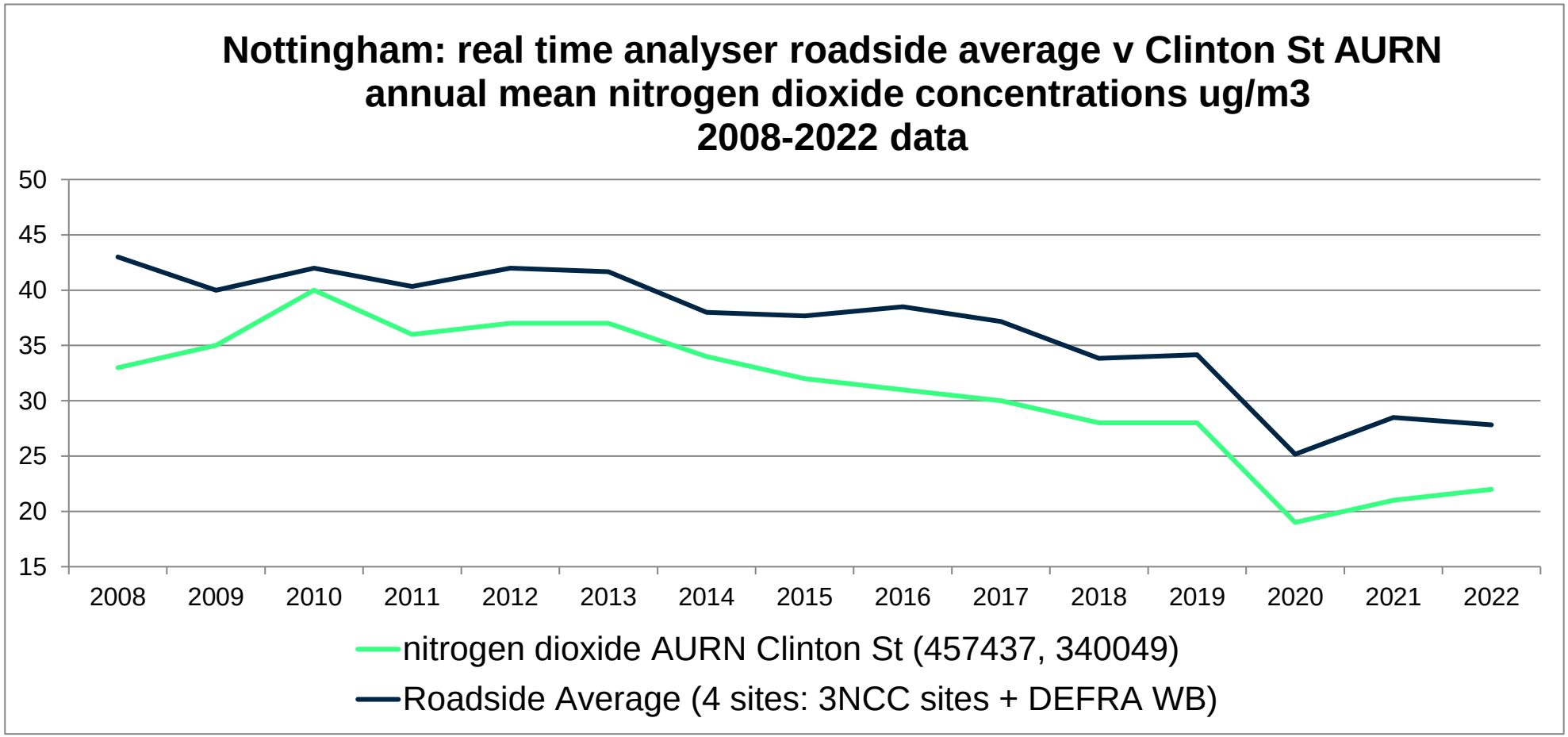


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CG NOx	457945	339667	Roadside		98.7	0	0	0	0	0
LS NOx	454940	338314	Roadside		95.6	0	0	0	0	0
SA NOx	456967	341382	Roadside		89.4	0	0	0	0	0
AURN CC	457437	340049	Urban Background		99	0	0	0	0	0
AURN WB	454573	341643	Roadside		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%).

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 2022 (%) (2)	2018	2019	2020	2021	2022
CC AURN	457437	340049	Urban Background		99	16	18	15	14	17
WB AURN	454573	341643	Roadside		97	18	20	16	16	18

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

Notes:

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

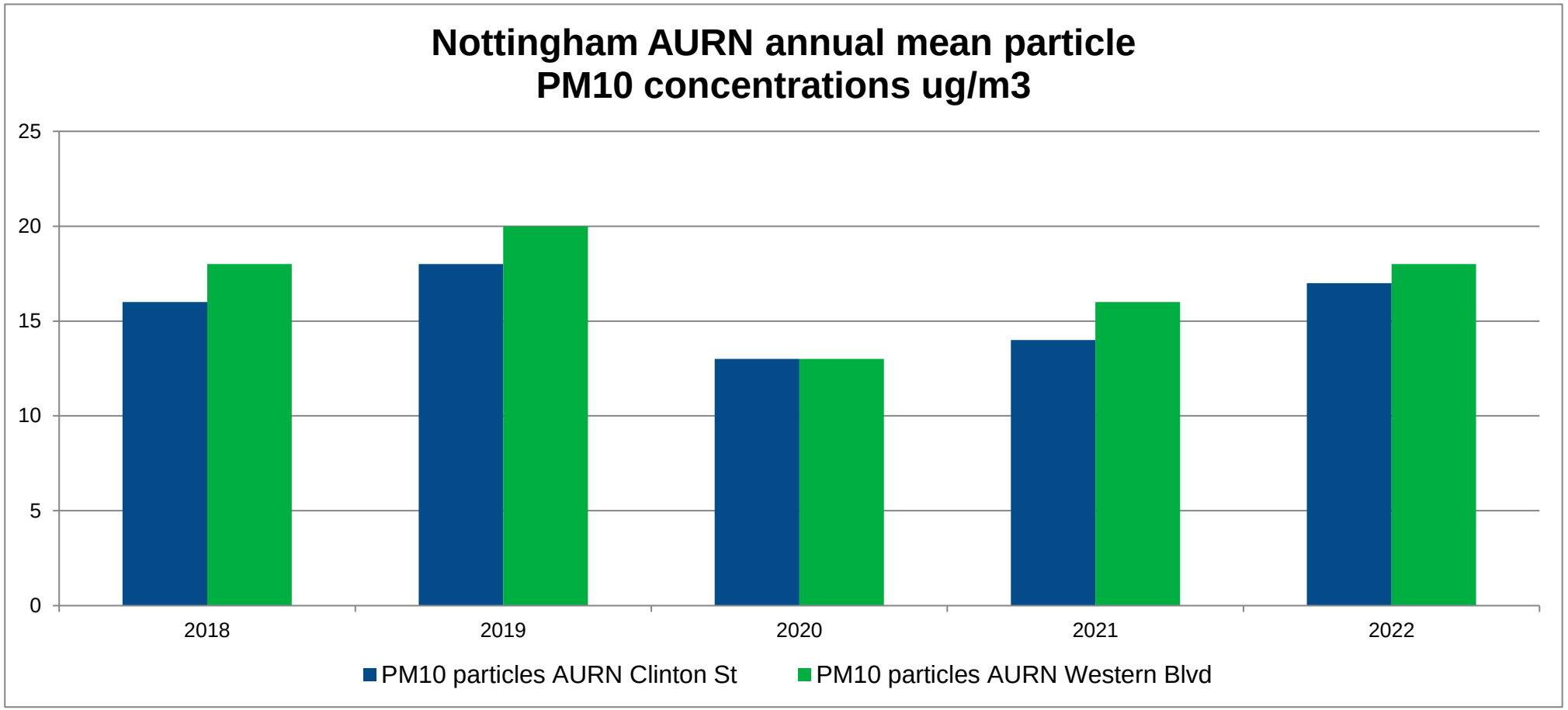
Exceedances of the PM_{10} annual mean objective of $40\mu g/m^3$ are shown in **bold**.

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%).

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



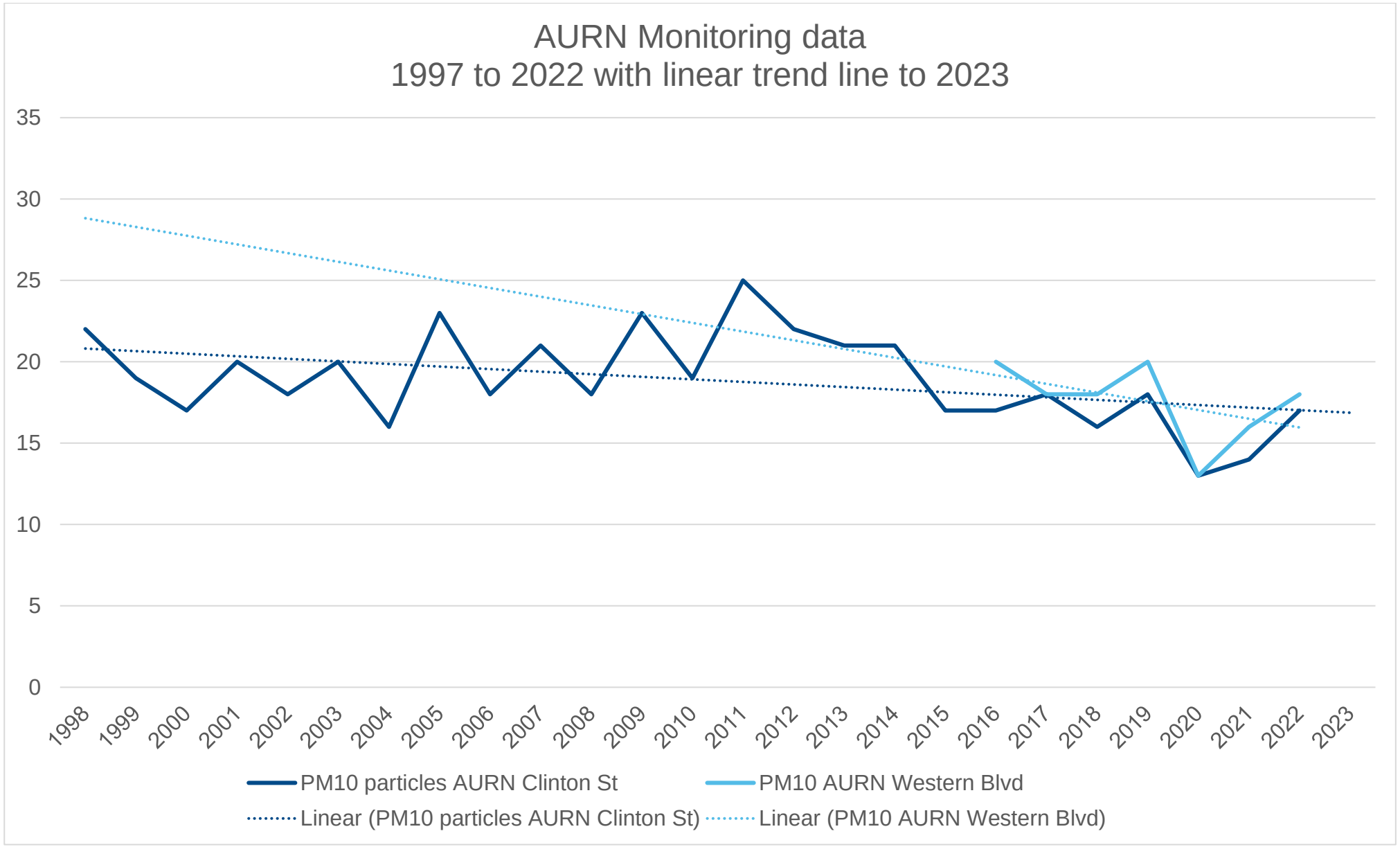

AURN Monitoring data
1997 to 2022 with linear trend line to 2023
35
30
25
20
15
10
5
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
PM10 particles AURN Clinton St
PM10 AURN Western Blvd
Linear (PM10 particles AURN Clinton St)
Linear (PM10 AURN Western Blvd)

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 2022 (%) (2)	2018	2019	2020	2021	2022
CC AURN	457437	340049	Urban Background		99	2	9	0	1	6
WB AURN	454573	341643	Roadside		97	2	12	3	1	5

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%).

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 2022 (%) (2)	2018	2019	2020	2021	2022
CC AURN	457437	340049	Urban Background		99	10	11	9	8	10

☒ **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%).

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

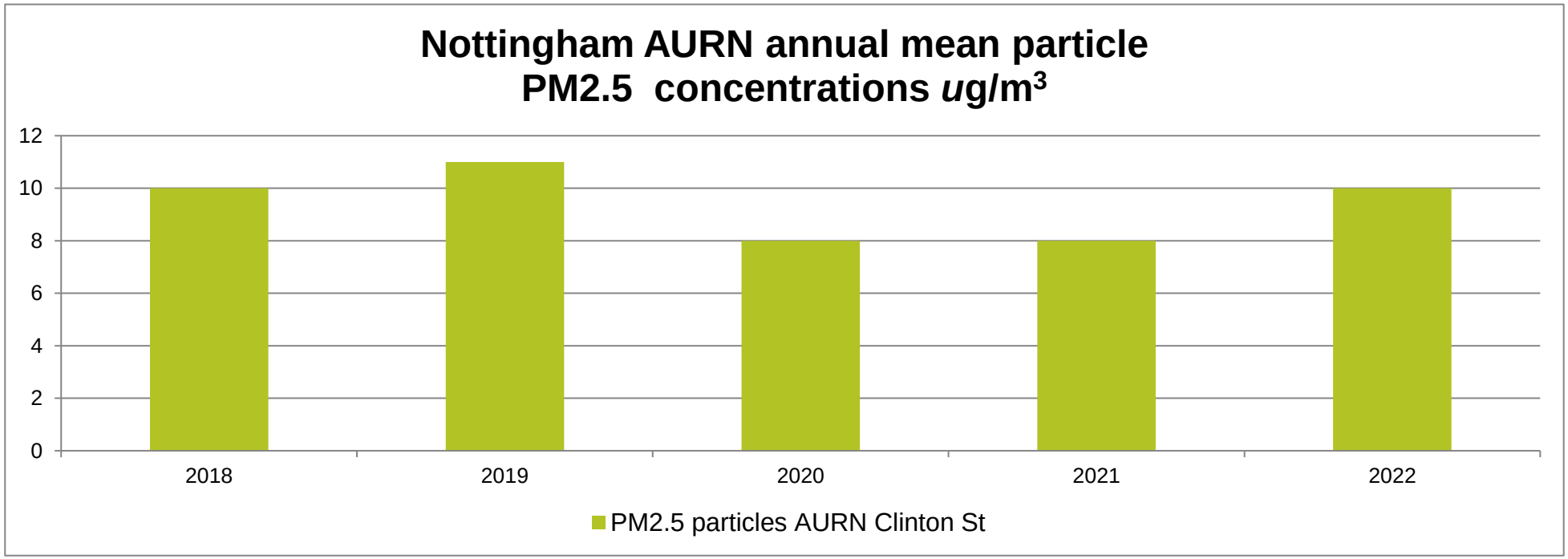


Figure A.4.1 – Trends in Annual Mean $PM_{2.5}$ Concentrations 2008-2022

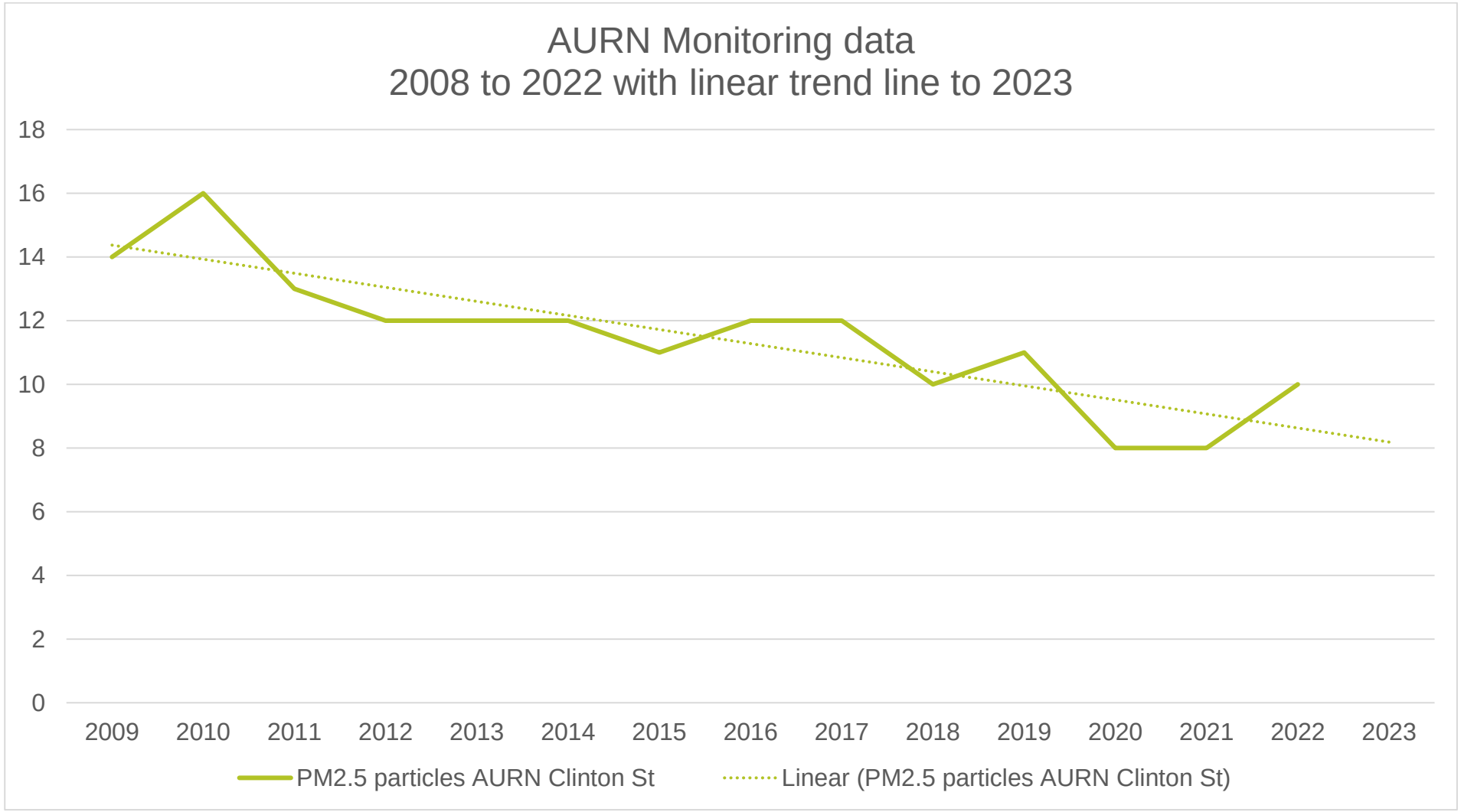


Table A.9 – SO_2 2022 Monitoring Results, Number of Relevant Instances

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (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
CC AURN	457437	340049	Urban Background		82	14	7	2

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%).

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
2	454520	338931	32.8	27.6	28.5	17.3	18.4	19.6	19.6	17.7	22.5	28.1	28.1	30.3	24.2	27.1		
4	454784	338146	32.2	25.2	29.8	23.3	19.3	20.2	19.1	18.6	22.4	27.1	26.6	31.6	24.6	27.6		
5	455146	338511	42.4	30.1	35.7	24.6	23.0	24.2	23.8	24.1	29.0	33.8	31.6	34.5	29.8	33.3		
6	454466	340111	41.4	26.3	26.8	22.0	21.7	24.9	24.3	22.2	26.4	31.6	30.5	33.7	27.6	31.0		
12	455774	340812	38.8	25.7	30.0	27.0	25.1			56.3	33.8	29.3	30.7	35.4	33.2	37.2		
13	455439	340131	31.2	26.2	34.8	29.8	24.8		41.2	29.4	31.9	30.6	31.0	32.8	31.2	35.0		
14	455622	340142	43.8	41.1	37.2	34.1	34.4	31.7	33.5	35.3	35.5		38.5	42.0	37.0	**41.5**		
16	455870	339133	39.7	30.2	32.6	25.4	23.3	23.0	22.8	26.2	27.2	29.5	31.5	35.8	28.9	32.4		
17	455955	339129	40.6	31.7	29.7	23.1	27.2	28.2	28.0	28.0	40.6	35.4	32.9	34.9	31.7	35.5		
19	456853	339303	32.0	23.6	28.5	20.3	17.3	14.8	14.3	18.8	20.9	22.7	24.5	30.1	22.3	25.0		
21	457083	339637	41.1	30.0	41.3	29.9	27.6	24.4	28.0	32.3	38.0	32.4	31.9	35.0	32.7	36.6		
24, 25, 26	456967	341382	44.3	35.4	25.3	23.2	29.1	30.8	30.1	26.0	31.4	35.2	34.5	35.2	31.7	35.5		
27	457963	339681	42.9	32.4	31.8	24.8	26.7	25.7	27.2	28.7	32.1	30.0	35.8	38.4	31.4	35.1		
28	458060	338276	39.8	22.7	35.1	24.7	20.0	22.9	27.3	29.4		28.9	32.3	33.5	28.8	32.2		
30	458079	339887	43.9	36.5	40.0	35.5	30.3	30.5	31.1	32.1	39.6	37.5	39.0	43.0	36.6	**41.0**		
31	454367	339946	35.3	24.2	27.7	21.1	21.5	22.7	20.9	21.0	25.5	24.6	26.3	28.9	25.0	28.0		
33	454941	338314	39.4	27.3	35.0	25.5	21.2	20.2	20.4	22.4	27.3	29.7	28.3	35.9	27.7	31.0		
35	454587	340088	43.8	30.7	33.0	21.2	26.3	26.8	27.8	27.8	31.2	32.0	33.8	37.2	31.0	34.7		
40	454321	339931	35.6	23.5	43.5	31.4	21.8	18.7	22.2	28.7	33.3	26.0	27.6	33.0	28.8	32.2		
43	455453	339595	36.6	27.3				20.8	19.9	21.5	26.4	31.0	28.9	35.2	27.5	30.8		
44	457775	339530	38.5		37.3	24.4	21.7	19.6	23.0	24.4	27.3	30.5	33.7	34.9	28.7	32.1		
46	457781	339123	64.3	55.4	55.9	43.8	47.3	45.2	50.7	49.7	48.9	49.2	52.9	48.5	51.0	**57.1**		
47	457406	339153	47.2		42.7	36.4	33.5	31.2		38.7	41.5	39.0	44.8	44.2	39.9	**44.7**	32.0	
49	457150	339384	47.9	34.1	42.2	33.7		60.2	33.3	35.7	40.2	37.7	38.0	43.1	40.6	**45.4**		
50	455713	337838	57.5	37.7	39.8	32.8	31.9	35.1	32.2	45.6	45.2	39.6	47.3	46.7	41.0	**45.9**		
51	457528	339339	38.9	31.8	31.5	20.7	21.6	23.4	21.2	21.0	26.1	30.6	32.9	35.2	27.9	31.3		
52	454386	340087	44.2	31.6	41.8	32.4	30.5	31.9	33.5	29.7	33.4	40.5	41.4	42.7	36.1	**40.5**		
53	454243	340057	36.1	23.7	33.6	19.4	16.8	17.2	18.8	19.0	24.3	26.8	29.8	31.4	24.7	27.7		
55	456441	336131	39.7	26.2	24.6	18.8	15.5	15.0	19.2	17.9	24.9	24.7	25.3	30.2	23.5	26.3		
56	457064	342128	54.9	39.2		28.9	34.1	35.6	38.1	34.2		34.9	43.7		38.2	**42.8**	29.3	
57	456265	336414	28.0	20.9	27.8	19.4		14.1	15.4	18.8	21.7	21.7	21.2	25.7	21.3	23.9		
10, 58, 59	455528	342828	42.7	34.2	42.8	35.5	31.9	29.5	33.0	29.2	38.7	33.7	34.9	38.5	35.4	39.6		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
20, 60, 61	456399	340191	42.8	33.4	44.9	38.1	34.8	31.2	32.9	40.0	40.8	37.3	38.2	40.1	37.9	**42.4**		
22, 62, 63	456156	340383	36.6	23.8	38.0	30.7	24.1	20.7	24.1	31.9	35.6	31.4	32.4	36.6	30.5	34.2		
29, 64, 65	458459	339011	49.9	35.5	45.0	36.5	33.5	30.2	34.4	38.0	43.9	37.5	40.7	40.3	38.8	**43.4**		
54, 66, 67	454493	341505	47.2	35.9	37.7	28.3	29.9	32.9	28.9	27.8	36.2	34.2	37.2	36.6	34.4	38.5		
68	455538	335731	44.7	33.2	26.7	25.9		26.0	27.0	30.2	34.1	27.5	29.1	38.0	31.1	34.9		
69	455529	335701	41.8	30.4	25.4	21.9	23.5	24.5	24.2	25.1	27.9	23.6	25.4	32.4	27.2	30.4		

☒ **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 2022 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 2022

Nottingham City Council has not identified any new major or significant sources likely to significantly impact on air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Nottingham City Council During 2022

Changes continue to be made the City Centre road layout and prioritisation under the Southside Transport (Broadmarsh) project (Table 2.2 NCC07).

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 2022 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 2022 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 have applied a local bias adjustment factor of 1.12 to the 2022 monitoring data. A summary of bias adjustment factors used by Nottingham City Council over the past five years is presented in Table C.1.

The results of diffusion tubes 24,25,26 and co-located with the St Andrew's Road real time analyser were used to derive the bias adjustment.

The local bias adjustment was used in preference to the national bias adjustment because use of the NBA would reduce the average of the three diffusion tube values from 31.7 (5 ug/m3 less than the average reported by the RTA) to 26.3 (9 ug/m3 less). Whereas the use of the local bias factor corrects for the 'under reading' of the three tubes. Bringing the average of the three diffusion tubes back to the annual mean of 35 ug/m3, calculated from the real time analysers monitoring record.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	Local	-	1.12
2021	Local	-	1.11
2020	Local	-	1.10
2019	Local	-	1.08
2018	Local	-	1.00

Table C.2 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2
Periods used to calculate bias	8	
Bias Factor A	1.12 (1.01 – 1.25)	
Bias Factor B	-10% (-20% - -1%)	
Diffusion Tube Mean (µg/m^3)	31.7	
Mean CV (Precision)	4.1%	
Automatic Mean (µg/m^3)	35.3	
Data Capture	98%	
Adjusted Tube Mean (µg/m^3)	35 (32 – 40)	

Notes:

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

Table C.3 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
47	1.0	24.0	44.7	24.9	32.0	*Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.*
56	1.0	11.0	42.8	14.9	29.3	

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 NOx, LS NOx and SA NOx Sites

Calibration gases used in the CG NOx, LS NOx and SA NOx 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 NOx, LS NOx and SA NOx Sites

During 2022 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 PM10 or PM2.5 particulate monitoring equipment.

Monitoring data from two DEFRA operated sites are reported.

Automatic Monitoring Annualisation

Nottingham City Council does not operate its own PM10 or PM2.5 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, any sites with a data capture below 25% do not require annualisation.

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 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.

Note. No automatic NO2 monitoring locations within Nottingham City Council's administrative area required distance correction during 2022.

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

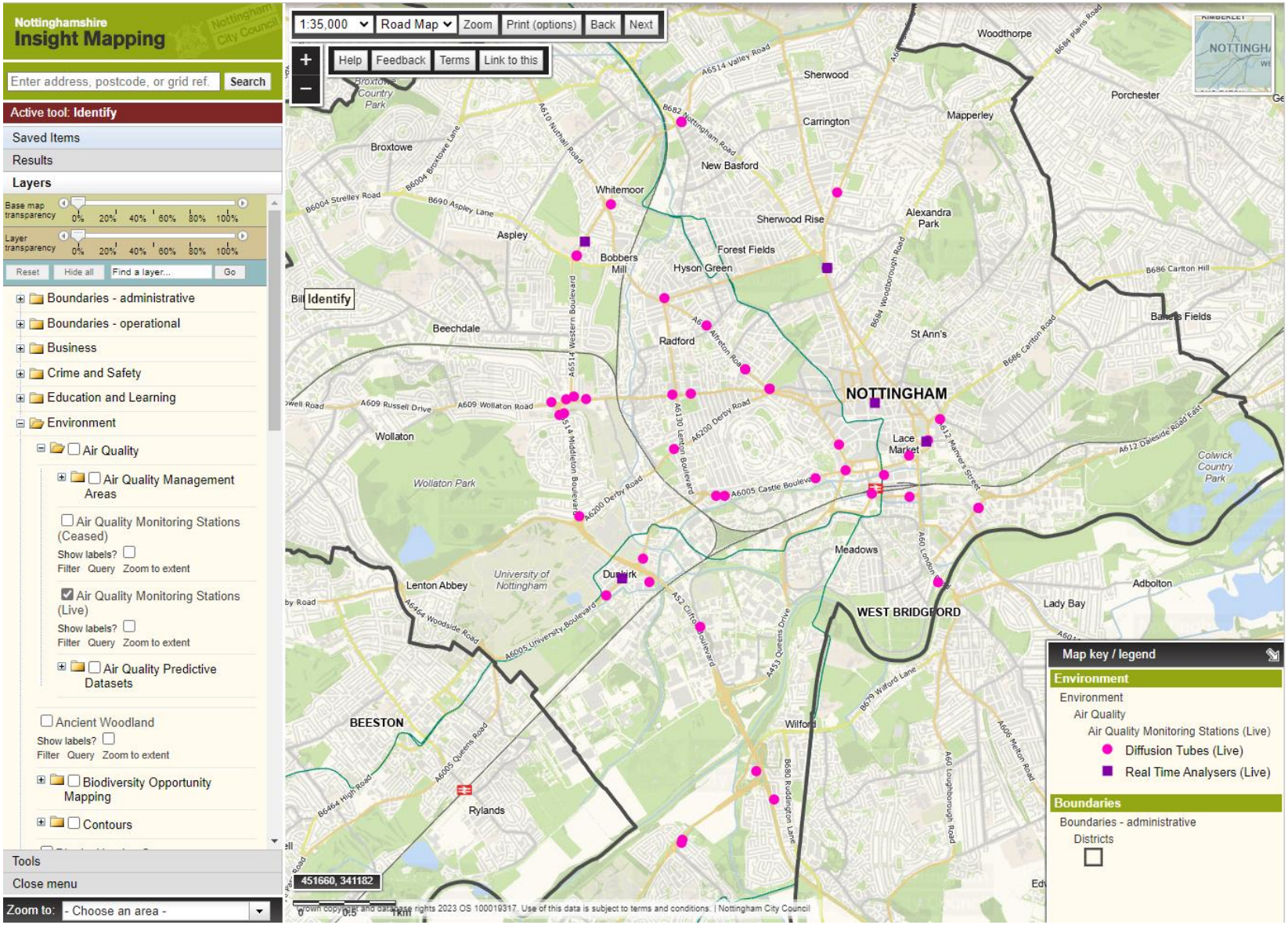
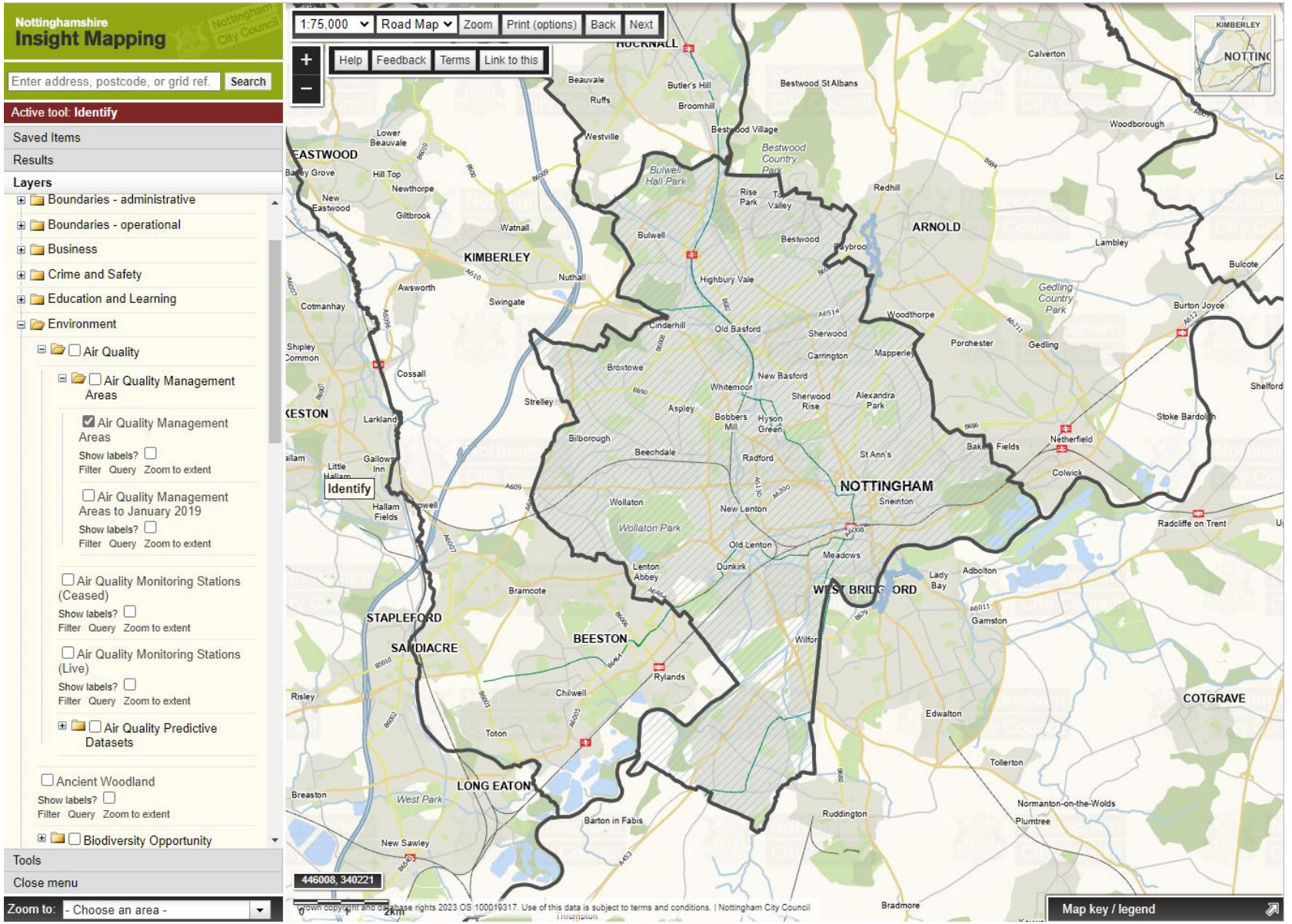


Figure D.2 Map of Nottingham No.2 Air Quality Management Area for nitrogen dioxide (city-wide)



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

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

[7] 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.

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- AEA Energy & Environment (Feb 2008) **Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users Issue 1a**
- AEA Technology (2005) **Local Site Operators' Manual**
- **Air Quality (England) Regulations 2000 (SI 2000 No. 928),**
- **Air Quality Standards Regulations 2010 (SI 2010 No. 1001)**
- Department for the Environment, Food and Rural Affairs **Clean Air Strategy 2019**
- Department for the Environment, Food and Rural Affairs (2007) **The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007**
- **The Air Quality (England) (Amendment) Regulations 2002 (SI 3043)**
- **The Pollution Prevention and Control Act 1999**
- **Nottingham City Council (2000 - 2019) LAQM Review and Assessment Reports:**

http://www.nottinghaminsight.org.uk/f/63682/Library/Environment/Air-Quality/

- **Nottingham City Council**
  Health and Wellbeing Joint Strategic Needs Assessment:-

  Air Quality and Health 2015 and 2019

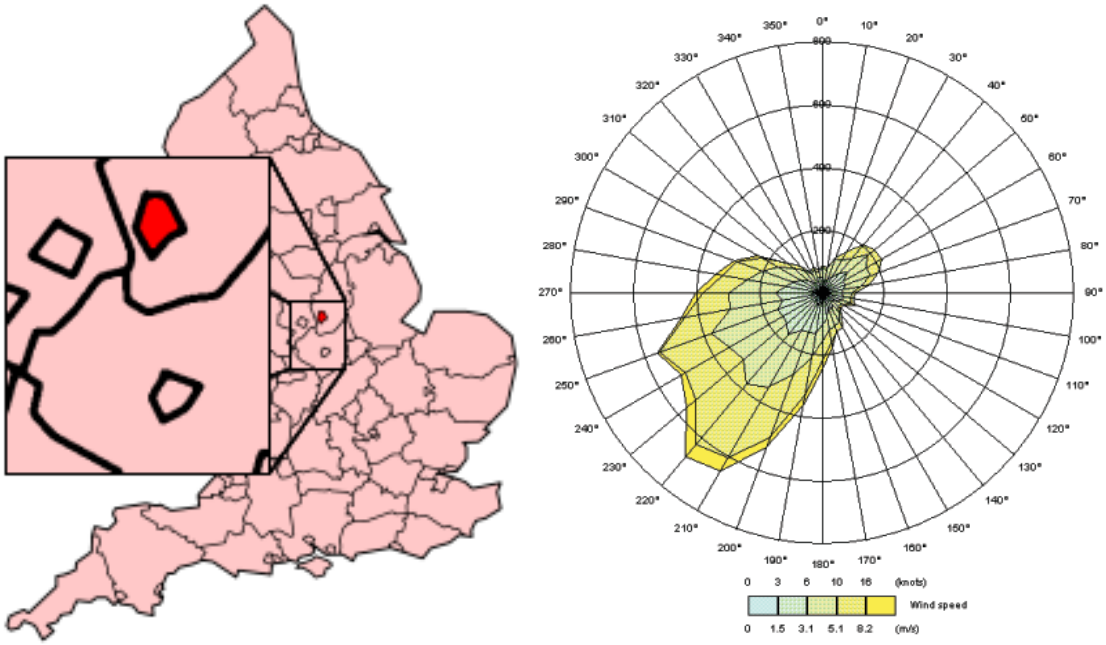
Nottingham City Council Website **http://www.nottinghamcity.gov.uk**

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 9: 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 10: Nottingham City Council's geographic location (detailed)

