2023 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management, as amended by the Environment Act 2021

Date: June 2023

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Report Reference Number	ESBC ASR2023
Date	June 2023

Executive Summary: Air Quality in Our Area

Air Quality in East Staffordshire

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

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

The main pollutants of concern in East Staffordshire are nitrogen dioxide (NO_2). Two air quality management areas (AQMAs) were declared by East Staffordshire Borough Council back in 2007 with regards to exceedances of the annual mean NO_2 objective of 40 $\mu g/m^3$. 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.

An Air Quality Action Plan (AQAP) for both AQMAs was drawn up, the most recent update being the 2015 to 2020 Action Plan, which is also now at the point of requiring an update.

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

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

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

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

Whilst many monitored locations meet the annual NO_2 objective in AQMA 1, one or two locations have remained over this limit concentration at the monitoring site itself, but 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 NO_2 objective have occurred for the past three years. Historically, the locations within AQMA 1 with the highest NO_2 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 NO_2 target for the past twelve years and is therefore at a point where it can be revoked.

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 the three consecutive years of compliance seen in AQMA 1 coincides with the Covid-19 pandemic which undoubtedly would have had some impact on NO_2 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 monitoring data has been obtained to add more certainty on the long term NO_2 trend. In the meantime, East Staffordshire Borough Council will work with its Highway partners at the County Council in developing an updated AQAP in pursuit of making continued improvements in air quality, albeit the measures are likely to be of a lighter touch to earlier action plans.

Actions to Improve Air Quality

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

The Environmental Improvement Plan[5] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term $PM_{2.5}$ targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce $PM_{2.5}$ in their areas. The Road to Zero[6] details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Although the 2015-2020 AQAP is largely complete and now in need of review, East Staffordshire Borough Council still carried out a number of additional direct measures during the current reporting year of 2022 in pursuit of improving local air quality as reported in Section 2.2 of this report. The key measures were

- Phase 2 of the Air Aware Project engaging with schools, pupils, staff and parents within the Burton upon Trent area on activities such as school travel plans, anti-idling campaigns etc.
- Funding received for the purchase of two low-cost air quality monitoring (Zephyr) sensors together with an air quality monitoring public portal
- A number of measures set under the Climate Change and Nature Action Plan 2021 were also delivered during the 2022 reporting year such as the publication of an EV Strategy and installation of EV charge points at two new locations within Burton town. These measures have dual benefits to air quality and climate change.

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

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

Conclusions and Priorities

Conclusions:

No new AQMAs have been declared during 2022 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 four years now. No further detailed assessment or consideration to an AQMA declaration is required. East Staffordshire Borough Council therefore scaled back monitoring in this area at the beginning of 2023 with the façade monitoring sites being removed from the network.

Areas of AQMA 1 towards the centre of Burton upon Trent still marginally exceeds the annual mean NO_2 objective at one or two monitoring sites, but when distance corrections are applied for relevant exposures, all locations meet the annual mean NO_2 Objective over the past three years. There is a long-term trend of reductions in NO_2 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 NO_2 objective at the facades of relevant receptors and has done so since 2011. East Staffordshire Borough Council still plans to revoke this AQMA later in 2023 or 2024.

All other monitoring sites outside of the AQMAs met the relevant pollutant limits during 2022.

Priorities for 2023-24 include:

- East Staffordshire Borough Council to review the Air Quality Action Plan (AQAP) and draw on any synergies with the Climate Change and Nature Action Plan 2021
- To revoke the smaller AQMA 2 in Stapenhill
- To start work on supplementary planning guidance.
- To liaise with Staffordshire County Council's Highways Authority to identify and advance local transport related projects that will improve air quality through S106 agreements through developments.

- To consider any Defra grants or Office for Low Emission Vehicles (OLEV) funding as deemed appropriate
- Staffordshire County Councils Highways Authority have identified a number of priorities for 2023-24 and beyond (see Section 2.2)
- East Staffordshire Borough Council to install the aforementioned Zephyr air quality sensors and set up the public portal to support the Air Aware Project work, identify temporal/spatial trends and open up awareness to the public of local air quality
- To continue monitoring of local air quality at the automatic monitoring station and diffusion tube network over the coming year or two and consider revocation of AQMA 1 should compliance with the annual mean NO_2 target at relevant receptors continue

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 $2m^3$. For wood sold in volumes of $2m^3$ 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)
- EN*plus*

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:

- Martyn Manning – Environmental Protection Officer, Environmental Health, East Staffordshire Borough Council
- Sharon Walker – Climate Change and Adaptation Officer, Environmental Health, East Staffordshire Borough Council
- Mark Jeffcoat - Climate Change and Adaptation Officer, Environmental Health, East Staffordshire Borough Council
- Rebecca Slinn – Planning Information Officer, East Staffordshire Borough Council
- Annabel Chell – Head of Connectivity & Sustainability, Staffordshire County Council
- Cath Stephenson – Connectivity Project Officer, Connectivity Support Team, Staffordshire County Council
- Ryan Proctor – School Travel Advisor, Connectivity Support Team, Staffordshire County Council
- Susan Timmis – Environmental Health Officer, Environmental Health & Regulatory Services, Tamworth Borough Council

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

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. The Air Aware project continues with joint funding from Staffordshire 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 three targeted locations, Burton, Leek, and Cannock. 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 NO_2 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 NOx. 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 can be viewed in Table 2.5

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, Officers from Newcastle Borough Council, Stoke City Council and Staffordshire County Council are jointly working under Ministerial Direction to improve transport related air pollution in North Staffordshire.

Dr Richard Harling

Director of Health and Care
Staffordshire County Council
[6th June 2023]

If you have any comments on this ASR please send them to Craig Morris at:

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Telephone: 01283 508509

Email: craig.morris@eaststaffsbc.gov.uk

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1 Local Air Quality Management

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

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

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 Borough Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of both AQMAs and also the air quality monitoring locations in relation to each AQMA. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean

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 National Highways?	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	36 µg/m^3 monitored	3	Air Quality Action Plan 2015-2020	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	29.3 µg/m^3 monitored	12	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.**

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

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed, and provided the key information specified in the Guidance and overall was accepted. However, Defra advised the following two points should be addressed before the report was published:

1. Distance correction calculations were completed for thirteen monitoring sites in 2020 and are included in Table C.4. However, the distance corrected concentration for DT55, DT56, and DT57 are not included within table B.1. This should be added to the report.
   East Staffordshire Borough Council has since included the 2020 distance correction for DT55, DT56, and DT57 within Table B.1 of the published report now available on the Councils air quality pages of its website.
2. The AQMA shown in Figure D.13 is incorrectly aligned with the background mapping, which falsely gives the impression that monitoring site DT2 is located outside the AQMA. This should be amended so that the AQMA is located in the correct place.
   AQMA 2 shown in Figure D.13 was realigned for the final published report and indeed for this current ASR.

Defra also made the following advisory comments designed to help inform future reports:

1. The Council have provided a detail discussion regarding the comments from the previous ASR, and the comments have been noted and changes made in the ASR. The Council should continue this in future ASRs to ensure all reports are to a good standard. *Comments noted*
2. All graphs are well-presented, and colours schemes allow for both monitoring sites and years to be easily distinguished. However, the line showing the AQO on Figure A.2 does not extend across the whole figure. This should be changed so that easy comparison between the monitoring data and AQO can be made for monitoring site DT2. *Comments noted*

3. A good discussion regarding the potential to revoke AQMA 2 is provided, with clear reasoning for the revocation given. Progress on the revocation of this AQMA should be discussed in future ASRs. *Further discussion provided in this current ASR*

4. A comment could be made within table A.1 to highlight that continuous monitoring site CM2 is a National Highways monitor, as it currently gives the impression that the monitoring location is a Council site. This may lead to confusion when viewing monitoring results. *Table A.1 in this current ASR makes it clear that site CM2 is a National Highways monitor that runs independently of East Staffordshire Borough Council. There is also further explanations within the text of this document.*

5. A well detailed discussion surrounding the QA/QC procedures has been provided, and an image of the National Bias Adjustment spreadsheet has been included. This is good practice and should be continued in future ASRs. *Comments noted*

Although the 2015-2020 AQAP is largely complete and now in need of review, East Staffordshire Borough Council has still taken forward a number of additional direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed to date within the 2015-2020 AQAP 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 up to the reporting year of 2022 presented. Where there has been, or continues to be, barriers restricting the implementation of a measure, these are also presented within Table 2.2.

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

The AQMAs were declared in 2007 due to NO_2 from vehicle emissions and as a result, the AQAP originally relied heavily on measures contained within Staffordshire County Council's East Staffordshire Integrated Transport Strategy https://www.staffordshire.gov.uk/Transport/transportplanning/District-integrated-transport-strategies/Documents/East-Staffordshire-Transport.pdf.

There are no immediate plans to review this transport strategy as it will be reviewed once East Staffordshire Borough Council's Local Plan is reviewed. However some individual measures which are marked as new schemes are being looked at by the County Council and are summarised in this section, with a large focus on active travel and improvements in cycling connectivity. These new schemes will also be incorporated into the updated AQAP.

Key completed measures since the last ASR are:

- The diffusion tube network has been reviewed, with new locations added and those showing consistent compliance being removed.
- East Staffordshire Borough Council in collaboration with Staffordshire County Council continued to support Phase 2 of the Air Aware Project engaging with schools, pupils, staff and parents within the Burton upon Trent area. Activities have included school travel plans, anti-idling campaigns and information packs, clean air day promotions etc. More details on progress with the Air Aware Project is presented in Appendix C: Additional Air Quality Works Undertaken by East Staffordshire Borough Council During 2022.
- As part of the above-mentioned 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 received in Spring 2023 and an external consultant Earthsense will set up and manage the public portal.
- East Staffordshire Borough Council continued to deliver its targets set under the Climate Change and Nature Action Plan during the 2022 reporting year. See Appendix C: Additional Air Quality Works Undertaken by East Staffordshire Borough Council During 2022 for more details on the background to the Climate Change Action Plan. Two dedicated Climate Change officers have been appointed to lead on the delivery of these targets with support from Environmental Health due to the synergies with climate change and air quality. The key measures completed during the 2022 reporting year that will also have air quality benefits include;-
    - The publication of an Electric Vehicle (EV) strategy setting out how East Staffordshire Borough Council will support the uptake of Ultra Low Emission Vehicles through increased provision of EV charging infrastructure across the District.
    - The installation of three dual floor mounted EV charge points in Coopers Square Car Park within Burton town centre.

- EV charge points have also been successfully installed for staff within the council's own estates at Millers Lane and Stapenhill Cemetery in April/May 2022.
- A policy for the District's taxi fleet to be Euro 4 and Euro 6 compliant came into effect on 1st October 2022.

East Staffordshire Borough Council's priorities for the coming year are:

- First and foremost, East Staffordshire Borough Council will review the current AQAP which is now out of date, which we aim to complete for the end of March 2024. The new AQAP will incorporate some of the measures set out in the Climate Change and Nature Action Plan 2021 and is likely to be of a lighter touch compared to earlier versions as concentrations have fallen below the annual mean NO_2 Objective over the past three years in AQMA 1. East Staffordshire Borough Council will continue to monitor these trends closely over the next year or two before making a formal decision on revoking to reflect any uncertainty in the data that may have been influenced by the Covid-19 pandemic.
- To formally 'revoke' the smaller AQMA 2 in our borough during 2023-24. This was originally scheduled for 2020-21 but due to resource constraints has been delayed. Revoking the smaller AQMA is justified by consistent reductions in NO_2 below the annual mean NO_2 objective over a number of years. More details are provided in Section 3.2.1 and Figure A.5.
- To install the two recently purchased Zephyr air quality sensors at the chosen school locations by the end of the summer 2023 and subsequently initialise the public air quality portal that will be available for the public to view. This will help support campaign work with the chosen schools under the Air Aware Project as well as inform the public of hotspot locations so they can make informed choices on travel behaviours. It will also enable the identification of spatial/temporal trends in air quality. The plan is to move each sensor after a 6 to 12 month period to new locations which are yet to be confirmed.
- To liaise with Staffordshire County Council's Highways Authority to identify and advance local transport related projects that will improve air quality that otherwise may not have been progressed due to funding constraints. This will be supported by

S106 agreements from developments under the damage cost approach adopted in the supplementary planning guidance.

- To make a start on publishing formal supplementary planning guidance during the 2023-24 financial year. This will include the requirement for a damage cost to be applied more formally to developments with a significant air quality impact, ensuring a commensurate level of mitigation. This was originally planned between 2020 and 2022 but was delayed due to a combination of impacts from the Covid-19 pandemic and resource constraints from staff shortages.
- To identify further opportunities within our Climate Change and Nature Action Plan 2021 and other local authority policies such as the Burton Towns Fund to support air quality improvements from our own estate and locally within the Borough, as well as supporting ongoing targets within the Plan where there are synergies. These will be included within the updated AQAP.
- To support Staffordshire County Council in bids to Defra's Air Quality Fund to continue projects such as the Air Aware Project.
- To consider further locations within the Borough and where appropriate, submit a grant application under the Office for Low Emission Vehicles (OLEV) 'On-street Residential Chargepoint' Scheme.
- To continue to monitor and review NO_2 through our extensive diffusion tube network during 2023-24.
- Servicing and data management contracts have been renewed for 2023-24 which helps to ensure good quality, reliable data from our automatic monitoring station at Derby Turn.

Staffordshire County Councils Highways Authority have completed the following measures in 2022-23 and identified the following priorities for 2023-24:

- *A5121 Wellington Road / A5189 Shobnall Road roundabout, Burton* - a feasibility study to be undertaken to determine whether any engineering interventions could be considered whilst understanding the impacts on the wider network. The study potentially could lead to a design being prepared for an agreed scheme to be

delivered which initially had been proposed for 2021/22, but now is no longer being taken forward.

- *Waterloo Street, Burton upon Trent*- following a feasibility study, improvement of current speed calming features; provision of tactile paving and improved signing and markings were completed in the spring of 2022 along Waterloo Street between Dallow Street and Byrkley Street.
- *A444 Corridor Study, Stapenhill, Burton*- current proposals include a pedestrian crossing on Stapenhill Road, temporary weight restriction on Sycamore Rd and Saxon St, extension of the two lanes on Main Street at the Stapenhill Road junction, feasibility of schemes to improve highway capacity on the A5189, including the signalisation of the junction at Tesco supermarket, and provision of a cycle route to Swadlincote. The cycle route is now under construction and due to be completed in 2022-23.
- *High street gateways, Burton*- following provision of an Automatic Number Plate Recognition (ANPR) bus gate on High Street, an investigation of options for enhancing the gateways into High Street at both New Street and Worthington Way, removing the need for bollards will be undertaken. The current proposal includes altering the layout of the junctions, enhancing the surfacing and appearance of the junctions to make it clearer that pedestrians have priority in High Street. ANPR and footway maintenance along high street have now been delivered. Initial designs have also been completed for a potential junction improvement at New Street/ High Street. The County Council will try and push for the junction improvements to be included in the East Staffordshire Levelling Up Fund
- *B5017 Corridor Improvements, Burton* – to deliver traffic calming on the B5017 between Wellington Road/ Shobnall Road and Postern Road, taking into account local community concerns, safety concerns around Shobnall Primary School and access to the hospital. Improvements are required in line with community concerns about the traffic impact of major development sites. There are potential delays to delivery timescales due to structural maintenance issues along the B5017.
- *Transport improvements associated with Land South of Branston, Burton* - A report has been completed that recommends walking and cycling proposals along the B5018 corridor, between Main Street Branston and Paget High School. Detailed design and consultation will be undertaken on enhancing walking and cycling

provision during 2023/24. RTPI infrastructure will also be provided at Branston and within the town centre. The transport package is required to help mitigate the traffic impact associated with development at Land South of Branston, in line with the East Staffordshire District Integrated Transport Strategy and Local Plan. Negotiations are taking place that may secure a contribution from Network Rail.

- *Active Travel Scheme, Station Street, Burton* - Construction of a cycle route between Guild Street and the railway station began in February 2023 and is due for completion in the autumn of 2023. The scheme is integral to the completion of the East-West cycle connection required to support the delivery of East Staffordshire Borough Council's Burton Town Investment Plan and Staffordshire's Local Cycling and Walking Infrastructure Plan (LCWIP).
- (**New Scheme**) *Shobnall Road, Burton upon Trent National Cycle Network* - Installation of LTN1/20 compliant cycling infrastructure along Shobnall Road Burton upon Trent to link National Cycle Network route 54 from the access to Shobnall Fields with Anglesey Street, including installation of National Cycle Network signage. The project is located to the south west of Burton upon Trent and will remove a section of National Cycle Network 54 from a busy highway to cycle route segregated from the highway. The scheme will be funded through Paths for Everyone T6.
- (**New Scheme***) Beam Hill/Stretton Local Transport Package, Burton Feasibility Study* - To consider options for delivering transport improvements to mitigate the impact of traffic on local residential areas and improve the environment for pedestrians and cyclists. The first portion of S106 payment has been triggered. Concerns have been raised about the increase in traffic levels in the area generated from strategic development sites (950 dwellings). Schemes need to be delivered in accordance with the S106 related to Land at Upper Outwoods Farm, Beamhill Road
- (**New Scheme**) *East Staffordshire/Burton upon Trent Towns Fund Cycling and pedestrian improvements* - Will be delivered along Borough Road between the rail station and the town hall; along connecting roads through residential areas, together with improved cycle provision on the A511. The scheme will remove acute barriers to cycling/walking and is expected to achieve medium/high value for money and will help to deliver the Local Cycling and Walking Infrastructure Plan. East-west connectivity will be improved between housing growth areas, residential areas, the canal, town centre developments and onwards to the new washlands walking/cycling bridge.

- (**New Scheme**) *Cycle Parking Provision of high quality cycle parking at key locations in Burton, Stafford, Newcastle, Cannock and Tamworth to support the new segregated cycle routes being delivered as part of Active Travel Funds*. A Feasibility Study is being produced by Sustrans that identifies the current issues of current cycle parking provision and proposes locations for new parking required to support the current investment in new segregated cycle routes
- (**New Scheme**) *Traffic Signal Renewal - Wellington Street/Derby Street Gyratory* - To update and replace the existing traffic signal furniture. The Gyratory is old and consists of four junctions and four pedestrian crossing's which are run off two controllers. It is also part of AQMA 1. The life cycle of a traffic signal asset is approximately 15-20 years, the last upgrade was 19 years ago. The gyratory has experienced a number of faults in the last year, above the normal number. The high fault rates are due to ageing equipment meaning repeat visits for our maintenance contractor. This is a critical part of the network which needs to be renewed as well as modified to make the gyratory operate more efficiently.

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 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. 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. Many of these transport related measures rely on developer contributions, so implementation is dependent on development progress in East Staffordshire.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, East Staffordshire Borough Council anticipates that further additional measures not yet prescribed will be required in subsequent years to maintain compliance and enable the revocation of AQMA 1.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Walton on Trent bypass (third river crossing)	Transport Planning and Infrastructure	Other	TBC	TBC	Staffordshire County Council/Derbyshire County Council	Developers & highway infrastructure funding	NO	Funded		Planning	Medium-high		Drakelow Park development underway but no formal agreed date for the third river crossing (Walton bypass) due to engineering and flooding concerns to alleviate	Lengthy Timescale
2	Town Centre Regeneration Programme	Traffic Management	Strategic highway improvements, re-prioritising road space away from cars, including access management, selective vehicle priority, bus priority, high vehicle occupancy lane	2016	2031	Staffordshire County Council/East Staffordshire Borough Council	Highway Infrastructure Funding	NO	Funded		Implementation	Medium-high		Town Centre Regeneration Programme now completed with the exception of Station Street regeneration which started in March 2020. A new cycle route commenced in the Spring 2023 and is due for completion by the end of 2023. Many of these will then help improve traffic flow within the AQMA	Lengthy Timescale / Funding
3	Improved bus provision/services	Transport Planning and Infrastructure	Bus route improvements	2020	Now completed	Staffordshire County Council	Highway Infrastructure Funding	NO	Funded		Completed	Low-medium			Completed in 2021
4	A5189/A444 network reinforcement & enhanced cycling/pedestrian facilities	Transport Planning and Infrastructure	Other	2018	2031	Staffordshire County Council	Highway Infrastructure Funding	NO	Funded			Low		Current proposals include a pedestrian crossing on Stapenhill Road, temporary weight restriction on Sycamore Rd and Saxon St, extension of the two lanes on Main Street at the Stapenhill Road junction, feasibility of schemes to improve highway capacity on the A5189, including the signalisation of the junction at Tescos, and provision of a cycle route to Swadlincote. Essential bridge maintenance work now completed and construction of the cycle route has also commenced and due for completion in 2023	Lengthy Timescale / Funding

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
5	Local transport corridors	Traffic Management	Strategic highway improvements, re-prioritising road space away from cars, including access management, selective vehicle priority, bus priority, high vehicle occupancy lane	2016	2020	Staffordshire County Council	Highway Infrastructure Funding	NO	Funded		Aborted	Medium		B5017 Corridor Improvements, Burton Deliver traffic calming and pedestrian improvements on the B5017 between Wellington Road/Shobnall Road and Postern Road, taking into account local community concerns, safety concerns around Shobnall Primary School and access to the hospital. Improvements are required in line with community concerns about the traffic impact of major development sites. There are potential delays to delivery timescales due to structural maintenance issues along the B5017	Funding delayed scheme but hoped to be revisited in future
6	Completion of National Cycle Route NCN63 through Burton upon Trent	Promoting Travel Alternatives	Promotion of cycling	2017	2018	Staffordshire County Council	Highway Infrastructure Funding	NO	Funded			Low		Currently under construction	
7	Burton rail station forecourt improvements	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2018	2019	Staffordshire County Council / Network Rail	Highway / Network Rail Infrastructure Funding	NO	Funded		Completed	Low		Completed 2020	
8	Eco-stars recognition scheme	Freight and Delivery Management	Other	2016	2018	Staffordshire local authorities	Partnership Funding				Completed	Low		Finished in 2018	
9	Development control policy for air quality management & subsequent environmental supplementary planning document (SPD)	Policy Guidance and Development Control	Other policy	2019	2021	East Staffordshire Borough Council		NO	Not Funded		Planning	Medium	Formal adoption of SPD	Delayed due to Covid-19 pandemic and staff resource constraints from staff leaving the authority. This measure will be picked up again in 2023-24 as part of the updated AQAP	Resource Constraints
10	Investigation of feasibility for S.106 obligations and community infrastructure levy funding for air quality	Policy Guidance and Development Control	Other policy	2019	2021	East Staffordshire Borough Council	Developer Funding	NO	Funded		Implementation	Medium	Formal adoption of SPD	Some initial work undertaken and used for some planning applications, but further work required	

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
11	Feasibility study for low emission vehicles and associated infrastructure	Policy Guidance and Development Control	Other policy	2020	2020	East Staffordshire Borough Council	Developer and/or OLEV/Defra Grant Funding	YES	Funded		Planning	Low		Three electric vehicle charge points were installed in Coopers Square Car park early in 2023. Further chargepoints are being looked at as part of the Electric Vehicle Strategy published in 2022. This will also be included as an ongoing measure in the updated AQAP	
12	Investigation into funding streams for bus operators	Alternatives to private vehicle use	Other	TBC	TBC	East Staffordshire Borough Council					Implementation	Med		No progress	
13	Partnership working with public health	Public Information	Other	2016	2032	East Staffordshire Borough Council					Implementation	Low		Public health presence at Staffordshire Air Quality Forum & projects undertaken. Partnership activities declined during the pandemic due to restrictions, but have since reconvened. For example East Staffordshire Borough Council supported its partners at the County Council on the annual Clean Air Day that took place on 16th June 2022 with vehicle idling awareness outside Burton Queens Hospital and promotion of Dr Bike scheme with hospital staff. Furthermore as part of the ongoing Air Aware project East Staffordshire Borough Council has supported its partners at the County Council at delivering a number of initiatives at local schools.	Resource Constraints
14	Partnership working with Staffordshire County Council in promoting sustainable travel	Promoting Travel Alternatives	Other	2016	2032	East Staffordshire Borough Council					Implementation	Low		As Above	Resource Constraints
15	Enhancement of the Council website for air quality & updating leaflets & other Council publications	Public Information	Other	2016	2032	East Staffordshire Borough Council					Implementation	Low		Ongoing	

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
16	Ongoing review of the air quality monitoring network	Other	Other	2016	2032	East Staffordshire Borough Council					Implementation	Low		Monitoring network reviewed regularly. The network was reviewed twice in the last 12 months with new tubes added in Tutbury and Rolleston Road, Stapenhill and the Uttoxeter façade sites being removed early 2023 due to consistent compliance	
17	Environmental permitting	Environmental Permits	Other	2016	2032	East Staffordshire Borough Council					Implementation	Low	All scheduled inspections completed	Due to restrictions during the pandemic in 2020/21 and resource constraints some scheduled inspections were missed, but for 2022-23 all scheduled visits were successfully completed	Resource Constraints
18	Detailed Air Quality Assessment- A50 Uttoxeter	Other	Other	2017	2018	East Staffordshire Borough Council/Highways England (now National Highways)	Internal / National Highways	NO	Funded		Completed	Low	Not required- Objective exceedances ruled out by façade monitoring	Façade monitoring locations were disbanded early 2023 due to consistent compliance	
19	AURN site located	Other	Other	2016	2017	Environment Agency	Environment Agency Funding	YES	Funded		Implementation	Low	AURN site located	Monitoring of NO_2 since 2018. PM_{10} & $PM_{2.5}$ monitoring commenced in July 2022	Equipment failures / station breakdowns
20	A515 – Minor roads experimental Traffic Regulation Order (TRO)	Transport Planning and Infrastructure	Other	2019	TBC	Staffordshire County Council	Highway Infrastructure Funding	NO	Funded		Planning	Low	TRO trialled	Advance signage on the Trunk Road network is required to keep HCVs on the A50 and the A38. National Highways approval will be required, and the signs would need to be designed and installed under their approval and permission. Costs include lane closures on the A38. No further progress made to date.	Funding
21	A5121 Wellington Rd/A5189 Shobnall Rd roundabout, Burton	Transport Planning and Infrastructure	Other	2020	TBC	Staffordshire County Council	Highway Infrastructure Funding	NO	Funded		Aborted	Med		Feasibility study to determine whether any engineering interventions could be considered whilst understanding the impacts on the wider network. The study potentially could lead to a design being prepared for an agreed scheme to be delivered in 2021/22, but has now been aborted	Funding

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
														and no longer being taken forward.	
22	Real time bus passenger information project management and infrastructure improvements	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2018	2019	Staffordshire County Council	Highway Infrastructure Funding	NO	Funded		Completed	Low		RTPI project management and co-ordination, including partnership working with bus operators to ensure that they continue to provide vehicle location information. Re-allocation / installation of new infrastructure to accommodate bus service changes. Promotion of the new RTPI information on My Staffs App and work towards income generation. Introducing further sustainable RTPI schemes such as solar RTPI will be considered.	Funding
23	High Street gateways, Burton	Transport Planning and Infrastructure	Other	2019	2020	Staffordshire County Council	Highway Infrastructure Funding	NO	Funded		Completed	Low		Investigate options and consult on the preferred scheme for enhancing the gateways into High Street at both New Street and Worthington Way, removing the need for bollards. The current proposal includes altering the layout of the junctions, making access to High Street a minor route; enhancing the surfacing and appearance of the junctions to make it clearer that pedestrians have priority in High Street; improving the siting and design of signs and removing sign clutter; and retaining bus access to the High Street with consideration of Automatic Number Plate Recognition	Funding

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
														(ANPR) to control access. Designs for junction improvements at New St/High St have been completed, and Staffordshire County Council are looking at including the junction improvements in the Levelling Up Fund	
24	B5017 Corridor Improvements, Burton	Transport Planning and Infrastructure	Other	2019	TBC	Staffordshire County Council	Highway Infrastructure Funding	NO	Funded		Aborted	Low		B5017 Corridor Improvements, Burton Deliver traffic calming and pedestrian improvements on the B5017 between Wellington Road/Shobnall Road and Postern Road, taking into account local community concerns, safety concerns around Shobnall Primary School and access to the hospital. Improvements are required in line with community concerns about the traffic impact of major development sites. There are potential delays to delivery timescales due to structural maintenance issues along the B5017	Technical issues

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
25	Transport improvements associated with Land South of Branston, Burton	Transport Planning and Infrastructure	Other	2019	2025	Staffordshire County Council	Highway Infrastructure Funding	NO	Funded		Implementation	Low-medium		Consider a package of transport measures that could include bus enhancements, RTPI, improving walking/cycling connections from the Branston area linking into those proposed by the development, and improvements to Wellington Rd/Second Ave/Parkway roundabout. RTPI, pedestrian and cycle scheme designs are complete, due to be delivered by 2025.	Funding

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

The Environment Act 2021 established a legally binding duty on the Government to set an annual mean target on the level of fine particulate matter ($PM_{2.5}$), these have been set in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023. Also as detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

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/m^3, with an interim target of 12 µgm^3 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 (PM_{10}) 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, 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 PM_{10}. 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 NO_2 for a number of years, but it was not until 1st July 2022 that PM_{10} and $PM_{2.5}$ monitoring commenced, with an annual mean $PM_{2.5}$ concentration of 7 μgm^3 being recorded at this AURN site during 2022.

Given the fact $PM_{2.5}$ monitoring commenced part way through 2022, 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 9.4 μgm^3 and is located at grid reference 424500; 324500 (i.e. Horninglow Road near to Derby Turn), its lowest level is 5.8 μgm^3 and is located at 415500; 349500 (i.e. Okeover located at the northern extremity of the Borough and bordering Staffordshire Moorlands District).

[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/tbm/1/page-options/car-do-0_ine-yo-1:2019:-1:-1_ine-ct-2_ine-pt-0

[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 2021[7]

	2018			2019			2020			2021		
District/County	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 NO_2 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 NOx. 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;

East Staffordshire Borough Council is taking the following measures as outlined in Table 2.5 and with our partners at the county council and other partners identified in the table to address $PM_{2.5}$

Smoke Control Areas

East Staffordshire Borough Council declared the majority of Burton upon Trent to be a smoke control area on 1st July 1975, see the UK Air Website interactive smoke control area map at Smoke Control Area Interactive Map (defra.gov.uk) for more details of the boundaries of this smoke control area. Changes to the Environment Act 2021 has enabled councils to now issue fines of between £175 and £300 with respect to the emission of a substantial amount 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. Local Authorities also have the option to take enforcement action under the Environmental Protection Act 1990 for statutory nuisance if the smoke emissions are harmful to health or a nuisance. This applies everywhere in England and not just in a smoke control area. This change should enable East Staffordshire Borough Council to address the incorrect use of log burners even if they are Defra exempt.

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

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	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 in areas of Newcastle Town Centre AQMA and Kidsgrove AQMA. Live labs monitoring work linked to congestion in Newcastle.	UTC in Stafford Town Centre	Town Centre Regeneration Programme & a number of schemes are currently being progressed which will aid traffic management. Many of these will help improve traffic flow within the AQMA. Live labs monitoring work linked to congestion in Burton.	LDC is liaising with Midlands Connect to increase volume of traffic using M6 Toll to reduce congestion on the A5 as well as lobbying Highways England to upgrade the A38 & A5 to expressways.		UTC in Tamworth Town Centre at Ventura Park
	Reduction of speed limits, 20mph zones	low	✓	Advisory 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	Campaign only Air Aware project
	Anti-idling enforcement	low	✓	Campaign only Air Aware project	Campaign only Air Aware project	No	Campaign only Air Aware project	Campaign only Air Aware project	Campaign only Air Aware project	
	Other		✓							
Promoting Travel Alternatives	**Workplace Travel Planning**	low	✓	https://www.staffordshire.gov.uk/Business/Workplace-health/Active-travel-and-air-quality-in-the-workplace.aspx						
	Encourage / Facilitate home-working	low	✓	Agile working policy adopted		Homeworking Policy adopted	Homeworking Policy adopted	Homeworking policy adopted	Agile working policy adopted	Homeworking policy adopted
	School Travel Plans	low	✓	https://www.staffordshire.gov.uk/Education/Schooltransport/Active-school-travel/Travel-to-School-Action-Plans-September-2020.aspx						
	Promotion of cycling	low	✓	https://www.staffordshire.gov.uk/Transport/transportplanning/Walking-and-cycling.aspx Additional Capability Funded activities in Burton & Stafford Town areas only, linked to infrastructure improvements. Social prescribing bid to be submitted for Newcastle to improve fitness and health through prescribing waling & cycling.					South Staffordshire Cycling Scheme	Same as other Staffs authorities
	Promotion of walking	low	✓	https://www.staffordshire.gov.uk/Transport/transportplanning/Walking-and-cycling.aspx Additional Capability Funded activities in Burton & Stafford Town areas only, linked to infrastructure improvements. Social prescribing bid to be submitted for Newcastle to improve fitness and health through prescribing waling & cycling.					Walking for health scheme	Same as other Staffs authorities
	Staffordshire Share a Lift Scheme		✓	Staffordshire share a lift scheme "on hold" during 2020/21 – plans to update in 2022.						
	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 recently completed.	Lichfield Trent Valley access for all works recently completed including lifts.	Brinsford Park and Ride - Parkway Station business case ongoing	
Transport Planning & Infrastructure	**Local Transport Plans and District Strategies**	high	✓	https://www.staffordshire.gov.uk/Transport/transportplanning/District-integrated-transport-strategies/districtintegratedtransportstrategies.aspx						
	Public transport improvements- interchanges stations and services	low	✓	Proposed reinstatement of Leek rail connection. Planning application approved during 2021.	Kidsgrove will be multi-modal	New services with S106 funding provided in Stone to new estates in Walton and Yarnfield. Stafford Gateway will be multi- modal		Lichfield Bus Station resurfaced, repainted and new coach parking bays provided. Alternative location for bus station currently under consideration	Parkway station will be multi- modal	Planned improvements at Tamworth station
	Public cycle hire scheme	low	✓		e-scooter trials	e-scooter trials NOW ENDED AWAITING CONCLUSIONS				
	Cycle network	low	✓	https://www.staffordshire.gov.uk/Transport/cycling/cyclemaps.aspx Newcastle town deal includes a town centre permeability theme which includes new walk & cycle infrastructure going on from Active Travel fund 2 scheme, Business case to be complete soon.						
	Bus route improvements	high	✓	Potential bus stop upgraded in Cheadle Town Centre	RTPI on key routes in Newcastle Town Centre. Improved future bus services to Chatterley Valley	Improved bus priority and interchange on key routes in Stafford post-SWAR	Improvements in Burton town centre	RTPI introduced at key stops in Lichfield City.	Consideration of future bus stop upgrades on key routes	Corporation Street interchange improvements planned for future delivery discussions ongoing with TBC

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	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	✓	✓		http://www.staffordbc..gov.uk/planning/planning-policy/local-plan-2012-2031	http://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	South Staffordshire Local Plan South Staffordshire Council (sstaffs.gov.uk)	Local & National Validation requirements 2017: http://www.tamworth.gov.uk/sites/default/files/planning_docs/National-and-Local-Validation-requirements-2017.pdf
	Air Quality Strategy			In development		2019-2022 Air Quality Strategy				
	Planning Guidance for developers		✓	In development		http://www.staffordbc.gov.uk/planning/planning-policy/supplementary-planning-policy-documents	Informal guidance in place		Sustainable Development	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 has been used for applicable applications.		Damage cost assessment now required for applicable applications.	Damage cost assessment now required for applicable applications.			
	Planning Policies		✓	• Policy T1: Development and Sustainable Transport• Policy SD2: Renewable/Low-Carbon Energy		http://www.staffordbc.gov.uk/planning/planning-policy/local-plan-2012-2031	Supplementary planning document in development	https://www.lichfielddc.gov.uk/Council/Planning/The-local-plan-and-planning-policy/Planning-policy.aspx	Planning policies and guidance	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	✓	In development		In development as part of Climate Change Policy				

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	Stafford BC	East Staffs BC	Lichfield DC	South Staffs DC	Tamworth BC
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						
	Quiet & out of hours delivery	low	✓			✓				
	Delivery and Service plans	medium	✓			x				
	Freight Partnerships for city centre deliveries	high	✓			x				
Vehicle Fleet Efficiency	Driver training and ECO driving aids	medium	✓	✓		✓				
	Promoting low emission public transport	high	✓	X		x				
	Vehicle retrofitting programmes	medium	✓		Bus retrofit for vehicles using A53 service 4	x		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 and recognition schemes	medium	✓	Staffordshire membership of ECO Stars Scheme						
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; phase 1 "spend analysis completed"		Waste fleet vehicles comply with Euro VI.				
	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	high	✓	Energy Saving Trust (EST) have reviewed current fleet and issued draft The majority comply with are highest EURO emission standard tween with the rest completed between 2022/ 2023		In prgress as part of Climate Change Action Plan		LDC looking to replacing old vehicles within the fleet with more modern cleaner vehicles, which comply with the prevailing EURO standard. This will be extended to all Council owned vehicles.		
	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	high	✓	EV strategy on council car parks included in new car parking strategy. Trial alternative fuels; Electric and hydrated vegetable oil are currently being tested by waste fleet	Newcastle towns deal includes EV charging infrastructure.	Procurement of EV on staff carparks				
	Priority parking for LEV's	high	✓	✓		✓		Electric Vehicle charging spaces	Electric Vehicle charging spaces at offices	EV charging spaces being investigated
	Taxi Licensing conditions	medium	✓	In development		✓				
	Taxi emission incentives	medium	✓			✓				

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	Stafford BC	East Staffs BC	Lichfield DC	South Staffs DC	Tamworth BC
Environmental permits	**Introduction/increase of environment charges through permit systems and economic instruments (Permit fees set centrally)**	medium	✓			✓				
	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 and National Plans going beyond BAT	high	✓			Nil				
	Other		✓			Nil				
Other measures	**Smoky Diesel Hotline**		✓	https://www.gov.uk/report-smoky-vehicle						
	A5 and M6 Partnership		✓			x		Strategy for the A5 2011-2026	Strategy for the A5 2011-2026	
	Domestic Smoke Control advice and Enforcement		✓	✓	-	https://www.staffordbc.gov.uk/environment/smoke-control.cfm	Provided via ESBC Website & other literature	https://www.lichfielddc.gov.uk/home-garden/bonfires-barbecues-smoke/1	Bonfires and Smoke South Staffordshire Council (sstaffs.gov.uk)	
	Garden Bonfires - Advice and nuisance enforcement		✓	✓	-	http://www.staffordbc.gov.uk/environmental-health/pollution/bonfires	Provided via ESBC Website & other literature	https://www.lichfielddc.gov.uk/home-garden/bonfires-barbecues-smoke/1	Smokey Bonfire Leaflet (sstaffs.gov.uk)	http://www.tamworth.gov.uk/air-quality
	Commercial burning advice and enforcement		✓	✓	-	http://www.staffordbc.gov.uk/environmental-health/pollution/bonfires	Provided via ESBC Website & other literature	https://www.lichfielddc.gov.uk/home-garden/bonfires-barbecues-smoke/1	Bonfires and Smoke South Staffordshire 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
	Multi agency working with Staffordshire Fire Service and 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	
	Stoke-on-Trent Low Carbon District Heat Network		✓	-	-	Nil	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 2022 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 2018 and 2022 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

Automatic Monitoring Sites

East Staffordshire Borough Council undertook automatic (continuous) monitoring at one sites during 2022. 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 NO_2 since 2018 and PM_{10} / $PM_{2.5}$ 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.

Non-Automatic Monitoring Sites

East Staffordshire Borough Council undertook non-automatic (i.e. passive) monitoring of NO_2 at 48 sites during 2022. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

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

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

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

Diffusion tubes were bias corrected using the nationally derived correction factor for 2022, due to poor data capture following a technical fault with the automatic analyser that led to downtime for most of November 2022. The national correction factor for 2022 was 0.87 compared to 0.79 using the local factor. Furthermore by using the national bias factor to

correct 2022 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 NO_2 results over the national factor. The national bias factor was also used to correct diffusion tube data for 2021 as this produced noticeably higher NO_2 results, so again a more conservative approach had been followed for that year.

Graphical representations of the monitored NO_2 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 NO_2 objective of 40µg/m^3. However, a small number of locations remain over this limit concentration, with three exceedances during 2022. This compares to 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 2022 was 45.5µg/m^3 at monitoring location DT10, albeit this is a kerbside location. The locations within AQMA 1 with the highest NO_2 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), NO_2 concentrations have consistently been below the 40µg/m^3 Objective for the past three years with an overall downward trend, but for one or two locations NO_2 concentrations have remained within 10% of the annual NO_2 Objective, with levels hovering around 36µg/m^3. 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 five 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 NO_2 concentrations have occurred historically within each arm of AQMA 1, whereas the data presented in Figure A.1 and Table A.4 is the NO_2 concentration at the monitoring location itself, as required by Defra for the purpose of this ASR.

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 40µg/m^3 for the first time through 2020 and 2021, with further reductions in 2022. 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 40µg/m^3 Objective since 2011. On this basis, East Staffordshire Borough Council will start the process to formally 'revoke' AQMA 2. This was originally scheduled for 2020-21, but has been delayed due to resource constraints resulting from staff leaving the Authority and other service demands that have taken precedence. East Staffordshire Borough Council will continue to monitor at the current locations however.

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, the initial indications are that NO_2 concentrations are well below the annual mean NO_2 Objective at these new locations, but monitoring will continue throughout 2023 and beyond to obtain a longer term picture. A map of the new monitoring locations around Rosliston Road is presented in Figure D.24 in Appendix D.

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 montioring locations exceeded the annual mean NO_2 objective, with the highest concentrations being 59.7µg/m^3 in 2022 at monitoring location DT51. However, when corrected to the nearest façade as shown in Table B.1 in Appendix B, NO_2 concentrations are lower. Although two of the Uttoxeter diffusion tube sites (DT51 and DT55/DT56/DT57), still show NO_2 concentrations in excess of 40µg/m^3, 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/m^3 which would be indicative of potential exceedences of the hourly 200 µg/m^3 objective.

All of the Uttoxeter residential façade locations (i.e. tube sites DT60 to DT71) have consistently met the annual mean NO_2 objective over the past four years, therefore these locations were removed from the network early in 2023. East Staffordshire Borough Council will continue to monitor at sites along the A50 to identify any changes in traffic patterns and hence NO_2 concentrations.

New tube sites were introduced within Tutbury at the beginning of 2022 (i.e. sites DT74, DT75 and DT76). Figure D.23 in Appendix D shows the exact locations of these new diffusion tubes sites. For the first full year of monitoring, NO_2 concentrations are well within the annual mean NO_2 objective.

General

No new pollutant sources that could affect air quality objectives have been identified during 2022.

No new receptors have been identified as exceeding any objectives during 2022.

Monitoring data from 2020 and to a certain degree 2021 do not represent normal years due to the Covid-19 pandemic. As reported in the 2022 ASR, there was a significant reduction in vehicle journeys in 2020, hence NO_2 concentrations dropped noticeably more in 2020 at a number of locations within the District when compared with previous years, with little change in 2021. The results for 2020 and 2021 should be treated with some

caution. For 2022, NO_2 concentrations across the Borough have overall declined slightly or plateaued. As traffic data is currently unavailable for the Borough for 2022, it is unclear whether traffic has returned to 2019 levels. Predicting future travel behaviours and their impact on pollutant concentrations within the Borough is complicated further by remote/flexible working patterns continuing for many since pandemic restrictions were lifted, with no sign of this changing any time soon. The cost of living crisis may also continue to influence travel behaviours moving forward.

Despite results from 2016 to 2019 showing a general downward trend in NO_2 concentrations, there were still some marginal exceedances of the annual mean objective at three sites in AQMA 1 during 2022, albeit these monitoring sites are not representative of annual exposure. When corrected for distance at relevant façade locations, NO_2 concentrations are below the annual mean NO_2 Objective at all locations but for one or two sites have remained within 10% of the annual NO_2 Objective for the past three years. Should concentrations continue to decline for another year or two, East Staffordshire Borough Council maybe in a position to revoke AQMA 1. However, given the fact compliance against the annual mean NO_2 Objective over the past three years has coincided with the Covid-19 pandemic creates some uncertainty on the long term NO_2 picture for AQMA 1. East Staffordshire Borough Council feels it would be prudent to keep AQMA 1 in force for the foreseeable until a clearer picture is obtained from another year or two's worth of monitoring data. In contrast, there is still justification for revoking AQMA 2 as explained above.

3.2.2 Particulate Matter (PM_{10})

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

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

As shown in Table A.6 the annual mean concentration at the Horninglow AURN site for 2022 was 11µg/m^3 and is the first year PM_{10} monitoring commenced so at this early stage it is not possible to assess for any long term trends. With regards to exceedances of the daily PM_{10} mean, none occurred at the Horninglow AURN site during 2022.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A would normally present 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 that year. As shown in Table A.8, $PM_{2.5}$ concentrations were 7µg/m^3 during this initial monitoring year. 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 AQMAs	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

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)
DT18	A444- Glebe School (Rs)	Roadside	425706	321902	NO_2	AQMA2	3.2	1.5	No	1.5
DT20	Derby Rd – opp. Coytes (Rs)	Roadside	425161	324737	NO2	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 – 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	NO2	AQMA1	8.7	2.8	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)
DT33	Horninglow St - Charrington House (Rs)	Roadside	424984	323388	NO_2	AQMA1	1.3	1.5	No	1.5
DT34	Horninglow St – 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
DT37	Evershed Way / Anglesey Rd (Rs)	Roadside	424096	322774	NO_2	AQMA1	2.2	1.9	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

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)
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 60	Other	408624	334698	NO_2	Outside AQMAs	0.0	11.5	No	1.5
DT61	Uttoxeter 61	Other	408624	334698	NO_2	Outside AQMAs	0.0	11.5	No	1.5
DT62	Uttoxeter 62	Other	408624	334698	NO_2	Outside AQMAs	0.0	11.5	No	1.5
DT67	Uttoxeter 67	Other	408344	334664	NO_2	Outside AQMAs	0.0	16.0	No	1.5
DT68	Uttoxeter 68	Other	408344	334664	NO_2	Outside AQMAs	0.0	16.0	No	1.5
DT69	Uttoxeter 69	Other	408344	334664	NO_2	Outside AQMAs	0.0	16.0	No	1.5
DT70	Uttoxeter 70	Other	408305	334662	NO_2	Outside AQMAs	0.0	14.0	No	1.5
DT71	Uttoxeter 71	Other	408299	334649	NO_2	Outside AQMAs	0.0	25.5	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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	424671	324019	Urban Centre	88.7	88.7	39	37	32	25.2	31.0
CM3	424646	324897	Urban Background	76	76	19	18	14	15	16

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

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

Notes:

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

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

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

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

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

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

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

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
DT1	425362	323339	Roadside	100	100.0	34.2	32.3	27.1	25.9	27.6
DT2	425575	322028	Roadside	92.3	92.3	**45.8**	**43.5**	38.4	37.8	36.8
DT3	424367	324781	Roadside	90.4	90.4	32.0	30.1	26.2	24.8	29.1
DT4, DT5, DT6	424671	324019	Urban Centre	90.4	90.4	39.8	37.0	34.4	33.4	34.3
DT7	423952	323281	Kerbside	92.3	92.3	**42.0**	**40.3**	36.3	36.1	34.2
DT8	424796	323624	Roadside	100	100.0	**40.0**	37.4	30.9	32.3	32.4
DT10	424636	324037	Kerbside	90.4	90.4	**49.7**	**44.4**	**43.4**	**42.2**	**45.5**
DT11	426742	324155	Urban Background	100	100.0	14.4	12.9	11.8	10.5	10.9
DT13	424416	324483	Roadside	100	100.0	38.4	34.8	30.9	32.4	27.4
DT15	424581	323963	Roadside	92.3	92.3	**43.8**	**40.0**	37.5	37.4	37.0
DT17	424212	323473	Roadside	100	100.0	**51.0**	**45.0**	**42.1**	**42.4**	**41.3**
DT18	425706	321902	Roadside	100	100.0	39.3	33.4	30.3	30.6	29.0

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 2022 (%) [2]	2018	2019	2020	2021	2022
DT20	425161	324737	Roadside	92.3	92.3	33.2	30.3	29.9	28.0	29.2
DT22	424708	324140	Roadside	92.3	92.3	38.3	36.6	36.0	32.9	32.1
DT23	424547	323940	Roadside	100	100.0	**40.0**	36.7	36.2	34.0	34.2
DT24	424351	323660	Roadside	82.7	82.7	39.3	35.6	32.0	32.2	34.8
DT25	424453	323794	Roadside	100	100.0	34.0	29.4	27.2	27.3	28.1
DT27	424149	323344	Kerbside	100	100.0	**45.2**	**42.5**	38.8	**40.3**	39.5
DT28	423993	323308	Kerbside	100	100.0	**53.7**	**48.4**	**42.5**	**44.1**	**42.6**
DT29	423812	323077	Roadside	100	100.0	39.3	36.4	33.1	31.7	32.5
DT30	423807	323115	Roadside	100	100.0	**40.9**	37.0	36.1	35.0	33.4
DT31	423784	323099	Roadside	92.3	92.3	**44.6**	**40.3**	34.4	35.2	33.3
DT33	424984	323388	Roadside	90.4	90.4	39.7	37.1	34.5	33.4	32.9
DT34	425270	323346	Roadside	92.3	92.3	36.1	32.5	29.2	30.6	29.1
DT35	425275	323327	Roadside	100	100.0	**41.0**	32.4	37.0	34.0	33.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2018	2019	2020	2021	2022
DT37	424096	322774	Roadside	57.7	57.7	31.7	31.7	32.0	30.3	29.7
DT39	424648	322300	Roadside	100	100.0	38.3	32.4	29.9	28.0	27.8
DT40	423611	323176	Roadside	100	100.0	34.0	31.2	31.2	27.3	29.8
DT41	423264	323358	Roadside	100	100.0	34.2	32.0	27.9	29.5	28.5
DT42	422129	323906	Roadside	100	100.0	25.2	23.4	23.0	21.7	21.7
DT43	424969	323802	Roadside	100	100.0	31.2	27.2	26.5	25.0	24.6
DT49	408609	334703	Roadside	100	100.0	**60.8**	**53.2**	**49.1**	**46.0**	**46.6**
DT51	408875	334742	Roadside	100	100.0	**82.7**	**72.3**	**64.0**	**59.8**	**59.7**
DT52	408415	334622	Roadside	90.4	90.4	23.2	19.9	17.0	18.2	16.9
DT55, DT56, DT57	408545	334699	Roadside	100	100.0	**65.5**	**58.9**	**49.8**	**48.4**	**46.8**
DT60	408624	334698	Other	100	100.0	**42.7**	37.5	32.2	28.3	28.7
DT61	408624	334698	Other	100	100.0	37.5	32.0	26.8	27.5	27.2
DT62	408624	334698	Other	90.4	90.4	30.6	25.5	19.2	22.8	22.6

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 2022 (%) [2]	2018	2019	2020	2021	2022
DT67	408344	334664	Other	90.4	90.4	31.7	27.6	21.0	24.9	23.6
DT68	408344	334664	Other	100	100.0	33.7	29.5	21.9	25.6	24.3
DT69	408344	334664	Other	84.6	84.6	28.3	22.1	17.5	19.9	21.3
DT70	408305	334662	Other	100	100.0	24.7	21.3	22.0	18.8	18.0
DT71	408299	334649	Other	100	100.0	23.6	20.5	15.3	17.5	17.1
DT74	421423	328754	Roadside	63.5	63.5					16.3
DT75	421233	328895	Roadside	100	100.0					17.2
DT76	421156	328896	Urban Background	90.4	90.4					13.5
DT77	425190	320750	Kerbside	100	50.0					20.8
DT78	425502	321414	Roadside	100	50.0					17.2

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

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

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

Notes:

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

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

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

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

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

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

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations (AQMA 1)

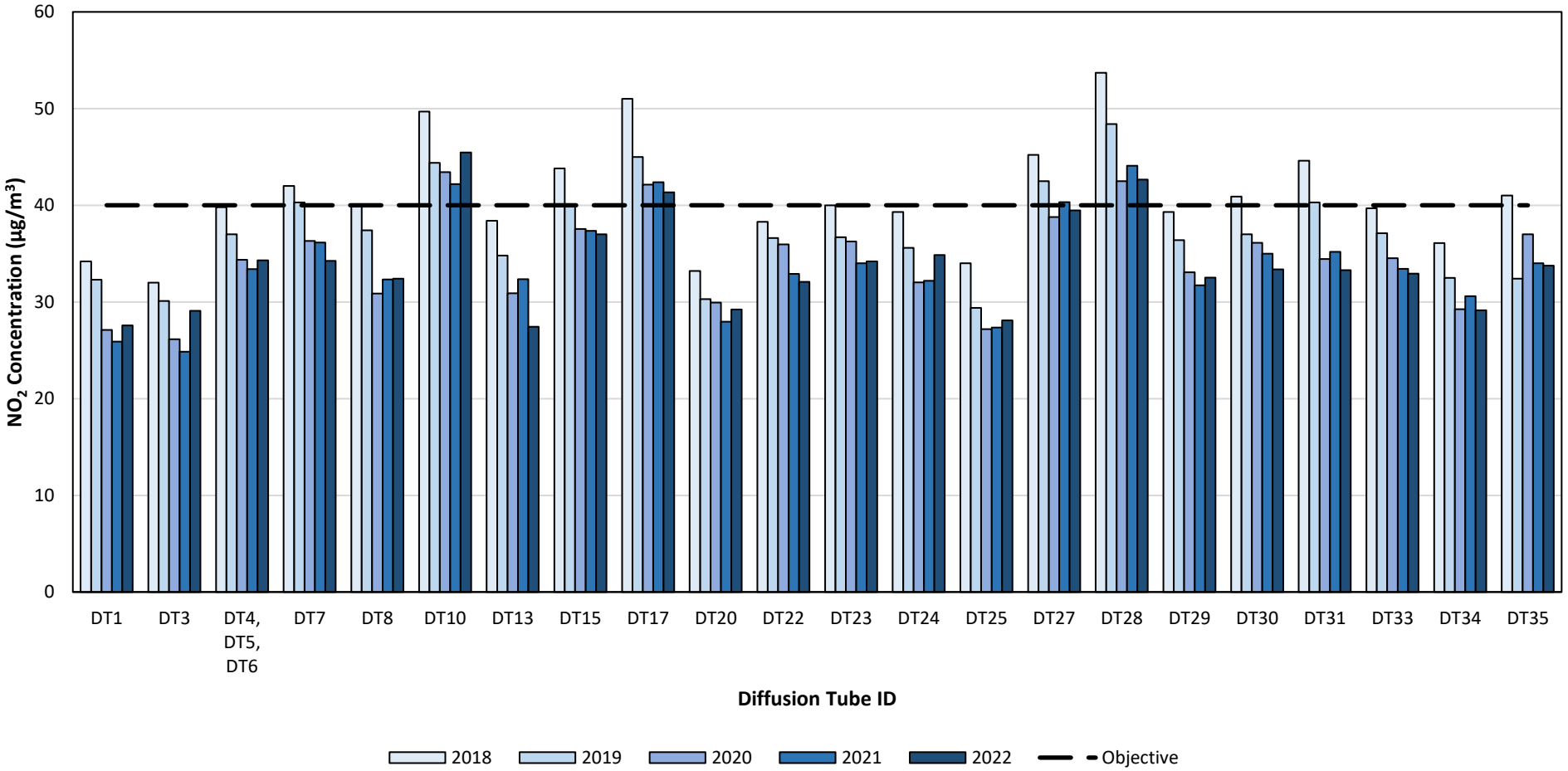


Figure A.2 – Trends in Annual Mean NO_2 Concentrations (AQMA 2)

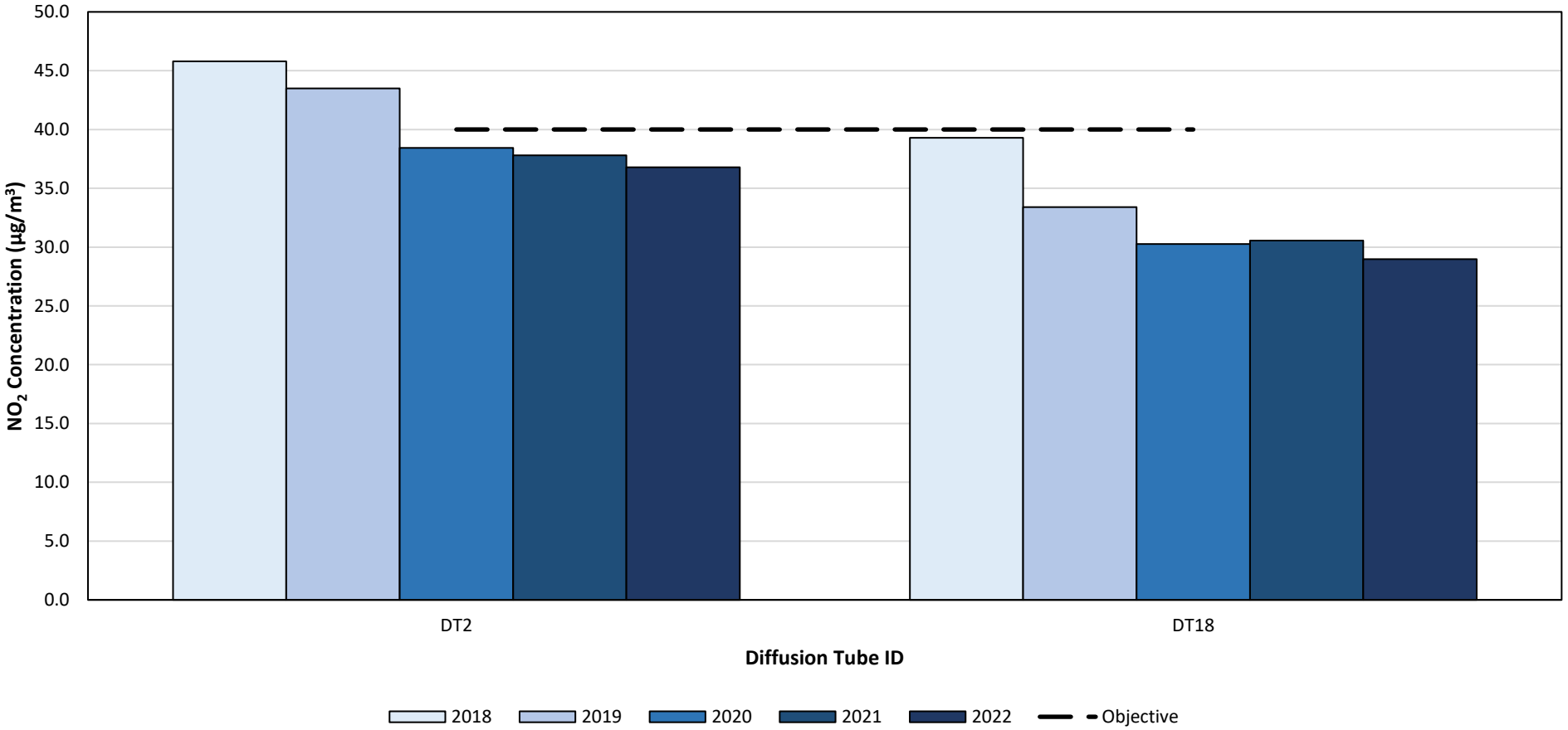


Figure A.3 – Trends in Annual Mean NO_2 Concentrations (Burton sites, outside AQMAs)

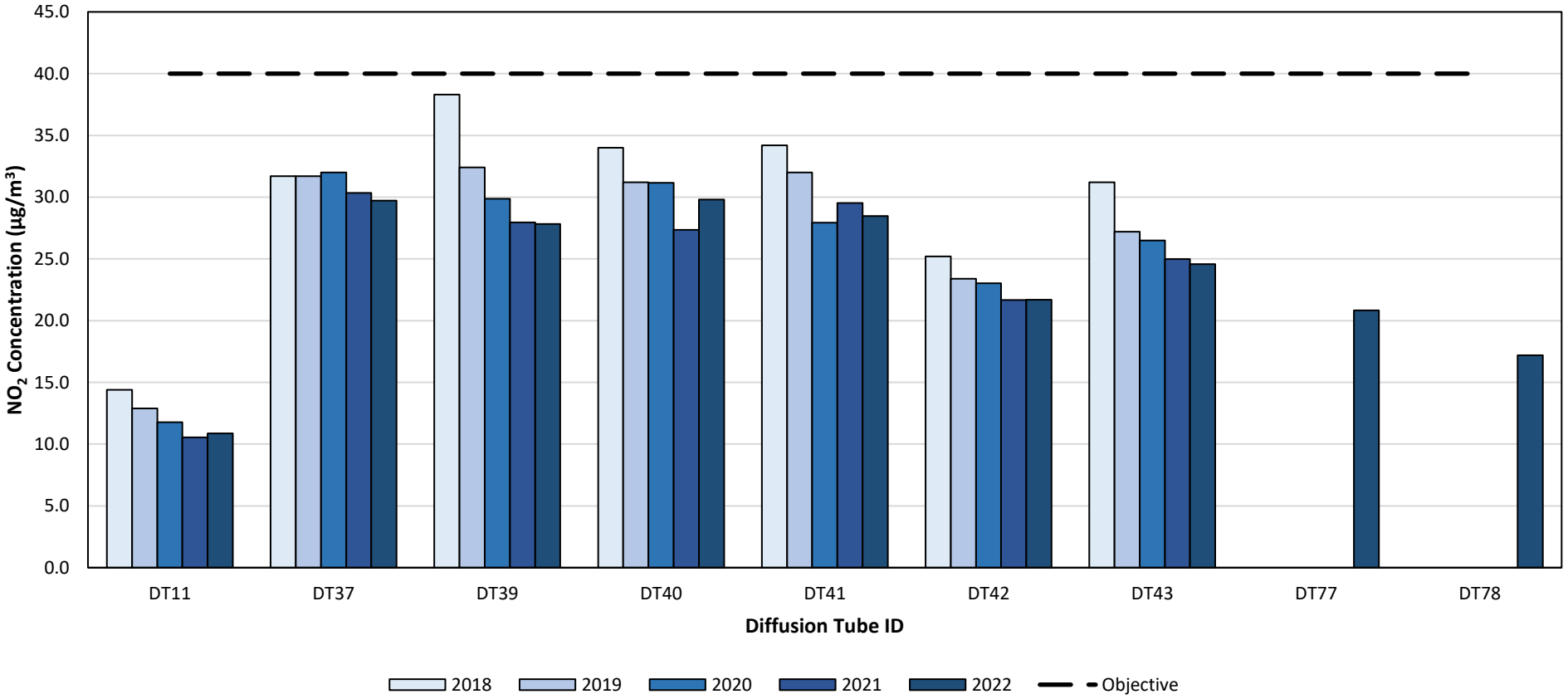


Figure A.4 – Trends in Annual Mean NO_2 Concentrations (Uttoxeter and Tutbury sites)

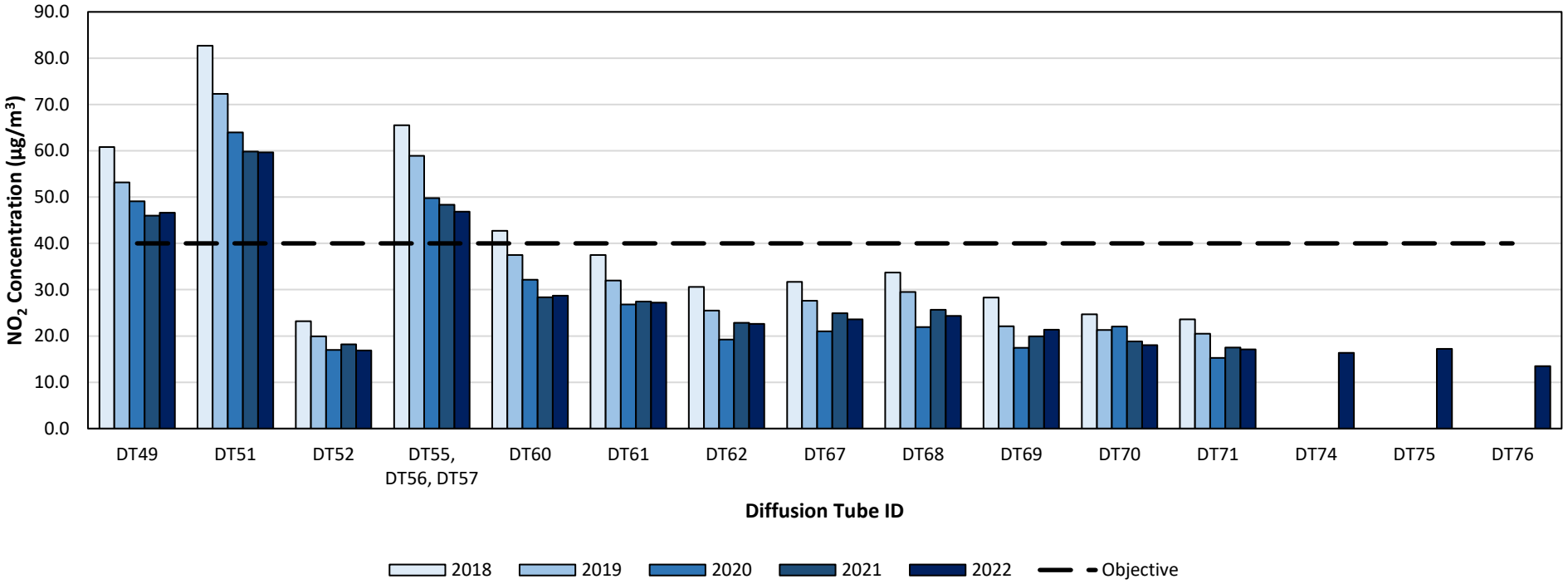


Figure A.5 – Long-term trends in Annual Mean NO_2 Concentrations in AQMA 1 (2018-2022) at relevant exposures (distance corrected)

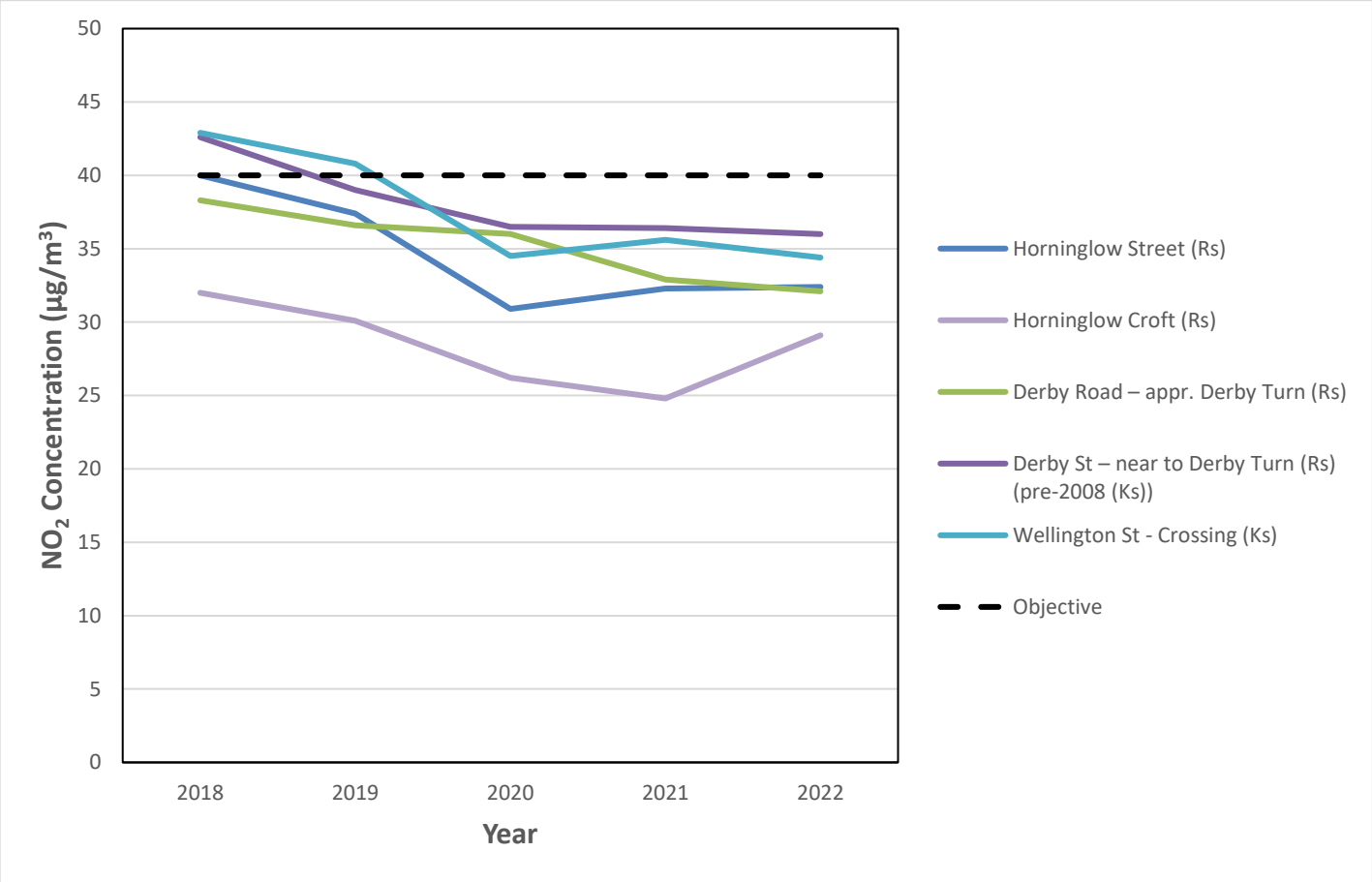


Figure A.6 – Long-term trends in Annual Mean NO_2 Concentrations in AQMA 2 (2007 to 2022) at relevant exposures (distance corrected)

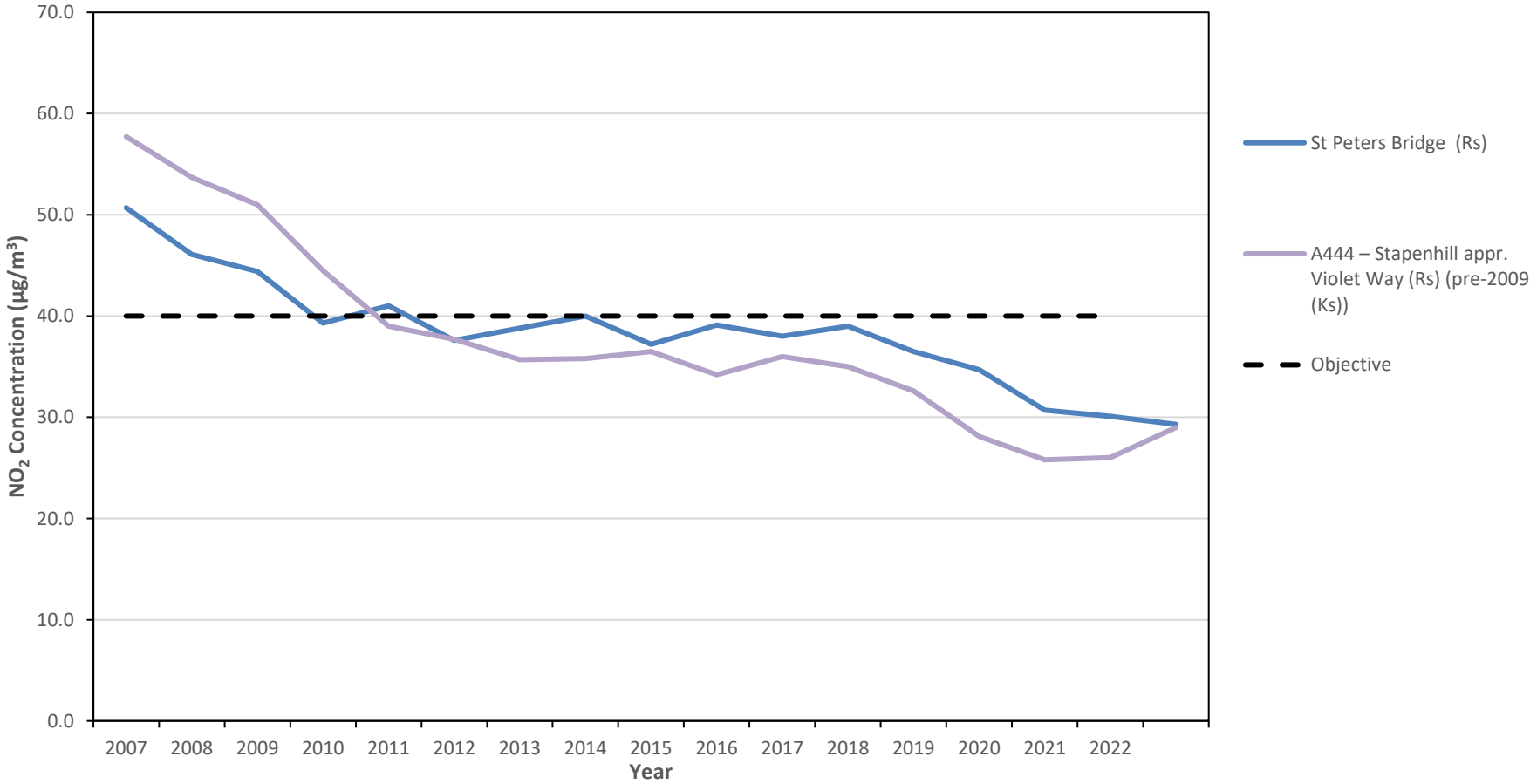


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	424671	324019	Urban Centre	88.7	88.7	0	0	0	0	0
CM3	424646	324897	Urban Background (Defra AURN Site)	76	76	0	0	0	0	0

Notes:

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

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

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM3	424646	324897	Urban Background (Defra AURN Site)	100	50	N/A	N/A	N/A	N/A	11

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

Notes:

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

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

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM3	424646	324897	Urban Background (Defra AURN Site)	100	50	N/A	N/A	N/A	N/A	0

Notes:

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

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
CM3	424646	324897	Urban Background (Defra AURN Site)	100	50	N/A	N/A	N/A	N/A	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 $\mu g/m^3$.

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.87)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT1	425362	323339	44.1	27.8	30.4	25.9	26.7	29.5	30.7	28.7	35.9	30.4	35.5	34.9	31.7	27.6	-	
DT2	425575	322028	54.9	39.5	45.7	34.9	36.3		43.6	39.6	44.1	39.7	43.5	43.4	42.3	36.8	29.3	
DT3	424367	324781	39.8	30.0	32.4	24.7		43.1	23.6	24.2	28.9	38.7	42.2	40.2	33.4	29.1	-	
DT4	424671	324019	49.1	37.6	37.5	31.2		39.7	37.1	35.5	43.3	40.9	45.2	37.0	-	-	-	Triplicate Site with DT4, DT5 and DT6 - Annual data provided for DT6 only
DT5	424671	324019	55.8	38.9	33.6	33.5		38.0	37.1	35.7	43.8	42.1	44.0	40.1	-	-	-	Triplicate Site with DT4, DT5 and DT6 - Annual data provided for DT6 only
DT6	424671	324019	51.0	41.3	36.6	32.4		21.8	37.2	34.8	44.1	36.2	46.1	42.7	39.4	34.3	-	Triplicate Site with DT4, DT5 and DT6 - Annual data provided for DT6 only
DT7	423952	323281	51.4	38.0	37.4	32.1	35.1	36.2	39.5	38.5	44.2	38.1		42.5	39.4	34.2	-	
DT8	424796	323624	42.7	34.9	45.2	39.4	34.5	27.3	35.6	39.8	38.2	36.9	38.0	34.4	37.2	32.4	-	
DT10	424636	324037	62.4	55.7	47.6	44.7		48.4	45.8	48.8	49.8	65.9	55.6	50.1	52.3	**45.5**	34.8	
DT11	426742	324155	20.9	13.9	12.1	9.4	7.2	7.8	9.0	10.4	11.7	12.6	16.2	18.8	12.5	10.9	-	
DT13	424416	324483	42.3	27.7	43.9	1.4	16.3	18.2	27.4	38.8	39.6	37.1	37.1	48.6	31.5	27.4	-	
DT15	424581	323963	44.6	36.1	51.5	36.5	35.4	32.8	37.0	52.0		48.4	51.4	42.0	42.5	37.0	36.0	
DT17	424212	323473	55.3	43.3	54.6	43.7	41.0	39.6	44.3	50.0	46.1	50.0	56.1	46.2	47.5	**41.3**	35.4	
DT18	425706	321902	44.2	29.9	35.3	27.8	26.6	29.3	31.3	32.4	40.2	30.5	34.4	37.8	33.3	29.0	-	
DT20	425161	324737	38.8	30.9	34.4	26.4	23.7	21.0		46.6	28.5	36.8	40.3	41.9	33.6	29.2	-	
DT22	424708	324140	48.1	38.0	39.9	32.3	31.5	30.1	31.9	35.3		37.7	44.0	36.7	36.9	32.1	-	
DT23	424547	323940	50.6	39.7	40.7	34.0	31.9	32.9	37.2	40.5	40.6	37.7	42.7	43.0	39.3	34.2	-	

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 (0.87)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT24	424351	323660	46.9	41.4	41.4	33.2			33.1	34.7	32.5	44.8	47.8	44.7	40.1	34.8	-	
DT25	424453	323794	40.1	33.3	40.9	30.5	24.3	21.4	25.0	35.4	30.4	34.0	35.4	36.9	32.3	28.1	-	
DT27	424149	323344	55.6	39.8	48.6	41.5	35.1	42.6	44.1	48.0	49.7	44.0	49.5	46.1	45.4	39.5	32.5	
DT28	423993	323308	56.8	45.2	55.4	40.8	43.9	39.2	47.8	50.5	50.2	54.6	58.5	45.3	49.0	**42.6**	34.4	
DT29	423812	323077	52.6	39.6	33.4	30.9	31.1	37.1	37.8	28.5	35.3	35.2	45.6	41.4	37.4	32.5	-	
DT30	423807	323115	42.7	33.4	37.6	35.0	31.4	33.6	36.1	39.9	39.6	42.5	45.4	43.0	38.4	33.4	-	
DT31	423784	323099	46.8		39.2	34.3	35.2	33.1	37.9	40.6	5.7	46.3	54.9	46.9	38.3	33.3	-	
DT33	424984	323388	52.2	39.6	38.0	29.5	31.0	32.9	35.4	27.4	42.8	44.3	43.1		37.8	32.9	-	
DT34	425270	323346	41.9	32.2	38.7	32.0	26.9	27.4	31.3		35.1	31.0	34.3	37.7	33.5	29.1	-	
DT35	425275	323327	46.8	42.5	41.9	37.1	33.8	32.8	35.8	36.1	38.5	38.0	46.7	35.4	38.8	33.7	-	
DT37	424096	322774	40.9	34.7	36.5	26.7	28.2	31.6	31.9						32.9	29.7	-	
DT39	424648	322300	39.3	28.2	36.3	29.7	25.7	29.2	31.3	38.2	36.6	27.8	29.3	32.3	32.0	27.8	-	
DT40	423611	323176	44.6	36.9	32.8	26.0	30.0	31.6	30.9	26.3	32.9	38.7	46.7	33.8	34.3	29.8	-	
DT41	423264	323358	39.7	33.1	37.8	28.1	29.6	27.7	30.3	29.2	34.7	35.4	41.6	25.6	32.7	28.5	-	
DT42	422129	323906	33.8	24.8	26.7	19.0	19.0	23.0	20.0	16.1	25.3	28.4	32.8	30.3	24.9	21.7	-	
DT43	424969	323802	39.0	21.4	33.2	27.8	19.5	23.4	22.3	27.4	27.6	28.2	33.3	35.9	28.3	24.6	-	
DT49	408609	334703	58.0	55.0	45.3	48.8	59.1	59.4	58.9	57.3	51.8	53.7	60.7	34.9	53.6	**46.6**	33.6	
DT51	408875	334742	74.7	69.3	60.1	61.9	66.6	78.4	71.3	62.1	68.9	69.0	81.4	59.6	68.6	**59.7**	**42.7**	
DT52	408415	334622	26.8	16.9	21.8	20.9	15.0	15.3	17.8	22.1	21.8	15.7	19.4	< 1.2	19.4	16.9	-	
DT55	408545	334699	60.5	56.4	52.8	52.5	58.1	56.6	58.7	66.0	54.4	44.8	53.3	27.7	-	-	-	Triplicate Site with DT55, DT56 and DT57 - Annual data provided for DT57 only

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 (0.87)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT56	408545	334699	64.4	56.9	55.4	57.4	53.3	45.6	56.3	62.5	53.5	44.5	69.0	45.6	-	-	-	Triplicate Site with DT55, DT56 and DT57 - Annual data provided for DT57 only
DT57	408545	334699	63.0	59.8	54.0	53.8	52.8	49.9	57.9	63.3	55.9	40.5	53.6	27.4	53.8	**46.8**	**42.2**	Triplicate Site with DT55, DT56 and DT57 - Annual data provided for DT57 only
DT60	408624	334698	40.2	34.9	31.6	31.0	30.8	26.4	34.2	38.2	32.2	31.0	33.3	32.0	33.0	28.7	-	
DT61	408624	334698	35.3	30.0	33.1	29.9	27.1	32.1	32.9	38.8	32.9	25.6	30.1	27.8	31.3	27.2	-	
DT62	408624	334698	31.4	18.0	26.6		22.2	23.7	28.7	37.5	31.5	19.6	21.1	25.4	26.0	22.6	-	
DT67	408344	334664	28.6	20.0	29.8	30.5		23.5	27.4	39.7	32.6	17.9	22.8	25.7	27.1	23.6	-	
DT68	408344	334664	34.3	24.6	28.8	34.0	24.1	23.9	31.6	37.8	24.3	23.6	24.3	24.3	28.0	24.3	-	
DT69	408344	334664	29.0		25.8	24.6	20.1	18.2	21.6	27.1	34.7	20.0		24.0	24.5	21.3	-	
DT70	408305	334662	28.0	17.1	20.5	22.1	17.6	16.0	20.6	24.5	24.1	16.6	20.9	20.2	20.7	18.0	-	
DT71	408299	334649	25.0	16.1	19.7	21.2	15.4	15.0	18.8	23.6	22.1	17.5	18.6	22.8	19.7	17.1	-	
DT74	421423	328754	27.0	19.5	19.3			16.1	16.6		19.0		22.0	23.8	20.4	16.3	-	
DT75	421233	328895	26.3	17.8	21.5	18.1	13.2	14.3	16.7	19.4	20.5	19.9	23.7	26.2	19.8	17.2	-	
DT76	421156	328896	19.3	14.1	18.1		14.3	8.6	10.6	15.7	14.1	15.6	17.8	22.6	15.5	13.5	-	
DT77	425190	320750							20.3	21.6	24.1	22.3	25.1	30.5	24.0	20.8	-	
DT78	425502	321414							14.6	16.7	19.5	17.2	26.2	24.6	19.8	17.2	-	

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

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

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

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

☒ **East Staffordshire Borough Council confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

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

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**. See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within East Staffordshire Borough Council During 2022

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 2022.

All planning developments subject to air quality assessments were predicted to have a negligible contribution to NO_2, PM_{10} 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 2022

East Staffordshire Borough Council has continued to support the Air Aware Project and Climate Change Action Plan within the reporting year of 2022.

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 is intended to focus further on the schools and community (small businesses) engagement programme but also to increase public awareness. The school engagement has mainly targeted areas where school traffic impacts on the District's AQMAs. 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

In East Staffordshire, the Air Aware Project has engaged with 10 schools in the urban area of Burton upon Trent with 8,242 pupil engagements and 740 parent engagements with the school settings. Activities taking place specifically within East Staffordshire has included

- 5 Anti-Idling Campaigns at 5 different schools, see Figure C.1;
- 5 Hiking with a Viking activities to promote walking to school and park and stride locations at 5 different schools.
- Clean Air Day promotion in 8 schools across Burton upon Trent.
- Walk to School Week and Walk to School Month campaigns.
- Air Quality Monitoring using the hand-held monitor at 5 sites in Burton upon Trent
- Diffusion Tube Monitoring and sharing of data.
- 12 assemblies to promote air quality and active travel in Burton upon Trent
- New family resources and transition resources for 10 schools in the Burton Area to promote active travel.
- New infrastructure at 3 schools including cycle and scooter storage.
- 6 school travel plans with 4 accredited schools including 1 at Gold standard.
- Social media and newsletter promotion of air quality initiatives by schools.
- Bikeability and Scooter training including additional sessions for Air Quality schools.
- 8 "Anti-Idling Packs" supplied to Burton Schools and to 16 schools in total across the district with railing banners, boards and posters

Figure C.1 – Anti-Idling Campaigns at Local Schools

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)

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 NO_2 tube analysis and the Annual Field Inter-Comparison Exercise https://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html. Their lab code is 1017. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 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 2022, the laboratory scored 100% (satisfactory) in AIR-PT rounds AR049, AR050 and AR053 (February, July and November 2022) but just 0% (unsatisfactory) for round AR052 (September 2022). Investigation into the results for round

AR052 showed issues with the full extraction of the analyte from the tube and issues with training of a new member of staff. This did not affect results for other samples. Additional samples for the following round were ordered, and analysis was subsequently completed with 100% satisfactory results.

The laboratory also takes part in the field inter-comparison scheme. Based on 12 diffusion tube studies, all local authority co-location studies in 2022 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 http://laqm.defra.gov.uk/diffusion-tubes/precision.html

Monitoring was completed in adherence with the 2022 Diffusion Tube Monitoring Calendar, throughout the year.

Diffusion Tube Annualisation

Annualisation was required for four non-automatic monitoring sites in the East Staffordshire Borough during 2022 as data capture for these sites dropped below 75%. Data from three AURN monitoring sites; Derby – St Alkmund's Way, Stoke on Trent Centre, and Nottingham Centre 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 µg/m^3)

Site ID	Annualisation Factor AURN Derby – St Alkmund's Way	Annualisation Factor AURN Stoke on Trent Centre	Annualisation Factor AURN Nottingham Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
DT37	1.0601	1.0451	1.0067	1.0373	32.9	34.2
DT74	0.9261	0.9185	0.9171	0.9206	20.4	18.8
DT77	0.9789	0.9816	1.0347	0.9984	24.0	23.9
DT78	0.9789	0.9816	1.0347	0.9984	19.8	19.8

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

East Staffordshire Borough Council have applied a national bias adjustment factor of 0.87 to the 2022 monitoring data. The national bias factor was used to correct diffusion tube data for all sites during 2022 as this produced noticeably higher NO_2 results, so a more conservative approach has been followed. Furthermore, a technical fault with the NOx analyser at the Derby Turn automatic monitoring station led to a loss of data for much of November 2022, hence affecting 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
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)
2018	Local	-	0.90 for Burton sites 0.97 for Uttoxeter sites

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Distance correction should be considered at any monitoring site where the annual mean concentration is greater than 36µg/m^3 and the monitoring site is not located at a point of relevant exposure, which for the most recent reporting year of 2022 was applied to nine diffusion tube sites. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

More details on the distance correction calculations for 2020 and 2021 are presented in Table C.3.

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

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
DT2	3.0	9.5	36.8	11.7	29.3	
DT10	0.5	3.7	45.5	15.3	34.8	
DT15	1.8	2.3	37.0	18.9	*36.0*	*Predicted concentration at Receptor within 10% the AQS objective.*
DT17	1.7	5.5	41.3	18.9	35.4	

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
DT27	0.5	3.4	39.5	18.9	32.5	
DT28	0.5	2.5	42.6	13.7	34.4	
DT49	5.5	18.0	46.6	10.9	33.6	
DT51	3.0	11.5	59.7	10.9	**42.7**	*Predicted concentration at Receptor above AQS objective.*
DT55, DT56, DT57	14.5	19.5	46.8	10.9	**42.2**	*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.*

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 2022 therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

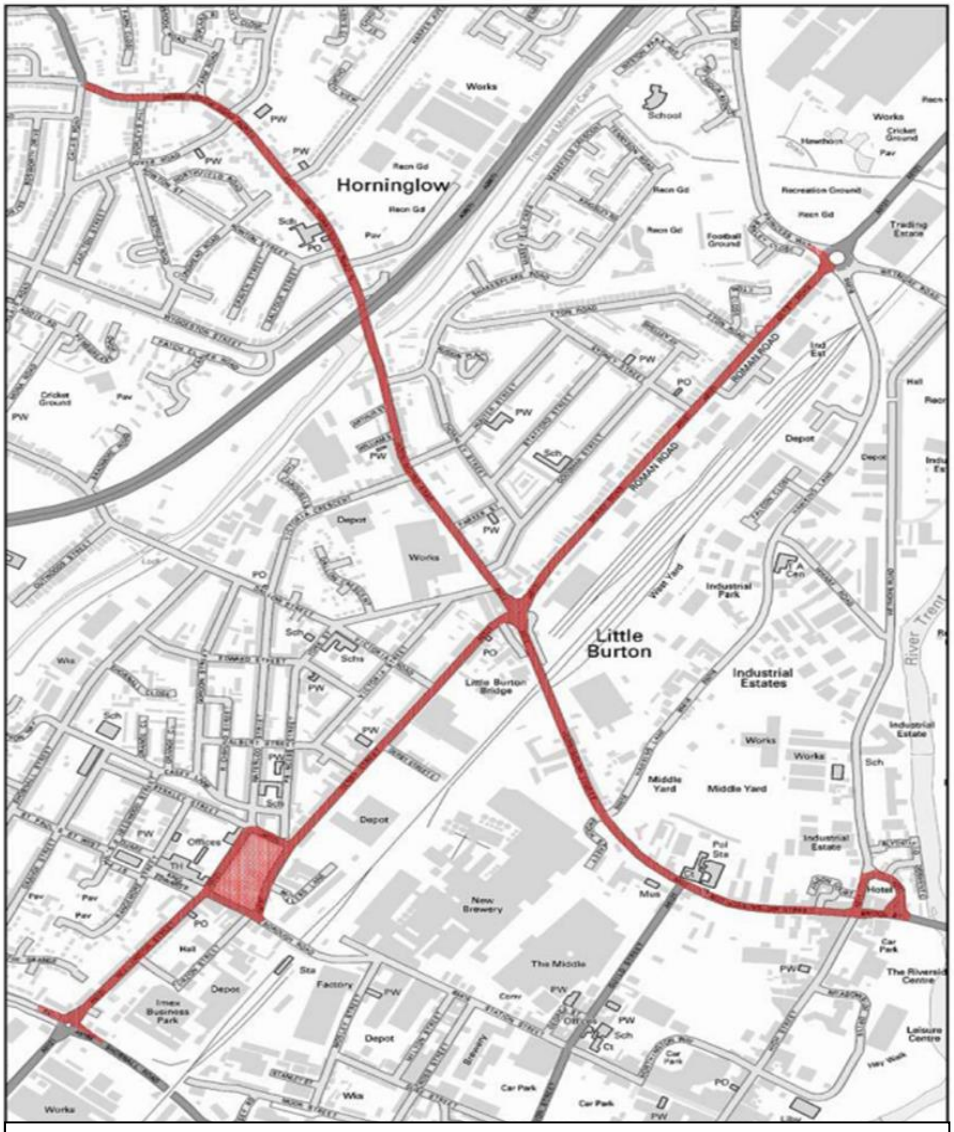
NO_2 Fall-off with Distance from the Road

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

No automatic NO_2 monitoring locations within the East Staffordshire Borough required distance corrections during 2022.

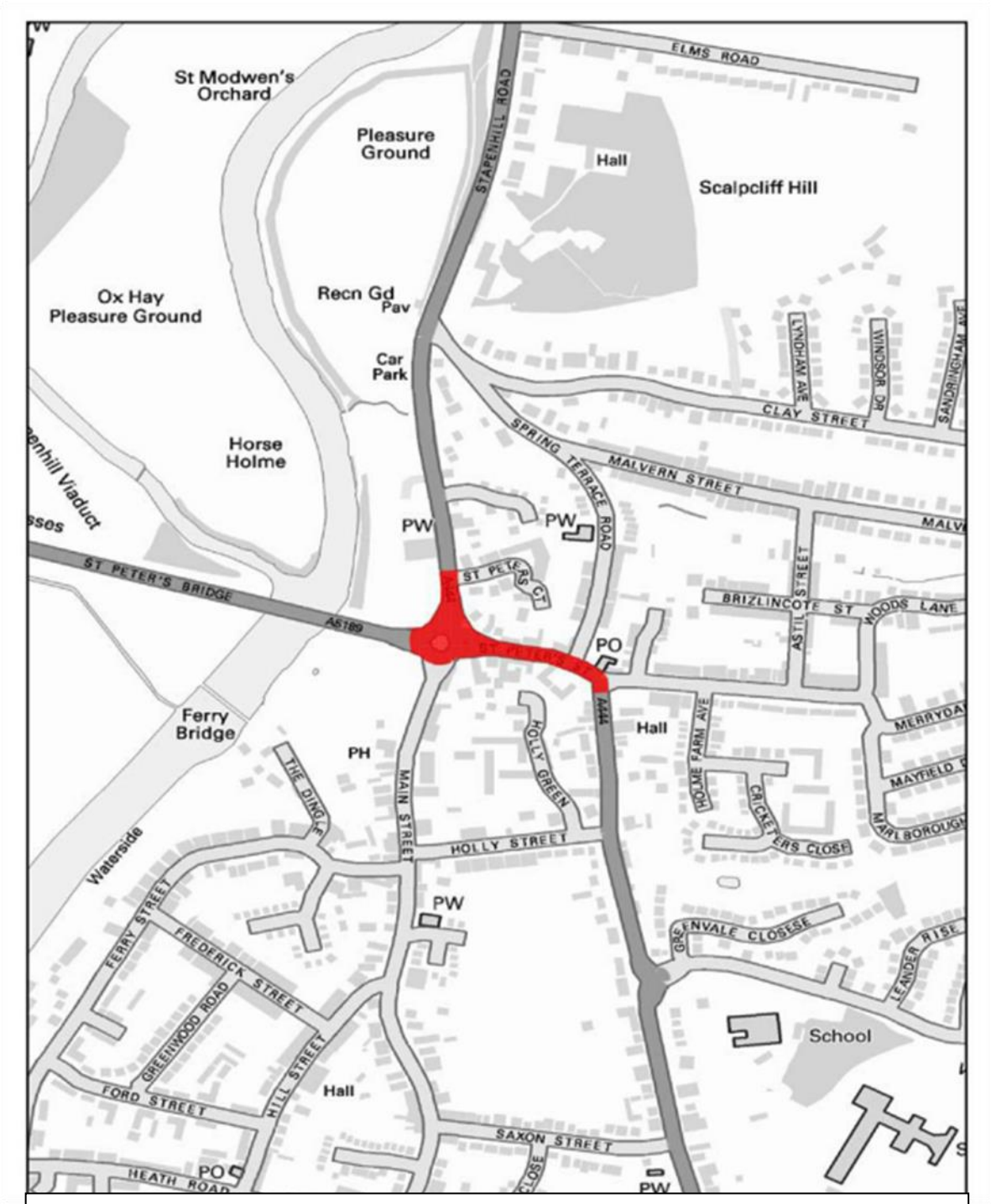
Appendix D: Map(s) of Monitoring Locations and AQMAs

Figure D.1 – AQMA 1 Burton upon Trent



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 Byrkley St.

Figure D.2 – AQMA 2 Stapenhill



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

Figure D.3 – The automatic monitoring station at Derby Turn, Burton upon Trent

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

Figure D.5 – Diffusion tubes - Burton upon Trent, AQMA 1 – Derby Street

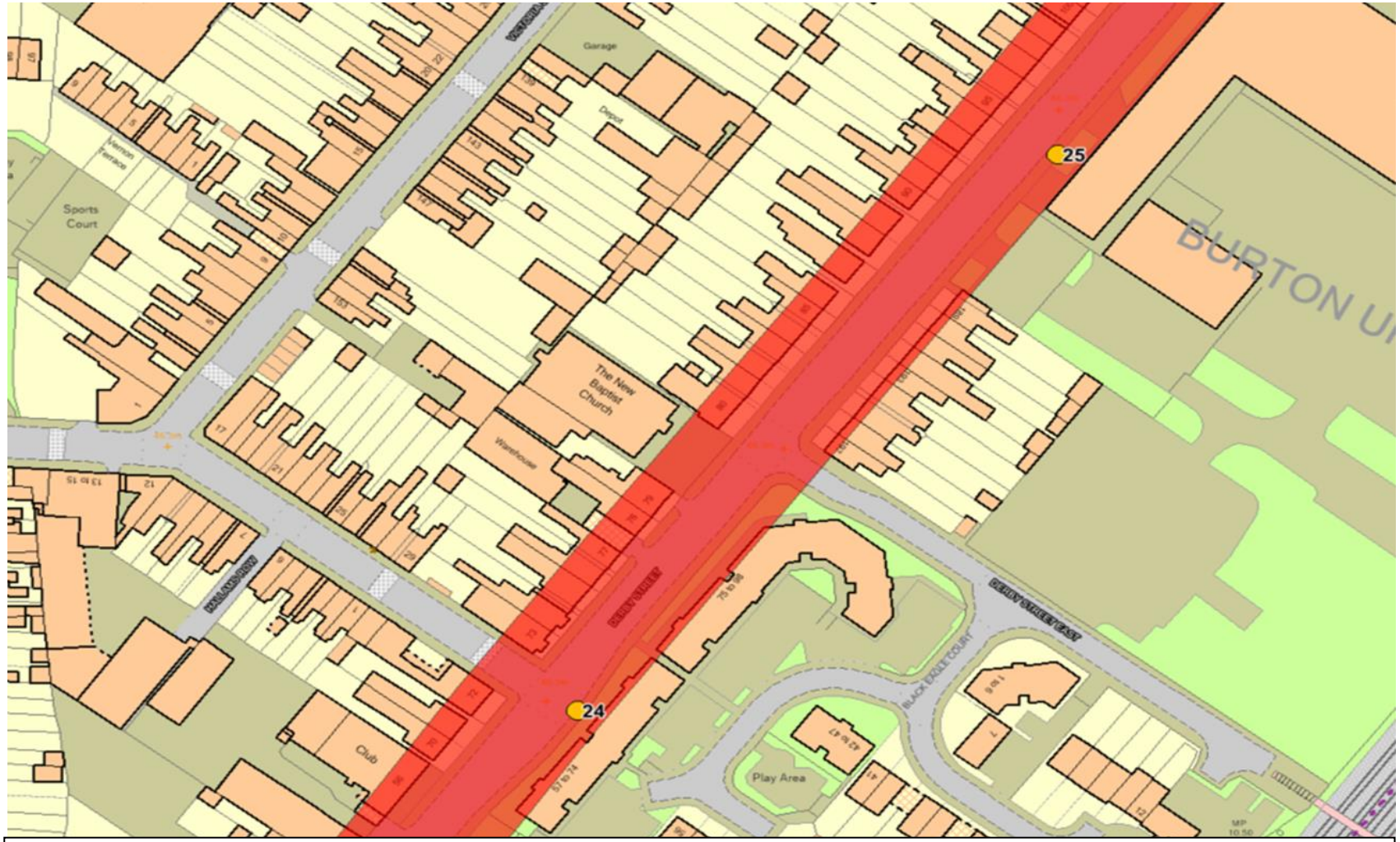


Figure D.6 – Diffusion tubes - Burton upon Trent, AQMA 1 – Wellington Street/ Waterloo Street/ Derby Street

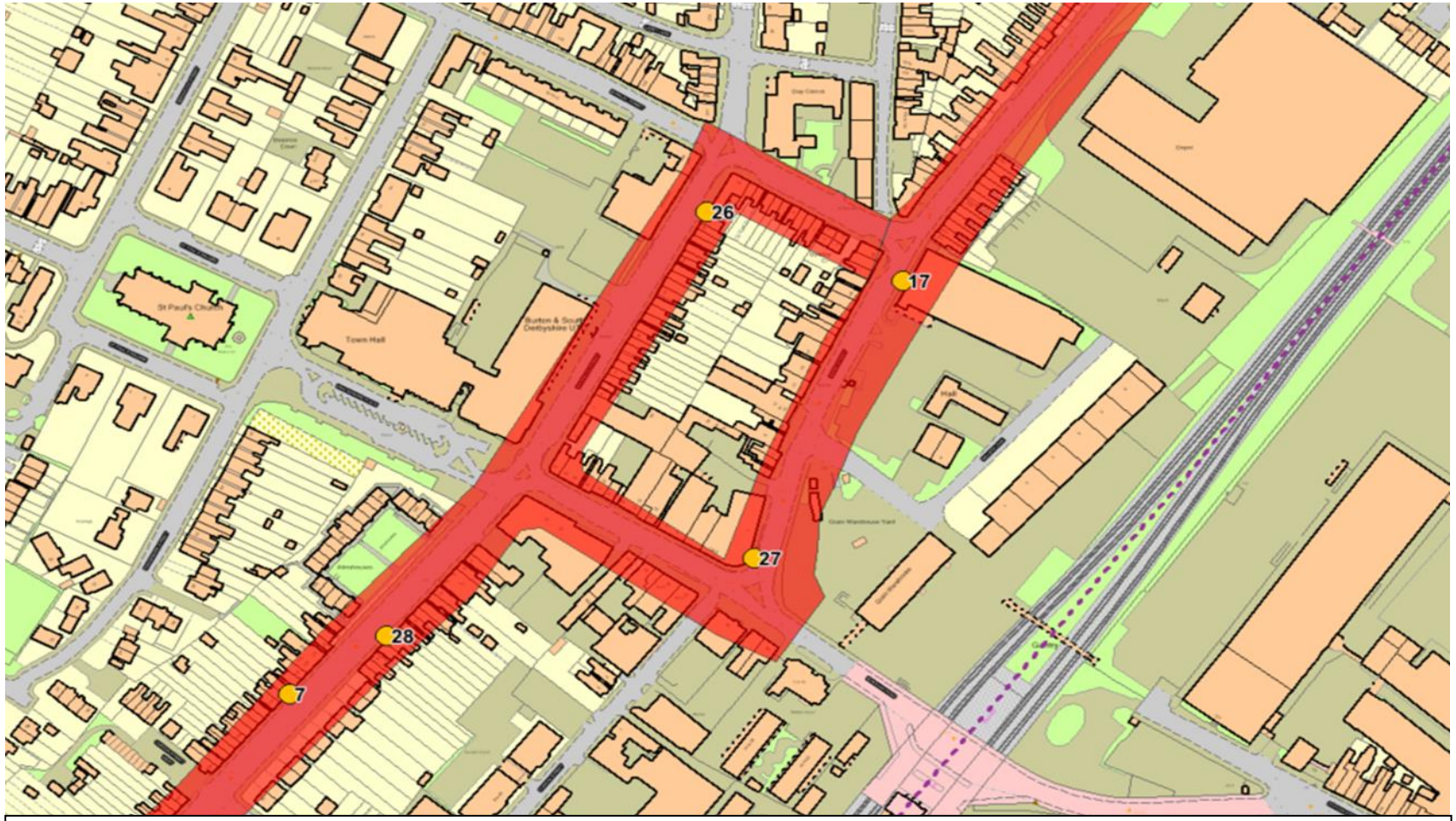


Figure D.7 – Diffusion tubes - Burton upon Trent, AQMA 1 – Derby Road

Figure D.8 – Diffusion tubes - Burton upon Trent, AQMA 1 – Horninglow Road

Figure D.9 – Diffusion tubes - Burton upon Trent, AQMA 1 – Horninglow Street

Figure D.10 – Diffusion tubes - Burton upon Trent, AQMA 1 – Bridge Street

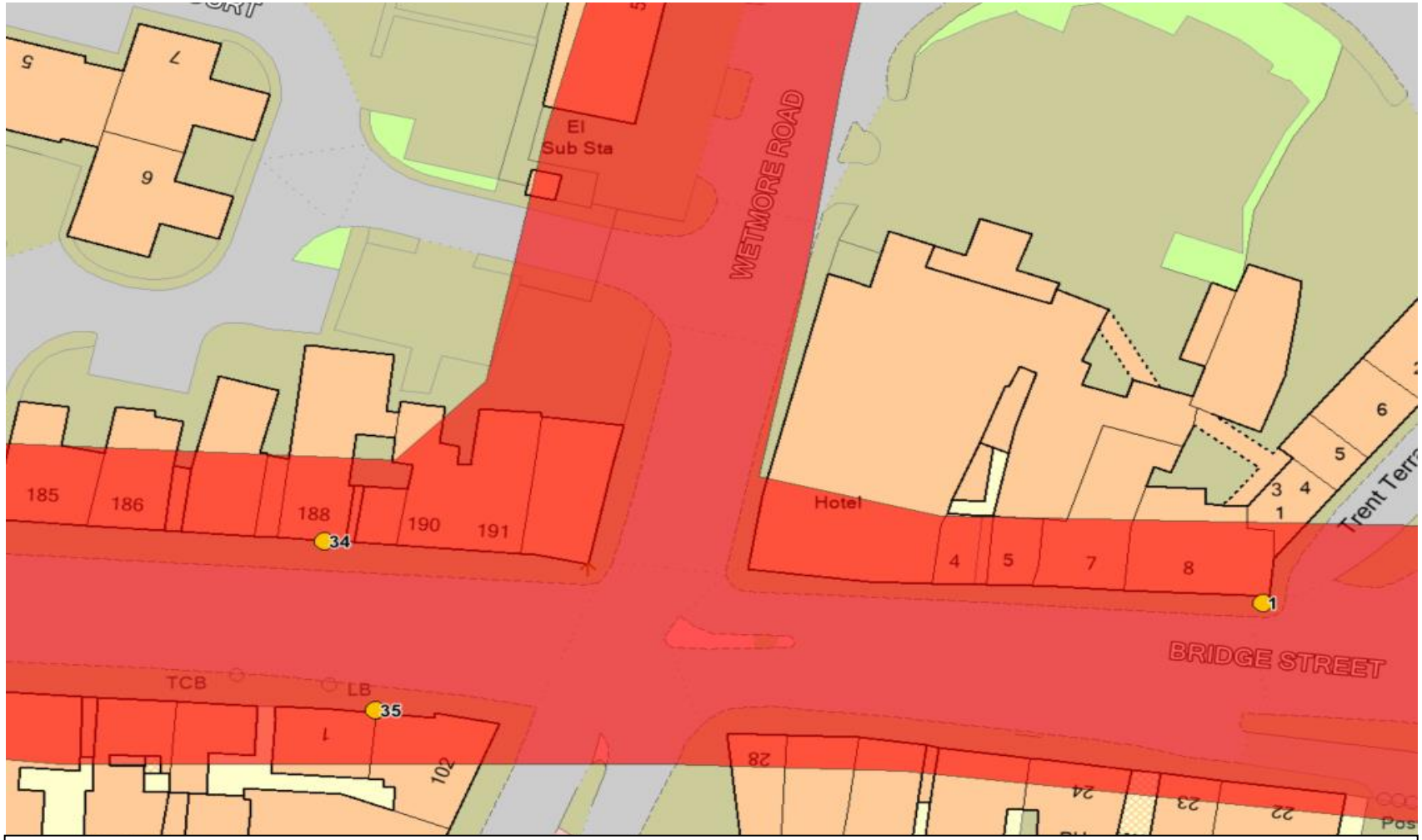


Figure D.11 – Diffusion tubes - Burton upon Trent, AQMA 1 – Horninglow Croft

Figure D.12 – Diffusion tubes - Burton upon Trent, AQMA 1 – Wellington Street/ Shobnall Road

Figure D.13 – Diffusion tubes - Stapenhill, AQMA 2 – St Peters Bridge Roundabout/A444 St Peters Street

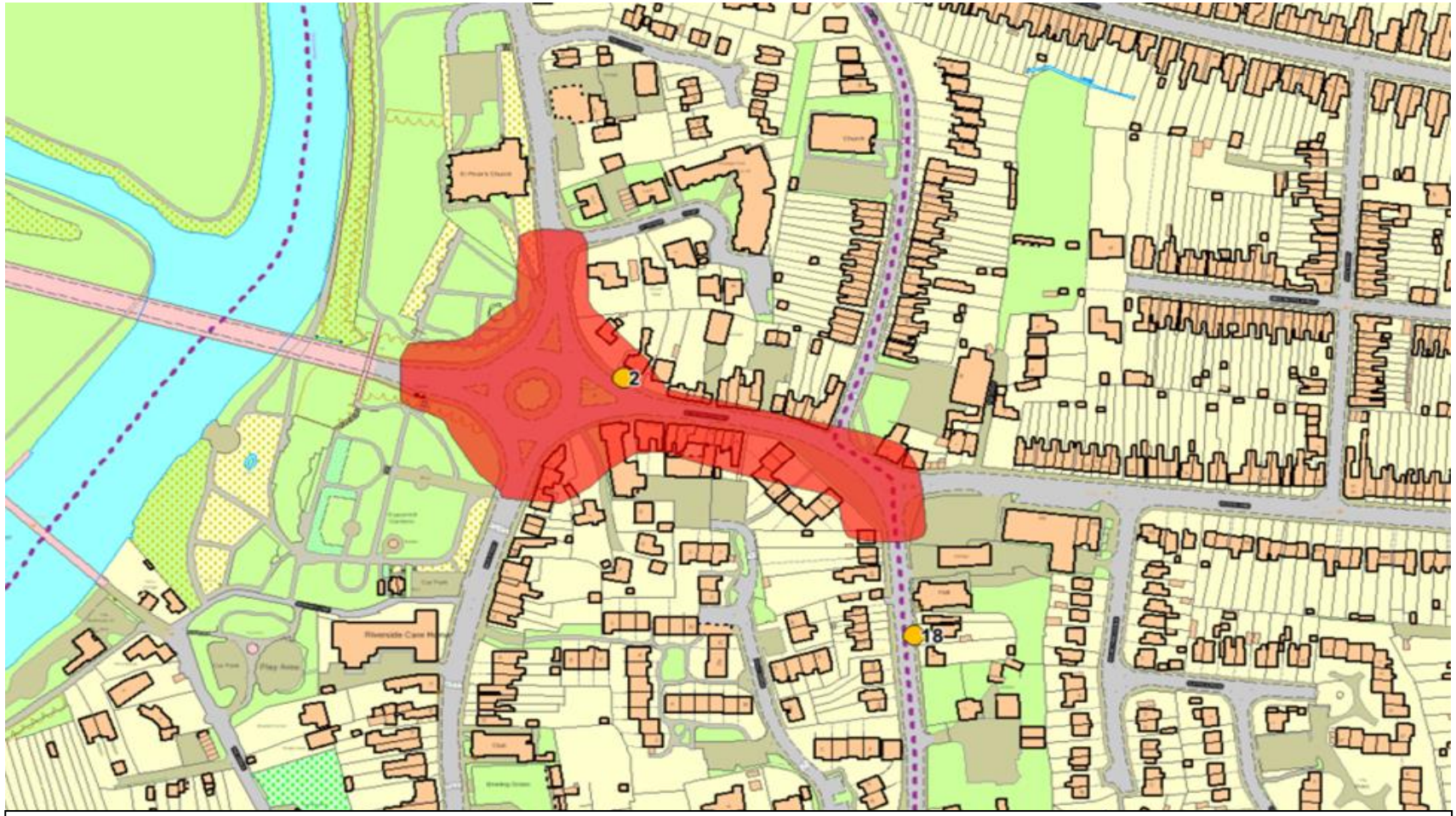


Figure D.14 – Diffusion tubes – Burton upon Trent, Outside AQMAs – Winshill, Brookside Urban Background

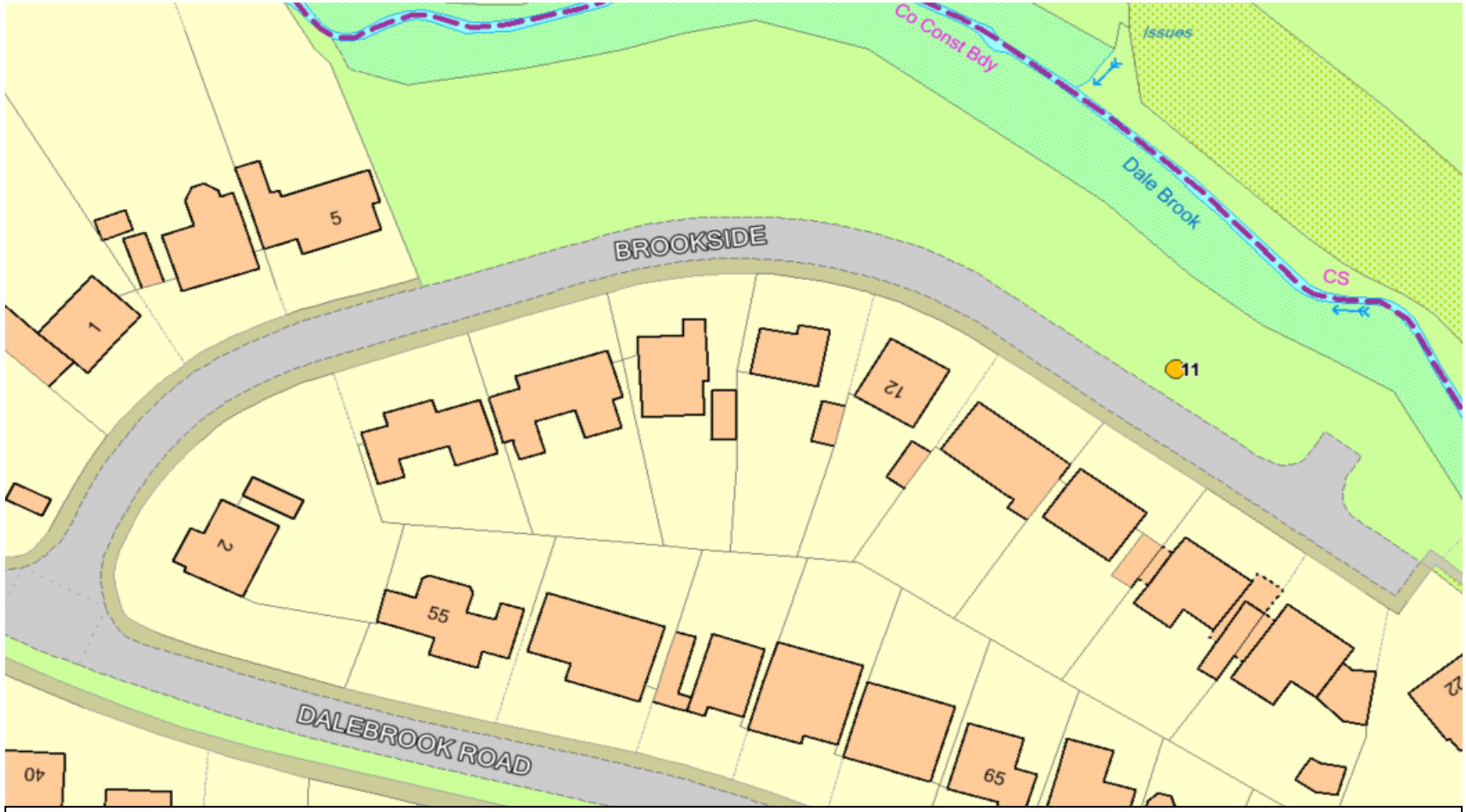


Figure D.15 – Diffusion tubes - Burton upon Trent, Outside AQMAs – Anglesey Road/Evershed Way junction

Figure D.16 – Diffusion tubes - Burton upon Trent, Outside AQMAs – Orchard Street/Branston Road junction

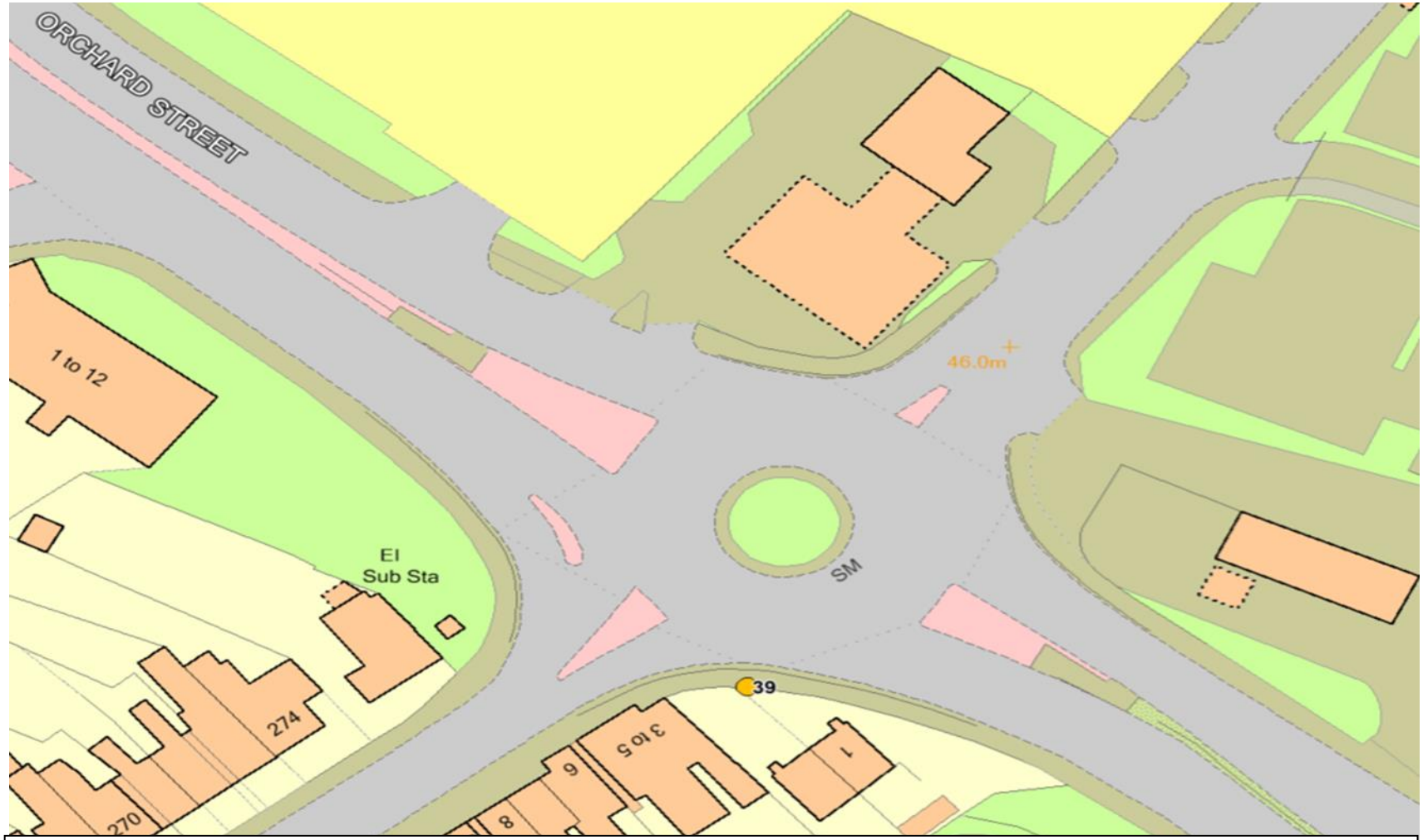


Figure D.17 – Diffusion tubes - Burton upon Trent, Outside AQMAs – Shobnall Road

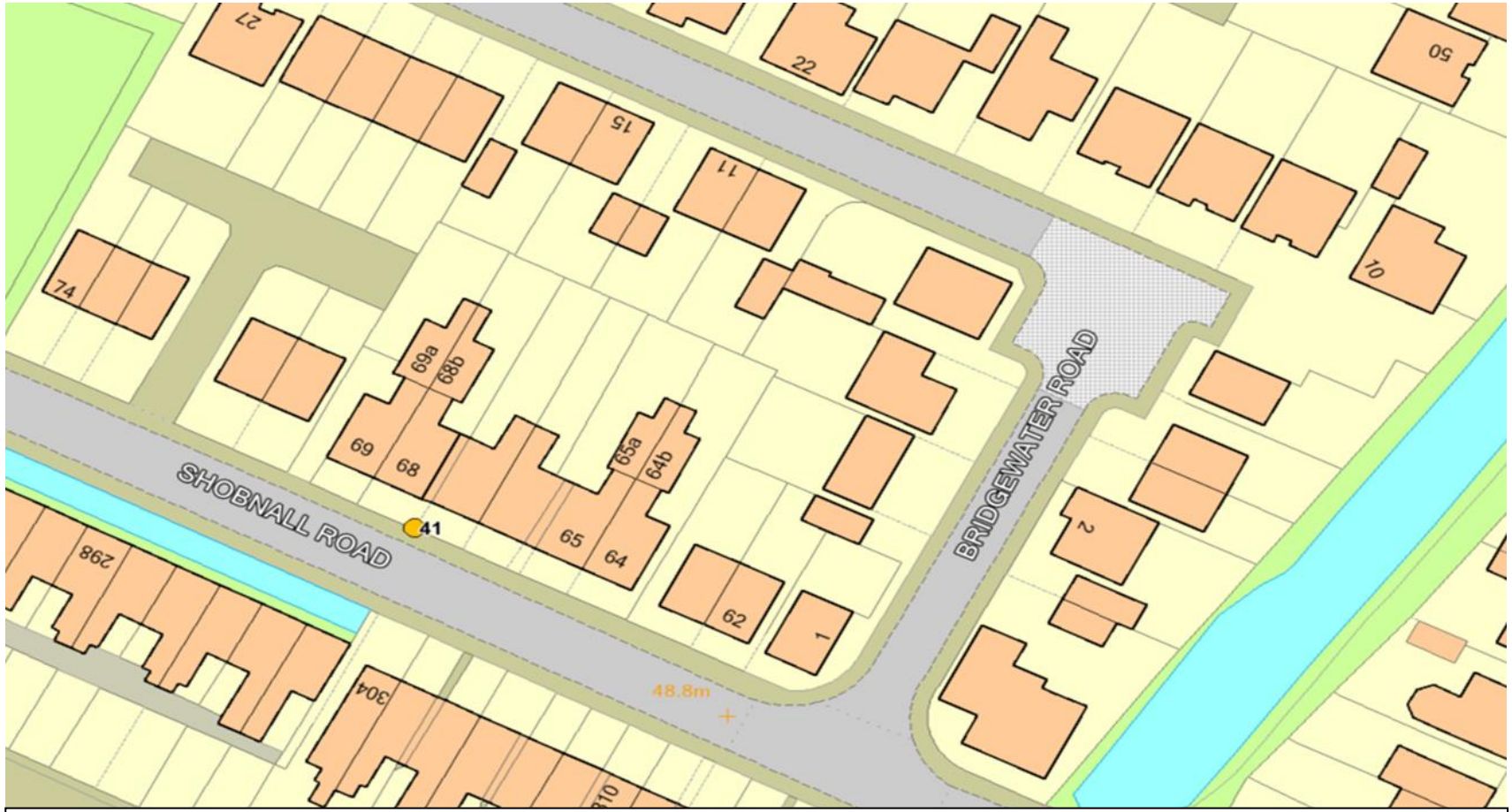


Figure D.18 – Diffusion tubes - Burton upon Trent, Outside AQMAs – Forest Road

Figure D.19 – Diffusion tubes - Burton upon Trent, Outside AQMAs – Hawkins Lane

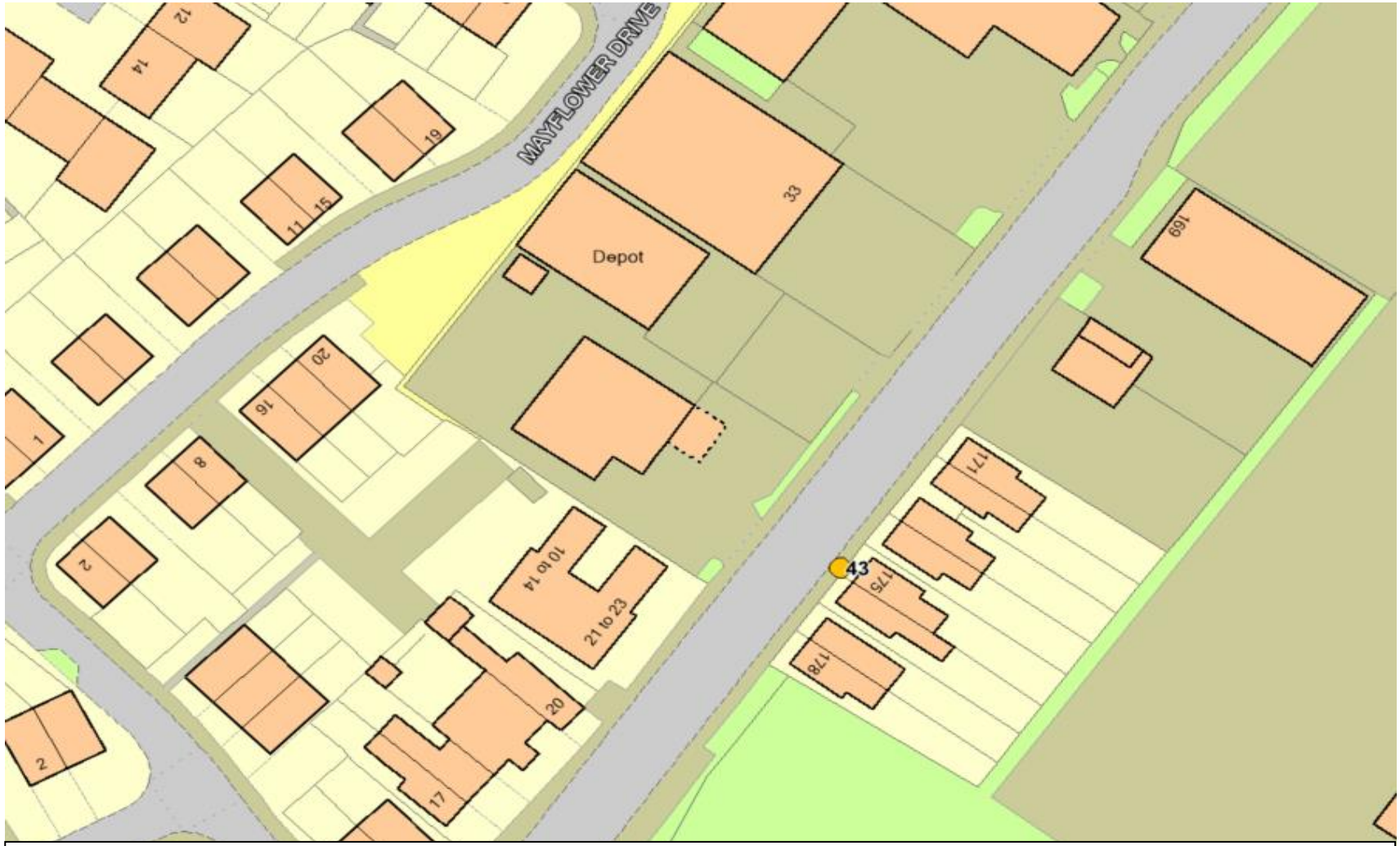


Figure D.20 – Diffusion tubes – Uttoxeter A50

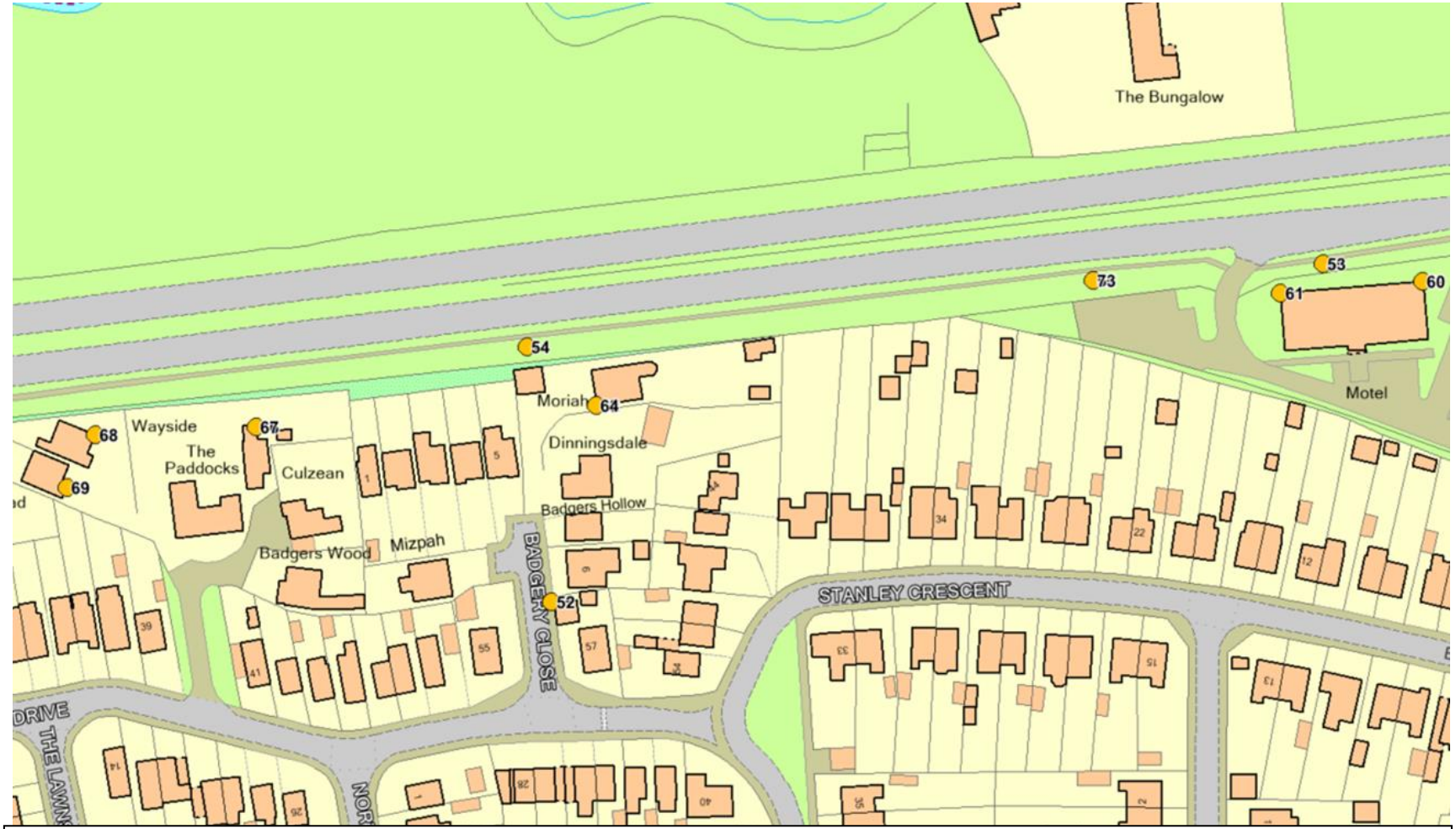


Figure D.21 – Diffusion tubes – Uttoxeter A50

Figure D.22 – Diffusion tubes – Uttoxeter A50

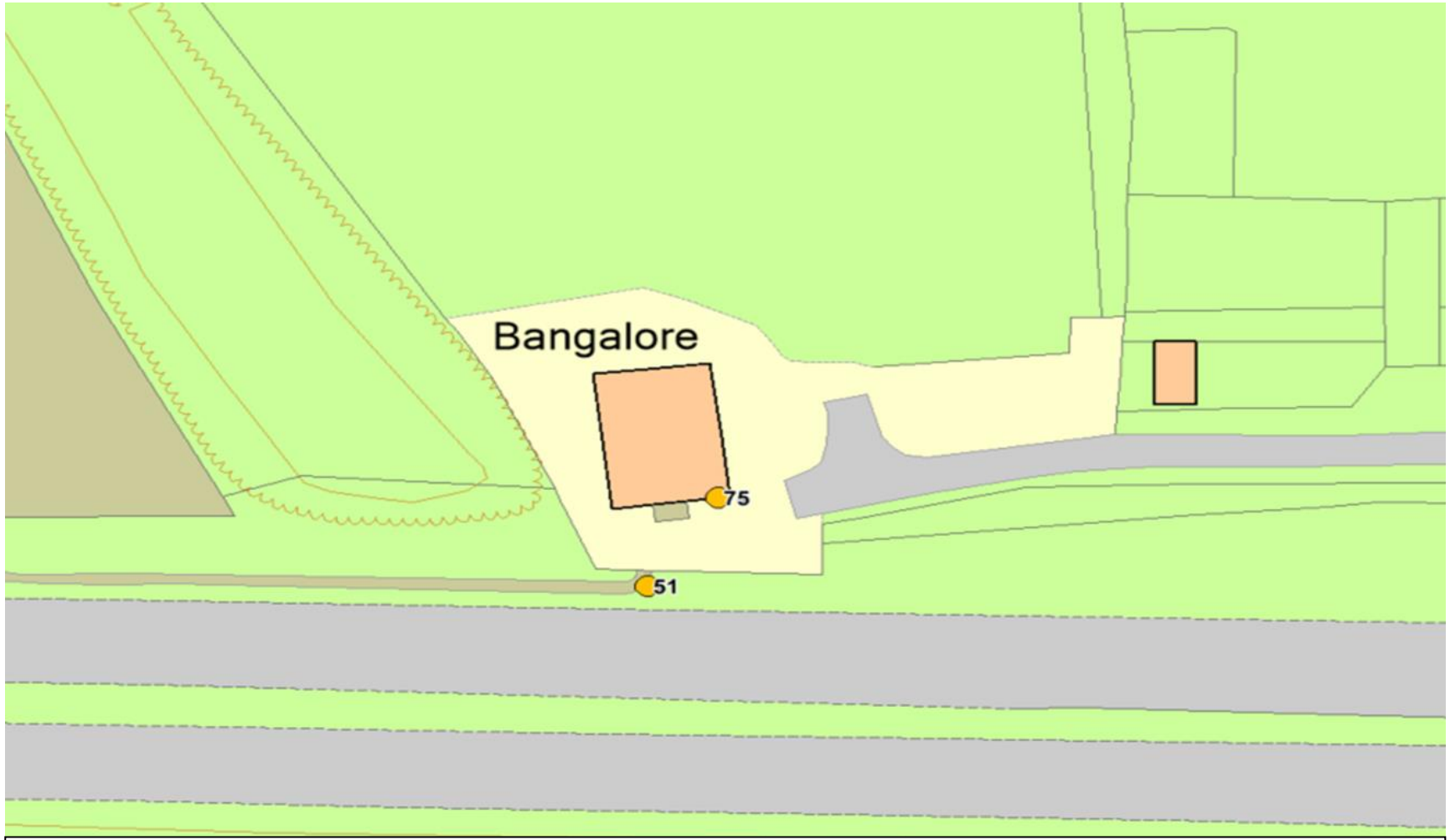
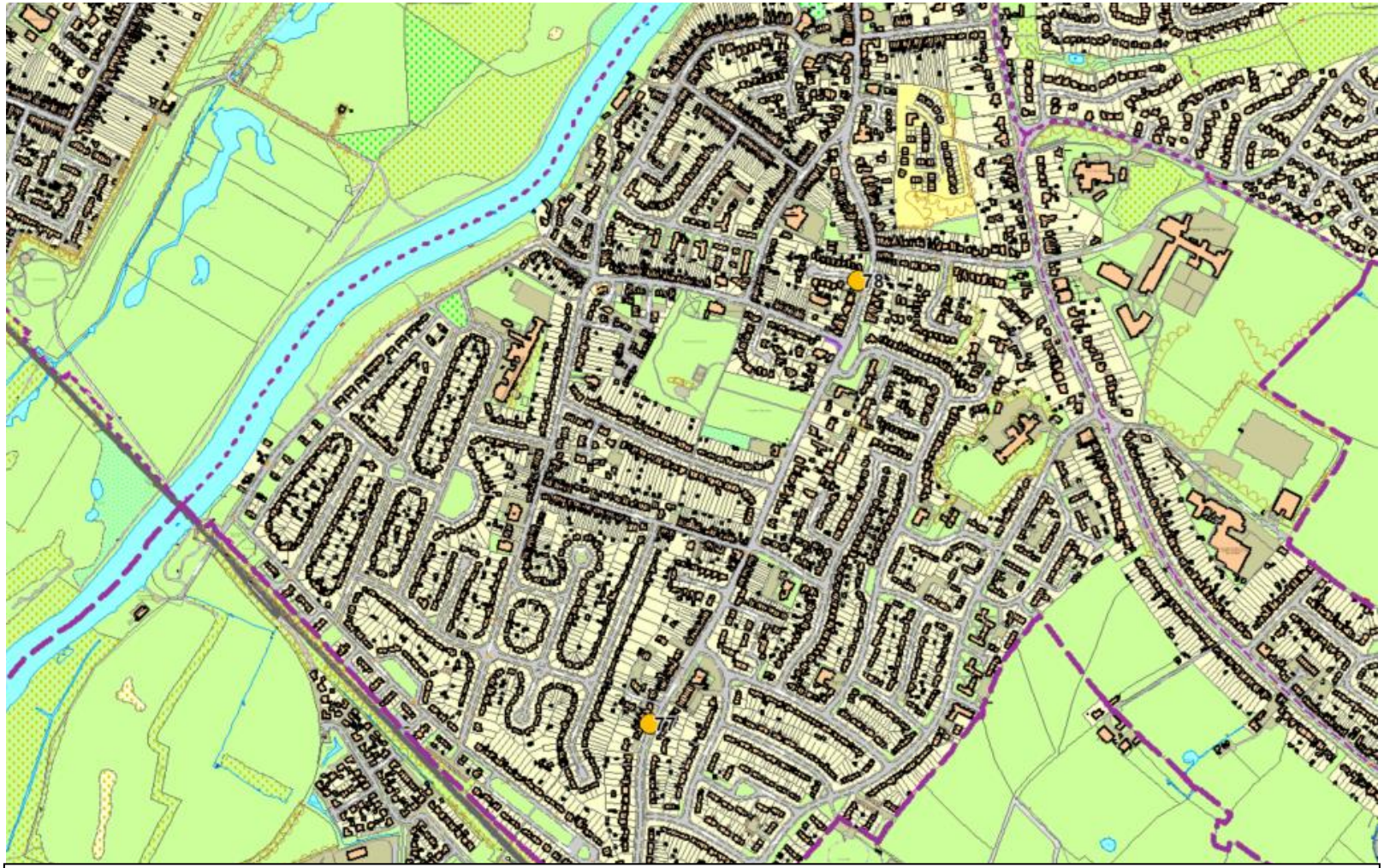


Figure D.23 – New Diffusion Tubes - Tutbury

Figure D.24 – New Diffusion Tubes – Rosliston Road area



Appendix E: Summary of Air Quality Objectives in England

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

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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
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