



# North East Derbyshire District Council

## Air Quality Annual Status Report

Bureau Veritas

December 2024

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# North East Derbyshire District Council

## 2024 Air Quality Annual Status Report (ASR)

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

Date: December 2024

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| Report Reference Number | North East Derbyshire District Council_2024 ASR                                        |
| Date                    | December 2024                                                                          |

## Executive Summary: Air Quality in Our Area

### Air Quality in North East Derbyshire

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year<sup>1</sup>.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution<sup>2</sup>.

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 <sub>2</sub> )                          | Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.                                                                                                                                                                                                                                                           |
| Sulphur Dioxide (SO <sub>2</sub> )                           | Sulphur dioxide (SO <sub>2</sub> ) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.                                                                                                                                                                                                                                                                        |
| Particulate Matter (PM <sub>10</sub> and PM <sub>2.5</sub> ) | <p>Particulate matter is everything in the air that is not a gas.</p> <p>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.</p> <p>PM<sub>10</sub> refers to particles under 10 micrometres. Fine particulate matter or PM<sub>2.5</sub> are particles under 2.5 micrometres.</p> |

<sup>1</sup> UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

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

North East Derbyshire District Council is a local government District in eastern Derbyshire, England, named to reflect its geographical position within the wider county. The District is one of Britain's longest established visitor destinations and includes various holiday parks and bed and breakfasts that support increasing tourism for the area. The District also occupies a key historical and environmental position, with the industrial history centred on wool trade, engineering, iron and steel production and heavy minerals extraction such as coal mining and limestone quarrying. This in turn encourages coal adoption for domestic heating which was exacerbated by the miners' concessionary fuel allowances. As such, the impact of coal burning on air quality in North East Derbyshire was extensive and Smoke Control Areas (SCAs) have been adopted since the 1970s for some areas of the District. North East Derbyshire District Council are conscious that the development of new houses in the District since the 1970s, coupled with increased popularity of domestic biomass burning (wood burners) may negatively affect air quality in a similar way. As such, the effects of new developments and biomass burning are reviewed through the air quality screening process, and for biomass fuel utilisation on a larger scale, it is assessed through the development control regime.

The District is approximately 106 square miles in area and boasts a rich variety of charming landscape. Within the District there are also a range of designated areas, including 30 conservation areas, 11 sites of special scientific interest (SSSI), two local nature reserves (LNRs) and over 10 local wildlife sites (LWS). The area is predominantly rural in nature, with a population of approximately 102,000. The largest urban areas are Dronfield and Clay Cross where approximately 11,000 and 9,000 people live, respectively. Other population centres across the District include Eckington, Shirland, Killamarsh and Wingerworth. The District is the 18<sup>th</sup> least densely populated area of the 35 local authority areas within the East Midlands, as per the [Office for National Statistics](#).

Air pollution within North East Derbyshire is predominantly attributable to the extensive network of A-roads (i.e. the A61, A6102, A617, A619, A621, A625, A632 and A38) and the M1 (Junction 29 at Chesterfield/Mansfield) that operate within the Council's administrative boundary. In addition, car ownership per household in North East Derbyshire (81.3%) is higher than the national average (73.2%), as reported in the [RAC Foundation](#). As a result of the extensive arterial road network and high level of car ownership, vehicle emissions are the main contributor to air pollution within North East Derbyshire. This concept is reiterated in both the [North East Derbyshire Local Plan 2014 – 2034](#) and the [North East Derbyshire District Council Growth Strategy](#), which highlight the objective to reduce the

need to travel by private car to employment, education and services due to the lack of provision of convenient public transport modes in the District. It is however noted that major congestion does not frequently occur within the District due to the strategic nature of the road links to nearby major cities such as Sheffield, thus the majority of the vehicles are throughflow traffic. Furthermore, the A619 is a gateway to the Peak District National Park, with traffic flows peaking significantly in the summer with the influx of tourist-related through traffic.

Despite the extensive road network, North East Derbyshire continues to enjoy good air quality, continuing the trend of no reported exceedances of the annual mean NO<sub>2</sub> objective of 40 µg/m<sup>3</sup>. As a result, there are no declared air quality management areas (AQMAs) within North East Derbyshire District Council's administrative boundary.

During 2023, concentrations of NO<sub>2</sub> were monitored passively via a diffusion tube network of 16 sites, of which one was a triplicate, resulting in a total of 18 diffusion tubes being deployed across the District each month. These are located around the main population centres, including Dronfield, Clay Cross, Eckington and Killamarsh. In 2023, the maximum NO<sub>2</sub> annual mean concentration recorded by the diffusion tube network was 34.3 µg/m<sup>3</sup> (Site ID: 22-1), which is below the AQS objective of 40 µg/m<sup>3</sup>. Relative to the previous reporting year, the NO<sub>2</sub> annual mean concentrations reduced at 13 out of 16 sites (81%), indicating a slight improvement in air quality in 2023 across North East Derbyshire.

## 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<sup>3</sup> 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<sub>2.5</sub>), the pollutant of most harmful to human health. The Air Quality Strategy<sup>4</sup> provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

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<sup>3</sup> Defra. Environmental Improvement Plan 2023, January 2023

<sup>4</sup> Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

The Road to Zero<sup>5</sup> 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 (AQMA) are designated due to elevated concentrations heavily influenced by transport emissions.

Within North East Derbyshire, since the introduction of the passive monitoring network, there has been no site exceeding the AQS annual mean objective of 40 µg/m<sup>3</sup> for NO<sub>2</sub>. As a result, there are currently no designated AQMA and, therefore, no AQAP. However, there a range of plans and policies that North East Derbyshire District Council have developed and contributed towards that when implemented, will have an additional benefit of improving air quality, and ensuring compliance with the objectives is maintained.

For example, as part of North East Derbyshire District Council's commitment to reduce the impacts of and tackle climate change, a [Climate Change Strategy \(2022 – 2030\)](#) has been produced. The strategy is primarily focused on road transport and residential buildings, as these are responsible for approximately 60% of CO<sub>2</sub> emissions across the District, with the aim to achieve an 80% reduction in carbon emissions by 2030. This primary focus on reducing emissions from the transport sector will have a co-benefit of improving air quality through the implementation of measures to reduce the number of trips by private vehicles.

North East Derbyshire District Council are also actively looking at ways to develop the infrastructure that will encourage a more sustainable form of travel. This includes developing cycling and walking routes to facilitate active travel and installing Electric Vehicle (EV) charging points to facilitate the uptake of low emission transport.

Therefore, despite there being no exceedance of the air quality objectives across the District, North East Derbyshire District Council continue to develop measures to further improve air quality. These measures will ensure that the compliance with the objectives is maintained, and that the residents continue to experience good air quality.

## Conclusions and Priorities

During 2023, the data from the passive diffusion tube monitoring network showed no exceedances of the annual mean objective of 40 µg/m<sup>3</sup> for NO<sub>2</sub>. The highest reported

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

annual mean concentration in 2023 was  $34.3 \mu\text{g}/\text{m}^3$  (Site ID: 22-1), indicating that there was no site where the annual mean concentration was within 10% of the objective. Relative to the previous reporting year (2022), the majority of sites across the entire diffusion tube network experienced a decrease in the annual mean concentration of  $\text{NO}_2$  that was recorded, except one site where the concentration showed no change between each reporting year (Site ID: 23) and two sites where the annual mean increased slightly (Site ID: 70 and 76). However, the maximum increase from 2022 and 2023 was  $0.3 \mu\text{g}/\text{m}^3$ , indicating that there has been no significant increase in the concentration of  $\text{NO}_2$  across North East Derbyshire in 2023. The District continues to enjoy good air quality.

The following actions are considered to be key priorities in ensuring the air quality conditions in North East Derbyshire continue to comply with the AQS objectives:

- Continue to review the current monitoring programme, exploring the need to deploy new monitoring locations in areas where monitoring has not previously been undertaken and where it is believed that there may be elevated concentrations of  $\text{NO}_2$  in areas of relevant public exposure;
- Actively engage with developers at the planning application stage to promote the installation of EV charging or alternatively, provide suitable infrastructure to allow for future cost-effective installations;
- Implement the planned EV charging points in car parks and on streets across the District;
- Provide an integrated transport network to facilitate the efficient movement of pedestrian and vehicular traffic, goods and services across the District;
- Improve the existing walking and cycling networks to encourage active travel, by acquiring funding for development;
- Implement measures within the Local Cycling and Walking Infrastructure Plan (LCWIP) and alternate active travel plans; and
- Increase public education on awareness of air pollution and actions they can take to improve air quality.

## Local Engagement and How to get Involved

Owing to the fact that the main source of air pollution within North East Derbyshire is from vehicle emissions, the public can support the reduction of air pollution by participating in active travel. These include, but are not limited to:

- Use of Public Transport: Reduces the number of private vehicles on the road, which reduces pollution concretions by limiting congestion and the volume of traffic.
- Active Travel: Walking or cycling instead of using a private vehicle, especially for journeys that are of short distance (i.e. walking to the local shop);
- Car / Lift Sharing: Where a number of individuals are making similar journeys, such as travelling to work or to school, car sharing reduces the number of vehicles on the road and therefore the amount of emissions being released. This can be promoted via school and workplace travel plans;
- Low Emission Travel: Choosing a vehicle that meets the needs of the owner, whilst also reducing the amount of emissions being released (i.e. fully electric, hybrid fuel and more fuel efficient cars); and
- Travel Plans: Asking your employer, school or college to develop a green travel plan.

North East Derbyshire District Council continue to work with local businesses, charities, developers, tourism bodies, schools, local transport operators and more organisations to develop measures to improve air quality across the area.

## Local Responsibilities and Commitment

This ASR was prepared by Bureau Veritas on behalf of North East Derbyshire District Council, with the support and agreement of the following officers and departments:

- Paul Denton – Environmental Protection Team Manager
- Gill Halliwell – Environmental Health Service Manager

This ASR has been approved by:

- Paul Denton – Environmental Protection Team Manager
- Gill Halliwell – Environmental Health Service Manager

This ASR has not been signed off by a Director of Public Health.

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# 1 Local Air Quality Management

This report provides an overview of air quality in North East Derbyshire during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

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

## **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 East Derbyshire District Council do not currently have any declared AQMAs.

## 2.2 Progress and Impact of Measures to address Air Quality in North East Derbyshire

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

1. It is clear that the Council have addressed all comments from the previous ASR appraisal. The Council should continue to address all comments in the future to ensure the reports remain at the good standard.
  - Appraisal comments on the 2023 ASR have been addressed in the 2024 ASR.
2. The Council have expanded their monitoring network in 2022 to capture concentrations at residential properties within an area of concern. The Council is commended for ensuring their monitoring network is appropriate and areas of concern are highlighted prior to any exceedances. The monitoring network should continue to be frequently reviewed and expanded where necessary.
  - Albeit no new sites were introduced in 2023, the Council continue to frequently review its monitoring network to ensure suitable monitoring is in place in areas of concern.
3. It would be useful for larger or bolder labels to be included on Figure D.2 as it is quite difficult to highlight the location of each site and cross-reference this with the smaller scale maps below.
  - Label sizes have been amended in all Figures so that Site IDs are clearly visible to ensure each site is easily identifiable.
4. There is a minor typo on Page 13: "... which provides a for estimating PM<sub>2.5</sub> concentrations from PM<sub>10</sub> measurements".
  - The 2024 ASR has been proofread prior to submission/publication.
5. Background concentrations of PM<sub>2.5</sub> have been provided to estimate the current PM<sub>2.5</sub> levels. The backgrounds are currently below the current PM<sub>2.5</sub> targets, including the newly introduced target of 10 µg/m<sup>3</sup> by 2040. The Council should continue to estimate these concentrations to ensure this target continued to be met.
  - As North East Derbyshire District Council do not automatically monitor PM<sub>2.5</sub>, background concentrations of PM<sub>2.5</sub> have again been used to estimate the current level of PM<sub>2.5</sub> across the District in the 2024 ASR.

North East Derbyshire District Council continue to use the monitoring network to review whether the air quality across the District is below the objectives, to ensure that residents

are exposed to a safe level of air quality. The removal of monitoring locations in areas of relevant public exposure as a result of the reported concentrations being below the air quality objectives, and the addition of new locations due to a requirement for monitoring elsewhere, highlights the proactive nature of North East Derbyshire District Council. This continual review of the network helps identify any areas that may be of potential concern and allows for effective mitigation measures to be implemented into an area before the air quality objectives are exceeded. Therefore, the proactive approach ensures that the levels of air quality remain compliant across the whole of the District, and that local residents are not exposed to adverse levels of air pollution.

North East Derbyshire District Council also implement measures to improve air quality through the [Climate Change Strategy \(2022 – 2030\)](#). The strategy has 10 core themes, including housing, planning and renewable energy, that are aimed at reducing CO<sub>2</sub> emissions. These measures however have an additional co-benefit of improving air quality. Primarily, this is due to the fact that the majority of the District's CO<sub>2</sub> emissions are generated by road transport and residential buildings (approximately 60%). The strategy therefore aims to achieve an 80% reduction in carbon emissions by 2030, and hit net-zero carbon emissions by 2050, in line with neighbouring East Midlands councils and the UK's commitment. The measures within the Climate Change Strategy that have an impact on improving air quality across the District include:

- Modification of the vehicles within the Council's fleet;
- Implementation of car park and on-street EV charging points;
- Installation of Air Source Heat Pumps (ASHPs).

North East Derbyshire District Council promote active travel across the District, and therefore a subsequent reduction in vehicular usage, through [Derbyshire Connect](#) – a transport service available to those unable to use public transport due to either their age, a disability, or living in an area where bus services are limited. The service provides transport to healthcare facilities and a weekly weekday trip for each community in the county to a nearby shopping area or supermarket. This helps to reduce the number of vehicles on the road (i.e. by sharing transport to a healthcare facility or the shops), which contributes to improvements in air quality, by promoting the District as inclusive and an enabler of active travel for all. The scheme is funded by Derbyshire County Council and is run by Derbyshire Community Transport.

The promotion of active travel is a priority for North East Derbyshire District Council, and is further encouraged through the [Gold Card Scheme](#), which allows people to travel free on

local buses during off-peak periods (9:30am – 11pm weekdays, and anytime during weekends and bank holidays). The card also gives discount at over 1,300 shops, and allows individual's access to all libraries across the District, encouraging community relations and incentivising the uptake of active travel. This helps to improve air quality by reducing the overall emission contributions from frequent vehicular usage.

North East Derbyshire District Council further encourage active travel by promoting the Derbyshire Cycle Plan (2016 – 2030). The plan demonstrates North East Derbyshire District Council's commitment to developing cycling infrastructure in the area to encourage the uptake of active travel. The plan has four strategic aims, which when combined and implemented will help to improve air quality across the District, by reducing emissions from the use of private vehicles:

- *Infrastructure Connectivity:* Develop high quality, connected routes in all cycling environments.
- *Increased Participation:* Implement targeted participation programmes at the local level to encourage behavioural changes, enabling more people to cycle.
- *Effective Communication and Marketing:* Develop a well-connected marketing campaign and communications for residents (and visitors) to help encourage behavioural change and increase the uptake of cycling.
- *Advocacy:* Cross-sector advocacy for policy change, and implementation at the highest level.

North East Derbyshire District Council are also host to the [Key Cycle Network \(KCN\)](#), as well as having a [Local Cycle Network \(LCN\)](#) that forms the connections between the KCN and destinations such as small town centres and villages. The KCN provides a strategic network across Derbyshire with connections to key destinations, towns, villages, transport hubs, employment and housing areas with long distance trails to support the visitor economy. Of the 770 km of routes in the KCN, approximately 400 km are complete, with the remaining 370 km categorised into 127 sections prioritised for investment in the short, medium and long term, with an estimated total cost of £265 million. The initiative aims to improve air quality across the East Midlands region, inclusive of North East Derbyshire, through active transport routes and the encouragement of walking/cycling. The uptake of walking/cycling is further encourage by North East Derbyshire District Council through the Derbyshire County Council Local Cycling and Walking Infrastructure Plan (2020 – 2035), where the North East Derbyshire area is a key focus of the plan due to the concentration within the District and the trip generation that is reflective of the District's position at the top

of the East Midlands region settlement hierarchy and the associated tourism appeal. The Local Cycling and Walking Infrastructure Plan (LCWIP) provides a strategic approach to identifying cycling and walking improvements at the District level and wider East Midlands region, with the shared ambition to improve connectivity to other sub regions (e.g. Greater Manchester, South Yorkshire, Lincolnshire, Staffordshire, Cheshire and Leicestershire). The LCWIP enables a long-term approach (i.e. over 10 – 15 years) to developing local cycling and walking networks, that will increase the number of trips made on foot or by bicycle. North East Derbyshire District Council acknowledge the responsibility for implementing the actions contained within the LCWIP, and are proactively seeking funding alongside neighbouring borough and District councils to improve the existing networks.

North East Derbyshire District Council are also encouraging sustainable transport by promoting the uptake of electrical vehicles (EVs). Primarily, this is done via a collaborative relationship with Derbyshire County Council to install EV charging points across the District. North East Derbyshire District Council have also developed a relationship with local residents and business to establish a reduction in tailpipe vehicle emissions by encouraging those with a Derbyshire postcode to register for a D2N2 Card, which offers reduced charging tariffs. EV charging is further promoted by working with neighbouring District and borough councils through the Go Ultra Low Charge Point Project, which identifies several suitable locations across the District and National Park owned car parks to be assessed for infrastructure improvements, thus identifying priority areas. In addition, North East Derbyshire District Council have adopted the [Derbyshire County Council Local Electric Vehicle Infrastructure \(LEVI\) Strategy Action Plan \(2019 – 2029\)](#), which outlines ways in which the accessibility of EV charging can be improved, and provides investment into the area through a UK Government fund. However, this plan has now been superseded by the newly adopted [Zero Emission Vehicle Infrastructure \(ZEVI\) Strategy \(2019 – 2029\) \(2022 Update\)](#), following accelerated policy framework and technological advances, with the primary focus on the ban of UK sales of internal combustion engine (ICE) petrol and diesel vehicles by 2030.

Whilst the measures stated above will help to contribute towards maintaining compliance, as good practice North East Derbyshire District Council will also work towards implementing the measures listed in Table 2.1. The majority of the measures contained in the report for the last reporting year have been completed, therefore Table 2.1 outlines the new measures that are the new focus of North East Derbyshire District Council. These measures can be classified under four key themes:

- Increasing public understanding;
- Encouraging alternative modes of transport;
- Developing infrastructure improvements; and
- Promoting low emission travel.

North East Derbyshire District Council are committed to working with partners from across the county to proactively engage with end users that are at high risk of fuel poverty. This involves working with all internal departments, Derbyshire County Council, local installers and agencies to deliver several energy cost reduction measures. The Home Assistance Coordinator (employed by the Joint Environmental Health Service) continues to proactively engage with owner/occupiers to give energy advice, educate individuals and encourage the effective use of heating systems.

North East Derbyshire Council are also committed to reducing the fuel cost and carbon footprints to its own housing and commercial stock. All council owned leisure centres have now moved onto air source heat pumps. Accommodation reviews have also taken place leading to the consolidation of office space and the expansion of hybrid working, resulting in less trips made using a private vehicle.

Recent guidance from the Government on tackling air quality issues has seen North East Derbyshire District Council form stronger links (specifically in respect to air quality) with key partners such as the County Director of Public Health and County Council Highways Planner. Officers of North East Derbyshire District Council have been, and continue to, actively participate in the Derbyshire County and City Air Quality Working Group.

Table 2.1 – Progress on Measures to Improve Air Quality

| Measure No. | Measure Title                                                                                                                                                            | Category                         | Classification       | Year Measure Introduced | 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           | Provide energy advice to owner / occupiers (all tenures) and encourage / educate on energy efficiencies                                                                  | Public Information               | Via other mechanisms | 2023                    | 2024 (Ongoing)                     | NEDDC                     | N/A                                        | NO                     | Not Funded                                                                                  | < £10k                    | Completed      | Reduction in Nitrogen Dioxide, Sulphur Dioxide and Particulates | Housing / Environment                                                                               | Ongoing<br><br>119 requests for service 23/24 received face to face advice.<br><br>Engagement events, social media campaigns | Dedicated Home Assistance Co-ordinator post to help support households to improve their energy efficiency, improve home insulation measures, replace fossil fuel heating systems with clean alternatives and help to reduce overall electricity used.                                                                                                                                             |
| 2           | Private sector domestic home heating improvements                                                                                                                        | other                            | other                | 2023                    | 2024                               | NEDDC/ DCC Healthy Homes  | NEDDC / DCC / Public Health                | NO                     | Funded                                                                                      | < £10k                    | completed      | carbon                                                          | Number of improvements                                                                              | 15 homes completed                                                                                                           | Home heating improvements. Installation of gas central heating and repairs to existing boilers                                                                                                                                                                                                                                                                                                    |
| 3           | Improvements to reduce environmental impact of council housing<br><br>(Rykneld Homes manages around 7,600 social housing properties on behalf of North East Derbyshire). | Carbon reduction/ climate change | Council priority     | 2023                    | 2027                               | Rykneld Homes Ltd / NEDDC | Social Housing Decarbonisation Fund (SHDF) | NO                     | Government's Social Housing Decarbonisation Fund (SHDF)<br><br>NEDDC Major Work's Programme |                           | completed      | carbon                                                          | Key priority: Improve existing housing & environment<br><br>Rykneld Homes Business Plan 2023 - 2027 | ongoing                                                                                                                      | In 2023 / 24 Rykneld homes delivered the Council's £21.2 million Major Works programme, which included:<br><br>289 new heating systems<br><br>295 external wall insulation<br><br>218 new windows<br><br>116 new roofs<br><br>Since 2010, Installed external wall insulation (EWI) to 1,500 non-traditional homes.<br><br>Ongoing 2 year programme from 2023 to deliver EWI to 640 council homes. |

| Measure No. | Measure Title                                                              | Category                                | Classification                                                                                                       | Year Measure Introduced | 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                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| 4           | East Midlands Air Quality Network - (Derbyshire Air Quality Working Group) | Policy Guidance and Development Control | Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality | 2023                    | 2024 Ongoing                       | NEDDC / Derbyshire County Council / Public Health England / Derby City Council/ Derbyshire LAs | N/A            | NO                     | Funded         | < £10k                    | Implementation | Reduction in a range of pollutants             | Full engagement across the group / regular meetings                                                                                                        | Ongoing<br><br>Derby and Derbyshire Air Quality Strategy (2020-2030) | <p>The Derbyshire Air Quality Working Group reports annually to the Health and Wellbeing Board with various metrics.</p> <p>Air Quality Strategy for Derby and Derbyshire that aims to improve air quality through three broad themes:</p> <ul style="list-style-type: none"> <li>• sustainable travel options</li> <li>• reducing sources of air pollution &amp; net zero options</li> <li>• mitigating against the health impacts of air pollution.</li> </ul> |
| 5           | Supporting / Encouraging Homeworking/ workplace travel planning            | Promoting Travel Alternatives           | Encourage / Facilitate home-working                                                                                  | 2023                    | 2030                               | NEDDC                                                                                          | N/A            | NO                     | Not Funded     | < £10k                    | Completed      | Reduced Vehicle Emissions                      | <p>North East Derbyshire District Council - Council Plan 2023 – 2027</p> <p>North East Derbyshire District Council Climate Change Strategy 2024 – 2030</p> | Ongoing priority area                                                | <p>Our agile working policies provide digital alternatives to reduce travel requirements. Hybrid policies and plans encourage alternatives to car use and promote more sustainable travel.</p> <p>“All in” days for Team Meetings promoted.</p>                                                                                                                                                                                                                  |
| 6           | School Travel Plans                                                        | Promoting Travel Alternatives           | School Travel Plans                                                                                                  | 2023                    | 2024                               | DCC                                                                                            | DCC            | NO                     | Funded         | £10-50K                   | Implementation | Reduced Vehicle Emissions                      | <p>Increased walking to and from schools</p> <p>Number of schools in the area engaged</p>                                                                  | Ongoing                                                              | Promote sustainable travel                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 7           | Workplace travel plans                                                     | Promoting Travel Alternatives           | Workplace travel plans                                                                                               | 2023                    | 20230                              | NEDDC / DCC                                                                                    | N/A            | NO                     | Not funded     | < £10k                    | Implementation | Reduced Vehicle Emissions                      | North East Derbyshire District Council - Council Plan 2023 – 2027                                                                                          | Ongoing priority area                                                | Promote sustainable travel such as walking cycling and public transport.                                                                                                                                                                                                                                                                                                                                                                                         |

| Measure No. | Measure Title                                                       | Category                                                              | Classification         | Year Measure Introduced | 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                                                                                                                                                                                                                                                                                                                                                                                                |
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|             |                                                                     |                                                                       |                        |                         |                                    |                        |                |                        |                |                           |                |                                                                               | North East Derbyshire District Council Climate Change Strategy 2024 – 2030                         |                                                                                                | Development proposals for companies with large numbers of employees to prepare travel plans for the sustainable transport of staff to and from work.                                                                                                                                                                                                                                                                                 |
| 8           | Bus Service Improvement Plan (BSIP)                                 | Transport planning and infrastructure / Promoting Alternative travel. | Bus Route Improvements | 2023                    | 2024                               | DCC                    | DCC            | NO                     | Funded         | £10-50K                   | Implementation | Decarbonisation of public transport                                           | Various Bus corridors monitored in NEDDC e.g. Chesterfield to Clay Cross, Dronfield                | Ongoing<br><br>Increased bus use / passenger growth                                            | Work by DCC as part of BSIP and National Bus strategy.<br><br>Until 31/12/24 a single bus journey anywhere across Derbyshire will cost no more than £2 any day on most routes.                                                                                                                                                                                                                                                       |
| 9           | Regulation of low emission fuels and Smoke Control Areas            | Promoting Low Emission Plant                                          | Other Policy           | 2023                    | 2024                               | NEDDC                  | DEFRA grant    | Yes                    | Funded         | < £10k                    | Completed      | Smoke and sulphur dioxide emissions reduced through Clean Air Act Regulations | Smoke Control Areas Enforcement & Fee Policy (Draft for consultation)<br><br>Implement / enforced. | Ongoing<br><br>Education/enforcement ongoing                                                   | Most of North East Derbyshire District covered by smoke control areas (SCAs). Some areas not included in orders made in 60s and 70s when less densely populated.<br><br>Appraise existing Smoke Control Orders and outline need for extending smoke control provisions.<br><br>A draft policy for consultation has been produced regarding financial penalties and how much to charge those responsible for smoke emissions in SCAs. |
| 10          | Regulation of waste management and reduction of burning trade waste | Promoting Low Emission Plant                                          | Other Policy           | 2023                    | 2024                               | NEDDC                  | N/A            | NO                     | Not Funded     | < £10k                    | Implementation | Smoke and sulphur dioxide emissions reduced through Clean Air Act Regulations | Implement / enforced.                                                                              | Ongoing<br><br>Reactive enforcement work picked up by ongoing District work/ Implementation of | Continue to work with businesses to educate on waste management. Further development of information available on the Council's website and                                                                                                                                                                                                                                                                                           |

| Measure No. | Measure Title                                     | Category              | Classification                                                                                  | Year Measure Introduced | 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                                                                                                                                                                                                                                                                                                                                                                          |
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|             |                                                   |                       |                                                                                                 |                         |                                    |                        |                         |                        |                  |                           |                |                                                |                           | education of businesses                    | through Social Media campaigns.                                                                                                                                                                                                                                                                                                                                                                                |
| 11          | Making reports on Air Quality available to public | Public Information    | Other                                                                                           | 2023                    | 2024                               | NEDDC                  | N/A                     | NO                     | Not Funded       | < £10k                    | Completed      | N/A                                            | Annual/Monthly Reports    | Ongoing                                    | <p>Link available from the Council's air Quality website pages to uk-air.defra.gov.uk for daily pollution forecasts based on location or postcode.</p> <p>Work is ongoing to progress making monthly NO<sub>2</sub> results available through the Council web site.</p>                                                                                                                                        |
| 12          | Environmental Permits & Industrial Emissions      | Environmental Permits | Introduction/ increase of environmental funding through permit systems and economic instruments | 2023                    | 2024                               | NEDDC                  | Annual Subsistence Fees | NO                     | Partially Funded | < £10k                    | Completed      | Various pollutants regulated                   | 100% Inspections          | Ongoing enforcement of current regulations | <p>Non-compliant processes are encouraged to comply by lower annual subsistence fees and less regulatory input.</p> <p>Businesses potentially operating without a required permit within the District are identified by being frequently out and about on the District and regular internet searches are undertaken as time allows.</p> <p>Statutory work completed by Joint Environmental Health Service.</p> |
| 13          | Environmental Campaigns                           | Public Information    | Other                                                                                           | 2023                    | 2024                               | NEDDC                  | N/A                     | NO                     | Not Funded       | < £10k                    | Completed      | N/A                                            | Number of campaigns       | Ongoing                                    | Ongoing campaigns through staff bulletins and social media to educate on AQ matters, e.g., use of correct fuels, clean burning of wood, anti-idling and promoting clean air day.                                                                                                                                                                                                                               |

| Measure No. | Measure Title                    | Category                         | Classification                                                                                                       | Year Measure Introduced | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| 14          | Electric Vehicle Charging Points | Promoting Low Emission Transport | Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging | 2023                    | 2024                               | NEDDC / DCC/ Energy Saving Trust / Office for Zero Emission Vehicles (OZEV) | OZEV           | NO                     | Funded<br><br>LEVI | £10k - 50k                | Completed      | Increase uptake of electric vehicles and use of charging points.<br><br>Reduced Vehicle Emissions | Number of EV charge points.                                          | Ongoing<br><br>A DCC commissioned study with partner organisations to work on a plan to install more electric vehicle charging points across the county over the next 10 years as part of LEVI strategy. | EV points are conditioned where possible on new planning applications.<br><br>Low Emission Vehicle Infrastructure (LEVI) Strategy has identified suitable locations for EV charge points and other infrastructure throughout the District and across Derbyshire.<br><br>Final Selection of sites/ locations within the HPBC District being determined.                                                                                                                                                                 |
| 15          | Fleet Improvement                | Vehicle Fleet efficiency         | Fleet efficiency                                                                                                     | 2023                    | 2030                               | NEDDC                                                                       | NEDDC          | NO                     |                    |                           | Implementation | NO <sub>2</sub> / Particulates                                                                    | Council Plan 2023 – 2027<br><br>Climate Change Strategy 2024 - 20230 | Ongoing                                                                                                                                                                                                  | All current fleet vehicles have exhaust/engine management system particulate filters to reduce CO <sub>2</sub> /NO <sub>2</sub> emissions.<br><br>All new vehicle purchases meet the most up to date emissions standards – currently Euro VI.<br><br>Alternative fuel sources are considered when tendering but current technology doesn't have the range to operate services given the rural nature of the District. Hybrid fleet vehicles are being considered and hydrogen fuel systems as the technology develops. |

| Measure No. | Measure Title                       | Category                         | Classification   | Year Measure Introduced | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| 16          | Climate change and carbon reduction | Council priority                 | Council priority | 2023                    | 2030                               | NEDDC                  | NEDDC          | NO                     | Funded                                                          |                           | Implementation | Carbon                                         | Council Plan 2023 – 2027<br><br>Climate Change Strategy 2024 - 20230 | Ongoing priority area<br><br>Updating Carbon Reduction plan to deliver Net Zero 2050 and regularly publish progress and evaluation reports. | Develop, manage, monitor and review the action plans produced                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 17          | Council Owned building upgrades     | Carbon reduction/ climate change | Council priority | 2023                    | 2030                               | NEDDC                  | NEDDC          | NO                     | Funded<br><br>BEIS / PSDS / Dept for Energy security & Net Zero |                           | Implementation | Carbon                                         | Council Plan 2023 – 2027<br><br>Climate Change Strategy 2024 - 20230 | Ongoing priority area.<br><br>Installation of energy efficiency measures                                                                    | Leisure Centres Dronfield Active – 100% renewable energy measures completed and retrofitted air source heat pumps, solar panels, LEV lighting and cavity wall insulation.<br><br>Eckington Active – renewable energy measures competed and retrofitted air source heat pumps, cavity wall insulation, solar panels, LEV lighting.<br><br>New Clay Cross Active - Existing leisure centre – build ongoing. Existing facility being replaced with a brand-new community leisure centre hub retaining pre-existing sports hall frame which has helped to avoid between 30% and 40% of additional emissions associated with manufacturing a new frame. 100% renewable energy include air source heat pumps, solar panels, enhanced |

| Measure No. | Measure Title                     | Category                                                                    | Classification                                             | Year Measure Introduced | 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                                                                                                                                                                                                                                                                  |
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|             |                                   |                                                                             |                                                            |                         |                                    |                        |                      |                        |                |                           |                |                                                  |                                                                                   |                                 | thermal efficiency to ensure better heat retention, LED lighting.                                                                                                                                                                                                                                      |
| 18          | Low Carbon Challenge Fund Project | Energy efficient technologies.                                              | Carbon reduction and Net Zero 2050                         | 2023                    | 2024                               | NEDDC                  | Clay Cross Town Deal | NO                     | Funded         | 10K - 100K                | Completed      | Reduction in carbon footprint                    | Number of local businesses engaged and energy efficient technologies implemented. | Completed                       | Assisted local businesses to invest in various energy efficient technologies and reduce their carbon footprint. Clay Cross businesses awarded Low Carbon Challenge Fund grants to implement technologies such as solar panels, energy efficient lighting, HVO fuelling station for distribution fleet. |
| 19          | Cycle links                       | Transport planning and infrastructure / Alternatives to private vehicle use | Derbyshire Cycle Network                                   | 2022                    | 2030                               | NEDDC/ DCC             | NEDDC                | NO                     | TBC            | TBC                       | Ongoing        | Reduced vehicle emissions by encouraging cycling | Carbon Reduction Plan 2019 – 2030<br>Council Plan 2023 - 2027                     | TBC                             | Linking existing cycle paths to other sections of the Derbyshire Cycle Network. Working in partnership to improve signage, waymarking, interpretation and marketing of cycle routes e.g. Trans Pennine Trail.                                                                                          |
| 20          | Eco School Grants                 | Promote travel alternatives<br>Public information<br>Other                  | Pollution reduction,<br>Carbon reduction and Net Zero 2050 | 2023                    | 2024                               | NEDDC                  | NEDDC                | NO                     | Funded         | <£1K                      | Ongoing        | Reduced vehicle emissions and carbon reduction   | Carbon Reduction Plan 2019 – 2030<br>Council Plan 2023 - 2027                     | Completed<br><br>22 eco schools | Tackling climate change by implementing projects, e.g. Scooter racks to encourage to scoot to school. Eco garden planting to increase oxygen levels and decrease greenhouse gases.                                                                                                                     |

## 2.3 PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy<sup>6</sup>, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM<sub>2.5</sub>). There is clear evidence that PM<sub>2.5</sub> (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

### ***PM<sub>2.5</sub> Monitoring:***

North East Derbyshire District Council do not currently undertake any monitoring of PM<sub>2.5</sub>.

### ***PM<sub>2.5</sub> Background Concentrations:***

The most recent [Defra Background Maps](#) (2021 reference year) show that all background concentrations of PM<sub>2.5</sub> are significantly below the current annual mean AQS objective of 20 µg/m<sup>3</sup>. The highest background concentration in 2023 is predicted to be 8.1 µg/m<sup>3</sup> within the 1 km x 1 km grid square with centroid grid reference of 435500, 378500. This is in the rural town of Dronfield, to the west of the A61 – a major route through the District.

### ***Impact on Public Health:***

The Public Health Outcomes Framework data tool, compiled by Public Health England, quantifies the mortality burden of PM<sub>2.5</sub> within England on a country and local authority scale. The fraction of mortality attributable to PM<sub>2.5</sub> emissions within North East Derbyshire is 5.3%, which is marginally lower than the regional average for the East Midlands (6.1%) and the national average for England (5.8%).

### ***Smoke Control Areas:***

Smoke Control Areas (SCAs) are designated zones in which it is an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler. It is also an offence to acquire an unauthorised fuel for use within a SCA unless it is used within an exempt appliance (exempted from the controls which generally apply in SCAs). There currently 22 SCAs within North East Derbyshire, which can be viewed via the [interactive map](#).

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<sup>6</sup> Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

**Measures to Reduce PM<sub>2.5</sub> Emissions:**

North East Derbyshire District Council is taking the following measures to address PM<sub>2.5</sub>:

- Encouraging developers to proactively install EV charging points at the planning stage or the consideration of suitable infrastructure to facilitate cost efficient installations in the future;
- Working alongside Derbyshire County Council to implement an EV charging programme, with at least 10 charging stations currently active across the District, with more scheduled for implementation to further encourage the uptake of EVs;
- Seeking to secure investment from the LEVI fund from the UK Government to further enhance its EV charging network in line with the [Derbyshire County Council LEVI Strategy Action Plan 2019 – 2029](#) and [Zero Emission Vehicle Infrastructure \(ZEVI\) Strategy 2019 – 2029](#); and
- Introducing strategies within the [Climate Change Strategy 2022 – 2030](#) and the [Vision Derbyshire Climate Change Strategy \(2022 – 2025\)](#) that assist with the achievement of net-zero carbon emissions across the District by 2050. Many of the measures within these strategies address local air quality, including PM<sub>2.5</sub>.

North East Derbyshire District Council also recognise that there is a need for additional measures beyond encouraging the uptake of EVs to reduce emissions of PM<sub>2.5</sub>. As such, the following measures are also being implemented, with active travel the key theme:

- Investing in improving the travel network to facilitate more active forms of travel (i.e. walking and cycling) to subsequently reduce the volume of vehicles and the associated release of emissions;
- Promoting the well-connected main rail network, Robin Hood commuter and leisure line, with stations in Dronfield and nearby Alfreton and Chesterfield in Bolsover District Council's administrative area. The benefits of commuting via public transport, as opposed to private vehicle, are also being highlighted to the public;
- Promoting the '[Gold Card](#)', which allows older people and those with certain disabilities to travel for free on local buses during off-peak periods, between 9:30am – 11:00pm weekdays, and anytime during weekends and bank holidays. This scheme incentivises active travel throughout the District, thus reducing air pollution contributions from frequent use of private vehicles;
- Implementing the [Local Cycling and Walking Infrastructure Plan \(LCWIP\)](#) developed by Derbyshire County Council for 2020 to 2035. The purpose of the LCWIP is to reduce the number of vehicle trips across North East Derbyshire and

subsequent release of emissions, due to the high population concentration and related hierarchal position in the East Midlands Settlements as well as the strong associated tourism appeal; and

- Promoting and developing the Derbyshire Cycling Plan 2016 to 2030 which demonstrates North East Derbyshire District Council's commitment to improving the cycling network across the District. This cycling plan makes connections to both the Key Cycle Network and the Local Cycle Network, which highlight 770 km of routes (400 km complete and 370 km requiring additional funding) available to cycle, walk and run, promoting more active forms of travel. Complete and proposed cycle networks across Derbyshire can be seen via the [interactive map](#).

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

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

### 3.1 Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

North East Derbyshire District Council did not undertake any automatic (continuous) monitoring during 2023.

#### 3.1.2 Non-Automatic Monitoring Sites

North East Derbyshire District Council undertook non-automatic (i.e. passive) monitoring of NO<sub>2</sub> at 16 sites during 2023, which is the same number of sites as in the previous reporting year. Therefore, there has been no sites added to or removed from the monitoring network in 2023. One site was a triplicate (Diffusion Tube ID: 20, 72 and 73), resulting in a total of 18 diffusion tubes being deployed across the District each month. 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 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<sub>2</sub>)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40 µg/m<sup>3</sup>. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 – NO<sub>2</sub> 2023 Diffusion Tube Results (µg/m<sup>3</sup>) includes distance corrected values, only where relevant.

During 2023, all monitoring locations across the diffusion tube network reported NO<sub>2</sub> annual mean concentrations below the AQS objective (40 µg/m<sup>3</sup>), with the maximum concentration being 34.3 µg/m<sup>3</sup> (Site ID: 22-1). This site also recorded the highest NO<sub>2</sub> annual mean concentration in the previous reporting year, yet the concentration is slightly lower from that recorded in 2022 (36.6 µg/m<sup>3</sup>). Relative to previous reporting year, the majority of sites across the entire diffusion tube network experienced a decrease in the concentration of NO<sub>2</sub> that was recorded, except one site which recorded the same annual mean concentration (Site ID: 23) and two sites which recorded increased annual mean concentrations (Site ID: 70 and 76). However, the maximum increase from 2022 to 2023 was only 0.3 µg/m<sup>3</sup> (Site ID: 70), indicating no significant rise in NO<sub>2</sub> concentration across North East Derbyshire.

Figure A.1 and Figure A.2 presents the monitored concentrations of NO<sub>2</sub> across the diffusion network over the last five years (2019 – 2023).

In the absence of any automatic monitoring of NO<sub>2</sub>, LAQM TG.22 provides an empirical relationship that can be used to predict the likelihood of that the 1-hour objective for NO<sub>2</sub> (200 µg/m<sup>3</sup> not to be exceeded more than 18 times per year) is to be exceeded. This states that the 1-hour objective is likely to be exceeded at any diffusion tube site that recorded an annual mean concentration greater than 60 µg/m<sup>3</sup>. However, as the maximum NO<sub>2</sub> annual mean concentration in 2023 recorded across the entire diffusion tube network was 34.3 µg/m<sup>3</sup>, it can be concluded that the NO<sub>2</sub> 1-hour objective was not exceeded during 2023. This trend has been evident throughout the last five years (2019 – 2023).

## 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) <sup>(1)</sup> | Distance to kerb of nearest road (m) <sup>(2)</sup> | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|-------------------|--------------------------------------------|-----------|-------------------------|--------------------------|----------------------|----------------------|--------------------------------------------------|-----------------------------------------------------|---------------------------------------------|-----------------|
| 1                 | 79 Derby Rd. Tupton                        | Suburban  | 439053                  | 366171                   | NO <sub>2</sub>      | No                   | 0.0                                              | 12.0                                                | No                                          | 2.0             |
| 2                 | 144 Nethermoor Rd. Tupton                  | Suburban  | 438983                  | 365324                   | NO <sub>2</sub>      | No                   | 4.7                                              | 8.5                                                 | No                                          | 2.0             |
| 5                 | Salient Chesterfield Rd. Duckmanton        | Roadside  | 444775                  | 371232                   | NO <sub>2</sub>      | No                   | 12.5                                             | 15.0                                                | No                                          | 2.0             |
| 6                 | 5 Gelbe Close, Holmewood                   | Suburban  | 442718                  | 365779                   | NO <sub>2</sub>      | No                   | 1.5                                              | 14.0                                                | No                                          | 2.0             |
| 15                | Brookfield Hse. Church St. Eckington       | Roadside  | 443384                  | 379761                   | NO <sub>2</sub>      | No                   | 13.0                                             | 3.2                                                 | No                                          | 2.0             |
| 22-1              | 77 High Street, Clay Cross                 | Roadside  | 439142                  | 363449                   | NO <sub>2</sub>      | No                   | 0.0                                              | 1.5                                                 | No                                          | 2.0             |
| 23                | 181 High Street, Clay Cross                | Roadside  | 439186                  | 363050                   | NO <sub>2</sub>      | No                   | 2.5                                              | 1.5                                                 | No                                          | 2.5             |
| 24                | 304 North Wingfield Road, Grassmoor        | Roadside  | 440708                  | 366629                   | NO <sub>2</sub>      | No                   | 0.0                                              | 5.0                                                 | No                                          | 2.0             |
| 25                | 31 High Street, Dronfield                  | Roadside  | 434992                  | 378519                   | NO <sub>2</sub>      | No                   | 0.0                                              | 4.5                                                 | No                                          | 2.0             |
| 27                | Traffic Light, outside Aingarh, Duckmanton | Roadside  | 444542                  | 371254                   | NO <sub>2</sub>      | No                   | 20.0                                             | 0.5                                                 | No                                          | 2.5             |
| 70                | 300 Sheffield Road, Killamarsh             | Roadside  | 445149                  | 381150                   | NO <sub>2</sub>      | No                   | 0.0                                              | 2.5                                                 | No                                          | 2.5             |
| 71                | East View, Soaper Lane, Dronfield          | Suburban  | 435233                  | 378542                   | NO <sub>2</sub>      | No                   | 0.0                                              | 16.5                                                | 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) <sup>(1)</sup> | Distance to kerb of nearest road (m) <sup>(2)</sup> | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|-------------------|--------------------------------------------------|------------------|-------------------------|--------------------------|----------------------|----------------------|--------------------------------------------------|-----------------------------------------------------|---------------------------------------------|-----------------|
| 20, 72, 73        | 26 Top Road, Calow                               | Roadside         | 440869                  | 370912                   | NO <sub>2</sub>      | No                   | 0.0                                              | 1.5                                                 | No                                          | 2.0             |
| 74                | 1 The Poplars, Chesterfield Road, Duckmanton     | Urban Background | 443555                  | 371305                   | NO <sub>2</sub>      | No                   | 0.0                                              | 15.0                                                | No                                          | 2.0             |
| 75                | 50 High Street, Clay Cross                       | Roadside         | 439157                  | 363417                   | NO <sub>2</sub>      | No                   | 0.0                                              | 3.0                                                 | No                                          | 2.5             |
| 76                | 3 Manor Farm Mews, Chesterfield Road, Duckmanton | Roadside         | 444504                  | 371267                   | NO <sub>2</sub>      | No                   | 2.7                                              | 2.7                                                 | No                                          | 2.0             |

**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 – Annual Mean NO<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>)**

| Diffusion Tube ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type        | Valid Data Capture for Monitoring Period (%) <sup>(1)</sup> | Valid Data Capture 2023 (%) <sup>(2)</sup> | 2019 | 2020 | 2021 | 2022 | 2023 |
|-------------------|-------------------------|--------------------------|------------------|-------------------------------------------------------------|--------------------------------------------|------|------|------|------|------|
| 1                 | 439053                  | 366171                   | Suburban         | 100                                                         | 100                                        | 19.4 | 12.5 | 16.9 | 16.0 | 15.9 |
| 2                 | 438983                  | 365324                   | Suburban         | 100                                                         | 100                                        | 17.7 | 15.2 | 15.3 | 14.8 | 14.2 |
| 5                 | 444775                  | 371232                   | Roadside         | 82.7                                                        | 82.7                                       | 22.8 | 13.7 | 17.9 | 16.9 | 15.4 |
| 6                 | 442718                  | 365779                   | Suburban         | 100                                                         | 100                                        | 18.3 | 13.2 | 14.9 | 15.2 | 14.3 |
| 15                | 443384                  | 379761                   | Roadside         | 100                                                         | 100                                        | 24.0 | 20.1 | 21.8 | 21.4 | 20.9 |
| 22-1              | 439142                  | 363449                   | Roadside         | 90.4                                                        | 90.4                                       | -    | -    | -    | 36.6 | 34.3 |
| 23                | 439186                  | 363050                   | Roadside         | 100                                                         | 100                                        | 25.3 | 21.2 | 21.9 | 19.9 | 19.9 |
| 24                | 440708                  | 366629                   | Roadside         | 100                                                         | 100                                        | 18.4 | 12.9 | 16.2 | 15.6 | 13.9 |
| 25                | 434992                  | 378519                   | Roadside         | 100                                                         | 100                                        | 18.3 | 11.3 | 16.9 | 14.7 | 13.7 |
| 27                | 444542                  | 371254                   | Roadside         | 100                                                         | 100                                        | 38.3 | 23.6 | 26.3 | 25.5 | 24.9 |
| 70                | 445149                  | 381150                   | Roadside         | 100                                                         | 100                                        | -    | 26.9 | 30.8 | 28.3 | 28.6 |
| 71                | 435233                  | 378542                   | Suburban         | 100                                                         | 100                                        | -    | 12.0 | 16.3 | 15.8 | 15.3 |
| 20, 72, 73        | 440869                  | 370912                   | Roadside         | 100                                                         | 100                                        | 25.6 | 18.4 | 23.4 | 22.4 | 21.8 |
| 74                | 443555                  | 371305                   | Urban Background | 92.3                                                        | 92.3                                       | -    | 11.3 | 13.4 | 13.3 | 12.1 |
| 75                | 439157                  | 363417                   | Roadside         | 92.3                                                        | 92.3                                       | -    | 26.2 | 29.7 | 28.3 | 26.8 |
| 76                | 444504                  | 371267                   | Roadside         | 92.3                                                        | 92.3                                       | -    | 16.3 | 18.0 | 16.8 | 16.9 |

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

☒ Diffusion tube data has been bias adjusted.

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

**Notes:**

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

Exceedances of the  $\text{NO}_2$  annual mean objective of  $40\mu\text{g}/\text{m}^3$  are shown in **bold**.

$\text{NO}_2$  annual means exceeding  $60\mu\text{g}/\text{m}^3$ , indicating a potential exceedance of the  $\text{NO}_2$  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%).

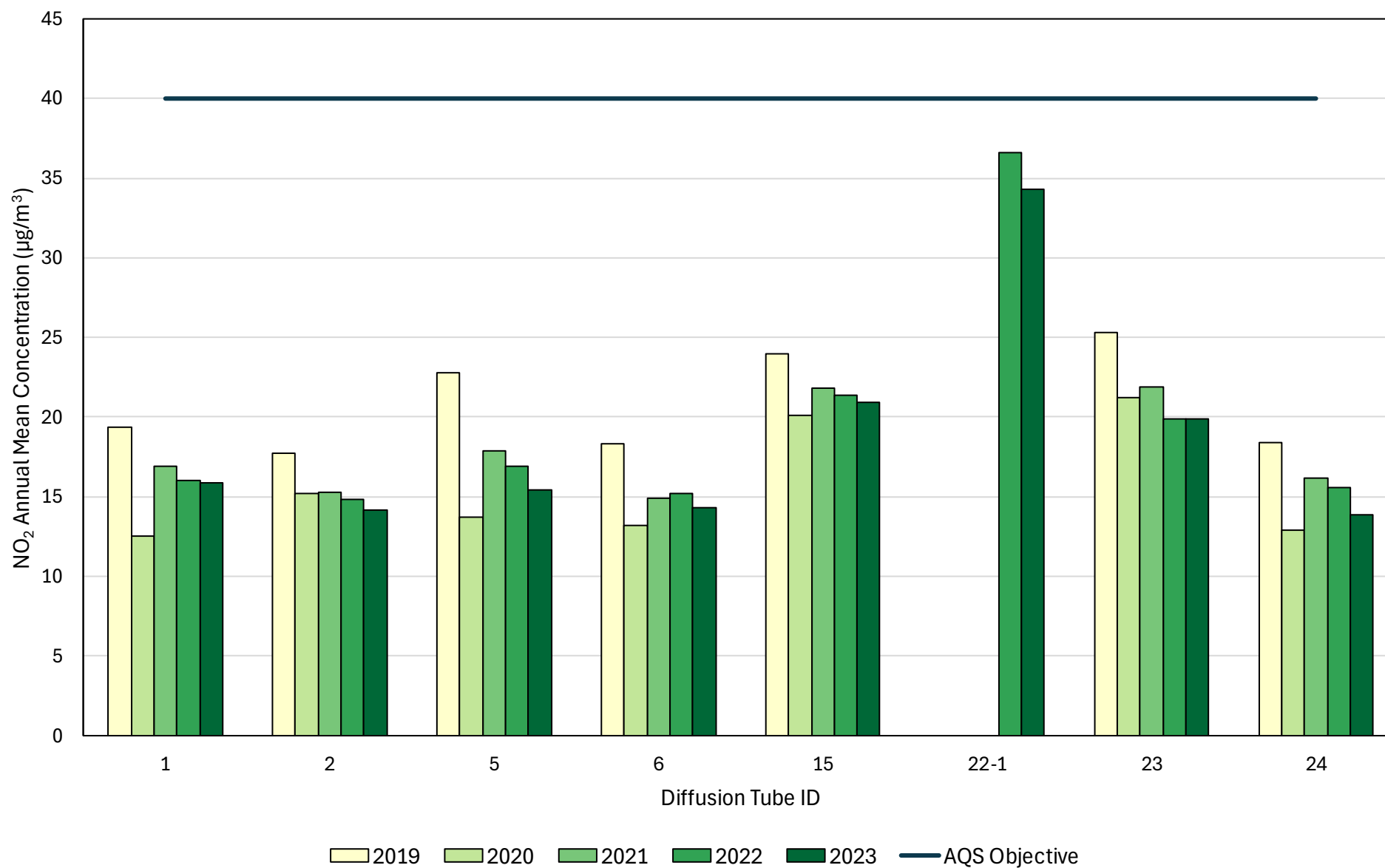
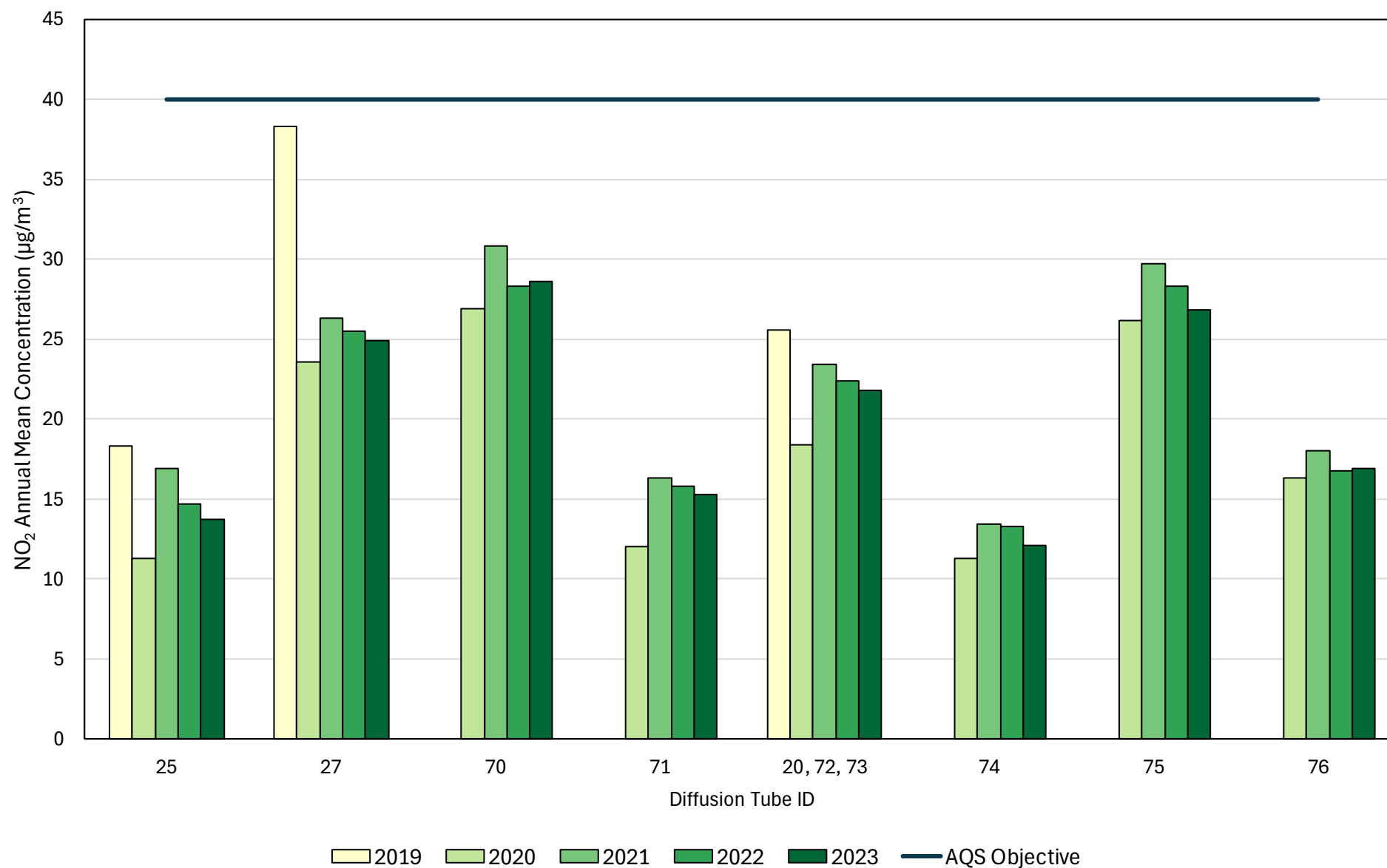
**Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations (Diffusion Tubes 1 – 24)**

Figure A.2 – Trends in Annual Mean NO<sub>2</sub> Concentrations (Diffusion Tubes 25 – 76)

## Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO<sub>2</sub> 2023 Diffusion Tube Results (µg/m<sup>3</sup>)

| 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 (0.83) | Annual Mean: Distance Corrected to Nearest Exposure | Comment                                                               |
|-------|-------------------------|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------------|--------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------------|
| 1     | 439053                  | 366171                    | 23.7 | 21.2 | 20.6 | 19.4 | 17.9 | 14.3 | 14.3 | 16.1 | 19.9 | 20.3 | 24.1 | 17.4 | 19.1                  | 15.9                                             |                                                     |                                                                       |
| 2     | 438983                  | 365324                    | 20.1 | 20.9 | 18.4 | 16.3 | 14.0 | 13.0 | 13.5 | 13.6 | 19.0 | 18.2 | 21.0 | 16.9 | 17.1                  | 14.2                                             |                                                     |                                                                       |
| 5     | 444775                  | 371232                    | 23.6 | 14.3 | -    | 18.5 | 17.4 | 17.6 | 13.8 | 17.5 | -    | 21.4 | 25.3 | 16.1 | 18.6                  | 15.4                                             |                                                     |                                                                       |
| 6     | 442718                  | 365779                    | 21.2 | 24.9 | 16.6 | 15.7 | 12.5 | 11.8 | 14.5 | 13.1 | 18.8 | 18.3 | 22.7 | 15.9 | 17.2                  | 14.3                                             |                                                     |                                                                       |
| 15    | 443384                  | 379761                    | 27.9 | 26.9 | 30.0 | 27.2 | 26.4 | 26.0 | 23.9 | 22.9 | 18.0 | 25.1 | 25.1 | 22.5 | 25.1                  | 20.9                                             |                                                     |                                                                       |
| 22-1  | 439142                  | 363449                    | 43.3 | 48.8 | -    | 44.9 | 40.9 | 33.0 | 36.4 | 37.8 | 46.8 | 43.0 | 44.2 | 35.9 | 41.4                  | 34.3                                             |                                                     |                                                                       |
| 23    | 439186                  | 363050                    | 24.3 | 27.5 | 15.1 | 25.1 | 20.9 | 25.0 | 19.1 | 24.5 | 29.4 | 25.6 | 28.9 | 21.9 | 23.9                  | 19.9                                             |                                                     |                                                                       |
| 24    | 440708                  | 366629                    | 22.5 | 21.0 | 19.3 | 18.3 | 15.6 | 15.3 | 11.8 | 15.2 | 16.1 | 21.1 | 9.8  | 14.8 | 16.7                  | 13.9                                             |                                                     |                                                                       |
| 25    | 434992                  | 378519                    | 20.2 | 19.3 | 18.0 | 15.7 | 13.9 | 14.1 | 11.9 | 13.9 | 17.6 | 15.4 | 22.8 | 14.9 | 16.5                  | 13.7                                             |                                                     |                                                                       |
| 27    | 444542                  | 371254                    | 25.1 | 27.1 | 29.6 | 34.5 | 33.5 | 38.4 | 21.0 | 27.9 | 32.4 | 37.8 | 34.3 | 17.8 | 29.9                  | 24.9                                             |                                                     |                                                                       |
| 70    | 445149                  | 381150                    | 36.5 | 38.1 | 34.8 | 38.5 | 39.8 | 37.8 | 23.4 | 32.3 | 32.8 | 35.3 | 38.9 | 24.8 | 34.4                  | 28.6                                             |                                                     |                                                                       |
| 71    | 435233                  | 378542                    | 19.9 | 21.9 | 18.6 | 15.5 | 18.0 | 17.0 | 15.8 | 17.2 | 19.3 | 19.3 | 22.5 | 16.7 | 18.5                  | 15.3                                             |                                                     |                                                                       |
| 20    | 440869                  | 370912                    | 28.9 | 32.1 | 27.0 | 24.8 | 21.7 | 20.5 | 23.7 | 23.5 | 31.6 | 28.8 | 25.0 | 25.8 | -                     | -                                                |                                                     | Triplicate Site with 20, 72 and 73 - Annual data provided for 73 only |
| 72    | 440869                  | 370912                    | 32.3 | 30.4 | 28.4 | 19.9 | 22.3 | 22.4 | 24.0 | 25.3 | 28.8 | 18.9 | 32.6 | 26.5 | -                     | -                                                |                                                     | Triplicate Site with 20, 72 and 73 - Annual data provided for 73 only |
| 73    | 440869                  | 370912                    | 27.2 | 31.3 | 27.3 | 24.1 | 23.8 | 22.0 | 24.2 | 25.1 | 31.2 | 29.9 | 31.4 | 24.7 | 26.3                  | 21.8                                             |                                                     | Triplicate Site with 20, 72 and 73 - Annual data provided for 73 only |
| 74    | 443555                  | 371305                    | 17.3 | 16.5 | 16.9 | 14.8 | 12.3 | 12.8 | 10.9 | 12.1 | -    | 17.2 | 17.8 | 11.6 | 14.6                  | 12.1                                             |                                                     |                                                                       |
| 75    | 439157                  | 363417                    | 36.0 | 35.0 | 34.1 | 32.5 | 39.7 | 33.8 | -    | 29.4 | 35.0 | 28.4 | 28.6 | 22.7 | 32.3                  | 26.8                                             |                                                     |                                                                       |
| 76    | 444504                  | 371267                    | 21.7 | 25.0 | 21.5 | 20.8 | 18.0 | 17.6 | -    | 16.7 | 20.1 | 20.9 | 22.6 | 18.5 | 20.3                  | 16.9                                             |                                                     |                                                                       |

- ☒ All erroneous data has been removed from the NO<sub>2</sub> 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 East Derbyshire District Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 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 East Derbyshire District Council

North East Derbyshire District Council have identified eight potential new and ongoing development sources relating to air quality within the reporting year of 2023. Further investigation has identified that of the applications that have planning permission approved (as detailed below in Table C.1), an air quality assessment (or equivalent environmental assessment / construction management plan) has been undertaken. These have concluded that the approved planning applications are not expected to significantly impact the air quality within North East Derbyshire District Council.

**Table C.1 – 2023 Approved Planned and Ongoing Developments**

| Application Number | Location                                                               | Proposal                                                                                                                                                                                          | Status                                      |
|--------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| 16/00526/RM        | The former Avenue Site, Derby Road, Wingerworth, Chesterfield, S42 6NB | Section 73 Application to vary Condition 1 (Approved Plans) to make changes to roof orientation (Major Development)                                                                               | Development Commenced                       |
| 06/01334/FL        | BiWater / Egstow Park                                                  | Expecting future RM applications on Phase 5a (housing) and newly approved Phase 9 (now housing)                                                                                                   | Development Commenced (on all but Phase 5a) |
| 14/01290/OL        | Land on the west side of Chesterfield Road, Holmewood                  | Outline application with all matters reserved for new housing, public house/restaurant, small commercial units and associated leisure space (Major Development) (Departure from Development Plan) | Development Commenced                       |
| 18/01170/OL        | Windy Ridge, Tibshelf Road, Holmewood, Chesterfield, S42 5TA           | Outline Application for the erection of up to 250 dwellings (Major Development/Contrary to                                                                                                        | Development Commenced                       |

|             |                                                               | Development Plan/Affecting a Public Footpath) (Amended Plans) (Amended Title)                                                                                                                                                                                                                                      |                       |
|-------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 21/01486/PM | Windy Ridge, Tibshelf Road, Holmewood, Chesterfield, S42 5TA  | Reserved Matters application pursuant to Outline Planning Permission 18/01170/OL for erection of 247 no. dwellings (including 20% affordable), including details of appearance, layout, scale, landscaping and access (Major Development/ Affecting a Public Right of Way) (Amended Plans) (Further Amended Plans) | Development Commenced |
| 21/00773/RM | Land adjacent to the west side of 40 Church Meadows, Calow    | Approval of Reserved Matters (means of access, appearance, landscaping, layout and scale) for 43 no. dwellings in respect to Outline Application NED/19/00907/OL at land adjacent to the west site of 40 Church Meadows, Calow for Woodhall Homes Limited (Major Development) (Amended Details) (Amended Plans)    | Development Commenced |
| 17/00826/OL | Land north west of 66 Stretton Road, Morton                   | Outline Application (all matters except access reserved) for residential development (Major Development)                                                                                                                                                                                                           | Development Commenced |
| 21/00621/FL | Land to the east of Prospect House, Highstairs Lane, Stretton | Construction of 28 no. dwellings. Original application 15/00910 replaced by 21/00621. Reserved Matters applications being built out including 22/00884 and 22/00885                                                                                                                                                | Development Commenced |

## **Additional Air Quality Works Undertaken by North East Derbyshire District Council During 2023**

North East Derbyshire District Council have not completed any additional works during the reporting year of 2023.

### **QA/QC of Diffusion Tube Monitoring**

During 2023, the diffusion tubes were supplied and analysed by Gradko International Ltd, using the 50% TEA in acetone preparation method. Gradko International are a UKAS accredited laboratory who participate in the AIR-PT scheme for NO<sub>2</sub> diffusion tube analysis and Annual Field Intercomparison Exercise. These provide strict criteria that participating laboratories must meet, ensuring that the reported NO<sub>2</sub> concentrations are of a high calibre. From the AIR-PT results relative to period when the diffusion tubes deployed during 2023 were being analysed (AR055, January – February 2023, AR056, May – June 2023, AR058 July – August 2023, AR059 September – October 2023, and AR062 January – February 2024), Gradko scored 100% – the percentage score reflected the results deemed satisfactory based upon the z-score of  $\pm 2$ .

Of the local authority co-location studies which are based on diffusion tubes supplied by Gradko International Ltd with the 50% TEA in acetone preparation method, all 15 were of 'good' precision. The precision reflects the laboratory's performance and consistency in preparing and analysing the diffusion tubes, as well as the subsequent handling of the tubes in the field. Diffusion tube results are considered to be of 'good' precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more monitoring periods during a year is less than 20%.

During 2023, all diffusion tubes were deployed and collected in accordance with the Defra LAQM calendar. As a result, the diffusion tubes were exposed each month for a consistent duration (i.e. four to five weeks).

### **Diffusion Tube Annualisation**

As stated in LAQM.TG22, annualisation is required for any site which has a data capture less than 75%, but greater than 25%. However, during 2023 all diffusion tube monitoring locations within North East Derbyshire recorded a data capture above 75% and, therefore, annualisation was not required for any site.

## Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance about 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<sub>x</sub>/NO<sub>2</sub> continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

North East Derbyshire District Council have applied a national bias adjustment factor of 0.83 to the 2023 monitoring data. A summary of bias adjustment factors used by North East Derbyshire District Council over the past five years is presented in Table C.2.

As no automatic (continuous) monitoring is carried out by North East Derbyshire District Council, there are no co-location studies to obtain a local bias adjustment factor. As such, the national factor, which is based on 17 co-location studies, has instead been applied. The national bias adjustment factor spreadsheet (version 09/24) is shown in Figure C.1.

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

| Monitoring Year | Local or National | If National, Version of National Spreadsheet | Adjustment Factor |
|-----------------|-------------------|----------------------------------------------|-------------------|
| 2023            | National          | 06/24                                        | 0.83              |
| 2022            | National          | 06/23                                        | 0.82              |
| 2021            | National          | 03/22                                        | 0.83              |
| 2020            | National          | 03/21                                        | 0.82              |
| 2019            | National          | 03/20                                        | 0.87              |

## NO<sub>2</sub> Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO<sub>2</sub> fall-off with distance calculator available on the LAQM Support website.

No diffusion tube NO<sub>2</sub> monitoring location within North East Derbyshire District Council required distance correction during 2023.

Figure C.1 – National Bias Adjustment Factor Spreadsheet (09/24)

| National Diffusion Tube Bias Adjustment Factor Spreadsheet                                                                                                                                                                                                                                                                                                                                       |                                                                                             |                                                                                           |                                          |                                                                                                                                                                                                                                            |                          | Spreadsheet Version Number: 09/24                                                                                                                                                      |                                                        |          |                             |                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------|-----------------------------|------------------------------------|
| Follow the steps below in the correct order to show the results of relevant co-location studies                                                                                                                                                                                                                                                                                                  |                                                                                             |                                                                                           |                                          |                                                                                                                                                                                                                                            |                          | This spreadsheet will be updated at the end of March 2025<br>LAQM Helpdesk Website                                                                                                     |                                                        |          |                             |                                    |
| Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods<br>Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet<br>This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use. |                                                                                             |                                                                                           |                                          |                                                                                                                                                                                                                                            |                          | The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory. |                                                        |          |                             |                                    |
| Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.                                                                                                                                                                                                                                                                                    |                                                                                             |                                                                                           |                                          |                                                                                                                                                                                                                                            |                          |                                                                                                                                                                                        |                                                        |          |                             |                                    |
| Step 1:                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                             | Step 2:                                                                                   | Step 3:                                  | Step 4:                                                                                                                                                                                                                                    |                          |                                                                                                                                                                                        |                                                        |          |                             |                                    |
| Select the Laboratory that Analyses Your Tubes from the Drop-Down List                                                                                                                                                                                                                                                                                                                           |                                                                                             | Select a Preparation Method from the Drop-Down List                                       | Select a Year from the Drop-Down List    | Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution.<br>Where there is more than one study, use the overall factor <sup>3</sup> shown in blue at the foot of the final column. |                          |                                                                                                                                                                                        |                                                        |          |                             |                                    |
| If a laboratory is not shown, we have no data for this laboratory.                                                                                                                                                                                                                                                                                                                               |                                                                                             | If a preparation method is not shown, we have no data for this method at this laboratory. | If a year is not shown, we have no data  | If you have your own co-location study then see footnote <sup>6</sup> . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953                                   |                          |                                                                                                                                                                                        |                                                        |          |                             |                                    |
| Analysed By <sup>1</sup>                                                                                                                                                                                                                                                                                                                                                                         | Method <sup>2</sup><br><small>To do your selection, choose (M) from the pop-up list</small> | Year <sup>3</sup><br><small>To do your selection, choose (M)</small>                      | Site Type                                | Local Authority                                                                                                                                                                                                                            | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )                                                                                                                                    | Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> ) | Bias (B) | Tube Precision <sup>4</sup> | Bias Adjustment Factor (A) (Cm/Dm) |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | R                                        | City Of London Corporation                                                                                                                                                                                                                 | 11                       | 36                                                                                                                                                                                     | 31                                                     | 16.0%    | G                           | 0.86                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | UB                                       | City Of London Corporation                                                                                                                                                                                                                 | 10                       | 28                                                                                                                                                                                     | 22                                                     | 26.2%    | G                           | 0.79                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | R                                        | LB Newham                                                                                                                                                                                                                                  | 12                       | 27                                                                                                                                                                                     | 21                                                     | 28.0%    | G                           | 0.78                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | SU                                       | Redcar And Cleveland Borough Council                                                                                                                                                                                                       | 12                       | 14                                                                                                                                                                                     | 10                                                     | 48.0%    | G                           | 0.68                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in Acetone                                                                          | 2023                                                                                      | R                                        | Sandwell Mbo                                                                                                                                                                                                                               | 12                       | 33                                                                                                                                                                                     | 26                                                     | 27.6%    | G                           | 0.78                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | UB                                       | Sandwell Mbo                                                                                                                                                                                                                               | 11                       | 21                                                                                                                                                                                     | 18                                                     | 15.8%    | G                           | 0.86                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | R                                        | Sandwell Mbo                                                                                                                                                                                                                               | 12                       | 23                                                                                                                                                                                     | 20                                                     | 14.2%    | S                           | 0.88                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in Acetone                                                                          | 2023                                                                                      | UC                                       | Falkirk Council                                                                                                                                                                                                                            | 12                       | 33                                                                                                                                                                                     | 29                                                     | 14.9%    | G                           | 0.87                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in Acetone                                                                          | 2023                                                                                      | UB                                       | Falkirk Council                                                                                                                                                                                                                            | 12                       | 15                                                                                                                                                                                     | 13                                                     | 8.9%     | G                           | 0.92                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | R                                        | London Borough Of Lewisham                                                                                                                                                                                                                 | 11                       | 33                                                                                                                                                                                     | 27                                                     | 22.7%    | G                           | 0.82                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in Acetone                                                                          | 2023                                                                                      | R                                        | London Borough Of Merton                                                                                                                                                                                                                   | 12                       | 37                                                                                                                                                                                     | 31                                                     | 18.5%    | G                           | 0.84                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | KS                                       | Marylebone Road intercomparison                                                                                                                                                                                                            | 11                       | 47                                                                                                                                                                                     | 38                                                     | 25.7%    | G                           | 0.80                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | R                                        | Royal Borough Of Windsor And Maidenhead                                                                                                                                                                                                    | 11                       | 27                                                                                                                                                                                     | 23                                                     | 21.6%    | G                           | 0.82                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | R                                        | Royal Borough Of Windsor And Maidenhead                                                                                                                                                                                                    | 12                       | 24                                                                                                                                                                                     | 24                                                     | 0.6%     | G                           | 0.99                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | R                                        | London Borough Of Richmond Upon Thames                                                                                                                                                                                                     | 11                       | 18                                                                                                                                                                                     | 16                                                     | 15.6%    | G                           | 0.86                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | UB                                       | Westminster City Council                                                                                                                                                                                                                   | 10                       | 29                                                                                                                                                                                     | 21                                                     | 35.1%    | G                           | 0.74                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | R                                        | Westminster City Council                                                                                                                                                                                                                   | 12                       | 40                                                                                                                                                                                     | 35                                                     | 14.6%    | G                           | 0.87                               |
| Gradko                                                                                                                                                                                                                                                                                                                                                                                           | 50% TEA in acetone                                                                          | 2023                                                                                      | Overall Factor <sup>3</sup> (17 studies) |                                                                                                                                                                                                                                            |                          |                                                                                                                                                                                        |                                                        | Use      |                             | 0.83                               |

## Appendix D: Maps of Monitoring Locations

Figure D.1 – Non-Automatic Monitoring Sites in North East Derbyshire

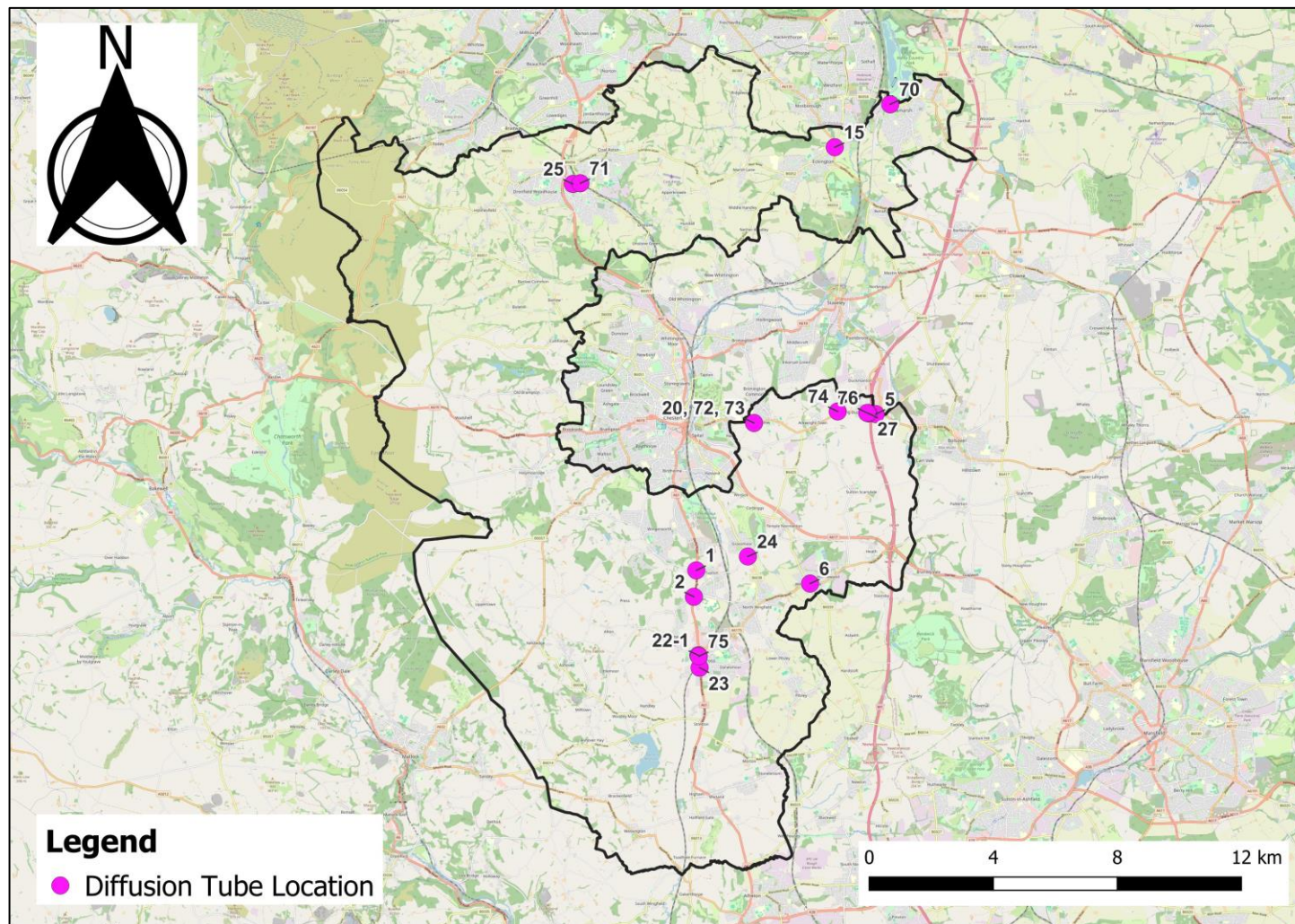


Figure D.2 – Non-Automatic Monitoring Sites in Dronfield

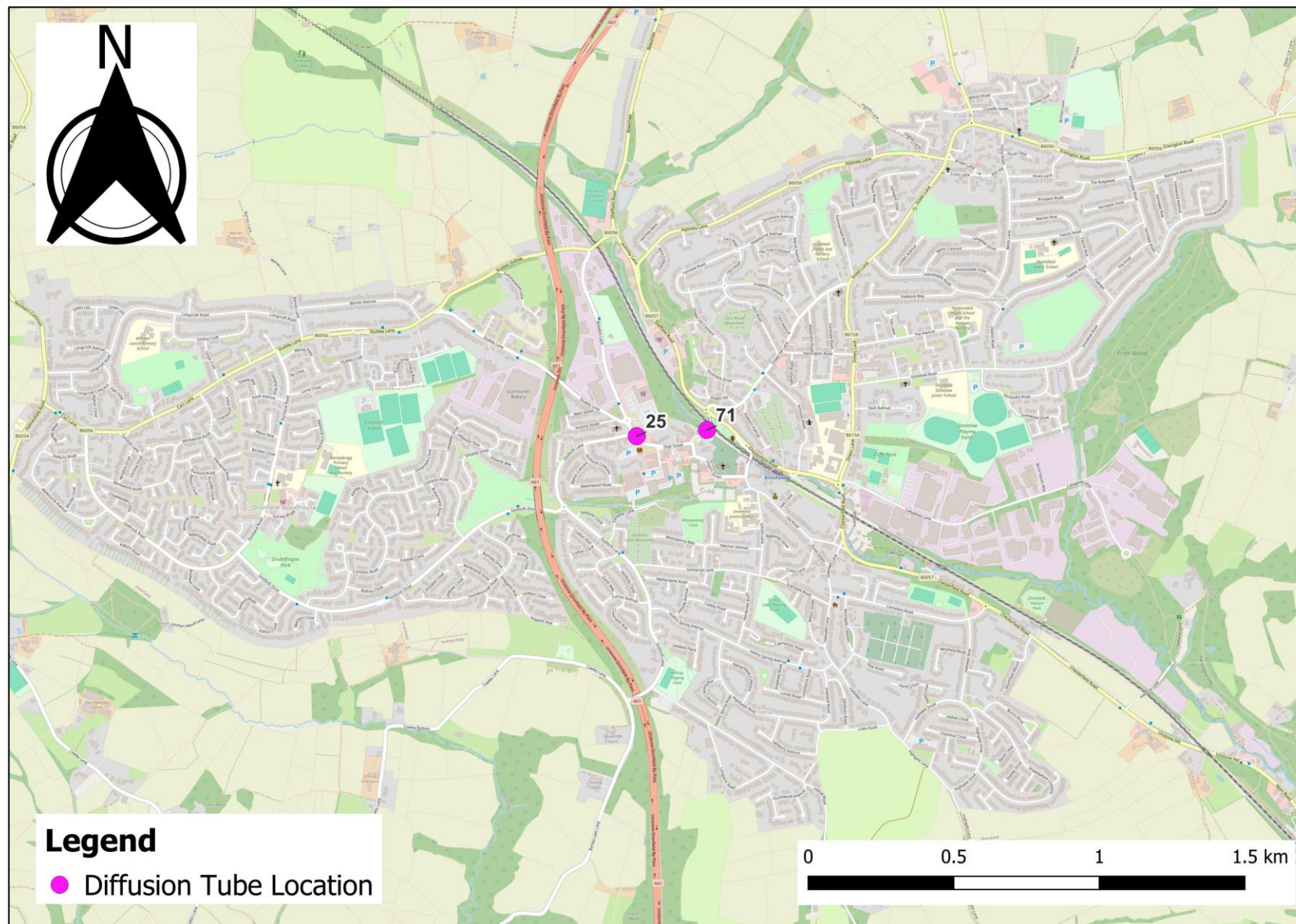


Figure D.3 – Non-Automatic Monitoring Sites in Eckington and Killamarsh



Figure D.4 – Non-Automatic Monitoring Sites in Calow and Long Duckmanton



Figure D.5 – Non-Automatic Monitoring Sites in Tupton, Grassmoor and Williamthorpe

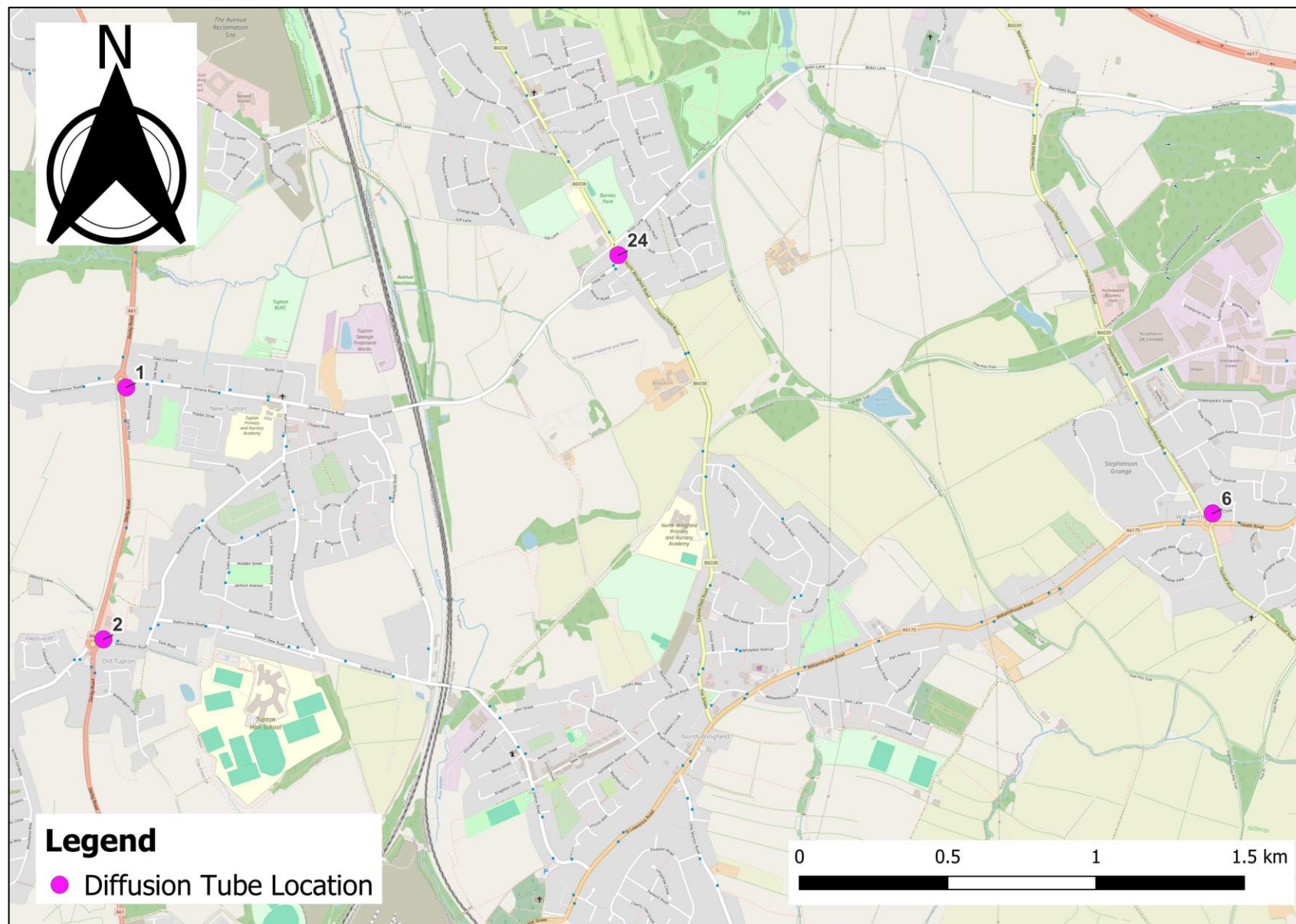
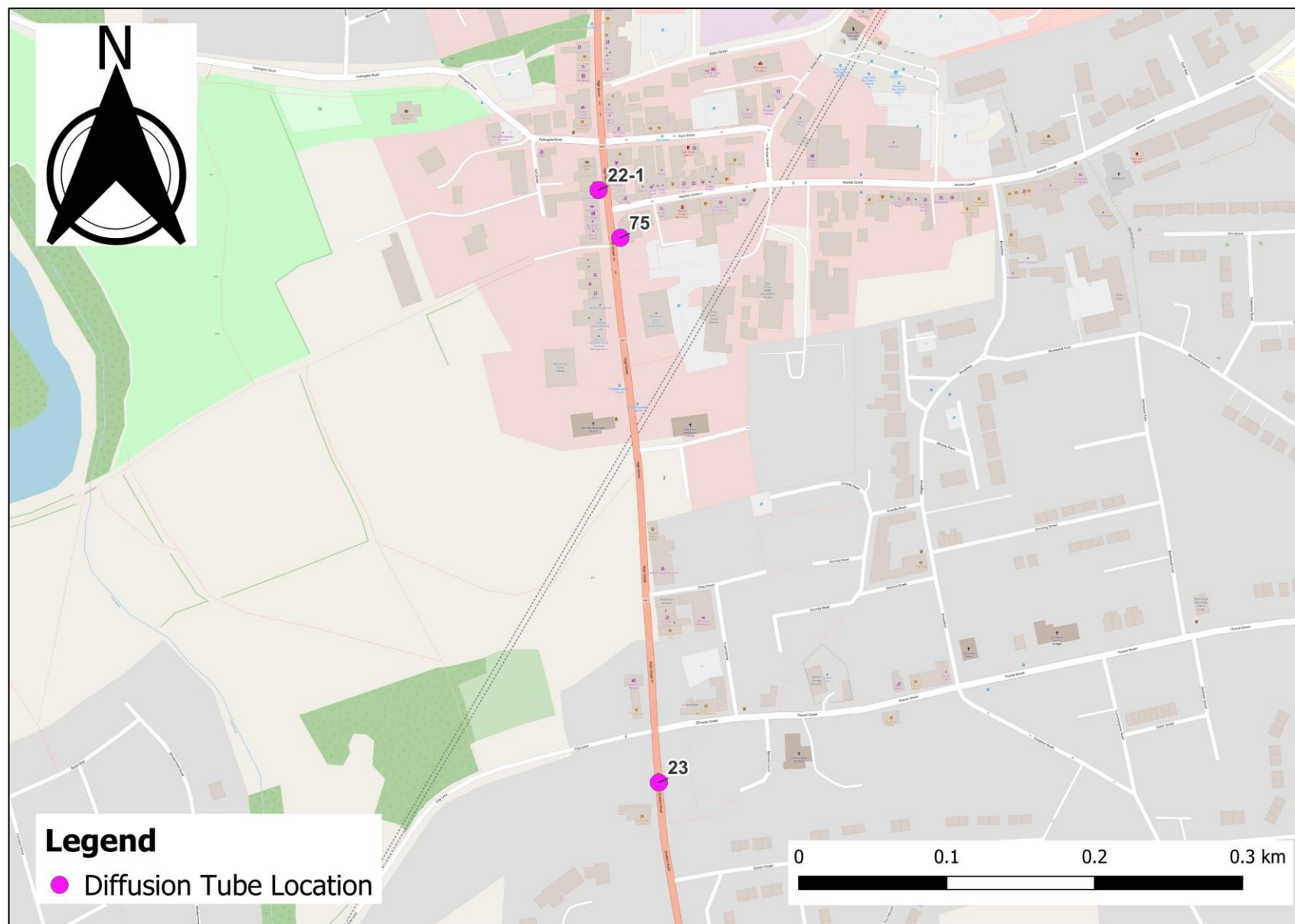


Figure D.6 – Non-Automatic Monitoring Sites in Clay Cross



## Appendix E: Summary of Air Quality Objectives in England

**Table E.1 – Air Quality Objectives in England<sup>7</sup>**

| Pollutant                              | Air Quality Objective: Concentration                                | Air Quality Objective: Measured as |
|----------------------------------------|---------------------------------------------------------------------|------------------------------------|
| Nitrogen Dioxide (NO <sub>2</sub> )    | 200µg/m <sup>3</sup> not to be exceeded more than 18 times a year   | 1-hour mean                        |
| Nitrogen Dioxide (NO <sub>2</sub> )    | 40µg/m <sup>3</sup>                                                 | Annual mean                        |
| Particulate Matter (PM <sub>10</sub> ) | 50µg/m <sup>3</sup> , not to be exceeded more than 35 times a year  | 24-hour mean                       |
| Particulate Matter (PM <sub>10</sub> ) | 40µg/m <sup>3</sup>                                                 | Annual mean                        |
| Sulphur Dioxide (SO <sub>2</sub> )     | 350µg/m <sup>3</sup> , not to be exceeded more than 24 times a year | 1-hour mean                        |
| Sulphur Dioxide (SO <sub>2</sub> )     | 125µg/m <sup>3</sup> , not to be exceeded more than 3 times a year  | 24-hour mean                       |
| Sulphur Dioxide (SO <sub>2</sub> )     | 266µg/m <sup>3</sup> , not to be exceeded more than 35 times a year | 15-minute mean                     |

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<sup>7</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## Glossary of Terms

| Abbreviation      | Description                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AQAP              | Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'    |
| AQMA              | Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives |
| ASR               | Annual Status Report                                                                                                                                                                                  |
| Defra             | Department for Environment, Food and Rural Affairs                                                                                                                                                    |
| DMRB              | Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways                                                                                                        |
| EU                | European Union                                                                                                                                                                                        |
| FDMS              | Filter Dynamics Measurement System                                                                                                                                                                    |
| LAQM              | Local Air Quality Management                                                                                                                                                                          |
| NO <sub>2</sub>   | Nitrogen Dioxide                                                                                                                                                                                      |
| NO <sub>x</sub>   | Nitrogen Oxides                                                                                                                                                                                       |
| PM <sub>10</sub>  | Airborne particulate matter with an aerodynamic diameter of 10µm or less                                                                                                                              |
| PM <sub>2.5</sub> | Airborne particulate matter with an aerodynamic diameter of 2.5µm or less                                                                                                                             |
| QA/QC             | Quality Assurance and Quality Control                                                                                                                                                                 |
| SO <sub>2</sub>   | Sulphur Dioxide                                                                                                                                                                                       |

## References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.