North Warwickshire Borough Council

2025 Air Quality Annual Status Report (ASR)

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

Date: 30 June, 2025

Figure 1 on page 1: Air quality related visual content.

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Report Reference Number	NWBCASR2025
Date	30 June 2025

Local Responsibilities and Commitment

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

Milen Woldeab, Senior Environmental Protection Officer.

This ASR has been approved by:

Sharon Gallagher, Environmental Health and Licensing Manager

This ASR has not been signed off by a Director of Public Health. However this has been referred to the Chief Executive, and will go before the Community and Environment Board and Full Council.

If you have any comments on this ASR please send them to Milen Woldeab at:

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Executive Summary: Air Quality in Our Area

Air Quality in North Warwickshire Borough Council

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

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

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

Table ES 1 - Description of Key Pollutants

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

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[1] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter ($PM_{2.5}$), the pollutant most harmful to human health. The Air Quality Strategy[2] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[3] details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The Warwickshire Local Cycling and Walking Infrastructure Plan (LCWIP) is a long-term, county-wide plan for investment in walking, wheeling and cycling routes and Active Travel Zones. It was approved by Warwickshire County Council in February 2024[4]. Routes within North Warwickshire are highlighted

North Warwickshire Borough Council is continuing to work in partnership through the Coventry and Warwickshire Air Quality Alliance, which is made up of the Borough, Districts County Council and City Council as well as and Public Health England.

In Partnership with Public Health at County Council, North Warwickshire Borough council have successfully funded air quality monitoring systems with a focus on monitoring fine particulate matter. 8 monitors were installed in October 2024 in Water Orton, Polesworth, Dordon and Hartshill.

Conclusions and Priorities

Monitoring over the past 12 months has shown levels of nitrogen dioxide for all monitoring sites to be below the national objective. It is not considered necessary to declare an Air Quality Management Area (AQMA) at the current time. The council's priority for the

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

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

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

[4] Warwickshire County Council Warwickshire Local Cycling and Walking Infrastructure Plan (LCWIP) 2024

upcoming year to complete the Air Quality Strategy and aim for this to be published by December 2025. The council want to continue to conduct further monitoring on potential hotspot areas and the locations will be reviewed yearly to ensure we are capturing the whole borough.

How to get Involved

If further information is required a copy of the previous Annual Status Report for North Warwickshire can be seen at Air Quality Annual Status Report ASR downloads | North Warwickshire (northwarks.gov.uk). Also, if you have any questions relating to air quality please contact the Environmental Health Department at North Warwickshire Borough Council on 01827 715341 or via e-mail at environmentalhealth@northwarks.gov.uk.

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Tables

1 Local Air Quality Management

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

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance 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 North Warwickshire 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.

North Warwickshire Borough Council currently does not have any declared AQMAs. A local Air Quality Strategy is under development to prevent and reduce polluting activities. The council are in the process of producing The Local Air Quality Strategy.

2.2 Progress and Impact of Measures to address Air Quality in North Warwickshire Borough Council

Defra's appraisal of last year's ASR concluded:

The report is well structured, detailed, and provides the information specified in the Guidance. The following comments are designed to help inform future reports:

1. The results have been discussed in a good level of detail. Trends are presented within their discussion and comparisons are drawn between previous monitoring years.
2. When using shorthand version of chemical formulas, please ensure that the proper subscripting is used. For example, cubic metres should be presented as "m^3" if using the shorthand notation.
3. Some of the tabulated results that do not have a measurement are blank. Results that were null should be recorded with a dash ("-") in the cell.
4. Conclusions and priorities are not stated within the relevant section. Details on what NWBC's priorities for improving air quality would be welcomed in next year's report.
5. The local engagement section could be strengthened. There is no evidence in the report of how people can or are getting engaged with local air quality management in NWBC's jurisdiction. Evidence of how NWBC engages with the local community should be presented in this section.

6. Maps used to show the locations of passive monitoring sites are clearly presented in appendix D.
7. The national bias adjustment was used and the reason for using it was clearly justified.

The Borough Council is continuing to work in partnership through the Coventry and Warwickshire Air Quality Alliance, which is made up of the Borough, Districts County Council and City Council as well as and Public Health England.

An Air Quality Supplementary Planning Document[5] was also approved by the Council in September 2019 in a bid to help reduce air pollution issues at the planning stage. This has helped to ensure the council are considering air quality with every development that requires planning consent. As part of the Coventry and Warwickshire Air Quality Alliance a review of the Air Quality SPD is being considered to address Particulate Matter in additional detail.

In September 2021, the Council adopted a new Local Plan[6] which includes an emphasis on air quality when considering development within the borough.

Warwickshire County Council has produced Warwickshire Local Transport Plan in 2023[7]. The plan supports County Council's response to the climate emergency and the county's moves towards Net Zero carbon.

Several activities within the borough are a source of air quality. This includes active quarries, and construction activities. The High Speed 2 (HS2) project has intensified in this reporting year and has been identified as a potential source of air pollution. The effect could see a change in NO_2 concentrations and fine particulate matter. HS2 release monthly reports for North Warwickshire Borough Council which are carefully monitored by Environmental Health.

North Warwickshire Borough Council has taken forward a number of direct measures during the current reporting year of 2024 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1. Five measures are included within Table 2.1, with the type of measure and the progress North Warwickshire Borough Council have made during the reporting year of 2024 presented. Where there have

[5] North Warwickshire Borough Council. Supplementary Planning Documents, September 2019.

[6] North Warwickshire Borough Council. Adopted Local Plan 2021

[7] Warwickshire County Council. Warwickshire's Local Transport Plan, July 2023.

been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.1.

Key Completed measures are:

- Installation of 8 Airly air quality sensors in potential hot spot areas in Water Orton, Hartshill, Dordon and Polesworth.
- Increased our advice via social media to promote green waste services and discourage bonfires.
- The council's Taxi and Private Hire Licensing Policy actively encourages the use of electric vehicles to reduce the impact on air quality.

North Warwickshire Borough Council expects the following measures to be completed over the course of the next reporting year:

• Publication of the Air Quality Strategy in partnership with relevant stakeholders.

• Establish borough wide smoke control area to ensure there is a consistent approach across the borough.

North Warwickshire Borough Council worked to implement these measures in partnership with the following stakeholders during 2024:

- Highways and Public Health at Warwickshire County Council
- Members of the Health and Wellbeing Working Party.

The principal challenges and barriers to implementation that North Warwickshire Borough Council anticipates facing are securing funding, lack of resources, and potential impact of government devolution.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Installation of Air Quality Sensors	Public Information	Via the Internet	2023	2027	Environmental Health, North Warwickshire Borough Council Public Health, Warwickshire County Council.	Warwickshire County Council, North Warwickshire Borough Council	Funded	£10k – 50K	Implementation	Monitoring of PM and awareness	Monitoring data for North Warwickshire Borough council to help with achieve targets from Environmental Protection Act 2021.	In partnership with stakeholders, 8 sensors were installed in October 2024	Faced delays with installation as we relied on external company.
2	Promote green waste services and discourage the use of bonfires	Public Information	Via the Internet	2023	2025	Environmental Health, North Warwickshire Borough Council	N/A	Not Funded	< £10k	Implementation	Increase use of green services and less bonfire complaints	Reduction in smoke complaints	Early stages of discussions with the Communication team	Regular posts on website and social media pages with advice on green waste collections and bonfires.
3	Introduce Borough Wide Smoke Control Areas	Policy Guidance and Development Control	Other Policy	2025	2026	Environmental Health, North Warwickshire Borough Council	N/A	Funded	< £10k	Planning	Reduce incidents of burning and have a consistent rule across the borough.	Approval of Borough Wide Smoke Control Area.	Discussions have begun with Councillors and the team will take a report to Committee for approval to consult residents.	Requires approval by committee and public consultation.
4	Anti-idling campaign	Public Information	Other	2025	2026	Environmental Health, North Warwickshire Borough Council	North Warwickshire Borough Council	Not Funded	< £10k	Planning	Raising awareness about idling engines as a source of air pollution	Reduce Idling in traffic.	Discussions internally to outline focus points.	Early stages, need to outline full plan and consider what funding might be required.
5	Promote the use of Electric vehicles as part of Taxi and Private Hire Licensing Policy	Public Information	Other	2023	2025	Environmental Health, North Warwickshire Borough Council	N/A	Not Funded	< £10k	Completed	Increase in Electric or Hybrid vehicles which are Licensed by the Council	Increase the number of Electric and Hybrid Vehicles	Taxi Licensing Policy adopted and published. The policy encourages the use of electric and hybrid vehicles and no upper age limit for use of these vehicles is included.	Lack of Infrastructure for Electric vehicles on council land which potentially deters drivers.

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

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

The Public Health Outcomes Framework[9] includes a new indicator relating to the impact of particulate pollution on human health relating to the period 2023 which is the most recent period available. Indicator D01 – Fraction of mortality attributable to particulate air pollution provides an estimation of the mortality burden associated with long-term exposure to $PM_{2.5}$ as a percentage of the annual deaths from all causes in those aged 30+. The D01 indicator for North Warwickshire is 5.4% for 2024. This is comparable to the Counties average Warwickshire which is (5.1%) and the national English average (5.2%).

The modelled background level provided by Defra for North Warwickshire are modelled to be between 6.1µg/m3 and 8.2µg/m3 for 2024, with the annual mean for 2024 being 6.6µg/m3.

The WHO guideline value are more stringent for $PM_{2.5}$. WHO updated their Global Air Quality Guidelines on 22 September 2021. The new update includes interim targets intended to guide reduction, as well as revised guideline levels, including (as annual mean concentrations):

• $PM_{2.5}$ Interim targets of 35 / 25 / 15 / 10, and a guideline level of 5 µg/m3.

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

[9] Public Health England. Public Health Outcomes Framework, 2025.

As established in the Environment Act 2021, legally binding regulations were released on Particle Matter.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 require that in England by the end of 2040:

• An annual average of 10 µg/m3 for $PM_{2.5}$ is not exceeded at any monitoring station.

• Population exposure to $PM_{2.5}$ is at least 35% less than in 2018.

The Environmental Improvement Plan 2023 for England has set intermit targets that by January 2028:

• An annual average of 12 µg/m3 for $PM_{2.5}$ is not exceeded at any monitoring station.

• Population exposure to $PM_{2.5}$ is at least 22% less than in 2018.

Local Authorities are now required to take preventative action thorough a local Air Quality Strategy. North Warwickshire Borough Council are in the process of producing their strategy.

North Warwickshire Borough Council is taking the following measures to address $PM_{2.5}$:

- Installation of Air Quality Sensors which measure $PM_{2.5.}$ The monitoring data collected enables the council to identify potential hotspots and can investigate the cause.
- Anti- idling campaign which raises awareness on impact of leaving engines running whilst stationary. Outline hotspots areas such as schools, hospitals and bus stops.
- Aim to reduce the number of complaints about smoke and dust.
- When appropriate include planning conditions to limit dust from construction sites as part of planning process.
- Seek to improve knowledge of levels of fine particulate matter and implement behaviour change, pollution reduction and strategies to reduce exposure where applicable. •
- Link air quality to any new transport and climate change strategies.
- The Council will continue to inspect processes with environmental permits as per DEFRA guidance.

- North Warwickshire Borough council have various Smoke Control Areas within the Council's boundary. In these areas, only authorised and smokeless fuels are allowed to be burnt, unless being used in an exempt appliance. These areas are considered when investigating smoke complaints. This helps control and reduce $PM_{2.5}$ emissions in these areas. The council are in the initial stages of reviewing the smoke control areas.

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

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

3.1 Summary of Monitoring Undertaken

3.1.1 Non-Automatic Monitoring Sites

North Warwickshire Borough Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 27 sites during 2024. Table A.1 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.2 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

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

North Warwickshire Borough Council have taken direct measure to gather a better understanding of air quality issues in the area. Results from 2023 showed several locations had consistent results below the N02 AQS objective 40µg/m3. The council reviewed the locations and have changed several sites, in order to capture different areas within the borough for 2024.

In 2024 all monitoring sites have reported an annual mean NO_2 concentration less than the annual mean NO_2 AQS objective of 40µg/m3. An exceedance of the air quality objective for nitrogen dioxide was identified between 2019 – 2022 for Tube 8 A5 Watling Street, Dordon (11). The level in 2024 was below the objective but this location continues to be monitored closely.

The data shows there has been a reduction at 8 out of 27 locations in 2024. 14 Locations saw a slight increase in levels, but significantly below 40µg/m3. Dordon and Coleshill are areas in which the annual mean concentration remains the highest.

Based on the trends highlighted in Figure A.1, North Warwickshire Borough Council are reviewing the tube locations to ensure we are continuing to capture new areas.

Appendix A: Monitoring Results

Table A.1 – 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)
Tube 3	Spon Lane, Grendon (3)	Kerbside	427835	299652	NO2	No	2.0	1.0	No	2.0
Tube 5	Top Long Street, Dordon (5)	Kerbside	426195	300310	NO2	No	2.0	1.0	No	2.0
Tube 6	Bottom Long Street, Dordon (6)	Kerbside	426178	300108	NO2	No	2.0	0.0	No	2.0
Tube 8	11 Watling Street, Dordon (8)	Roadside	426136	300075	NO2	No	2.0	2.0	No	2.0
Tube 9	55 Watling Street, Dordon (9)	Roadside	426025	300135	NO2	No	2.0	2.0	No	2.0
Tube 10	65 Watling Street, Dordon (10)	Roadside	425943	300172	NO2	No	2.0	3.0	No	2.0
Tube 11	Old Ambulance Station, Dordon (11)	Roadside	425811	300263	NO2	No	2.0	14.0	No	2.0

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)
Tube 13	Farthing Lane, Curdworth (13)	Kerbside	418186	292959	NO2	No	2.0	0.0	No	2.0
Tube 14	Maud Road, Water Orton (14)	Kerbside	418060	290943	NO2	No	2.0	0.0	No	2.0
Tube 15	Coleshill Heath Road, Coleshill (15)	Other	419854	287041	NO2	No	2.0	N/A	No	2.0
Tube 16	Coventry Road, Coleshill (16)	Kerbside	420027	287360	NO2	No	2.0	0.0	No	2.0
Tube 17	Parkfield Road Island, Coleshill (17)	Roadside	420120	288627	NO2	No	2.0	2.0	No	2.0
Tube 18	Church Hill, Coleshill (18)	Kerbside	420042	289079	NO2	No	2.0	1.0	No	2.0
Tube 19	High Street, Coleshill (19)	Roadside	419983	289095	NO2	No	2.0	3.0	No	2.0
Tube 20	52 High Street, Coleshill (20)	Kerbside	419951	289203	NO2	No	2.0	0.0	No	2.0

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)
Tube 21	A Blythe Road, Coleshill (21)	Kerbside	420024	289176	NO2	No	2.0	1.0	No	2.0
Tube 22	B Blythe Road, Coleshill (22)	Roadside	420040	289199	NO2	No	2.0	2.0	No	2.0
Tube 23	Coleshill Road, Furnace End (23)	Kerbside	424876	291320	NO2	No	2.0	1.0	No	2.0
Tube 25	Victoria Road, Hartshill (25)	Kerbside	432733	293402	NO2	No	2.0	1.0	No	2.0
Tube 26	Church Road, Hartshill (26)	Kerbside	432560	293767	NO2	No	2.0	1.0	No	2.0
Tube 27	Coleshill Road, Atherstone (27)	Kerbside	430940	297759	NO2	No	2.0	1.0	No	2.0
Tube 30	Coleshill Road, Curdworth (30)	Kerbside	417832	292974	NO2	No	2.0	1.0	No	2.0
Tube 31	Kingsbury Road, Curdworth (31)	Kerbside	417920	293071	NO2	No	2.0	1.0	No	2.0

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)
Tube 32	Bus Stop - Watling Street, Grendon (32)	Kerbside	428415	298970	NO2	No	7.0	1.0	No	2.0
Tube 33	15 High Street, Polesworth (33)	Kerbside	426310	302574	NO2	No	2.0	1.0	No	2.0
Tube 34	93 Ratcliffe Road, Atherstone (34)	Kerbside	430411	298790	NO2	No	2.0	1.0	No	2.0
Tube 35	Trilby Road, Rowland Way (35)	Kerbside	430429	298832	NO2	No	2.0	1.0	No	2.0

Table A.2 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
Tube 3	427835	299652	Kerbside		66.0	13.6	14.0	14.2	0.4	13.7
Tube 5	426195	300310	Kerbside		100.0	22.5	23.5	19.6	20.4	20.1
Tube 6	426178	300108	Kerbside		100.0	25.2	26.0	25.0	22.5	22.4
Tube 8	426136	300075	Roadside		100.0	35.0	**42.7**	**40.6**	36.4	36.6
Tube 9	426025	300135	Roadside		92.5	35.1	35.5	36.7	29.7	31.3
Tube 10	425943	300172	Roadside		100.0	35.4	38.1	36.3	30.8	31.7
Tube 11	425811	300263	Roadside		100.0	23.7	20.7	22.9	18.6	18.1
Tube 13	418186	292959	Kerbside		100.0	15.4	16.7	14.9	12.7	14.1
Tube 14	418060	290943	Kerbside		100.0	20.9	22.2	21.9	19.9	20.3
Tube 15	419854	287041	Other		100.0	27.8	29.9	30.1	27.9	26.2
Tube 16	420027	287360	Kerbside		100.0	19.7	21.3	23.8	18.3	20.3
Tube 17	420120	288627	Roadside		75.0	19.1	22.0	25.4	19.9	19.0
Tube 18	420042	289079	Kerbside		90.6	18.5	20.0	19.7	16.2	17.5
Tube 19	419983	289095	Roadside		64.2	26.5	28.7	30.3	26.7	25.1
Tube 20	419951	289203	Kerbside		90.6					21.8
Tube 21	420024	289176	Kerbside		75.0	29.2	31.6	31.4	35.0	25.9
Tube 22	420040	289199	Roadside		92.5	35.8	37.7	37.9	24.8	30.0
Tube 23	424876	291320	Kerbside		100.0	21.0	22.6	24.8	21.7	21.0
Tube 25	432733	293402	Kerbside		81.1	20.4	22.0	22.1	15.2	19.0
Tube 26	432560	293767	Kerbside		92.5	17.4	16.7	19.4	16.1	17.7
Tube 27	430940	297759	Kerbside		92.5	19.0	20.5	21.1	16.8	19.8
Tube 30	417832	292974	Kerbside		100.0		21.9	21.8	19.5	20.2
Tube 31	417920	293071	Kerbside		92.5		30.5	30.9	24.3	23.6
Tube 32	428415	298970	Kerbside		100.0					13.8
Tube 33	426310	302574	Kerbside		90.6					16.4
Tube 34	430411	298790	Kerbside		90.6					13.2
Tube 35	430429	298832	Kerbside		100.0					14.8

☒ **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**.

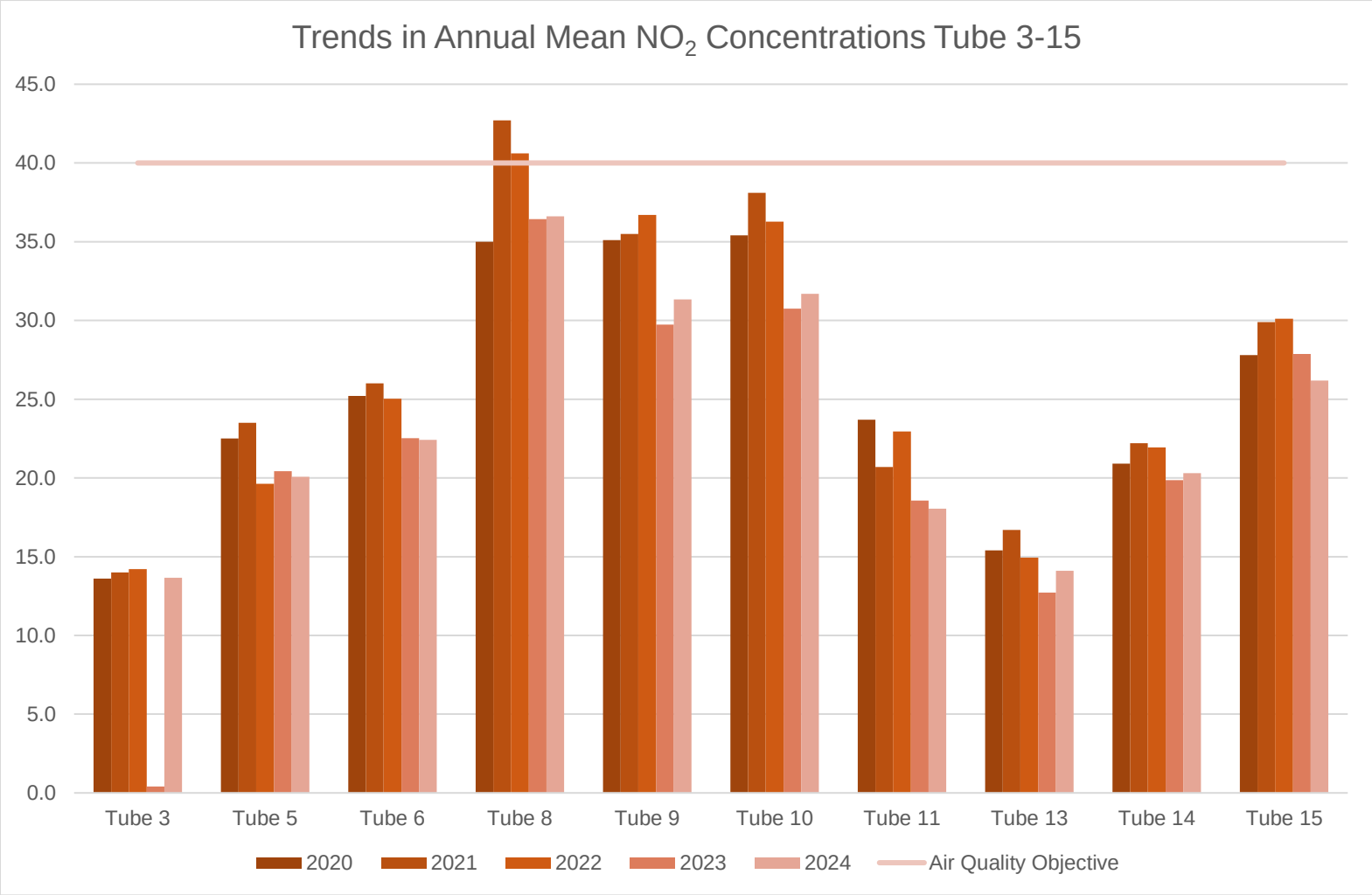
Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

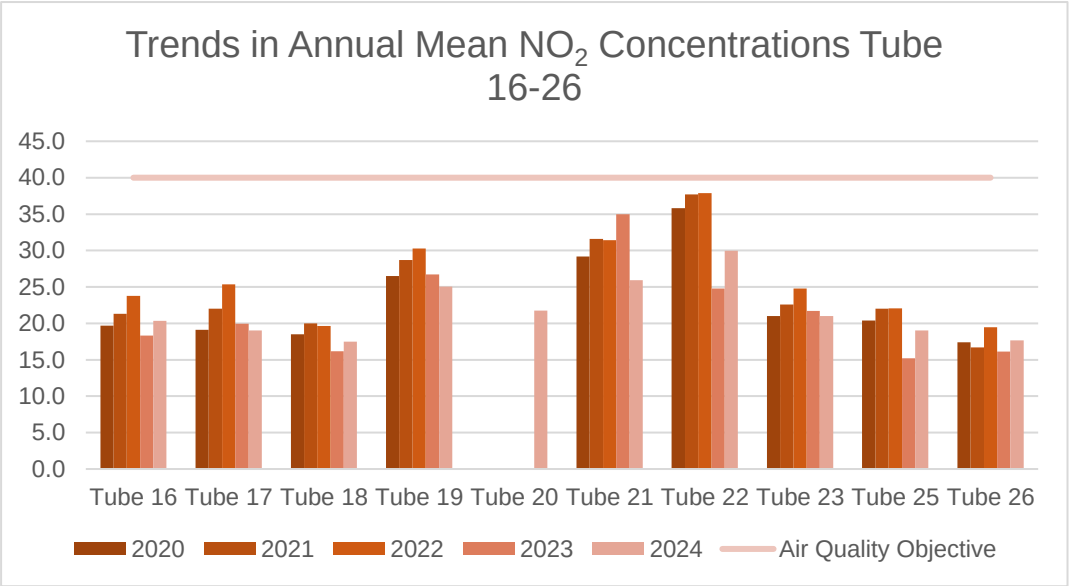
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

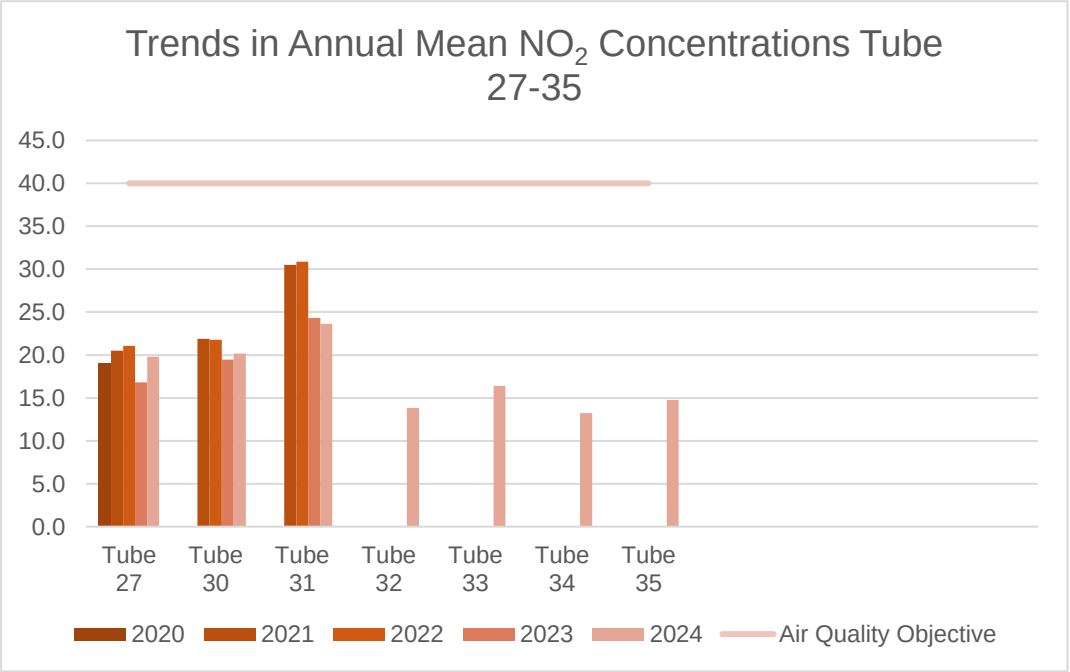
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(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




Trends in Annual Mean NO2 Concentrations Tube 16-26
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Tube 16
Tube 17
Tube 18
Tube 19
Tube 20
Tube 21
Tube 22
Tube 23
Tube 25
Tube 26
2020
2021
2022
2023
2024
Air Quality Objective


Trends in Annual Mean NO2 Concentrations Tube 27-35
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Tube 27
Tube 30
Tube 31
Tube 32
Tube 33
Tube 34
Tube 35
2020
2021
2022
2023
2024
Air Quality Objective

Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
Tube 3	427835	299652			36.3			9.2	8.1	10.1	9.5	16.2	19.6	17.7	15.8	13.7	-	
Tube 5	426195	300310	30.7	28.4	22.6	20.6	21.6	18.4	17.4	19.6	23.5	24.4	32.0	27.4	23.9	20.1	-	
Tube 6	426178	300108	32.3	30.9	25.5	23.4	24.9	24.5	20.6	22.2	23.2	26.2	34.5	32.2	26.7	22.4	-	
Tube 8	426136	300075	43.9	48.9	41.0	43.1	41.5	47.4	44.6	43.3	40.7	38.6	45.2	44.8	43.6	36.6	31.9	
Tube 9	426025	300135	43.1	43.8		31.9	37.0	36.2	35.4	28.9	34.1	40.7	42.1	37.0	37.3	31.3	-	
Tube 10	425943	300172	43.4	42.3	33.8	33.8	36.8	37.3	35.1	34.1	37.3	37.8	43.9	37.1	37.7	31.7	-	
Tube 11	425811	300263	24.1	26.3	21.2	16.7	17.9	17.2	18.8	18.1	15.1	22.0	35.1	25.2	21.5	18.1	-	
Tube 13	418186	292959	24.1	20.7	17.4	18.3	15.0	10.1	11.2	10.8	13.7	19.0	22.7	18.5	16.8	14.1	-	
Tube 14	418060	290943	32.2	27.9	23.9	27.3	22.5	14.7	19.2	16.7	20.5	28.4	30.2	26.4	24.2	20.3	-	
Tube 15	419854	287041	38.7	29.2	31.8	20.2	27.5	29.5	30.2	29.8	23.8	35.3	42.0	36.1	31.2	26.2	-	
Tube 16	420027	287360	32.1	29.5	22.1	27.4	17.6	20.8	21.2	21.7	19.9	23.7	30.9	23.5	24.2	20.3	-	
Tube 17	420120	288627			20.4	20.5	18.9		19.0	18.8	19.1	28.3	33.4	25.1	22.6	19.0	-	
Tube 18	420042	289079	29.5		16.1	18.9	19.0	17.6	17.3	16.2	22.9	20.5	28.4	22.6	20.8	17.5	-	
Tube 19	419983	289095	41.9		27.1	15.7			29.8	24.3	32.3	31.9	36.9		30.0	25.1	-	
Tube 20	419951	289203	32.1	31.3	23.4	26.2	19.6	19.2	22.3		23.3	29.1	31.3	27.2	25.9	21.8	-	
Tube 21	420024	289176	44.0		27.0	21.9		24.0	24.5		32.3	35.5	36.9	31.7	30.9	25.9	-	
Tube 22	420040	289199	38.7	41.2	45.2	25.7	35.4	31.5	31.1	29.5		37.1	43.3	33.8	35.7	30.0	-	
Tube 23	424876	291320	31.2	26.5	22.2	30.9	27.7	20.2	17.9	18.2	25.3	26.9	30.0	22.9	25.0	21.0	-	
Tube 25	432733	293402	29.2	25.8	21.1	20.5	21.9	20.9	19.4		16.1	24.0	27.7		22.7	19.0	-	
Tube 26	432560	293767		22.5	19.4	19.4	21.4	15.0	17.5	17.1	21.0	23.6	31.2	23.0	21.0	17.7	-	
Tube 27	430940	297759	31.8	27.1	20.1	20.7	22.1	21.7		17.7	20.8	24.3	30.5	22.5	23.6	19.8	-	
Tube 30	417832	292974	32.8	42.4	22.8	12.4	22.0	17.3	15.9	17.5	22.5	24.2	30.7	27.3	24.0	20.2	-	
Tube 31	417920	293071	38.5	35.7		21.9	27.2	24.8	19.0	22.0	29.3	29.4	33.6	28.2	28.1	23.6	-	
Tube 32	428415	298970	22.2	1.1	15.6	16.0	17.9	13.0	13.2	13.6	16.1	22.0	26.4	20.3	16.4	13.8	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
Tube 33	426310	302574	27.3		16.9	13.0	19.2	16.1	14.9	15.9	19.0	23.3	26.8	22.3	19.5	16.4	-	
Tube 34	430411	298790	23.6	21.7	17.4	14.3	14.2	11.5	12.2	12.6	14.4		25.1	6.2	15.7	13.2	-	
Tube 35	430429	298832	20.7	21.7	14.6	16.4	14.8	15.3	14.9	15.2	15.2	18.7	26.0	17.5	17.6	14.8	-	

☒ **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**

☒ **North Warwickshire Borough Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within North Warwickshire Borough Council During 2024

North Warwickshire Borough Council have identified several approved planning applications as potential new source of air pollution. HS2 construction is scheduled to continue which continues to be a source in 2024.

Additional Air Quality Works Undertaken by North Warwickshire Borough Council During 2024.

North Warwickshire Borough Council has not completed any additional works within the reporting year of 2024.

QA/QC of Diffusion Tube Monitoring

Gradko International Ltd were the supplier used for diffusion tubes in 2024 and the method of preparation was 20% TEA in water.

Gradko International Ltd is UKAS accredited (ISO: 17025) and participates in the AIR NO_2 PT scheme15. This scheme forms an integral part of the UK NO_2 Network's QA/QC and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). In the most recent AIR NO_2 PT rounds AR062 and AR063 for January to June 2024 respectively Gradko International Ltd achieved a 100% satisfactory score for both rounds.[10]

[10] Summary of Laboratory Performance in AIR NO2 Proficiency Testing Scheme (May 2022 – June 2024).

Diffusion Tube Annualisation

If annualisation was required for any non-automatic monitoring sites, the sites requiring annualisation should be clearly defined along with details of the calculation method undertaken provided in Table C.1.

Tubes 3 and 19 required annualisation as the data capture was less than 75% but greater than 25%. The Diffusion Tube Data Processing Tool Version 5.4 was used to calculate annualisation factors.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Diffusion Tube ID	Annualisation Factor Walsall Woodlands	Annualisation Factor West Bromwich Kenrick Park	Annualisation Factor Birmingham Ladywood	**Average Annualisation Factor**	**Raw Data Annual Mean**	**Annualised Annual Mean**
Tube 3	1.0357	1.0397	1.0092	1.0282	15.8	16.3
Tube 19	0.9881	1.0327	0.9621	0.9943	30.0	29.8

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2024 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.

North Warwickshire Borough Council have applied a national bias adjustment factor of 0.84 to the 2024 monitoring data. A summary of bias adjustment factors used by North Warwickshire 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
2024	National	06/25	0.84
2023	National	05/24	0.81
2022	National	06/23	0.84
2021	National	06/22	0.84
2020	National	06/21	0.81

NO_2 Fall-off with Distance from the Road

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

Diffusion tube 8, recorded NO_2 concentrations greater than 36µg/m^3 and were not located at the point of relevant exposure and therefore required a fall-off with distance calculation. The output data from the LAQM NO_2 fall-off with distance calculator, is presented Table C.4.

Table C.3 – Non-Automatic 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
Tube 8	2.0	4.0	36.6	7.6	31.9	

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

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

Figure 1 on page 30: Air quality related visual content.

Figure 1 on page 31: Air quality related visual content.

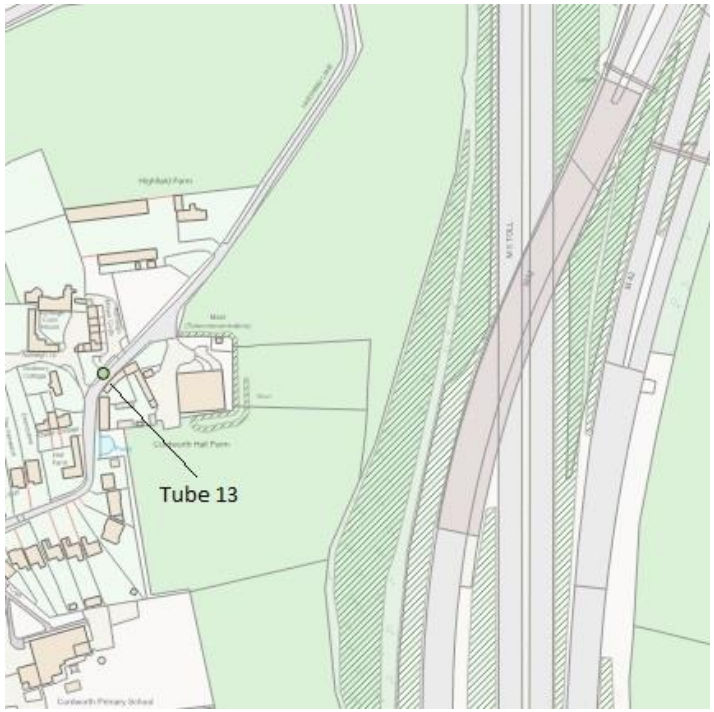


Figure 3 on page 32: Air quality related visual content.

Figure 2 on page 32: Air quality related visual content.

Figure 1 on page 32: Air quality related visual content.

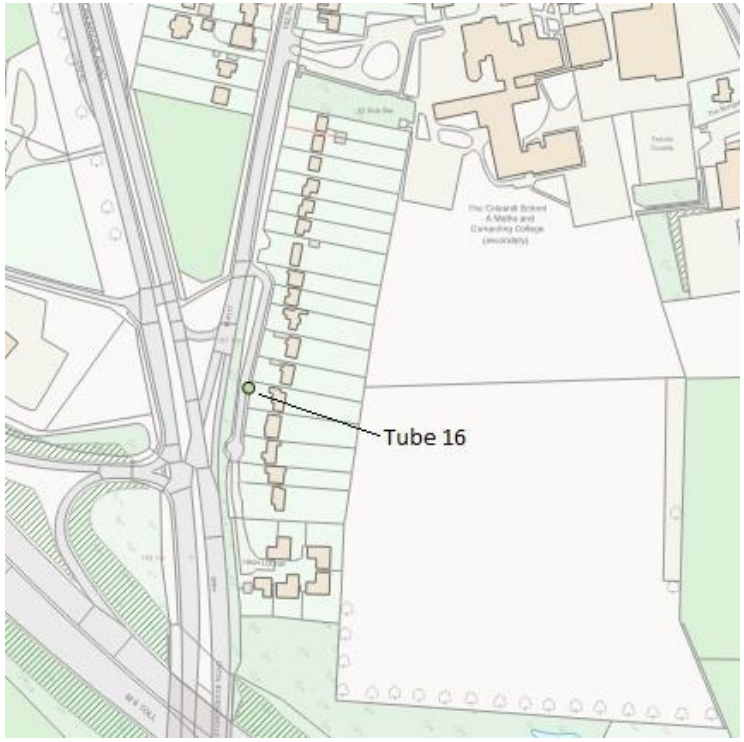


Figure 2 on page 33: Air quality related visual content.

Figure 1 on page 33: Air quality related visual content.

Figure 1 on page 34: Air quality related visual content.

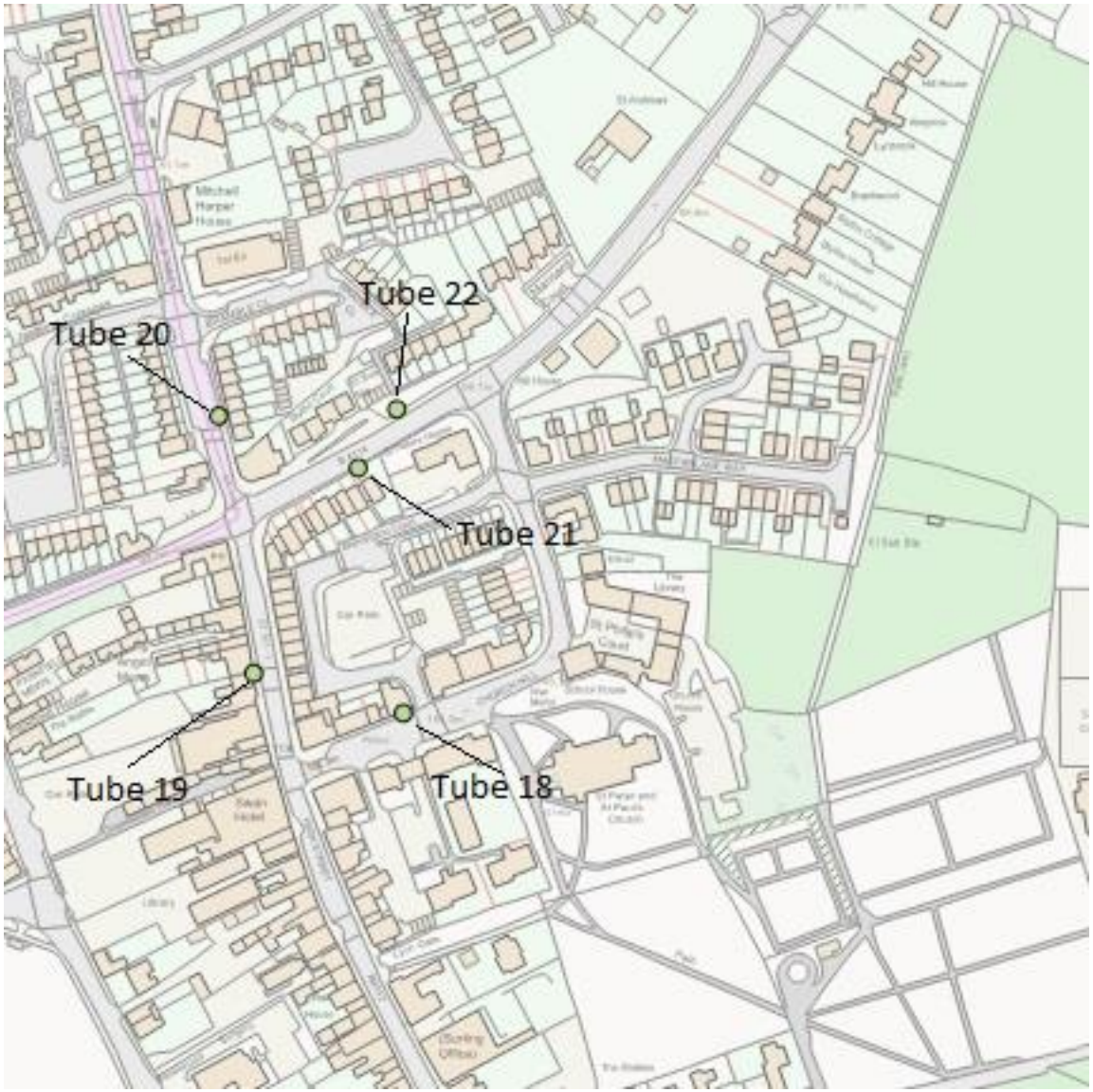


Figure 1 on page 35: Air quality related visual content.

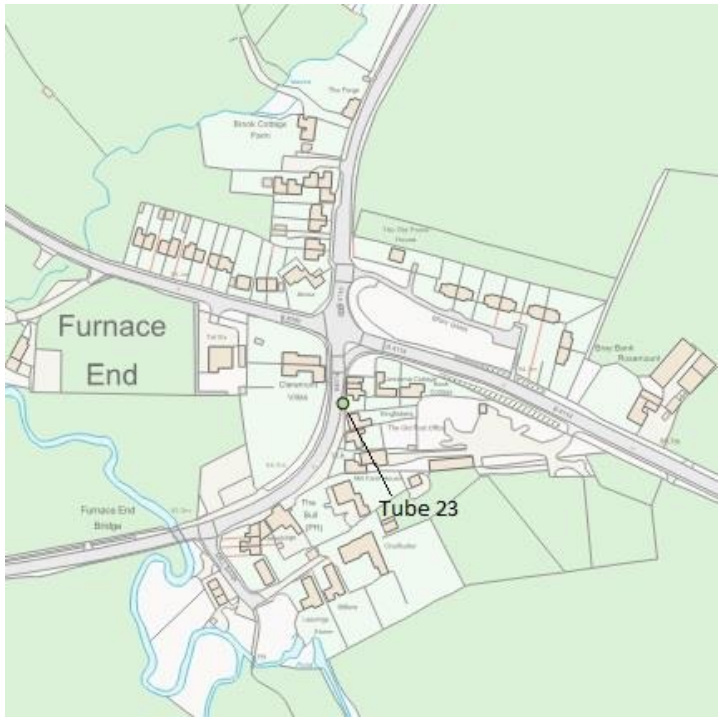


Figure 2 on page 36: Air quality related visual content.

Figure 1 on page 36: Air quality related visual content.

Figure 2 on page 37: Air quality related visual content.

Figure 1 on page 37: Air quality related visual content.

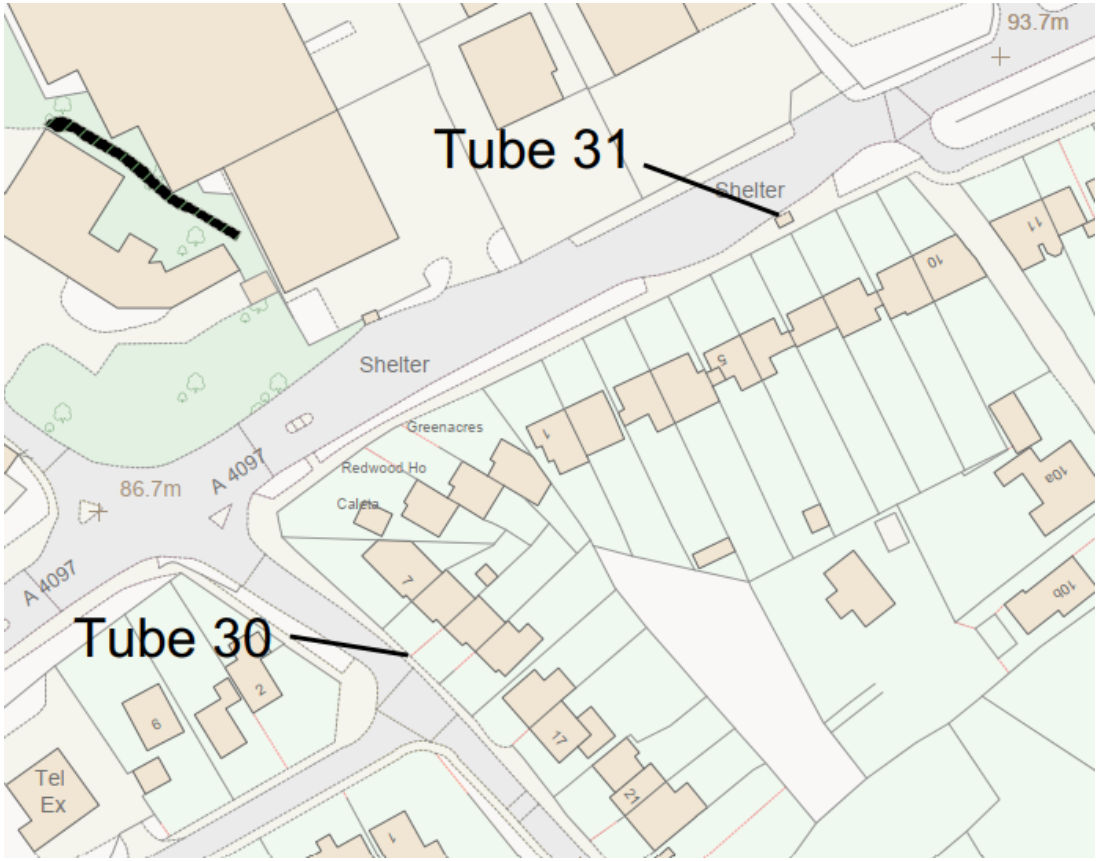
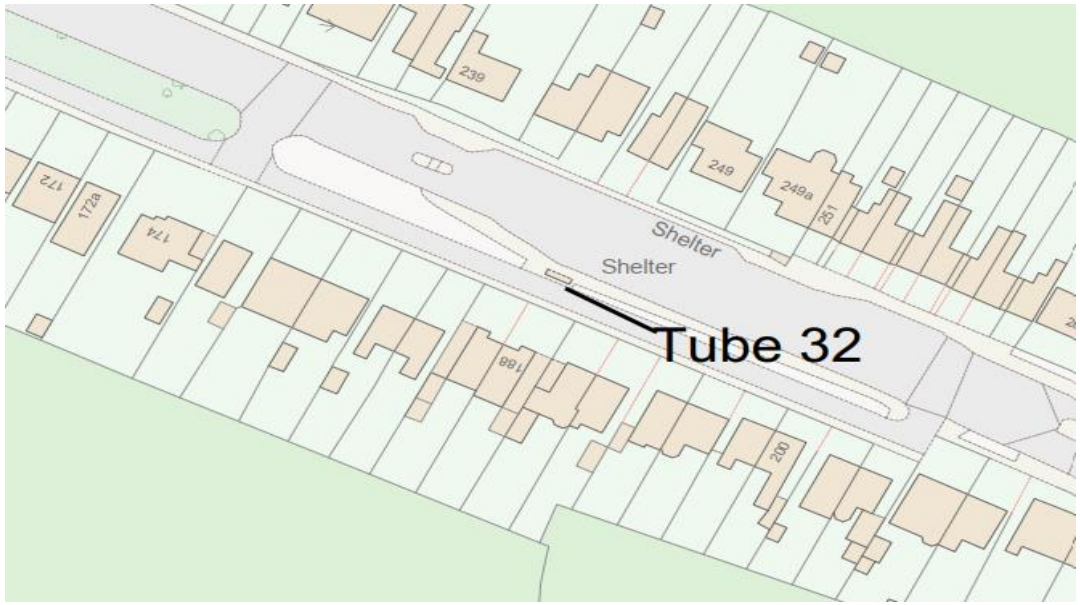


Figure 1 on page 38: Air quality related visual content.



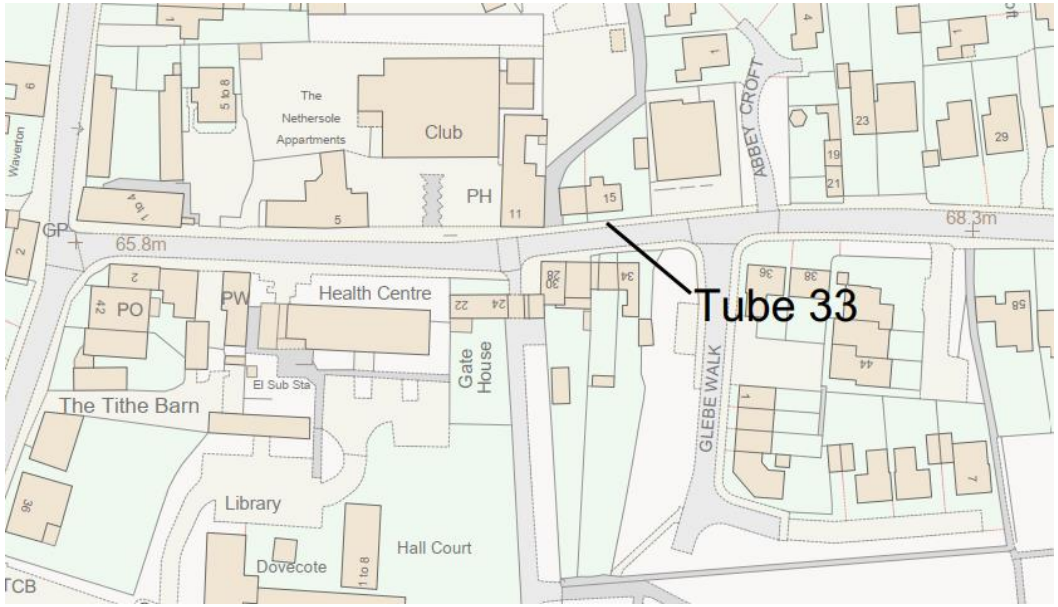
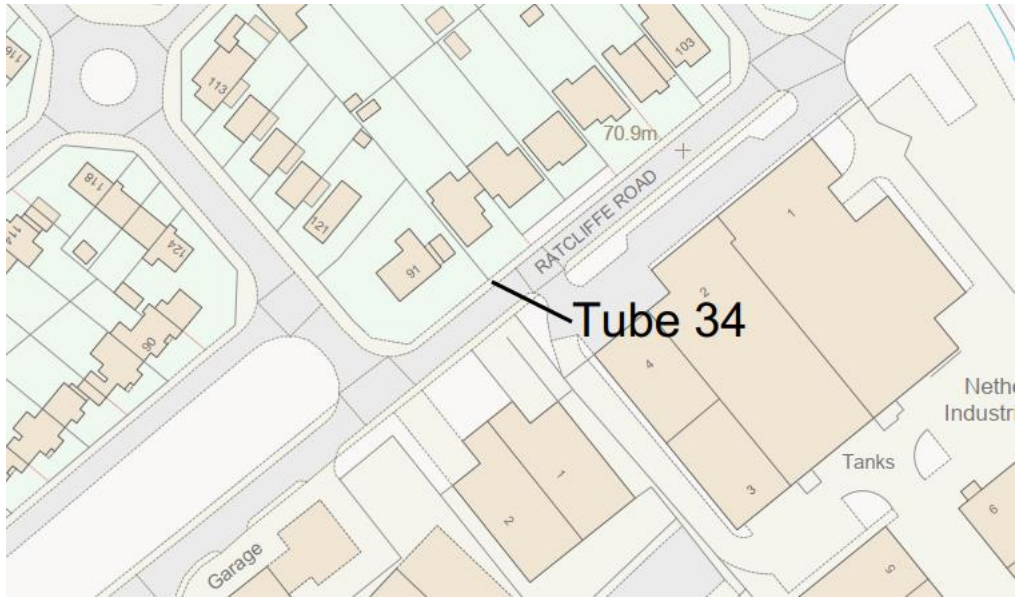


Figure 2 on page 39: Air quality related visual content.

Figure 1 on page 39: Air quality related visual content.



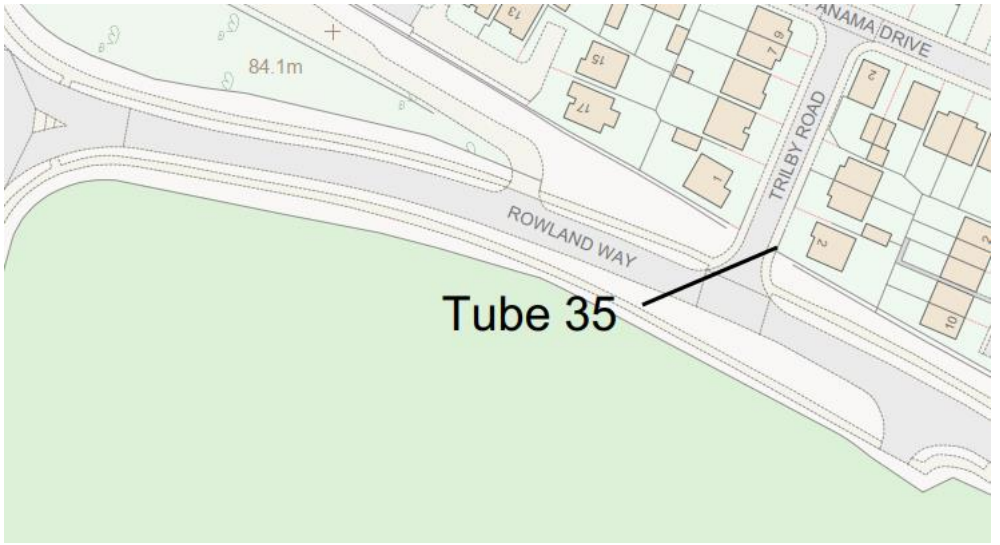


Figure 2 on page 40: Air quality related visual content.

Figure 1 on page 40: Air quality related visual content.

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[11]

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

[11] 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
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

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- Household Air Pollution December 2023. Published by World Health Organization.
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- Warwickshire County Council Warwickshire Local Cycling and Walking Infrastructure Plan (LCWIP) 2024. Published by Warwickshire County Council.
- Supplementary Planning Documents, September 2019. Published by North Warwickshire Borough Council.
- Local Plan 2021. Published by North Warwickshire Borough Council.
- Warwickshire's Local Transport Plan, July 2023. Published by Warwickshire County Council.
- Public Health Outcomes Framework, 2024. Published by Public Health England.