



2024 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 2024

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Executive Summary: Air Quality in Our Area

Air Quality in East Staffordshire

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year¹.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution².

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

Table ES 1 - Description of Key Pollutants

Pollutant	Description
Nitrogen Dioxide (NO ₂)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO ₂)	Sulphur dioxide (SO ₂) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM ₁₀ and PM _{2.5})	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM ₁₀ refers to particles under 10 micrometres. Fine particulate matter or PM _{2.5} are particles under 2.5 micrometres.

The main pollutants of concern in East Staffordshire are nitrogen dioxide (NO₂). Two air quality management areas (AQMAs) were declared by East Staffordshire Borough Council back in 2007 with regards to exceedances of the annual mean NO₂ objective of 40 µg/m³.

¹ UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

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

The larger of the two AQMAs is centred on Derby Turn close to the centre of Burton upon Trent. The second AQMA is much smaller and is centred on St Peters Bridge roundabout in Stapenhill. Both of the AQMAs can be viewed at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=93. A map of both AQMAs has also been included in Appendix D, Figures D.1 and D.2.

Whilst all monitored locations met the annual NO₂ objective in AQMA 1 during 2023, one or two locations remained over this limit concentration at the monitoring site itself between 2020 and 2022. When distance corrections are applied to calculate the concentration at a point of relevant exposure (e.g. the façade of a residential dwelling), no exceedances of the NO₂ objective have occurred for the past four years. Historically, the locations within AQMA 1 with the highest NO₂ concentrations have been centred on Derby Turn and Wellington Street, albeit there has been a downward trend in concentrations since the AQMAs were declared. Monitoring within AQMA 2 has shown consistent compliance with the annual mean NO₂ target for the past twelve years and is therefore at a point where it can be revoked. This formal revocation process is currently underway.

Government guidance states that where levels of a pollutant have reduced and remained below their prescribed concentration limit for at least three consecutive years, an AQMA can be revoked. However, in this case two of the four years of compliance seen in AQMA 1 coincides with the Covid-19 pandemic which undoubtedly would have had some impact on NO₂ concentrations due to the reduction in traffic levels seen widely throughout 2020 and to a lesser degree 2021. Any consideration to revoking AQMA 1 at this stage may be premature until another year or two's worth of compliant monitoring data has been obtained to add more certainty on the long term NO₂ trend.

In the meantime, East Staffordshire Borough Council has drafted a new AQAP containing measures specifically for AQMA 1 as well as some wider Borough measures. The updated AQAP has been approved both internally and by Defra and is about to go through the public consultation process, in pursuit of formal adoption soon. More details on the updated AQAP and how the measures will be delivered are outlined in Section 2.2.

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 Plan³ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter (PM_{2.5}), the pollutant of most harmful to human health. The Air Quality Strategy⁴ provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero⁵ details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions. East Staffordshire Borough Council has taken forward a whole new suite of direct measures during the current reporting year of 2024 in pursuit of improving local air quality by updating its AQAP. The new AQAP sets out completely new measures that primarily addresses NO₂ within AQMA 1, but also addresses more strategic issues to try and reduce emissions of NO₂, PM_{2.5} and carbon dioxide (CO₂) across the Borough that will improve human health and the environment in a more equitable way. Alongside the updated AQAP, East Staffordshire Borough Council has also reviewed its 2015 Air Quality Strategy. The new 2024-2029 Air Quality Strategy sets out the overarching framework through which air quality will be managed within the Borough and includes the Council's responsibilities under LAQM. Both documents have been approved internally and externally by Defra and are due to go out for public consultation very soon. East Staffordshire Borough Council worked in partnership with Staffordshire County Council's Connectivity and Sustainability Team and Public Health/Prevention Team, neighbouring local authorities as well as this Council's own Development Control Team, Waste Management and Climate Change services in developing the new AQAP. One of the key

³ Defra. Environmental Improvement Plan 2023, January 2023

⁴ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

⁵ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

measures that is already underway is the procurement of electric buses and associated infrastructure that operate on key service routes that traverse AQMA 1. Funds have been secured through a combination of levelling-up funds as well as successful bids for a Defra Air Quality Grant and Department for Transport (DfT) ZEBRA 2 scheme. Providing clean, convenient bus services will help encourage more residents out of single-occupancy vehicles, particularly diesel cars and LGVs which contribute the most to roadside NO₂ in AQMA 1.

East Staffordshire Borough Council also continued to support the Air Aware Project. This project has provided schools engagement, business engagement, and a communications campaign to raise awareness of air quality issues, across the Borough through the appointment of School Travel Advisors since 2019. Linked to this, East Staffordshire Borough Council received funding for the purchase of two low-cost air quality monitoring (Zephyr) sensors together with the MyAir® web app to provide a public online portal to enable district residents, schools and businesses to understand air quality at a localised level. Both Zephyr sensors were installed at school locations at the end of 2023 to help further with the Air Aware Project.

Conclusions and Priorities

No new AQMAs have been declared during 2023 or are likely to be required within the next 12 months.

Monitoring confirms relevant receptors near the A50 in Uttoxeter are within objective limits for over five years now, and some façade monitoring locations have now been removed due to consistent compliance. No further detailed assessment or consideration to an AQMA declaration is required. Some roadside monitoring will however continue.

For the first time, no exceedances of the annual mean NO₂ objective were recorded within AQMA 1. When distance corrections are applied for relevant exposures, all locations meet the annual mean NO₂ Objective over the past four years. There is a long-term trend of reductions in NO₂ concentrations for which East Staffordshire Borough Council may be in a position to revoke AQMA 1 within a year or two should the current trajectory continue. AQMA 2 at Stapenhill roundabout continues to remain below the annual NO₂ objective at the facades of relevant receptors and has done so since 2011. East Staffordshire Borough Council is in the process of formally revoking this AQMA.

All other monitoring sites outside of the AQMAs met the relevant pollutant limits during 2023.

Key priorities for 2024-25 are:-

- To complete the formal revocation of AQMA 2.
- To purchase and introduce the zero emission buses secured through a combination of levelling-up funds, and DfT ZEBRA 2 funds on 9 which traverses through part of AQMA 1.
- To develop a smoke control policy for enforcing the new smoke control laws and provide educational/awareness material.
- To continue to support Staffordshire County Council in the planning and delivery of transport projects as well as supporting them with any Defra or DfT bid opportunities to help fund transport projects where possible or available.
- To continue to support the Air Aware project in growing the schools and business engagement.
- To continue indicative monitoring through the low cost Zephyr sensors and promotion of the public portal.
- To continue to closely monitor and review NO₂ through our extensive diffusion tube network during 2024-25.
- To raise awareness of air quality issues generally and provide information and guidance to members, businesses and residents as to how they can protect themselves and be part of the solution through behaviour change.

Local Engagement and How to get Involved

The easiest way for the public to get involved in aiding air quality improvements within the area would be to look at alternatives modes of travel. The following are suggested alternatives to private travel that would contribute to improving air quality within the Borough:

Think Before You Drive

- Avoid vehicle idling and/or use of air conditioning running continuously. By switching your engine off you can save fuel, money and improve local air quality
- Consider leaving the car at home one day a week.
- Walk or cycle – From choosing to walk or cycle for your journey the number of vehicles is reduced and also there is the added benefit of keeping fit and healthy. Information on cycle routes within the East Staffordshire District is currently

available on Staffordshire County Council's website at the following link

<https://www.staffordshire.gov.uk/Transport/cycling/Documents/East-Staffordshire.pdf>;

- East Staffordshire Borough Council endorses the Staffordshire Air Aware scheme established by Staffordshire County Council, which provides more detail on reducing reliance on personal vehicle use. This can be viewed at <https://www.staffordshire.gov.uk/DoingOurBit/Get-Inspired/Clean-green-and-safe/Air-aware/Air-aware.aspx>
- Hold meetings by conference call or Microsoft Teams/ Zoom rather than driving to meetings. This reduces fuel, vehicle maintenance and other travel costs, and increases productivity through reduction in hours lost through unnecessary travel.
- Facilitate Flexible Working Arrangements for staff to work remotely from home or hubs closer to home for one or more days a week thus removing or reducing commuter journeys. This reduces congestion which has beneficial impacts for delivery times, reduced business costs and thus economic benefits. Additionally, it provides social benefits through improved work-life balance for employees and helps to improve local air quality and reduced emergency vehicle response times.
- If you must drive consider fuel efficient driving advice, known as 'Smarter Driving Tips', which ultimately will save you on fuel costs and reduce your emissions. Several websites promote such advice including:
 - <https://energysavingtrust.org.uk/advice/ecodriving/>
 - <https://www.theaa.com/driving-advice/fuels-environment/drive-smart>
 - <https://www.vehicle-certification-agency.gov.uk/fcb/smarter-driving-tips.asp>

Energy Efficiency

Improving the energy efficiency of your home / school / workplace will help reduce energy bills, as well as reducing emissions associated with power generation. The Energy Savings Trust (EST) which is a non-profit organisation, funded by the government and private sector can provide independent and impartial advice to help consumers in lowering emissions and cut their energy bills. For further information, visit the EST website at <https://www.energysavingtrust.org.uk/>

Around The Home

- Use water-based or low solvent paints, glues, varnishes and wood preservatives, look for brands with a low VOC content.
- Have your central heating system checked regularly to avoid risking exposure to toxic carbon monoxide.
- Most of Burton upon Trent, excluding Branston and parts of Stretton are in a Smoke Control Area. The extents of the Smoke Control Area can be viewed on Defra's interactive smoke control area map at <https://uk-air.defra.gov.uk/data/sca/>. This tool enables you to search for an address or postcode to find out if that address or property is within a Smoke Control Area. Within a Smoke Control Area, unless you are using a Defra approved (i.e. exempt) appliance you can only burn fuel that is on the list of authorised fuels or any of the following smokeless fuels;-
 - Anthracite
 - Semi-anthracite
 - Gas
 - Low volatile steam coal

The sale and supply of traditional household coal in homes is now banned everywhere in England and not just within a Smoke Control Area as of 1st May 2021.

Defra regularly update their list of approved appliances and authorised fuels which can be searched for at <https://smokecontrol.defra.gov.uk/search.php?type=fuels>

Some unauthorised fuels, such as wood can only be burned on a Defra approved (i.e. exempt) appliance such as some boilers and wood-burning stoves. These appliances have been rigorously tested to demonstrate low smoke emissions when used in accordance with the manufacturer's instructions and with the recommended fuel.

On 1st May 2020 the [Air Quality \(Domestic Solid Fuels Standards\) \(England\) Regulations 2020](#) came into force, as part of the Clean Air Strategy. Through this legislation, wood can only be burned on a Defra approved (exempt) appliance as long as it is dry (moisture content of less than 20%) and has been certified as 'Ready to Burn'. These details must be clearly stated on the packaging or on the shelf in the store. The logo, supplier details and unique certification number must also be clearly labelled for wood sold in volumes of less than 2m³. For wood sold in volumes of 2m³ or more, suppliers must provide customers with a notice that

explains how to dry, store and check the moisture of the wood before it is used. The 'Ready to Burn' scheme was launched by Woodsure in 2017, which promotes the sale and use of good quality dry wood, which has lower emissions than wet wood.

The Ecodesign Directive is a standard that was implemented across Europe on 1st January 2022. The legislation, introduced by the European Union, also forms part of the government's Clean Air Strategy and means that all new stoves bought after this date will need to meet agreed emissions standards.

In addition to Ecodesign is the "Clear Skies Mark" for solid fuel appliances. Certified appliances at level 3 or above are Ecodesign compliant and Defra Exempt. The different levels in the scheme allow you to identify how far beyond Ecodesign criteria they go in terms of reducing emissions and increasing efficiency. Further information on the scheme, the levels and a list of certified products can be found on the Clear Skies Mark website at <https://www.clearskiesmark.org/>

Further information on Woodsure and Ecodesign can be found using the links below, in addition to a practical guide produced by the chimney sweeps association providing advice and guidance if using wood-burning stoves or open fires whether you are in a Smoke Control Area or not. In April 2018, the Guild of Master Chimney Sweeps launched the 'Burn Right' campaign. This provides good practice guidance on using your fire. Wood pellets used in biomass boilers are covered by the ENplus certification scheme; further details are found below.

- [Smoke Control Areas: Do you know the rules?](#)
- [Burn better: Making changes for cleaner air - Defra, UK](#)
- [Ready To Burn](#)
- [Dry Firewood | Woodsure | Ready to Burn Firewood Video](#)
- [Practical Guide if using woodburning stoves or open fires](#)
- [Burnright](#)
- [Open fires and wood-burning stoves - a practical guide \(defra.gov.uk\)](#)
- [ENplus](#)

Other Considerations

- When planning days out or journeys to work, check the air pollution forecast at <https://uk-air.defra.gov.uk/forecasting/>
- Be energy efficient - make sure your house is well insulated and use energy efficient appliances <https://www.energysavingtrust.org.uk/home-energy-efficiency>

- Refrain from having bonfires or barbecues when air pollution levels are high.
- Never burn household waste, especially plastics, rubber and treated timber.

Air quality enquiries can be made to Environmental Health:

Tel: 01283 508509 or Email: ehsupport@eaststaffsbc.gov.uk

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of East Staffordshire Borough Council with the support and agreement of the following officers and departments:

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- Mike Calverley – Health Protection and EPR Lead, Public Health and Prevention – Health and Care Directorate, Staffordshire County Council

This ASR has been endorsed and signed off by the Director of Health and Care at Staffordshire County Council:

Endorsement from the Director of Health & Care, Staffordshire County Council.

Staffordshire County Council (SCC) is committed to working with partners to ensure that Staffordshire will be a place where improved health and wellbeing is experienced by all. Poor air quality has a negative impact on public health, with potentially serious consequences for individuals, families, and communities. Identifying problem areas and ensuring that actions are taken to improve air quality forms an important element in protecting the health and wellbeing of Staffordshire residents. Improving air quality is often a complex issue, presenting a multi-agency challenge – so it is essential that all agencies work together effectively to deliver improvements where they are needed.

As Director of Health and Care across Staffordshire I endorse this Annual Status Report which sets out the position in all the Local Authorities across Staffordshire and Stoke-on-Trent focusing on human made pollution with particulate matter.

The Air Aware project (phase 2) ran until March 2023 with Defra funding, however The Air Aware project continues with joint funding from SCC Public Health and Connectivity Teams to March 2025. The project delivers behaviour change to increase active travel, decrease car use, and raise awareness of air quality issues through five elements. These are business and school engagement, communications and campaigns, electric vehicles, and air quality monitoring in targeted locations. Campaigns include Anti-Idling, walking and cycle activities and Clean Air Day. These have been countywide engaging a large number of businesses and schools. The programme focuses on reducing levels of NO and PM, which are monitored at key locations.

A number of the Staffordshire Authorities are currently involved in implementing measures to reduce levels of NO₂ within their areas, which are detailed elsewhere in their ASR. Since the update of the Environment Act 2021 there is now a statutory duty imposed on Local Authorities in England to reduce PM_{2.5}, a number of the measures are complementary with those being undertaken to improve Air Quality. A mapping exercise completed by the Staffordshire Air Quality Forum members details the measures currently in place which are considered to have an impact in reducing PM_{2.5} within the County.

Post Covid the Staffordshire and Stoke-on-Trent (SOT) Air Quality Forum has recommenced meeting on a quarterly basis. This forum involves all the Districts and

Boroughs and both SCC and SOT and is chaired on a rotating basis across the Districts and Borough's.

In addition, Levelling up Fund 2 Schemes will improve a number of major roads around the county, reduce journey times, put greener, cleaner buses on main roads, improve walking and cycling routes and reduce the impact of housing and commercial developments. They will benefit East Staffordshire, Cannock Chase, and Stafford Borough. Total package cost circa £20m.

Finally, it's worth mentioning both Climate Change and The Local Transport Plan 4 (LTP4). SCC have signed up to the Climate Emergency and since signing up have reduced its Carbon footprint by 50%. We are now also now working towards LTP4, with our Local Authority partners. LTP4 will come into effect in 2025 and will have a positive effect on Air Quality over the coming years

Dr Richard Harling



Director of Health and Care
Staffordshire County Council

[June 2024]

Table of Contents

Executive Summary: Air Quality in Our Area	i
Air Quality in East Staffordshire	i
Actions to Improve Air Quality	iii
Conclusions and Priorities	iv
Local Engagement and How to get Involved.....	v
Local Responsibilities and Commitment	ix
Endorsement from the Director of Health & Care, Staffordshire County Council.....	x
Figures	xiv
1 Local Air Quality Management	1
2 Actions to Improve Air Quality	2
2.1 Air Quality Management Areas	2
2.2 Progress and Impact of Measures to address Air Quality in East Staffordshire	4
2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations	14
2.3.1 Particulate Matter (PM _{2.5}) Levels in Staffordshire and Stoke-on-Trent.....	15
2.3.2 PM _{2.5} and Mortality in Staffordshire & Stoke-on-Trent	16
2.3.3 Particulate Matter (PM _{2.5}) Levels in Staffordshire and Stoke-on-Trent.....	18
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance	25
3.1 Summary of Monitoring Undertaken	25
3.1.1 Automatic Monitoring Sites	25
3.1.2 Non-Automatic Monitoring Sites	26
3.2 Individual Pollutants	26
3.2.1 Nitrogen Dioxide (NO ₂)	26
3.2.2 Particulate Matter (PM ₁₀)	30
3.2.3 Particulate Matter (PM _{2.5}).....	31
Appendix A: Monitoring Results	32
Appendix B: Full Monthly Diffusion Tube Results for 2023	55
Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC	58
New or Changed Sources Identified Within East Staffordshire Borough Council During 2023 ...	58
Additional Air Quality Works Undertaken by East Staffordshire Borough Council During 2023 ..	58
QA/QC of Diffusion Tube Monitoring	61
Diffusion Tube Annualisation	61
Diffusion Tube Bias Adjustment Factors	62
NO ₂ Fall-off with Distance from the Road.....	63
QA/QC of Automatic Monitoring	63
Automatic Monitoring Annualisation	64
NO ₂ Fall-off with Distance from the Road.....	64
Appendix D: Map(s) of Monitoring Locations and AQMAs	65

Appendix E: Summary of Air Quality Objectives in England	82
Glossary of Terms	83
References	84

Figures

Figure A.1 – Trends in Annual Mean NO ₂ Concentrations (AQMA 1).....	42
Figure A.2 – Trends in Annual Mean NO ₂ Concentrations (AQMA 2).....	43
Figure A.3 – Trends in Annual Mean NO ₂ Concentrations (Burton sites, outside AQMAs).....	44
Figure A.4 – Trends in Annual Mean NO ₂ Concentrations (Uttoxeter and Tutbury sites).....	45
Figure A.5 – Long-term trends in Annual Mean NO ₂ Concentrations in AQMA 1 (2018-2023) at relevant exposures (distance corrected).....	46
Figure A.6 – Long-term trends in Annual Mean NO ₂ Concentrations in AQMA 2 (2007-2023) at relevant exposures (distance corrected).....	47
Figure A.7 – Long-term trends in Traffic Volume (AADT) in AQMA 1 (2013-2022).....	48
Figure A.8 – Long-term trends in Traffic Volume (AADT) in AQMA 2 (2013-2022).....	49
Figure A.9 – Long-term trends in Traffic Volume (AADT) across Staffordshire as a whole	50
Figure D.1 – AQMA 1 Burton upon Trent.....	65
Figure D.2 – AQMA 2 Stapenhill.....	66
Figure D.3 – Location of the automatic monitoring station at Derby Turn, Burton upon Trent.....	67
Figure D.4 – Diffusion tubes - Burton upon Trent, AQMA 1 – Around Derby Turn.....	68
Figure D.5 – Diffusion tubes - Burton upon Trent, AQMA 1 – A5121: Wellington Street, Wellington Street/Borough Road/Waterloo Street Gyratory to Derby Street.....	69
Figure D.6 – Diffusion tubes - Burton upon Trent, AQMA 1 – A5121: Derby Road.....	70
Figure D.7 – Diffusion tubes - Burton upon Trent, AQMA 1 – A511: Horninglow Road.....	71
Figure D.8 – Diffusion tubes - Burton upon Trent, AQMA 1 – A511: Horninglow Street.....	72
Figure D.9 – Diffusion tubes - Stapenhill, AQMA 2 – St Peters Bridge Roundabout/A444 St Peters Street.....	73
Figure D.10 – Diffusion tubes - Burton upon Trent, Outside AQMAs – Winshill, Brookside Urban Background.....	74
Figure D.11 – Diffusion tubes - Burton upon Trent, Outside AQMAs – Orchard Street/Branston Road junction.....	75
Figure D.12 – Diffusion tubes - Burton upon Trent, Outside AQMAs – Forest Road to Shobnall Road.....	76
Figure D.13 – Diffusion tubes - Burton upon Trent, Outside AQMAs – Hawkins Lane.....	77
Figure D.14 – Diffusion tubes – Uttoxeter A50 West.....	78

Figure D.15 – Diffusion tubes – Uttoxeter A50 East.....	79
Figure D.16 – Diffusion tubes – Tutbury.....	80
Figure D.17 – Diffusion tubes – Rosliston Road area (Stapenhill).....	81

Tables

Table 2.1 – Declared Air Quality Management Areas.....	3
Table 2.2 – Progress on Measures to Improve Air Quality.....	12
Table 2.3 – Estimated average number of deaths by local authority area attributable to PM _{2.5} within Staffordshire for adults over 30 (2018 to 2021).....	16
Table 2.4 – Public Health Outcomes Framework Indicator 3.01 - Fraction of annual all cause adult mortality attributable to anthropogenic (human made) particulate air pollution (measured as fine particulate matter, PM _{2.5}) for Staffordshire Authorities 2018 to 2021....	17
Table 2.5 – Actions being taken within Staffordshire to reduce PM _{2.5}	19
Table A.1 – Details of Automatic Monitoring Sites.....	32
Table A.2 – Details of Non-Automatic Monitoring Sites.....	33
Table A.3 – Annual Mean NO ₂ Monitoring Results: Automatic Monitoring (µg/m ³).....	37
Table A.4 – Annual Mean NO ₂ Monitoring Results: Non-Automatic Monitoring (µg/m ³)....	38
Table A.5 – 1-Hour Mean NO ₂ Monitoring Results, Number of 1-Hour Means > 200µg/m ³	51
Table A.6 – Annual Mean PM ₁₀ Monitoring Results (µg/m ³).....	52
Table A.7 – 24-Hour Mean PM ₁₀ Monitoring Results, Number of PM ₁₀ 24-Hour Means > 50µg/m ³	53
Table A.8 – Annual Mean PM _{2.5} Monitoring Results (µg/m ³).....	54
Table B.1 – NO ₂ 2023 Diffusion Tube Results (µg/m ³).....	55
Table C.1 – Annualisation Summary (concentrations presented in µg/m ³).....	62
Table C.2 – Bias Adjustment Factor.....	62
Table C.3 – Non-Automatic NO ₂ Fall off With Distance Calculations (concentrations presented in µg/m ³).....	63
Table E.1 – Air Quality Objectives in England.....	82

1 Local Air Quality Management

This report provides an overview of air quality in East Staffordshire during 2023. 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 East Staffordshire Borough Council to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority 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 East Staffordshire Borough Council can be found in Table 2.1. The table presents a description of the two AQMAs that are currently designated within East Staffordshire. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO₂ annual mean

We are however currently in the process of revoking AQMA 2 due to a number of years of consistent compliance with the annual mean NO₂ objective. The evidence base for revoking AQMA 2 is outlined in more detail within Section 3 of this report.

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 1 Burton upon Trent	26/05/2007	NO ₂ Annual Mean	This AQMA includes a number of arterial roads located towards the centre of Burton upon Trent	NO	61.9 µg/m ³ modelled	34.8	4	Air Quality Action Plan 2024	http://www.eaststaffsbc.gov.uk/environmental-health/pollution/air-quality
AQMA 2 St Peter's Bridge	25/05/2007	NO ₂ Annual Mean	Small AQMA centred on a roundabout at end of St Peter's Bridge in Stapenhill	NO	43.4 µg/m ³ modelled	30	13	Air Quality Action Plan 2015-2020	http://www.eaststaffsbc.gov.uk/environmental-health/pollution/air-quality

- East Staffordshire Borough Council confirm the information on UK-Air regarding their AQMA(s) is up to date.
- East Staffordshire Borough Council confirm that all current AQAPs have been submitted to Defra.

2.2 Progress and Impact of Measures to address Air Quality in East Staffordshire

Defra's appraisal of last year's ASR concluded that the report is well structured, detailed, provides the information specified in the Guidance and overall was accepted. However, Defra made the following advisory comments designed to help inform future reports:

1. The Council have provided an in-depth section discussing the comments from the previous ASR, and the comments have been noted and changes made in the ASR. This should continue in future ASRs to ensure all reports are to a good standard.

East Staffordshire Borough Council has noted this comment and followed the same approach in this ASR.

2. ESBC intend to retain AQMA 1 until further monitoring data is available as compliance only began during 2020 which may not be representative due to the impacts of COVID-19. ESBC are intending to revoke AQMA 2 in 2023 or 2024. This stance is supported; ESBC must proceed with plans to revoke AQMA 2 in 2023 and provide an update in their 2024 ASR.

AQMA 1 has been retained and an updated AQAP has been drafted, approved internally and accepted by Defra. This updated AQAP is now going out for public consultation. The new measures within the updated AQAP are reported in this ASR. As for AQMA 2, East Staffordshire Borough Council is now in the process of revoking this AQMA.

3. There are two exceedances of the annual mean NO₂ objective (after distance correction) in 2022. It is noted ESBC do not think it is appropriate to declare an AQMA here as there are no residential receptors. This is supported, nevertheless the Council should continue close monitoring of concentrations here.

Close monitoring at these two locations has continued through 2023 with further reductions in NO₂ concentrations, albeit there remains a marginal exceedance of the annual mean Objective. Again there are no residential receptors at these locations and monitoring will continue through 2024 and beyond.

4. A detailed list of measures to address PM_{2.5} across Staffordshire has been outlined. Cross County collaboration is welcomed, as is the detailed consideration of PM_{2.5} emissions.

Cross county collaboration has continued and progress is again reported in this ASR in Section 2.3.

5. The ASR also referenced the PHOF and indicator D01, this is good practice and should be continued in future ASRs.

The PHOF and indicator D01 is again reported in this ASR in Section 2.3.

6. Bias adjustment has been applied, with the choice of factor suitably justified.

Bias adjustments have been applied to monitoring data for 2023 and are reported in this ASR in Section 3 and in Appendix C

7. The provided maps should show the north arrow and scale bar. The maps can also provide more context, for example using both zoomed in maps and maps of the whole local area. Additionally, it appears not all monitoring locations are included in the maps, for example DT55, DT56, DT57 cannot be found.

Maps of the monitoring locations have been adapted in this ASR to show the north arrow, scale bar and have been amalgamated in some cases to provide a better spatial context. Triplicate sites are also better labelled in this ASR.

8. ESBC have purchased two low-cost Zephyr sensors. This can be a useful tool, however the Council are reminded these sensors can only be used as indicative monitoring and are not suitable to be used towards LAQM reporting.

The two low-cost Zephyr sensors have since been installed at two school locations to support the Air Aware schools engagement programme and raise awareness of air quality within the Borough. Defra's comments regarding using the data from the sensors for indicative purposes have been noted. More details are provided below in Section 2.2 and in Appendix C under additional air quality works undertaken by East Staffordshire Borough Council during 2023

East Staffordshire Borough Council has taken forward a whole new suite of direct measures during the current reporting year of 2024 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. All measures are included within Table 2.2, with the type of measure and the progress East

Staffordshire Borough Council have made during the reporting year of 2024 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in the 2024 updated Action Plan as well as the 2022 Climate Change Action Plan.

Key completed measures since the last ASR are:

- The previous 2015-2020 AQAP has been updated setting out completely new measures that primarily addresses NO₂ within AQMA 1, but also addresses more strategic issues to try and reduce emissions of NO₂, PM_{2.5} and carbon dioxide (CO₂) across the Borough in order to improve human health and the environment in a more equitable way. These new measures are set out in Table 2.2.
- Alongside the updated 2024 AQAP, East Staffordshire Borough Council has also reviewed its 2015 Air Quality Strategy. The new 2024-2029 Air Quality Strategy sets out the overarching framework through which air quality will be managed within the Borough and includes the Council's responsibilities under LAQM. The overall aim of the new Air Quality Strategy is:

“To monitor and improve local air quality to reduce the detrimental impacts that poor air quality can have on human health and the environment.”

- Both the updated AQAP and overarching 2024-2029 Air Quality Strategy have been approved internally through cabinet, leaders and deputy leaders of the Council as well as Defra and are about to go out for public consultation.
- During 2023, East Staffordshire Borough Council in collaboration with other Staffordshire Districts continued to support the Air Aware Project. This project has provided school engagement, business engagement, and a communications campaign to raise awareness of air quality issues, across the Borough through the appointment of School Travel Advisors. The initial grant ran from 2019 to 2020, and built up significant local momentum, particularly with local schools. In April 2021, the consortium was successful in obtaining a Defra grant to continue with the funding of the Air Aware. Phase 2 of the Air Aware project focused further on the schools and community (small businesses) engagement programme. School engagement has mainly targeted areas where school traffic impacts on the borough's AQMA. The Air Aware project has also been incorporated as a new measure within the updated

AQAP (see Measure 7, Table 2.2). More details on specific activities and initiatives relating to the Air Aware project are provided in Appendix C under the heading additional air quality works undertaken by East Staffordshire Borough Council.

- Linked to the Air Aware Project (Measure 7), East Staffordshire Borough Council received funding for the purchase of two low-cost air quality monitoring (Zephyr) sensors together with the MyAir® web app to provide a public online portal to enable district residents to understand air quality at a localised level (see Measure 8 in Table 2.2). The public portal will help support further school (and business) engagement projects. The Zephyrs were installed at two school locations at the end of 2023, one at Horninglow Primary School located within AQMA 1 and the second at Outwoods Primary School just outside of the AQMA. Funding for this project is secured for at least two years and each Zephyr will be moved to a new location every six to twelve months. Users of the public portal can use the app as a one-stop shop of resources to gain an insight on health impacts of air pollution, pollution hotspots, peak times, and identify nearby sources contributing to elevated levels. This in turn will enable people to make more informed decisions on their own personal risks and using alternative modes of travel. More details about the portal itself are provided in Appendix C.

East Staffordshire Borough Council worked to implement these measures in partnership with the following stakeholders during 2023:

- Staffordshire County Council's Connectivity and Sustainability Team
- Staffordshire County Council's Connectivity Support Team
- Staffordshire County Council's Public Health and Prevention Team
- Neighbouring local authorities
- East Staffordshire Borough Council's Development Control Team
- East Staffordshire Borough Council's Climate Change and Adaptation Officers
- East Staffordshire Borough Council's Waste Management Services

East Staffordshire Borough Council expects the following measures outlined in Table 2.2 to be completed over the course of the next reporting year:

- **Measure 1: Procurement of electric buses on Service 9 that operates within Burton AQMA 1** – To complement the Air Quality Grant application in measure 1 above, Staffordshire County Council's Connectivity and Sustainability Team and Diamond Bus ('Bus Operator') submitted a joint bid to fund further electric buses for service 9. This application was submitted in December 2023 and a letter of support

was provided by East Staffordshire Borough Council. This bid was submitted through the DfT Zero Emission Bus Regional Areas (ZEBRA) 2 scheme that has been set up to provide £129 million (England total) to support the introduction of zero emission buses (ZEBs) in financial years 2023 to 2024 and 2024 to 2025. The projected benefits in terms of increased bus patronage and reduction in emissions are expected to be similar to those in Measure 1 above. Since completing the original draft of the updated AQAP, confirmation has been received (April 2024) the bid has been successful which will help further in the funding of zero-emission vehicles across key routes in Burton upon Trent, including AQMA 1. Delivery of this scheme is expected to take place over the coming months.

- **Measure 2: Traffic signal reconfiguration within AQMA 1** – Over the coming year, Staffordshire County Council are planning to update and replace the existing traffic signal furniture on the Wellington Street/ Borough Road / Derby Street gyratory which is within AQMA 1 and where the highest NO₂ concentrations have historically been recorded. The existing traffic signals are old and consists of 4 junctions and 4 pedestrian crossing's which are run off 2 controllers. The life cycle of a traffic signal asset is approximately 15 to 20 years, the last upgrade being 19 years ago. The gyratory has experienced a number of faults in the past two years. The high fault rates are due to ageing equipment. This is a critical part of the network which needs to be renewed as well as modified to make the gyratory operate more efficiently. In turn this will help improve traffic flow and reduce congestion around this gyratory, Wellington Street and Derby Street and reduce roadside NO₂ concentrations.
- **Measure 11: Development of an enforcement policy for enforcing the new smoke control laws** – The Environment Act 2021 amended the Clean Air Act 1993 to introduce new provisions for enforcing smoke emissions in smoke control areas thereby helping local authorities reduce particulate pollution associated with domestic burning. Changes to the Environment Act 2021 now enables local authorities to issue fines of between £175 and £300 with respect to the emissions of smoke coming from a chimney of any building, chimney for furnace of any fixed boiler and even stacks from moored vessels if the latter are included in the scope of a smoke control area. It is also now an offence to buy or sell unauthorised fuels for use in a smoke control area unless they are used on a Defra approved (i.e. exempt) appliance and contain the correct certification labelling on the packaging. Currently PM_{2.5} is not at risk of exceeding any concentration targets within East Staffordshire

and is also not a contributory factor to the designation of AQMA 1. However, it is still relevant in that it is the pollutant identified to be most damaging to human health across the UK, hence why the development of an enforcement policy for enforcing the new smoke control laws has been included as a measure in the updated AQAP. Most of Burton upon Trent, is already in a Smoke Control Area, but over the coming year East Staffordshire Borough Council aims to develop its own enforcement policy for smoke control and will also produce educational material in leaflets, through the Council's website and social media to raise people's awareness of the new smoke control area laws and health impacts of particulates.

East Staffordshire Borough Council's key priorities for the coming year are to implement measures 1, 2 and 3 explained above and highlighted in yellow in Table 2.2 in part because they are already underway and because they are expected to deliver the greatest benefit to AQMA 1. However, first and foremost, East Staffordshire Borough Council will formally adopt the updated AQAP and overarching Air Quality Strategy taking into account any feedback where relevant from the public consultation process as well as progress the formal revocation of AQMA 2 which is also underway. Other priorities for the coming year are:

- To develop a smoke control policy for enforcing the new smoke control laws as explained in measure 11 above.
- To continue to support Staffordshire County Council in the planning and delivery of transport projects as outlined in measures 4 to 6 in Table 2.2 and any additional opportunities should they arise. East Staffordshire Borough Council will also support Staffordshire County Council with any Defra or DfT bid opportunities to help fund transport projects where possible or available.
- To continue to support the Air Aware project in growing the schools and business engagement.
- To continue indicative monitoring through the low cost Zephyr sensors and promotion of the public portal
- To continue to closely monitor and review NO₂ through our extensive diffusion tube network during 2024-25.
- To raise awareness of air quality issues and provide information and guidance to members, businesses and residents as to how they can protect themselves and be

part of the solution through behaviour change. Measures 13 and 14 in Table 2.2 are particularly relevant here.

The principal challenges and barriers to implementation that East Staffordshire Borough Council anticipates facing during the next 12 months are continued resource constraints and increasing pressures/demands in other aspects of Environmental Health, as well as funding issues.

Progress on measures has to date been slower than expected due to competing local authority priorities and demands, as well as staff shortages resulting from staff leaving the authority in 2021/22, hence why the updated AQAP has only recently been drafted. East Staffordshire's transport strategies are at least in part linked with Local Plan updates and as a result the speed of implementation of many future air quality improvement measures are determinant on progress of these policies and documents. Some of these transport related measures rely on developer contributions, so implementation is dependent on development progress within East Staffordshire.

It is important to note here that NO₂ concentrations have dropped below the annual mean NO₂ Objective at all locations within AQMA 1 during years 2020 to 2023 (see Section 3). However compliance being reached in 2020 and 2021 in particular may not necessarily be representative of long term trends in pollutant concentrations due to observed changes in travel behaviours associated with the Covid-19 pandemic. Also some monitoring locations within AQMA 1 still recorded levels of NO₂ that were within 10% of the annual mean Objective (i.e. above 36µgm³) in 2022, albeit NO₂ levels dropped further to below 36µgm³ at all locations in 2023. To account for the inherent uncertainty with the use of diffusion tubes for monitoring purposes, revocation should only be considered where there are three consecutive years of annual mean NO₂ concentrations below 36µgm³. Therefore, AQMA 1 is still relevant, hence the rationale for updating the AQAP, which Defra supported in their feedback of the draft 2024 AQAP. In order to be proportionate, the 2024 updated AQAP focuses on measures that can be implemented within the next few years that will work towards reducing NO₂ concentrations further and maintain them below 36 µgm³. East Staffordshire Borough Council therefore anticipates that the measures stated above and in Table 2.2 will achieve consistent compliance in AQMA 1 within the next two to three years.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Procurement of electric buses on Service 9 that operates within Burton AQMA1	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2024	2025/26	Staffordshire County Council & Bus Operator (Diamond)	Zebra2 DfT Funding	No	Partial Funding from DfT & Bus operator	£1 million - £10 million from DfT	Implementation Phase	Lower NOx, PM ₁₀ and PM _{2.5} and carbon emissions. 5 tonnes of NO ₂ savings and 131 kg PM savings estimated from the DfT's Greener Bus Model toolkit	Procurement of zero emission buses and increased bus patronage	Bid submitted in December 2023 with letter of support from East Staffordshire Borough Council. Confirmation received in April 2024 that the bid was successful	Unexpected increase in costs to deliver scheme
2	Traffic signal reconfiguration within AQMA 1	Traffic Management	UTC, Congestion management, traffic reduction	2024	2025	Staffordshire County Council & East Staffordshire Borough Council	DfT (Integrated Transport Block)	No	Fully Funded	£100k - £500k	Planning Phase	Lower NOx, PM ₁₀ and PM _{2.5} emissions	Improved traffic flow, reduced congestion		Staff resources, increasing costs to deliver scheme and reduced funding
3	Schools Engagement through the Air Aware Project	Promoting Travel Alternatives	Other	2020	Ongoing	Staffordshire County Council & East Staffordshire Borough Council	Funded through Air Quality Grant for phases 1 and 2 (2020-2023) and Staffordshire Public Health and Connectivity Teams	Yes for initial phases	Partially Funded	£100k - £500k	Active	Lower NOx, PM ₁₀ and PM _{2.5} emissions	Improved understanding and awareness of local air quality issues and encouragement of greener modes of travel	Ongoing work supporting Staffordshire County Council School Travel Advisors with campaign work such as vehicle idling, school travel plans, competitions and promotional work	Staff resources if staff leave and funds run out. Break down of equipment.
4	Burton Towns Fund cycling and pedestrian route improvements	Transport Planning and Infrastructure	Cycle Network	2025	2026	Staffordshire County Council & East Staffordshire Borough Council	Burton Towns Fund	No	Fully Funded	£500k - £1 million	Planning Phase	Lower NOx, PM ₁₀ and PM _{2.5} emissions	Installation of new cycle routes		Staff resources, increasing costs to deliver scheme and reduced funding
5	Derby Street walking and wheeling	Promoting Travel Alternatives	Promotion of Walking	2024	2025	Staffordshire County Council & East Staffordshire Borough Council	DfT (Active Travel Fund 3) managed by ATE	No	Fully Funded	£100k - £500k	Planning Phase	Lower NOx, PM ₁₀ and PM _{2.5} emissions	Promoting green modes of travel		Staff resources, increasing costs to deliver scheme and reduced funding
6	Shobnall Road National Cycle Network (NCN)	Transport Planning and Infrastructure	Cycle Network	2024	2025	Staffordshire County Council, Sustrans & East Staffordshire Borough Council	Paths for Everyone (DfT funds) managed by Sustrans	No	Fully Funded	£100k - £500k	Planning Phase	Lower NOx, PM ₁₀ and PM _{2.5} emissions	Installation of new cycle routes		Staff resources, increasing costs to deliver scheme and reduced funding

Measure No.	Measure Title	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
7	Installation of low cost Zephyr air monitors and launch of MyAir public portal	Public Information	Other	2023	2026	East Staffordshire Borough Council	Funded through Air Quality Grant as part of Air Aware Project in Measure 7 above	Yes	Fully Funded	£10k - £50k	Implementation	n/a	Improved understanding and awareness of local air quality issues and encouragement of greener modes of travel		Staff resources if staff leave and funds run out
8	Development of supplementary planning document (SPD) for air quality	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2024/25	2025/26	East Staffordshire Borough Council	Not Funded	N/A	N/A	N/A	Planning Phase	Lower NOx, PM ₁₀ and PM _{2.5} emissions Arising from new developments	Formal adoption of SPD		Staff resources if staff leave to deliver and monitor scheme
9	Waste collection service electrification	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2024	2030/31	Staffordshire Waste Partnership (consortium of 4 district/borough councils)	Midlands Net Zero Hub	No	Fully Funded	£50k - £100k	Planning Phase	Lower NOx, PM ₁₀ and PM _{2.5} and carbon emissions	Feasibility study for decarbonisation of entire waste collection services	A bid to fund the feasibility study for decarbonisation of the waste collection services has been submitted by the partnership. The partnership has received confirmation the bid was unsuccessful. The study will still go ahead, but alternative funding sources are now being sought	Feasibility study will identify if decarbonisation of existing waste depot is possible, if not a new larger site would be required therefore incurring greater costs which may delay implementation
10	Air quality monitoring review	Public Information	Other	2024	Ongoing	East Staffordshire Borough Council	No external funding (in-house)	No	N/A	Approximately £5 per diffusion tube	Active	N/A	Monitoring of NO ₂ concentrations	Ongoing, periodic reviews of monitoring network to ensure monitoring is appropriate, cost effective and identify any changes in trends	Staff resources
11	Development of an enforcement policy for enforcing the new smoke control laws	Policy Guidance and Development Control	Other Policy	2024	2024/25	East Staffordshire Borough Council	No external funding (in-house)	No	N/A	N/A	Planning Phase	Lower PM ₁₀ and PM _{2.5} and emissions	Enforcement of smoke control laws		Staff resources
12	Taxi licensing policy incentives	Promoting Low Emission Transport	Taxi emission incentives	2024	Ongoing	East Staffordshire Borough Council	Initially no external funding	No	N/A	N/A	Planning Phase	Lower NOx, PM ₁₀ and PM _{2.5} and carbon emissions	Taxi Licensing policy	The Council's Hackney Carriage & private Hire Policy 2024-2029 is currently out for consultation. Viability for incorporating incentives for EV uptake is being considered.	Opposition to changes

Measure No.	Measure Title	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
13	External and internal working groups	Policy Guidance and Development Control	Other Policy	2024	Ongoing	East Staffordshire Borough Council, Staffordshire County Council & Other Agencies	No external funding (in-house)	No	N/A	N/A	Implementation Phase	N/A	Formation of targeted Working Groups	Currently East Staffordshire Borough Council has a working group through the Staffordshire Air Quality Forum. Moving forward this will be expanded to other internal and external groups combining both air quality and climate change	Staff changeover
14	Communications and engagement plan	Public Information	Other	2024	2025	East Staffordshire Borough Council	No external funding (in-house)	No	N/A	N/A	Planning Phase	N/A	Combined Communications and Engagement Plan for air quality and climate change		Staff changeover & resources
15	Electric Vehicle Charging Infrastructure Plan	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2022	2030/31	East Staffordshire Borough Council & Staffordshire County Council	LEVI Funding	No	Fully Funded	£500k-£1million	Implementation Phase	Lower NOx, PM ₁₀ and PM _{2.5} and carbon emissions	EV Charging Infrastructure	Three EVCPs have already been installed in Coopers Square, Millers Lane and Stapenhill Cemetery in Burton and one located in Trinity Square, Uttoxeter	Increasing costs, lack of funds
16	Green New Deal for East Staffordshire	Promoting Travel Alternatives	Other	2023	Ongoing	East Staffordshire Borough Council, Staffordshire County Council, Bike Companies	Various internal and external	No	Fully Funded	>£90k	Implementation Phase	Lower NOx, PM ₁₀ and PM _{2.5} and carbon emissions	Promoting green travel alternatives & sustainability		Increasing costs, lack of funds
17	Environmental Permitting	Environmental Permits	Other	2024	Ongoing	East Staffordshire Borough Council	No external funding (in-house)	No	N/A	N/A	Implementation Phase	Lower NOx, PM ₁₀ and PM _{2.5} and other pollutant emissions	Environmental Permitting Regulation		Staff changeover & resources

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy⁶, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM_{2.5}). There is clear evidence that PM_{2.5} (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

There are now two targets to work towards:

The annual mean concentration target, which requires that by the end of 31st December 2040. The annual mean level of PM_{2.5} in ambient air must be equal to or less than 10 µg/m³, with an interim target of 12 µg/m³ to be achieved by the end of January 2028 as set out in the Environmental Improvement Plan 2022.

The other major target is, the population exposure reduction target. This requires that there is at least a 35% reduction in population exposure by the end of 31st December 2040 (“the target date”), as compared with the average population exposure in the three-year period from 1st January 2016 to 31st December 2018 (“the baseline period”), determined in accordance with Regulation 8.

Particulate matter, or PM, is the term used to describe particles found in the air, including dust, dirt and liquid droplets. PM comes from both natural and man-made sources, including traffic emissions and Saharan-Sahel dust. These particles can be suspended in the air for long periods of time and can travel across large distances.

PM less than 10 micrometres in diameter (PM₁₀) pose a health concern because they can be inhaled into and accumulate in the respiratory system. PM less than 2.5 micrometres in diameter (PM_{2.5}) are referred to as "fine" particles and are believed to pose the greatest health risks, as they can lodge deeply into the lungs and also pass into the bloodstream.

PM_{2.5} is the pollutant which has the biggest impact on public health and on which the Public Health Outcomes Framework (PHOF) D01 Fraction of mortality attributable to particulate air pollution (2020), Public Health Outcomes Framework indicator ⁷ is based. Air pollution affects us all. It is associated with impacts on lung development in children,

⁶ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

heart disease, stroke, cancer, exacerbation of asthma and increased mortality, among other health effects.⁸

The mortality burden of air pollution in England is estimated to be between 26,000 and 38,000 a year.⁸

Within Staffordshire it is estimated that in 2021 (latest figures) (5.0% of all deaths can be attributed to exposure to PM_{2.5}, compared to 5.5% across England (29,850 deaths annually)⁷. Overall, the estimated cost to individuals and society is more than £20 billion annually for the UK.

2.3.1 Particulate Matter (PM_{2.5}) Levels in Staffordshire and Stoke-on-Trent

Only Stoke on Trent monitor locally for PM₁₀. However, a number of authorities have been approached by Defra to host an Automatic Urban and Rural Network (AURN), which if suitable sites can be found would mean that these councils will have PM data specific to their area rather than having to rely on the PM_{2.5} background maps provided by Defra. East Staffordshire Borough Council was approached by Defra to host an AURN in Horninglow, Burton upon Trent, back in 2016-17. The AURN site was subsequently installed and monitored for NO₂ for a number of years, but it was not until 1st July 2022 that PM₁₀ and PM_{2.5} monitoring commenced. However, for 2023 there is a full years' worth of data with a PM_{2.5} concentration of 7 µgm³ being recorded at this AURN site during 2023.

Aside from the AURN site, East Staffordshire Borough Council felt it was prudent to indicate the area of maximum background annual mean PM_{2.5} concentrations and the area of minimum background annual mean PM_{2.5} which has been derived from the Defra Background maps. From these maps, East Staffordshire Borough Council has determined that, its highest level is 9.3 µgm³ and is located at grid reference 424500; 324500 (i.e. Horninglow Road near to Derby Turn), its lowest level is 5.8 µgm³ and is located at 415500; 349500 (i.e. Okeover located at the northern extremity of the Borough and bordering Staffordshire Moorlands District). This indicates that East Staffordshire Borough Council is currently meeting both the 2028 interim PM_{2.5} concentration target of 12 µgm³ and the 2040 long term PM_{2.5} concentration target of 10 µgm³.

⁷ Public Health England. Public Health Outcomes Framework 5th May https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/gid/1000043/pat/6/par/E12000005/ati/102/are/E10000028/iid/30101/age/230/sex/4/cid/4/tb/m/1/page-options/car-do-0_ine-yo-1:2019:-1:-1_ine-ct-2_ine-pt-0 © Crown copyright 2021

⁸ Chief Medical Officer's annual report 2022

2.3.2 PM_{2.5} and Mortality in Staffordshire & Stoke-on-Trent

Although the levels of PM_{2.5} within the County and City of Stoke on Trent are below the 2020 EU Limit value, the impact on adult mortality directly attributable to PM_{2.5} is nonetheless still an important public health issue within Staffordshire and Stoke-on-Trent. This is revealed in data obtained from UK Health Security Agency (UKHSA) used to inform Public Health Outcomes Framework indicator D01, as shown in Table 2.4.

The percentage estimated number of deaths attributable to PM_{2.5} in adults over 30 has been translated into the estimated number of attributable deaths for each local authority area within Staffordshire, and are shown in Table 2.3. The data presented to 2021 is the latest data available at time of publication of this report. Approximately 5.8% of deaths from 2018 to 2021 within the County can be attributed to PM_{2.5}. (Note the method for calculating this figure changed in 2022 and we have only the data for 2018, 2019, 2020 & 2021 using this new method. As the 2020 data for this indicator includes the period from March 2020 onwards, the mortality data used in its calculation will reflect the effects of the Covid-19 pandemic).

Table 2.3 – Estimated average number of deaths by local authority area attributable to PM_{2.5} within Staffordshire for adults over 30 (2018 to 2021)

District/County	Percentage
Newcastle-under-Lyme	5.5%
Stafford	5.5%
East Staffordshire	6.0%
South Staffordshire	5.8%
Lichfield	6.0%
Staffordshire Moorlands	5.3%
Cannock Chase	6.0%
Tamworth	6.4%
Stoke on Trent	5.9%
Staffordshire County	5.8%
England	6.3%

Table 2.4 – Public Health Outcomes Framework Indicator 3.01 - Fraction of annual all cause adult mortality attributable to anthropogenic (human made) particulate air pollution (measured as fine particulate matter, PM_{2.5}) for Staffordshire Authorities 2018 to 2021⁷

District/County	2018			2019			2020			2021		
	Deaths - all causes persons 30+	%*	Estimated attributable deaths	Deaths - all causes persons 30+	%*	Estimated attributable deaths	Deaths - all causes persons 30+	%*	Estimated attributable deaths	Deaths - all causes persons 30+	%*	Estimated attributable deaths
Newcastle-under-Lyme	1334	5.7	80	1282	6.8	90	1548	4.7	70	1409	5	70
Stafford	1336	5.8	80	1315	6.8	90	1565	4.5	70	1432	4.8	70
East Staffordshire	1093	6.3	70	1128	7.3	80	1355	5.1	70	1287	5.1	70
South Staffordshire	1211	6.3	80	1212	7.0	90	1418	4.9	70	1333	5.1	70
Lichfield	1087	6.4	70	1093	7.2	80	1272	5.2	70	1129	5.1	60
Staffordshire Moorlands	1108	5.2	60	1080	6.6	70	1276	4.5	60	1133	4.7	50
Cannock Chase	976	6.4	60	908	7.2	70	1046	5.1	50	1089	5.2	60
Tamworth	653	6.9	50	678	7.7	50	752	5.6	40	730	5.4	40
Stoke on Trent	2746	6.1	170	2490	7.2	180	3034	5.0	150	2790	5.2	150
Staffordshire	8798	6.1	530	8692	7.0	610	10227	4.9	500	9539	5	480

2.3.3 Particulate Matter (PM_{2.5}) Levels in Staffordshire and Stoke-on-Trent

A number of the Staffordshire Authorities are currently involved in implementing measures to reduce levels of NO₂ within their areas, which are detailed elsewhere in their ASR.

Since the update of the Environment Act 2021 there is now a statutory duty imposed on Local Authorities in England to reduce PM_{2.5}, a number of the measures are complementary with those being undertaken to reduce NO_x. A mapping exercise completed by the Staffordshire Air Quality Forum members details the measures currently in place which are considered to have an impact in reducing PM_{2.5} within the County.

These are produced in Table 2.5 below;

Table 2.5 - Actions being taken within Staffordshire to reduce PM_{2.5}

Measures category	Measure Classification	Effect on reducing NO _x and PM ₁₀ emissions (low, medium, high)	Reduces PM _{2.5} emissions	Local Authority								
				Staffordshire Moorlands DC	Newcastle under - Lyme BC	Cannock Chase	Stafford BC	East Staffs BC	Lichfield DC	South Staffs DC	Tamworth BC	
Traffic Management	Urban Traffic Control systems, Congestion management, traffic reduction	low		UTC in Leek Town Centre	UTC SCOOT in areas of Newcastle Town Centre AQMA and Kidsgrove AQMA. Live labs monitoring work linked to congestion in Newcastle.	UTC in Cannock Town Centre	UTC in Stafford Town Centre	Traffic signal reconfiguration within the Wellington Street/Derby Street/Borough Road gyratory to help improve traffic flow and reduce congestion within AQMA 1 to be delivered in 2024-25	Liaising with Midlands Connect to increase usage of M6 Toll to reduce congestion on A5 & lobbying for upgrade of A38 & A5. The A5 corridor priority for congestion control, but the central section outside of LDC prioritised for transport intervention measures. Consideration of Junction improvements at Muckley Corner. UTC in Lichfield Town Centre.		UTC in Tamworth Town Centre at Ventura Park	
	Reduction of speed limits, 20mph zones	low		20mph zones near some schools in residential areas			20mph zones near some schools in residential areas	20 mph zones near some schools in residential areas		20mph zones in Trysull, Bradley, Kinver and Bilbrook		
	Road User Charging (RUC)/ Congestion charging	low		No					M6 Toll	M6 Toll		
	Anti-idling enforcement	low		Anti-Idling Campaign toolkits available to schools for pupil run campaign.	Anti-Idling Campaign toolkits available to schools for pupil run campaign.	Anti-Idling Campaign toolkits available to schools for pupil run campaign.	Anti-Idling Campaign toolkits available to schools for pupil run campaign.	Anti-Idling Campaign toolkits available to schools for pupil run campaign.	Anti-Idling Campaign toolkits available to schools for pupil run campaign.	Anti-Idling Campaign toolkits available to schools for pupil run campaign.	Anti-Idling Campaign toolkits available to schools for pupil run campaign.	Anti-Idling Campaign toolkits available to schools for pupil run campaign.
	Other			Live Public Facing portal linked to Zephyr air quality monitor for PM _{2.5} with district modelling.				Live Public Facing portal linked to Zephyr air quality monitor for PM _{2.5} with district modelling.				
Promoting Travel Alternatives	Workplace Travel Planning	low		Where developers are required to produce and implement Workplace Travel Plans as part of the planning process, SCC review and monitor the outcomes.								
	Encourage / Facilitate home-working	low		Agile working policy applied	Homeworking Policy adopted	Homeworking Policy adopted	Homeworking Policy adopted	Homeworking Policy adopted	Homeworking policy adopted	Agile working policy adopted	Homeworking policy adopted	
	School Travel Plans	low		Where School Travel Plans are required as part of the planning process SCC review and monitor the outcomes Residential developers are required to make S106 contributions where appropriate to fund active travel measures and initiatives carried out within schools. School Travel Plans are written and produced by the Active School Travel Team for any school in Staffordshire wishing to take part in the accredited Modeshift STARS with support of resources, toolkits, assemblies, campaigns and lesson plans to encourage behaviour change https://www.staffordshire.gov.uk/Transport/Cycling/Cycling-and-active-travel.aspx Review of LCWIP will include additional areas such as Biddulph and Rugeley Cycling and active travel - Staffordshire County Council								
	Promotion of cycling	low		INTO Walking and Cycling Social Prescribing Specific to Newcastle-under-Lyme www.staffordshire.gov.uk/walkingandcycling (just Newcastle) Benefits of Cyling promoted through the Travel Plan Process (all) Gov Cycle to work scheme promoted and encouraged via the Travel Plan Process Bikeability is promoted and delivered in most schools in Staffordshire in line with Active Travel England's target of 80% of all year 6 pupils to receive Bikeability training by 2025. Staffordshire is on target to achieve this figure. (Link to Bikeability Page)								
	Promotion of walking	low		https://www.staffordshire.gov.uk/Transport/Cycling/Cycling-and-active-travel.aspx Review of LCWIP will include additional areas such as Biddulph and Rugeley INTO Walking and Cycling Social Prescribing Specific to Newcastle-under-Lyme https://www.staffordshire.gov.uk/Transport/Cycling/INTO/Get-INTO-walking-and-cycling-in-Newcastle-under-Lyme.aspx INTO Walking and Cycling Social Prescribing Specific to Newcastle-under-Lyme www.staffordshire.gov.uk/walkingandcycling (just newcastle) Walk to school campaign resources offered free to all Staffordshire schools including railing banner, posters, digital toolkit and reward bookmarks for pupils (LINK HERE) Benefits of Walking promoted through the Travel Plan process (all) Walks and Country Trails - Staffordshire County Council								
Staffordshire Share a Lift Scheme			Car Share promoted via Travel Plan process.									

Measures category	Measure Classification	Effect on reducing NOx and PM ₁₀ emissions (low, medium, high)	Reduces PM _{2.5} emissions	Local Authority							
				Staffordshire Moorlands DC	Newcastle under - Lyme BC	Cannock Chase	Stafford BC	East Staffs BC	Lichfield DC	South Staffs DC	Tamworth BC
	Promote use of rail and inland waterways	medium		North Staffordshire Community Rail Partnership operating along the North Staffordshire Line includes Blythe Bridge station.	North Staffordshire Community Rail Partnership operating along the North Staffordshire Line includes Kidsgrove station. Kidsgrove station to be fully accessible and regenerated through Town Deal.		Redevelopment of Stafford Station into a gateway associated with HS2 works.	Burton Forecourt improvements completed in 2021 with segregated bus lanes/stops to help improve flow.	Lichfield Trent Valley access for all works recently completed including lifts.	Improved access/ park facilities at Codsall Station. Upgrades and Landywood Station Brinsford Park and Ride - Parkway Station business case ongoing	
Transport Planning & Infrastructure	Local Transport Plans and District Strategies	high		District integrated transport strategies - Staffordshire County Council							
	Public transport improvements-interchanges stations and services	low		Proposed reinstatement of Leek rail connection. Planning application approved 2022 . Oct 2023 the re-opening of the Stoke – Leek line to be funded by scrapping of Northern leg of HS2	Kidsgrove will be multi-modal through Town Deal funding.		New services with S106 funding provided in Stone to new estates in Walton and Yarnfield. Stafford Gateway will be m2.ulti- modal		Alternative location for bus station currently under consideration	Construction on the West Midlands interchange has started.	Planned improvements at Tamworth station
	Public cycle hire scheme	low					e-scooter trials NOW ENDED AWAITING CONCLUSIONS	East Staffs BC are working with local cycle firms to establish an affordable bike rental scheme to increase uptake of sustainable travel in Burton.			
	Cycle network	low		Local cycling and walking infrastructure plan 2021 - Staffordshire County Council Staffordshire cycle maps currently awaiting audit and review							
	Bus route improvements	high		As a result of BSIP & BSIP+ funding consideration is being given to bus route improvements where feasible. New 95 route from Audley to Biddulph introduced.	As a result of BSIP & BSIP+ funding consideration is being given to bus route improvements where feasible. New 95 route from Audley to Biddulph introduced.	As a result of BSIP & BSIP+ funding consideration is being given to bus route improvements where feasible	Improved bus priority and interchange on key routes in Stafford post-SWAR	Defra air quality bid to fund procurement of electric buses & associated infrastructure along services 8 & 9 through Burton secured from Feb 2024. Scheme to be delivered 2024 with funding from the Defra Air Quality grant and Level up Funding 2.	As a result of BSIP & BSIP+ funding consideration is being given to bus route improvements where feasible. New 830 service to Hill Ridware introduced.	As a result of BSIP & BSIP+ funding consideration is being given to bus route improvements where feasible	As a result of BSIP & BSIP+ funding consideration is being given to bus route improvements where feasible
	Active Travel Fund	low		Move More Staffordshire Moorlands a collaborative strategy that will see partners working together with the aim to move more every day and to provide greater support to those that need it most.	ATF 2 measures to encourage walking and cycling	ATF2 measures to encourage walking and cycling.	ATF 2 measures to encourage walking and cycling.	ATF 2, 3 & 4 measures to encourage walking/ cycling. Footway widening with segregated cycle & pedestrian routes along Station St to the railway station completed late 2023. Further pedestrian & cycle improvements within the AQMA & across Burton planned for between 2024 & 2026			ATF 3 and 4 measures to encourage walking and cycling
	Levelling Up Fund 2	medium		<p>Schemes will improve a number of major roads around the county, reduce journey times, put greener, cleaner buses on main roads, improve walking and cycling routes and reduce the impact of housing and commercial developments. They will benefit East Staffordshire, Cannock Chase and Stafford Borough. Total package cost circa £20m.</p> <ul style="list-style-type: none"> ▪ Circa £6 million at the A38/A5121 Branston Interchange, near Burton, to complete the work at junction and open up for large scale housing and business development. Staffordshire County Council is adding additional money to walking and cycling schemes in the area for non-motorists to cross the A38 safely. ▪ More than £9 million for work at either end of the A34 between Cannock and Stafford. In Cannock there will be walking and cycling routes to complement the planned town centre regeneration and link to the train station. In Stafford there will be the creation and maintenance of walking and cycling routes along from Radford Bank to the town centre. ▪ Approximately £4.2 million to introduce either the latest generation Euro VI diesels, or electric-powered buses on certain busy routes, as well as improving bus stops and changing priority at junctions. <p>Bus routes benefiting from the new investment include the #8 and #9 services in Burton, run by Midland Classic; the #74 between Stafford and Cannock, run by Chaserider; and the #875 from Stafford to Cannock, via Penkridge, run by Select Buses.</p>							

Measures category	Measure Classification	Effect on reducing NOx and PM ₁₀ emissions (low, medium, high)	Reduces PM _{2.5} emissions	Local Authority								
				Staffordshire Moorlands DC	Newcastle under - Lyme BC	Cannock Chase	Stafford BC	East Staffs BC	Lichfield DC	South Staffs DC	Tamworth BC	
Alternatives to private vehicle use	Bus based Park & Ride	medium							New bus central station as part of Friarsgate development scheme			
	Car Clubs	low										
Policy Guidance and Development Control	Planning applications to require assessment of exposure / emissions for development requiring air quality impact assessment	high		https://www.staffsmoorlands.gov.uk/media/6155/Adopted-Local-Plan/pdf/Adopted_Local_Plan.pdf?m=1601645140880	Included as part of Local Validation List https://www.newcastle-staffs.gov.uk/planning-applications/information-requirements-validation-planning-applications		http://www.staffordbc.gov.uk/planning/planning-policy/local-plan-2012-2031	https://www.eaststaffsbc.gov.uk/planning/planning-policy/local-plan-2012-2031	https://www.lichfielddc.gov.uk/Council/Planning/The-local-plan-and-planning-policy/Planning-policy.aspx	Adopted South Staffordshire Local Plan, Local Plan, Planning Framework (sstaffs.gov.uk)	Local & National Validation requirements : http://www.tamworth.gov.uk/sites/default/files/planning_docs/National-and-Local-Validation-requirements-2017.pdf	
	Air Quality Strategy			Draft Air Quality Action Plan 2024-2029 submitted to Defra awaiting feedback.	Revised Air Quality Action Plan due in 2024 will include requirements for PM _{2.5}		2019-2023 Air Quality Strategy 2024-26 Drafted	Revised Air Quality Action Plan & overarching Air Quality Strategy has been drafted & approved internally & submitted to Defra for approval. Going for public consultation/ formal adoption 2024		In development		
	Planning Guidance for developers			SMDC "Air Quality and Emissions Mitigation" Guidance for Developers available, and currently being updated with view to be adopted as a official SPD	To be developed alongside New Local Plan HERE		http://www.stafforddc.gov.uk/planning/planning-policy/supplementary-planning-policy-documents	Currently informal guidance in place, but the revised Air Quality Action Plan includes a measure for formal guidance as part of a Supplementary Planning Document (SPD)		Planning Guidance and SPDs (sstaffs.gov.uk)	https://www.tamworth.gov.uk/sites/default/files/planning_docs/Tamworth_Design_SPD_July_2019_v1-0.pdf	
	Developer Contributions based on damage cost calculation			Damage cost assessment used for applicable applications Developer Contributions SPD now makes specific reference to contributions to mitigate air quality impacts.	To be considered as above				Damage cost assessment now required for applicable applications.			
	Planning Policies			https://www.staffsmoorlands.gov.uk/media/6155/Adopted-Local-Plan/pdf/Adopted_Local_Plan.pdf?m=1601645140880	Various policies support alternatives to use of car and increased use of public transport HERE	The Cannock Local Plan is currently under review https://www.cannockchasedc.gov.uk/residents/planning-and-building-control/planning-policy/cannock-chase-local-plan	http://www.staffordbc.gov.uk/planning/planning-policy/local-plan-2012-2031	Supplementary planning document to be developed as part of revised Air Quality Action Plan	https://www.lichfielddc.gov.uk/Council/Planning/The-local-plan-and-planning-policy/Planning-policy.aspx	Planning Guidance and SPDs (sstaffs.gov.uk)	https://www.tamworth.gov.uk/local-plan	
	STOR Sites (Short Term Operating Reserve) Energy Generation . Regulation via planning / permitting regime	high										
	Low Emissions Strategy	high			Forms part of Climate change action plan &	In development			Part of Climate Change Action Plan developed in 2022 https://www.eaststaffsbc.gov.uk/environmental-health/climate-			

Measures category	Measure Classification	Effect on reducing NOx and PM ₁₀ emissions (low, medium, high)	Reduces PM _{2.5} emissions	Local Authority								
				Staffordshire Moorlands DC	Newcastle under - Lyme BC	Cannock Chase	Stafford BC	East Staffs BC	Lichfield DC	South Staffs DC	Tamworth BC	
				Climate change action plan part 2					change/what-we-are-doing-tackle-climate-change			
Freight and Delivery Management	Freight Consolidation Centre	medium		X								
	Route Management Plans/ Strategic routing strategy for HGV's	high			https://www.staffordshire.gov.uk/Transport/transportplanning/localtransportplan/home.aspx This should be considered as part of planning applications where new proposals come forward.							
	Quiet & out of hours delivery	low										
	Delivery and Service plans	medium										
	Freight Partnerships for city centre deliveries	high										
Vehicle Fleet Efficiency	Driver training and ECO driving aids	medium										
	Promoting low emission public transport	high		X								
	Vehicle retrofitting programmes	medium		Ongoing / in development. Energy Saving Trust (EST) have reviewed current fleet and issued recommendations including training .		Cannock Council Ultra low emission vehicle strategy in development. Cannock Council Green Transport Strategy in development.	Incorporation of emissions enhancements on waste fleet		Retrofitting of old Council owned HGVs and Buses with pollution abatement equipment will be considered by the Council where technically and financially feasible			
	Fleet efficiency & recognition schemes	medium		https://www.staffordshire.gov.uk/environment/Documents/Climate-Change-Action-Plan.pdf - Where possible consider and implement a transition plan to full EV vehicles within the SCC fleet								
Promoting low emission transport	Low emission zone (LEZ) Clean Air Zone (CAZ)	high		X								
	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	high		Procurement Strategy in development; Climate change action plan			Waste fleet vehicles comply with Euro VI. This will be extended to all Council owned vehicles.	Ongoing as part of the climate change agenda with the Staffordshire Wide Partnership (SWP) working towards decarbonising the waste fleet by 2030. Currently looking at funding options for feasibility study of waste depot decarbonisation.		Council new vehicles all comply with Euro 6		
	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	high		Majority of fleet comply with highest EURO emission next replacement period in 2028. EV salary Sacrifice Scheme launched for employees			Investigating replacing old vehicles within the fleet with more modern cleaner vehicles, which comply with prevailing EURO standard.		Vehicles replaced (in addition to normal fleet turnover)	Most council vehicles were replaced last year with new cleaner vehicles		

Measures category	Measure Classification	Effect on reducing NOx and PM ₁₀ emissions (low, medium, high)	Reduces PM _{2.5} emissions	Local Authority							
				Staffordshire Moorlands DC	Newcastle under - Lyme BC	Cannock Chase	Stafford BC	East Staffs BC	Lichfield DC	South Staffs DC	Tamworth BC
	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	high		EV strategy on council car parks. hydrated vegetable oil are currently being used by waste fleet	Newcastle towns deal includes EV charging infrastructure.		Procurement of EV on staff carparks partially completed.	EV Strategy adopted in 2022. https://www.eaststaffsbc.gov.uk/environmental-health/climate-change/electric-vehicles-and-charging-infrastructure. Currently East Staffs owns one rapid charger and two fast dual charge Electric Vehicle Charging Points (EVCPs) operating in Coopers Square, Burton, and there is one located in Trinity Square, Uttoxeter. Further EVCPs are being shortlisted for eligible funding through LEVI funding streams.		EV Parking at Council Offices, staff & public car parks	
	Priority parking for LEV's	high							LDC reviewing its car park strategy for the District in pursuit of increasing the provision of EV charging Infrastructure.		EV charging spaces being investigated.
	Taxi Licensing conditions	medium		In development		Taxi licensing policy promotes uptake of electric vehicles	Scheduled to promote EV	All taxi vehicles must meet Euro 6 emission standards.			
	Taxi emission incentives	medium		In development				Viability for incorporation of financial incentives in taxi licensing policy to encourage EV uptake in development			
	EV Strategy	high		https://democracy.staffsmoorlands.gov.uk/documents/s32243/SM-Public-EV-Charging-Strategy-V1_Final_15.09.22.pdf				Staffordshire EV Charging Infrastructure Strategy https://www.staffordshire.gov.uk/Transport/Sustainable-travel/Electric-vehicles/02-SCC-Public-EV-Charging-Strategy-V3-3.pdf			
	Adoption of SCC EV Strategy	high		Adoption of SCC EV Strategy February 2023	Adoption of SCC EV Strategy Cabinet 10 January, 2023	Adoption of SCC EV Strategy April 2023	Adoption of SCC EV Strategy Aug/Sept 2023	Adoption of SCC EV Strategy March 2023 Their own local agenda and informative web site: Electric Vehicles and Charging Infrastructure East Staffordshire Borough Council (eaststaffsbc.gov.uk)		Adoption of SCC EV Strategy July 2023	Currently drafting a local EV strategy Adoption of SCC EV strategy: Agenda for Cabinet on Thursday, 6th April, 2023, 6.00 pm :: Tamworth Borough Council
Environmental permits	Introduction/ increase of environment charges through permit systems and economic instruments (Permit fees set centrally)	medium							Ongoing Environmental Permits inspection of installation adhering to permits and enforcement/penalties for breaches		
	Measures to reduce pollution through IPPC Permits going beyond BAT	medium					https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/211863/env-permitting-general-guidance-a.pdf (Chapter 15)				
	Large Combustion Plant Permits & National Plans going beyond BAT	high					NA			NA	

Measures category	Measure Classification	Effect on reducing NOx and PM ₁₀ emissions (low, medium, high)	Reduces PM _{2.5} emissions	Local Authority								
				Staffordshire Moorlands DC	Newcastle under - Lyme BC	Cannock Chase	Stafford BC	East Staffs BC	Lichfield DC	South Staffs DC	Tamworth BC	
	Other											
Other measures	Smoky Diesel Hotline								https://www.gov.uk/report-smoky-vehicle			
	A5 and M6 Partnership									Strategy for the A5 2011-2026	Strategy for the A5 2011-2026	
	Domestic Smoke Control advice and Enforcement			SMDC Smoke Control	-		https://www.staffordbc.gov.uk/environment/smoke-control.cfm	Smoke Control Area in force covering Burton Town http://eaststaffsbc.gov.uk/environmental-health/pollution/smoke-control-areas As part of the revised Air Quality Action Plan a Smoke Control Policy will be developed in 2024-25 to incorporate the new smoke controls laws and charging regime	https://www.lichfielddc.gov.uk/home-garden/bonfires-barbecues-smoke/1	Smoke Control Areas South Staffordshire District Council (sstaffs.gov.uk)	Drafting of fines policy for issue of persistent dark smoke from domestic chimneys.	
	Garden Bonfires - Advice and nuisance enforcement			SMDC Smoke Nuisance and Bonfires & EPUK leaflet used	-		http://www.staffordbc.gov.uk/environmental-health/pollution/bonfires	Information provided via the website http://eaststaffsbc.gov.uk/environmental-health/pollution/bonfires	https://www.lichfielddc.gov.uk/home-garden/bonfires-barbecues-smoke/1	Smells, Dust and Fumes South Staffordshire District Council (sstaffs.gov.uk)	http://www.tamworth.gov.uk/air-quality	
	Commercial burning advice and enforcement			SMDC Commercial smoke & waste management "its a burning issue" EA leaflet	-		http://www.staffordbc.gov.uk/environmental-health/pollution/bonfires	Information provided via http://eaststaffsbc.gov.uk/environmental-health/pollution/smoke-control-areas	https://www.lichfielddc.gov.uk/home-garden/bonfires-barbecues-smoke/1	Smells, Dust and Fumes South Staffordshire District Council (sstaffs.gov.uk)	http://www.tamworth.gov.uk/air-quality	
	Multi agency working with Fire Service and Environment Agency for trade burning			Information shared as appropriate. -	-			Information shared as appropriate	Information shared as appropriate	Information shared as appropriate	Information shared as appropriate	Information shared as appropriate
	Multi agency working with Staffordshire Fire Service & Local Authority Building Control regarding chimney fires and complaints about DIY domestic heating systems			Information shared as appropriate. -	-			Information shared as appropriate	Information shared as appropriate	Information shared as appropriate	Information shared as appropriate	Information shared as appropriate
	Stoke-on-Trent Low Carbon District Heat Network			-	-			Information shared as appropriate.				

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

This section sets out the monitoring undertaken within 2023 by East Staffordshire Borough Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

East Staffordshire Borough Council undertook automatic (continuous) monitoring at one site (i.e. Derby Turn) during 2023. Table A.1 in Appendix A shows the details of the automatic monitoring sites. National monitoring results are available at <https://uk-air.defra.gov.uk/networks/>

National Highways operate an automatic monitoring site adjacent to the A50 carriageway in Uttoxeter (Ref: CM2 in Table A.1) and although this is not a local authority station, the data can be made available to us, should we require it.

Furthermore, Bureau Veritas manage an urban background monitoring station off Masefield Crescent (Horninglow, Burton upon Trent) on behalf of Defra. This station forms part of the automatic, urban, rural network (AURN), which is the UK's largest automatic monitoring network. AURN sites provide high resolution hourly information which is communicated rapidly to the public, using a wide range of electronic, media and web platforms. The Horninglow AURN site has monitored NO₂ since 2018 and PM₁₀ / PM_{2.5} from 1st July 2022, see Table A.1 (Ref: CM3). Although this is not a local authority station, data is available at <https://uk-air.defra.gov.uk/networks/>.

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

East Staffordshire Borough Council undertook non-automatic (i.e. passive) monitoring of NO₂ at 41 sites during 2023. 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: Map(s) of Monitoring Locations and AQMAs. 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 (NO₂)

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

For diffusion tubes, the full 2023 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 NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

Diffusion tubes were bias corrected using the nationally derived correction factor for 2023, due to poor data capture following technical faults with the automatic analyser that led to downtime for over half of the months of June and November 2023. The national correction factor for 2023 was 0.86 compared to 0.85 using the local factor. Furthermore by using the national bias factor to correct 2023 diffusion tube data produced higher results hence a more conservative approach has been followed. The local factor had previously been used

for a number of years up until 2020 as they produced slightly higher NO₂ results over the national factor. The national bias factor was also used to correct diffusion tube data for 2021 and 2022 as this produced noticeably higher NO₂ results, so again a more conservative approach had been followed for those years.

Graphical representations of the monitored NO₂ annual mean concentrations for the past five years are shown in Figures A.1 to A.4 in Appendix A.

AQMA 1 - Burton upon Trent

For the larger AQMA 1, as shown in Figure A.1, located towards the centre of Burton upon Trent, most monitored locations (not corrected for distance) meet the annual NO₂ objective of 40µg/m³. Despite NO₂ concentrations being below 40µg/m³ for the past five years at the Derby Turn automatic monitoring station as shown in Table A.3, a small number of non-automatic monitoring locations (i.e. diffusion tube sites) remain just over this limit concentration, with two exceedances during 2023. This compares to three exceedances during 2022, four exceedances during 2021, three exceedances during 2020, seven during 2019 and eleven during 2018, thus demonstrating a continued long-term air quality improvement. The highest concentration during 2023 was 43.3µg/m³ at monitoring location DT28, albeit this is a kerbside location. The diffusion tube locations within AQMA 1 with the highest NO₂ concentrations are historically centred on Derby Turn and Wellington Street.

When corrected for distance to take account of concentrations at relevant receptors (see Table B.1 in Appendix B), NO₂ concentrations have consistently been below the 40µg/m³ Objective for the past four years with an overall downward trend, but for one or two locations, NO₂ concentrations remained within 10% of the annual NO₂ Objective between 2020 and 2022, with levels hovering around 36µg/m³. However, during 2023 all locations when corrected for relevant receptors dropped below 36µg/m³ for the first time since the AQMA was declared back in 2007. Should this current trajectory continue for another year or two, East Staffordshire Borough Council maybe in a position to revoke AQMA 1. Figure A.5 in Appendix A demonstrates this improvement in air quality within AQMA 1 over the past six years to show the rationale for considering future revocation of AQMA 1. Please note the five monitoring locations presented in Figure A.5 represent relevant façade exposure locations where the highest NO₂ concentrations have occurred historically within each arm of AQMA 1, whereas the data presented in Figure A.1 and Table A.4 is the NO₂

concentration at the monitoring location itself, as required by Defra for the purpose of this ASR.

No relevant exposure location exceeds $60\mu\text{g}/\text{m}^3$ which would be indicative of potential exceedences of the hourly $200\mu\text{g}/\text{m}^3$ objective.

AQMA 2 - Stapenhill

The smaller AQMA 2 shown in [Figure A.2](#), is located at St Peters Bridge Island in Stapenhill where long term reductions in NO_2 have occurred. Concentrations at the monitoring locations fell below the NO_2 annual objective of $40\mu\text{g}/\text{m}^3$ for the first time through 2020 and 2021, with further reductions in 2022 and 2023. When corrected for distance to take account of concentrations at relevant receptors (see Table B.1 in Appendix B), NO_2 concentrations are even lower and have been below the $40\mu\text{g}/\text{m}^3$ Objective since 2011. On this basis, East Staffordshire Borough Council has taken the decision to formally 'revoke' AQMA 2. Defra feedback in October 2023 in relation to East Staffordshire Borough Council's 2023 ASR, supports our intention and the rationale for revoking AQMA 2. East Staffordshire Borough Council are now in the process of formally revoking this AQMA.

[Figure A.6](#) in Appendix A demonstrates this long term improvement in air quality within AQMA 2 dating back to 2007 to show the rationale behind revoking AQMA 2. Please note the data presented in [Figure A.6](#) is distance corrected to show concentrations at the facades of relevant exposure with respect to the annual mean NO_2 objective, whereas [Figure A.2](#) and the data presented in [Table A.4](#) is the NO_2 concentration at the monitoring location itself, as required by Defra for the purpose of this ASR.

Burton upon Trent sites outside of AQMAs

For Burton upon Trent monitoring locations outside of the AQMAs, concentrations have continued to remain well below the NO_2 Objective levels over the past five years as shown in [Figure A.3](#). Monitoring locations DT77 and DT78 around Rosliston Road in Stapenhill are new locations that were added to the network in the summer of 2022, following concerns from local residents of air quality around their property. As the results show NO_2 concentrations were well below the annual mean NO_2 Objective at these new locations both during 2022 and 2023, but monitoring will continue throughout 2024 and beyond to obtain a longer term picture.

Uttoxeter and Tutbury sites

Although the National Highways (formerly Highways England) diffusion tube monitoring along the A50 has now ceased, East Staffordshire Borough Council extended the monitoring network to include A50 receptor façade locations in 2017-18.

As shown in Figure A.4 and Table A.4, three monitoring locations exceeded the annual mean NO₂ objective, with the highest concentrations being 57.6µg/m³ in 2023 at monitoring location DT51. However, when corrected to the nearest façade as shown in Table B.1 in Appendix B, NO₂ concentrations are much lower. Although two of the Uttoxeter diffusion tube sites (DT51 and DT55/DT56/DT57), still show NO₂ concentrations just above 40µg/m³, when corrected to the nearest façade, the receptors in question are not residential and not subject to the relevant exposure criteria in line with this annual objective. No relevant exposure location exceeds 60µg/m³ which would be indicative of potential exceedences of the hourly 200 µg/m³ objective.

All of the Uttoxeter residential façade locations (i.e. tube sites DT60 to DT71) consistently met the annual mean NO₂ objective over a four year period to the end of 2022, therefore these locations were removed from the network early in 2023. East Staffordshire Borough Council will however continue to monitor at sites along the A50 to identify any changes in traffic patterns and hence NO₂ concentrations.

New tube sites were introduced within Tutbury at the beginning of 2022 (i.e. sites DT74, DT75 and DT76). NO₂ concentrations were well within the annual mean NO₂ objective both during 2022 and 2023.

General

No new pollutant sources that could affect air quality objectives have been identified during 2023.

No new receptors have been identified as exceeding any objectives during 2023.

For 2023, NO₂ concentrations have overall declined further across the Borough relative to 2022 and previous years.

The results for 2020 and 2021 should be treated with some caution. Monitoring data from 2020 and to a certain degree 2021 do not represent normal years due to the Covid-19 pandemic. As reported in previous ASRs, there was a significant reduction in vehicle journeys in 2020, hence NO₂ concentrations dropped noticeably more in 2020 at a number

of locations within the District when compared with previous years, with little change in 2021.

Traffic data sourced from the Department for Transport (DfT) from 2013 to 2022 is shown in [Figure A.7](#) and [Figure A.8](#) to show longer term traffic flows and travel behaviours in AQMA 1 and AQMA 2 respectively. For both AQMA 1 and AQMA 2, the total volume of traffic expressed as an estimated annual average daily traffic flow (AADT) has overall declined from a peak in 2016. Rapid declines in 2020 and 2021 can be attributed to travel restrictions associated with the Covid-19 pandemic. In 2022, despite a slight increase in traffic flow in both AQMA 1 and AQMA 2, traffic has still not returned to pre-pandemic levels. This pattern is consistent with the overall picture for Staffordshire as shown in [Figure A.9](#).

Despite results showing a general downward trend in NO₂ concentrations, there were still some marginal exceedances of the annual mean objective at two sites in AQMA 1 during 2023 and three sites during 2022, albeit these monitoring sites are not representative of annual exposure. When corrected for distance at relevant façade locations, NO₂ concentrations were below the annual mean NO₂ Objective at all locations between 2020 to 2023 but for one or two sites remained within 10% of the annual mean NO₂ Objective (i.e. above 36 µg/m³) for years 2020, 2021 and 2022. All locations dropped below 36 µg/m³ for the first time in 2023. Should concentrations continue to be compliant for another year or two, East Staffordshire Borough Council maybe in a position to revoke AQMA 1.

AQMA 1 will therefore remain in force for the foreseeable until a clearer picture is obtained from another year or two's worth of monitoring data and will be subject to the updated AQAP explained earlier in this ASR. In contrast, there is still justification for the revocation of AQMA 2 as explained above.

3.2.2 Particulate Matter (PM₁₀)

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

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

As shown in Table A.6 the annual mean concentration at the Horninglow AURN site for 2023 was 12µg/m³ compared to 11µg/m³ in 2022 both of which are well within the annual

mean Objective. With regards to exceedances of the daily PM₁₀ mean, none occurred at the Horninglow AURN site during 2023 or 2022.

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. However, as PM_{2.5} monitoring at the Horninglow AURN site only commenced in 2022, results can only be reported for the past two years. As shown in Table A.8, PM_{2.5} concentrations were 7 µg/m³ during both 2023 and 2022 which meets both the interim annual mean concentration target of 12 µg/m³ to be achieved by 2028 and the annual mean concentration target of 10 µg/m³ to be met across England by the end of 31st December 2040. The Horninglow AURN site is a Defra station and is independent of East Staffordshire Borough Council.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
CM1	Derby Turn	Urban Centre	424671	324019	NO ₂	YES	Chemiluminescent	8.2	5	1.8
CM2	Uttoxeter (National Highways Monitoring site)	Roadside	408521	334694	NO ₂	No	Chemiluminescent	9.5	3.25	1.8
CM3	Burton on Trent Horninglow (Bureau Veritas Site, UKA00652)	Urban Background	424646	324897	NO ₂ , PM ₁₀ , PM _{2.5}	No	Chemiluminescent (NO ₂) Fine Dust Analysis System (FIDAS) for PM ₁₀ & PM _{2.5}	N/A	N/A	1.9

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)
DT1	Trent Bridge (Rs)	Roadside	425362	323339	NO ₂	AQMA1	0.5	2.1	No	1.5
DT2	St Peters Bridge (Rs)	Roadside	425575	322028	NO ₂	AQMA2	6.5	3.0	No	1.5
DT3	Horninglow Croft (Rs)	Roadside	424367	324781	NO ₂	AQMA1	2.2	1.6	No	1.5
DT4, DT5, DT6	Monitoring Station Derby Turn (Rs)	Urban Centre	424671	324019	NO ₂	AQMA1	8.2	5.0	Yes	1.5
DT7	Wellington St (Ks)	Kerbside	423952	323281	NO ₂	AQMA1	1.7	0.5	No	1.5
DT8	Horninglow St (Rs)	Roadside	424796	323624	NO ₂	AQMA1	2.0	2.7	No	1.5
DT10	Derby Turn (Ks)	Kerbside	424636	324037	NO ₂	AQMA1	3.2	0.5	No	1.5
DT11	Winshill - Brookside (B)	Urban Background	426742	324155	NO ₂	Outside AQMA's	0.0	0.0	No	1.5
DT13	Horninglow Rd - nr Shakespeare Rd junction (Rs)	Roadside	424416	324483	NO ₂	AQMA1	2.8	1.8	No	1.5
DT15	Derby St-Antique shop (Rs)	Roadside	424581	323963	NO ₂	AQMA1	0.5	1.8	No	1.5
DT17	Derby St- Lidl (Rs)	Roadside	424212	323473	NO ₂	AQMA1	3.8	1.7	No	1.5
DT18	A444- Glebe School (Rs)	Roadside	425706	321902	NO ₂	AQMA2	3.2	1.5	No	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)
DT20	Derby Rd – opp. Coytes (Rs)	Roadside	425161	324737	NO ₂	AQMA1	5.7	4.0	No	1.5
DT22	Derby Rd – former Delter Hotel (Rs)	Roadside	424708	324140	NO ₂	AQMA1	6.0	3.2	No	1.5
DT23	Derby St – approaching Building Merchants (Rs)	Roadside	424547	323940	NO ₂	AQMA1	3.4	2.0	No	1.5
DT24	Derby St - Maltings Court (Rs)	Roadside	424351	323660	NO ₂	AQMA1	2.8	2.3	No	1.5
DT25	Derby St – Briggs (Rs)	Roadside	424453	323794	NO ₂	AQMA1	7.0	3.0	No	1.5
DT27	Derby St – former Furniture King (Ks)	Kerbside	424149	323344	NO ₂	AQMA1	2.9	0.5	No	1.5
DT28	Wellington St – crossing (Ks)	Kerbside	423993	323308	NO ₂	AQMA1	2.0	0.5	No	1.5
DT29	Wellington St – Imex Business Park (Rs)	Roadside	423812	323077	NO ₂	AQMA1	12.9	2.5	No	1.5
DT30	Wellington St – opp Protrade (Rs)	Roadside	423807	323115	NO ₂	AQMA1	0.5	1.9	No	1.5
DT31	Wellington St – Carlton Court (Rs)	Roadside	423784	323099	NO ₂	AQMA1	8.7	2.8	No	1.5
DT33	Horninglow St - Charrington House (Rs)	Roadside	424984	323388	NO ₂	AQMA1	1.3	1.5	No	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)
DT34	Horninglow St – former Jee Ja Jees (Rs)	Roadside	425270	323346	NO ₂	AQMA1	0.6	3.5	No	1.5
DT35	Horninglow St – former Spirit Games (Rs)	Roadside	425275	323327	NO ₂	AQMA1	0.5	2.7	No	1.5
DT39	Branston Rd / St Peters Bridge (Rs)	Roadside	424648	322300	NO ₂	Outside AQMAs	9.1	3.2	No	1.5
DT40	Grange St / Shobnall Rd Corner (Rs)	Roadside	423611	323176	NO ₂	Outside AQMAs	7.6	2.9	No	1.5
DT41	Shobnall Rd - Marstons (Rs)	Roadside	423264	323358	NO ₂	Outside AQMAs	3.8	1.5	No	1.5
DT42	Forest Rd - Fred Brewer Way (Rs)	Roadside	422129	323906	NO ₂	Outside AQMAs	2.1	1.0	No	1.5
DT43	Hawkins Lane (Rs)	Roadside	424969	323802	NO ₂	Outside AQMAs	1.7	1.5	No	1.5
DT49	A50 Travelodge – Uttoxeter (Rs)	Roadside	408609	334703	NO ₂	Outside AQMAs	12.5	5.5	No	1.5
DT51	A50 near McDonalds – Uttoxeter (Rs)	Roadside	408875	334742	NO ₂	Outside AQMAs	8.5	3.0	No	1.5
DT52	Badgery Close – Uttoxeter (Rs)	Roadside	408415	334622	NO ₂	Outside AQMAs	12.0	63.0	No	1.5
DT55, DT56, DT57	A50 monitoring station	Roadside	408545	334699	NO ₂	Outside AQMAs	5.0	14.5	Yes	1.5
DT60	Uttoxeter - A50 JCB House East	Other	408624	334698	NO ₂	Outside AQMAs	0.0	11.5	No	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)
DT61	Uttoxeter - A50 JCB House West	Other	408624	334698	NO ₂	Outside AQMAs	0.0	11.5	No	1.5
DT74	Tutbury Richard Wakefield Primary School (Rs)	Roadside	421423	328754	NO ₂	Outside AQMAs	13.0	2.0	No	1.5
DT75	Tutbury High Street (Rs)	Roadside	421233	328895	NO ₂	Outside AQMAs	0.0	2.5	No	1.5
DT76	Tutbury - Duke Street Public Car Park (Rs)	Urban Background	421156	328896	NO ₂	Outside AQMAs	0.0	0.0	No	1.5
DT77	Rosliston Road (RS)	Kerbside	425190	320750	NO ₂	Outside AQMAs	5.0	0.5	No	1.5
DT78	Ivy Lodge Close / Rosliston Road Corner (Rs)	Roadside	425502	321414	NO ₂	Outside AQMAs	2.0	1.5	No	1.5

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 NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
CM1	424671	324019	Urban Centre	85.6	85.6	37	32	25.2	31	32.2
CM3	424646	324897	Urban Background	100	100	18	14	15	16	15

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/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ 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 NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

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 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
DT1	425362	323339	Roadside	100	100.0	32.3	27.1	25.9	27.6	27.1
DT2	425575	322028	Roadside	100	100.0	43.5	38.4	37.8	36.8	37.9
DT3	424367	324781	Roadside	100	100.0	30.1	26.2	24.8	29.1	24.6
DT4, DT5, DT6	424671	324019	Urban Centre	100	100.0	37.0	34.4	33.4	34.3	32.0
DT7	423952	323281	Kerbside	100	100.0	40.3	36.3	36.1	34.2	34.9
DT8	424796	323624	Roadside	100	100.0	37.4	30.9	32.3	32.4	32.7
DT10	424636	324037	Kerbside	100	100.0	44.4	43.4	42.2	45.5	41.1
DT11	426742	324155	Urban Background	100	100.0	12.9	11.8	10.5	10.9	9.9
DT13	424416	324483	Roadside	100	100.0	34.8	30.9	32.4	27.4	29.1
DT15	424581	323963	Roadside	100	100.0	40.0	37.5	37.4	37.0	34.9
DT17	424212	323473	Roadside	100	100.0	45.0	42.1	42.4	41.3	39.2
DT18	425706	321902	Roadside	100	100.0	33.4	30.3	30.6	29.0	28.5
DT20	425161	324737	Roadside	100	100.0	30.3	29.9	28.0	29.2	26.6

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 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
DT22	424708	324140	Roadside	92.3	92.3	36.6	36.0	32.9	32.1	31.8
DT23	424547	323940	Roadside	100	100.0	36.7	36.2	34.0	34.2	32.1
DT24	424351	323660	Roadside	92.3	92.3	35.6	32.0	32.2	34.8	32.1
DT25	424453	323794	Roadside	100	100.0	29.4	27.2	27.3	28.1	26.5
DT27	424149	323344	Kerbside	100	100.0	42.5	38.8	40.3	39.5	39.2
DT28	423993	323308	Kerbside	100	100.0	48.4	42.5	44.1	42.6	43.3
DT29	423812	323077	Roadside	92.3	92.3	36.4	33.1	31.7	32.5	31.4
DT30	423807	323115	Roadside	73.1	73.1	37.0	36.1	35.0	33.4	33.8
DT31	423784	323099	Roadside	100	100.0	40.3	34.4	35.2	33.3	34.9
DT33	424984	323388	Roadside	100	100.0	37.1	34.5	33.4	32.9	33.5
DT34	425270	323346	Roadside	100	100.0	32.5	29.2	30.6	29.1	29.0
DT35	425275	323327	Roadside	100	100.0	32.4	37.0	34.0	33.7	33.6
DT39	424648	322300	Roadside	100	100.0	32.4	29.9	28.0	27.8	27.3
DT40	423611	323176	Roadside	100	100.0	31.2	31.2	27.3	29.8	27.0

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 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
DT41	423264	323358	Roadside	100	100.0	32.0	27.9	29.5	28.5	27.2
DT42	422129	323906	Roadside	90.4	90.4	23.4	23.0	21.7	21.7	20.2
DT43	424969	323802	Roadside	100	100.0	27.2	26.5	25.0	24.6	26.1
DT49	408609	334703	Roadside	100	100.0	53.2	49.1	46.0	46.6	43.4
DT51	408875	334742	Roadside	100	100.0	<u>72.3</u>	<u>64.0</u>	59.8	59.7	57.6
DT52	408415	334622	Roadside	90.4	90.4	19.9	17.0	18.2	16.9	17.0
DT55, DT56, DT57	408545	334699	Roadside	100	100.0	58.9	49.8	48.4	46.8	44.4
DT60	408624	334698	Other	100	100.0	37.5	32.2	28.3	28.7	27.6
DT61	408624	334698	Other	100	100.0	32.0	26.8	27.5	27.2	24.8
DT74	421423	328754	Roadside	92.3	92.3				16.3	14.2
DT75	421233	328895	Roadside	100	100.0				17.2	16.0
DT76	421156	328896	Urban Background	82.7	82.7				13.5	12.1
DT77	425190	320750	Kerbside	100	100.0				20.8	19.3
DT78	425502	321414	Roadside	100	100.0				17.2	16.0

- ☒ **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 $\mu\text{g}/\text{m}^3$.

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

NO_2 annual means exceeding $60\mu\text{g}/\text{m}^3$, 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 NO₂ Concentrations (AQMA 1)

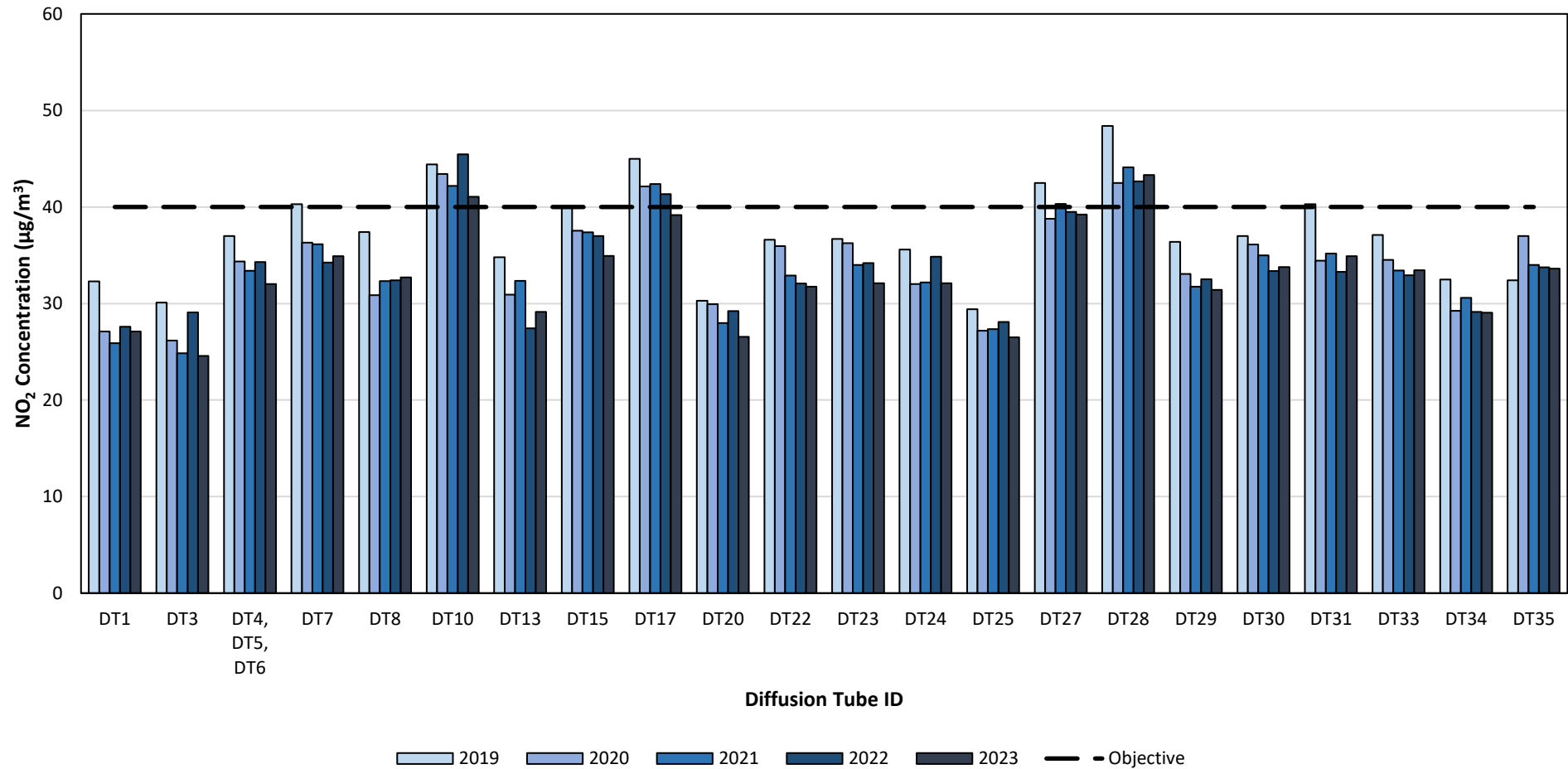


Figure A.2 – Trends in Annual Mean NO₂ Concentrations (AQMA 2)

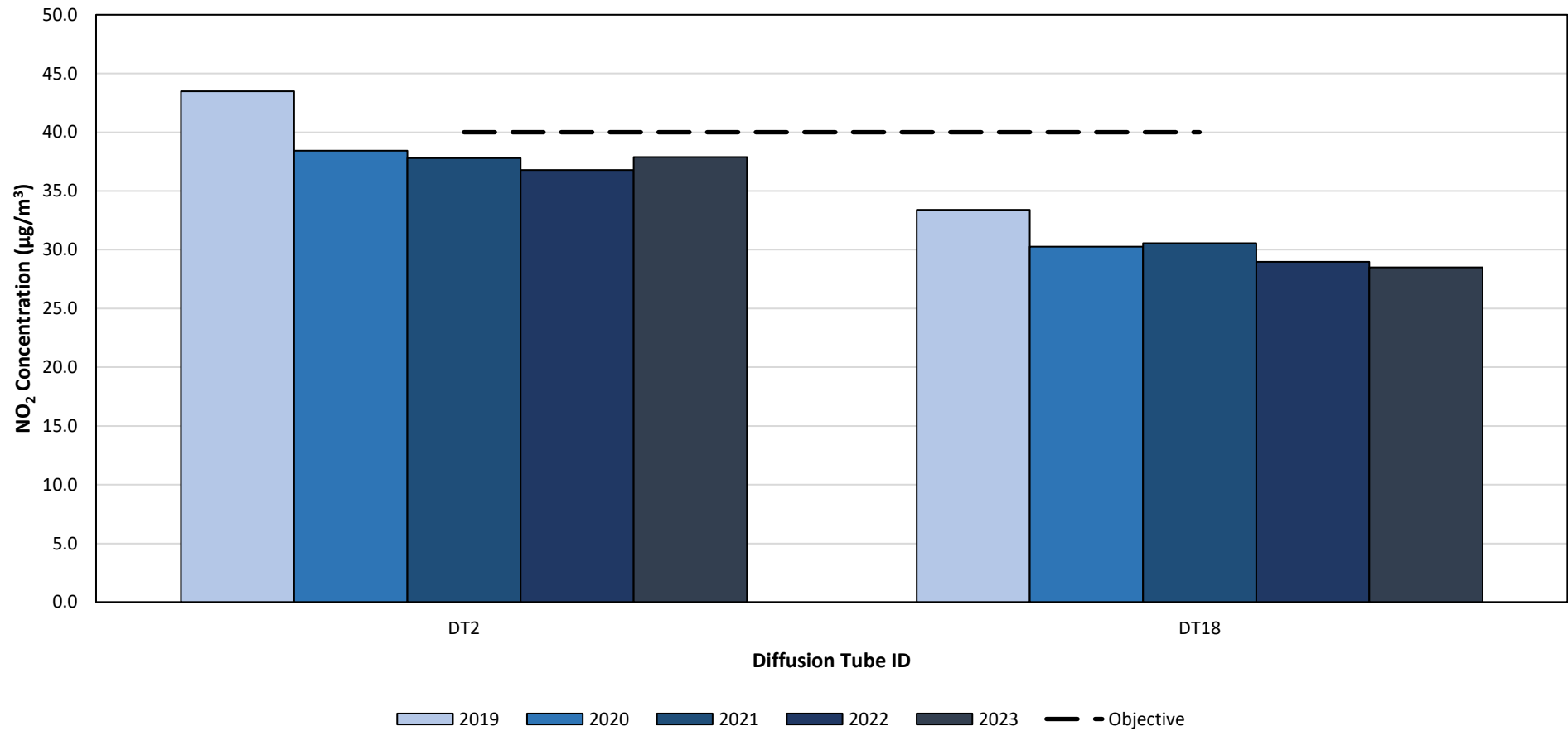


Figure A.3 – Trends in Annual Mean NO₂ Concentrations (Burton sites, outside AQMAs)

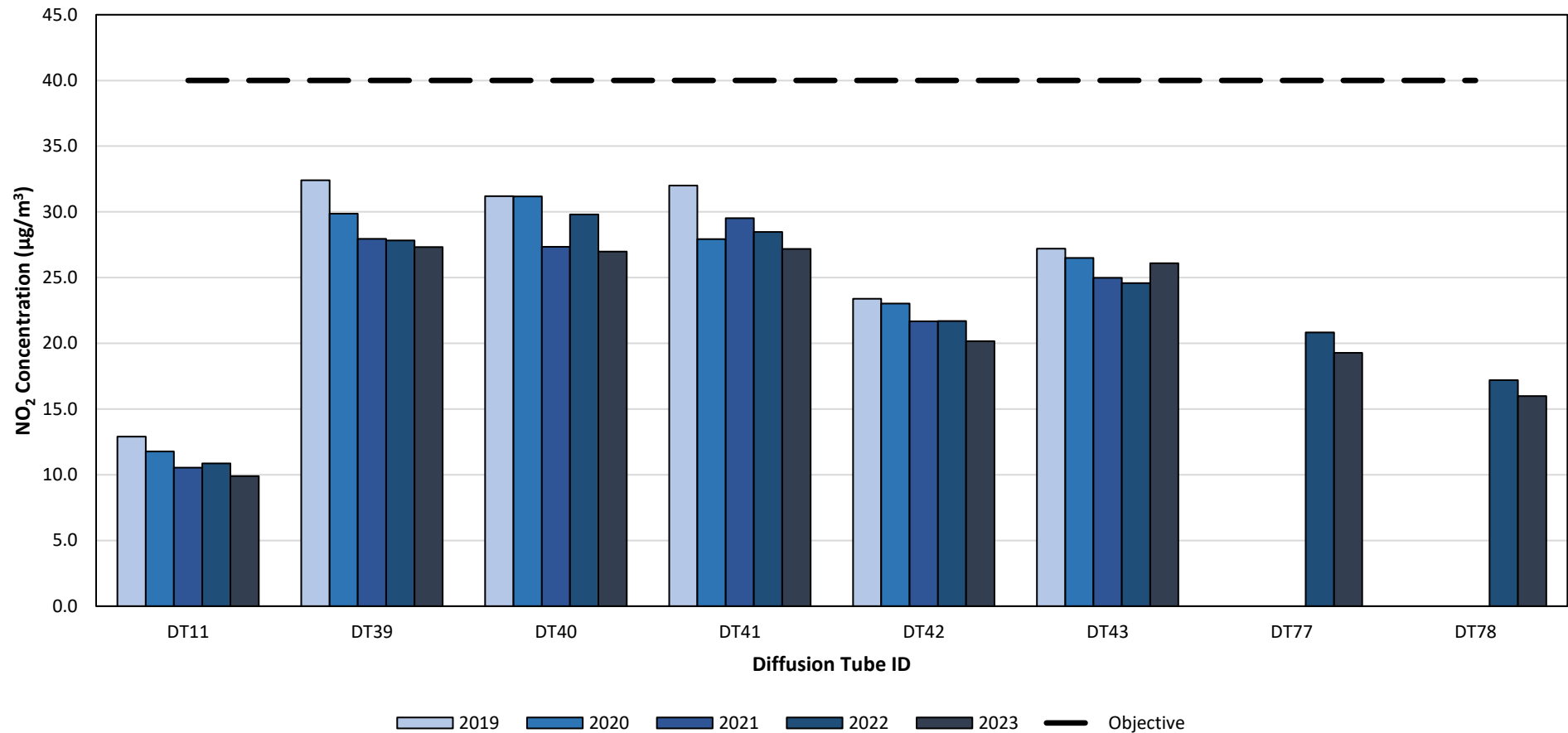


Figure A.4 – Trends in Annual Mean NO₂ Concentrations (Uttoxeter and Tutbury sites)

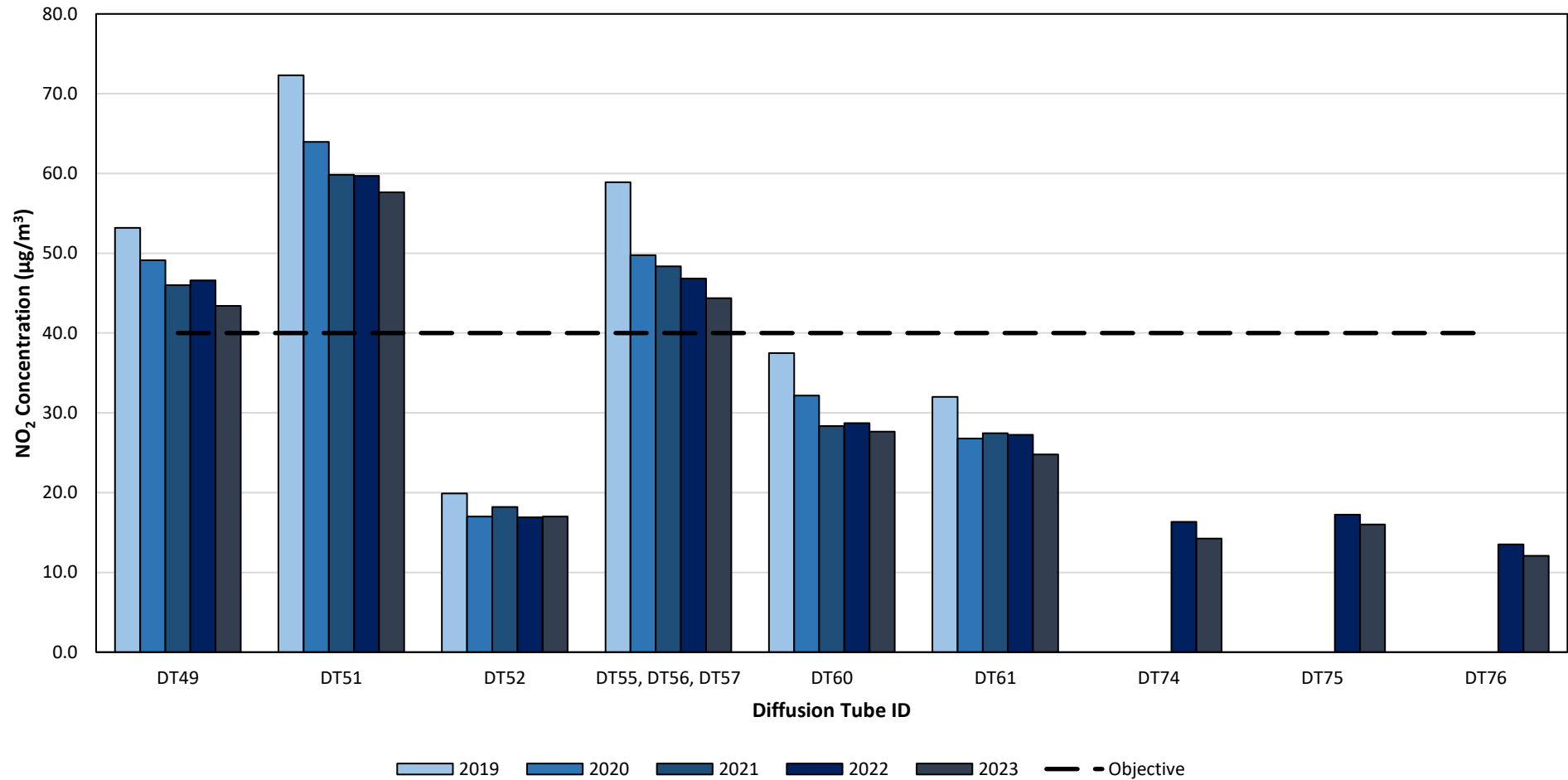


Figure A.5 – Long-term trends in Annual Mean NO₂ Concentrations in AQMA 1 (2018-2023) at relevant exposures (distance corrected)

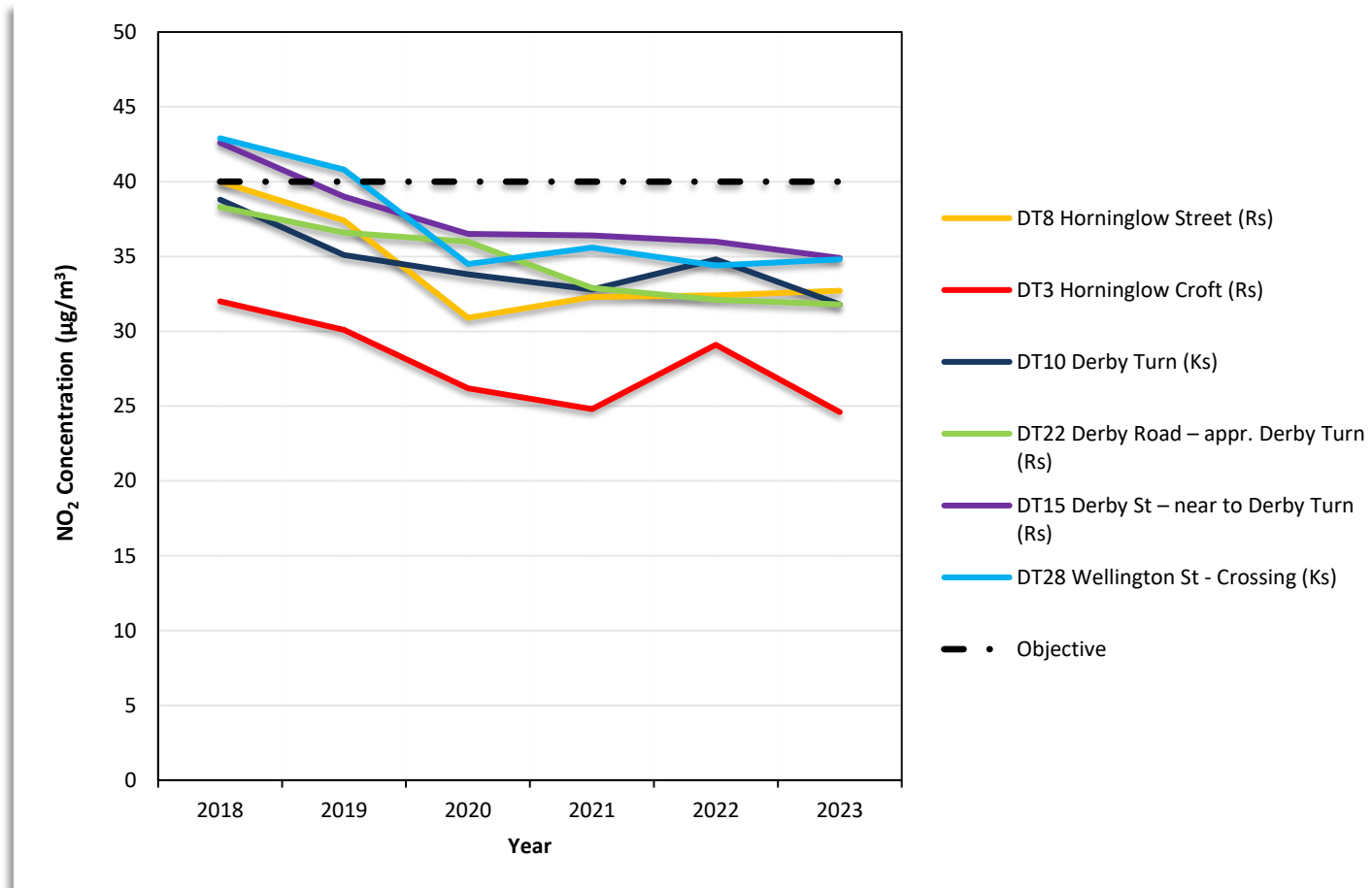


Figure A.6 – Long-term trends in Annual Mean NO₂ Concentrations in AQMA 2 (2007-2023) at relevant exposures (distance corrected)

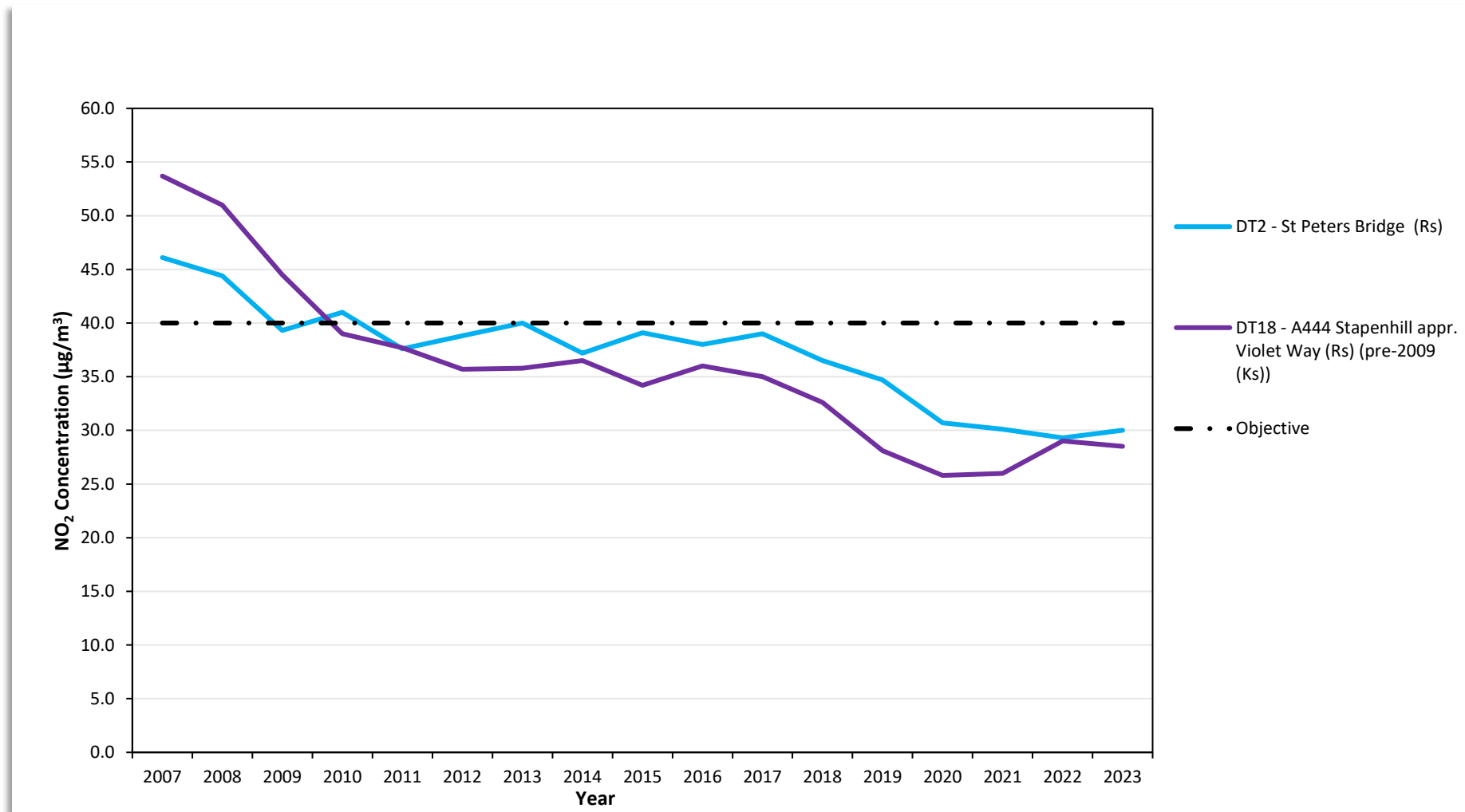
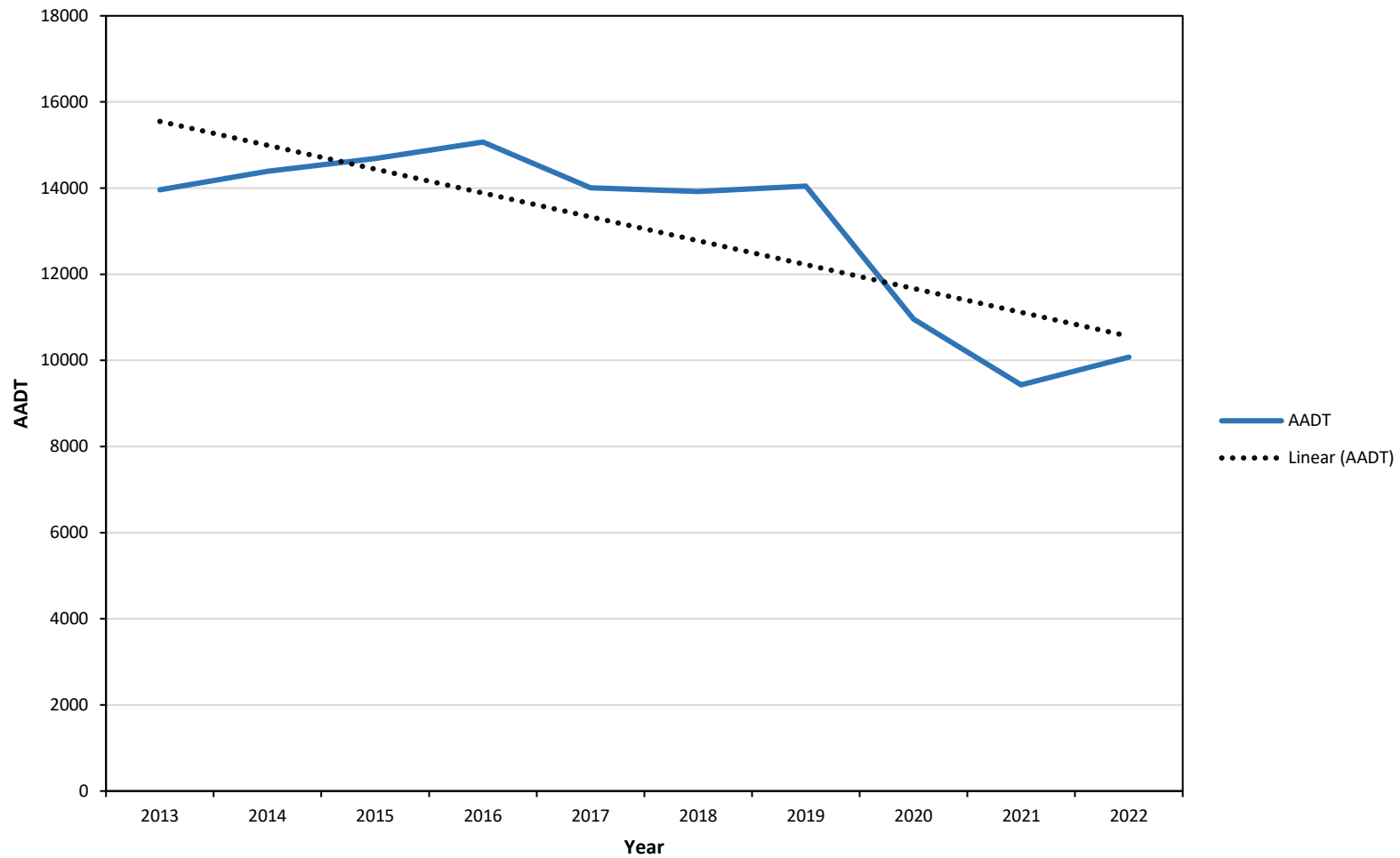
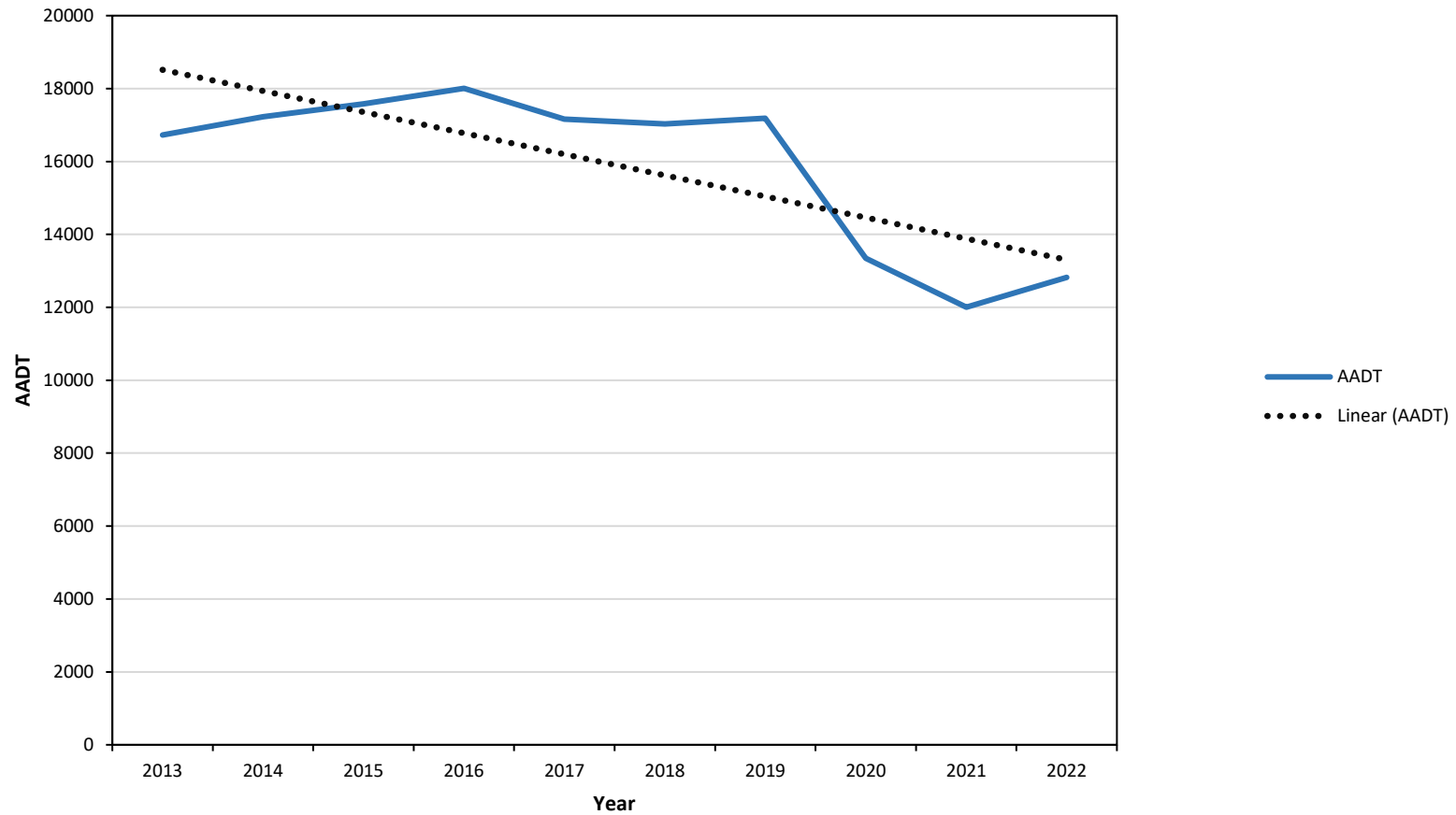


Figure A.7 – Long-term trends in Traffic Volume (AADT) in AQMA 1 (2013-2022)



Note: Sourced from Department for Transport (DFT) at <https://roadtraffic.dft.gov.uk/local-authorities/117>

Figure A.8 – Long-term trends in Traffic Volume (AADT) in AQMA 2 (2013-2022)

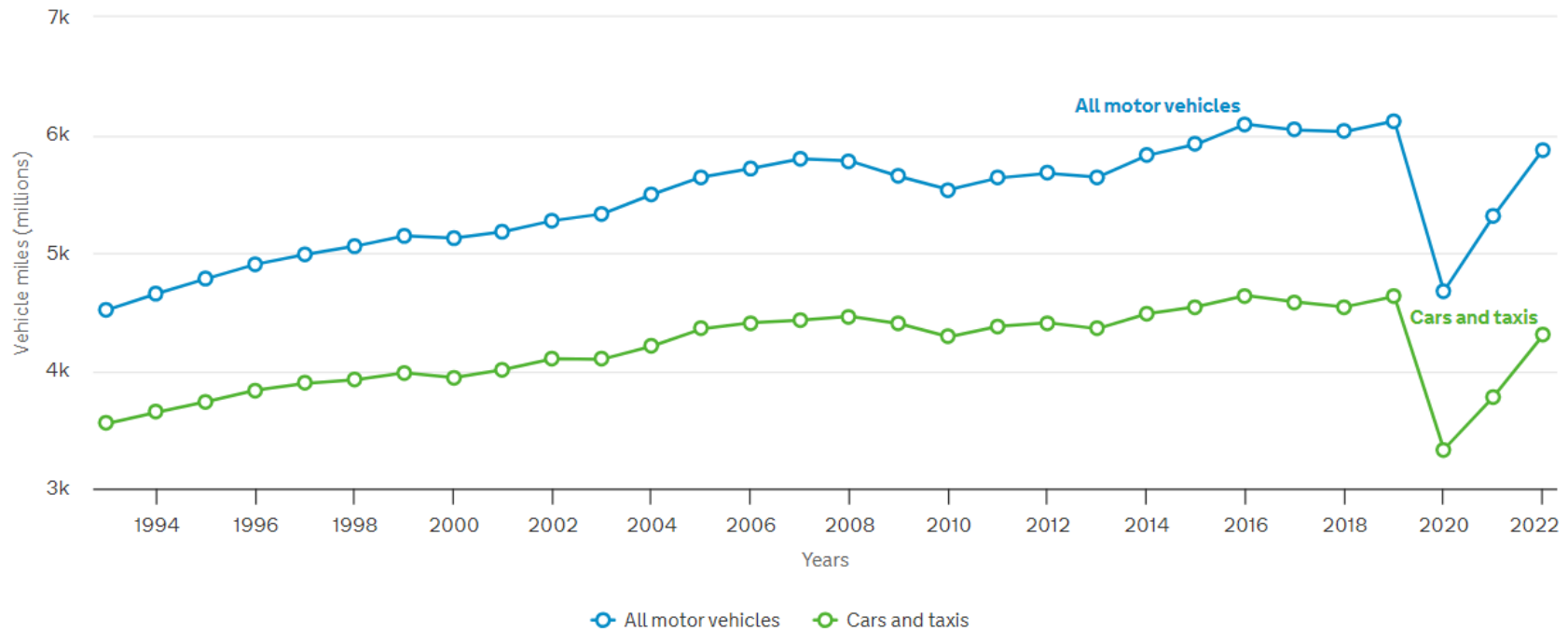


Note: Sourced from Department for Transport (DFT) at <https://roadtraffic.dft.gov.uk/local-authorities/117>

Figure A.9 – Long-term trends in Traffic Volume (AADT) across Staffordshire as a whole

Annual traffic by vehicle type in Staffordshire

Traffic in Great Britain from 1993 to 2022 by vehicle type in vehicle miles (millions)



Highcharts.com

Whilst historically significant, the long term trends can be misleading in most cases due to the extraordinary circumstances observed as a result of the coronavirus pandemic. Vehicle miles travelled in Great Britain have had year-on-year growth in each year between 2011 and 2019. Following a sharp decline in 2020, traffic levels in 2021 and 2022 increased, but 2022 levels still remain lower than the 2016 levels. Therefore, to say traffic has fallen since 2016 would misconstrue as the overall decrease is entirely due to the decline in traffic levels observed during the pandemic.

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
CM1	424671	324019	Urban Centre	85.6	85.6	0	0	0	0	0
CM3	424646	324897	Urban Background	100	100	0	0	0	0	0

Notes:

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

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

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
CM3	424646	324897	Urban Background	100	100				11	12

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

Notes:

The annual mean concentrations are presented as µg/m³.

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

All means have been “annualised” as per LAQM.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%).

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
CM3	424646	324897	Urban Background	100	100				0	0

Notes:

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

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

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

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

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

Table A.8 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
CM3	424646	324897	Urban Background	100	100				7	7

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

Notes:

The annual mean concentrations are presented as µg/m³.

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%).

Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO₂ 2023 Diffusion Tube Results (µg/m³)

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 (0.86)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT1	425362	323339	34.9	36.9	32.3	28.3	29.1	25.2	27.0	31.4	33.8	35.6	34.0	29.6	31.5	27.1	-	
DT2	425575	322028	46.9	48.1	40.0	40.6	44.6	44.2	34.7	46.0	52.3	43.4	47.2	40.9	44.1	37.9	30.0	
DT3	424367	324781	31.8	32.5	30.0	26.1	23.9	22.2	25.4	23.7	32.5	31.7	33.5	29.5	28.6	24.6	-	
DT4	424671	324019	41.3	42.9	41.5	32.9	30.9	26.8	35.5	36.7	42.9	37.5	45.0	35.6	-	-	-	Triplicate Site with DT4, DT5 and DT6 - Annual data provided for DT6 only
DT5	424671	324019	37.6	42.0	37.9	35.4	34.1	26.1	35.1	36.0	42.4	36.3	48.7	36.4	-	-	-	Triplicate Site with DT4, DT5 and DT6 - Annual data provided for DT6 only
DT6	424671	324019	42.0	41.1	39.8	31.6	34.5	27.1	31.8	36.0	40.2	38.1	46.0	34.2	37.2	32.0	-	Triplicate Site with DT4, DT5 and DT6 - Annual data provided for DT6 only
DT7	423952	323281	37.5	60.6	37.4	36.6	40.6	34.4	31.5	37.3	42.0	45.5	48.7	35.0	40.6	34.9	-	
DT8	424796	323624	34.0	40.9	36.5	40.2	38.7	43.6	30.3	36.0	43.5	41.1	42.0	29.7	38.0	32.7	-	
DT10	424636	324037	50.3	54.6	47.3	41.9	43.9	41.6	43.3	48.4	54.3	46.2	57.5	43.5	47.7	41.1	31.8	
DT11	426742	324155	16.9	15.3	10.6	8.6	7.6	7.2	8.7	8.6	11.1	13.2	16.9	13.4	11.5	9.9	-	
DT13	424416	324483	27.9	42.1	38.1	34.5	35.8	30.1	25.3	27.3	40.7	35.7	39.4	29.5	33.9	29.1	-	
DT15	424581	323963	38.3	40.8	41.3	42.3	38.3	40.4	30.8	38.1	52.8	44.7	43.5	36.1	40.6	34.9	-	
DT17	424212	323473	48.7	45.9	46.9	45.9	44.4	45.1	38.7	43.5	53.6	40.1	53.1	40.7	45.6	39.2	33.7	
DT18	425706	321902	35.6	37.0	32.7	31.4	31.6	29.0	27.9	32.7	36.9	35.2	40.5	26.8	33.1	28.5	-	
DT20	425161	324737	38.9	34.6	32.2	28.5	23.9	23.5	23.2	24.8	36.3	36.2	38.9	29.5	30.9	26.6	-	
DT22	424708	324140		44.7	38.0	33.8	31.6	28.0	30.7	34.8	41.8	40.5	46.7	35.6	36.9	31.8	-	
DT23	424547	323940	35.0	43.3	39.4	36.4	36.9	32.0	30.3	34.6	42.5	40.7	43.0	34.0	37.3	32.1	-	
DT24	424351	323660	39.8	42.0	38.3		30.5	31.6	31.8	32.3	45.2	42.2	40.6	36.3	37.3	32.1	-	

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 (0.86)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT25	424453	323794	30.4	39.1	30.8	31.8	26.0	28.7	20.8	26.8	35.4	33.4	38.1	28.4	30.8	26.5	-	
DT27	424149	323344	47.0	48.2	44.9	42.3	46.5	41.5	38.8	44.9	49.4	49.5	53.4	41.0	45.6	39.2	32.2	
DT28	423993	323308	48.1	49.6	52.3	47.8	52.3	50.8	45.5	47.5	59.1	50.9	54.0	46.4	50.4	43.3	34.8	
DT29	423812	323077	44.9	37.9	38.0	30.7	31.2	23.6	34.9	35.2	41.7	37.3	46.4		36.5	31.4	-	
DT30	423807	323115	40.2	40.1	37.7	36.9	36.2				46.2	36.6	44.9	34.8	39.3	33.8	-	
DT31	423784	323099	44.7	41.4	38.4	36.9	35.0	35.6	37.7	36.7	50.3	42.0	48.3	40.1	40.6	34.9	-	
DT33	424984	323388	62.7	41.0	38.3	36.1	29.1	29.0	36.4	29.7	40.7	39.9	47.0	37.0	38.9	33.5	-	
DT34	425270	323346	35.2	39.1	33.1	34.6	36.7	32.9	24.8	32.4	34.8	35.8	39.8	26.1	33.8	29.0	-	
DT35	425275	323327	41.6	44.8	42.0	42.8	34.2	28.0	33.9	37.0	43.4	41.0	45.1	35.2	39.1	33.6	-	
DT39	424648	322300	30.8	35.7	30.9	31.5	33.8	32.9	24.7	31.0	31.8	33.7	36.7	27.7	31.8	27.3	-	
DT40	423611	323176	35.7	31.5	32.1	25.3	25.2	23.7	30.0	28.3	37.6	36.1	39.8	31.1	31.4	27.0	-	
DT41	423264	323358	31.0	30.8	29.9	30.9	30.2	28.1	26.6	28.1	38.3	39.4	36.8	29.3	31.6	27.2	-	
DT42	422129	323906	26.8	23.1	18.9	20.7	20.3		19.9	21.3	28.1	28.0	28.3	22.5	23.4	20.2	-	
DT43	424969	323802	58.0	31.2	29.4	25.6	22.8	24.9	23.3	23.5	28.5	30.4	38.7	27.9	30.4	26.1	-	
DT49	408609	334703	49.0	52.1	50.9	50.4	51.1	50.4	48.2	53.2	55.1	42.9	51.2	51.2	50.5	43.4	31.4	
DT51	408875	334742	64.7	65.1	67.2	63.7	60.0	61.7	67.5	68.4	83.2	76.7	71.9	54.1	67.0	57.6	41.3	
DT52	408415	334622	43.2	23.5	19.4	19.0	18.6	15.1	10.8	17.0	18.5	19.6		12.9	19.8	17.0	-	
DT55	408545	334699	53.6	60.1	52.3	53.3	60.1	54.2	39.0	52.1	52.7	39.2	56.3	50.5	-	-	-	Triplicate Site with DT55, DT56 and DT57 - Annual data provided for DT57 only
DT56	408545	334699	54.8	57.4	54.2	50.8	57.7	54.9	40.2	53.3	51.5	46.9	43.2	49.2	-	-	-	Triplicate Site with DT55, DT56 and DT57 - Annual data provided for DT57 only
DT57	408545	334699	47.9	59.9	55.1	51.2	60.0	54.4	38.7	53.3	52.3	42.1	54.2	50.3	51.6	44.4	40.0	Triplicate Site with DT55, DT56 and DT57 - Annual data provided for DT57 only
DT60	408624	334698	36.0	36.4	31.9	34.0	33.1	32.7	25.2	31.9	33.4	32.5	32.1	26.3	32.1	27.6	-	

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 (0.86)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT61	408624	334698	29.1	33.2	28.1	32.6	32.0	28.8	20.4	30.8	30.7	28.3	30.8	21.2	28.8	24.8	-	
DT74	421423	328754	20.0	22.2	17.1	14.3	14.7	9.9	14.6	15.1	17.5		23.0	13.8	16.6	14.2	-	
DT75	421233	328895	20.1	23.0	19.3	18.2	15.3	14.3	13.7	16.0	18.7	19.7	27.5	17.6	18.6	16.0	-	
DT76	421156	328896	15.4	18.7	14.3	15.6	13.1	12.7	9.2	10.5	I/S	19.0	I/S	11.9	14.0	12.1	-	
DT77	425190	320750	29.0	29.7	19.4	20.3	19.1	19.9	17.9	20.8	16.4	27.0	28.7	20.9	22.4	19.3	-	
DT78	425502	321414	24.8	20.6	19.6	16.8	13.5	14.3	12.3	15.6	22.4	23.9	22.2	17.0	18.6	16.0	-	

All erroneous data has been removed from the NO₂ 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.

East Staffordshire Borough Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within East Staffordshire Borough Council During 2023

As in previous years there have been a handful of large housing and commercial developments that have been subject to air quality assessments through the planning process in 2023.

All planning developments subject to air quality assessments were predicted to have a negligible contribution to NO₂, PM₁₀ and PM_{2.5} both within and outside of the AQMAs.

In the case of residential developments in the AQMAs, particularly the smaller sites or change of use from commercial/office space to residential flats, mitigation has been required to protect future occupants from existing adverse air quality. This mitigation has normally taken the form of mechanical ventilation as an alternative to having open windows with an air inlet drawing cleaner air into the property. Often this has been a control mechanism for noise as well as air quality.

Additional Air Quality Works Undertaken by East Staffordshire Borough Council During 2023

East Staffordshire Borough Council has continued to support the Air Aware Project and Climate Change Action Plan within the reporting year of 2023.

Air Aware Project

The Air Aware Project is a joint project between Staffordshire County Council, East Staffordshire Borough Council and other Staffordshire districts supported by a Defra grant, and council funding. The project has provided school engagement, business engagement, and a communications campaign to raise awareness of air quality issues, across the District. The initial grant ran from 2019 to 2020, and built up significant local momentum, particularly with local schools, although the role programme was affected by the Covid-19 pandemic and associated restrictions. In April 2021, East Staffordshire Borough Council,

in partnership with Staffordshire County Council, Staffordshire Moorlands District Council, and Cannock Chase District Council were successful in obtaining a Defra grant to continue with the funding of the Air Aware. Phase 2 of the Air Aware project was intended to focus further on the schools and community (small businesses) engagement programme but also to increase public awareness. The Air Aware Project has been used as an interactive learning resource, developed specifically for schools within or close to the AQMAs to raise awareness of the causes and harmful effects of air pollution through fun and engaging initiatives such as anti-idling campaigns, competitions, clean air day promotions and information packs etc. The idea behind this project is to empower children to act as advocates to their siblings, parents and wider community for reducing air pollution. The Air Aware project will continue with match funding from Staffordshire County Council's Public Health and Connectivity Teams to at least March 2025. Engagement includes

- Providing School assemblies on air quality,
- Active travel campaigns through an academic annual calendar,
- Accreditation of schools through STARS travel planning,
- Anti-idling campaigns to get parents to "switch off when they drop off"
- Provision of walking bus co-ordinators

As part of the Air Aware Project, East Staffordshire Borough Council received funding in 2022 to enable the purchase of two low-cost air quality monitoring (Zephyr) sensors together with an air quality monitoring public portal that will help support further school (and business) engagement projects, particularly in and around the District's AQMAs as well as monitor temporal/spatial trends in air quality and any emerging hotspots of air pollution. Both Zephyrs were installed at two school locations late in 2023 and an external consultant Earthsense have since set up a MyAir® web app to provide a public online portal to enable district residents to understand air quality at a localised level which will run for at least two years. The Earthsense Zephyr is an iMCERTS certified real time air quality monitor that takes live measurements of ambient air pollutants, including nitrogen dioxide (NO₂), nitric oxide (NO), ozone (O₃), and particulate matter (PM₁, PM_{2.5}, PM₁₀).

Measurements are sent back to the MyAir® web application, where air quality data can be viewed, analysed, and downloaded. Used in combination with the MappAir® air quality model, users can pull various insights about areas of interest, such as pollution hotspots, peak times, and identify nearby sources contributing to elevated levels. MyAir® web app is currently available from <https://portal.earthsense.co.uk/EastStaffordshirePublic/>

Climate Change Action Plan

East Staffordshire Borough Council declared a 'Climate Emergency' in August 2020 and now has a target:

“to make the Council’s activities carbon neutral by 2040 and aspires to make the Borough carbon neutral by 2050”

In March 2022, the Council carried a motion to support nature’s recovery across the Borough and committed to several additional actions to protect and enhance nature. Following the declaration of the Climate Emergency, the Council published an interim Climate Change Action Plan containing 57 actions.

A Climate Change and Nature Strategy 2022 has also been published to accompany the Action Plan and both documents will be reviewed on an ongoing basis. Both documents can be viewed on the Council’s Climate Change pages of its website at [Climate change | ESBC \(eaststaffsbc.gov.uk\)](https://www.eaststaffsbc.gov.uk/Climate-change/)

Climate change and nature recovery are now considered in all East Staffordshire Borough Council decisions, strategies, policies and plans.

The Council is in a key position to take action on climate change, in the way it manages its own estate and assets, and in leading the community through its roles as a regulator and as a service provider

Over the next few years East Staffordshire Borough Council’s delivery will be focused upon the following objectives:

- Reduce energy consumption and emissions from our own activities
- Promote green travel and transport
- Protect and enhance our environment
- Improve air quality
- Reduce fuel poverty
- Reduce waste
- Sustainable development

Section 7 of the Climate Change Action Plan contains measures for the provision of Electric Vehicle (EV) charging infrastructure and improving public transport, while Section 8 of the Plan includes measures to improve air quality.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied and analysed by Staffordshire Highways Laboratory utilising the 20% triethanolamine (TEA) in water preparation method. Staffordshire Highways Laboratory is a UKAS accredited laboratory and participates in the AIR-PT Scheme (a continuation of the Workplace Analysis Scheme for Proficiency (WASP)) for NO₂ tube analysis and the Annual Field Inter-Comparison Exercise <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/qa-qc-framework/>. Their lab code is 1017. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO₂ concentrations reported are of a high calibre. The laboratory follows the procedures set out in the Harmonisation Practical Guidance. Results for each round are classified on z-scores for each tube as satisfactory (≤ 2), questionable (between 2 and < 3) and unsatisfactory (> 3). In 2023, the laboratory scored 100% (satisfactory) in AIR-PT rounds AR055 (January-February), AR056 (May-June), AR058 (July-August) and AR059 (September-October).

The laboratory also takes part in the field inter-comparison scheme. Based on 11 diffusion tube studies, all local authority co-location studies in 2023 were rated as 'Good' (tubes are considered to have "satisfactory" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%). A summary of precision results for Staffordshire Scientific Services against some other laboratories is available from <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/precision-and-accuracy/>

Monitoring was completed in adherence with the 2023 Diffusion Tube Monitoring Calendar, throughout the year.

Diffusion Tube Annualisation

Annualisation was required for just one non-automatic monitoring site in the East Staffordshire Borough during 2023 as data capture for this site dropped below 75%. Data from three AURN monitoring sites; Burton upon Trent (Horninglow), Cannock (A5190 Roadside) and Birmingham (A4540 Roadside) were selected from the [DEFRA UK Air data selector](#) resource to provide location specific diffusion tube average annualisation factors to apply to the raw data annual mean for each of the four locations in accordance with LAQM.TG22 Box 7.10. More details are provided in [Table C.1](#).

Table C.1 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor AURN Burton on Trent (Horninglow)	Annualisation Factor AURN Cannock (A5190 Roadside)	Annualisation Factor AURN Birmingham (A4540 Roadside)	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
DT30	0.8849	0.8982	0.9255	0.9029	39.3	33.8

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 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.

East Staffordshire Borough Council have applied a national bias adjustment factor of 0.86 to the 2023 monitoring data. The national bias factor was used to correct diffusion tube data for all sites during 2023 as this produced noticeably higher NO_2 results, hence a more conservative approach has been followed. Furthermore, a technical fault with the NO_x analyser at the Derby Turn automatic monitoring station led to a loss of data for much of both June and November 2023 that affected data capture and the reliability of using a local bias correction factor.

A summary of bias adjustment factors used by East Staffordshire Borough Council over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.86 (based on 11 studies, applied to all sites)
2022	National	03/23	0.87 (based on 12 studies, applied to all sites)
2021	National	03/22	0.86 (based on 14 studies, applied to all sites)
2020	Local	-	0.90 (applied to all sites)
2019	Local	-	0.88 (applied to all sites)

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36µg/m³ and the monitoring site is not located at a point of relevant exposure, which for the most recent reporting year of 2023 was applied to eight diffusion tube sites as shown in Table C.3. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

Table C.3 – Non-Automatic NO₂ Fall off With Distance Calculations (concentrations presented in µg/m³)

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
DT2	3.0	9.5	37.9	11.4	30.0	
DT10	0.5	3.7	41.1	14.9	31.8	
DT17	1.7	5.5	39.2	18.5	33.7	
DT27	0.5	3.4	39.2	18.5	32.2	
DT28	0.5	2.5	43.3	13.4	34.8	
DT49	5.5	18.0	43.4	10.5	31.4	
DT51	3.0	11.5	57.6	10.5	41.3	<i>Predicted concentration at Receptor above AQS objective.</i>
DT55, DT56, DT57	14.5	19.5	44.4	10.5	40.0	<i>Predicted concentration at Receptor above AQS objective. Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.</i>

QA/QC of Automatic Monitoring

East Staffordshire Borough Council has a contract with a company called Air Quality Data Management (AQDM) for data collection in relation to our automatic monitoring station at Derby Turn. AQDM ensures that our data is fully ratified to the standards highlighted in the LAQM Technical Guidance standards. Performance of the monitoring station is

checked daily, seven days a week. Alerts are issued if there are problems and the engineers fully briefed about the symptoms and likely actions. This helps maximise the data capture and data quality. Live data is also disseminated on AQDMs UK website for public viewing at <http://www.UKAirQuality.net> and enables comparison with other monitoring sites and identification of pollution episodes.

East Staffordshire Borough Council also has a service contract with a company called ESU1 Ltd for the maintenance of the monitoring station. We also undertake our own routine calibrations at least monthly.

The A50 Uttoxeter automatic monitoring site and the AURN site at Horninglow are subject to full QA/QC procedures although these are independent of East Staffordshire Borough Council. National Highways contract out the QA/QC of their monitoring stations, while Bureau Veritas manage the QA/QC of the AURN Horninglow site.

Automatic Monitoring Annualisation

All automatic monitoring locations within the jurisdiction of East Staffordshire Borough Council recorded data capture of greater than 75% during 2023 despite some data loss in June and November 2023. Annualisation of automatic monitoring data was therefore not required. In addition, any sites with a data capture below 25% do not require annualisation.

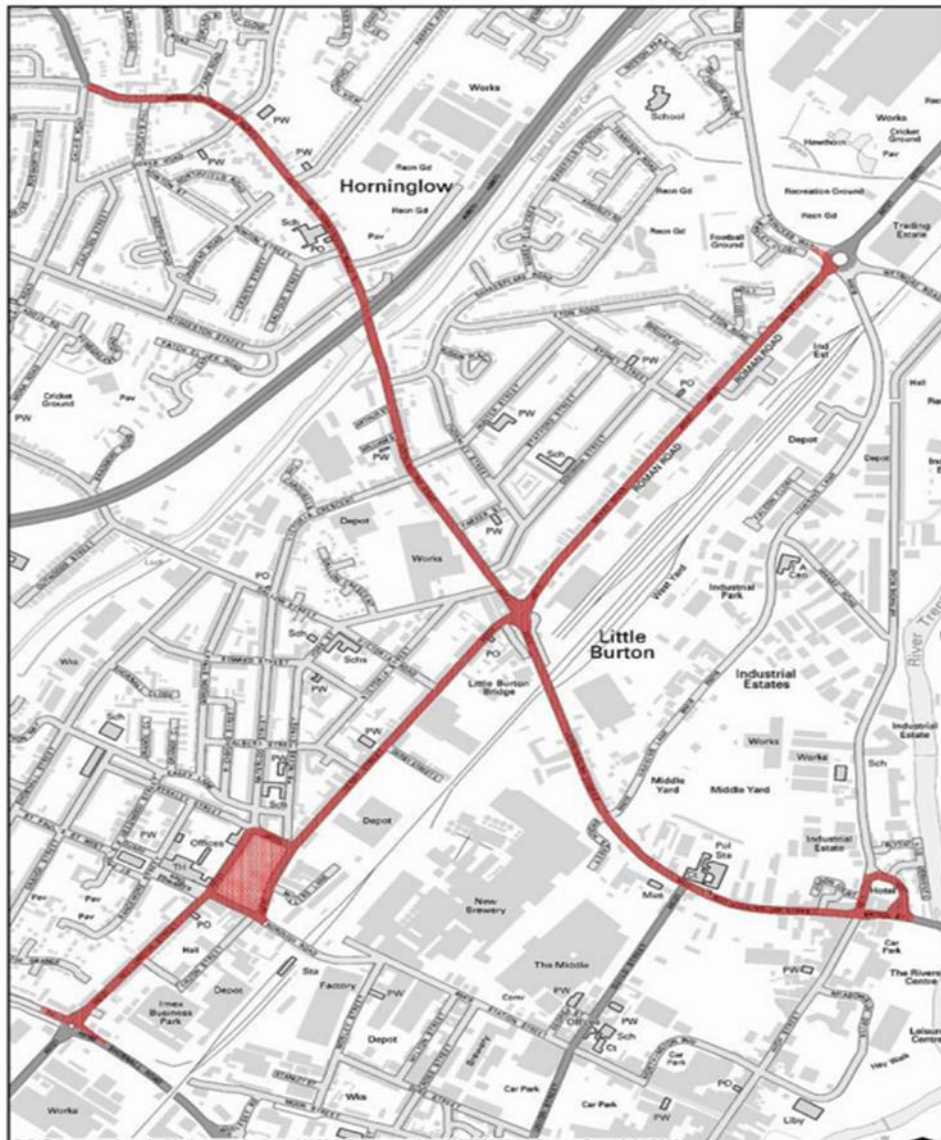
NO₂ Fall-off with Distance from the Road

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

No automatic NO₂ monitoring locations within the East Staffordshire Borough required distance corrections during 2023.

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

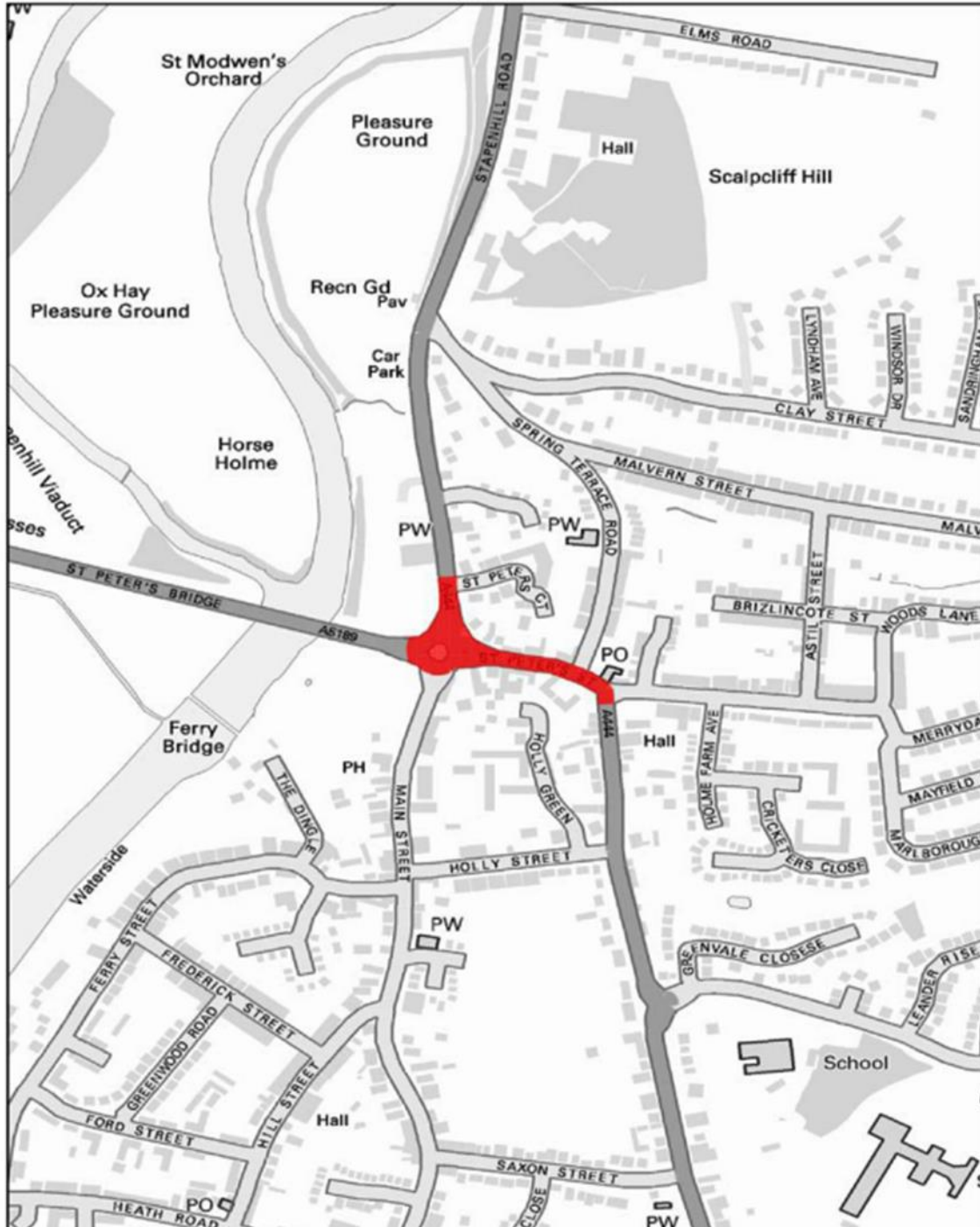
Figure D.1 – AQMA 1 Burton upon Trent



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* Derby Rd, Derby St, part of Princess Way roundabout, Horninglow St, Horninglow Rd, Bridge St, Wellington St, part of Borough Road, part of Wellington St roundabout, part of Waterloo St and part of Byrkeley St.

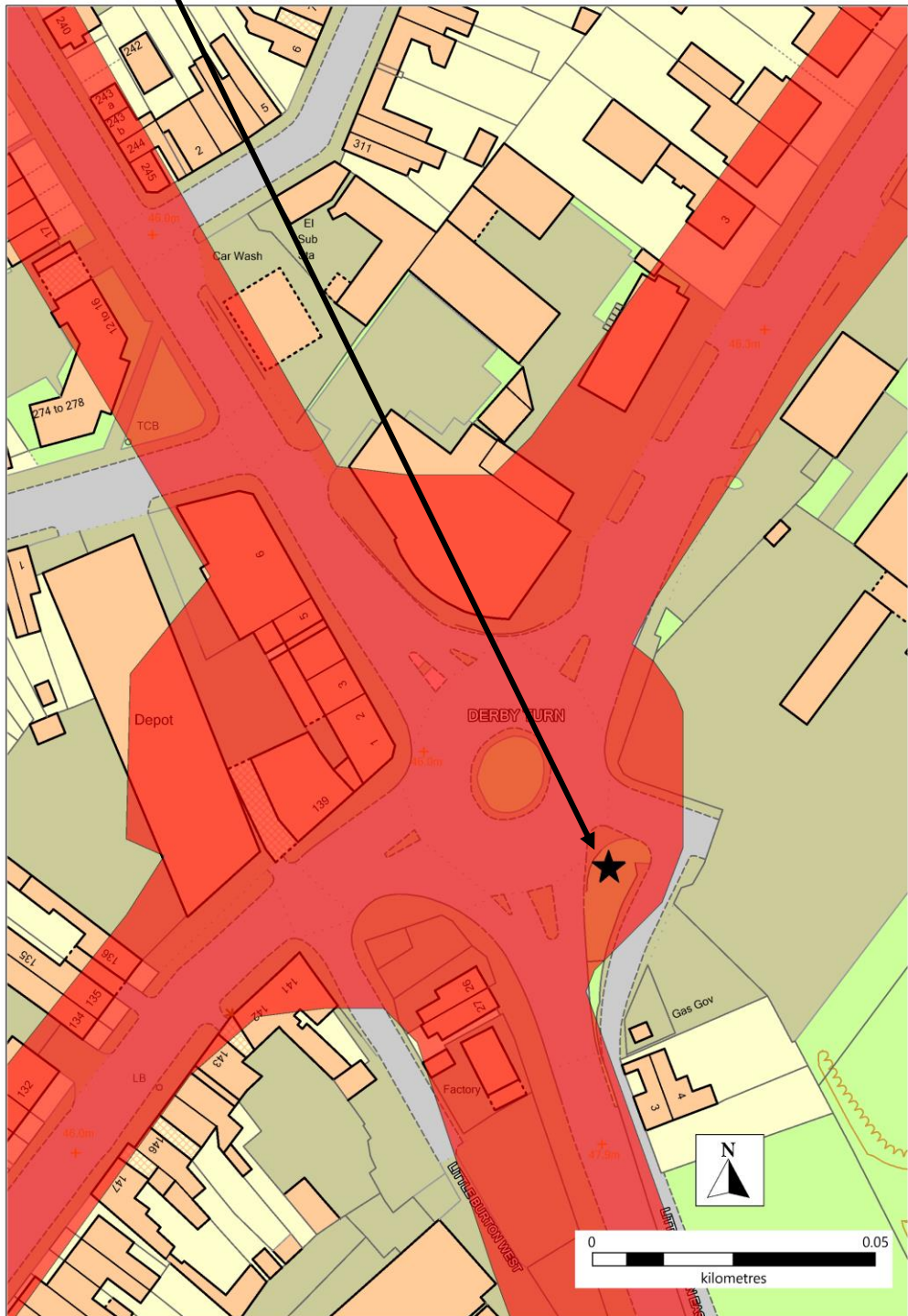
Figure D.2 – AQMA 2 Stapenhill



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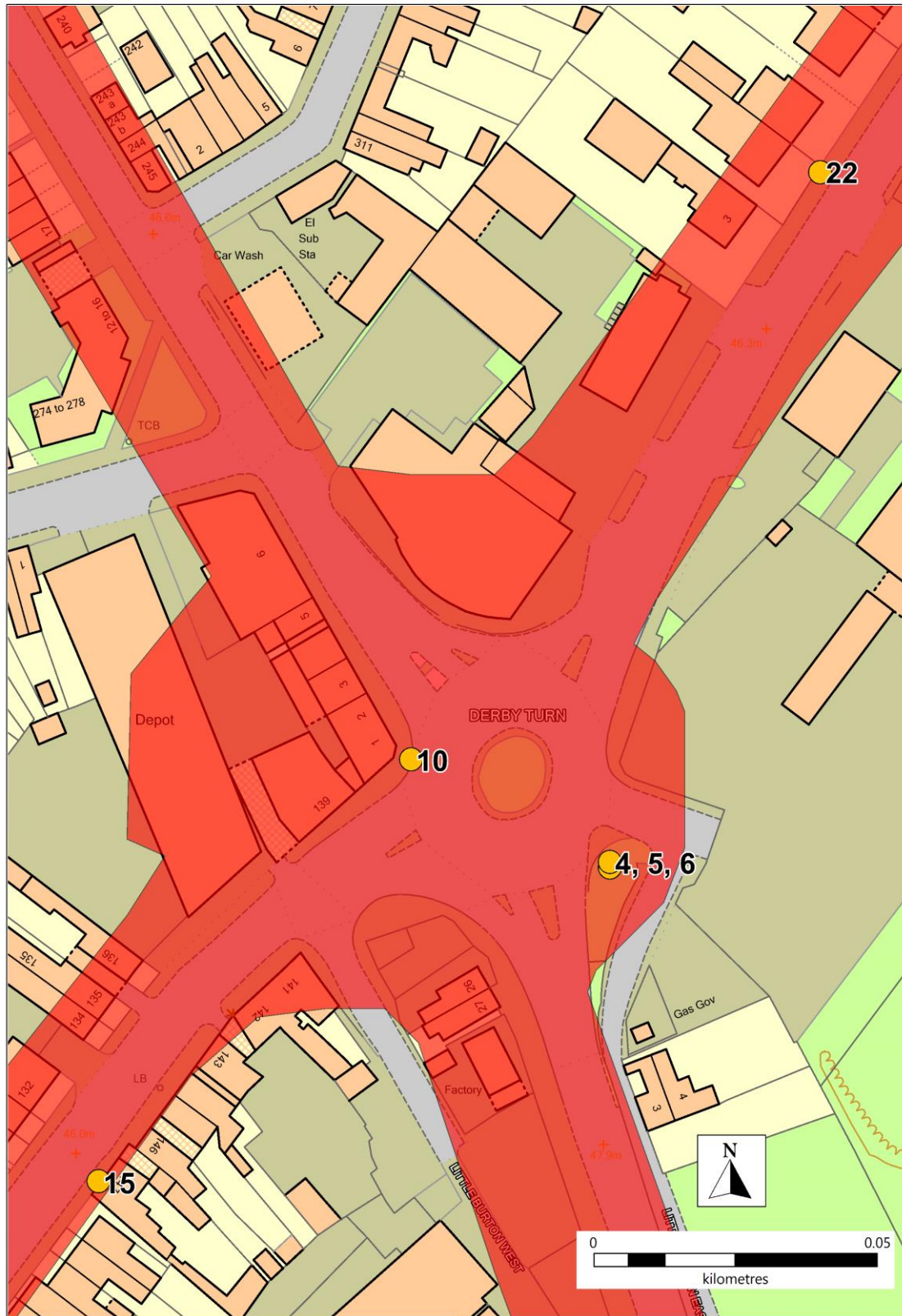
*St Peters Bridge roundabout and part of St Peters St, Stapenhill, Burton upon Trent

Figure D.3 – Location of the automatic monitoring station at Derby Turn, Burton upon Trent



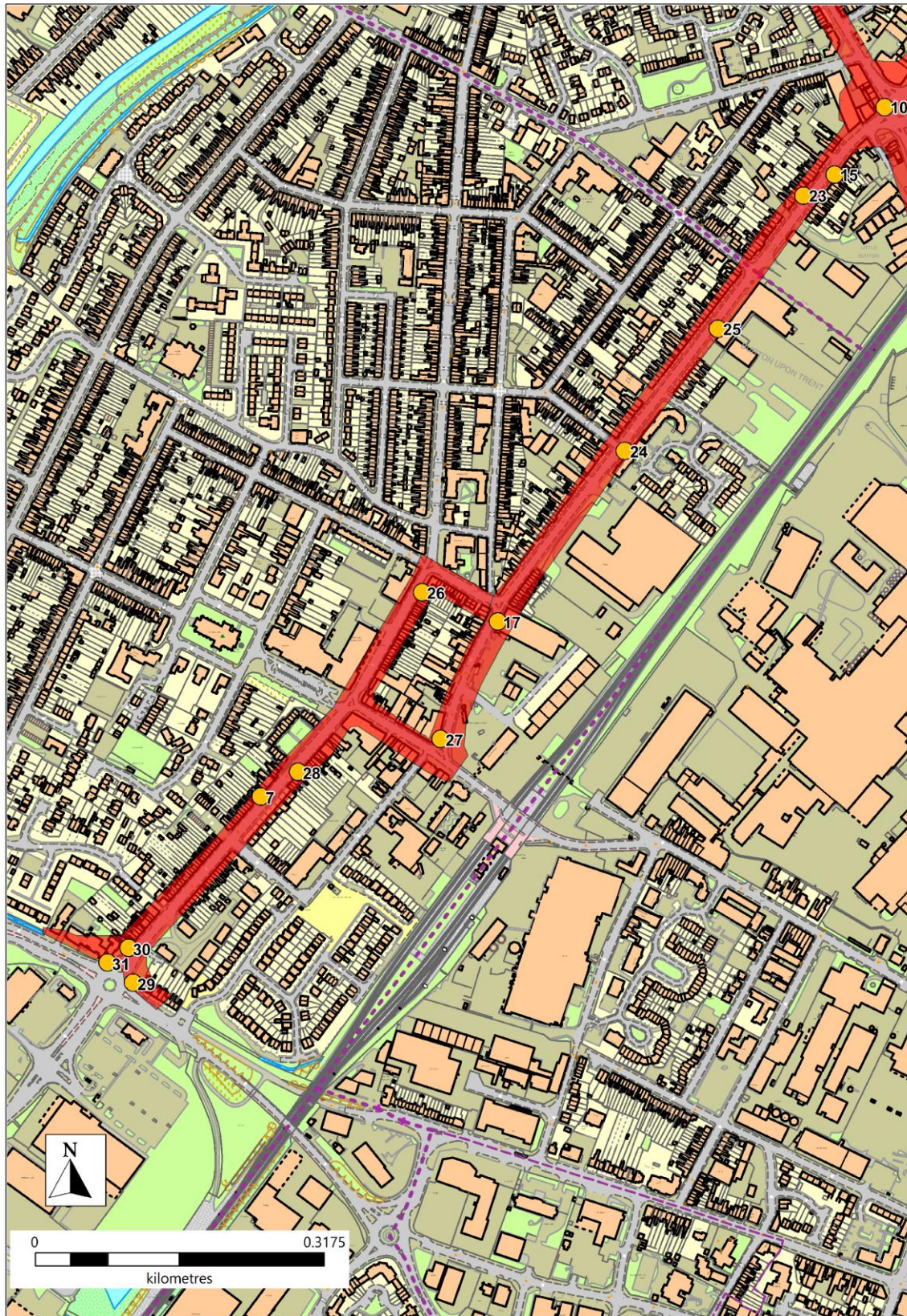
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Figure D.4 – Diffusion tubes - Burton upon Trent, AQMA 1 – Around Derby Turn



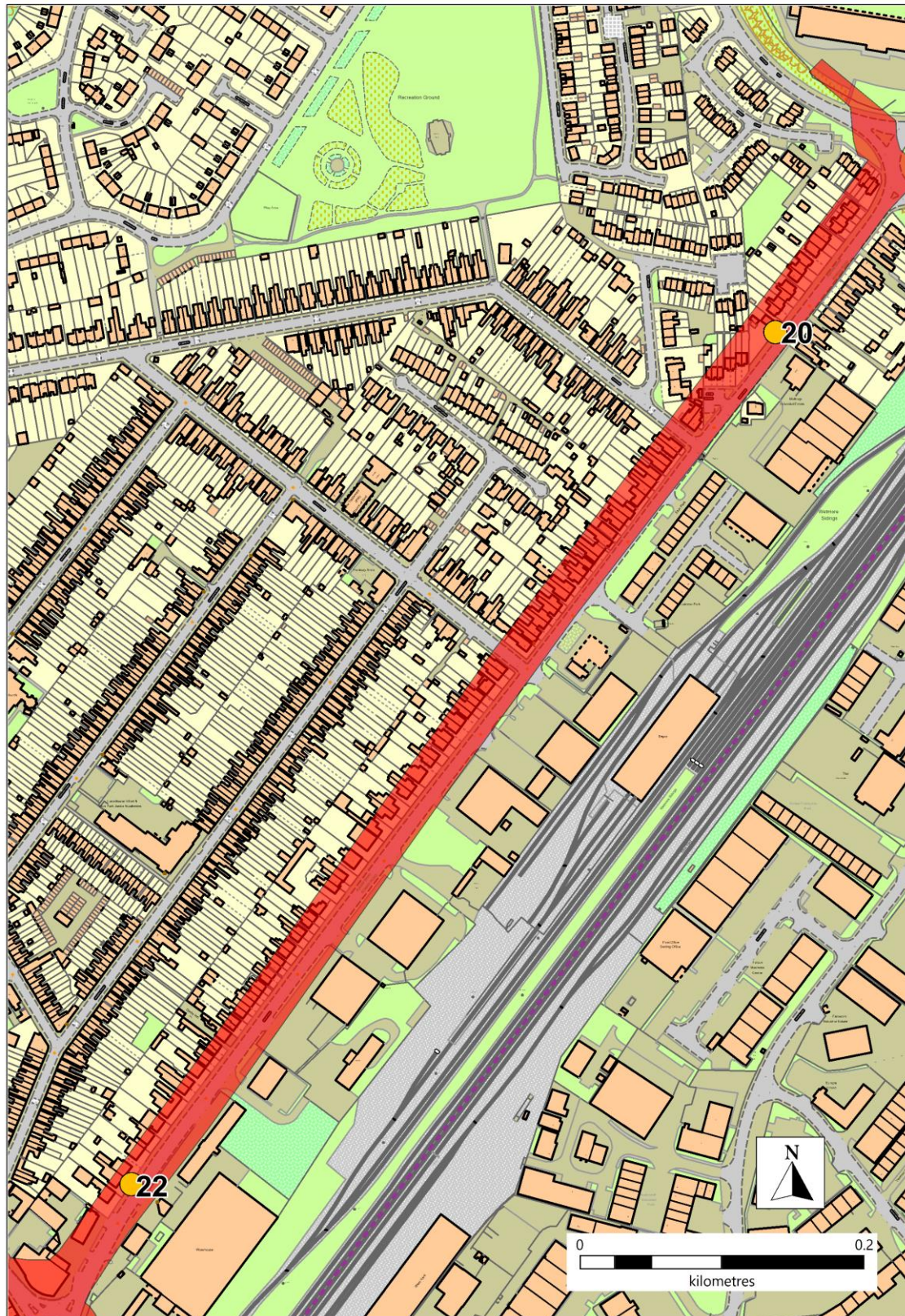
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Figure D.5 – Diffusion tubes - Burton upon Trent, AQMA 1 – A5121: Wellington Street, Wellington Street/Borough Road/Waterloo Street Gyratory to Derby Street



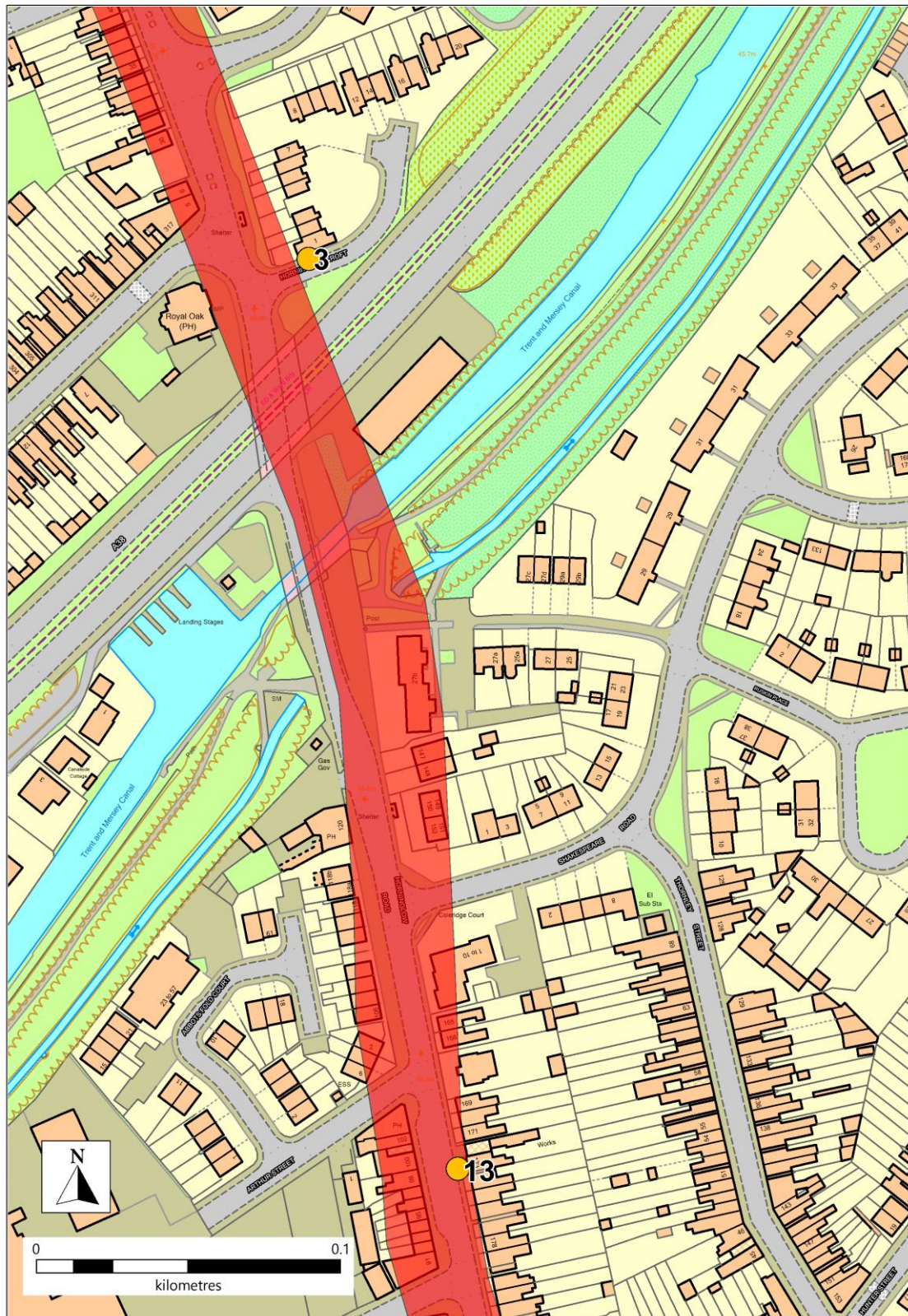
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Figure D.6 - Diffusion tubes - Burton upon Trent, AQMA 1 – A5121: Derby Road



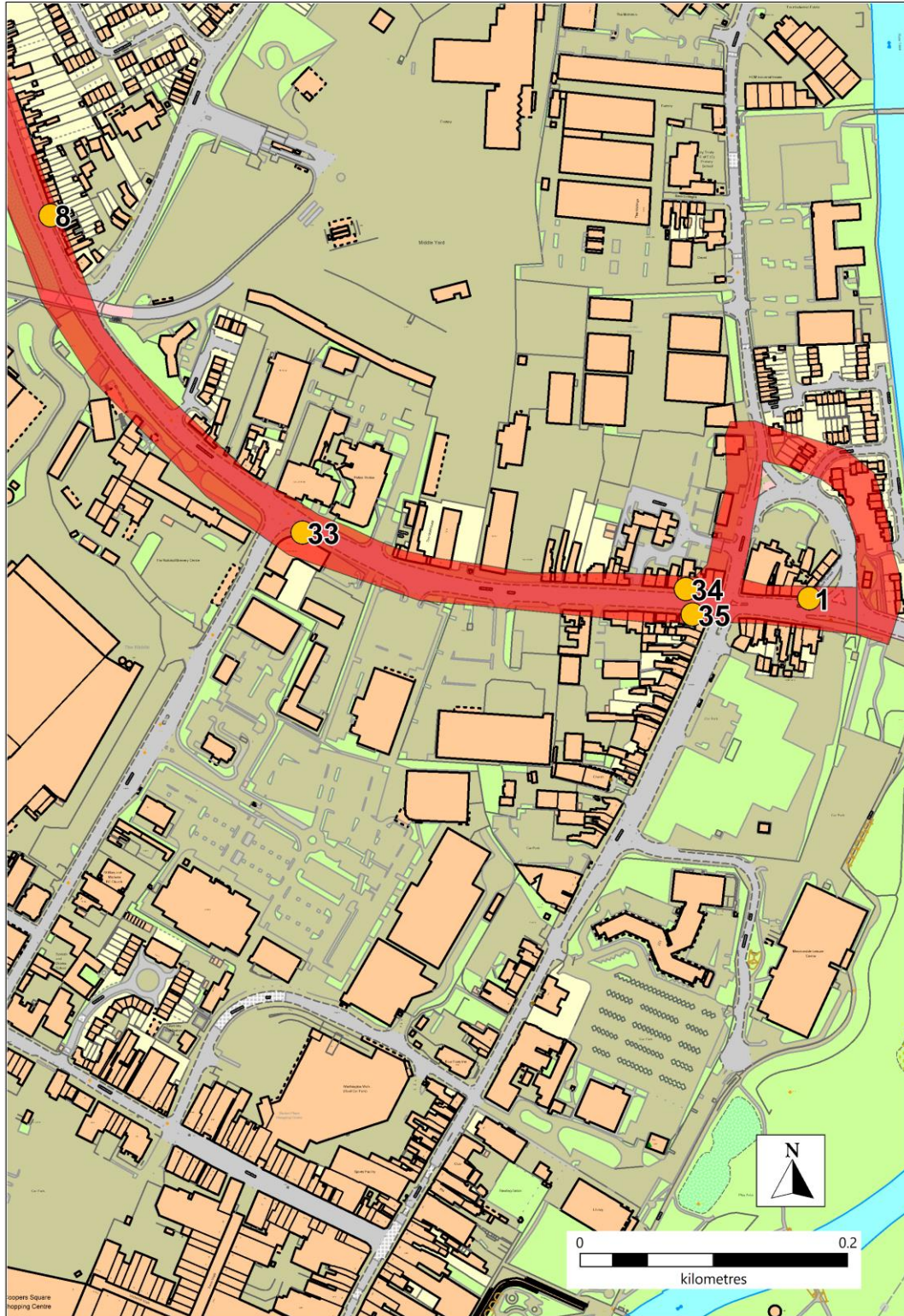
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Figure D.7 - Diffusion tubes - Burton upon Trent, AQMA 1 – A511: Horninglow Road



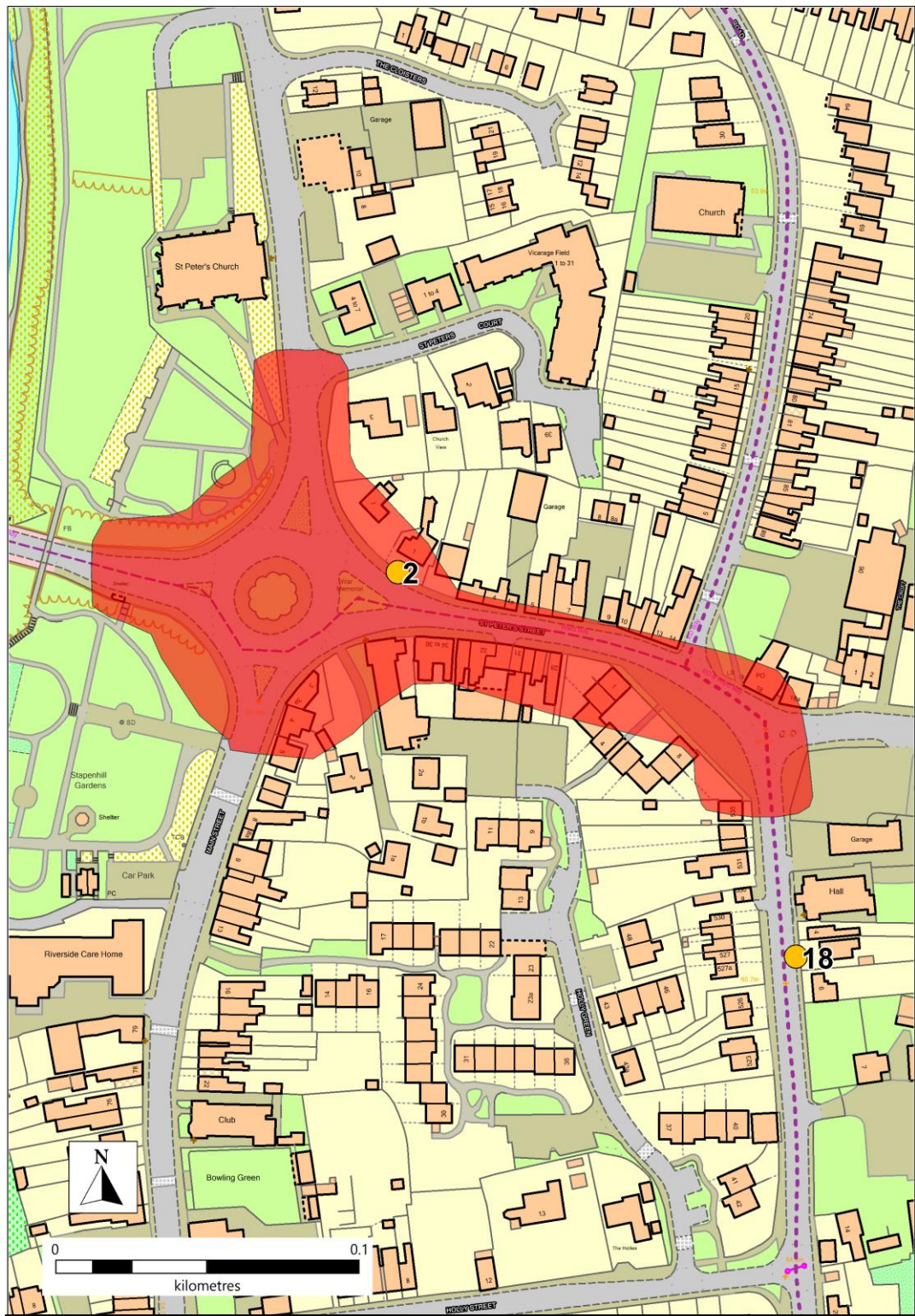
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Figure D.8 - Diffusion tubes - Burton upon Trent, AQMA 1 – A511: Horninglow Street



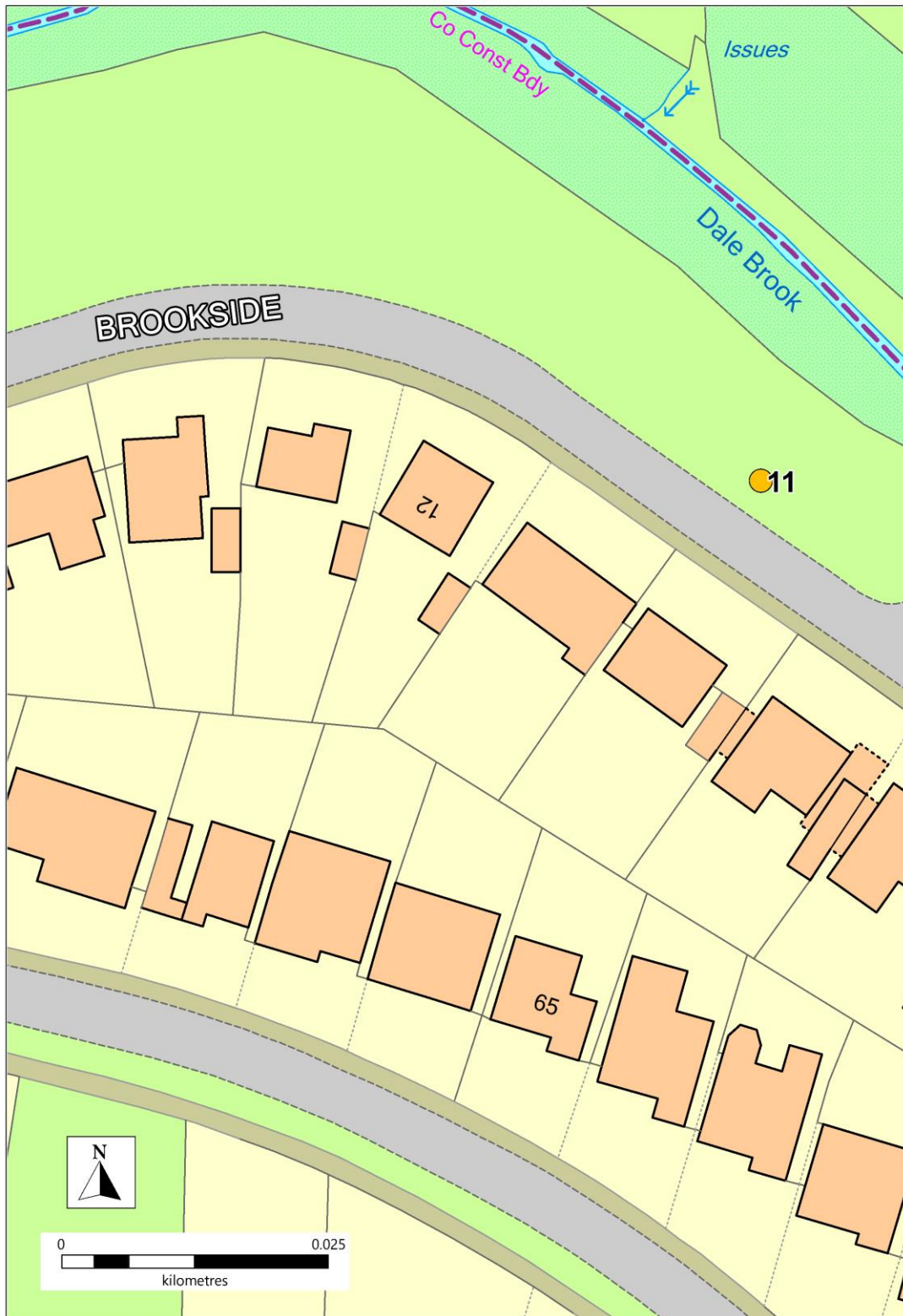
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Figure D.9 - Diffusion tubes - Stapenhill, AQMA 2 – St Peters Bridge Roundabout/A444 St Peters Street



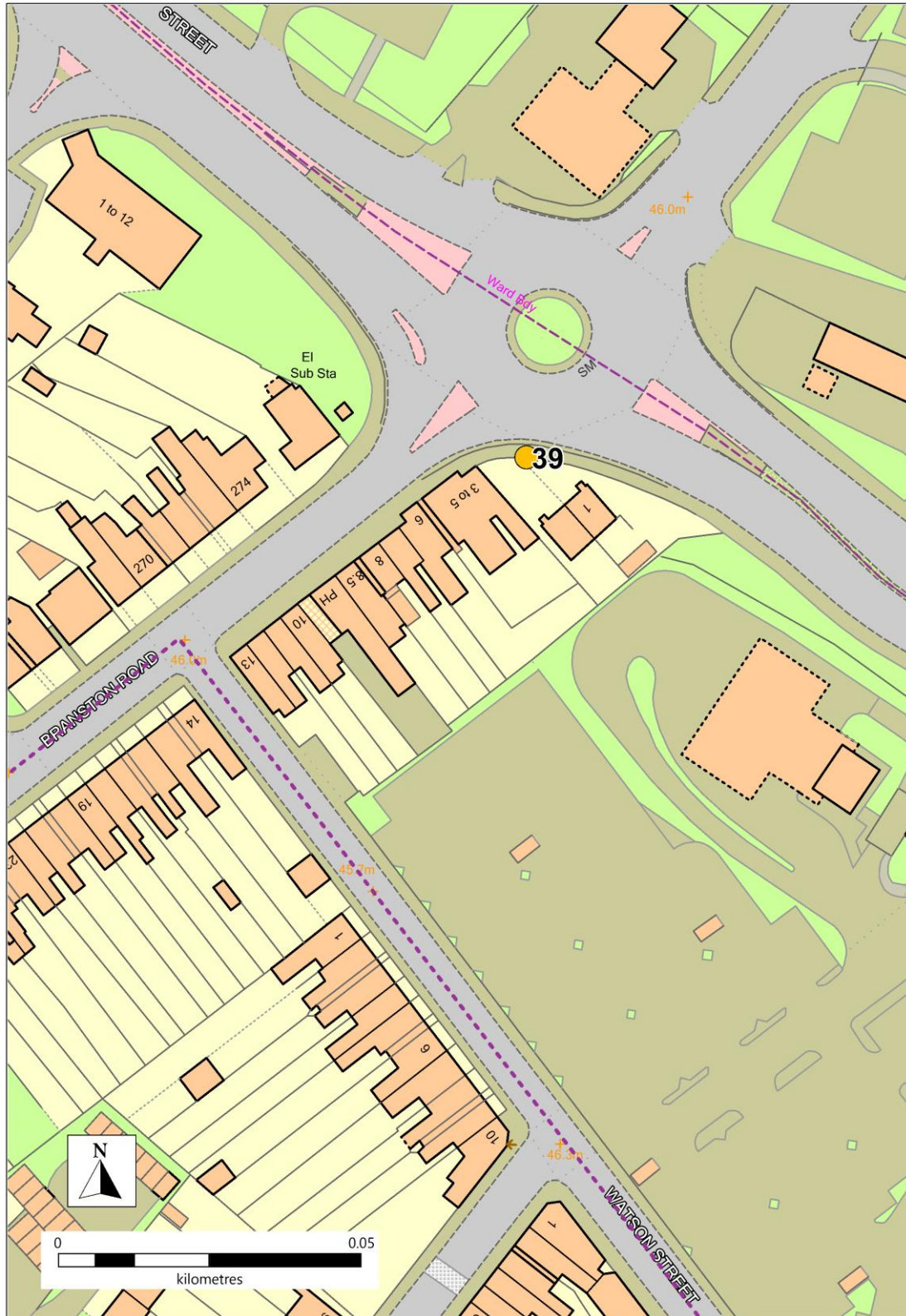
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Figure D.10 - Diffusion tubes - Burton upon Trent, Outside AQMAs – Winhill, Brookside Urban Background



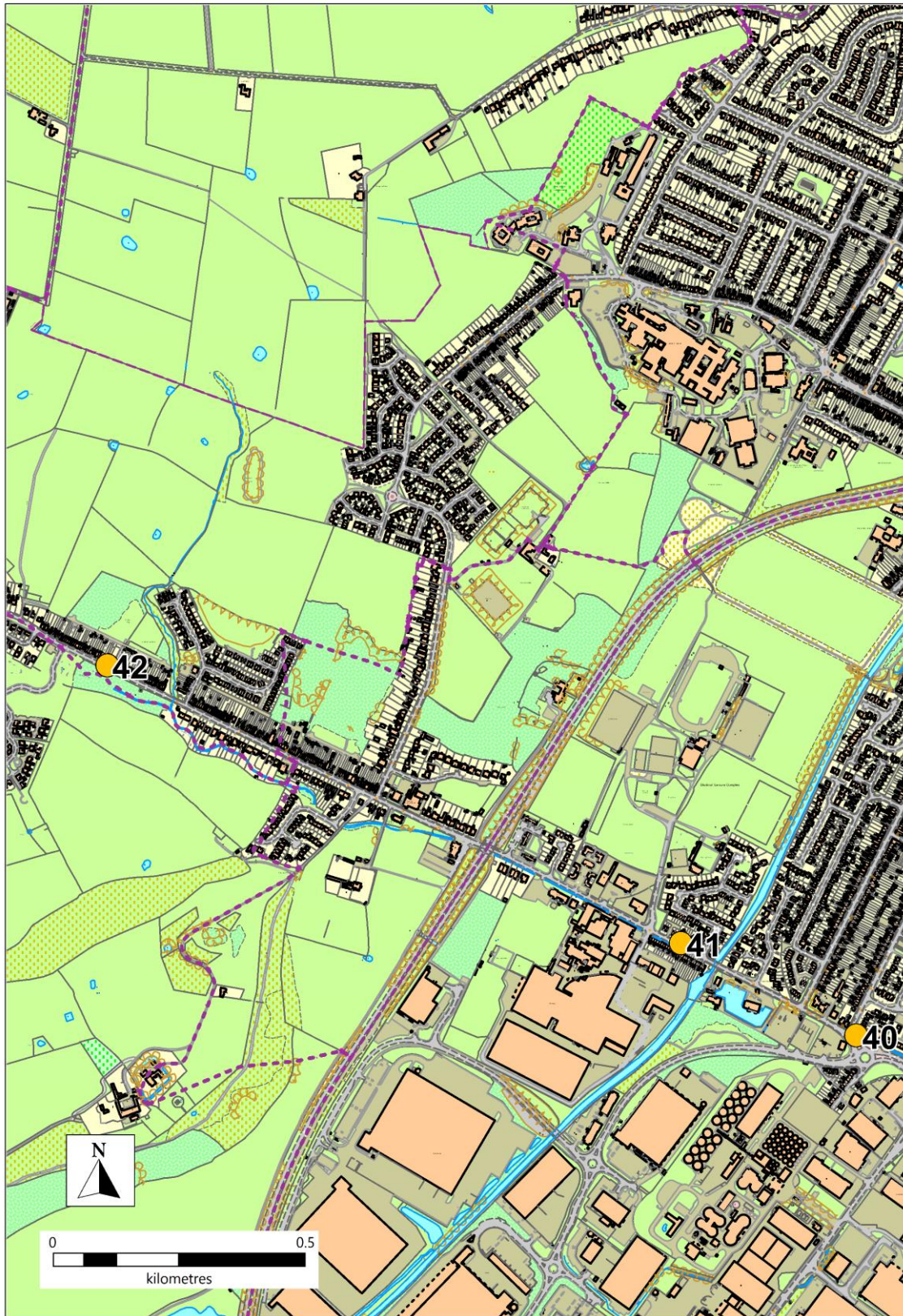
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Figure D.11 - Diffusion tubes - Burton upon Trent, Outside AQMAs – Orchard Street/Branston Road junction



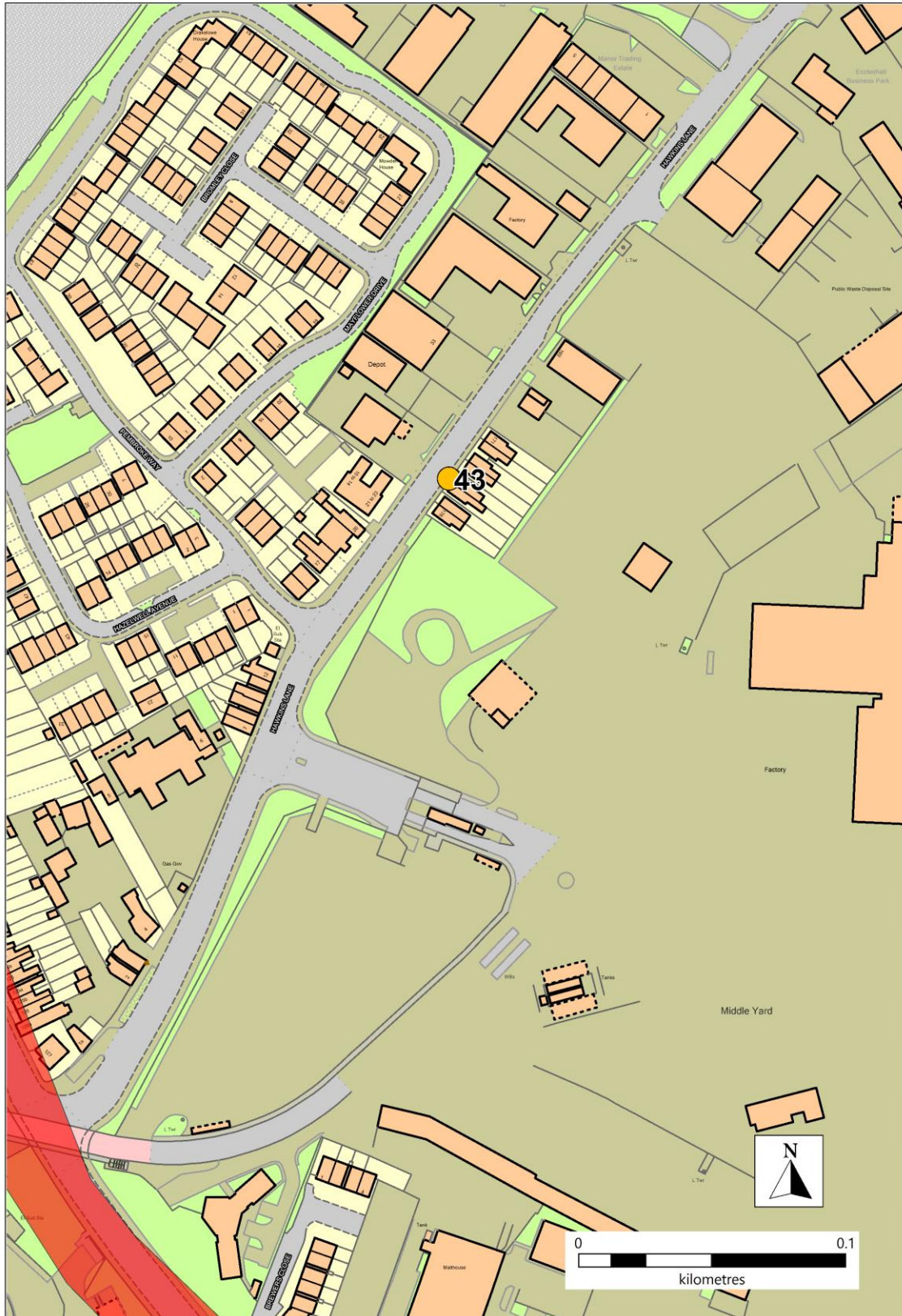
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Figure D.12 - Diffusion tubes - Burton upon Trent, Outside AQMAs – Forest Road to Shobnall Road



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Figure D.13 - Diffusion tubes - Burton upon Trent, Outside AQMAs – Hawkins Lane



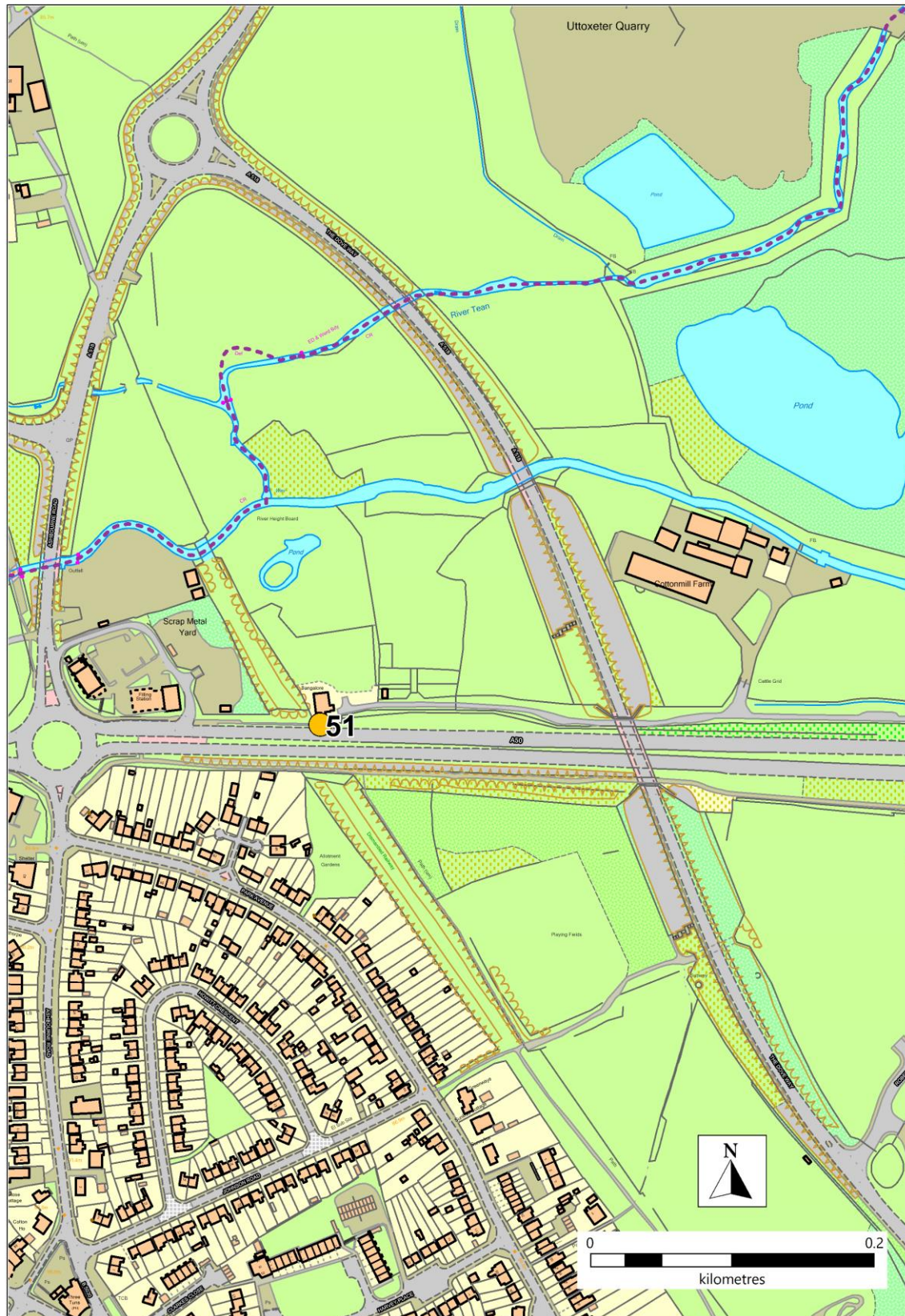
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Figure D.14 - Diffusion tubes – Uttoxeter A50 West



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Figure D.15 - Diffusion tubes – Uttoxeter A50 East



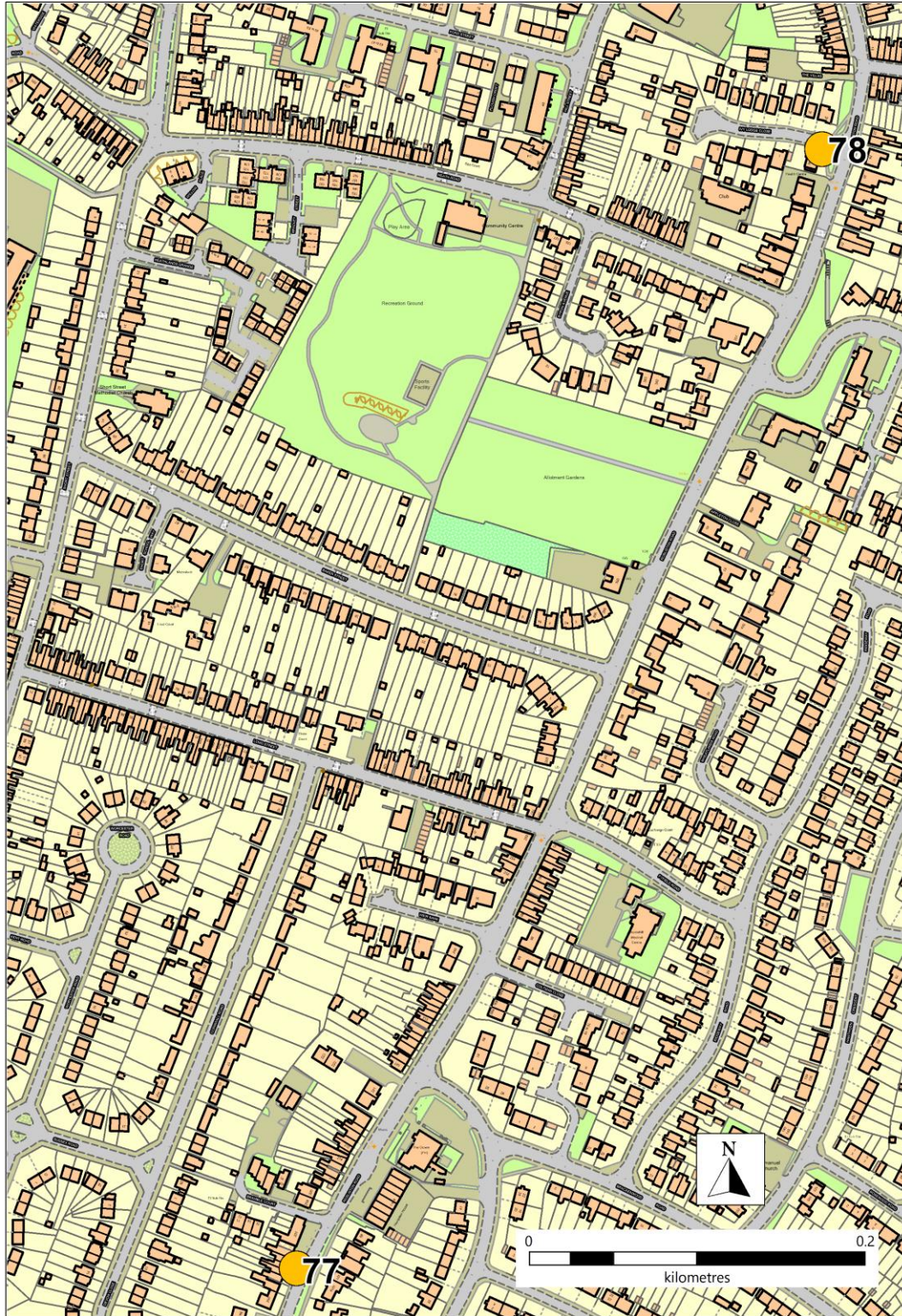
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Figure D.16 - Diffusion tubes – Tutbury



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Figure D.17 - Diffusion tubes – Rosliston Road area (Stapenhill)



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Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

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/m³).

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'
AQDM	Air Quality Data Management
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
AURN	Automatic Urban & Rural Network
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
UKHSA	UK Health Security Agency

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.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.