



# 2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995  
Local Air Quality Management

Date: December 2022

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## Executive Summary: Air Quality in Our Area

### Air Quality in Newcastle-under-Lyme Borough Council

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages<sup>3</sup>, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017<sup>4</sup>.

The main pollutant of concern in the Borough is nitrogen dioxide (NO<sub>2</sub>). Nitrogen Dioxide (NO<sub>2</sub>) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NO<sub>x</sub>). Nitrogen Oxides are released into the atmosphere when fossil fuels (coal, natural gas, and petroleum) are used in power stations, area heating and vehicle engines.

NO<sub>x</sub> emissions from burning fossil fuels are mainly released as nitric oxide (NO), although some sources can release a substantial amount of NO<sub>x</sub> as NO<sub>2</sub>. Reactions in the atmosphere can subsequently turn NO into NO<sub>2</sub>.

Breathing air with high concentrations of NO<sub>2</sub> can irritate and inflame the airways and lungs, with those suffering with respiratory diseases such as asthma being particularly affected.

Road transport is the largest source of NO<sub>2</sub> emissions in the UK and is the major contributor to concentrations within the Borough. Strict European standards require emissions from vehicles to improve over time. This is achieved by improvements in engine design and fitting three way catalysts to road vehicles. The role that road transport plays in air quality is greater within urban areas.

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<sup>1</sup> Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

<sup>3</sup> Defra. Air quality appraisal: damage cost guidance, July 2021

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

The Borough of Newcastle under Lyme is located in North Staffordshire, with the town of Newcastle being the major urban area, together with the smaller town of Kidsgrove. Covering an area of 21,096 hectares (81 square miles) the Borough has a population of 129,600. The Borough is in a strategic location between roads running north from London to Carlisle, and west to Chester. Two major trunk roads pass through the Borough, along with a number of major roads which converge on the two main towns of Newcastle, and Kidsgrove;

- The M6, which is currently one of the most heavily trafficked and congested roads in the country
- The A500, a major road linking Newcastle under Lyme and Stoke on Trent with junctions 15 and 16 of the M6. These motorway junctions are adjacent to the Borough's boundary and so contribute to traffic congestion in the area.
- A34, A52, A525, A523 and A53 pass through Newcastle
- A50, A5011 and A34 pass through Kidsgrove

A high proportion of traffic travels into/through the four Air Quality Management Areas (AQMAs) within the Borough which have been declared for Nitrogen dioxide (NO<sub>2</sub>), these are;

- AQMA 1: Liverpool Road, Kidsgrove
- AQMA 2: Newcastle-under-Lyme Town Centre
- AQMA 3: Maybank-Wolstanton-Porthill
- AQMA 4: Little Madeley

Road traffic is the most significant source of pollution to the Borough; however, other sources include industrial and domestic emissions. Certain industries (Permitted Processes) are regulated by the Borough Council in accordance with the Environmental Permitting (England and Wales) Regulations 2016 <sup>(5)</sup>. Currently there are 43 Part B processes and 3 Part A2 processes within the Borough. The Environmental Permits for processes regulated by the Borough Council can be found on the Public Register <sup>(6)</sup>.

The Environment Agency is responsible for the regulation of Part A processes, also under the Environmental Permitting (England and Wales) Regulations 2016. One of the Part A process within

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<sup>5</sup> [The Environmental Permitting \(England and Wales\) Regulations 2016 \(legislation.gov.uk\)](https://www.legislation.gov.uk/uksi/2016/1154/contents/made)

<sup>6</sup> <https://www.newcastle-staffs.gov.uk/protection/environmental-permit>

the borough is a landfill. Over the past 12 months, intensive work has been carried out by the Borough in conjunction with the Environment Agency, UK Health Security Agency, and Staffordshire County Council Public Health, to investigate complaints concerning gaseous emissions from this landfill, situated approximately 1.3 Kilometres outside of AQMA 2: Newcastle-under-Lyme Town Centre.<sup>7</sup>

Complaints relating to odours from the site have been received from properties across the Borough. Although methane is the primary component of landfill gas, a number of other compounds, including nitric oxides are associated with the breakdown of waste substances. The Environmental Permits for other activities regulated by the Environment Agency can be found on their Public Register<sup>(8)</sup>.

## Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy (9) sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero<sup>(10)</sup> sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Pollutant concentrations in all areas were lower than in previous years, due to some extent to the Government's enforced travel restrictions in response to the Covid-19 pandemic. Vehicle miles travelled on Great Britain's road decreased by 21.3% in 2021 compared to the previous year. The recent trends in road traffic have been impacted by the national restrictions implemented from March 2020 onwards following the COVID-19 pandemic.

Provisional estimates show motor vehicles travelled 299.3 billion vehicle miles in Great Britain for the year ending September 2021. All motor vehicle traffic was broadly stable compared to the year

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<sup>7</sup> <https://consult.environment-agency.gov.uk/west-midlands/walleys-quarry-landfill-sliverdale/>

<sup>8</sup> [Public registers \(data.gov.uk\)](https://publicregisters.data.gov.uk/)

<sup>9</sup> Defra. Clean Air Strategy, 2019

<sup>10</sup> DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018


ending September 2020 (+0.4%), but was 16.1% lower than pre-pandemic levels (the year ending December 2019) <sup>(11)</sup>.

Compared to the year ending September 2020, in the year ending September 2021:


- car traffic decreased by 1.7% to 222.3 billion vehicle miles
- van and lorry traffic increased by 7.3% and 8.9%, respectively
- motorway traffic decreased by 1.4%
- 'A' road traffic increased by 0.6%
- minor road traffic increased by 1.1%

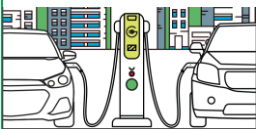


The reduction in traffic movement had a dramatic impact on the NO<sub>2</sub> concentrations for this period and is shown in lower than previous monitored concentrations across the Borough. Therefore, monitoring data should be treated with caution, as it may not be representative of concentrations when traffic returns to more normal numbers.

**Table 1.1 - Local actions to improve air quality achieved in 2021**

PROJECT	ACTION	OUTCOME/ IMPACT
 <p><b>Ministerial Direction number 1. Mandating compliance with the EU's NO<sub>2</sub> annual mean limit value (which applies to the majority of areas which are publicly accessible) in the shortest possible time for the A53 from Basford Bank to Victoria Street</b></p>	<p>An options appraisal to achieve compliance with the EU's NO<sub>2</sub> annual mean limit value (which applies to the majority of areas which are publicly accessible) in the shortest possible time, has identified that a traffic management scheme involving bus gate restrictions at peak times of the day would achieve compliance in the shortest possible time when compared to a benchmark Clean Air Zone. This together with measures in the neighbouring city of Stoke on Trent form the basis of the North</p>	<p>A full business case is to be prepared for submission to the DEFRA minister by Summer 2022. Subject to acceptance, it is anticipated that the bus gate and associated measures will be in place early in 2023.</p> <p>For up-to-date information on progress with the associated North Staffordshire Local Air Quality Plan <a href="#">Click here</a></p>

<sup>11</sup> [Road Traffic Estimates in Great Britain: 2021 \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/92444/road-traffic-estimates-in-great-britain-2021.pdf)

PROJECT	ACTION	OUTCOME/ IMPACT
	Staffordshire Local Air Quality Plan	
<p><b>Ministerial Direction number 2. Mandating compliance with the EU's NO<sub>2</sub> annual mean limit value (which applies to the majority of areas which are publicly accessible) in the shortest possible time for the A53 from Basford Bank to Victoria Street– by a bus retrofit scheme requiring the upgrade</b></p>  <p><b>of buses to Euro IV emissions standard by winter 2020 (NULBC lead)</b></p>	<p>Works have been completed to 23 buses with CVRAS accredited exhaust abatement technology and replacement of hydraulic fans with electrical systems</p>	<p>Modelling shows that this will result in a reduction of 1µg/m<sup>3</sup> of NO<sub>2</sub> along the A53 and wider route. Monitoring to continue for 5 years to evaluate impact. <a href="#">Click here</a></p>

PROJECT	ACTION	OUTCOME/ IMPACT
 <b>Low / zero emission taxi infrastructure charging scheme</b>	<p>Sites are operational and available for public use. Sites have are currently being commissioned.</p>	<p>RAPID off-street EV Charging Infrastructure has been installed at four locations across the Borough. A total of 10 charging stations have been provided for use by the licensed taxi trade and general public. Drivers are also able to access delivery partner sites in the Stafford Borough and Stoke-on-Trent City Council areas under this joint project. It is planned to engage with the licensed taxi trade to show the business case and to demonstrate how EV can work successfully for them.</p> <p>For further information <a href="#">Click here</a></p>
 <b>Air Aware' initiative</b>	<p>In progress. This project is being delivered by Staffordshire County Council with the support of District Councils.</p>	<p>Developments and further information can be found at</p> <p>For further information <a href="#">Click here</a></p>
 <b>DFT supported Electric scooter trial for hire at various sites</b>	<p>Since the trial started in September 2020, 200 e-scooters have been operational with bays deployed in both Stafford and Newcastle-under-Lyme. There have been over 40,000 rides taken across the county, that's four times around the circumference of the earth. The length of ride has varied with the average distance per ride being 4.9km –the longest journey was 38km</p>	<p>Trial hire scheme in selected areas of the Borough involving 110 e-scooters provided by Zwings Scooters, ran until Summer 2021. Data from the scheme is being shared with DFT. In May 2022 the Government announced plans to consult on the wider rollout of such schemes nationally during the course of the next parliament.</p> <p>For further information <a href="#">Click here</a></p>

PROJECT	ACTION	OUTCOME/ IMPACT
 Continued Engagement with HS2 Ltd and contractors re design, build and operation of HS2 Phase 2a	<p>Borough Council Environmental Health staff continue to engage with HS2 Ltd and its contractors to ensure that the environmental health related effects of the scheme (air quality, noise, land contamination, light) as it passes through the Borough are fully considered and assessed</p>	<p>HS2 have committed to best practice in the management of environmental health effects and is committed to not causing any exceedances of Air Quality Standards. The Council will continue to actively engage with HS2 during all phases leading to the operation of the railway within the Borough.</p>
<p>Walley's Quarry Landfill – NULBC and EA joint air quality monitoring<sup>12</sup></p> 	<p>A network of air quality monitoring stations, part funded by the Borough Council, has been setup around Walley's Quarry landfill in Silverdale. This follows significant complaints of odour reported in early 2021. The monitored pollutants are hydrogen sulphide, methane, oxides of nitrogen, sulphur dioxide and different particulate matter size fractions (Total Suspended Particulate (TSP), PM10 and PM2.5). The hydrogen sulphide data is compared against the World Health Organisation (WHO) guideline values for both odour annoyance and potential health impacts.</p>	<p>Data, provided to UKHSA by the EA up to the end of August 2022, have been compared to appropriate health-based air quality guidelines and standards or assessment levels for hydrogen sulphide, particulate matter, nitrogen dioxide, sulphur dioxide, methane and volatile organic compounds (VOCs comprising benzene, toluene, ethylbenzene and xylene (BTEX)). In addition, for hydrogen sulphide and toluene the concentrations have been a It should be noted that the four MMFs monitor the ambient air in the locality and not exclusively, the emissions from the landfill site 2 compared to the odour annoyance guideline and odour detection thresholds respectively. Air concentrations of particulate matter, nitrogen dioxide, sulphur</p>

<sup>12</sup> <https://consult.environment-agency.gov.uk/west-midlands/walleys-quarry-landfill-silverdale/#section5>

PROJECT	ACTION	OUTCOME/ IMPACT
		<p>dioxide, methane and VOCs are lower than appropriate health-based and odour standards, guidelines or assessment levels, and therefore, the risk to health from these substances is minimal.</p> <p>The hydrogen sulphide data up to the end of August 2022 shows continuing low-level exposure to the population around the landfill site. All four MMF sites show a monthly average concentration in August below the long-term (lifetime) health-based guidance value. The cumulative average concentrations for MMF1, MMF2 and MMF6 are below the long-term (lifetime) health-based guidance value. At MMF9, the cumulative average concentration remains above the long-term (lifetime) health-based guidance value.<sup>13</sup></p>

## Conclusions and Priorities

Monitoring data for 2021 shows that all annual mean concentrations were below the annual mean objective. However, this is due in part to reduced traffic attributable to the impacts Covid-19 travel restrictions. Monitoring will continue in all areas of the Borough to assess whether concentrations remain below the objective, once traffic numbers return to normal.

In addition to working to reduce and maintain NO<sub>2</sub> concentrations below the annual objective in all areas of the Borough, we will continue to assess planning applications to ensure that future

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<sup>13</sup> [https://consult.environment-agency.gov.uk/west-midlands/walleys-quarry-landfill-sliverdale/user\\_uploads/ukhsa-human-health-risk-assessment-air-quality-monitoring-report---august-2022.pdf](https://consult.environment-agency.gov.uk/west-midlands/walleys-quarry-landfill-sliverdale/user_uploads/ukhsa-human-health-risk-assessment-air-quality-monitoring-report---august-2022.pdf)

developments and changes to the road networks across the Borough do not lead to an increase in the NO<sub>2</sub> concentration above the annual mean objective of 40µg/m<sup>3</sup>. We will also continue to regulate installations to ensure that emission limits are not exceeded and also regulation of smoke control and waste burning to reduce impacts on local air quality.

**Table 1.2 - 2021 Monitoring Conclusion Summary**

	CONCLUSIONS	SUMMARY
1	No exceedances within or outside of existing AQMAs	There were no exceedances of the UK NO <sub>2</sub> objectives in 2021, but this should be treated with caution. Traffic emissions were significantly impacted due to Covid-19 travel restrictions, leading to lower monitored concentrations.
2	Significant trends	<p><b>AQMA 1: Liverpool Road, Kidsgrove</b> – no clear trend. Five years of results less than 10% of the UK annual mean objective for NO<sub>2</sub> not yet achieved. In 2021 there was one site within 10% of the annual mean objective</p> <ul style="list-style-type: none"> <li>DT94 – 116 London Road, Kidsgrove - 37.5 µg/m<sup>3</sup> (within 6% of the annual mean NO<sub>2</sub> objective).</li> </ul> <p>See Appendix D. 9 for monitoring data for the period 2017 to 2021 and Figure D. 2 – Map of monitoring Area – AQMA 1: Liverpool Road, Kidsgrove and Figure D. 2, Figure D. 3, Figure D. 4 for the monitoring locations and AQMA.</p> <p><b>AQMA 2: Newcastle-under-Lyme Town Centre</b> – no clear trend. Five years of results less than 10% of the UK objective not yet achieved. For 2021, two diffusion tube locations were within 13% of the annual mean NO<sub>2</sub> objective, these being</p> <ul style="list-style-type: none"> <li>DT85 34.9 µg/m<sup>3</sup> - 106 Etruria Road / cross road junction with Albert Street and Sandy Lane (13% of the annual mean NO<sub>2</sub></li> </ul>

		<p>objective), see <a href="#">HERE</a> for Google Streetview of this location</p> <ul style="list-style-type: none"> <li>DT104 – 7 King Street, Newcastle-under-Lyme - 38.5 <math>\mu\text{g}/\text{m}^3</math>. See <a href="#">HERE</a> for Google Street View of this location.</li> </ul> <p>See Figure D. 9 for the map of monitoring locations and the AQMA map and Figure A.2 for trends for the period 2017 to 2021.</p> <p><b>AQMA 3: Maybank-Wolstanton-Porthill -</b> downward trend. Five years of results less than 10% of the UK objective achieved since 2016. For 2021, the highest monitoring location DT9 measured 26.9 <math>\mu\text{g}/\text{m}^3</math>.</p> <p>See Appendix Figure A. 3 for trends for the period 2017 to 2021 and Appendix Figure D. 7 for locations of monitoring and the AQMA map.</p> <p><b>AQMA 4: Little Madeley</b> – downward trend. All monitoring below the objective for 7 consecutive years (2015-2021). AQMA can be revoked. For 2021, the measurement recorded at this location was 18.3 <math>\mu\text{g}/\text{m}^3</math>.</p> <p>See Appendix Figure A. 3 for details of monitoring results for 2017 to 2021 and Appendix Figure D. 2 for monitoring location and the AQMA map. See <a href="#">HERE</a> for Google Street View of this location.</p>
3	Revoking of AQMA 4: Little Madeley	Monitoring data for the five years 2015 to 2021, shows concentrations below 36 $\mu\text{g}/\text{m}^3$ (10% of the objective). A downward trend is shown during that period. Therefore, AQMA 4: Little Madeley is planned to be revoked in Winter 22/23.
4	Review AQMA 3: Maybank-Wolstanton-Porthill	$\text{NO}_2$ concentrations within this AQMA for years 2016 to 2021 have been below 36 $\mu\text{g}/\text{m}^3$ at five of the six long-term monitoring sites. We propose to keep this AQMA in operation to assess the effects

		<p>of the Etruria Valley Link Road and the impacts of the measures introduced to bring about compliance with the NO<sub>2</sub> Annual Mean Limit Value on the A53 in Newcastle-under-Lyme and Stoke on Trent.</p> <p>Further information on the work being undertaken to achieve compliance with the EU Limit Value can be found here <a href="https://www.newcastle-staffs.gov.uk/protection/air-quality-management/6">https://www.newcastle-staffs.gov.uk/protection/air-quality-management/6</a></p>
6	Exceedances of air quality objectives outside any existing AQMAs, which have led to the amendment or designation of a new AQMA	None identified in 2021
7	New developments which may impact upon air quality	None identified in 2021.
8	Air Quality Action Plan update	<p>Actions plans for the three AQMA's AQMA 1: Liverpool Road, Kidsgrove, AQMA 2: Newcastle-under-Lyme Town Centre and AQMA 3: Maybank-Wolstanton-Porthill will require updating following the revocation of AQMA 4: Little Madeley. We plan to consult on this early in 2023.</p>

## Local Engagement and How to get Involved

If residents and businesses reduce the amount of fuel and chemicals used, it will improve air quality. The following ways can help:

## Commute

- Visit [Air Aware Staffordshire](#) which includes;
  - Bulletins for inspiration and information on ways and initiatives to reduce pollution from travelling,
  - Leaving the car at home one day a week. Further information can be found at [www.staffssaferroads.co.uk/](http://www.staffssaferroads.co.uk/)
  - Turning off car engines when vehicle is idle
  - Consider car sharing your journey further guidance can be found at <https://liftshare.com/uk>
  - Using a low/ zero carbon vehicle
  - Servicing vehicles
  - Working from home
  - Using public transport Travel planning APP's are available for most smart phones. Further details can be found at <https://www.travelsmartapp.com/>
  - Consider an electric vehicle



## School Run

- Walking or cycling to school is not only good for health but it will save on fuel costs and help reduce local air pollution. Further guidance can be found within Travel into School



<https://www.staffordshire.gov.uk/Education/Schooltransport/Active-school-travel/Travelling-into-School.aspx>

- Take turns with friends, neighbours or family to drive or walk the children to school. Check whether your school has a travel plan.



### transport and infrastructure

Bespoke workplace travelling plans to support employees and employers to use more environmentally sustainable modes of travel into work and use of vehicles for work. For further information visit <https://www.staffordshire.gov.uk/Business/Workplace-health/Active-travel-and-air-quality-in-the-workplace.aspx>

Grants may be available to support your business in becoming more energy efficient and towards the purchase of cleaner vehicles and support with charging infrastructure. Further information can be found from the following and also your energy supplier;

<https://www.gov.uk/government/organisations/office-for-low-emission-vehicles>



<https://energysavingtrust.org.uk/>



<https://sben.co.uk/>

## Around The Home

- Use water-based or low solvent paints, glues, varnishes and wood preservatives, look for brands with a low VOC content.
  - Make sure your home is well ventilated especially during DIY or cleaning.
  - Have your central heating system checked regularly to avoid risking exposure to toxic carbon monoxide. Make sure you use a Gas Safe Registered engineer.
  - Keep wood stoves and fireplaces well maintained, and make sure that wood burners are exempted for use in smoke control areas. Visit <https://uk-air.defra.gov.uk/library/burnbetter/> for advice.
- ✓ Ready to use wood bought from a [Woodsure](#) Certified Supplier, will offer the following benefits:



- Dry, Ready to Burn wood/logs & briquettes make any appliance more efficient. Look for the Woodsure logo.
- Burning dry wood instead of wet wood is part of the solution to reducing the impact on our environment.
- Burning wet wood increases emissions and has a greater impact on air quality.
- Any appliance and chimney system will suffer from smoke produced from wet wood, which increases maintenance and repair requirements, making it harder for chimney sweeps to keep systems in safe, effective condition.
- Burning waste and treated wood (e.g. old furniture) can emit harmful



- ✓ Be energy efficient- make sure your house is well insulated and use energy efficient appliances. Your energy supplier may offer grants to insulate your home.



Staffordshire County Council currently offers targeted grants. To make you home warmer and more energy efficient <https://www.staffordshire.gov.uk/Warmer-Homes/Staffordshire-Warmer-Homes.aspx>

- ✓ Purchase "Green Power" for the electricity in your home. (Contact your energy supplier or Staffordshire Warmer Homes)
- ✓ Avoid using bonfires to dispose of waste and never burn household waste, especially plastics, rubber and treated timber. See our webpages for advice on [recycling, household rubbish and garden waste](#).
- ✓ Before organising days out, check the DEFRA air pollution forecast

Home > Pollution forecast provided by the Met Office

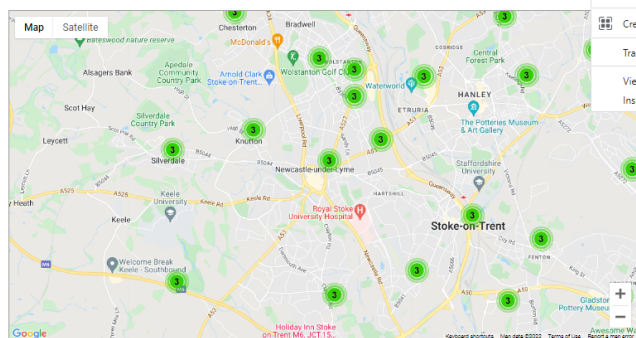
### Pollution forecast near st51bl

Issued at Today (1st March 2022). Provided by the Met Office.

Enter your location or postcode

st51bl

Today 1st Mar Wed 2nd Mar Thu 3rd Mar Fri 4th Mar Sat 5th Mar



The nearest locations to your postcode region are shown below and highlighted on the map.

1 What do the forecasts mean?

2 How are the forecasts produced?

3 Health advice associated with air pollution

Location	Today 1st Mar
Newcastle-under-Lyme	Low (Index 2)
Distance away: 0.09 miles	
Make default location	



Newcastle-under-Lyme Borough Council's air quality reports and action plan documents are accessible from the following link <https://www.newcastle-staffs.gov.uk/airquality>

For enquires or suggestions on how to improve air quality please feel free to contact us:

Write to:	The Environmental Protection Team, Newcastle-under-Lyme Borough Council Castle House, Barracks Road Newcastle under Lyme.ST5 1BL
Email:	<a href="mailto:environmental_health@newcastle-staffs.gov.uk">environmental_health@newcastle-staffs.gov.uk</a>
Telephone:	01782 717717

## Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of Newcastle-under-Lyme Borough Council with the support and agreement of the following officers and departments:

- Acting Head of Regulatory Services – Gillian Taylor
- Executive Director Sustainable Environment and Operations – Dave Adams

This ASR has been approved by:

- Portfolio Holder - Environment and Recycling – Councillor Trevor Johnson

This ASR has also been signed off by Dr Richard Harling, Director of Public Health at Staffordshire County Council.

## Annual Status Report(ASR) Air Quality Endorsement from the Director of Health & Care, Staffordshire County Council.

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

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

The Air Aware project “phase 2” continues through 2022 until March 2023. The project delivers behaviour change to increase active travel, decrease car use and raise awareness of air quality issues through five elements. These are business and school engagement, communications and campaigns, electric vehicles and air quality monitoring in three targeted locations, Burton, Leek and Cannock. Campaigns include Anti-Idling, walking and cycle activities and Clean Air Day. These have been countywide engaging a large number of businesses and schools. The programme will focus on reducing levels of NO and PM, which will be monitored at key locations.

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

Dr Richard Harling



**Director of Health and Care  
Staffordshire County Council  
[1 June 2022]**

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## Local Air Quality Management

This report provides an overview of air quality in Newcastle-under-Lyme Borough Council during 2021. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) 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 pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Newcastle-under-Lyme Borough Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table F. 1. And details of where they apply in Table F. 2 – Examples of Where the Air Quality Objectives Should Apply.

## Actions to Improve Air Quality

### 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 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Newcastle-under-Lyme Borough Council can be found in Table 3. The table presents a description of the four designated AQMA's. AQMA(s) that are currently designated within Newcastle-under-Lyme Borough Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA(s) and also the air quality monitoring locations in relation to the AQMA(s). The air quality objectives pertinent to the current AQMA designation(s) are as follows:

- NO<sub>2</sub> annual mean.

We propose to revoke "AQMA 4 - Little Madeley" as the results for the NO<sub>2</sub> annual mean have been consistently below the UK objective for the past 5 years (see monitoring/additional section).

**Table 3 – Declared Air Quality Management Areas**

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 1: Liverpool Road, Kidsgrove	Jan-15	NO <sub>2</sub> Annual Mean	Exceedance of the NO <sub>2</sub> annual mean objective along Liverpool Road A50, Kidsgrove.	NO	48	38.5	Newcastle under Lyme Air Quality Action Plan 2019 – 2024	<a href="http://www.newcastle-staffs.gov.uk/environment/air">www.newcastle-staffs.gov.uk/environment/air</a>
AQMA 2: Newcastle-under-Lyme Town Centre	Jan-15	NO <sub>2</sub> Annual Mean	Exceedance of the NO <sub>2</sub> annual mean objective. Covers Newcastle under Lyme Town Centre including the ring road A53, King Street, George Street and London Road to the boundary with the City of Stoke on Trent AQMA	YES	58.8	37.5	Newcastle under Lyme Air Quality Action Plan 2019 – 2024	<a href="http://www.newcastle-staffs.gov.uk/environment/air">www.newcastle-staffs.gov.uk/environment/air</a>
AQMA 3: Maybank-Wolstanton-Porthill	Jan-15	NO <sub>2</sub> Annual Mean	Covers the principal routes between Maybank, Wolstanton and Porthill. Declared due to exceedances of the	YES	46.5	32.5	Newcastle under Lyme Air Quality Action Plan 2019 – 2024	<a href="http://www.newcastle-staffs.gov.uk/environment/air">www.newcastle-staffs.gov.uk/environment/air</a>

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
			NO <sub>2</sub> annual mean in Maybank High Street and in the Porthill area					
AQMA 4: Little Madeley	Jan-15	NO <sub>2</sub> Annual Mean	Declared around two properties at Little Madeley due to an exceedance of the NO <sub>2</sub> annual mean arising from the M6 motorway.	YES	52.1	18.5	Newcastle under Lyme Air Quality Action Plan 2019 – 2024	<a href="http://www.newcastle-staffs.gov.uk/environment/air">www.newcastle-staffs.gov.uk/environment/air</a>

☒ Newcastle-under-Lyme Borough Council confirm the information on UK-Air regarding their AQMA(s) is up to date

☒ Newcastle-under-Lyme Borough Council confirm that all current AQAPs have been submitted to Defra

## Progress and Impact of Measures to address Air Quality in Newcastle-under-Lyme Borough Council

DEFRA's appraisal of last year's ASR concluded.

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

2021 ASR Appraisers Comment	NULBC Response
<p>1. Newcastle-under-Lyme Borough Council have provided a detailed review of their AQMQs, noting AQMA 3 and 4 have been compliant between 2016 to 2020. AQMA 4 has shown concentrations of less than 10% of the objective during this period, thus the Council have stated their intention to revoke this AQMA. AQMA 3 has seen concentrations above 36 µg/m<sup>3</sup>, thus the Council are taking the conservative approach and are continuing close monitoring. These decisions are supported; the Council is encouraged to progress with the consultation and any detailed assessment to support the revocation of AQMA 4 in 2022 and provide an update in their next ASR.</p>	<p>A report recommending consultation on the revocation of AQMA 4 – Little Madeley is scheduled to be presented to the Councils Public Protection Committee in Winter 2022/23. A final report with consultee comments and a recommendation to revoke will be presented in early 2023. DEFRA will be advised of the outcome prior to the publication of the next ASR due in June 2023</p>
<p>2. The Council have included an extensive update on their progress against AQAP measures in 2020. The use of tables to highlight completed actions and priorities for the year ahead allows is clear and concise. This is commended.</p>	<p>Format also used in this report</p>

<p>3. QA/QC procedures have been performed where appropriate, with supporting calculations demonstrating this has been done accurately. Both local and national bias adjustment factors have been calculated, with the decision to select the national factor justified. The Council should continue their good work.</p>	<p>Format also used in this report</p>
<p>4. Trends have been discussed by differentiating data from separate areas of the Borough, both within and outside of the AQMA. This makes for easy interpretation of spatial and temporal trends.</p>	<p>Format also used in this report</p>
<p>5. Accompanying graphs across different areas of the Borough, been included. However, the Figure of AQMA 2 is hard to read due to many monitoring locations being included. The Council could consider enlarging this figure on a landscape orientated page or splitting the data into separate figures.</p>	<p>Accepted and comments acted upon for this report.</p>
<p>6. There are some minor errors in the report; the Council is reminded to proof-read for such mistakes prior to publication.</p> <p>a) In Table 2.1 on page 4, the Council have left in an internal comment which reads "Check all refs to AQMAs".</p> <p>b) The figure captions (green text) do not align with the corresponding text for Figures A.1 to A.11/A.12.</p>	<p>Accepted and comments acted upon for this report.</p>

Newcastle-under-Lyme Borough Council has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in detail with the type of measure and the progress Newcastle-under-Lyme Borough Council have made during the reporting year of 2021 presented.

Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 7. – Progress on Measures to Improve Air Quality More detail on these measures can be found in their respective Action Plans. Key completed measures are detailed within the action plan:

Newcastle under Lyme Borough Council, along with partners has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 4, Table 5. Thirty measures are included within Table 7, together with the progress made by the Borough Council, Staffordshire County Council or Highways England during the reporting year of 2021. Barriers restricting the implementation of the measure are also presented within Table 7.

More detail on these measures can be found in their respective Action Plans.<sup>(14)</sup>

Key completed measures are:

**Table 4 –Completed air quality action plan measures in 2022**

MEASURE	SUMMARY
Upgrade of buses to Euro VI standard by winter 2020	Works were completed for 23 buses in late 2020. The Council continues to monitor compliance and NO <sub>2</sub> levels on the affected road covered by the associated ministerial direction. There are also small benefits to other locations where the Euro VI buses serve.
LSTF funding of cycling walking and bus links between Newcastle-under-Lyme and Stoke.	A new footpath and cycling link has been installed as part of HE junction improvement works between the A500 at Wolstanton and Porthill Works are also being undertaken to improve cross valley connectivity for walking and cycling in connection with the construction of the Etruria Valley Link Road.

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<sup>14</sup> The Air Quality Action plan for the Borough can be found at [www.newcastle-staffs.gov.uk/environment/air](http://www.newcastle-staffs.gov.uk/environment/air)

Electric Vehicles	The Borough Council is currently utilising three electric vans for use by the Borough Council's Pest Control and Dog Warden Team.
Scheme to Reduce congestion on Liverpool Road, Kidsgrove	A revised scheme to reduce congestion on Liverpool Road, Kidsgrove has been implemented by the County Council. This will see optimisation of traffic light signals at the junction of Liverpool Road / The Avenue and also a partial ban on turns out of Heathcote Street onto Liverpool Road.
Fleet Efficiency	The Councils waste collection and street scene fleets are now fully Euro 6.

The following measures have been placed on hold:

**Table 5 – Action Plan Measures delayed**

MEASURE	SUMMARY
Inclusion of air quality related planning policies in new joint local plan	Delayed pending publication of the revised local development plan for Newcastle under Lyme.
Develop policies to promote EV charging infrastructure in the Development Planning Process	Building regulations now require EV infrastructure and charging in new build and refurbished buildings where there is car parking. Plans are being developed at a county level to promote EV infrastructure across the wider county which will also include the NULBC estate.
Develop policies to support alternative vehicle fuelling technologies	Delayed pending publication of the revised local development plan for Newcastle under Lyme. Work is still continuing on drafting policies.
Voluntary Quality Network Partnership with bus operators	A decline in bus passenger travel and withdrawal and reliability of bus services is of major concern. Outside of a VQNP with operators, there is engagement with operators on an informal basis to identify issues and to jointly address challenges.

Kidsgrove Railway Station Transport hub	The station is now fully accessible for all passengers following a £6million. An approved Town Deal project includes an improved, modern station building, a new transport interchange, and a 200-space car park. There will also be better access to the nearby Trent and Mersey Canal.
Review location of bus stops to facilitate traffic flow around Liverpool Road / The Avenue.	An objection has been received which has led to the proposal being reviewed prior to a formal decision being made on whether to proceed
Borough Wide Air Quality Strategy	Delayed pending publication of the revised local development plan for Newcastle under Lyme.

Newcastle-under-Lyme Borough Council's priorities for the coming year are;

**Table 6 – Action Plan Priorities for the coming year**

PROJECT NAME	SUMMARY
Revoke AQMA 4: Little Madeley	Consultation on revocation will commence in Autumn 2022 based on NO <sub>2</sub> diffusion tube results only with a full report to the Council Public Protection Committee to be presented in Winter 22/23 with a recommendation to revoke. DEFRA to be formally notified
Review monitoring results for AQMA 3: Maybank-Wolstanton-Porthill	NO <sub>2</sub> concentrations have been at or below 36µg/m <sup>3</sup> at five of the six monitoring locations for the years 2016 to 2019. Concentrations for 2021 are lower than previous years due to reduced traffic emissions during travel restrictions. This AQMA will remain in place until monitoring confirms that all concentrations remain below 36µg/m <sup>3</sup> (10% of the objective) at all sites, following traffic number returning to normal.
Continue with current air quality monitoring.	To support LAQM process. No changes planned
Support uptake of ULEV	Continue with electric vehicle projects listed above.

Complete air quality developer guidance document.	As mentioned above.
Partnership working with Staffordshire County Council and other Staffordshire Authorities	Continue process that is delivering measures listed above.

Newcastle-under-Lyme Borough Council worked to implement these measures in partnership with the following stakeholders during 2021:

- Staffordshire County Council
- First Potteries
- Stoke on Trent City Council, Stafford Borough Council and Swarco

Newcastle-under-Lyme Borough Council's priorities for the coming year are

- Continue to monitor NO<sub>2</sub> by diffusion tube and automatic monitors at existing locations.
- Continue to work on measures where it has a direct control.
- Work with partners to encourage them to implement measures.
- Consult on and revoke the Little Madeley AQMA.
- Refresh and update the Air Quality Action Plans for AQMA 1 Kidsgrove, AQMA 2 Newcastle under Lyme Town, AQMA 3 Maybank, Wolstanton & Porthill.
- Revoke the current Smoke Control Areas within the Borough and replace with new smoke control areas which better reflect the circumstances.
- Bid for funding of activities which will aid in the understanding of and which will secure improvements in local air quality.

The principal challenges and barriers to implementation that Newcastle-under-Lyme Borough Council anticipates facing are

- Funding to deliver projects which is largely dependent on third parties including from the UK Government.
- Financial uncertainty following the Covid 19 pandemic and the impact on the UK economy from the war in the Ukraine.
- Reliance on other partners to deliver and their priorities for delivery

Whilst the measures stated above and in Table 7 will help to contribute towards compliance, Newcastle-under-Lyme Borough Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the Kidsgrove and Newcastle under Lyme Town AQMA's.

Table 7. – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
<b>Kidsgrove AQMA – Action Plan Measures</b>															
K1	Kidsgrove Railway Station Transport hub including parking and improved bus/rail interchange with new bus facilities closer to the station, Real Time Passenger Information provided at Kidsgrove station and at the bus stops, disabled/cycle parking, drop off and taxi facilities, and safer pedestrian and cycle access routes to the station	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2015	2025	Kidsgrove Town Deal Board & East Midlands Trains	Developers & highway infrastructure funding	NO	Partially Funded	£1 million - £10 million	Planning	Has potential to increase patronage / increase use of public transport and private car	Delivery of measure	Business Case and approval from DCLG required	Business case requires approval and funding to deliver project
K2	Traffic light optimisation to reduce congestion along Liverpool Road and prevention of right turn into Heathcote Street from A50	Traffic Management	UTC, Congestion management, traffic reduction	2016	2021	Staffordshire county Council	Staffordshire CC	NO	Funded	£50k - £100k	Completed	Reduced vehicle emissions	Delivery of measure	Completed	Community support / Funding. Scheme to be revised from original proposal to allow right turn.
K3	Review location of bus stops to facilitate traffic flow around Liverpool Road / The Avenue	Traffic Management	UTC, Congestion management, traffic reduction	2018	2020	Staffordshire county Council	Staffordshire County Council	NO	Funded	£10k - 50k	Aborted	Reduced vehicle emissions	Delivery of measure	Postponed pending review of monitoring results	Community support Objection from a resident has caused the scheme to be withdrawn for time being. We will monitor the impact of the Heathcote Street scheme on air quality, before we decide whether we need to pursue delivery of this proposal
<b>Newcastle under Lyme Town Centre – Air Quality Management Area – Air Quality Action Plan Measures</b>															
N1	Ensure that effects of additional traffic generated by	Policy Guidance and	Air Quality Planning	2016	2019	Henry Davidson Developments / Planning	Permission granted with conditions	NO	Not Funded	£100k - £500k	Aborted	No breach of AQO's	Monitoring	Cancelled	Scheme not taken forward. Alternative proposals being

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

8 [Every Breath we Take: The Lifelong Impact of Air Pollution; Report of a working Party, February 2016, ISBN 978-1-86016-567-2].

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
	Ryecroft mixed retail / student development are properly understood	Development Control	and Policy Guidance			Application to Newcastle under Lyme Borough Council	requiring assessment and mitigation								explored for Ryecroft Site as part of Newcastle under Lyme Town Deal
N2	Ensure that effects of emissions from plant associated with Ryecroft mixed retail / student development are properly understood	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2016	2019	Henry Davidson Developments / Planning Application to Newcastle under Lyme Borough Council	Permission granted with conditions requiring prior approval	NO	Not Funded	£10k - 50k	Aborted	No breach of AQO's	Emissions modelled and quantified	Cancelled	Scheme not taken forward. Alternative proposals being explored for Ryecroft Site as part of Newcastle under Lyme Town Deal
N3	Wayfinding strategy Newcastle under Lyme Town Centre and outlying areas for walking and cycling	Promoting Travel Alternatives	Promotion of walking	2016		Lead by Newcastle under Lyme Borough Council with support from Staffordshire County Council, Sustrans and Town Centre Business Improvement District	Future High Street Fund	NO	Funded	£50k - £100k	Planning	Not quantified	Delivery of strategy	Business Case and approval from DCLG required	Business case requires approval and funding to deliver project
N7	Ring-Road enhanced signage & subway improvements	Traffic Management	Other	2016	2021	Lead by Newcastle under Lyme Borough Council with support from Staffordshire County Council, Sustrans and Town Centre Business Improvement District	Staffordshire CC	NO	Funded	£10k - 50k	Completed	Reduced vehicle emissions	Delivery of strategy	Strategy and plans still under development. Improvements in air quality and congestion considered as a priority along with walking cycling and public transport connectivity.	Completed signage and partial subway enhancements
N8	Car Park Variable Message Signing Street parking restrictions	Traffic Management	Other	2016	2022	Lead by Newcastle under Lyme Borough Council with support from Staffordshire County Council, Sustrans and Town Centre Business Improvement District	Newcastle under Lyme B.C. & Staffordshire CC	NO	Not Funded	£50k - £100k	Aborted	Reduced vehicle emissions	VMS signs in place and street parking restrictions enforced	Cancelled	Other priorities identified for budget
N9	RTPI and subsidised bus travel / green travel plans sought for large-scale multi occupancy residential accommodation. Town centre	Policy Guidance and Development Control	Other policy	2016	2022	Staffordshire County Council with support via conditions on planning applications for inclusion in high occupancy student /	Staffordshire County Council through Section 106 contributions and Future High Street Fund	NO	Partially Funded	£100k - £500k	Implementation	Increased bus journeys from stops	Reduced vehicle emissions	A number of developments within the town centre are capitalising on proximity to public transport links, cycling infrastructure improvement on development and in	Financial viability of development schemes to support required S106 / Resistance from developers.

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

8 [Every Breath we Take: The Lifelong Impact of Air Pollution; Report of a working Party, February 2016, ISBN 978-1-86016-567-2].

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
	expected to accommodate 3000 students for local universities					keyworker accommodation								network sought through planning. Travel planning sought via planning and monitored via county highways. Reduced rate bus passes for university students promoted.	
MD 1	Ministerial Direction to implement bus retrofit scheme for public bus service using A53 between Sandy Lane and A500/A53 Roundabout at latest by 2021 and in the soonest possible timeframe	Promoting Low Emission Transport	Other	2018	2020	NULBC / First PMT / JAQU	DEFRA grant (100%)	YES	Funded	£100k - £500k	Completed	EU NO2 Annual mean exceedance non-compliance reduced by 1 year.	23 Buses retrofitted by end of 2020	Completed	Traffic Regulation Condition is to be sought to require operator to utilise Euro IV or better moving forward
MD 2	Ministerial Directions served on NULBC and SOTCC requiring Further Evaluation of measures to achieve compliance with the Ambient Air Quality Directive requirements for Nitrogen Dioxide in the soonest possible timeframe	Traffic Management	Other	2019	2022	National Highways / Staffs County Council / Stoke on Trent City Council and Newcastle under Lyme Borough Council Environmental Health	DEFRA grant (100%)	YES	Funded	£1 million - £10 million	Planning	EU NO2 Annual mean achieved in shortest possible timescale	Compliance with EU NO2 limit value	Covid 19 has affected initial compliance date. Options appraisal undertaken and preferred option of bus gate and traffic management agreed for consultation agreed by JAQU	Preferred option of time restricted bus gate at peak hours and reduced turning across traffic is subject to public consultation.
<b>Maybank, Wolstanton and Porthill Air Quality Management Area – Air Quality Action Plan Measures</b>															
W1	Improvements to Wolstanton and Porthill Junctions on A500 to reduce congestion	Traffic Management	UTC, Congestion management, traffic reduction	2016	2021	National Highways	Highways Agency	NO	Funded	> £10 million	Completed	Reduction in congestion / improved journey times	Modelling of air quality impacts and monitoring	Completed in 2021	Funding identified by HE. Project flagged as high risk for air quality along A500 due to exceedance of EU action level
W2	Short term routing strategy to mitigate impact of congestion associated with works to A500	Traffic Management	UTC, Congestion management, traffic reduction	2019	2021	National Highways / Staffs County Council / Stoke on Trent City Council and NULBC Environmental Health	Highways Agency	NO	Funded	£100k - £500k	Completed	Potential short term negative impact during build	Modelling of air quality impacts and monitoring	No negative impacts identified during build	Negative impacts not identified through monitoring or congestion impacts

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

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Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
W3	Evaluate the impact of the Etruria Valley Link Road in the May Bank, Porthill, Wolstanton area and provide appropriate mitigation	Traffic Management	Strategic highway improvements,	2010	2022	Lead by Stoke on Trent City Council with planning application to Newcastle under Lyme Borough Council/ Staffordshire County Council involved	Stoke on Trent City Council scheme	NO	Partially Funded	£10k - 50k	Implementation	unclear	Modelling of air quality impacts and monitoring	Minor adverse impact but no exceedances identified in 2021	Potential negative effects on Maybank Porthill, Wolstanton AQMA. Potential to improve AQ in Stoke on Trent at Basford Bank where hourly mean NO2 is being exceeded. Scheme has the potential to add a positive contribution to mitigation measures in this area. Monitoring will continue in both areas for at least 5 years post opening to evaluate success. AQMA to remain as a safeguard.
Little Madeley – Air Quality Management Area - Air Quality Action Plan Measures															
M1	Continue to monitor NO2 at relevant location in Little Madeley	Other	Other	2010	2023	Newcastle under Lyme Borough Council Environmental Health	Newcastle under Lyme Borough Council	NO	Funded	< £10k	Implementation	As reported per results	Monitoring	Compliance demonstrated since 2016. AMQA revocation planned to be subject to consultation and revocation in 2022	Nil
M2	Engage with NH concerning proposals to introduce smart managed motorway / hard shoulder running in Madeley area between junctions 15 and 16 of the M6 motorway	Traffic Management	Other	2010	2032	Lead by National Highways	National Highways	NO	Not Funded	< £10k	Not taken forward	Has potential to reduce congestion and vehicle emissions	Project delivered	Not yet commenced	Scheme not yet identified. Sections either side of junctions 15 and 16 of the M6 are being smart managed with hard shoulder running. Local geography is an issue to identifying appropriate solutions
Borough Wide Air Quality Action Plan – Complementary Measures for all locations including AQMA's															
BW 1	Borough Wide Air Quality Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2019	2023	Newcastle under Lyme Borough Council Environmental Health	Newcastle under Lyme Borough Council	NO	Not Funded	< £10k	Planning	Reduction in emissions	Strategy in place	Funding secured, planning phase	To launch alongside Local Plan
BW 2	Air Quality Planning Guidance	Policy Guidance and	Air Quality Planning	2016	2023	Newcastle under Lyme Borough Council	Newcastle under Lyme	NO	Not Funded	< £10k	Postponed	Reduction in emissions	Strategy in place	Postponed	The Council has decided to develop its own Local Plan

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

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Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
			Development Control			Environmental Health	Borough Council								and the planning guidance will sit alongside this as a material document.
<b>BW 3</b>	Inclusion of air quality related policies in the Newcastle under Lyme Local Plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2016	2023	Newcastle under Lyme Borough Council Environmental Health and Planning	Newcastle under Lyme Borough Council	NO	Not Funded	< £10k	Plan under development	Reduction in emissions	Policies in JLP	Plan under development	The Council has decided to develop its own Local Plan and relevant policies are being identified. <a href="https://www.newcastle-staffs.gov.uk/planning-policy/local-plan">https://www.newcastle-staffs.gov.uk/planning-policy/local-plan</a>
<b>BW 4</b>	Staffordshire and Stoke on Trent Eco-Stars	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2015	2020	Staffordshire Local Authorities	Staffordshire LA's	YES	Funded	£500k - £1 million	Completed	Reduction in emissions	Reduced vehicle emissions	Scheme has come to an end in Staffordshire. Several local and national operators including LA's have been appraised under the initiative	Slow take up by operators across County
<b>BW 5</b>	Eco Stars award for Council Street-Scene and Waste fleet	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2015	2019	Newcastle under Lyme Borough Council Street Scene Division	Staffordshire LA's	Yes	Funded	£500k - £1 million	Completed	Reduced vehicle emissions	Fleet achieves 5* rating	Implementation on-going	4* Ecostars award with action plan to move to 5*
<b>BW 6</b>	Green Travel Plan for new Civic Hub development in Town Centre	Promoting Travel Alternatives	Workplace Travel Planning	2015	2017	Lead by Staffordshire County Council as building owner in conjunction with Borough Council, Police, Library Service, Social Services, Aspire Housing	Newcastle under Lyme Borough Council	NO	Not Funded	< £10k	Completed	Reduced vehicle emissions	Completed	Completed 2019.	Now in monitoring phase <a href="https://publicaccess.newcastle-staffs.gov.uk/online-applications/applicationDetails.do?activeTab=externalDocuments&amp;keyVal=OUTZZDBM01S00">https://publicaccess.newcastle-staffs.gov.uk/online-applications/applicationDetails.do?activeTab=externalDocuments&amp;keyVal=OUTZZDBM01S00</a>
<b>BW 7</b>	Voluntary Quality Network Partnership with bus operators	Alternatives to private vehicle use	Other	2016	2019	Staffordshire County Council / Stoke on Trent City Council/ Local Bus Companies	Staffordshire County Council as Highways Authority	NO	Not Funded	£50k - £100k	Aborted	Reduced vehicle emissions /	Voluntary quality network operative across area	Aborted	Requires commitment from bus operators and councils. Decline in bus passenger numbers and services affects financial viability for improvements. Local operators use older fleet vehicles across area.
<b>BW 8</b>	Develop policies to promote EV	Policy Guidance	Air Quality	2019		Newcastle under Lyme Borough	Newcastle under Lyme	NO	Not Funded	< £10k	Aborted	Reduction in emissions	Planning Related	Policy drafted	Superseded by changes to Building

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Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
	charging infrastructure and support alternative vehicle fuelling technologies	and Development Control	Planning and Policy Guidance			Council / Staffordshire County Council	Borough Council						EV policies in place		Regulations in May 2022
<b>BW 9</b>	Support and participate in appropriate initiatives to encourage uptake of Zero and Low Emission Vehicle Technologies	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2016	2022	Newcastle under Lyme Borough Council, Staffordshire Districts and Staffordshire County Council	OLEV, National Highways & 3rd party funded	YES	Funded	£500k - £1 million	Underway	Reduction in emissions	Details of technologies and initiatives	Successful bid to OLEV LETIS. Rollout of EV chargers across several sites. Plan to be fully operational by end of 2022 and provider to engage with taxi and PHV trade	Slow rollout of programme and impacts from Covid 19
<b>BW 10</b>	Review the Borough Council's Hackney Carriage and Private Hire Licensing Policy to reduce tail pipe emissions from this sector	Promoting Low Emission Transport	Taxi emission incentives	2016	2019	Newcastle under Lyme Borough Council	Newcastle under Lyme Borough Council	NO	Not Funded	< £10k	Completed	Reduction in emissions	Policies updated with conditions	Policy approved in spring 2019	Policy adopted 2019 to 2025. Policies to support air quality improvement and improvements to latest emission standards and reduction in licence vehicle age not taken forward. Vehicles can be no older than 7 years old at date of first licence with council and no upper limit on age, subject to six month testing from 10 years old. If fails a retest will no longer be licensed.
<b>BW 11</b>	Transition the Council Vehicle fleet to Zero and Low Emission Vehicle Technologies	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2016	2030	Newcastle under Lyme Borough Council	Newcastle under Lyme Borough Council	NO	Partially Funded	£1 million - £10 million	Underway	Reduction in emissions	Policies updated	EURO IV refuse fleet and recycling vehicles delivered March 2020. 3 EV vans for pest control and dog warden service have been delivered. EV chargers installed and operational for council fleet vehicles at Knutton Depot.	Requires budget for capital expenditure by council
<b>HS2 Phase 2a route</b>	Ensure that emissions associated with construction and operation including off network effects	Transport Planning and Infrastructure	Public transport improvements-interchanges	2017	2032	HS2 and contractors / Newcastle under Lyme Borough Council	HS2 and contractors	NO	Funded	£1 million - £10 million	Underway	Emissions do not breach objectives or limit values	Emissions do not breach objectives or limit values	Discussion to date have identified that HS2 and contractors have assessed air quality impacts and have Environmental	Advance works to commenced in 2021 with route construction anticipated to commence by 2026

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Measure No.		Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
		do not cause exceedances of objectives or limit values		stations and services											Minimum Standards , Construction Plans and monitoring plans in place	and coming into operation by 2033

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

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

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

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

PM<sub>2.5</sub> is the pollutant which has the biggest impact on public health and on which the Public Health Outcomes Framework (PHOF) D01 Fraction of mortality attributable to particulate air pollution (2020), Public Health Outcomes Framework indicator <sup>7</sup> is based.

The Royal College of Physicians (RCP) undertook a review in February 2016 <sup>8</sup> where they found that long term exposure to air pollution impairs lung function growth in children, and that outdoor exposure is linked to lung cancer in adults. Within Staffordshire it is estimated that 4.9% of all deaths can be attributed to exposure to PM<sub>2.5</sub>, compared to 5.6% across England (31,750 deaths annually). Overall, the estimated cost to individuals and society is more than £20 billion annually for the UK.

<sup>7</sup> Public Health England. Public Health Outcomes Framework 1th June [https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/qid/1000043/pat/6/par/E12000005/ati/102/are/E10000028/iid/30101/age/230/sex/4/cid/4/tbm/1/page-options/car-do-0\\_ine-yo-1:2019:-1:-1\\_ine-ct-2\\_ine-pt-0](https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/qid/1000043/pat/6/par/E12000005/ati/102/are/E10000028/iid/30101/age/230/sex/4/cid/4/tbm/1/page-options/car-do-0_ine-yo-1:2019:-1:-1_ine-ct-2_ine-pt-0) © Crown copyright 2021

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## Particulate Matter (PM<sub>2.5</sub>) Levels in Staffordshire and Stoke-on-Trent

A number of the Staffordshire Authorities currently monitor locally for PM<sub>10</sub>. Defra's Automatic Urban and Rural Network (AURN) site, Stoke-on-Trent Centre has a dedicated PM<sub>2.5</sub> monitor. Table 8 presents data on the local level of PM<sub>2.5</sub> annual mean concentrations for the Staffordshire Authorities. Where the data is derived from PM<sub>10</sub> monitoring this has been adjusted by applying a correction factor of 0.7 to derive the PM<sub>2.5</sub> component. The correction factor has been derived from the average of all ratios of PM<sub>2.5</sub>/PM<sub>10</sub> for the years from 2010 to 2014 for forty sites within the Automatic Urban and Rural Network (AURN) where these substances are measured on an hourly basis and follows the guidance published in LAQM (TG16).

Newcastle under Lyme Borough Council doesn't monitor either PM<sub>2.5</sub> nor PM<sub>10</sub>, Figure E. 1 contains a map indicating four areas of maximum background annual mean PM<sub>2.5</sub> concentrations and four areas of minimum background annual mean PM<sub>2.5</sub>. This data is sourced from DEFRA.

The highest has a level of 9.7 µg/m<sup>3</sup> and is located at Madeley near to the east of the M6 Motorway whilst the lowest has level of 6.12 µg/m<sup>3</sup> at Hales which is in a rural agricultural area.

**Table 8 – Annual Mean PM<sub>10</sub> and PM<sub>2.5</sub> results of monitoring by Staffordshire Authorities 2017 to 2021**

Annual Mean PM <sub>10</sub> and PM <sub>2.5</sub>									
Results from monitoring Staffordshire Authorities 2017- 2021									
Authority	Site Type	Monitor Location	OS Grid Ref	(µg/m <sup>3</sup> )	Year				
					2017	2018	2019	2020	2021
Newcastle under Lyme	Roadside	Queen's Gardens	E385057	PM <sub>10</sub>	(5)	(5)	(5)	(5)	(5)
			N346137	PM <sub>2.5</sub>	(5)	(5)	(5)	(5)	(5)
Cannock Chase	Roadside	Cannock A5190	E401392	PM <sub>10</sub>	14	18	16	(6)	(6)
			N309954	PM <sub>2.5</sub>	9.8	12.6	11.2	(6)	(6)
Stoke on Trent	Roadside	Basford	E386288	PM <sub>10</sub>	23	23	24	*	19
			N346802	PM <sub>2.5</sub>	16 <sup>(1)</sup>	16 <sup>(1)</sup>	17	*	13
	Roadside	A50 Roadside Meir	E392548	PM <sub>10</sub>	18	19	20	17	18
			N342572	PM <sub>2.5</sub>	13 <sup>(1)</sup>	13 <sup>(1)</sup>	14 <sup>(1)</sup>	12 <sup>(1)</sup>	14 <sup>(1)</sup>
	Urban Background	Stoke on Trent Central	E388351	PM <sub>10</sub>			12	13	14
			N347895	PM <sub>2.5</sub>	9	9	9	7	8

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

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East Staffordshire	Roadside	Derby Tum	E424671 N324019	PM <sub>10</sub>	(4)	(4)	(4)	(4)	(4)
				PM <sub>2.5</sub>	(4)	(4)	(4)	(4)	(4)

Notes: <sup>(1)</sup>PM<sub>2.5</sub> results are derived from PM<sub>10</sub> monitored results corrected with a 0.7 correction factor in accordance with TG16 – Annex B: Derivation of PM<sub>2.5</sub> to PM<sub>10</sub> Ratio. All other results are directly monitored.

(4) East Staffordshire's monitors were decommissioned 2016

(5) Newcastle under Lyme monitors were decommissioned 2016

(6) Cannock Chase no longer monitor PM<sub>10</sub> nor PM<sub>2.5</sub>\*

\* No data available for 2020.

As can be seen from the results, concentrations of PM<sub>2.5</sub> within the Staffordshire Authorities are below the 2020 EU limit value of 25µg/m<sup>3</sup>.

## PM<sub>2.5</sub> and Mortality in Staffordshire & Stoke-on-Trent

Although the levels of PM<sub>2.5</sub> within the County and City of Stoke on Trent are below the 2020 EU Limit value, the impact on adult mortality directly attributable to PM<sub>2.5</sub> is nonetheless still an important public health issue within Staffordshire and Stoke-on-Trent. This is revealed in data obtained from Public Health England used to inform Public Health Outcomes Framework indicator D01<sup>7</sup>

The estimated percentage number of deaths attributable to PM<sub>2.5</sub> in adults over 30 has been translated into the estimated number of attributable deaths for each local authority area within Staffordshire, and are shown in Table 9. The data presented to 2020 is the latest data available at time of publication of this report. Approximately on average 7.0% of deaths between 2018 to 2020 within the County can be attributed to PM<sub>2.5</sub>. (Note the method for calculating this figure has changed and we only have the data for 2018, 2019 & 2020 using this new method).

<sup>7</sup> Public Health England. Public Health Outcomes Framework 1th June [https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/qid/1000043/pat/6/par/E12000005/ati/102/are/E10000028/iid/30101/age/230/sex/4/cid/4/tbm/1/page-options/car-do-0\\_ine-yo-1:2019:-1:-1\\_ine-ct-2\\_ine-pt-0](https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/qid/1000043/pat/6/par/E12000005/ati/102/are/E10000028/iid/30101/age/230/sex/4/cid/4/tbm/1/page-options/car-do-0_ine-yo-1:2019:-1:-1_ine-ct-2_ine-pt-0) © Crown copyright 2021

<sup>8</sup> [Every Breath we Take: The Lifelong Impact of Air Pollution; Report of a working Party, February 2016, ISBN 978-1-86016-567-2].

**Table 9. Public Health Outcomes Framework Indicator 3.01 - Fraction of annual all cause adult mortality attributable to anthropogenic (human made) particulate air pollution (measured as fine particulate matter, PM<sub>2.5</sub>) for Staffordshire Authorities 2018 to 2020<sup>7</sup>**

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

### Actions being taken within Staffordshire to reduce PM<sub>2.5</sub>

A number of the Staffordshire Authorities are currently involved in implementing measures to reduce levels of NO<sub>2</sub> within their areas, which are detailed elsewhere in this report. Whilst there is currently no statutory duty imposed on Local Authorities in England to reduce PM<sub>2.5</sub>, a number of the measures are complementary.

Newcastle-under-Lyme Borough Council is taking the following measures as outlined in Table 10 in conjunction with our partners at the County Council and other partners identified in the table to address PM<sub>2.5</sub>.

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

<sup>8</sup> [‘Every Breath we Take: The Lifelong Impact of Air Pollution; Report of a working Party, February 2016, ISBN 978-1-86016-567-2].

**Table 10 – Measures being undertaken within Newcastle under Lyme to reduce PM<sub>10</sub> and PM<sub>2.5</sub>**

Measures category	Measure Classification	Effect on reducing NOx and PM10 emissions (low, medium, high)	Reduces PM2.5 emissions	Existing Measure	Measure in Newcastle under Lyme
<b>Traffic Management</b>	Urban Traffic Control systems, Congestion management, traffic reduction	low	✓	✓	UTC in areas of AQMA 1: Liverpool Road, Kidsgrove and AQMA 2: Newcastle-under-Lyme Town Centre
<b>Promoting Travel Alternatives</b>	Workplace Travel Planning	low	✓	✓	<a href="http://www.staffordshire.gov.uk/Transport/Air-quality/Businesses.aspx">www.staffordshire.gov.uk/Transport/Air-quality/Businesses.aspx</a>
	Encourage / Facilitate home-working	low	✓	✓	Agile working policy adopted by Council
	School Travel Plans	low	✓	✓	Funded <a href="#">School Travel Plans</a> for school expansions: 14 Newcastle Borough,
	Promotion of cycling	low	✓	✓	The <a href="#">Local Cycling and Walking Infrastructure Plan</a> is currently under development by SCC
	Promotion of walking	low	✓	✓	
	Staffordshire Share a Lift Scheme		✓	✓	A new provider is currently being sought for the <a href="#">Staffordshire Lift Scheme</a>
<b>Transport Planning &amp; Infrastructure</b>	Local Transport Plans and District Strategies	high	✓	✓	The transport strategy for Newcastle-under-Lyme can be found <a href="#">HERE</a>
	Public transport improvements- interchanges stations and services	low	✓	✓	Kidsgrove Station interchange plans
	Cycle network	low	✓	✓	SCC currently looking to implement improved mapping software for future developments
	Bus route improvements	high	✓	✓	RTPI routes 3 & 4 Newcastle Town Centre. Improved future bus services to Chatterley Valley
<b>Policy Guidance and Development Control</b>	Planning applications to require assessment of exposure / emissions for development requiring air quality impact assessment	high	✓	✓	<a href="#">Local Validation list</a> draws attention to requirements
	Planning Policies		✓	✓	Local plan under development to include policies which will benefit air quality
	STOR Sites (Short Term Operating Reserve) Energy Generation. Regulation via planning / permitting regime	high	✓	✓	1 STOR site regulated for emissions via Environmental Permit – Norkier Power Holditch
	Route Management Plans/ Strategic routing strategy for HGV's	high	✓	✓	The Local Transport Strategy for Newcastle-under-Lyme can be found <a href="#">HERE</a>
<b>Vehicle Fleet Efficiency</b>	Promoting low emission public transport	high	✓	✓	Planned promotion of retrofitted buses on routes 3 / 4 and 4a in preference to private car
	Vehicle retrofitting programmes	medium	✓	✓	£370,000 DEFRA grant to retrofit 23 buses running on routes 3/ 4 and 4a to latest EURO IV. Completed November 2020
<b>Regulatory &amp; Policy</b>	Active regulation of permitted installations and identification of unregulated activities requiring permit		✓	✓	Regulation permitted installations and identification of unregulated activities requiring permit
	Clean Air Act enforcement,		✓	✓	Smoke Control, Cable burning, Dark Smoke, Chimney heights

	Environmental Protection Act 1990 / Anti-Social Behaviour (Crime and Policing) Act 2014		✓	✓	Enforcement of Duty of Care in respect of trade waste burning (EPA s33 & S34)  Statutory nuisance and CPW/CPN application for frequent burning
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### PM<sub>2.5</sub> in Staffordshire & Stoke-on-Trent - Next steps

As PM<sub>2.5</sub> is an issue requiring collaboration between the district, county and city authorities within Staffordshire, the following actions are proposed in addition to those outlined in the action plan. Progress on these and the action plan will be detailed in the 2022 ASR. This has been delayed due to the Covid Pandemic

- ✓To agree a target for reducing the fraction of All Cause Mortality from PM<sub>2.5</sub> in each district, city and county authority by 2020 **this was delayed due to disruption caused by the Covid Pandemic**
- ✓To agree a target for reducing PM<sub>2.5</sub> exposure (calculated from PM<sub>10</sub> exposure / background maps / local monitoring where available) **this was delayed due to disruption caused by the Covid Pandemic**
- ✓To maintain compliance with the 2020 EU limit value of 25µg/m<sup>3</sup>
- To include Public Health Outcome Framework Indicator D01 in the Staffordshire and District Authority and City Council Joint Strategic Needs Assessment for 2019/2020 onwards and to report progress to the relevant Health and Wellbeing Boards. **This was delayed due to disruption caused by the Covid Pandemic**
- To continue to identify risks affecting PM<sub>2.5</sub> which need to be addressed at a national level e.g.
- ✓A number of authorities within Staffordshire are receiving applications for STOR (Short Term Operating Reserve) sites to supplement power to the National Electricity Grid at times of peak demand. These sites typically operate during the autumn / winter months and can be high emitters of PM. Undertaking a comprehensive review of current smoke control areas with a view to revoking and putting in place a single smoke control area to cover the Borough and areas being targeted for development. We anticipate that this will be completed by the end of the 22/23 financial year
- Undertaking a data gathering exercise to map out where solid fuel burning stoves have been installed in accordance with current Building Regulations requirements and supplementing this with complaint and observational information.

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

This section sets out the monitoring undertaken within 2021 by Newcastle-under-Lyme Borough Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

### Summary of Monitoring Undertaken

#### Automatic Monitoring Sites

Newcastle-under-Lyme Borough Council undertook automatic (continuous) monitoring at 1 sites during 2021. Table A. 1 in Appendix A shows the details of the automatic monitoring sites. The Council's website [www.newcastle-staffs.gov.uk/laqm](http://www.newcastle-staffs.gov.uk/laqm) presents automatic monitoring results for Newcastle-under-Lyme Borough Council.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

#### Non-Automatic Monitoring Sites

Newcastle-under-Lyme Borough Council undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at 80 sites during 2021. Forty triplicate sites (DT 107 to DT146) were set up in the 2020 monitoring period to gain baseline data in preparation of possible effects of traffic increase on dispersion routes resulting from actions in the upcoming North Staffordshire Air Quality Action Plan.

Table A. 2 in Appendix A presents the details of the non-automatic sites.

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

## Individual Pollutants

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

### Nitrogen Dioxide (NO<sub>2</sub>)

Table A. 3 and Table A. 4 in Appendix A compare the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/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 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B. 1 includes distance corrected values, only where relevant.

Table A. 5 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past five years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year. Newcastle under Lyme has not measured any exceedances of this objective in the last five years.

Monitoring undertaken in 2021 has not identified any exceedances of either the NO<sub>2</sub> hourly mean or annual mean objective in any areas of the Borough.

### Kidsgrove AQMA 2017 to 2021

This AQMA is shown in Figure D. 2. Trends in annual mean NO<sub>2</sub> concentrations for the past five calendar years 2017 to 2021 are shown in Figure A.1. The highest measured NO<sub>2</sub> annual mean level was 37.8 µg/m<sup>3</sup> at DT105, junction of A50 / Victoria Avenue. This is a signalised junction, which is heavily congested at peak times. The Council will continue to monitor NO<sub>2</sub> levels at all diffusion tube location in this area and continue working with Staffordshire Highways to explore options to improve congestion and reduce levels of NO<sub>2</sub>.

For the areas in Kidsgrove outside of the AQMA which are monitored as detailed in Figure D. 3 and Figure D. 4, NO<sub>2</sub> concentrations are shown in Figure A.1. These locations have been chosen as part of the ministerial directive work for the A53 corridor. These locations do not show any exceedance of the NO<sub>2</sub> annual mean limit value which applies at places where the public have access.

### Newcastle Town AQMA 2017 to 2021

This AQMA is shown in Figure D. 9 and Figure D. 10. Trends in annual mean NO<sub>2</sub> concentrations for the past five calendar years 2017 to 2021 are shown in Figure A.2.

The highest measured NO<sub>2</sub> annual mean level was 37.5 µg/m<sup>3</sup> at DT95, 76 London Road, Newcastle. This property is the start of a row of terraced properties which sit at the back of a dual carriageway on one of the main routes into the town centre. Analysis of data for this area shows no clear trend and there is considered to be a risk of potential exceedance of the annual mean NO<sub>2</sub> objective in future years. The Council will continue to monitor NO<sub>2</sub> levels at all diffusion tube location in this area and continue working with Staffordshire Highways to explore options to improve congestion and reduce levels of NO<sub>2</sub>.

For the areas in the Town Centre AQMA which are monitored for compliance against the NO<sub>2</sub> annual mean limit value of 40 µg/m<sup>3</sup>, which is subject of a ministerial directive served on the Council, this applies at places where the public have access. These monitoring locations prefixed with N are displayed on Figure D. 9 and Figure D. 10. See Figure A.2 for EU Limit Value data since 2020.

These locations do not show any exceedance of the NO<sub>2</sub> annual mean limit value of 40 µg/m<sup>3</sup>. However, work is still being undertaken to ensure compliance in the shortest possible time with the directive given that there is only 2 years of monitoring data and modelling accepted by JAQU undertaken pre-pandemic has shown that natural compliance is not achieved until 2027.

### Maybank, Wolstanton and Porthill AQMA 2017 to 2021

This AQMA is shown in Figure D. 7. Trends in annual mean NO<sub>2</sub> concentrations for the past five calendar years 2017 to 2021 are shown in Figure A. 3. The highest measured NO<sub>2</sub> annual mean level was 32.5 µg/m<sup>3</sup> at DT103 Garage site at junction of Church Street, Grange Lane. This property is currently a garage block, however interest has been shown in redevelopment of this site for residential purposes. The junction is also due to be upgraded from a traffic lighted junction to a roundabout prior to the opening of the Etruria Valley Link Road. Although levels of NO<sub>2</sub> across all sites in this area have been below the objective for a number of years, the Council will continue to monitor the impacts on NO<sub>2</sub> for at least five years post opening of the Etruria Valley Link Road which is anticipated in spring 2023. We will also continue to monitor in this location for at least five years once measures on the A53 corridor, designed to achieve compliance with the NO<sub>2</sub> annual mean limit value have been implemented.

### Little Madeley – Collingwood AQMA 4

This AQMA and diffusion tube monitoring location is shown in Figure A. 4. Annual mean NO<sub>2</sub> concentrations for the past five calendar years 2017 to 2021 are shown in Figure A. 4. The highest measured NO<sub>2</sub> annual mean level was 18.3 µg/m<sup>3</sup>. Trends since 2017 show that the NO<sub>2</sub> annual mean objective has been consistently below the 40 µg/m<sup>3</sup>. Accordingly we plan to revoke this AQMA prior to the next ASR.

### Areas outside of current AQMA's

A network of NO<sub>2</sub> diffusion tubes has been deployed across areas of the Borough which sit outside of the current AQMA's. These have been in place since the Council was served with a Ministerial Direction for non compliance with the NO<sub>2</sub> annual mean EU Limit value for the A53 corridor at Basford. These sites have been chosen to assist with modelling and also to identify if air quality is being affected for example by drivers using alternative routes, once measures to address the EU Limit Value have been implemented. These areas are currently compliant with both the annual and daily mean NO<sub>2</sub> objectives and the annual mean NO<sub>2</sub> limit value. Maps showing the location of monitoring sites, are shown in Figure D. 3, Figure D. 4, Figure D. 5, Figure D. 6, Figure D. 8, Figure D. 12, Figure D. 13, whilst results are given in Table A. 4. These sites have an alternative reference prefixed with N.

### Air Pollutants attributed to Walleys Quarry Landfill monitored in Silverdale

The Environment Agency has undertaken monitoring for a range of pollutants associated with fugitive emissions from Walleys Quarry Landfill, an active non-hazardous waste landfill located in Silverdale, Newcastle under Lyme. The location of this site is shown in Figure 1.

The has involved monitoring for the following pollutants since early March 2021 at four locations representative of exposure at the principal wind directions in this location as shown in Figure 2 - Monitoring locations around the site

- NO<sub>2</sub>
- PM<sub>10</sub>
- PM<sub>2.5</sub>
- H<sub>2</sub>S

- CH<sub>4</sub>
- SO<sub>2</sub>
- VOC's (BTEX)

The results have been independently assessed against UK and international air quality and nuisance / health based standards by UKHSA. With the exception of H<sub>2</sub>S, all results are below UK air quality objectives and health based standards.

The hydrogen sulphide data up to the end of January 2022 shows continuing exposure to the population around the site. For two of the monitoring sites (MMF1 and MMF2) concentrations are below the long-term (lifetime) health-based guidance value, as they have been since June/July 2021. The third site (MMF6) monthly average concentrations have been below the long-term (lifetime) health-based guidance value since July 2021, with the exception of January 2022, which showed a slight exceedance. The cumulative averages for MMF1, MMF2 and MMF6 are below the long term (lifetime) health-based guidance value. At the fourth site (MMF9), concentrations in January 2022 remain above the long-term (lifetime) health-based guidance value. The monthly average values had plateaued from September to December 2021 but were significantly higher in January 2022. Monitoring will continue in 2022 with the arrangement being reviewed in 2023.

The non-technical summary for March 2021 to January 2022 is available to view online at [https://consult.environment-agency.gov.uk/west-midlands/walleys-quarry-landfill-sliverdale/user\\_uploads/ukhsa-health-risk-assessment-air-quality-monitoring-report---january-2022.pdf](https://consult.environment-agency.gov.uk/west-midlands/walleys-quarry-landfill-sliverdale/user_uploads/ukhsa-health-risk-assessment-air-quality-monitoring-report---january-2022.pdf)

**Figure 1 – Location of Walleys Quarry Landfill Site**

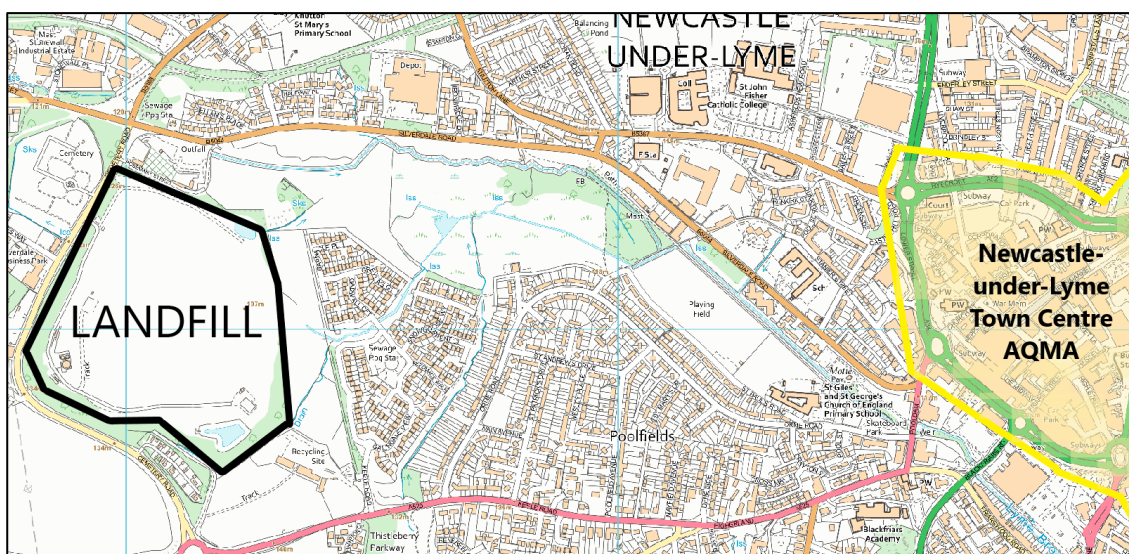
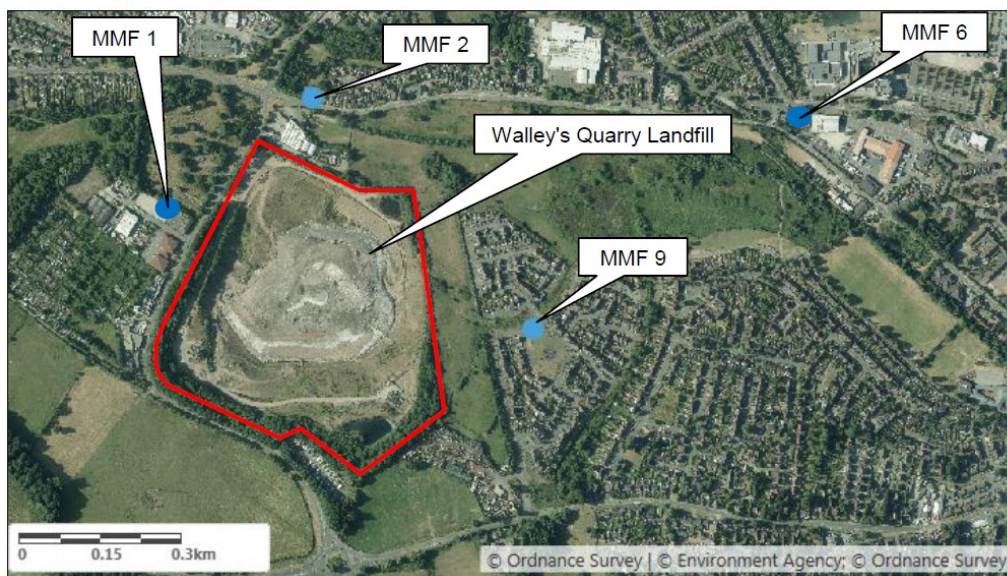


Figure 2 - Monitoring locations around the site



## Appendix A: Monitoring Results

**Table A. 1 – Details of Automatic Monitoring Sites**

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
CM1	Newcastle under Lyme Queen's Gardens	Roadside	385054	346134	NO <sub>2</sub>	YES	Chemiluminescent	2	3	2

**Notes:**

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable

**Table A. 2 – Details of Non-Automatic Monitoring Sites**

Site Name	Location	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
DTK1	A34 Holy Trinity	Kerbside	385051	345726	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	22.0	3.0		
DTK2	76 King St, N/C	Urban Centre	385469	346362	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	3.0		
DTUB1	Wolstanton, Harington St	Kerbside	384739	348326	NO <sub>2</sub>	NO	7.0	2.0		
DTUB2	Westlands, 4 Sneyd Crescent	Kerbside	383916	345059	NO <sub>2</sub>	NO	23.0	2.0		
DT3	Collingwood, 3 Newcastle Rd	Rural	378116	345488	NO <sub>2</sub>	YES - AQMA 4: Little Madeley	0.2	128.0		
DT6	106 Liverpool Rd	Suburban	384014	354429	NO <sub>2</sub>	YES - AQMA 1: Liverpool Road, Kidsgrove	0.2	4.0		
DT9	32 Porthill Bank	Suburban	385519	349055	NO <sub>2</sub>	YES - AQMA 3: Maybank-Wolstanton-Porthill	0.2	6.0		
DT11	34 London Road, N/C	Suburban	385112	345636	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.3	3.0		
DT24	26 High St, May Bank	Roadside	385574	347530	NO <sub>2</sub>	YES - AQMA 3: Maybank-Wolstanton-Porthill	0.2	3.0		
DT28	Limbrick Cottage Shralebrook	Rural	377994	350105	NO <sub>2</sub>	NO	0.3	45.0		
DT34	15 Barracks Road	Urban Centre	385059	345840	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	1.0	4.0		
DT39	4/6 Liverpool Road, Kidsgrove	Suburban	383560	354739	NO <sub>2</sub>	YES - AQMA 1: Liverpool Road, Kidsgrove	0.2	2.0		
DT40	Banktop Court, Porthill	Suburban	385128	348811	NO <sub>2</sub>	YES - AQMA 3: Maybank-Wolstanton-Porthill	0.2	20.0		
DT46	1 London Road (Trinity Court)	Urban Centre	385073	345685	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	4.0		
DT47	1 London Rd (Brook La)	Urban Centre	385023	345678	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.3	5.0		
DT49	2 Vale View, Porthill	Urban Centre	385595	349129	NO <sub>2</sub>	YES - AQMA 3: Maybank-Wolstanton-Porthill	0.3	6.0		
DT64	Kidsgrove Carpets 57 - 59 Liverpool Road	Urban Centre	383950	354445	NO <sub>2</sub>	YES - AQMA 1: Liverpool Road, Kidsgrove	0.2	10.0		
DT72	134 High Street Newcastle	Roadside	384981	345750	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	3.0		
DT73	21 London Road Newcastle	Roadside	385070	345738	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	4.0		
DT74	39 London Road Newcastle	Roadside	385132	345640	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	4.0		
DT76	11 Brunswick Street Newcastle	Roadside	385226	346156	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0		
DT84	102 King Street Newcastle	Roadside	385548	346400	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0		

Site Name	Location	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
DT85	106 King Street Newcastle	Urban Centre	385575	346413	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	5.0		
DT86	Hassell C.P. School Barracks Road N/C	Urban Centre	385075	345910	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	5.0		
DT87	Blue Chilli 1 King Street Newcastle	Urban Centre	385105	346225	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	5.0		
DT88	27 Lower Street Newcastle	Urban Centre	384709	345881	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	5.0		
DT91	Queens Gardens, Newcastle	Urban Centre	385054	346134	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	1.0	5.0		
DT92	41/43 Liverpool Road Kidsgrove	Urban Centre	383890	354461	NO <sub>2</sub>	YES - AQMA 1: Liverpool Road, Kidsgrove	1.0	5.0		
DT93	118 Liverpool Road Kidsgrove	Urban Centre	384056	354393	NO <sub>2</sub>	YES - AQMA 1: Liverpool Road, Kidsgrove	0.2	2.0		
DT94	116 Liverpool Road Kidsgrove	Urban Centre	385171	345539	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	4.0		
DT95	76 London Road Newcastle	Roadside	385131	345601	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0		
DT96	On Lamppost Next JJ Design London Road Newcastle	Roadside	384795	345796	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	3.0		
DT97	Blackfriars/ Lower Street	Roadside	385327	346148	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0		
DT98	Newcastle Taxis Brunswick Street	Roadside	384689	346284	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0		
DT100	Sainsbury's Carpark Near to Courts	Roadside	384806	345842	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0		
DT101	Blackburn House Lower Street Newcastle	Roadside	384609	346007	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0		
DT102	Maxims Lower Street Newcastle	Roadside	385682	347909	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0		
DT103	Grange Lange/High Street Wolstanton	Roadside	385213	346270	NO <sub>2</sub>	YES - AQMA 3: Maybank-Wolstanton-Porthill	0.2	2.0		
DT104	7 King Street Newcastle	Roadside	383991	354418	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0		
DT105	The Avenue Kidsgrove	Urban Centre	384030	354416	NO <sub>2</sub>	YES - AQMA 1: Liverpool Road, Kidsgrove	3.0	1.0		
*N1c	Knutton Lane	Roadside	384495	346298	NO <sub>2</sub>	NO	4.0	2.0		
*N2c	24A Clayton Road, Newcastle	Roadside	384961	345346	NO <sub>2</sub>	NO	5.0	2.0		

Site Name	Location	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
*N3c	Clayton Road (Opp Nuffield)	Roadside	385190	343318	NO <sub>2</sub>	NO	10.0	3.0		
*N4c	Holiday Inn Layby	Roadside	385110	342314	NO <sub>2</sub>	NO	49.0	2.0		
*N5c	Talke Road A34 Bradwell	Roadside	383882	349558	NO <sub>2</sub>	NO	25.0	2.0		
*N6c	A53 Whitmore Road	Roadside	382286	341956	NO <sub>2</sub>	NO	120.0	2.0		
*N7c	A53 Whitmore Road/ Seabridge Lane	Roadside	383052	343666	NO <sub>2</sub>	NO	107.0	2.0		
*N8c	9 Sneyd Avenue	Roadside	383953	344832	NO <sub>2</sub>	NO	5.0	2.0		
*N9c	Newcastle Community School Layby	Roadside	383545	345195	NO <sub>2</sub>	NO	20.0	2.0		
*N10c	Gallowstree Lane	Roadside	383157	345431	NO <sub>2</sub>	NO	40.0	2.0		
*N11c	Clough Hall Drive	Roadside	383199	352740	NO <sub>2</sub>	NO	10.0	2.0		
*N12c	154 Newcastle Road	Roadside	382934	353388	NO <sub>2</sub>	NO	10.0	2.0		
*N13c	Butt Lane Primary School	Roadside	382600	354062	NO <sub>2</sub>	NO	15.0	2.0		
*N14c	Pets and Pastimes, Butt Lane	Roadside	382707	354305	NO <sub>2</sub>	NO	2.0	2.0		
*N15c	One-Sure Insurance, Butt Lane	Roadside	382736	354385	NO <sub>2</sub>	NO	10.0	2.0		
*N16c	Aldi Bus Stop, Liverpool Road, Kidsgrove	Roadside	384261	354207	NO <sub>2</sub>	NO	10.0	3.0		
*N17c	Skate Park, Liverpool Road, Kidsgrove	Roadside	384638	354133	NO <sub>2</sub>	NO	20.0	2.0		
*N18c	49 Kidsgrove Bank	Roadside	385019	353832	NO <sub>2</sub>	NO	20.0	2.0		
*N19c	Adlington House Care Home, Wolstanton	Roadside	385387	348389	NO <sub>2</sub>	YES - AQMA 3: Maybank-Wolstanton-Porthill	5.0	2.0		
*N20c	Morris Square, Wolstanton	Roadside	385556	348224	NO <sub>2</sub>	YES - AQMA 3: Maybank-Wolstanton-Porthill	20.0	2.0		
*N21c	Victoria Public House, May Bank	Roadside	385416	347424	NO <sub>2</sub>	NO	10.0	2.0		
*N22c	34 Brampton Road	Roadside	385512	347373	NO <sub>2</sub>	NO	20.0	2.0		
*N23c	Ebenezer House, Newcastle	Roadside	384968	346228	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	30.0	2.0		
*N24c	St Georges Church, Brampton	Roadside	385098	346395	NO <sub>2</sub>	NO	20.0	2.0		
*N25c	25 King Street, Newcastle	Roadside	385463	346374	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	5.0	2.0		
*N26c	120 Etruria Road	Roadside	385612	346436	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	5.0	2.0		

Site Name	Location	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m)	Distance to Kerb of Nearest Road (m)	Tube Co-located with a Continuous Analyser	Height (m)
*N27c	Charlotte House, Etruria Road	Roadside	385926	346580	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	5.0	2.0		
*N28c	526 Etruria Road, Basford	Roadside	386009	346600	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	7.0	2.0		
*N29c	Andrew Place	Roadside	385518	346128	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	20.0	2.0		
*N30c	No 1 London Road Trinity Court on Road Sign	Roadside	385078	345687	NO <sub>2</sub>	YES - AQMA 2: Newcastle-under-Lyme Town Centre	4.0	2.0		
*N31c	Old Garage site, Cemetery Road	Roadside	382795	346011	NO <sub>2</sub>	NO	0.0	2.0		
*N32c	Post Office Depot, Church Lane	Roadside	383113	346592	NO <sub>2</sub>	NO	20.0	2.0		
*N33c	Church Lane/ Acacia Gardens	Roadside	383302	346727	NO <sub>2</sub>	NO	20.0	2.0		
*N34c	Lower Milehouse Lane opposite Morrison's Delivery	Roadside	383930	347273	NO <sub>2</sub>	NO	10.0	2.0		
*N35c	Pelican Crossing Lower Milehouse Lane near to Milehouse Restaurant	Roadside	384337	347534	NO <sub>2</sub>	NO	5.0	2.0		
*N36c	A34 Bustop by Bakery	Roadside	384207	347915	NO <sub>2</sub>	NO	50.0	2.0		
*N37c	Back of Road Sign near to Rosendale Avenue	Roadside	384021	348925	NO <sub>2</sub>	NO	10.0	2.0		
*N38c	A34 On Traffic Sign near to Parkhouse Industrial West (Screwfix)	Roadside	383764	349912	NO <sub>2</sub>	NO	0.0	2.0		
*N39c	On Entrance to Beta Way on lamp post with Camera Sign.	Roadside	383670	350326	NO <sub>2</sub>	NO	0.0	2.0		
*N40c	On Give way sign exit to High Carr Business Park.	Roadside	383587	350790	NO <sub>2</sub>	NO	80.0	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.  
 (3) Tubes prefixed \* are representative of public exposure for assessing compliance with the NO<sub>2</sub> EU Limit Value.

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

Site 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 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
385046	346147	Urban Centre	100	84,4.2	98	23.1	23	25.6	18	23.2

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

**Notes:**

The annual mean concentrations are presented as µg/m<sup>3</sup>.

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

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Table A. 4 - Annual Mean NO<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>)

Diffusion Tube ID	Alternative reference	Location	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2021 (%)	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> )				
								2017	2018	2019	2020	2021
DTK1		A34 Holy Trinity	385051	345726	Kerbside	100	100.0	<b>41.7</b>	37.2	<b>47.4</b>	27.4	31.4
DTK2		76 King St, N/C	385469	346362	Urban Centre	100	92.3	29.7	26.0	28.9	20.1	21.4
DTUB1		Wolstanton, Haritngton St	384739	348326	Kerbside	100	100.0	19.0	17.7	17.9	12.3	13.6
DTUB2		Westlands, 4 Sneyd Crescent	383916	345059	Kerbside	100	100.0	15.5	15.3	15.0	9.9	10.8
DT3		Collingwood, 3 Newcastle Rd	378116	345488	Rural	100	100.0	30.7	24.8	27.3	18.4	18.3
DT6		106 Liverpool Rd	384014	354429	Suburban	100	100.0	37.7	37.1	38.6	27.3	30.6
DT9		32 Porthill Bank	385519	349055	Suburban	100	100.0	33.4	29.3	33.2	24.6	26.9
DT11		34 London Road, N/C	385112	345636	Suburban	100	100.0	39.5	35.1	<b>56.5</b>	25.7	29.6
DT24		26 High St, May Bank	385574	347530	Roadside	100	92.3	35.3	30.4	34.8	22.9	25.3
DT28		Limbrick Cottage Shralebrook	377994	350105	Rural	100	100.0	29.9	25.2	25.9	18.1	21.3
DT34		15 Barracks Road	385059	345840	Urban Centre	100	100.0	32.1	29.2	33.7	21.2	25.4
DT39		4/6 Liverpool Road, Kidsgrove	383560	354739	Suburban	100	100.0	33.4	31.7	34.9	23.6	26.9
DT40		Banktop Court, Porthill	385128	348811	Suburban	100	100.0	28.3	25.2	26.5	19.4	20.5
DT46		1 London Road (Trinity Court)	385073	345685	Urban Centre	100	90.4	30.1	27.3	28.3	18.6	21.7
DT47		1 London Rd (Brook La)	385023	345678	Urban Centre	100	100.0	25.8	24.7	28.0	19.2	23.6
DT49		2 Vale View, Porthill	385595	349129	Urban Centre	100	100.0	31.5	27.2	31.9	21.9	25.1
DT64		Kidsgrove Carpets 57 - 59 Liverpool Road	383950	354445	Urban Centre	100	100.0	35.9	32.7	36.7	24.5	28.9
DT72		The Blackfriar, 134 High Street Newcastle	384981	345750	Roadside	100	100.0	30.4	26.9	36.7	24.3	27.4
DT73		21 London Road Newcastle	385070	345738	Roadside	100	100.0	32.0	29.3	32.6	27.7	30.8
DT74		39 London Road Newcastle	385132	345640	Roadside	100	82.7	33.0	31.9	35.7	22.6	27.2
DT76		11 Brunswick Street Newcastle	385226	346156	Roadside	100	100.0	36.5	33.1	37.7	27.1	35.0
DT84		102 King Street Newcastle	385548	346400	Roadside	100	100.0	35.1	33.6	37.1	27.0	28.5
DT85		106 King Street Newcastle	385575	346413	Urban Centre	100	100.0	<b>40.0</b>	38.8	<b>44.2</b>	27.9	34.9
DT86		Hassell C.P. School Barracks Road N/C	385075	345910	Urban Centre	100	90.4	29.7	27.9	28.6	21.3	22.0
DT87		Blue Chilli 1 King Street Newcastle	385105	346225	Urban Centre	100	100.0	37.9	34.9	39.4	25.6	32.2
DT88		27 Lower Street Newcastle	384709	345881	Urban Centre	100	100.0	29.9	28.2	30.8	20.8	23.1
DT89a, DT89b, DT89c		Queens Gardens, Newcastle	385054	346134	Urban Centre	100	100.0	30.2	29.8	30.1	20.9	24.5
DT92		41/43 Liverpool Road Kidsgrove	383890	354461	Urban Centre	100	100.0	33.5	31.9	33.3	22.5	26.3
DT93		118 Liverpool Road Kidsgrove	384056	354393	Urban Centre	100	100.0	30.4	28.2	31.5	21.7	24.7
DT94		116 Liverpool Road Kidsgrove	384030	354416	Urban Centre	100	100.0	32.1	31.8	47.2	30.2	37.5
DT95		76 London Road, Newcastle	385171	345539	Urban Centre	100	92.3	34.3	28.5	33.2	24.6	27.9
DT96		On Lamppost Next JJ Design London Road Newcastle	385131	345601	Roadside	100	90.4	39.8	35.8	39.5	28.9	28.1
DT97		Lower Street near Aldi	384795	345796	Roadside	100	92.3	28.6	27.6	29.8	19.7	16.9
DT98		NO 14 Takeaway, Brunswick Street	385327	346148	Roadside	100	84.6	37.7	36.5	38.8	24.3	30.1
DT100		Sainsbury's Carpark Near to Courts	384689	346284	Roadside	100	100.0	30.0	27.9	30.4	20.1	22.8
DT101		Blackburn House, Lower Street Newcastle	384806	345842	Roadside	100	100.0	33.0	32.8	32.9	21.6	26.0
DT102		Maxims Lower Street Newcastle	384609	346007	Roadside	100	92.3	<b>60.4</b>	<b>44.1</b>	<b>44.8</b>	31.4	32.5

Diffusion Tube ID	Alternative reference	Location	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2021 (%)	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> )				
								2017	2018	2019	2020	2021
DT103		Grange Lange/High Street Wolstanton	385682	347909	Roadside	100	100.0	24.1	25.1	23.1	17.1	16.6
DT104		7 King Street Newcastle	385213	346270	Roadside	100	100.0	38.2	37.9	58.8	34.5	37.8
DT105		The Avenue Kidsgrove	383991	354418	Roadside	100	100.0	38.2	26.0	29.7	18.7	21.2
<b>NO<sub>2</sub> annual mean EU Limit Value Exposure tubes below</b>												
DT107a, DT107b, DT107c	N1	Knutton Lane	384495	346298	Roadside	100	100.0				19.7	22.3
DT108a, DT108b, DT108c	N2	24A Clayton Road, Newcastle	384961	345346	Roadside	100	100.0				19.5	20.9
DT109a, DT109b, DT109c	N3	Clayton Road (Opp Nuffield)	385190	343318	Roadside	100	100.0				17.5	19.6
DT110a, DT110b, DT110c	N4	Holiday Inn Layby	385110	342314	Roadside	100	100.0				21.1	23.5
DT111a, DT111b, DT111c	N5	Talke Road, A34 Bradwell	383882	349558	Roadside	100	100.0				24.0	24.3
DT112a, DT112b, DT112c	N6	A53 Whitmore Road	382286	341956	Roadside	100	100.0				14.8	16.2
DT113a, DT113b, DT113c	N7	A53 Whitmore Road/ Seabridge Lane	383052	343666	Roadside	100	84.6				13.5	17.3
DT114a, DT114b, DT114c	N8	9 Sneyd Avenue	383953	344832	Roadside	100	100.0				16.1	17.5
DT115a, DT115b, DT115c	N9	Newcastle Community School Layby	383545	345195	Roadside	100	100.0				11.1	11.9
DT116a, DT116b, DT116c	N10	Gallowstree Lane	383157	345431	Roadside	100	100.0				16.4	17.1
DT117a, DT117b, DT117c	N11	Clough Hall Drive	383199	352740	Roadside	100	100.0				25.1	27.8
DT118a, DT118b, DT118c	N12	154 Newcastle Road	382934	353388	Roadside	100	100.0				18.5	20.8

Diffusion Tube ID	Alternative reference	Location	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2021 (%)	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> )				
								2017	2018	2019	2020	2021
DT119a, DT119b, DT119c	N13	Butt Lane Primary School	382600	354062	Roadside	100	100.0				18.0	20.6
DT120a, DT120b, DT120c	N14	Pets and Pastimes, Butt Lane	382707	354305	Roadside	100	100.0				24.2	28.7
DT121a, DT121b, DT121c	N15	One-Sure Insurance, Butt Lane	382736	354385	Roadside	100	100.0				20.4	21.4
DT122a, DT122b, DT122c	N16	Aldi Bus Stop, Liverpool Road, Kidsgrove	384261	354207	Roadside	100	100.0				20.8	23.0
DT123a, DT123b, DT123c	N17	Skate Park, Liverpool Road, Kidsgrove	384638	354133	Roadside	100	100.0				20.5	22.1
DT124a, DT124b, DT124c	N18	49 Kidsgrove Bank	385019	353832	Roadside	100	100.0				32.3	31.7
DT125a, DT125b, DT125c	N19	Adlington House Care Home, Wolstanton	385387	348389	Roadside	100	100.0				20.5	22.9
DT126a, DT126b, DT126c	N20	Morris Square, Wolstanton	385556	348224	Roadside	100	100.0				18.3	19.8
DT127a, DT127b, DT127c	N21	Victoria Public House, May Bank	385416	347424	Roadside	100	100.0				17.7	19.8
DT128a, DT128b, DT128c	N22	34 Brampton Road	385512	347373	Roadside	100	100.0				22.7	24.5
DT129a, DT129b, DT129c	N23	Ebanezer House, Newcastle	384968	346228	Roadside	100	100.0				19.8	23.6
DT130a, DT130b, DT130c	N24	St Georges Church, Brampton	385098	346395	Roadside	100	100.0				24.9	27.4
DT131a, DT131b, DT131c	N25	25 King Street, Newcastle	385463	346374	Roadside	100	100.0				28.9	28.2
DT132a, DT132b, DT132c	N26	120 Etruria Road	385612	346436	Roadside	100	100.0				25.2	27.7

Diffusion Tube ID	Alternative reference	Location	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%)	Valid Data Capture 2021 (%)	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> )				
								2017	2018	2019	2020	2021
DT133a, DT133b, DT133c	N27	Charlotte House, Etruria Road	385926	346580	Roadside	100	100.0				31.9	29.5
DT134a, DT134b, DT134c	N28	526 Etruria Road, Basford	386009	346600	Roadside	100	100.0				24.0	25.0
DT135a, DT135b, DT135c	N29	Andrew Place	385518	346128	Roadside	100	100.0				22.8	25.7
DT136a, DT136b, DT136c	N30	No 1 London Road Trinity Court on Road Sign	385078	345687	Roadside	100	100.0				22.2	25.9
DT137a, DT137b, DT137c	N31	Old Garage site, Cemetery Road	382795	346011	Roadside	100	100.0				15.8	17.2
DT138a, DT138b, DT138c	N32	Post Office Depot, Church Lane	383113	346592	Roadside	100	100.0				19.5	19.9
DT139a, DT139b, DT139c	N33	Church Lane/ Acacia Gardens	383302	346727	Roadside	100	100.0				13.7	13.9
DT140a, DT140b, DT140c	N34	Lower Milehouse Lane opposite Morrison's Delivery	383930	347273	Roadside	100	100.0				21.9	23.5
DT141a, DT141b, DT141c	N35	Pelican Crossing Lower Milehouse Lane near to Milehouse Restaurant	384337	347534	Roadside	100	100.0				26.1	28.6
DT142a, DT142b, DT142c	N36	A34 Bus stop by Bakery	384207	347915	Roadside	100	100.0				20.8	21.9
DT143a, DT143b, DT143c	N37	Back of Road Sign near to Rosendale Avenue	384021	348925	Roadside	100	100.0				30.7	33.9
DT144a, DT144b, DT144c	N38	A34 On Traffic Sign near to Parkhouse Industrial West (Screwfix)	383764	349912	Roadside	100	100.0				16.7	17.7
DT145a, DT145b, DT145c	N39	On Entrance to Beta Way on lamp post with Camera Sign.	383670	350326	Roadside	100	100.0				38.0	38.6
DT146a, DT146b, DT146c	N40	On Give way sign exit to High Carr Business Park.	383587	350790	Roadside	100	100.0				21.9	24.2

- ☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16**
- ☒ **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**.

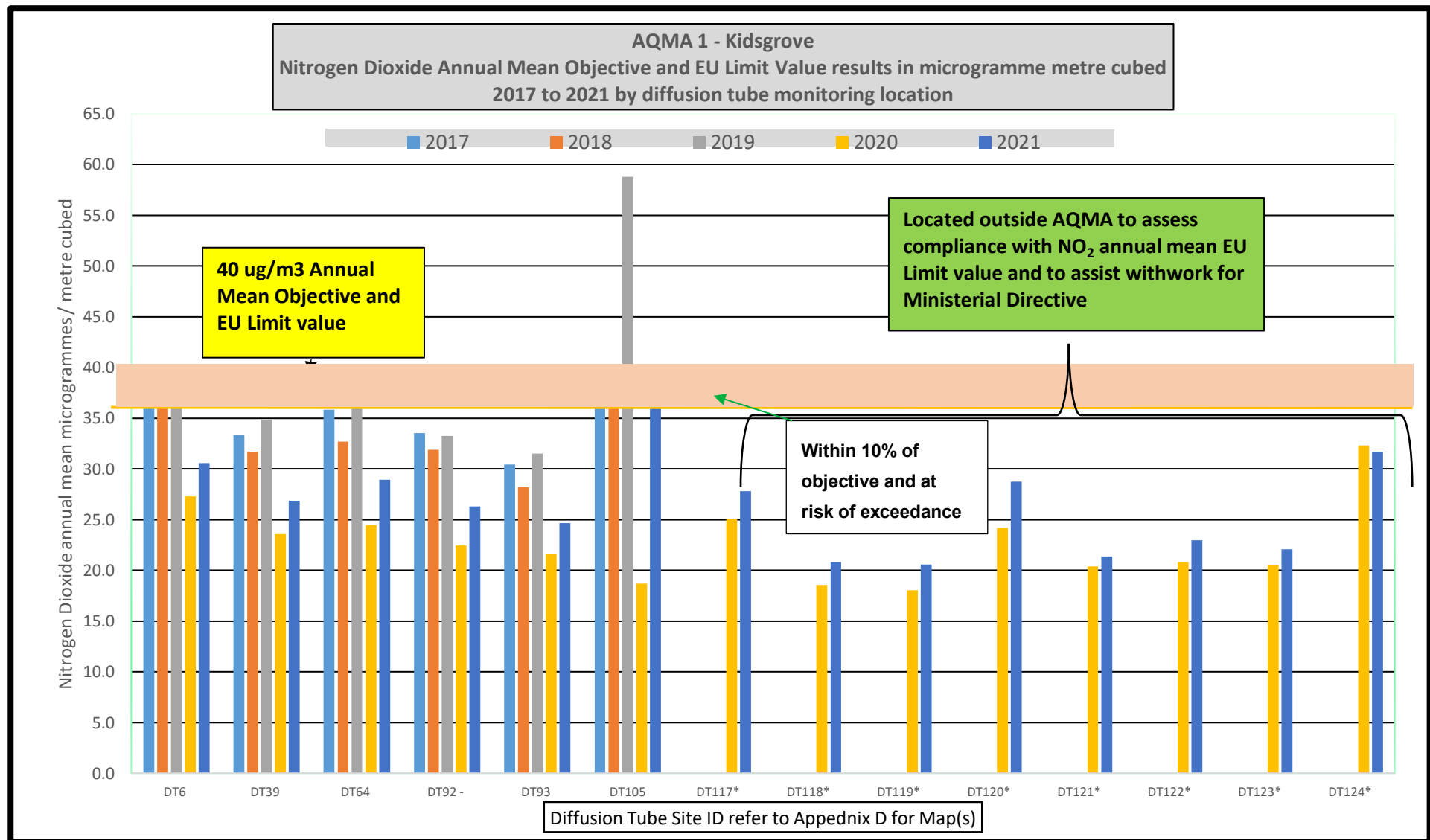
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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 2017 to 2021 – AQMA 1 Kidsgrove**



**Figure A.2 - Trends in Annual Mean NO<sub>2</sub> Concentrations 2017 to 2021 – AQMA 2 Newcastle Town**

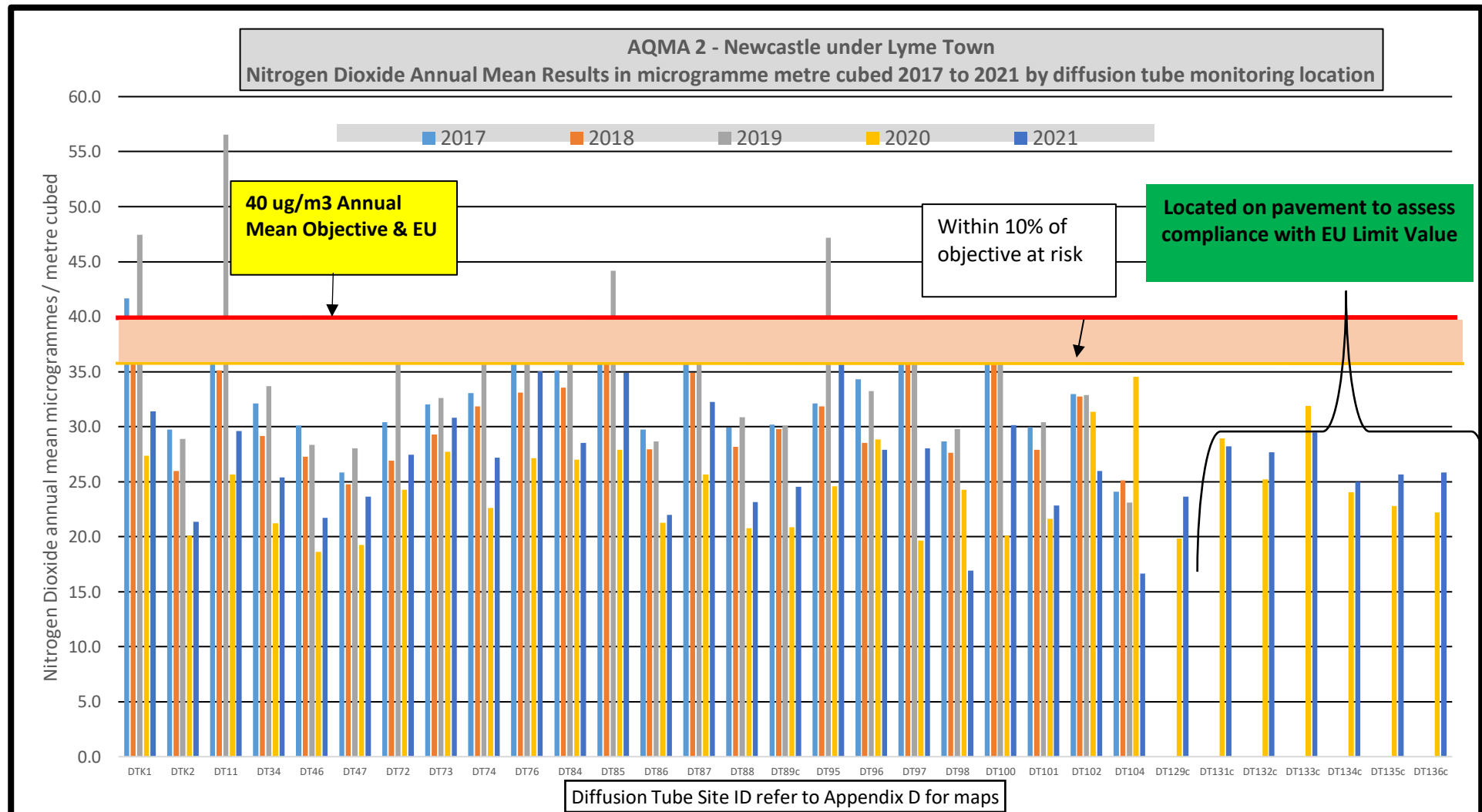
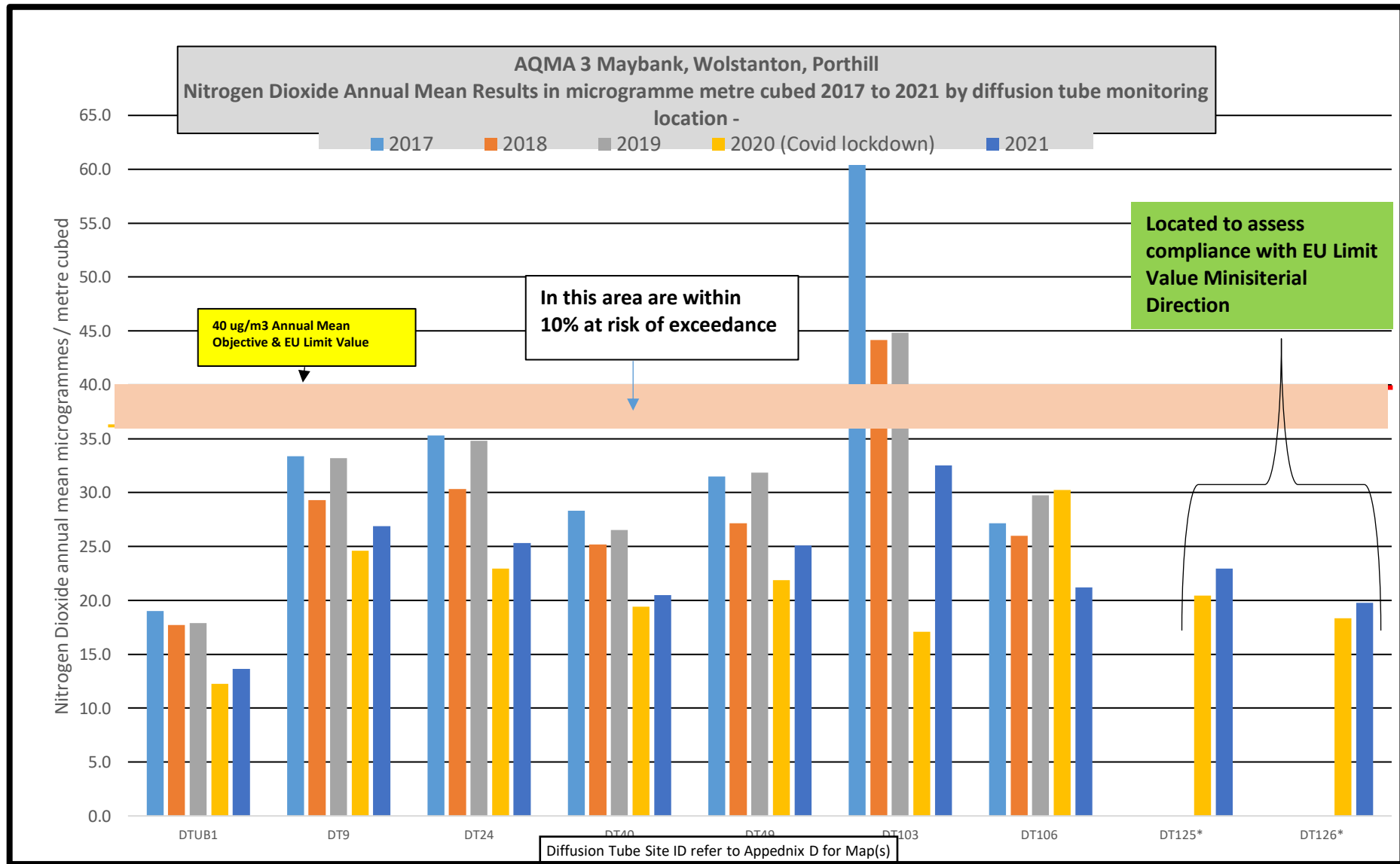
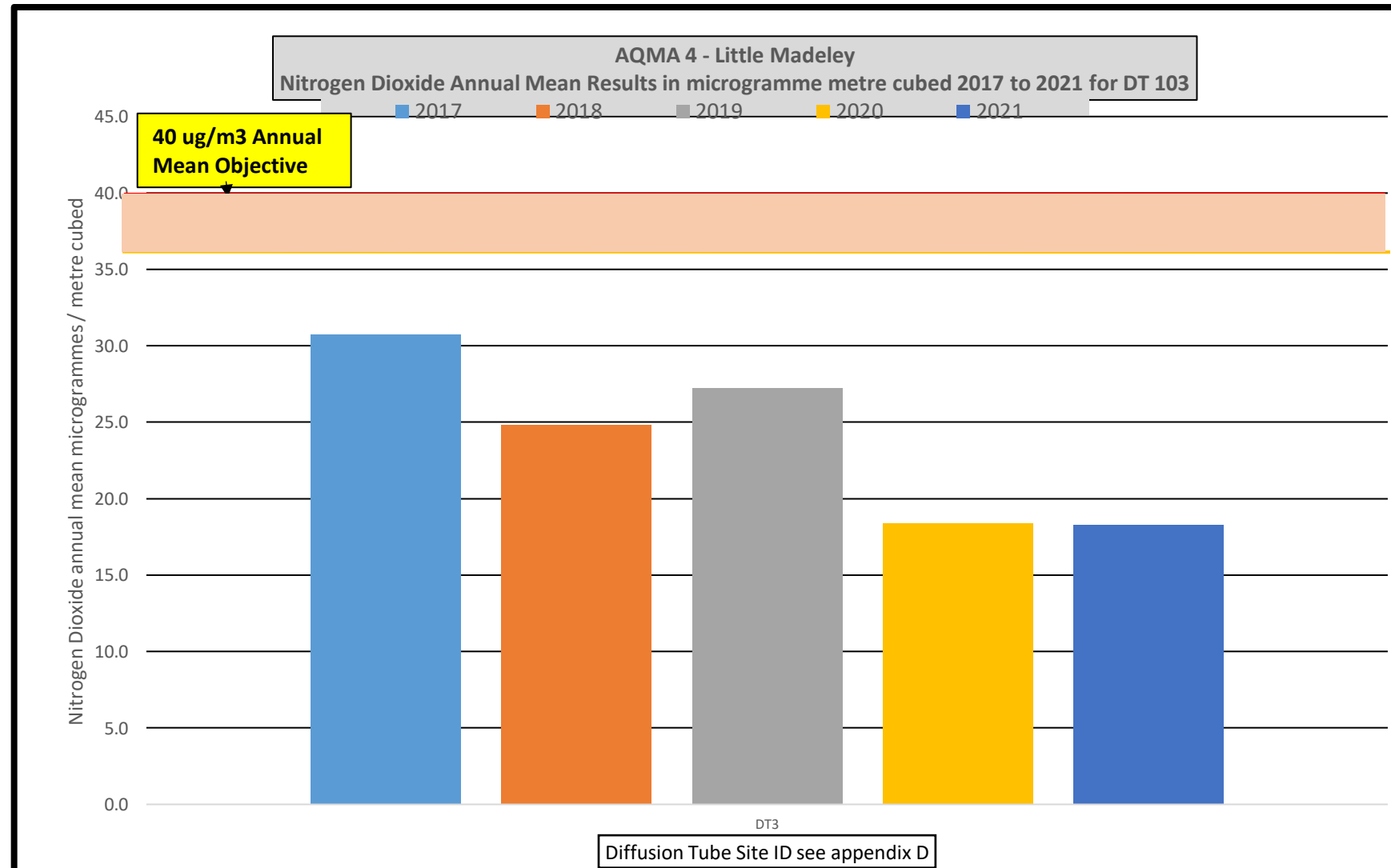


Figure A. 3 - Trends in Annual Mean NO<sub>2</sub> Concentrations 2017 to 2021 – AQMA 3 Maybank, Wolstanton, Porthill



**Figure A. 4 Trends in Annual Mean NO<sub>2</sub> Concentrations 2017 to 2021 – AQMA 4 Little Madeley, Collingwood**



**Table A. 5 – 1-Hour Mean NO<sub>2</sub> Monitoring Results, Number of 1-Hour Means > 200µg/m<sup>3</sup>**

Site 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 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
CM1	385046	346147	Urban Centre	100	84.4.2	0	0	0	0	0 (98 µg/m <sup>3</sup> )

**Notes:**

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

Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

## Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B. 1 – NO<sub>2</sub> 2021 Diffusion Tube Results (µg/m<sup>3</sup>)

DTID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.85)	Annual Mean: Distance Corrected to Nearest Exposure	Comments
DTK1	385051	345726	39.6	38.6	36.0	19.7	39.0	35.2	35.1	33.0	40.0	38.1	46.0	43.2	37.0	31.4		
DTK2	385469	346362	26.8	1.2	26.0	22.8	27.6	I/S	19.4	24.4	33.7	29.5	33.2	31.8	25.1	21.4		
DTUB1	384739	348326	24.4	19.6	16.6	9.5	14.3	11.9	11.3	11.9	16.4	15.8	22.2	18.7	16.1	13.6		
DTUB2	383916	345059	19.0	15.0	13.5	9.5	10.6	8.7	9.8	8.8	12.6	12.4	14.9	17.5	12.7	10.8		
DT3	378116	345488	22.8	19.4	27.0	18.8	22.2	18.9	15.9	19.6	19.5	23.0	26.7	24.8	21.6	18.3		
DT6	384014	354429	41.6	37.9	34.5	32.8	41.7	34.3	34.2	32.8	26.7	37.8	42.0	35.3	36.0	30.6		
DT9	385519	349055	35.7	33.8	34.6	24.3	33.2	29.8	28.3	30.0	35.5	27.3	33.3	33.8	31.6	26.9		
DT11	385112	345636	36.2	35.7	33.3	21.8	37.4	28.8	31.7	29.1	38.1	39.6	40.1	46.0	34.8	29.6		
DT24	385574	347530	29.8	31.2	31.8	20.7	32.3	I/S	29.0	26.3	31.4	29.9	37.4	27.9	29.8	25.3		
DT28	377994	350105	27.7	24.5	28.1	23.7	24.2	22.4	22.2	22.0	22.3	28.5	30.3	25.1	25.1	21.3		
DT34	385059	345840	30.8	28.7	32.0	22.9	31.3	29.6	25.4	26.5	34.7	29.9	33.3	33.1	29.9	25.4		
DT39	383560	354739	35.5	32.6	30.3	24.7	32.9	30.1	27.7	29.6	36.7	28.7	37.7	32.9	31.6	26.9		
DT40	385128	348811	19.9	29.4	25.7	21.1	24.6	19.1	20.0	20.0	28.6	23.9	29.9	27.2	24.1	20.5		
DT46	385073	345685	32.8	22.7	28.2	20.7	25.2	22.6	< 1.0	22.3	27.5	24.9	26.8	27.4	25.6	21.7		
DT47	385023	345678	23.9	28.8	25.5	25.2	24.7	24.1	23.1	45.3	31.0	23.5	28.7	29.9	27.8	23.6		
DT49	385595	349129	33.1	29.4	33.7	18.8	30.9	24.9	27.9	26.8	32.4	28.9	33.7	33.6	29.5	25.1		
DT64	383950	354445	40.8	38.4	34.2	23.6	34.6	27.7	30.9	29.6	37.8	36.7	37.1	37.3	34.1	28.9		
DT72	384981	345750	31.5	34.1	32.5	23.4	34.9	30.7	29.2	30.9	39.4	33.0	38.7	29.0	32.3	27.4		
DT73	385070	345738	36.4	37.8	32.0	30.5	38.0	33.9	36.3	35.0	38.9	35.8	43.7	36.8	36.3	30.8		
DT74	385132	345640	36.8	1.1	31.4	I/S	I/S	29.2	30.2	31.9	35.7	40.0	44.3	39.1	32.0	27.2		
DT76	385226	346156	41.6	54.9	36.3	25.3	50.9	30.2	31.6	37.4	50.3	51.6	43.4	41.1	41.2	35.0		
DT84	385548	346400	33.7	38.5	29.5	27.4	35.7	29.8	30.5	38.1	39.7	35.5	33.8	30.4	33.6	28.5		
DT85	385575	346413	36.3	38.9	62.9	32.8	47.0	39.2	39.0	31.6	49.5	38.7	39.2	37.4	41.0	34.9	34.9	
DT86	385075	345910	28.9	28.4	30.0	25.1	22.8	21.2	25.2	22.1	26.0	23.8	30.9	I/S	25.9	22.0		
DT87	385105	346225	36.9	37.9	34.0	25.9	45.0	35.8	38.2	35.7	42.5	43.6	42.5	37.1	37.9	32.2		
DT88	384709	345881	25.8	25.5	29.7	19.1	29.0	25.1	27.7	24.1	31.2	26.0	33.5	30.0	27.2	23.1		
DT89a	385054	346134	19.8	< 1.0	28.2	18.5	28.5	25.7	26.9	25.8	33.5	29.4	30.0	31.9	-	-		Co-Located with Continuous analyser Triplicate Site with DT89a, DT89b and DT89c - Annual data provided for DT89c only
DT89b	385054	346134	28.1	33.4	55.6	16.2	30.0	26.8	24.3	25.3	33.6	22.5	33.6	33.3	-	-		
DT89c	385054	346134	31.3	32.5	25.5	20.3	28.8	25.7	27.1	25.6	33.6	30.3	34.3	29.7	28.8	24.5		
DT92	383890	354461	37.9	36.1	29.8	22.2	30.3	24.5	24.3	25.7	36.9	34.7	33.5	35.1	30.9	26.3		
DT93	384056	354393	32.0	29.3	29.4	23.6	31.3	24.1	30.7	26.0	31.6	30.4	30.0	29.8	29.0	24.7		
DT94	385171	345539	I/S	44.4	40.3	40.8	49.7	43.1	42.2	41.6	50.2	42.5	46.1	44.8	44.2	37.5		
DT95	385131	345601	37.2	29.8	52.2	24.5	29.9	24.8	28.7	25.9	31.3	I/S	45.8	30.9	32.8	27.9		
DT96	384795	345796	40.8	35.2	30.7	18.4	33.3	28.0	31.6	I/S	35.3	32.9	41.3	35.5	33.0	28.1		
DT97	385327	346148	I/S	I/S	22.1	14.7	19.3	17.5	18.4	17.5	23.1	21.5	24.0	20.7	19.9	16.9		
DT98	384689	346284	39.3	39.9	37.0	24.7	39.5	29.1	32.9	29.7	42.4	37.2	41.3	32.4	35.5	30.1		
DT100	384806	345842	32.9	27.3	26.5	16.9	27.3	23.4	22.5	21.5	28.2	28.2	35.7	31.6	26.8	22.8		

DTID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.85)	Annual Mean: Distance Corrected to Nearest Exposure	Comments
DT101	384609	346007	I/S	31.5	27.2	27.2	32.7	29.9	30.0	30.6	34.3	27.1	34.6	30.8	30.5	26.0		
DT102	385682	347909	26.3	37.7	42.7	31.8	43.9	36.4	30.8	35.1	43.9	42.5	45.8	42.5	38.3	32.5		
DT103	385213	346270	17.4	21.4	19.9	15.8	20.8	15.6	17.2	16.4	23.8	18.7	21.3	26.5	19.6	16.6		
DT104	383991	354418	68.5	50.8	36.9	21.4	32.6	28.8	32.9	33.1	39.3	76.1	43.5	69.6	44.5	37.8	105	
DT105	384030	354416	24.6	27.1	23.9	15.0	24.2	17.9	19.4	19.0	41.6	26.9	30.7	28.8	24.9	21.2		Triplicate Site with DT107a, DT107b and DT107c - Annual data provided for DT107c only
DT107a	384495	346298	28.1	29.2	28.6	24.0	27.8	27.1	23.3	21.8	29.6	23.3	24.9	29.7	-	-		Triplicate Site with DT107a, DT107b and DT107c - Annual data provided for DT107c only
DT107b	384495	346298	19.7	28.2	27.5	22.8	29.5	26.0	24.3	22.2	30.2	23.0	21.5	23.4	-	-		Triplicate Site with DT107a, DT107b and DT107c - Annual data provided for DT107c only
DT107c	384495	346298	27.4	27.9	28.5	24.2	30.0	27.6	24.0	22.0	29.2	23.9	35.1	27.0	26.2	22.3		Triplicate Site with DT108a, DT108b and DT108c - Annual data provided for DT108c only
DT108a	384961	345346	21.8	26.4	30.6	21.1	24.8	20.7	24.5	20.7	26.5	27.0	28.3	21.1	-	-		Triplicate Site with DT108a, DT108b and DT108c - Annual data provided for DT108c only
DT108b	384961	345346	23.9	26.4	27.0	18.7	24.9	21.9	23.5	22.1	26.7	26.9	29.5	20.0	-	-		Triplicate Site with DT108a, DT108b and DT108c - Annual data provided for DT108c only
DT108c	384961	345346	32.4	25.8	29.7	17.6	25.2	20.6	21.0	21.2	25.8	25.8	29.4	26.2	24.6	20.9		Triplicate Site with DT109a, DT109b and DT109c - Annual data provided for DT109c only
DT109a	385190	343318	19.1	23.5	15.5	17.9	24.3	18.4	22.2	17.2	23.2	25.4	33.5	23.9	-	-		Triplicate Site with DT109a, DT109b and DT109c - Annual data provided for DT109c only
DT109b	385190	343318	27.4	26.7	16.4	19.3	22.8	18.2	23.3	15.2	24.9	27.4	33.6	28.7	-	-		Triplicate Site with DT109a, DT109b and DT109c - Annual data provided for DT109c only
DT109c	385190	343318	29.3	24.5	24.5	17.9	23.5	16.4	22.5	16.9	23.8	26.2	32.9	23.4	23.1	19.6		Triplicate Site with DT110a, DT110b and DT110c - Annual data provided for DT110c only
DT110a	385110	342314	27.9	25.9	31.4	21.9	30.4	27.3	29.1	25.4	29.6	32.7	32.4	27.5	-	-		Triplicate Site with DT110a, DT110b and DT110c - Annual data provided for DT110c only
DT110b	385110	342314	23.0	26.3	28.0	23.7	28.4	27.1	29.9	25.9	27.3	30.4	33.8	24.1	-	-		Triplicate Site with DT110a, DT110b and DT110c - Annual data provided for DT110c only
DT110c	385110	342314	29.9	26.4	29.5	16.1	29.8	20.8	28.5	26.0	30.7	32.0	32.3	24.0	27.7	23.5		Triplicate Site with DT111a, DT111b and DT111c - Annual data provided for DT111c only
DT111a	383882	349558	31.0	30.8	33.0	21.0	32.0	23.2	26.1	23.1	31.5	13.3	40.2	36.3	-	-		Triplicate Site with DT111a, DT111b and DT111c - Annual data provided for DT111c only
DT111b	383882	349558	28.2	30.3	33.0	19.8	30.7	22.6	24.9	21.3	31.6	33.6	37.0	30.6	-	-		Triplicate Site with DT111a, DT111b and DT111c - Annual data provided for DT111c only
DT111c	383882	349558	31.4	29.0	31.3	19.9	28.4	22.3	27.4	22.1	28.8	30.8	38.2	I/S	28.6	24.3		Triplicate Site with DT112a, DT112b and DT112c - Annual data provided for DT112c only
DT112a	382286	341956	22.0	19.0	18.1	12.7	17.2	18.2	17.7	16.7	22.6	18.2	22.3	19.4	-	-		Triplicate Site with DT112a, DT112b and DT112c - Annual data provided for DT112c only
DT112b	382286	341956	15.9	22.2	18.6	14.3	17.3	20.0	19.0	17.8	22.3	18.4	22.3	21.1	-	-		Triplicate Site with DT112a, DT112b and DT112c - Annual data provided for DT112c only

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DT112c	382286	341956	19.0	20.7	18.6	13.3	19.1	19.1	18.6	17.5	I/S	20.4	22.8	21.6	19.1	16.2		Triplicate Site with DT113a, DT113b and DT113c - Annual data provided for DT113c only
DT113a	383052	343666	I/S	22.2	16.9	12.8	I/S	17.3	19.3	19.1	25.0	23.3	22.5	16.7	-	-		Triplicate Site with DT113a, DT113b and DT113c - Annual data provided for DT113c only
DT113b	383052	343666	I/S	21.3	18.3	12.1	I/S	16.6	13.9	< 1.0	22.9	23.2	24.0	28.7	-	-		Triplicate Site with DT113a, DT113b and DT113c - Annual data provided for DT113c only
DT113c	383052	343666	I/S	22.7	17.9	13.2	I/S	18.3	18.9	18.7	24.1	21.8	21.0	37.5	20.3	17.3		Triplicate Site with DT114a, DT114b and DT114c - Annual data provided for DT114c only
DT114a	383953	344832	28.4	25.7	23.6	14.4	21.0	14.8	17.9	16.0	22.2	20.7	27.3	24.9	-	-		Triplicate Site with DT114a, DT114b and DT114c - Annual data provided for DT114c only
DT114b	383953	344832	23.7	24.8	21.2	13.9	19.5	17.1	17.3	16.0	22.8	21.5	27.3	15.8	-	-		Triplicate Site with DT114a, DT114b and DT114c - Annual data provided for DT114c only
DT114c	383953	344832	13.9	25.4	20.7	15.8	20.7	16.6	16.7	16.5	22.0	I/S	27.7	26.1	20.6	17.5		Triplicate Site with DT115a, DT115b and DT115c - Annual data provided for DT115c only
DT115a	383545	345195	20.8	15.3	16.1	12.2	13.3	12.8	13.3	10.7	15.9	11.1	19.8	13.2	-	-		Triplicate Site with DT115a, DT115b and DT115c - Annual data provided for DT115c only
DT115b	383545	345195	13.2	13.7	16.0	11.5	13.2	12.9	13.0	10.5	16.3	12.7	15.3	15.3	-	-		Triplicate Site with DT115a, DT115b and DT115c - Annual data provided for DT115c only
DT115c	383545	345195	13.3	13.9	14.0	12.6	13.5	12.4	14.0	10.8	14.5	12.4	18.6	14.9	14.0	11.9		Triplicate Site with DT116a, DT116b and DT116c - Annual data provided for DT116c only
DT116a	383157	345431	18.8	21.6	21.4	14.8	18.0	19.7	18.8	18.5	23.2	20.1	27.6	22.1	-	-		Triplicate Site with DT116a, DT116b and DT116c - Annual data provided for DT116c only
DT116b	383157	345431	16.0	19.6	20.9	13.1	19.4	17.6	18.4	18.2	23.3	22.0	28.1	21.0	-	-		Triplicate Site with DT116a, DT116b and DT116c - Annual data provided for DT116c only
DT116c	383157	345431	I/S	22.5	19.5	15.6	19.2	18.8	19.6	18.0	23.1	21.3	26.1	22.6	20.2	17.1		Triplicate Site with DT117a, DT117b and DT117c - Annual data provided for DT117c only
DT117a	383199	352740	39.1	27.3	34.2	24.9	34.3	29.5	32.4	32.1	37.5	36.2	41.9	29.8	-	-		Triplicate Site with DT117a, DT117b and DT117c - Annual data provided for DT117c only
DT117b	383199	352740	31.6	26.3	32.2	25.9	34.6	31.5	33.9	30.0	39.0	38.8	27.6	33.3	-	-		Triplicate Site with DT117a, DT117b and DT117c - Annual data provided for DT117c only
DT117c	383199	352740	36.3	27.3	28.8	22.3	34.6	31.7	32.2	34.0	36.3	40.0	39.9	30.1	32.7	27.8		Triplicate Site with DT118a, DT118b and DT118c - Annual data provided for DT118c only
DT118a	382934	353388	28.9	26.1	24.5	18.9	24.6	20.7	24.2	21.6	26.8	27.3	27.4	24.8	-	-		Triplicate Site with DT118a, DT118b and DT118c - Annual data provided for DT118c only
DT118b	382934	353388	24.5	25.7	23.7	18.0	27.3	20.5	24.1	22.1	28.0	26.0	26.7	28.5	-	-		Triplicate Site with DT118a, DT118b and DT118c - Annual data provided for DT118c only
DT118c	382934	353388	28.9	27.6	24.2	17.8	26.4	21.1	23.2	26.3	27.4	26.8	17.1	24.0	24.5	20.8		Triplicate Site with DT119a, DT119b and DT119c - Annual data provided for DT119c only
DT119a	382600	354062	26.4	28.1	23.0	22.9	21.9	22.2	21.1	23.8	30.1	24.2	24.3	25.2	-	-		Triplicate Site with DT119a, DT119b and DT119c - Annual data provided for DT119c only

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DT119b	382600	354062	29.4	31.2	24.0	21.5	24.0	21.8	20.0	22.0	28.4	24.0	22.6	23.0	-	-		Triplicate Site with DT119a, DT119b and DT119c - Annual data provided for DT119c only
DT119c	382600	354062	32.1	28.9	21.4	18.9	19.8	22.6	20.1	23.3	29.4	24.1	25.1	20.9	24.2	20.6		Triplicate Site with DT120a, DT120b and DT120c - Annual data provided for DT120c only
DT120a	382707	354305	31.6	28.1	35.4	44.5	37.4	32.1	29.2	31.3	36.3	35.0	40.4	29.0	-	-		Triplicate Site with DT120a, DT120b and DT120c - Annual data provided for DT120c only
DT120b	382707	354305	40.1	29.1	36.0	30.5	37.7	31.9	32.9	32.2	35.9	36.4	38.5	34.3	-	-		Triplicate Site with DT120a, DT120b and DT120c - Annual data provided for DT120c only
DT120c	382707	354305	26.6	29.0	35.9	23.9	37.3	33.3	32.6	30.8	35.0	34.2	39.3	32.8	33.8	28.7		Triplicate Site with DT121a, DT121b and DT121c - Annual data provided for DT121c only
DT121a	382736	354385	30.3	23.2	26.4	21.9	21.6	23.4	25.3	22.3	27.2	23.4	30.9	25.4	-	-		Triplicate Site with DT121a, DT121b and DT121c - Annual data provided for DT121c only
DT121b	382736	354385	25.3	26.1	27.7	22.2	24.9	23.9	I/S	20.3	27.8	22.5	30.4	26.5	-	-		Triplicate Site with DT121a, DT121b and DT121c - Annual data provided for DT121c only
DT121c	382736	354385	27.7	24.2	< 1.0	17.6	24.2	22.8	I/S	21.5	26.8	24.6	32.2	27.5	25.2	21.4		Triplicate Site with DT122a, DT122b and DT122c - Annual data provided for DT122c only
DT122a	384261	354207	30.6	27.8	27.4	28.2	28.0	26.5	25.7	22.1	26.2	22.1	28.3	25.0	-	-		Triplicate Site with DT122a, DT122b and DT122c - Annual data provided for DT122c only
DT122b	384261	354207	32.1	28.3	31.2	24.5	27.5	25.4	24.0	23.4	28.5	22.5	29.6	28.4	-	-		Triplicate Site with DT122a, DT122b and DT122c - Annual data provided for DT122c only
DT122c	384261	354207	35.2	30.6	30.6	26.8	28.7	25.5	25.8	23.7	27.2	21.5	30.5	23.8	27.0	23.0		Triplicate Site with DT123a, DT123b and DT123c - Annual data provided for DT123c only
DT123a	384638	354133	36.3	28.2	27.1	14.9	< 1.0	15.6	20.8	21.3	28.5	29.1	31.3	32.2	-	-		Triplicate Site with DT123a, DT123b and DT123c - Annual data provided for DT123c only
DT123b	384638	354133	31.8	25.6	22.5	25.0	23.6	18.7	21.7	10.8	27.0	31.5	30.1	32.7	-	-		Triplicate Site with DT123a, DT123b and DT123c - Annual data provided for DT123c only
DT123c	384638	354133	I/S	28.4	28.3	24.9	25.2	22.5	20.7	21.8	28.3	29.8	32.9	27.0	26.0	22.1		Triplicate Site with DT124a, DT124b and DT124c - Annual data provided for DT124c only
DT124a	385019	353832	49.7	38.9	45.2	12.8	35.9	32.8	35.7	34.6	41.4	30.5	49.5	41.4	-	-		Triplicate Site with DT124a, DT124b and DT124c - Annual data provided for DT124c only
DT124b	385019	353832	38.5	37.1	44.4	15.6	38.3	53.3	35.8	34.4	41.8	38.2	38.7	27.1	-	-		Triplicate Site with DT124a, DT124b and DT124c - Annual data provided for DT124c only
DT124c	385019	353832	39.0	39.7	41.4	22.1	32.9	34.0	35.7	34.9	40.6	41.4	45.0	43.7	37.3	31.7		Triplicate Site with DT125a, DT125b and DT125c - Annual data provided for DT125c only
DT125a	385387	348389	25.2	27.6	20.3	17.7	27.0	21.9	25.7	21.6	31.3	27.1	34.9	34.0	-	-		Triplicate Site with DT125a, DT125b and DT125c - Annual data provided for DT125c only
DT125b	385387	348389	35.5	28.6	29.6	17.5	26.4	22.5	25.9	22.7	31.5	30.2	31.8	32.7	-	-		Triplicate Site with DT125a, DT125b and DT125c - Annual data provided for DT125c only
DT125c	385387	348389	34.1	26.8	I/S	16.3	26.1	22.2	25.3	21.8	31.6	29.6	34.9	29.0	27.0	22.9		Triplicate Site with DT126a, DT126b and DT126c - Annual data provided for DT126c only

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DT126a	385556	348224	26.1	22.5	21.4	15.3	24.5	21.0	21.6	18.9	24.3	25.4	32.0	31.0	-	-		Triplicate Site with DT126a, DT126b and DT126c - Annual data provided for DT126c only
DT126b	385556	348224	25.5	25.4	24.2	16.3	24.1	19.6	18.2	19.8	26.2	24.9	29.9	31.8	-	-		Triplicate Site with DT126a, DT126b and DT126c - Annual data provided for DT126c only
DT126c	385556	348224	13.4	24.5	24.4	17.8	23.0	17.8	19.0	I/S	26.0	26.6	32.0	24.5	23.3	19.8		Triplicate Site with DT127a, DT127b and DT127c - Annual data provided for DT127c only
DT127a	385416	347424	29.0	31.5	22.0	14.9	23.3	19.6	21.0	20.0	25.1	25.4	28.7	27.7	-	-		Triplicate Site with DT127a, DT127b and DT127c - Annual data provided for DT127c only
DT127b	385416	347424	30.0	31.2	21.6	14.0	21.1	18.5	21.1	20.3	26.0	23.2	26.9	26.1	-	-		Triplicate Site with DT127a, DT127b and DT127c - Annual data provided for DT127c only
DT127c	385416	347424	18.2	29.9	19.9	14.0	22.3	21.2	20.8	19.8	25.6	24.6	28.6	25.7	23.3	19.8		Triplicate Site with DT128a, DT128b and DT128c - Annual data provided for DT128c only
DT128a	385512	347373	31.9	26.0	27.8	22.5	31.1	29.7	29.6	23.8	34.4	28.8	30.2	31.1	-	-		Triplicate Site with DT128a, DT128b and DT128c - Annual data provided for DT128c only
DT128b	385512	347373	I/S	25.5	26.7	21.1	32.0	30.4	I/S	26.1	33.4	26.8	31.0	22.0	-	-		Triplicate Site with DT128a, DT128b and DT128c - Annual data provided for DT128c only
DT128c	385512	347373	I/S	27.8	26.1	23.7	31.8	28.8	I/S	27.4	35.8	28.8	29.9	31.4	28.8	24.5		Triplicate Site with DT129a, DT129b and DT129c - Annual data provided for DT129c only
DT129a	384968	346228	28.6	31.3	26.8	22.7	31.4	22.5	25.1	< 1.0	34.7	30.2	33.1	31.5	-	-		Triplicate Site with DT129a, DT129b and DT129c - Annual data provided for DT129c only
DT129b	384968	346228	29.5	31.2	25.8	18.7	30.7	22.6	23.3	21.2	34.9	27.5	31.9	25.0	-	-		Triplicate Site with DT129a, DT129b and DT129c - Annual data provided for DT129c only
DT129c	384968	346228	33.8	30.0	26.8	21.9	29.9	22.9	22.3	22.8	34.4	29.2	32.2	32.2	27.8	23.6		Triplicate Site with DT130a, DT130b and DT130c - Annual data provided for DT130c only
DT130a	385098	346395	37.6	35.4	32.6	27.4	36.5	28.9	31.6	32.0	35.4	32.4	36.8	26.3	-	-		Triplicate Site with DT130a, DT130b and DT130c - Annual data provided for DT130c only
DT130b	385098	346395	30.2	36.2	24.3	22.1	35.7	27.9	30.4	31.1	39.8	36.1	39.4	32.5	-	-		Triplicate Site with DT130a, DT130b and DT130c - Annual data provided for DT130c only
DT130c	385098	346395	27.3	37.3	27.5	21.1	35.9	28.5	31.9	27.0	37.6	34.6	36.2	36.2	32.2	27.4		Triplicate Site with DT131a, DT131b and DT131c - Annual data provided for DT131c only
DT131a	385463	346374	43.0	33.8	34.1	22.0	34.6	32.1	33.5	33.0	38.3	34.3	40.1	38.4	-	-		Triplicate Site with DT131a, DT131b and DT131c - Annual data provided for DT131c only
DT131b	385463	346374	22.8	34.0	32.9	24.9	31.6	25.5	31.8	32.1	38.9	34.2	42.3	32.6	-	-		Triplicate Site with DT131a, DT131b and DT131c - Annual data provided for DT131c only
DT131c	385463	346374	24.0	31.9	35.9	25.1	I/S	33.5	33.2	32.0	38.7	I/S	38.6	33.5	33.2	28.2		Triplicate Site with DT132a, DT132b and DT132c - Annual data provided for DT132c only
DT132a	385612	346436	31.4	28.9	34.0	18.5	29.8	30.9	32.8	34.0	36.3	34.6	41.9	35.6	-	-		Triplicate Site with DT132a, DT132b and DT132c - Annual data provided for DT132c only
DT132b	385612	346436	36.4	28.0	32.7	21.7	30.3	30.3	31.0	33.2	36.0	34.1	39.5	38.6	-	-		Triplicate Site with DT132a, DT132b and DT132c - Annual data provided for DT132c only

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DT132c	385612	346436	35.5	28.8	35.5	18.8	31.1	32.8	29.9	32.9	36.0	30.1	43.4	36.4	32.5	27.7		Triplicate Site with DT133a, DT133b and DT133c - Annual data provided for DT133c only
DT133a	385926	346580	33.4	35.3	32.1	26.2	39.3	30.6	29.8	31.5	41.6	39.2	37.0	42.0	-	-		Triplicate Site with DT133a, DT133b and DT133c - Annual data provided for DT133c only
DT133b	385926	346580	33.5	39.2	33.7	22.3	41.1	30.5	29.0	30.0	44.7	38.5	39.4	33.4	-	-		Triplicate Site with DT133a, DT133b and DT133c - Annual data provided for DT133c only
DT133c	385926	346580	35.1	42.7	31.6	18.5	40.4	30.2	29.8	30.3	43.3	45.0	39.6	28.5	34.7	29.5		Triplicate Site with DT134a, DT134b and DT134c - Annual data provided for DT134c only
DT134a	386009	346600	< 1.0	32.9	32.1	22.9	30.5	28.3	28.1	26.6	36.0	33.4	37.1	27.6	-	-		Triplicate Site with DT134a, DT134b and DT134c - Annual data provided for DT134c only
DT134b	386009	346600	1.0	32.4	31.5	22.1	29.9	26.6	27.3	28.3	34.6	34.1	35.0	33.0	-	-		Triplicate Site with DT134a, DT134b and DT134c - Annual data provided for DT134c only
DT134c	386009	346600	25.2	33.2	32.5	22.1	30.2	27.9	28.6	28.5	38.2	35.7	35.9	35.4	29.4	25.0		Triplicate Site with DT135a, DT135b and DT135c - Annual data provided for DT135c only
DT135a	385518	346128	25.1	28.6	33.1	19.2	30.4	27.7	29.4	28.7	35.8	31.2	39.5	36.1	-	-		Triplicate Site with DT135a, DT135b and DT135c - Annual data provided for DT135c only
DT135b	385518	346128	23.9	30.6	29.3	17.8	31.8	25.4	29.9	28.9	34.6	30.2	39.7	37.8	-	-		Triplicate Site with DT135a, DT135b and DT135c - Annual data provided for DT135c only
DT135c	385518	346128	29.8	28.9	35.7	22.2	30.0	23.2	27.3	28.5	35.4	31.3	35.9	34.2	30.2	25.7		Triplicate Site with DT136a, DT136b and DT136c - Annual data provided for DT136c only
DT136a	385078	345687	34.8	28.1	31.9	21.1	27.4	25.9	30.3	26.5	33.1	33.3	36.2	32.1	-	-		Triplicate Site with DT136a, DT136b and DT136c - Annual data provided for DT136c only
DT136b	385078	345687	32.6	28.9	32.5	24.9	29.5	27.6	28.4	24.7	35.9	30.0	41.4	36.0	-	-		Triplicate Site with DT136a, DT136b and DT136c - Annual data provided for DT136c only
DT136c	385078	345687	24.5	27.9	31.7	21.1	30.2	I/S	27.6	25.1	32.6	32.3	45.2	36.8	30.4	25.9		Triplicate Site with DT137a, DT137b and DT137c - Annual data provided for DT137c only
DT137a	382795	346011	15.9	24.1	19.4	14.7	21.6	17.5	18.3	16.7	23.9	20.8	22.4	23.0	-	-		Triplicate Site with DT137a, DT137b and DT137c - Annual data provided for DT137c only
DT137b	382795	346011	13.6	26.8	19.9	16.3	20.0	17.7	18.3	17.0	23.5	21.6	22.5	23.4	-	-		Triplicate Site with DT137a, DT137b and DT137c - Annual data provided for DT137c only
DT137c	382795	346011	23.4	26.3	19.4	14.9	21.4	I/S	18.5	17.1	23.5	20.2	22.5	23.4	20.2	17.2		Triplicate Site with DT138a, DT138b and DT138c - Annual data provided for DT138c only
DT138a	383113	346592	23.5	30.7	25.9	16.4	23.3	17.2	19.3	18.9	29.9	I/S	26.1	26.0	-	-		Triplicate Site with DT138a, DT138b and DT138c - Annual data provided for DT138c only
DT138b	383113	346592	23.4	30.2	17.9	16.3	23.2	21.0	18.6	21.1	28.5	25.5	23.7	27.2	-	-		Triplicate Site with DT138a, DT138b and DT138c - Annual data provided for DT138c only
DT138c	383113	346592	22.6	29.1	25.6	16.5	23.3	19.9	18.0	20.5	28.7	27.3	24.7	I/S	23.4	19.9		Triplicate Site with DT139a, DT139b and DT139c - Annual data provided for DT139c only
DT139a	383302	346727	20.6	21.2	16.3	11.1	13.1	13.5	12.3	12.1	18.7	18.4	19.3	19.3	-	-		Triplicate Site with DT139a, DT139b and DT139c - Annual data provided for DT139c only

DTID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.85)	Annual Mean: Distance Corrected to Nearest Exposure	Comments
DT139b	383302	346727	19.4	18.7	17.6	8.6	13.7	12.7	12.6	12.8	17.7	17.6	19.0	19.9	-	-		Triplicate Site with DT139a, DT139b and DT139c - Annual data provided for DT139c only
DT139c	383302	346727	24.9	20.3	17.0	10.9	13.9	12.1	12.9	13.4	18.4	18.8	I/S	20.5	16.3	13.9		Triplicate Site with DT140a, DT140b and DT140c - Annual data provided for DT140c only
DT140a	383930	347273	34.0	30.7	28.2	20.3	26.2	25.5	22.7	24.3	31.7	28.4	34.2	31.5	-	-		Triplicate Site with DT140a, DT140b and DT140c - Annual data provided for DT140c only
DT140b	383930	347273	32.1	30.2	26.9	19.2	28.4	24.5	25.8	24.7	30.9	27.3	32.2	30.9	-	-		Triplicate Site with DT140a, DT140b and DT140c - Annual data provided for DT140c only
DT140c	383930	347273	27.4	31.5	27.8	19.9	27.5	25.5	26.2	22.6	31.8	26.3	32.4	27.0	27.7	23.5		Triplicate Site with DT141a, DT141b and DT141c - Annual data provided for DT141c only
DT141a	384337	347534	36.0	36.0	35.8	23.1	36.4	31.0	32.0	28.5	37.8	35.8	38.2	38.5	-	-		Triplicate Site with DT141a, DT141b and DT141c - Annual data provided for DT141c only
DT141b	384337	347534	31.3	30.5	35.8	20.0	37.0	31.0	31.3	28.4	38.0	31.4	42.0	39.1	-	-		Triplicate Site with DT141a, DT141b and DT141c - Annual data provided for DT141c only
DT141c	384337	347534	36.0	38.4	33.0	23.7	34.7	32.3	31.4	30.8	37.4	37.0	40.7	33.1	33.7	28.6		Triplicate Site with DT142a, DT142b and DT142c - Annual data provided for DT142c only
DT142a	384207	347915	29.7	27.8	27.3	19.2	24.1	22.8	24.7	21.6	30.3	26.4	30.5	31.4	-	-		Triplicate Site with DT142a, DT142b and DT142c - Annual data provided for DT142c only
DT142b	384207	347915	14.4	27.1	26.4	17.8	24.4	23.1	23.4	23.3	28.5	24.7	31.6	32.6	-	-		Triplicate Site with DT142a, DT142b and DT142c - Annual data provided for DT142c only
DT142c	384207	347915	28.1	28.9	27.3	18.1	25.2	21.9	23.8	22.9	28.0	25.8	34.9	31.6	25.8	21.9		Triplicate Site with DT143a, DT143b and DT143c - Annual data provided for DT143c only
DT143a	384021	348925	29.2	37.9	38.3	31.7	44.8	42.5	41.2	39.1	42.7	33.3	45.4	40.0	-	-		Triplicate Site with DT143a, DT143b and DT143c - Annual data provided for DT143c only
DT143b	384021	348925	37.6	36.4	41.3	31.4	44.7	41.3	47.1	38.9	49.4	40.3	48.1	35.9	-	-		Triplicate Site with DT143a, DT143b and DT143c - Annual data provided for DT143c only
DT143c	384021	348925	26.4	36.4	39.7	28.3	44.9	40.8	45.7	I/S	48.1	40.0	48.0	40.3	39.9	33.9		Triplicate Site with DT144a, DT144b and DT144c - Annual data provided for DT144c only
DT144a	383764	349912	24.1	26.7	21.2	17.9	14.9	21.2	21.4	19.5	26.5	18.2	20.4	21.4	-	-		Triplicate Site with DT144a, DT144b and DT144c - Annual data provided for DT144c only
DT144b	383764	349912	19.3	26.8	21.8	17.9	I/S	19.6	20.8	20.3	24.0	18.3	23.0	22.5	-	-		Triplicate Site with DT144a, DT144b and DT144c - Annual data provided for DT144c only
DT144c	383764	349912	18.6	25.5	I/S	16.6	I/S	21.5	19.1	19.6	25.2	18.4	23.6	20.5	20.8	17.7		Triplicate Site with DT145a, DT145b and DT145c - Annual data provided for DT145c only
DT145a	383670	350326	41.2	33.2	43.1	35.7	42.0	49.7	47.9	46.5	54.2	48.4	46.8	40.5	-	-		Triplicate Site with DT145a, DT145b and DT145c - Annual data provided for DT145c only
DT145b	383670	350326	32.9	42.6	43.3	30.5	50.9	56.1	47.1	46.7	58.8	49.7	53.4	47.1	-	-		Triplicate Site with DT145a, DT145b and DT145c - Annual data provided for DT145c only
DT145c	383670	350326	45.7	38.8	40.7	32.5	51.3	51.2	49.9	49.8	52.0	42.8	54.0	36.7	45.4	38.6		Triplicate Site with DT146a, DT146b and DT146c - Annual data provided for DT146c only

DTID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.85)	Annual Mean: Distance Corrected to Nearest Exposure	Comments
DT146a	383587	350790	28.5	27.3	27.6	17.9	30.6	28.7	32.2	26.4	35.1	32.5	38.0	27.5	-	-		Triplicate Site with DT146a, DT146b and DT146c - Annual data provided for DT146c only
DT146b	383587	350790	26.7	26.5	28.4	16.5	31.0	28.3	32.5	25.9	34.3	31.4	35.2	22.3	-	-		Triplicate Site with DT146a, DT146b and DT146c - Annual data provided for DT146c only
DT146c	383587	350790	26.6	22.4	27.9	17.6	31.2	29.4	30.9	26.5	34.1	30.6	35.8	20.2	28.5	24.2		

☒ All erroneous data has been removed from the NO<sub>2</sub> diffusion tube dataset presented in Table B.1

☒ National bias adjustment factor used

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

☒ Newcastle-under-Lyme Borough Council confirm that all 2021 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 Newcastle-under-Lyme Borough Council During 2021**

Intensive work has been carried out by Newcastle under Lyme Borough Council in conjunction with the Environment Agency, UK Health Security Agency, Staffordshire County Council Public Health and other bodies, to look into complaints concerning gaseous emissions from a landfill situated approximately 1.3 Kilometres outside of AQMA 2: Newcastle-under-Lyme Town Centre, regulated by the Environment Agency in accordance with the Environmental Permitting (England and Wales) Regulations 2016 (18)

The Committee on Climate Change, has called for a ban on all biodegradable waste sent to landfill by 2025, if the UK is to reach 'net zero emissions' by 2050. It is hoped that through improvements in the management of the site in conjunction with the ban on biodegradable waste by 2025, levels of gaseous emissions, including nitric oxides, will decrease from this site.

Newcastle-under-Lyme Borough Council has not identified any additional new sources relating to air quality within the reporting year of 2021.

### **Additional Air Quality Works Undertaken by Newcastle-under-Lyme Borough Council During 2021**

Newcastle-under-Lyme Borough Council has not completed any additional works within the reporting year of 2021

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

Staffordshire Scientific Services Laboratory supplied and analysed diffused tubes for Newcastle under Lyme Borough Council using the 20% TEA in water preparation method. The laboratory is

UKAS accredited to ISO/IEC 17025:2017 <sup>(15)</sup> and participates in the AIR-PT scheme run by LGC <sup>(16)</sup> and the Field Intercomparison Scheme run by NPL <sup>(17)</sup>

Monitoring has been completed in accordance with the 2021 Diffusion Tube Calendar <sup>(18)</sup>,

The subsequent valid data capture for the whole monitoring period was 100%.

### Diffusion Tube Annualisation

All diffusion tube monitoring locations within Newcastle-under-Lyme Borough Council recorded data capture in excess of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

### Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022ASR 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.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO<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.

Newcastle-under-Lyme Borough Council have applied a national bias adjustment factor of 0.85<sup>19</sup> to the 2021 monitoring data. A summary of bias adjustment factors used by Newcastle-under-Lyme Borough Council over the past five years is presented in Table C. 1

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<sup>15</sup> [https://www.ukas.com/wp-content/uploads/schedule\\_uploads/00002/0719Testing-Multiple.pdf](https://www.ukas.com/wp-content/uploads/schedule_uploads/00002/0719Testing-Multiple.pdf)

<sup>16</sup> <https://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html>

<sup>17</sup> <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/precision-and-accuracy/>

<sup>18</sup> <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-monitoring-calendar/>

<sup>19</sup> <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/> spreadsheet version number 09/22 for Staffordshire Scientific Services


**Table C. 1– Bias Adjustment Factor**

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	09/22	0.85
2020	National	09/21	0.85
2019	National	03/20	0.93
2018	National	03/18	0.93
2017	National	03/18	0.89

**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. Where appropriate, non-automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table C. 2.

**Table C. 2 – NO<sub>2</sub> Fall off With Distance Calculations (concentrations presented in µg/m<sup>3</sup>)**


**Fall off with Distance Inputs**

i) Enter background concentration for each diffusion tube listed. Once completed see Annual Results Summary tab

Enter data into the pink cells

Diffusion Tube ID	Distance (m)		NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> )			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Bias Adjusted	Background	Predicted at Receptor	
DT99	4.0	4.2	37.5	30.0	37.4	Predicted concentration at Receptor within 10% the AQ5 objective.
DT105	2.0	2.2	37.8	22.0	37.4	Predicted concentration at Receptor within 10% the AQ5 objective.

## QA/QC of Automatic Air Quality Instruments

Air quality measurements from the automatic instruments are validated and ratified by Air Quality Data Management (AQDM) <http://www.aqdm.co.uk> to the standards described in the Local Air Quality Management – Technical Guidance LAQM (TG16) <https://laqm.defra.gov.uk/technical-guidance>

### Validation

This process operates on data during the data collection stage. All data are continually screened algorithmically and manually for anomalies. There are several techniques designed to discover spurious and unusual measurements within a very large dataset. These anomalies may be due to equipment failure, human error, power failures, interference or other disturbances. Automatic screening can only safely identify spurious results that need further manual investigation.

Raw data from the gaseous instruments (e.g. NO<sub>x</sub>, O<sub>3</sub>, SO<sub>2</sub> and CO) are scaled into concentrations using the latest values derived from the manual and automatic calibrations. These instruments are not absolute and suffer drifts. Both the zero baseline (background) and the sensitivity may change over time. Regular calibrations with certified gas standards are used to measure the zero and sensitivity. However, these are only valid for the moment of the calibration since the instrument will continue to drift. The original raw data are always preserved intact while the processed data are dynamically scaled and edited.

### Ratification

This is the process that finalises the data to produce the measurements suitable for reporting. All available information is critically assessed so that the best data scaling is applied and all anomalies are appropriately edited. Generally this operates at three, six or twelve month intervals. However, unexpected faults can be identified during the instrument routine services or independent audits which are often at 6-monthly intervals. In practice, therefore, the data can only be fully ratified in 12-month or annual periods. The data processing performed during the three and six monthly cycles helps build a reliable dataset that is finalised at the end of the year.

There is a diverse range of additional information that can be essential to the correct understanding and editing of data anomalies. These may include

- the correct scaling of data
- ignoring calibrations that were poor e.g. a spent zero scrubber
- closely tracking rapid drifts or eliminating the data
- comparing the measurements with other pollutants and nearby sites

- corrections due to span cylinder drift
- corrections due to flow drifts for the particulate instruments
- corrections for ozone instrument sensitivity drifts
- eliminating measurements for NO<sub>2</sub> conversion inefficiencies
- eliminating periods where calibration gas is in the ambient dataset
- identifying periods where instruments are warming-up after a power cut
- identification of anomalies due to mains power spikes
- correcting problems with the date and time stamp
- observations made during the sites visits and services

The identification of data anomalies, the proper understanding of the effects and the application of appropriate corrections requires expertise gained over many years of operational experience. Instruments and infrastructure can fail in numerous ways that significantly and visually affect the quality of the measurements. There are rarely simple faults that can be discovered by computer algorithms or can be understood without previous experience.

Further information about air quality data management, expert data ratification and examples of bad practices are given on the Air Quality Data Management (AQDM) website

<http://www.aqdm.co.uk>

### **Automatic Monitoring Annualisation**

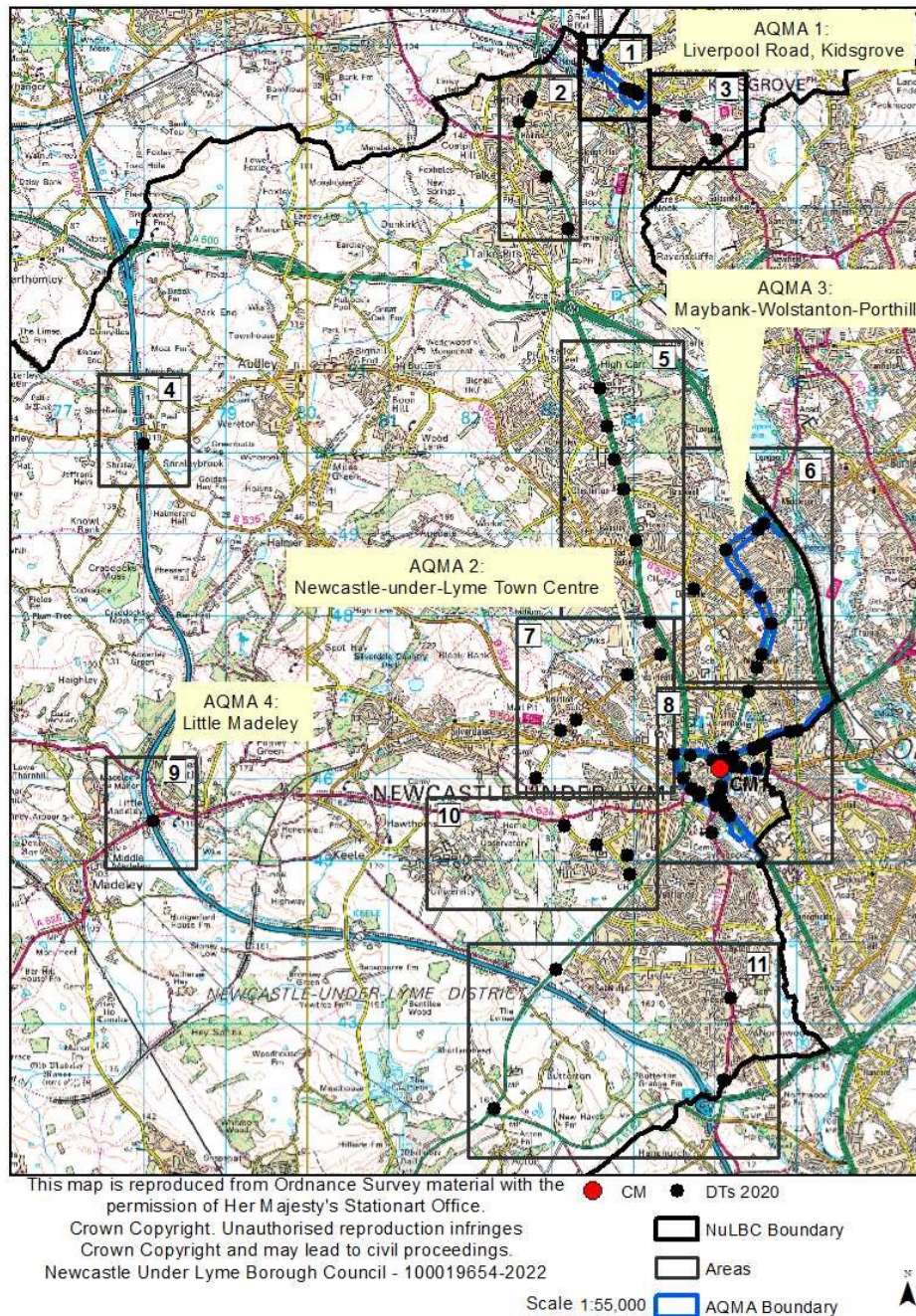
The automatic monitoring location within Newcastle-under-Lyme Borough Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

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

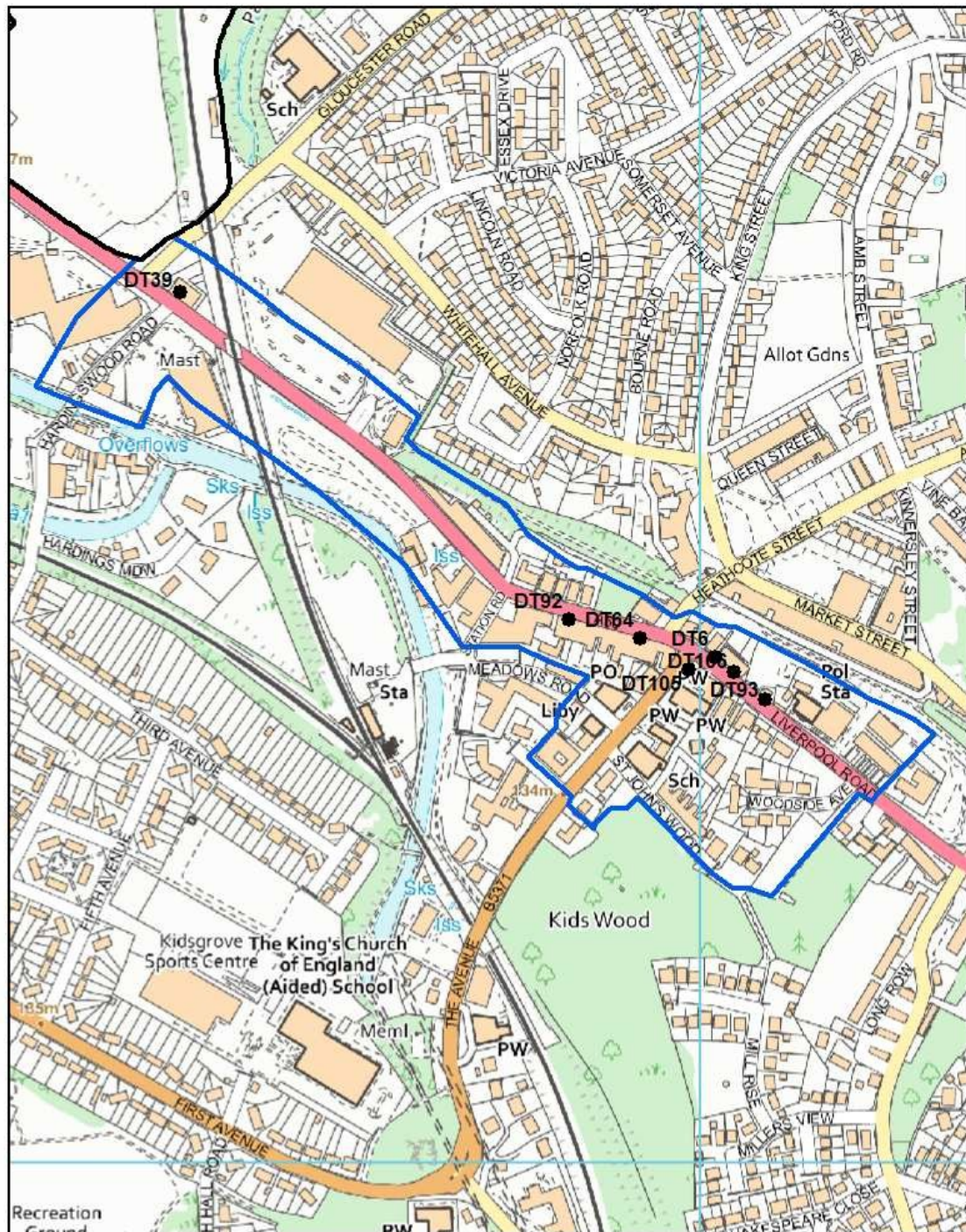
No automatic NO<sub>2</sub> monitoring locations within Newcastle-under-Lyme Borough Council required distance correction during 2021.

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

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



**Figure D. 2 – Map of monitoring Area – AQMA 1: Liverpool Road, Kidsgrove**



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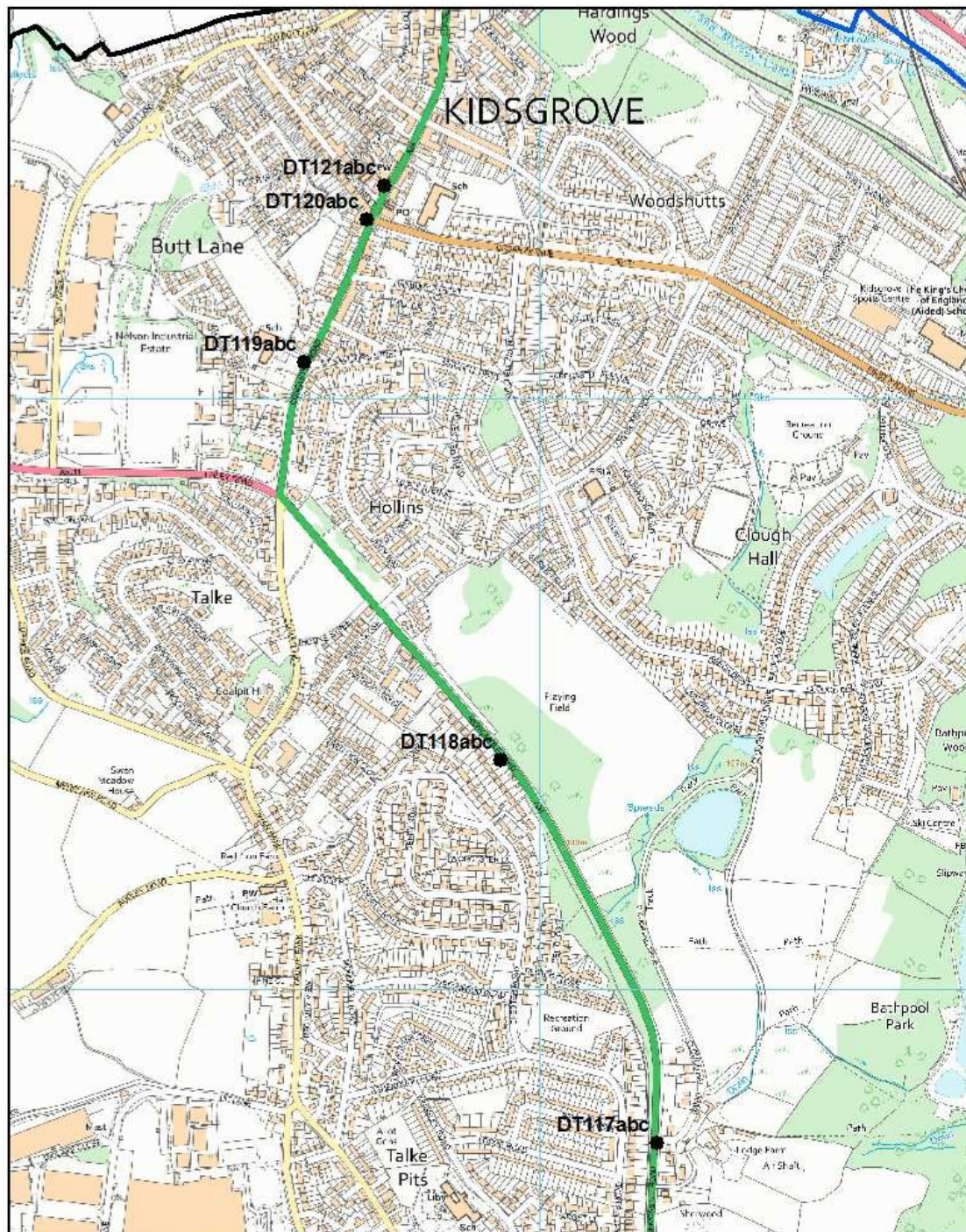
● DTs 2020

□ NuLBC Boundary

□ AQMA Boundary

Scale 1:4,000

**Figure D. 3 – Map of monitoring Area Kidsgrove Area 2 - Outside of current Kidsgrove AQMA**



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● DTs 2020  
□ NuLBC Boundary  
□ AQMA Boundary

Scale 1:8,000

**Figure D. 4 - Map of monitoring Area Kidsgrove Area 3 - Outside of current Kidsgrove AQMA**

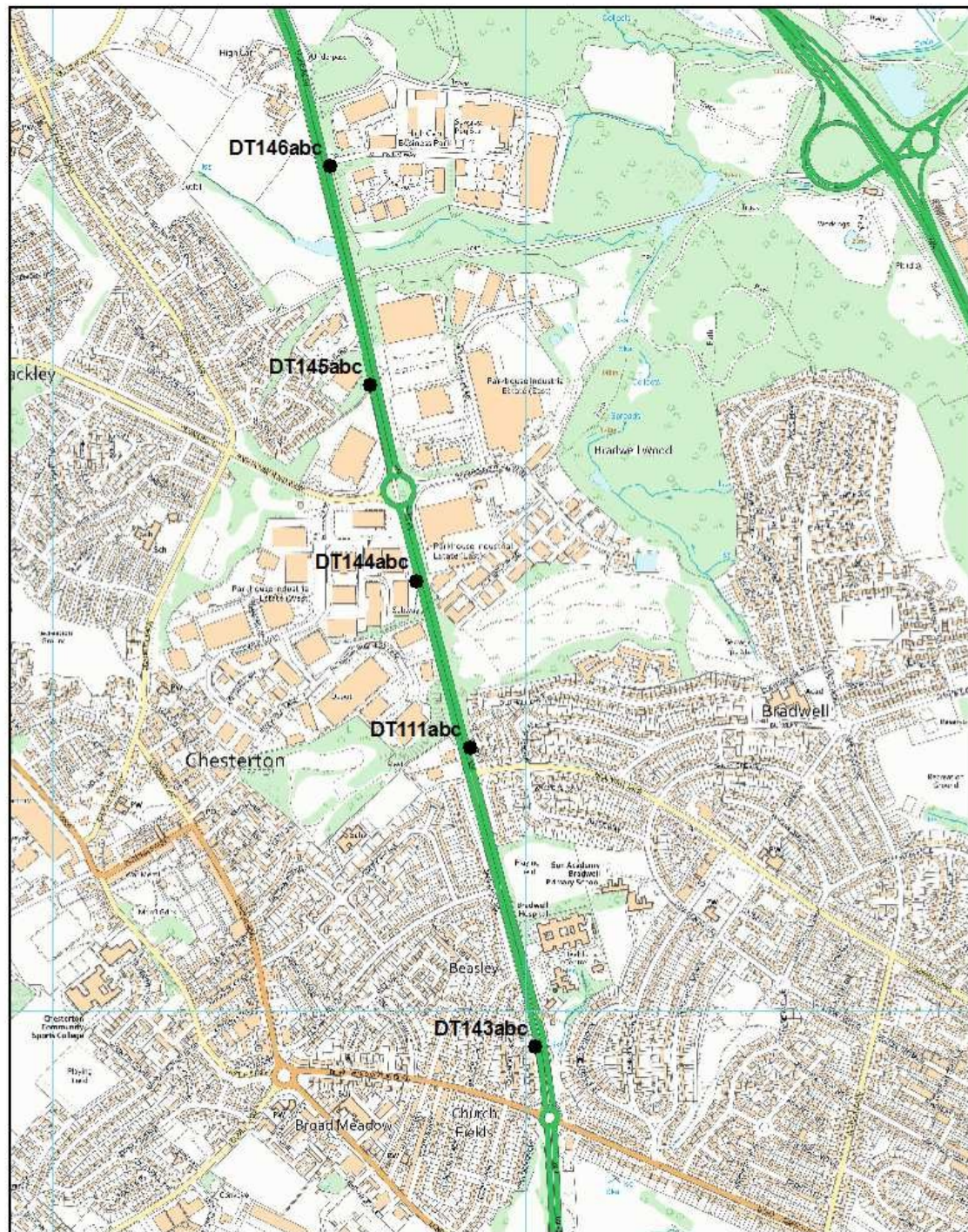


**Figure D. 5 - Map of monitoring Area 4– Shirley Brook Not located within an AQMA**



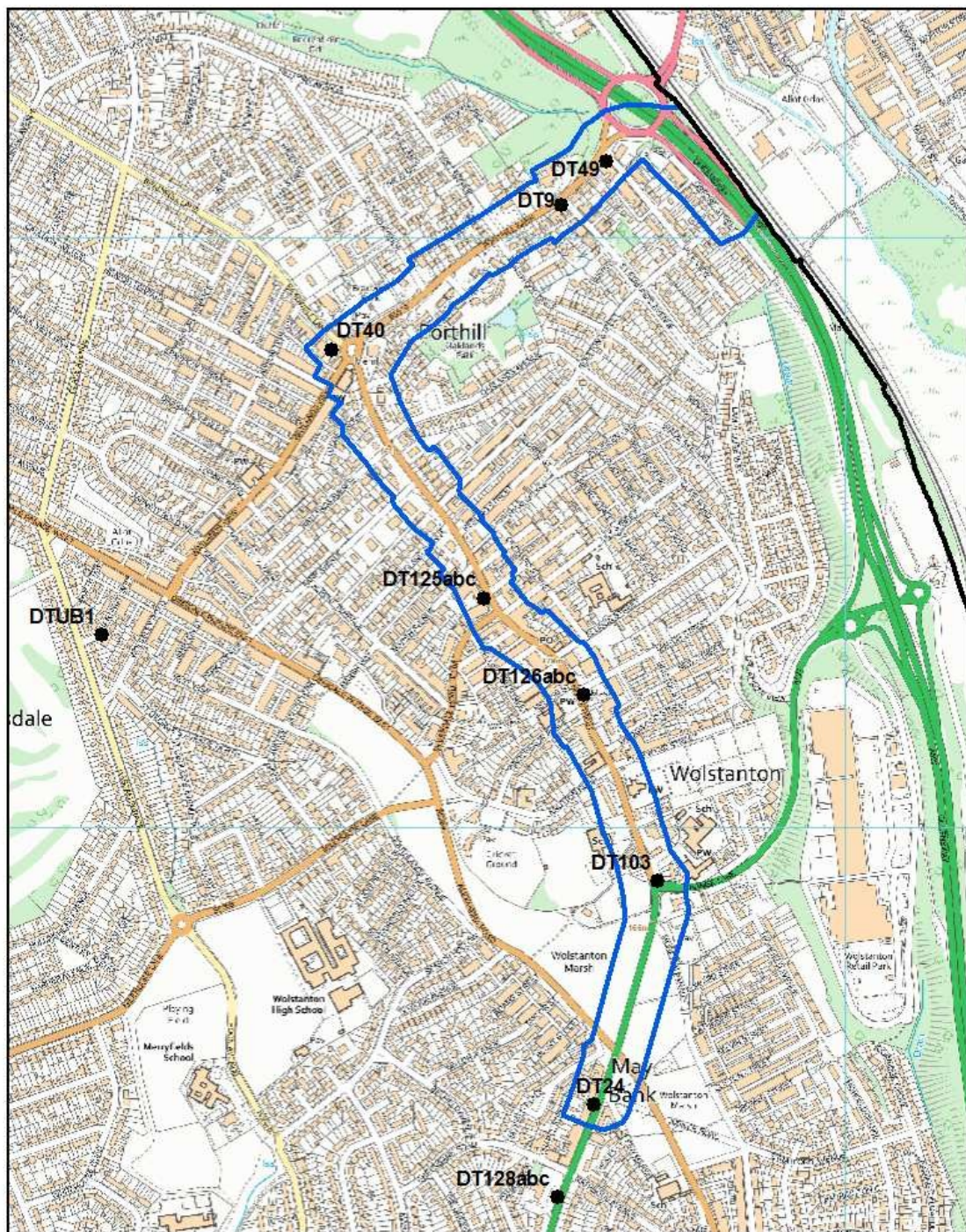
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● DTs 2020  
AQMA Boundary  
Scale 1:2,000



DTs 2020  
AQMA Boundary  
Scale 1:10,000

**Figure D. 7- Map of monitoring Area - AQMA 3: Maybank-Wolstanton-Porthill**



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● DTs 2020

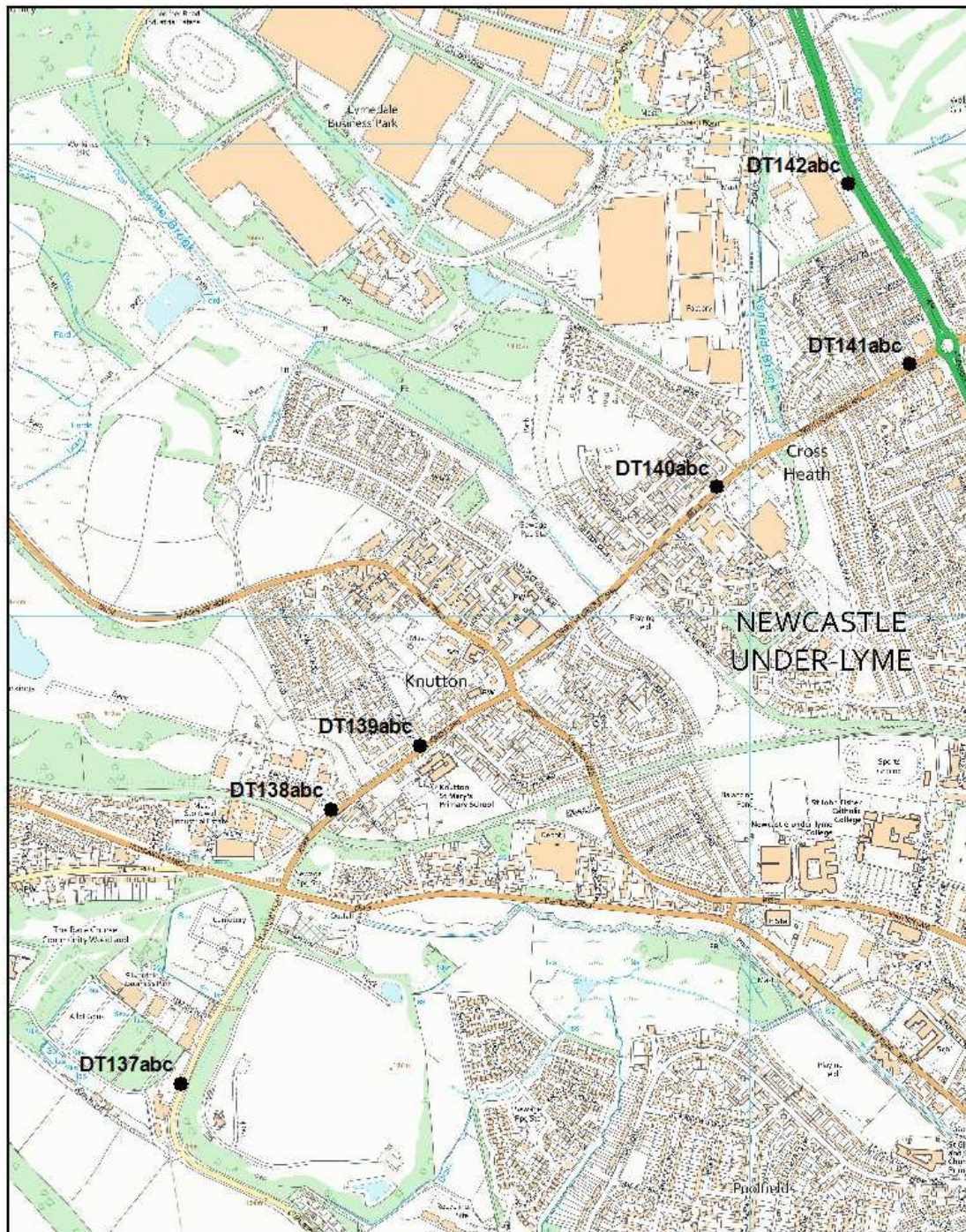
▬ NuLBC Boundary

▬ AQMA Boundary



Scale 1:8,000

**Figure D. 8 - Map of monitoring Area 7 – Knutton (Not within and AQMA)**



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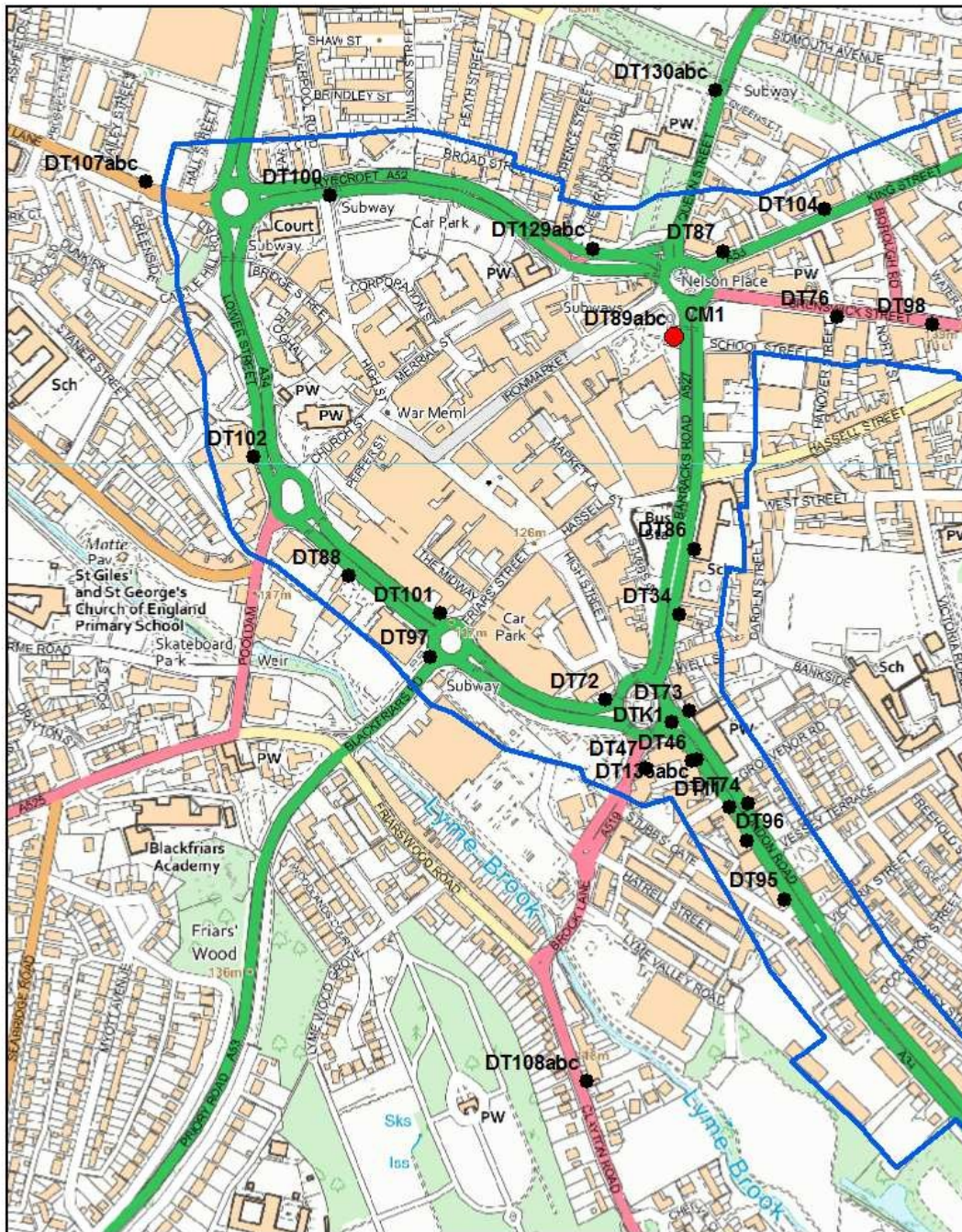
● DTs 2020

□ NuLBC Boundary

Scale 1:10,000 AQMA Boundary



**Figure D. 9- Map of monitoring Area 8 - AQMA 2: Newcastle-under-Lyme Town Centre (west)**



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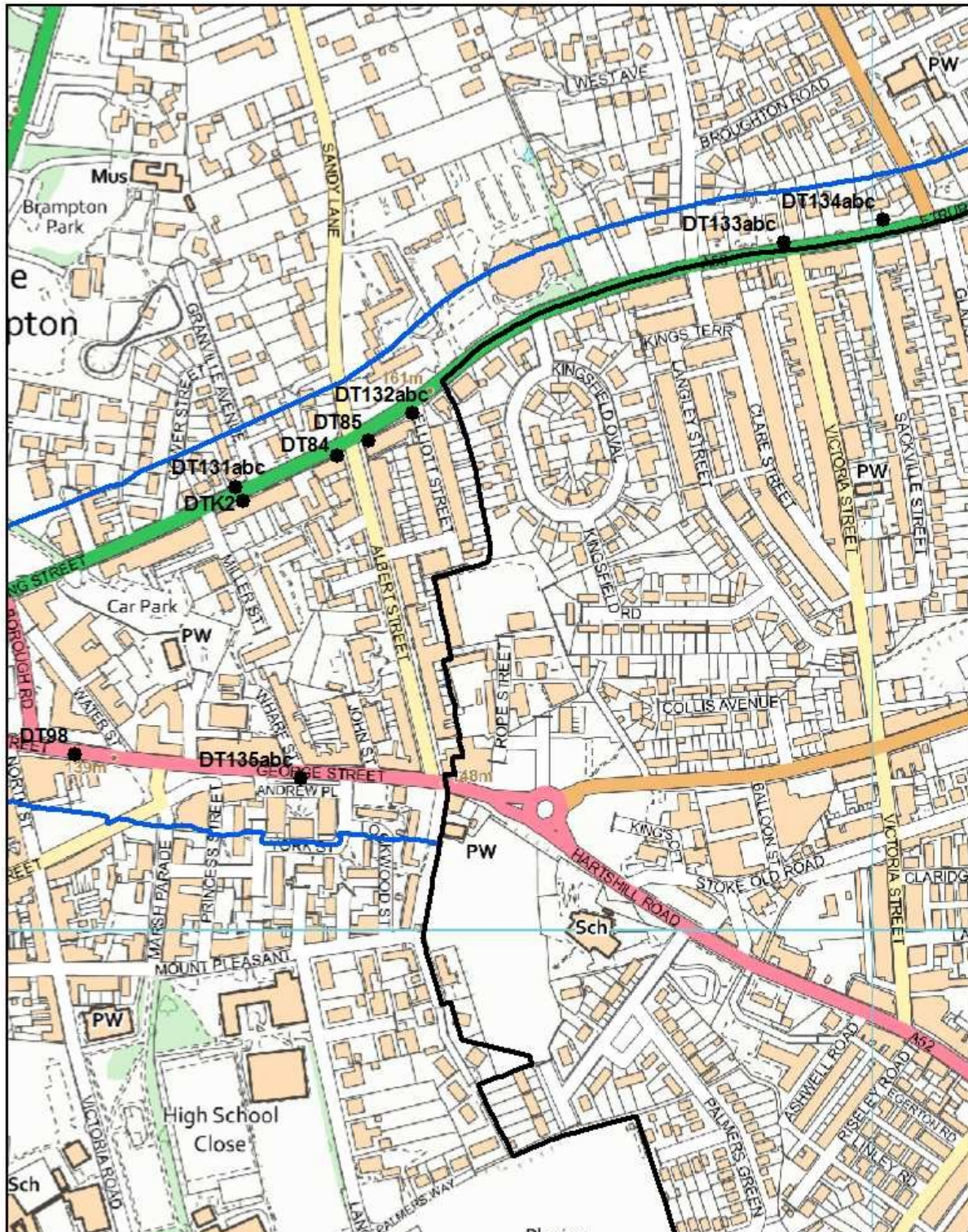
● CM ● DTs 2020

□ NuLBC Boundary

□ AQMA Boundary

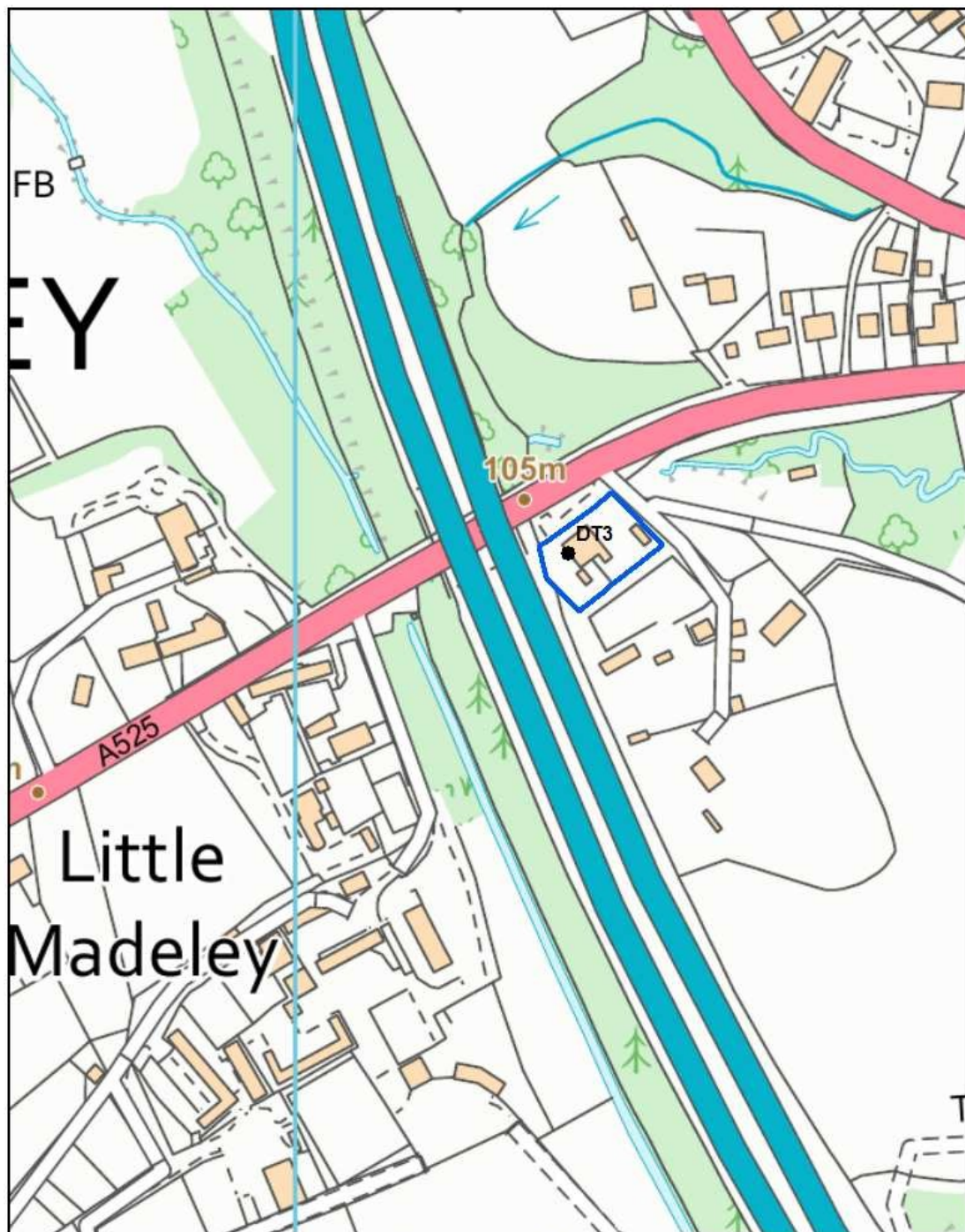
Scale 1:5,000





Scale 1:4,000

Figure D. 11- Map of monitoring Area 9 - AQMA 4: Little Madeley



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● DT\_2020  
AQMA Boundary  
Scale 1:2,000

**Figure D. 12 - Map of monitoring Area 10 – Thistleberry (Not within an AQMA)**



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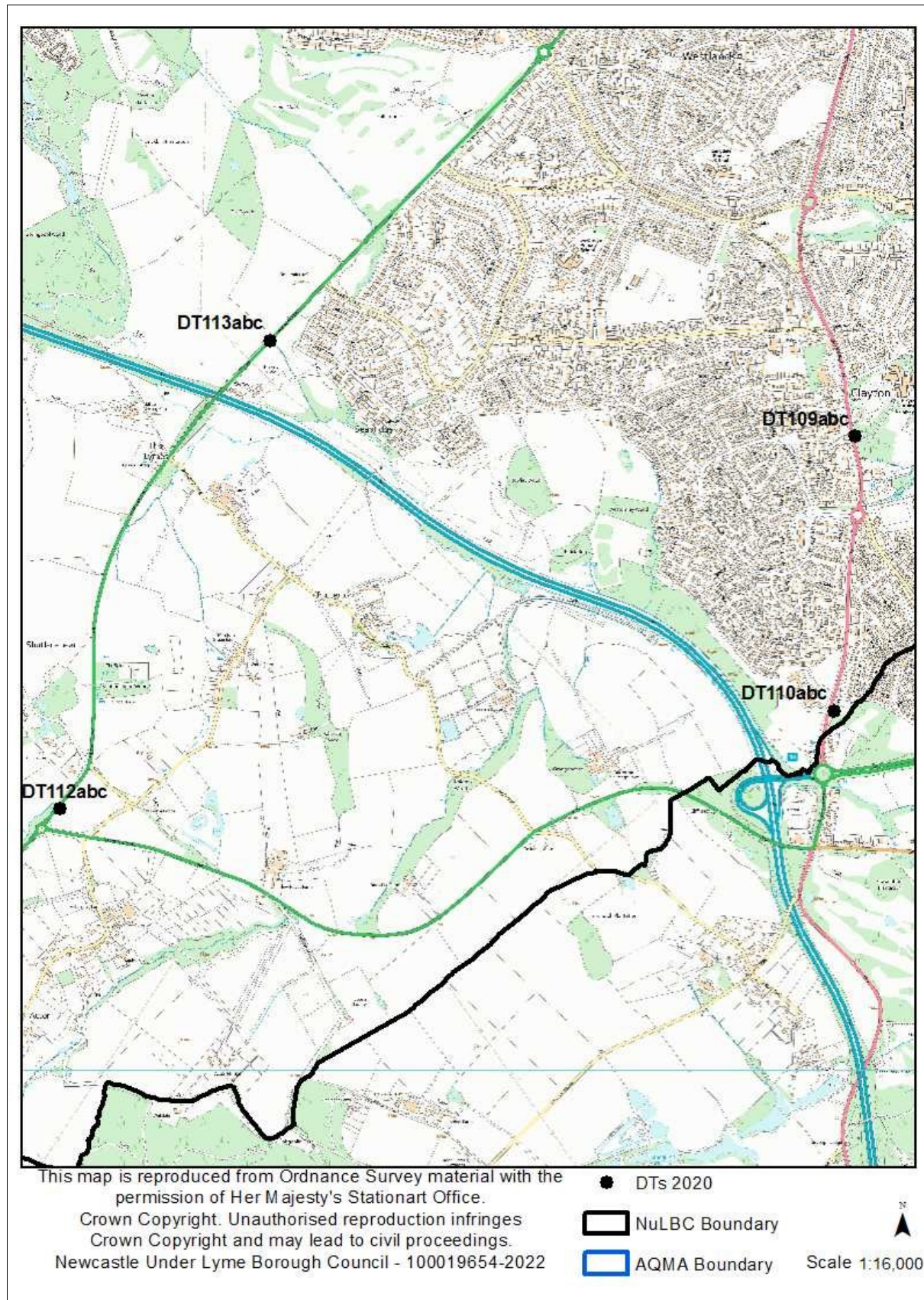
● DTs 2020

▬ NuLBC Boundary

▬ AQMA Boundary

Scale 1:6,000

**Figure D. 13 - Map of monitoring Area 11 – Clayton / Seabridge (Not within an AQMA)**

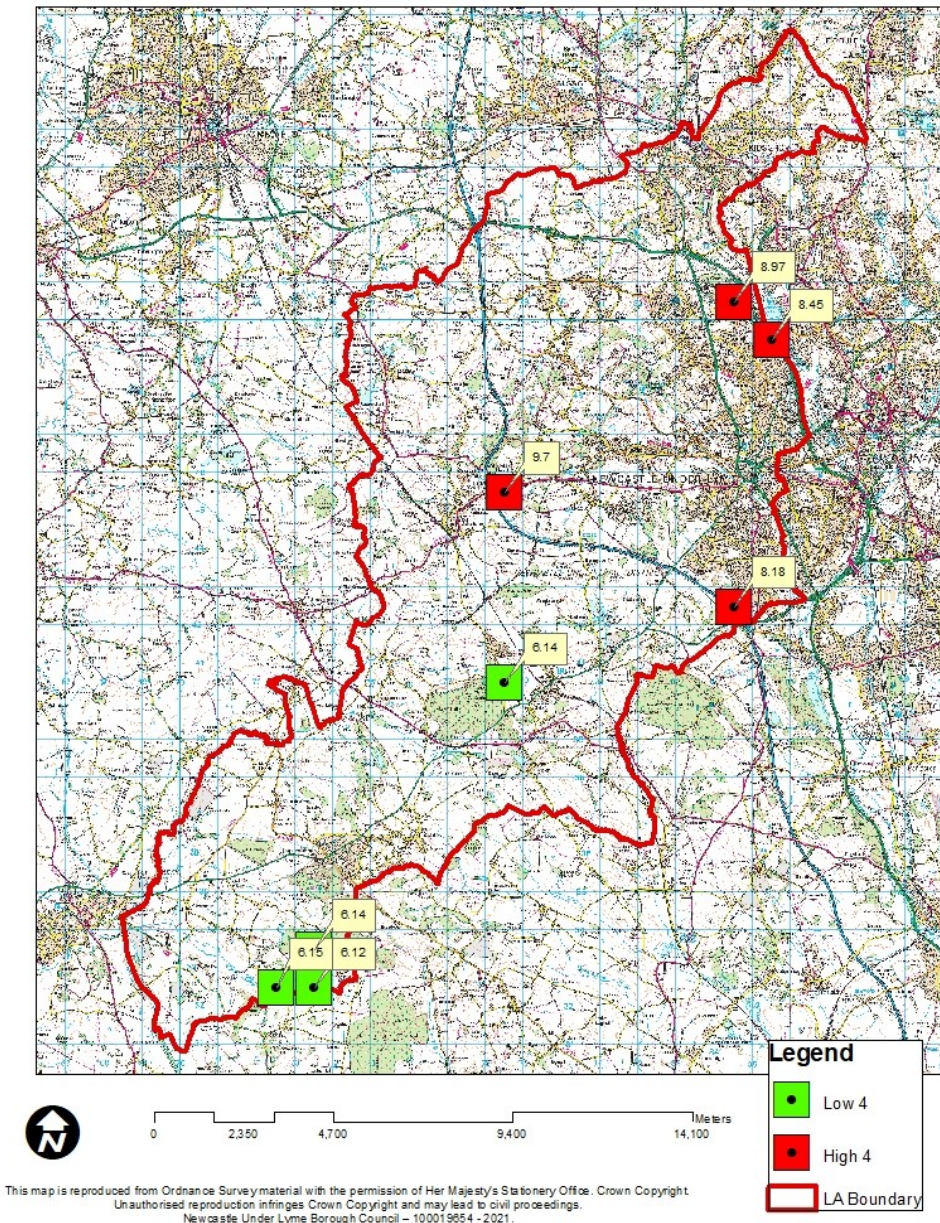


## Appendix E: PM2.5 background concentrations 2021

Figure E. 1 - PM2.5 Background concentrations 2021 in Newcastle under Lyme Borough

**Background concentrations of PM2.5 in  $\mu\text{g}/\text{m}^3$  for 2021**  
**Showing the four highest and four lowest areas based on a 1km grid square**

(Source data: DEFRA <https://uk-air.defra.gov.uk/data/laqm-background-home>)



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

Table F. 1 – Air Quality Objectives in England<sup>20</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

<sup>20</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

**Table F. 2 – Examples of Where the Air Quality Objectives Should Apply**

Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless used as a permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-hour mean and 8-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties <sup>21</sup> .	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be shorter than either the 24- or 8-hour relevant mean
1 – hour mean	All locations where the annual mean and 24- and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or	Kerbside sites where the public would not be expected to have regular access.

<sup>21</sup> Such locations should represent parts of the garden where relevant public exposure to pollutants is likely, for example where there is seating or play areas. It is unlikely that relevant public exposure to pollutants would occur at the extremities of the garden boundary, or in front gardens, although local judgement should always be applied

	more. Any outdoor locations where members of the public might reasonably expect to spend one hour or longer.	
15-minute mean	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer.	

## 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.TG16. April 2021. 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.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.