2025 Air Quality Annual Status Report (ASR)

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

Date: 30th June, 2025.

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Local Responsibilities and Commitment

This Annual Status Report (ASR) was prepared by the Environmental Protection Team of Newcastle-under-Lyme Borough Council with the support and agreement of the following departments:

- Regulatory Services
- Planning and Development Services
- Staffordshire County Council Public Health and Highways Departments

This ASR has been approved by:

- Councillor David Hutchinson – Portfolio Holder for Sustainable Environment

This ASR has been endorsed by the County Council`s Director of Health and Care, Dr Richard Harling.

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

Staffordshire County Council (SCC) is committed to working with partners to ensure that Newcastle under Lyme Borough Council 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 Newcastle under Lyme`s 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 Newcastle under Lyme's actions in conjunction with SCC and other partners approach to reducing human made pollution especially particulate matter.

Since the update of the Environment Act 2021 there is now a statutory duty imposed on Local Authorities in England to reduce $PM_{2.5}$, a number of the measures are complementary with those being undertaken to improve Air Quality. Many of Newcastle-under -Lymes`s activities to reduce NO_2 also can reduce particulates. To this end Newcastle under Lyme Borough Council has worked with a number of SCC projects/departments, such as the following.

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

Electric Vehicle project who are working in a consortium to install EV charging hubs for people without easy access to EV charging where they live via LEVI funding.

In addition, levelling up Fund 2 Schemes will improve a number of major roads around the county, reduce journey times, put greener, cleaner buses on main roads, improve walking and cycling routes and reduce the impact of housing and commercial developments.

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

Dr Richard Harling MBE, FFPH, MBBS, MSc

Director of Health and Care
Staffordshire County Council
[May 2025]

Executive Summary: Air Quality in Our Area

Air Quality in Newcastle Under Lyme

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

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

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

Table ES 1 - Description of Key Pollutants

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

The Borough of Newcastle under Lyme is 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/south between London and Carlisle, and east/west between Nottingham and Chester.

The main pollutants of concern in Newcastle under Lyme, as in most areas of the UK, are Nitrogen dioxide (NO_2) and Particulate Matter (PM). These pollutants are predominantly associated with road traffic emissions, but can also occur from other sources such as emissions to air from both domestic and industrial processes

Several major roads pass through the Borough or converge on the two main towns of Newcastle, and Kidsgrove. These roads are described below:

- The M6, which, passes through the borough running north/south.
- The A500, a major road which links Newcastle under Lyme and Stoke on Trent with junctions 15 and 16 of the M6.
- The A34, A52, A525, A523 and A53, which pass through Newcastle.
- The A50, A5011 and A34, which pass through Kidsgrove.

In 2024, Newcastle under Lyme Borough Council used diffusion tubes and an air quality monitoring station to measure pollutants, namely nitrogen dioxide. Maps illustrating the locations of all the sites in 2024 can be found in Appendix D.

The Air Quality Monitoring Station was located adjacent to Barracks Road within the Queens Gardens. The diffusion tubes were deployed to 78 locations across the district during 2024. These are small tubes that are attached to fixed positions (e.g. a lamp post). Diffusion tubes take Nitrogen dioxide samples over a one-month period, are collected and sent off to a laboratory for analysis. Diffusion Tubes are exchanged every month. They are widely used for indicative monitoring across the UK to highlight areas that may have air quality issues.

Previous years monitoring results highlighted areas of concern within the district as a result of emissions from road traffic vehicles. An air quality objective requires nitrogen dioxide levels to be below an annual average of 40µg/m^3. To improve air quality in areas where legal limits were likely to be exceeded, four Air Quality Management Areas

(AQMAs) were declared in January 2015 in relation to high nitrogen dioxide (NO_2) concentrations. These were:

- AQMA 1: Kidsgrove (the A50 corridor through the centre of Kidsgrove)
- AQMA 2: Newcastle-under-Lyme (the town Centre ring road and A53 to Basford part B Bank)
- AQMA 3: Maybank-Wolstanton-Porthill (Porthill Bank and Wolstanton & May Bank High Streets)
- AQMA 4: Little Madeley (a single property immediately adjacent to the M6). This AQMA was revoked on 1st April, 2025.

Maps showing the location and boundaries of these AQMAs are provided within Appendix D.

While Newcastle under Lyme Borough Council does not actively monitor, or measure, particulate matter concentrations, the Council and its partners do actively work towards minimising, and reducing, concentrations of particulate matter within the borough.

While road traffic is the most significant source of pollution to the Borough, other sources including industrial and domestic emissions, will contribute to air quality. Certain industries (Permitted Processes) are regulated by the Borough Council in accordance with the Environmental Permitting (England and Wales) Regulations 2016 [(1)]. Currently there are 39 Part B and 3 Part A2 processes within the Borough. Further information regarding these activities can be obtained from environmental_health@newcastle-staffs.gov.uk.

In addition, the Environment Agency is responsible for the regulation of Part A1 processes, also under the Environmental Permitting (England and Wales) Regulations 2016. One of these, Walleys Quarry landfill, has given rise to significant concern to residents of the borough. 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 emissions from this landfill, which is situated

[1] The Environmental Permitting (England and Wales) Regulations 2016 (legislation.gov.uk)

approximately 1.3 kilometres to the West of AQMA 2: Newcastle-under-Lyme (town centre).[2] The Environmental Permits for other activities regulated by the Environment Agency can be found upon their Public Register [(3)].

Complaints relating to emissions from this landfill 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.

Mobile monitoring stations were deployed to continuously monitor air quality in the proximity of the landfill, and these have the capability to monitor some of the pollutants which are relevant to Local Air Quality Management, notably NO_2, SO_2, PM_{10}, $PM_{2.5}$ and benzene. The monitoring stations are managed and operated by the Environment Agency national air quality team and the data from these stations is available via a dedicated Air Quality webpage. Information upon this page states that *the monitoring results for particulate matter, nitrogen dioxide and sulphur dioxide were below UK air quality objectives. Levels of benzene, toluene, ethylbenzene and xylene were below health-based guidance values.*

The landfill has been mentioned here as, due to the significant concern locally, there is likely to be an expectation from the public that the report refers to emissions from it. Regular updates regarding the landfill are provided upon Newcastle Under Lyme Borough Council`s website.

Actions to Improve Air Quality

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

[2] https://consult.environment-agency.gov.uk/west-midlands/walleys-quarry-landfill-sliverdale/

[3] Public registers (data.gov.uk)

The Environmental Improvement Plan[4] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter ($PM_{2.5}$), the pollutant of most harm to human health. The Air Quality Strategy[5] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[6] details the Government's approach to reduce exhaust emissions from road transport, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel, and most Air Quality Management Areas (AQMAs) are designated due to elevated concentrations related to transport emissions.

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

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

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

Table 1.1 - Local actions to improve air quality achieved in 2024.

PROJECT	ACTION	OUTCOME/ IMPACT
Ministerial Direction number 1. Mandating compliance with the EU's NO_2 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 	An options appraisal to achieve compliance with the EU's NO_2 annual mean limit value 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 has been further reviewed to identify non traffic related alternative schemes with measures in the neighbouring city of Stoke on Trent form the basis of the North Staffordshire Local Air Quality Plan	An assessment of an alternative scheme to the originally proposed bus gate is in the process of being reviewed for effectiveness to comply with the Ministerial Direction. A full business case has been approved by the Council and has been submitted to DEFRA`s Joint Air Quality Unit (JAQU). The Council is currently awaiting a response and, if accepted by DEFRA, a timetable for implementation will be devised.
Promotion of active travel and use of low emission vehicles.	Various projects are being delivered by Staffordshire County Council with the support of District Councils to promote cycling, walking, use of public transport, car sharing and the use of low emission vehicles. These include: • campaigns to tackle vehicle idling near schools where banners, megaphones and leaflets are supplied to schools and children engage drivers directly. • promotion of active school travel plans where schools are provided with information and guidance to enable them to educate pupils and parents and change their mode of travel. The school has the ability to gain accreditation to the modeshift stars scheme. • Social prescribing programme (INTO) where those not confident with walking or cycling are taken on led walks or given cycling lessons or given 1 to 1 sessions to facilitate active travel.	Lower vehicle emissions near to schools. Reduction of vehicle idling near to schools, promotion of walking and cycling and the reduction of vehicles using the school run.

PROJECT	ACTION	OUTCOME/ IMPACT
	• Wow outreach program to promote safer streets and walking routes to enable active travel.	Promotion of active travel to more vulnerable residents to reduce the use of vehicles. Promotion of active travel and reduction in the use of vehicles. For further, detailed information see table 2.5.
 **Revocation of the current Smoke Control Area and making of a new Borough wide Smoke Control Area**	Following the latest guidance from DEFRA concerning smoke control, the Borough Council has consulted residents on making the whole of the Borough a formal Smoke Control Area. The proposal to revoke the existing 21 smoke control areas was approved by the Licensing and Public Protection Committee on the 18th March 2025. To enable affected residents to adapt, and to source other forms of heating, the commencement of the borough wide smoke control areas was deferred and is due to come into effect on the 1st April, 2027.	Reduction in the emission of particulate matter emitted to air within the borough.
Replacement of Diesel with Hydrogentaed Vegetable All for all Council Operated Heavy Vehicles.	The Council has moved all heavy vehicles to HVO (Hydrotreated Vegetable Oil) which burns 90% cleaner than diesel and has reduced borough emissions by 700 tones	Reduction of 700 tonnes of CO2 emission per annum with associated reductions in emissions of nitrogen dioxide and particulate matter.

Conclusions and Priorities

The two locations (DT76 (11 Brunswick Street) and DT104 (7 King Street) found to exceed the annual mean objections for NO2 in 2023 were no longer in exceedance. The two locations found to be within 10% of this objective within 2023 (DT94 (116 Liverpool Road) and DT135 (Beata Road) had fallen below 36 ug/ m^3 in 2024.

Whilst the air quality of some areas remains of concern, only one location, DT102 (Belong, Lower Street) was identified as being in exceedance of any of the Air Quality Objectives in 2024 and only one location, DT104 (7 King Street), was identified as being within 10% of the annual NO_2 mean objective in 2024. Both DT102 and DT104 are located within AQMA 2 – Town Centre.

With the exception of DT76 (11 Brunswick Street), DT102 (Belong, Lower Street) and DT104 (7 King Street), all monitoring locations within AQMA 2 have been consistently below 36ug/ m^3 over the last 5 years. However, as these three locations are dispersed across the AQMA, there is no plan to amend the area of AQMA 2 at present.

Within AQMA 1 – Kidsgrove, and AQMA 3 Maybank Wolstanton & Porthill, there were no exceedances of the annual mean objective, and no site can be seen to have exceeded 36ug/ m^3 at any relevant location within 2024. This has been the case for over five years and so the Council is currently in the process of revoking AQMA 1 and AQMA 3.

AQMA 4 – Little Madeley, was revoked on the 1st April 2025 following a long period of compliance with the air quality objectives.

The NO_2 concentrations, and five year trends, at the monitoring sites across the borough indicated that there was no need to propose any new AQMAs.

With regards to general trend over the last five years, there has been a general improvement in air quality and a reduction of NO_2 concentrations was observed across virtually all monitoring locations in 2024. However, it was noted that there was a slight increase in both urban background sites, DTUB1 and DTUB2, within 2024.

No monitoring data was obtained for location DT100 during 2024 as the site was not accessible due to construction works. These works have now been completed, and diffusion tubes are now being deployed to the location. The automatic monitoring carried

out at CM1 (Queens Gardens) was discontinued at the end of the 2024 monitoring period for the reasons described within appendix C. No other changes to the monitoring regime are planned for the 2025 monitoring period.

The Council intends to publish a revised Air Quality Action in late 2025 after the recommendations made by DEFRA within their appraisal report (Ref AQAP24-249) have been actioned. It is likely that the AQAP will relate to AQMA 2 only if AQMAs 1 and 3 are revoked in August 2025.

Newcastle under Lyme's priorities for the coming year are:

- Priority 1: Working to reduce and maintain NO_2 concentrations below the annual objective in all areas of the Borough.
- Priority 2: Continue to support behaviour change to promote Active Travel and reduce reliance on car travel for short journeys.
- Priority 3: Continue to assess planning applications to ensure that future developments and changes to the road networks across the Borough do not lead to an increase in the NO_2 concentration above the annual mean objective of 40µg/m^3.
- Priority 4: Continue to regulate installations to ensure that emission limits are not exceeded.
- Priority 5: Regulation of smoke control and waste burning to reduce impacts on local air quality.
- Priority 6: to prepare and submit an update AQAP 2025-2030.
- Priority 7: to progress the revocation of AQMA 1- Kidsgrove and AQMA 3: Maybank-Wolstanton-Porthill.

The Council will continue to work with partners, such as Staffordshire County Council, to ensure ongoing compliance with the Air Quality Objectives and to improve air quality as far as possible.

Local Engagement and How to get Involved.

Everyone can get involved in improving air quality. Residents and businesses can consider the way they travel and use sustainable travel options, such as walking, cycling

or using public transport to reduce dependency on cars when possible. They can also look at how they heat their homes and offices, make buildings more energy efficient and take steps to improve indoor air quality.

Things to consider, and sources of further information, are given below:

When Commuting

- Leave the car at home one day a week if you can.
- Turn off car engines when the vehicle is idling.
- Consider car sharing your journey - further guidance can be found at Liftshare
- Use a low/ zero carbon vehicle such as one with a modern efficient engine, or an electric, or hybrid vehicle
- Service vehicles to keep them running efficiently.
- Work from home if you can
- Use public transport where possible
- Use a travel planning App, further details can be found at Travelsmart
- Visit Air Aware Staffordshire for bulletins giving inspiration and information on ways and initiatives to reduce pollution from travelling,

On the School Run

- Take turns with friends, neighbours, or family to drive or walk the children to school. Check whether your school has a travel plan.
- Consider walking, or cycling, to school. 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 obtained from active-school-travel

Workplace energy, transport and infrastructure

Bespoke workplace travel plans are available to support employees and employers to use more environmentally sustainable methods of travel into work and use of vehicles for work. For further information visit Staffordshire County Council`s Active travel and air quality in the workplace webpages.

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.

- The Office for zero emission vehicles
- The Energy Saving Trust
- The Staffordshire and Business Network

Improving Air Quality at 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.

Reducing Emissions from Your Home

- Keep wood stoves and fireplaces well maintained, and make sure that wood burners are exempted for use in smoke control areas.
- Visit burnbetter for advice.

- Use ready to burn wood bought from a Woodsure Certified Supplier. This will make any appliance more efficient, will reduce emissions of particulate matter and reduce damage to your stove and chimney and will reduce the risk of a chimney fire.

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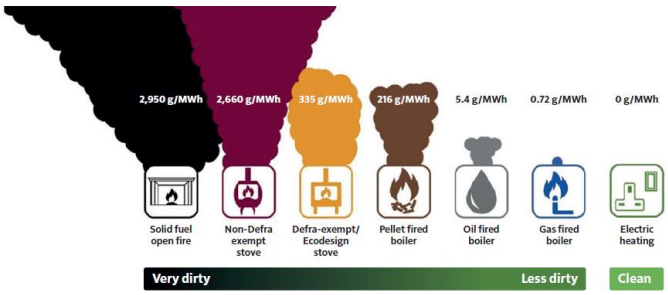


Note: The air pollution emissions will also depend on the age of the appliance, how it is maintained and used and the fuel burned (for example, dry or wet wood).

The following definitions were used: *Solid fuel open fire*: wood burned in an open fire. *Non-Defra-exempt stove*: wood in a conventional stove. *Defra-exempt/Ecodesign stove*: wood in an advanced/ecolabelled stove. *Pellet fired boiler*: wood in pellet stoves and boilers. *Oil fired boiler*: fuel oil in a medium (>50KWth <1MWth) boiler. *Gas fired boiler*: natural gas in a small (≤50kWth) boiler.

Source: Emission factors taken from EMEP 2019 Guidebook[12] (1A4 small combustion tables). Adapted from the Clean Air Strategy[13] with updated data

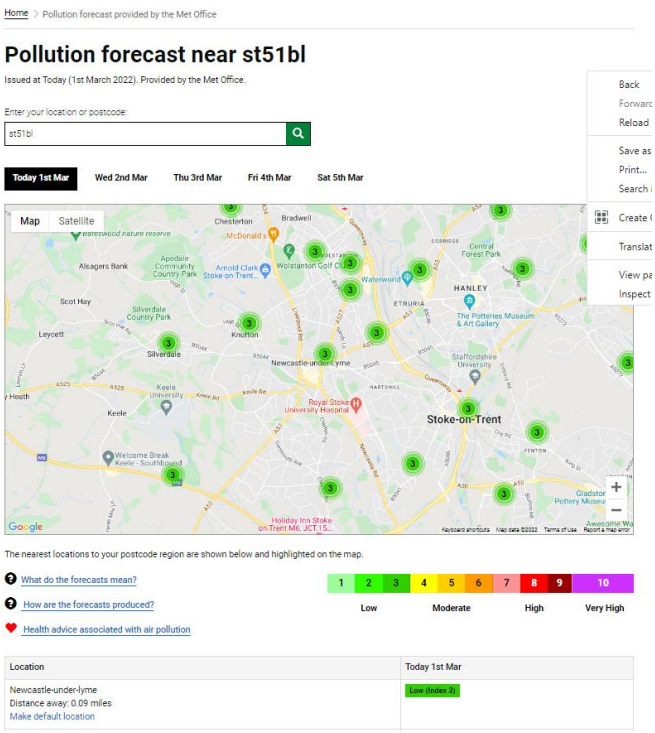
- Do not burn waste and treated wood (e.g. old furniture) as it can emit harmful emissions.

- 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 grants to make you home warmer and more energy efficient, visit Staffordshire Warmer Homes for more information.
- Purchase "Green Power" for the electricity in your home. (Contact your energy supplier or Staffordshire Warmer Homes for further details).
- Avoid using bonfires to dispose of waste and never burn household waste, especially plastics, rubber and treated timber.
- Before organising days out, check the DEFRA air pollution forecast

Know About Air Quality in Your Area.

- General information and air quality forecasts can be obtained from DEFRAs via Uk-Air.

  The forecasting gives information short term air levels in a localised area, and supplements this with health advice and air pollution alerts for 'at risk individuals' and the general public.



- 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

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1 Local Air Quality Management

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

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether 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 to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Newcastle under Lyme to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained and provide dates by which measures will be carried out.

A summary of AQMAs declared by Newcastle under Lyme can be found in Table 2.1. The table gives a description of the three AQMAs that are currently designated within Newcastle under Lyme.

Appendix D provides maps showing the location and extent of the AQMAs and also the locations where monitoring is carried. All of the AQMAs were designated in relation to exceedance of the NO_2 annual mean air quality objective.

This objective continues to be exceeded within AQMA 2 – Newcastle under Lyme Town Centre but the objective is consistently met elsewhere. Newcastle under Lyme Borough Council therefore propose to revoke AQMA 1 – Kidsgrove, and AQMA 3 – Maybank, Wolstanton and Porthill. Reports seeking approval to revoke AQMA 1 and AQMA 3 are to go before the Borough Council`s Licensing & Public Protection Committee on the 19th of August 2025 and the AQMAs will be formally revoked shortly afterwards if approval is given.

AQMA 4 – Little Madeley was formally revoked on the 1st April, 2025 after an extended period of compliance with the air quality objectives.

The current Air Quality Action Plan (2019-2024) is available at AIR QUALITY ACTION PLAN. An updated Air Quality Action Plan, proposing actions to be taken to improve air quality between 2024 and 2029 in relation to AQMA 1 and AQMA 2, was submitted to DEFRA for approval in November 2024. In. The subsequent appraisal report received by the Council made several recommendations for further work to be carried out and it is anticipated that the revised AQAP will be put out to consultation in late 2025. If AQMA 1 is revoked, the AQAP will be updated to relate to AQMA 2 only.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 1: Liverpool Road, Kidsgrove	15/01/2015	NO2 Annual Mean	Exceedance of the NO_2 annual mean objective along Liverpool Road A50, Kidsgrove.	NO	48	31.2	5	Newcastle under Lyme Air Quality Action Plan 2019 – 2024	AIR QUALITY ACTION PLAN 2019-24
AQMA 2: Newcastle-under-Lyme Town Centre	15/01/2015	NO2 Annual Mean	Exceedance of the NO_2 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	40.6 (40.3 at relevant exposure)	0	Newcastle under Lyme Air Quality Action Plan 2019 – 2024	AIR QUALITY ACTION PLAN 2019-24
AQMA 3: Maybank-Wolstanton-Porthill	15/01/2015	NO_2 Annual Mean	Principal routes between Maybank, Wolstanton and Porthill. due to exceedances of the NO_2 annual mean in Maybank High Street and in the Porthill area	YES	46.5	28.3	6	Newcastle under Lyme Air Quality Action Plan 2019 – 2024	AIR QUALITY ACTION PLAN 2019-24

☒ **Newcastle under Lyme Borough Council confirms 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.**

2.2 Progress and Impact of Measures to address Air Quality in Newcastle under Lyme

The main comments contained within DEFRA's appraisal of last year's ASR, reference ASR24-2443, are below:

DEFRA Comment	Action Taken by NULBC
The Revocation of AQMA 4 and 3 should be continued and progress on these should be included in next year's ASR.	AQMA 4 Little Madeley – revocation was approved by the Licensing and Public Protection Committee on the 5th September 2023 with the revocation order being formerly sealed on the 1st April 2025. AQMA 3-Maybank, Wolstanton Porthill - consultation has been carried out in relation to the revocation of AQMA 3 and a report recommending the revocation has been submitted to the Licensing and Public Protection Committee to obtain final approval of the revocation. This meeting is due to take place on the 19th August, 2025.
Maps of monitoring sites and AQMA boundaries have been provided, but they could be clearer. The base map could be altered, or the labels should be a different colour/size so the diffusion tube locations and their labels can be seen more clearly.	Maps have been updated and are contained within appendix D of this report.

Newcastle-under-Lyme Borough Council, and its partners have delivered a number of measures during the current reporting year of 2024 in pursuit of improving local air quality. Details of actions identified within the existing AQAP which have been completed, are in progress or are planned are set out in Table 2.2. with the type of measure and the progress Newcastle-under-Lyme Borough Council have made during the reporting year of 2024. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in the Action Plan 2019-2024. Key measures with have been completed are:

- The Kidsgrove Local Transport Package.
- Wayfinding strategy in Newcastle-under-Lyme.
- Cycle route improvements on A34 and A527, and between Newcastle and Stoke.
- Ring-road enhanced signage and subway.
- Car park variable messaging.
- Bus retrofit scheme for public bus service between Sandy Lane and A500/A53.
- Improvements to Wolstanton and Porthill Junctions on A500.
- Licensing policy review to reduce tail pipe emissions.
- Transition vehicle fleet to zero and low emission vehicle technology.
- Consultation on, and Committee approval of the Revocation of AQMA 4 Little Madeley in 2023.

Newcastle-under-Lyme Borough Council worked to implement these measures in partnership with the following stakeholders during 2024:

- Neighbouring local authorities.
- National Highways
- Staffordshire County Council

In addition to the measures specified within the AQAP 2019 to 2024 within table 2.3, further details of measures being taken to improve air quality are provided within table 1.1 and table 3.3.

The principal challenges and barriers to implementation that Newcastle-under-Lyme Borough Council anticipates facing are staffing issues within the Environmental Protection Team, community support and funding.

Newcastle-under-Lyme Borough Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in AQMA 2 Newcastle-under-Lyme Town Centre. However, progress on measures K1 and MD2 have been slower than expected as described below:

K1 – Kidsgrove Railway Station Transport hub including parking and improved bus/rail interchange. Delivery of this redevelopment has been delayed as poor ground conditions arising from historic land use may result in additional costs of £2 million. Additional sources of funding for this have not yet been obtained and may not be available. Therefore, the project, as originally envisaged, may not be deliverable, and the scope of the redevelopment is being reconsidered. It is anticipated that the final project will be delivered by the end of 2028.

MD2 – Compliance with Ministerial directions to Improve air quality at Basford Bank. Ministerial Directions were served upon NULBC and Stoke on Trent City Council requiring further evaluation of measures to achieve compliance with the Ambient Air Quality Directive requirements for Nitrogen Dioxide in relation to the A53 at Basford Bank. Delivery of this measure has been delayed, originally by the impact of the Covid 19 pandemic and then to allow several options to be considered. The preferred option of non-traffic management solution was submitted to DEFRA`s Joint Air Quality Unit for approval at the end of 2024 and the Council is awaiting a response. The final delivery date will be confirmed after approval of the proposals.

Newcastle under Lyme's priorities for the coming year are:

Priority 1: Working to reduce and maintain NO_2 concentrations below the annual objective in all areas of the Borough.

Priority 2: Continue to support behaviour change to promote Active Travel and reduce reliance on car travel for short journeys.

Priority 3: Continue to assess planning applications to ensure that future developments and changes to the road networks across the Borough do not lead to an increase in the NO_2 concentration above the annual mean objective of 40µg/m^3.

Priority 4: Continue to regulate installations to ensure that emission limits are not exceeded.

Priority 5: Regulation of smoke control and waste burning to reduce impacts on local air quality.

Priority 6: to prepare and submit an update AQAP 2025-2030.

Priority 7: to progress the revocation of AQMA 1- Kidsgrove and AQMA 3: Maybank-Wolstanton-Porthill.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
K1	Redevelop Kidsgrove Railway Station and surrounding area to create transport interchange and improve walking, cycling and public transport access.	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2015	2028	Kidsgrove Town Deal Board & East Midlands Trains	Developers & highway infrastructure funding	Partially Funded	£1 million - £10 million	Planning	Has potential to increase patronage / increased use of public transport	Delivery of measure	Delayed.	Poor ground conditions may result in additional costs of £2 million. Original project may not be deliverable, and the scope of the redevelopment is being reconsidered. Estimated completion date revised from 2025 to 2028.
MD 2	Comply with Ministerial Direction to reduce NO_2 in Basford Bank Area served on NULBC in the soonest possible timeframe	Traffic Management	Other	2019	2026	National Highways / Staffs County Council / Stoke on Trent City Council and Newcastle under Lyme Borough Council Environmental Health	DEFRA grant (100%)	Funded	£1 million - £10 million	Planning	EU NO_2 Annual mean achieved in shortest possible timescale	Compliance with EU NO_2 limit value	Covid 19 has affected initial compliance date. Several options appraisal undertaken, and preferred option of non-traffic management solution submitted to DEFRA - JAQU for approval at the end of 2024. Delivery date to be confirmed after approval of the proposals	Alternatives to use of a clean air zone or bus gate have been identified. The preferred option of non-traffic related solution, which will not affect or restrict users of the A53, is awaiting approval by DEFRA-JAQU.
BW 9	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	2026	Newcastle under Lyme Borough Council, Staffordshire Districts and Staffordshire County Council	OLEV, National Highways & 3rd party funded	Funded	£500k - £1 million	Underway	Reduction in emissions	Details of technologies and initiatives	Successful bid to Office for Low Emission Vehicles. Rollout of Electric vehicle chargers across and provider to engage with taxi and Private hire vehicle trade	
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	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	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
N3	Wayfinding strategy Newcastle under Lyme Town Centre and outlying areas	Promoting Travel Alternatives	Promotion of walking	2016		Lead by Newcastle under Lyme Borough Council with support from Staffordshire County Council, Sustrans and Town	Future High Street Fund	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

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
	for walking and cycling					Centre Business Improvement District								
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	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
N9	RTPI and subsidised bus travel / green travel plans sought for large-scale multi occupancy residential accommodation. Town centre expected to accommodate 3000 students for local universities	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 / keyworker accommodation	Staffordshire County Council through Section 106 contributions and Future High Street Fund	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 network sought through planning. Travel planning sought via planning and monitored via county highways. Reduced rate bus passes for university students promoted.	Financial viability of development schemes to support required S106 / Resistance from developers.
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%)	Funded	£100k - £500k	Completed	EU NO_2 Annual mean exceedance non-compliance reduced by 1 year.	23 Buses retrofitted by end of 2020	Completed	
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	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	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
W3	Evaluate the impact of the Etruria Valley Link Road in the May Bank, Porthill, Wolstanton area	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	Partially Funded	£10k - 50k	Implementation	unclear	Modelling of air quality impacts and monitoring	Minor adverse impact but no exceedances identified in 2024	Potential negative effects on Maybank Porthill, Wolstanton AQMA. Potential to improve AQ in Stoke on Trent at Basford Bank where hourly

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
	and provide appropriate mitigation													mean NO_2 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.
M1	Continue to monitor NO2at relevant location in Little Madeley	Other	Other	2010	2023	Newcastle under Lyme Borough Council Environmental Health	Newcastle under Lyme Borough Council	Funded	< £10k	Completed	As per reported results	Monitoring	Compliance demonstrated since 2016. Consultation on the AMQA revocation is complete and the Revocation Order drafted.	Nil
M2	Engage with National Highways 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	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
BW 1	Borough Wide Air Quality Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2019	2025	Newcastle under Lyme Borough Council Environmental Health	Newcastle under Lyme Borough Council	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 Development Control	Air Quality Planning and Policy Guidance	2016	2025	Newcastle under Lyme Borough Council Environmental Health	Newcastle under Lyme Borough Council	Not Funded	< £10k	Postponed	Reduction in emissions	Strategy in place	Postponed	The Council has decided to develop its own Local Plan and the planning guidance will sit alongside this as a material document.
BW 3	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	2025	Newcastle under Lyme Borough Council Environmental Health and Planning	Newcastle under Lyme Borough Council	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 polices are being identified.
BW 4	Staffordshire and Stoke on Trent Eco-Stars	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2015	2020	Staffordshire Local Authorities	Staffordshire LA's	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
BW 5	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	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*

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
BW 6	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	Not Funded	< £10k	Completed	Reduced vehicle emissions	Completed	Completed 2019.	Now in monitoring phase
BW 7	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	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.
BW 8	Develop policies to promote EV charging infrastructure and support alternative vehicle fuelling technologies	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2019	NA	Newcastle under Lyme Borough Council / Staffordshire County Council	Newcastle under Lyme Borough Council	Not Funded	< £10k	Aborted	Reduction in emissions	Planning Related EV policies in place	Policy drafted	Superseded by changes to Building Regulations in May 2022
BW 10	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	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 months testing from 10 years old. If fails a retest will no longer be licensed.
BW 11	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	Partially Funded	£1 million - £10 million	Underway	Reduction in emissions	Policies updated	EURO IV refuse fleet and recycling vehicles delivered March 2020. 14% of council light fleet transferred to EV. EV chargers installed and operational for council fleet vehicles at Knutton Depot. HGV vehicles have changed to HVO fuel.	Requires budget for capital expenditure by council
HS2 Phase 2a route	Ensure that emissions associated with construction and operation including off	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2017	2032	HS2 and contractors / Newcastle under Lyme Borough Council	HS2 and contractors	Funded	£1 million - £10 million	Aborted	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 and coming into operation by 2033

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
	network effects do not cause exceedances of objectives or limit values												Minimum Standards, Construction Plans and monitoring plans in place	

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[7], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter ($PM_{2.5}$). There is clear evidence that $PM_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases. As shown in table 2.3 below, it is estimated that in Newcastle under Lyme between 2018 and 2023, 5.4% of all deaths of those aged over 30 can be attributed to exposure to $PM_{2.5}$, compared to 6.1% across England. As shown in table 2.4, it is estimated that 70 deaths in in people over 30 years old were attributable to pm2.5 2023 (equivalent to 4.9% of the total for that year)

Overall, the estimated cost to individuals and society is more than £20 billion annually for the UK.

Table 2.3 Estimated average number of deaths by local authority area attributable to $PM_{2.5}$ within Staffordshire for adults over 30 between 2018 to 2023

District/County	Percentage
Newcastle-under-Lyme	5.4%
Stafford	5.3%
East Staffordshire	5.8%
South Staffordshire	5.6%
Lichfield	5.8%
Staffordshire Moorlands	5.1%
Cannock Chase	5.7%
Tamworth	6.1%
Stoke on Trent	5.7%
Staffordshire County	5.6%
England	6.1%

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

Table 2.4 Public Health Outcomes Framework Indicator 3.01- Fraction of annual all cause adult mortality attributable to anthropogenic (human made) particulate air pollution (measured as fine particulate matter, $PM_{2.5}$) for Staffordshire Authorities 2019 to 2023

	2019			2020			2021			2022			2023		
District/County	Deaths - all causes persons 30+	%*	Estimated attributable deaths	Deaths - all causes persons 30+	%*	Estimated attributable deaths	Deaths - all causes persons 30+	%*	Estimated attributable deaths	Deaths - all causes persons 30+	%*	Estimated attributable deaths	Deaths - all causes persons 30+	%*	Estimated attributable deaths
Newcastle-under-Lyme	1282	6.8	90	1548	4.7	70	1409	5	70	1402	5.1	70	1417	4.9	70
Stafford	1315	6.8	90	1565	4.5	70	1432	4.8	70	1433	5.0	70	1518	4.7	70
East Staffordshire	1128	7.3	80	1355	5.1	70	1287	5.1	70	1141	5.6	60	1129	5.3	60
South Staffordshire	1212	7.0	90	1418	4.9	70	1333	5.1	70	1297	5.3	70	1317	4.8	60
Lichfield	1093	7.2	80	1272	5.2	70	1129	5.1	60	1155	5.5	60	1170	5.2	60
Staffordshire Moorlands	1080	6.6	70	1276	4.5	60	1133	4.7	50	1186	4.9	60	1221	4.8	60
Cannock Chase	908	7.2	70	1046	5.1	50	1089	5.2	60	1038	5.4	60	1037	5.1	50
Tamworth	678	7.7	50	752	5.6	40	730	5.4	40	734	5.7	40	707	5.4	40
Stoke on Trent	2490	7.2	180	3034	5.0	150	2790	5.2	150	2569	5.3	140	2691	5.4	140
Staffordshire	8692	7.0	610	10227	4.9	500	9539	5	480	9380	5.3	500	9511	5.0	480

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

Only Stoke on Trent monitor locally for PM_{10}. However, several authorities, including Newcastle under Lyme, have been approached by Defra to host an Automatic Urban and Rural Network (AURN), which if suitable sites can be found would mean that these councils will have PM data specific to their area rather than having to rely on the $PM_{2.5}$ background maps provided by Defra. Currently the nearest AURN station to Newcastle under Lyme is in the centre of Stoke on Trent.

As Newcastle under Lyme Borough does not monitor $PM_{2.5}$ or PM_{10}, a map indicating the areas with the highest four levels of background annual mean $PM_{2.5}$ concentrations and the areas with the lowest four levels of minimum background annual mean $PM_{2.5}$ has been derived from the Defra Background maps. Newcastle under Lyme Borough Council has determined that the highest background PM_{10} concentration is 9.1 $\mu g/m^3$, located in the 1km grid square which includes the M6 motorway at Keele. The lowest PM_{10} concentration is 5.9 $\mu g/m^3$, located in the rural part of the Borough at Tyrley.

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

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

The percentage estimated number of deaths attributable to $PM_{2.5}$ in adults over 30 has been translated into the estimated number of attributable deaths for each local authority area within Staffordshire and are shown below. The data presented to 2023 is the latest data available at time of publication of this report. Approximately 5.6% of deaths of adults over 30 between 2018 to 2023 within the County can be attributed to $PM_{2.5}$.

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

Staffordshire Authorities are currently implementing measures to reduce levels of NO_2 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 $PM_{2.5}$, many of the

measures are complementary, reducing not just NO_2 but also other pollutants including particulate matter.

Table 2.5 outlines various measures that Newcastle-under-Lyme Borough Council and Staffordshire County Council are taking to address $PM_{2.5}$.

As shown witin the table 2.5, the measures taken to reduce concentrations of $pm_{2.5}$ will also have the effect of reducing concentrations of NO_2 and particulate matter.

During 2024, Newcastle under Lyme took a number of direct measures to address $PM_{2.5}$. In particular, where relevant, planning applicants were required to submit a Construction Management Plan (CMP), including controls for dust emissions. These CMPs are reviewed by the Environmental Services Team to ensure that the risk of dust emissions was properly considered and that appropriate mitigation measures were applied.

In addition, the potential for emission of particulate matter was controlled through inspection and regulation of activities under Environmental Permits, such as concrete batching plants, mineral processing sites and ceramic factories.

The major conurbations within the borough have been designated as smoke control areas. In 2024, seven complaints were received regarding smoke. No enforcement activity, in the form of formal warning letters or financial penalties, was carried out in relation to smoke control area contraventions during 2024 as relevant matters were addressed informally. Newcastle under Lyme Borough Council intends to promote the uptake energy efficiency measures, low emission boilers and higher efficiency/lower emission solid fuel appliances as part of the implementation of the Borough wide smoke control area. The use of enforcement powers will be considered alongside this.

$PM_{2.5}$ in Staffordshire & Stoke-on-Trent - Next steps

As $PM_{2.5}$ 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 revised AQAP, once issued, and 2025 ASR.

- To maintain compliance with the 2020 EU limit value of 25µg/m^3.

- To include Public Health Outcome Framework Indicator D01 in the Staffordshire and District Authority and City Council Joint Strategic Needs Assessment onwards and to report progress to the relevant Health and Wellbeing Boards.
- To continue to identify risks affecting $PM_{2.5}$ which need to be addressed at a national and local level.
- To revoke existing smoke control areas, which only cover the major conurbations, and to put in place a single smoke control area to cover the whole Borough and areas being targeted for development upon 1st April, 2027.
- To promote uptake of energy efficiency measures, lower emission solid fuel appliances and alternative, low emission, sources of heating (such as heat pumps).

Table 2.5 Measures being undertaken within Newcastle under Lyme to $PM_{2.5}$

Category	Measure Classification	Effect on reducing NOx and PM_{10} emissions	Reduce $PM_{2.5}$ emissions	Existing Measure	Measure in Newcastle under Lyme
Traffic Management	Urban Traffic Control systems, Congestion management, traffic reduction	low	✓	✓	UTC SCOOT software has been used to Coordinate Road traffic signals in areas of the AQMA 2 Newcastle under Lyme (Town Centre) and AQMA 1 Kidsgrove with live labs monitoring work in relation to congestion in Newcastle.
	Anti-idling Enforcement	low	✓	✓	Ant-idling Campaign Toolkits have been developed and are available to schools for pupil run campaign
Promoting Travel Alternatives	Workplace Travel Planning	low	✓	✓	Where developers are required to produce and implement workplace travel plans as part of the planning process, SCC review them and monitor the outcomes.
	Encourage / Facilitate homeworking	low	✓	✓	A home working policy has been adopted by the Council
	School Travel Plans	low	✓	✓	Where School Travel Plans are required as part of the planning process, SCC review and monitor the outcomes

					Residential developers are required to make S106 contributions where appropriate to fund active travel measures and initiatives carried out within schools. School Travel Plans are written and produced by the Active School Travel Team for any school in Staffordshire wishing to take part in the accredited to Modeshift STARS. Resources, toolkits, assemblies, campaigns and lesson plans to encourage behaviour change are provided.
	Promotion of cycling	low	✓	✓	The local cycling and walking infrastructure plans have been reviewed to include additional areas Further information regarding Cycling and active travel is available at Cycle & active travel INTO Walking and Cycling Social Prescribing is providing coach-led walks, bike rides, training and one-to-one sessions. Further information is available from INTO The benefits of Cycling and the government`s cycle to work scheme are being promoted through the Travel Plan Process Bikeability is being promoted and delivered in most schools in Staffordshire and 80% of all year 6 pupils are to receive Bikeability training by 2025.
	Promotion of walking	low	✓	✓	The local cycling and walking infrastructure plans have been reviewed to include additional areas Further information regarding Cycling and active travel is available at Cycle & active travel INTO Walking and Cycling Social Prescribing is providing coach-led walks, bike rides, training and one-to-one sessions. Further information is available from INTO

					Walk to school campaign resources are offered free to all Staffordshire schools including railing banner, posters, digital toolkit and reward bookmarks for pupils The benefits of Walking is promoted through the Travel Plan process Walking routes and trails are promoted at Walks and Country Trails
	Promote use of rail and inland waterways	medium	✓	✓	North Staffordshire Community Rail Partnership, operating along the North Staffordshire Line and including Kidsgrove station, works with the community to promote rail transport. Further information is available at from the North Staffordshire Community Rail Partnership Kidsgrove station is being redeveloped to be fully accessible through the Town Deal.
	Staffordshire Share a Lift Scheme		✓	✓	Car Share schemes are promoted within the travel plan process.
Transport Planning & Infrastructure	Local Transport Plans and District Strategies	high	✓	✓	The transport strategy for Newcastle-under-Lyme has been developed to help prioritise the County Council's expenditure on transport improvements and secure potential resources to allow delivery, including developer contributions and Government funding. Further information is available at Transport Plan
	Public transport improvements- interchanges stations and services	low	✓	✓	Kidsgrove Station interchange plans are intended to be mulit-modal and will improve connectivity between Kidsgrove and the wider area. Further information is available at Kidsgrove Town Deal project

	Active Travel Fund	low	✓	✓	Active Travel Fund 2 measures have been developed to encourage walking and cycling linking Newcastle Town Centre, Newcastle Greenway, Keele University, and Stoke-on-Trent. Further information is available at Active travel Newcastle - Staffordshire County Council
	Bus route improvements	high	✓	✓	As a result of Bus Service Improvement Plans (BSIP) & BSIP+ funding, consideration is being given to bus route improvements where feasible. A new 95 route from Audley to Biddulph introduced
Policy Guidance and Development Control	Planning applications to require assessment of exposure / emissions for development requiring air quality impact assessment	high	✓	✓	A Local Validation list has been implemented which draws attention to need to submit appropriate assessments of air quality impacts as part of the planning application process.
	Air Quality Strategy		✓	✓	The revised Air Quality Action Plan, now expected in late 2025, will include requirements for control of $PM_{2.5}$
	Planning Guidance for developers		✓	✓	Guidance for developers will be developed alongside the Borough Council` new Local Plan
	Developer Contributions		✓	✓	

	based on damage cost calculation				The introduction of damage costs assessments associated with new developments will be considered alongside the development of planning guidance and the local plan.
	Planning Policies		✓	✓	Various planning policies have been implemented to minimise impacts or developments.
	Low Emissions Strategy	high	✓	✓	A low emission strategy is under development
Vehicle Fleet Efficiency	Fleet efficiency & recognition schemes	medium	✓	✓	Staffordshire County Council's has developed a Climate Change Action Plan with is available at Climate-Change-Action-Plan -
Promoting low emission transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	high	✓	✓	The Newcastle towns deal includes expansion of the EV charging infrastructure
	Adoption of SCC EV Strategy	high	✓	✓	SCC EV charging Strategy has been adopted, see item 8 of the agenda of the cabinet meeting at Agenda of Cabinet Meeting of 10 January, 2023

Environmental permits	Introduction/increase of environment charges through permit systems and economic instruments (Permit fees set centrally)	medium	✓	✓	Regulation of industrial processes to prevent, or minimise, emissions. Further information regarding the regulation of industrial activities can be found at Local Authorities General Permitting General Guidance Manual & Environmental Permitting Core Guidance
	Measures to reduce pollution through Environmental Permits going beyond BAT	medium	✓	✓	Regulation of industrial processes to prevent, or minimise, emissions. Further information regarding the regulation of industrial activities can be found at Local Authorities General Permitting General Guidance Manual & Environmental Permitting Core Guidance
	Large Combustion Plant Permits & National Plans going beyond BAT	high	✓	✓	Regulation of industrial processes to prevent, or minimise, emissions. Further information regarding the regulation of large combustion plants can be found at Environmental Permitting Guidance on the Large-Combustion-Plants Directive
Other Measures	Smoky Diesel Hotline		✓	✓	Tackle smoking vehicle exhausts by encouraging people to report them to the Driver and Vehicle Standards Agency at Report a smoky vehicle or the Police

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

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Newcastle under Lyme undertook automatic (continuous) monitoring at one site during 2024. Table A.1 in Appendix A shows the details of the automatic monitoring site.

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

3.1.2 Non-Automatic Monitoring Sites

Newcastle under Lyme undertook non- automatic (i.e. passive) monitoring of NO_2 at 78 sites during 2024.

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

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted

for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

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

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

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

Automatic Monitoring.

Continuous monitoring was carried out within AQMA 2 – Town Centre at CM1 (Queens Gardens) and no NO_2 hourly mean concentration exceeded the hourly mean air quality objective of 200µg/$m^{3,}$ during 2024 which was consisten with previous years.

The annual mean concentration at CM1 during 2024 was 21.2 ug/ m3. As shown within figure A-0 within appendix A, there is a slight downward trend overall between 2020 and 2024.

Non-Automatic Monitoring.

Figures A1 to A7 within appendix A show trends in NO_2 annual mean concentrations between years 2020 to 2024, as identified during the non-automatic monitoring, for each. Trends are presented separately for each individual AQMA (and any monitoring locations which are in close proximity of an AQMA) and for each geographical area outside of an AQMA. Any exceedances, trends or other relevant factors are discussed, and key issues are summarised below:

AQMA 1 Kidsgrove.

The predominant source of pollution within AQMA 1 is road traffic upon the A50 as it passes through Kidsgrove and terraced buildings at the roadside inhibit dispersion.

Figure A.1 presents NO_2 annual mean concentrations for sites within AQMA1 - Kidsgrove with the monitoring locations being shown within figure D2.

An increase in concentration was observed from 2020 to 2022 as traffic flows returned to normal following the Covid-19 pandemic but since then there is a general trend of reduction is observed across the sites.

There were no exceedances of the annual mean objective in 2024. Concentrations at DT94 (116 Liverpool Road) can be seen to have been within 10% of the air quality objective during 2021, 2022 and 2023 before falling to 31.2ug/ m^3 in 2024. However, the monitoring location is not a relevant location and distance correction calculations predict the concentration at the façade of the nearest relevant receptor to be below 36ug/ m^3 for each of the 5 years (33.0 ug/ m^3 being predicted at the façade in 2023 which was the year with the highest measurement at 37.7 ug/ m^3).

As there has been no exceedance of the air quality objective and no monitoring location is within 10% of the air quality objective, the Council is looking to revoke the AQMA.

AQMA 2 Newcastle under Lyme

The predominant source of pollution within AQMA 2 is road traffic upon the A34, ring road and A53 as it passes through the town centre or uses the A53 which link the town to Stoke on Trent. There are several roundabout and pedestrian crossings which affect traffic flow and, in places, terraced buildings at the roadside inhibit dispersion.

*Figure A.2 presents NO_2 annual mean concentrations for sites within AQMA 2 – Newcastle and t*he monitoring locations are shown within figure D9 and figure D10. It should be noted that DT107 (Knutton Lane), DT108 (24A Clayton Road) and DT130 (St Georges Church, Brampton) are not actually within the AQMA itself but are just outside the boundary and will be influenced by the same traffic as it enters and leaves the town.

An increase in concentration was observed from 2020 to 2022 as traffic flows returned to normal following the Covid-19 pandemic (with a further increase being observed during 2023 in several locations); however, since then there is a general trend of reduction experienced across most sites with the exception of locations DT102 (Belong, Lower

Street) and DT104 (7 King Street). No monitoring data was obtained for location DT100 (Sainsburys Car Park) during 2024 as the site was not accessible due to construction works. These works have now been completed, and diffusion tubes are now being deployed to the location.

There was only one exceedance of the annual mean objective in 2024 where a concentration of 40.6 ug/ m^3 was reported at DT102 (Belong, Lower Street) Following distance correction, this was calculated to be 40.3 ug/ m^3 at the nearest relevant receptor. This was significant increase upon previous years and no corresponding increase was observed at nearby monitoring locations upon the same stretch of road (DT88 (27 Lower Street)).

An exceedance was reported at DT76 (11 Brunswick Street) and DT104 (7 King Street) during 2023, the concentrations in both locations have now fallen below the air quality objective. The concentration at DT104 (38.9ug/ m^3) can be seen to still be within 10% of the air quality objective during 2024. DT104 is not deployed to a relevant location but there are relevant receptors within the same row of terraced buildings which are equidistant from the road,

DT102 and DT104 are both located upon terraced facades, upon slight inclines and just after roundabouts. The high concentrations are therefore attributed to poor dispersion of vehicle exhaust emissions and vehicles accelerate up bank after leaving the roundabouts. It is unclear though, at present, as to what has given rise to the increase in 2024.

Urban traffic control measures implemented within this area, the increasing uptake of low emission vehicles across the brough and the promotion of active travel should bring these sites into compliance with the air quality objective over time.

AQMA 3 Maybank, Wolstanton & Porthill

Basford Bank and Grange Lane (A527) are busy roads which link the area to neighbouring Stoke on Trent and provide access to the A500.This results in heavy traffic flows within AQMA 3 and the predominant source of pollution within AQMA 3 is road traffic. In places terraced buildings at the roadside inhibit dispersion.

Figure A.3 presents NO_2 annual mean concentrations for sites within AQMA 3 Maybank, Wolstanton and Porthill and the monitoring locations are shown within figures D6 and D7. DTUB1 (Hartington Street), DT127 (Victoria Public House Maybank) and DT128 (34

Brampton Road) are not within the AQMA itself but DT127 and DT128 are located upon the A527 adjacent to the AQMA and DTUB1 provides an urban background measurement nearby.

An increase in concentration was observed from 2020 to 2022 as traffic flows returned to normal following the Covid-19 pandemic but since then there is a general trend of reduction experienced across the sites with the exception of DT24 (26 High Street, May Bank) and DT40 (Banktop Court, Porthill) where a steady increase has been observed year on year. It is unclear as to why concentrations are increasing within these locations; however, the concentrations are still substantially lower than the annual mean objective.

A slight increase was observed at DTUB1, however this is an urban background site and the concentrations are very low.

There are no exceedances of the annual mean objective in 2024, and no site can be seen to exceed 36ug/ m^3. This has been the case for over five years and so the Council is currently in the process of revoking AQMA 3.

Kidsgrove (outside AQMA 1)

Figure A.4 presents NO_2 annual mean concentrations for sites within parts of Kidsgrove which are outside of AQMA 1, and monitoring locations are shown within figures D3 and D4. These monitoring locations, are to the East and West of AQMA 1, being situated upon the A34 and the A50 and being influenced by emission from road traffic vehicles using these roads.

An increase in concentration was observed from 2020 to 2022/23 as traffic flows returned to normal following the Covid-19 pandemic but since then there is a general trend of reduction experienced across the sites

There are no exceedances of the annual mean objective in 2024, and no location was observed to be within 10% of the objective.

Chesterton Talke and Bradwell

Figure A.5 presents NO_2 annual mean concentrations for sites adjacent to the A34 within Chesterton, Talke and with the monitoring locations being shown within figures D5.

An increase in concentration was observed from 2020 to 2022/23 as traffic flows returned to normal following the Covid-19 pandemic but since then there is a general trend of

reduction experienced across the sites although a substantial increase was observed at DT111 (Talke Road, A34 Bradwell) within 2024. It is unclear as to what gave rise to this increase; however, the concentration is well below the air quality objective and is some distance from a relevant location.

The high concentrations previously observed at DT145 (Entrance to Beata Road) have continued to reduce from a peak of 40.5ug/ m^3 in 2022 to 35.5ug/ m^3 in 2024. This location is some distance for a relevant location as so there was no requirement to declare an air quality management area previously.

There are no exceedances of the annual mean objective in 2024, and no location was observed to be within 10% of the objective

Silverdale, Knutton and Cross Heath

Monitoring is carried within Silverdale, Knutton and Cross Heath along the route between the A525 to the A34.

Figure A.6 presents NO_2 annual mean concentrations for sites within Silverdale, Knutton and Cross Heath and the monitoring locations are shown within figure D8 and D6.

An increase in concentration was observed from 2020 to 2022 as traffic flows returned to normal following the Covid-19 pandemic but since then there is a general trend of reduction experienced across the sites.

There are no exceedances of the annual mean objective in 2024, and no location was observed to be within 10% of the objective.

Thistleberry, Clayton & Seabridge.

Monitoring is carried out along the A53 and A519 which are major routes into the town centre and are influenced by traffic using junction 15 of the M6. Figure A.7 presents NO_2 annual mean concentrations for sites within Thistleberry, Clayton and Seabridge and the monitoring locations are shown within figures D11 and D12.

An increase in concentration was observed from 2020 to 2022/23 as traffic flows returned to normal following the Covid-19 pandemic but since then there is a general trend of reduction experienced across the sites.

A slight increase was observed at DTUB2; however, this is an urban background site and the concentrations are very low.

There are no exceedances of the annual mean objective in 2024, and no location was observed to be within 10% of the objective

Summary

The two locations (DT76 (11 Brunswick Street) and DT104 (7 King Street) found to exceed the annual mean objections for NO_2 in 2023 were no longer in exceedance. The two locations found to be within 10% of this objective within 2023 (DT94 (116 Liverpool Road) and DT135 (Beata Road) had fallen below 36 ug/ m^3 in 2024.

In 2024, No annual mean was found to be greater than 60µg/m^3, which indicates that it is likely that there was no exceedance of the 1-hour mean objective at any site.

Only one location, DT102 (Belong, Lower Street) was identified as being in exceedance of the annual mean objective in 2024 where a concentration of 40.6 ug/ m^3 was observed (this was calculated to be 40.3 ug/ m^3 at the nearest relevant receptor). This was significant increase upon previous years and no corresponding increase was observed at nearby monitoring locations upon the same stretch of road (DT88).

Only one location DT104 (7 King Street) was identified as being within 10% of the annual mean objective in 2024 where a concentration of 38.9ug/ m^3 was observed. DT104 is not deployed at a relevant location but there are relevant receptors within the same row of terraced buildings which are equidistant from the road, if it is assumed that if the concentration is the same at this position, a concentration of 38.2 is predicted at the nearest relevant receptor. Both DT102 and DT104 are located within AQMA 2 – Town Centre.

With the exception of DT76 (11 Brunswick Street), DT102 (Belong, Lower Street) and DT104 (7 King Street), all monitoring locations within AQMA 2 have been consistently below 36ug/ m^3 over the last 5 years. However, as these three locations are dispersed across the AQMA, there is no plan to amend the area of AQMA 2 at present.

Within 2024, there were no exceedances of the annual mean objective, and no site can be seen to exceeded 36ug/ m^3 at any relevant location within AQMA 1 – Kidsgrove, or AQMA

3 Maybank Wolstanton & Porthill. This has been the case for over five years and so the Council is currently in the process of revoking AQMA 3 and AQMA 1.

The NO_2 concentrations, and five year trends, at the monitoring sites across the borough indicated that there was no need to propose any new AQMAs.

With regards to general trends, an increase in NO_2 annual mean concentration was observed from 2020 to 2022, in some locations this continued until 2023, as traffic flows returned to normal following the Covid-19 pandemic; but, since then there is a general trend of reduction of NO_2 concentrations across virtually all monitoring locations. However, it was noted that there was a slight increase in both urban background sites, DTUB1 (Hartington Street, Wolstanton) and DTUB2 (4 Sneyd Crescent, Westlands), within 2024.

No monitoring data was obtained for location DT100 during 2024 as the site was not accessible due to construction works. These works have now been completed, and diffusion tubes are now being deployed to the location. The automatic monitoring carried out at CM1 (Queens Gardens) was discontinued at the end of the 2024 monitoring period for the reasons described within appendix C. No other changes to the monitoring regime are planned for the 2025 monitoring period.

3.2.2 Particulate Matter (PM_{10}) and Particulate Matter ($PM_{2.5}$)

Particulate Matter is not measured by NULBC.

3.2.3 Sulphur Dioxide (SO_2)

Sulphur dioxide is not measured by NULBC.

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)	Distance to kerb of nearest road (m)	Inlet Height (m)
CM1	Newcastle under Lyme Queen's Gardens	Roadside	385054	346134	NO_2	YES. AQMA 2	Chemiluminescent	10	8	1.8

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DTK1	A34 Holy Trinity	Kerbside	385051	345726	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	22.0	3.0	No	2.5
DTK2	76 King St, N/C	Urban Centre	385469	346362	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	3.0	No	2.5
DTUB1	Wolstanton, Hartington St	Kerbside	384739	348326	NO_2	No	7.0	2.0	No	2.5
DTUB2	Westlands, 4 Sneyd Crescent	Kerbside	383916	345059	NO_2	No	10.0	2.0	No	2.5
DT6	106 Liverpool Rd	Suburban	384014	354429	NO_2	Yes - AQMA 1	0.2	4.0	No	2.5
DT9	32 Porthill Bank	Suburban	385519	349055	NO_2	Yes – AQMA 3	0.2	6.0	No	2.5
DT11	34 London Road, N/C	Suburban	385112	345636	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	3.0	No	2.5
DT24	26 High St, May Bank	Roadside	385574	347530	NO_2	YES – AQMA 3	0.2	3.0	No	2.5
DT34	15 Barracks Road	Urban Centre	385059	345840	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	4.0	No	2.5
DT39	4/6 Liverpool Road, Kidsgrove	Suburban	383560	354739	NO_2	Yes - AQMA 1	0.2	2.0	No	2.5
DT40	Banktop Court, Porthill	Suburban	385128	348811	NO_2	YES – AQMA 3	0.2	11.0	No	2.5
DT46	1 London Road (Trinity Court)	Urban Centre	385073	345685	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	4.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT47	1 London Rd (Brook La)	Urban Centre	385023	345678	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	8.0	No	2.5
DT49	2 Vale View, Porthill	Urban Centre	385595	349129	NO_2	YES – AQMA 3	0.3	5.0	No	2.5
DT64	Kidsgrove Carpets 57 - 59 Liverpool Road	Urban Centre	383950	354445	NO_2	Yes - AQMA 1	0.2	2.0	No	2.5
DT72	134 High Street Newcastle	Roadside	384981	345750	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	3.0	3.0	No	2.5
DT73	21 London Road Newcastle	Roadside	385070	345738	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	4.0	No	2.5
DT74	39 London Road Newcastle	Roadside	385132	345640	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	4.0	No	2.5
DT76	11 Brunswick Street Newcastle	Roadside	385226	346156	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0	No	2.5
DT84	102 King Street Newcastle	Roadside	385548	346400	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	4.0	No	2.5
DT85	106 King Street Newcastle	Urban Centre	385575	346413	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	4.0	No	2.5
DT86	Hassell C.P. School Barracks Road N/C	Urban Centre	385075	345910	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	7.0	No	2.5
DT87	1 King Street Newcastle	Urban Centre	385105	346225	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	5.0	No	2.5
DT88	27 Lower Street Newcastle	Urban Centre	384709	345881	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	5.0	No	2.5
DT89, DT90, DT91	Queens Gardens, Newcastle	Urban Centre	385054	346134	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	10.0	8.0	Yes	1.8
DT92	41/43 Liverpool Road Kidsgrove	Roadside	383890	354461	NO_2	Yes - AQMA 1	0.2	2.0	No	2.5
DT93	118 Liverpool Road Kidsgrove	Roadside	384056	354393	NO_2	Yes - AQMA 1	0.2	3.0	No	2.5
DT94	116 Liverpool Road Kidsgrove	Roadside	384030	354416	NO_2	Yes - AQMA 1	2.0	2.0	No	2.5
DT95	76 London Road Newcastle	Roadside	385171	345539	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0	No	2.5
DT96	On Lamppost Next to JJ Design London Road Newcastle	Roadside	385131	345601	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0	No	2.5
DT97	Blackfriars/ Lower Street	Roadside	384795	345796	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	27.0	1.0	No	2.5
DT98	Newcastle Taxis Brunswick Street	Roadside	385327	346148	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT101	Blackburn House Lower Street Newcastle	Roadside	384806	345842	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	10.0	2.0	No	2.5
DT102	Belong Lower Street Newcastle	Roadside	384609	346007	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	6.0	No	2.5
DT103	Grange Lange/High Street Wolstanton	Roadside	385682	347909	NO_2	YES - AQMA 3	0.2	2.0	No	2.5
DT104	7 King Street Newcastle	Roadside	385213	346270	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	0.2	2.0	No	2.5
DT105	The Avenue Kidsgrove	Roadside	383991	354418	NO_2	Yes - AQMA 1	12.0	1.0	No	2.5
DT107a (N1a) DT107b (N1b) DT107C (N1c)	Knutton Lane	Roadside	384495	346298	NO_2	No	6.0	2.0	No	2.5
DT108a (N2a) DT108b (N2b) DT108c (N2c)	24A Clayton Road, Newcastle	Roadside	384961	345346	NO_2	No	7.0	1.0	No	2.5
DT109a (N3a) DT109b (N3b) DT109c (N3c)	Clayton Road (Opp Nuffield)	Roadside	385190	343318	NO_2	No	16.0	1.0	No	2.5
DT110a (N4a) DT110b (N4b) DT110c (N4c)	Holiday Inn Layby	Roadside	385110	342314	NO_2	No	39.0	2.0	No	2.5
DT111a (N5a) DT111b (N5b) DT111c (N5c)	Talke Road, A34 Bradwell	Roadside	383882	349558	NO_2	No	20.0	4.0	No	2.5
DT112a (N6a) DT112b (N6b) DT112c (N6c)	A53 Whitmore Road	Roadside	382286	341956	NO_2	No	120.0	2.0	No	2.5
DT113a (N7a) DT113b (N7b) DT113c (N7c)	A53 Whitmore Road/ Seabridge Lane	Roadside	383052	343666	NO_2	No	107.0	2.0	No	2.5
DT114a (N8a) DT114b (N8b) DT114c (N8c)	11 Sneyd Avenue	Roadside	383953	344832	NO_2	No	13.0	2.0	No	2.5
DT115a (N9a) DT115b (N9b) DT115c (N9c)	Newcastle Community School Layby	Roadside	383545	345195	NO_2	No	20.0	1.0	No	2.5
DT116a (N10a) DT116b (N10b) DT116c (N10c)	Gallowstree Lane	Roadside	383157	345431	NO_2	No	50.0	2.0	No	2.5
DT117a (N11a) DT117b (N11b) DT117c (N11c)	Clough Hall Drive	Roadside	383199	352740	NO_2	No	15.0	2.0	No	2.5
DT118a (N12a) DT118b (N12b) DT118c (N12c)	156 Newcastle Road	Roadside	382934	353388	NO_2	No	20.0	2.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT119a (N13 a) DT119b (N13 b) DT119c (N13 c)	Butt Lane Primary School	Roadside	382600	354062	NO_2	No	15.0	2.0	No	2.5
DT120a (N14a) DT120b (N14b), DT120c (N14c)	Pets and Pastimes, Butt Lane	Roadside	382707	354305	NO_2	No	2.0	2.0	No	2.5
DT121a (N15a) DT121b (N15b) DT121c (N15c)	One-Sure Insurance, Butt Lane	Roadside	382736	354385	NO_2	No	10.0	2.0	No	2.5
DT122a (N16a) DT122b (N16b) DT122c (N16c)	Aldi Bus Stop, Liverpool Road, Kidsgrove	Roadside	384261	354207	NO_2	No	10.0	3.0	No	2.5
DT123a (N17a) DT123b (N17b) DT123c (N17c)	Skate Park, Liverpool Road, Kidsgrove	Roadside	384638	354133	NO_2	No	20.0	2.0	No	2.5
DT124a (N18a) DT124b (N18b) DT124c (N18c)	51 Kidsgrove Bank	Roadside	385019	353832	NO_2	Yes - AQMA 3	14.0	2.0	No	2.5
DT125a (N19a) DT125b (N19b) DT125c (N19c)	Adlington House Care Home, Wolstanton	Roadside	385387	348389	NO_2	Yes - AQMA 3	7.0	2.0	No	2.5
DT126a (N20a) DT126b (N20b) DT126c (N20c)	Morris Square, Wolstanton	Roadside	385556	348224	NO_2	No	20.0	2.0	No	2.5
DT127a (N21a) DT127b (N21b) DT127c (N21c)	Victoria Public House, May Bank	Roadside	385416	347424	NO_2	No	10.0	2.0	No	2.5
DT128a (N22a) DT128b (N22b) DT128c (N22c)	36 Brampton Road	Roadside	385512	347373	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	6.0	2.0	No	2.5
DT129a (N23a) DT129b (N23b) DT129c (N23c)	Ebenezer House, Newcastle	Roadside	384968	346228	NO_2	No	30.0	1.0	No	2.5
DT130a (N24a) DT130b (N24b) DT130c (N24c)	St Georges Church, Brampton	Roadside	385098	346395	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	20.0	1.0	No	2.5
DT131a (N25a) DT131b (N25b) DT131c (N25c)	27 King Street, Newcastle	Kerbside	385463	346374	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	5.0	0.5	No	2.5
DT132a (N26a) DT132b (N26b) DT132c (N26c)	603 Etruria Road	Roadside	385612	346436	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	5.0	2.0	No	2.5
DT133a (N27a) DT133b (N27b) DT133c (N27c)	Charlotte House, Etruria Road	Roadside	385926	346580	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	5.0	2.0	No	2.5
DT134a (N28a) DT134b (N28b) DT134c (N28c)	528 Etruria Road, Basford	Roadside	386009	346600	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	9.0	2.0	No	2.5
DT135a (N29a) DT135b (N29b) DT135c (N29c)	Andrew Place	Roadside	385518	346128	NO_2	YES - AQMA 2: Newcastle-under-Lyme Town Centre	20.0	2.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT136a (N30a) DT136b (N30b) DT136c (N30c)	No 1 London Road Trinity Court on Road Sign	Roadside	385078	345687	NO_2	No	3.0	2.0	No	2.5
DT137a (N31a) DT137b (N31b) DT137c (N31c)	Old Garage site, Cemetery Road	Roadside	382795	346011	NO_2	No	187.0	2.0	No	2.5
DT138a (N32a) DT138b (N32b) DT138c (N32c)	Post Office Depot, Church Lane	Roadside	383113	346592	NO_2	No	20.0	2.0	No	2.5
DT139a (N33a) DT139b (N33b) DT139c (N33c)	Church Lane/ Acacia Gardens	Roadside	383302	346727	NO_2	No	16.0	1.0	No	2.5
DT140a (N34a) DT140b (N34b) DT140c (N34c)	Lower Milehouse Lane opposite Morrison's Delivery	Roadside	383930	347273	NO_2	No	20.0	1.0	No	2.5
DT141a (N35a) DT141b (N35b) DT141c (N35c)	Pelican Crossing Lower Milehouse Lane near to Milehouse Restaurant	Roadside	384337	347534	NO_2	No	5.0	2.0	No	2.5
DT142a (N36a) DT142b (N36b) DT142c (N36c)	A34 Bus stop by Bakery	Roadside	384207	347915	NO_2	No	50.0	2.0	No	2.5
DT143a (N37a) DT143b (N37b) DT143c (N37c)	Back of Road Sign near to Rosendale Avenue	Roadside	384021	348925	NO_2	No	10.0	1.0	No	2.5
DT144a (N38a) DT144b (N38b) DT144c (N38c)	A34 On Traffic Sign near to Parkhouse Industrial West (Screwfix)	Roadside	383764	349912	NO_2	No	260.0	1.0	No	2.5
DT145a (N39a) DT145b (N39b) DT145c (N39c)	On Entrance to Beta Road on lamp post with Camera Sign.	Roadside	383670	350326	NO_2	No	20.0	2.0	No	2.5
DT146a (N40a) DT146b (N40b) DT146c (N40c)	On Give way sign exit to High Carr Business Park.	Roadside	383587	350790	NO_2	No	80.0	2.0	No	2.5

Notes:

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

(2) N/A if not applicable.

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
CM1	385054	346134	Roadside	97.7	97.7	25.6	18.0	23.2	26.5	21.2

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

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

☐ **Where exceedances of the NO_2 annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2024.**

Notes:

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

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

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

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

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

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

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

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DTK1	385051	345726	Kerbside	100.0	49.1	27.4	31.4	33.5	34.4	27.6
DTK2	385469	346362	Urban Centre	100.0	56.1	20.1	21.4	24.9	24.5	20.8
DTUB1	384739	348326	Kerbside	100.0	65.8	12.3	13.6	14.3	12.5	13.5
DTUB2	383916	345059	Kerbside	100.0	65.8	9.9	10.8	11.2	9.9	10.2
DT6	384014	354429	Suburban	100.0	56.3	27.3	30.6	31.7	30.1	27.8
DT9	385519	349055	Suburban	100.0	65.8	24.6	26.9	28.4	27.3	24.8
DT11	385112	345636	Suburban	100.0	56.6	25.7	29.6	30.4	25.5	23.2
DT24	385574	347530	Roadside	100.0	39.1	22.9	25.3	26.7	27.1	28.3
DT34	385059	345840	Urban Centre	100.0	58.0	21.2	25.4	26.3	26.0	21.8
DT39	383560	354739	Suburban	100.0	56.6	23.6	26.9	27.3	28.5	24.3
DT40	385128	348811	Suburban	100.0	65.8	19.4	20.5	20.9	21.1	21.8
DT46	385073	345685	Urban Centre	100.0	65.8	18.6	21.7	24.2	21.8	20.1
DT47	385023	345678	Urban Centre	100.0	56.6	19.2	23.6	23.0	22.1	20.4
DT49	385595	349129	Urban Centre	100.0	65.8	21.9	25.1	25.7	24.7	21.7
DT64	383950	354445	Urban Centre	100.0	65.8	24.5	28.9	29.8	26.2	26.8
DT72	384981	345750	Roadside	100.0	48.8	24.3	27.4	30.5	28.0	27.2
DT73	385070	345738	Roadside	100.0	56.6	27.7	30.8	31.9	31.3	27.6
DT74	385132	345640	Roadside	100.0	50.1	22.6	27.2	29.3	33.3	28.5
DT76	385226	346156	Roadside	100.0	56.6	27.1	35.0	35.3	**42.2**	28.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT84	385548	346400	Roadside	100.0	65.8	27.0	28.5	30.3	28.2	25.1
DT85	385575	346413	Urban Centre	100.0	56.6	27.9	34.9	34.4	34.4	30.9
DT86	385075	345910	Urban Centre	100.0	56.3	21.3	22.0	22.3	21.1	16.7
DT87	385105	346225	Urban Centre	100.0	65.8	25.6	32.2	34.9	31.2	27.8
DT88	384709	345881	Urban Centre	100.0	56.6	20.8	23.1	25.0	23.8	21.5
DT89, DT90, DT91	385054	346134	Urban Centre	100.0	58.0	20.9	24.5	25.7	24.1	25.7
DT92	383890	354461	Roadside	100.0	56.3	22.5	26.3	27.8	26.8	24.0
DT93	384056	354393	Roadside	100.0	65.8	21.7	24.7	26.0	25.9	24.2
DT94	384030	354416	Roadside	100.0	56.6	30.2	37.5	36.2	37.7	31.2
DT95	385171	345539	Roadside	100.0	65.8	24.6	27.9	27.9	25.2	23.3
DT96	385131	345601	Roadside	100.0	56.6	28.9	28.1	29.6	27.6	25.2
DT97	384795	345796	Roadside	100.0	56.6	19.7	16.9	19.7	19.7	17.3
DT98	385327	346148	Roadside	100.0	56.6	24.3	30.1	35.5	30.8	27.1
DT101	384806	345842	Roadside	100.0	65.8	21.6	26.0	26.6	25.6	24.0
DT102	384609	346007	Roadside	100.0	48.2	31.4	32.5	35.3	34.9	**40.6**
DT103	385682	347909	Roadside	100.0	56.6	17.1	16.6	19.5	18.5	15.8
DT104	385213	346270	Roadside	100.0	58.2	34.5	37.8	37.8	**40.4**	38.9
DT105	383991	354418	Roadside	100.0	56.3	18.7	21.2	21.3	22.2	19.3
DT107a (N1a) DT107b (N1b) DT107C (N1c)	384495	346298	Roadside	100.0	65.8	19.7	22.3	21.7	21.5	17.0
DT108a (N2a) DT108b (N2b) DT108c (N2c)	384961	345346	Roadside	100.0	65.8	19.5	20.9	22.3	20.0	19.0
DT109a (N3a) DT109b (N3b)	385190	343318	Roadside	100.0	65.8	17.5	19.6	20.8	21.3	19.1

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT109c (N3c)										
DT110a (N4a) DT110b (N4b) DT110c (N4c)	385110	342314	Roadside	100.0	56.3	21.1	23.5	25.2	21.5	20.3
DT111a (N5a) DT111b (N5b) DT111c (N5c)	383882	349558	Roadside	100.0	31.5	24.0	24.3	24.4		29.7
DT112a (N6a) DT112b (N6b) DT112c (N6c)	382286	341956	Roadside	100.0	56.1	14.8	16.2	17.1	15.4	14.3
DT113a (N7a) DT113b (N7b) DT113c (N7c)	383052	343666	Roadside	100.0	65.8	13.5	17.3	17.6	16.0	15.2
DT114a (N8a) DT114b (N8b) DT114c (N8c)	383953	344832	Roadside	100.0	65.8	16.1	17.5	19.3	17.5	16.7
DT115a (N9a) DT115b (N9b) DT115c (N9c)	383545	345195	Roadside	100.0	56.3	11.1	11.9	13.4	14.0	11.4
DT116a (N10a) DT116b (N10b) DT116c (N10c)	383157	345431	Roadside	100.0	65.8	16.4	17.1	18.5	18.3	16.7
DT117a (N11a) DT117b (N11b) DT117c (N11c)	383199	352740	Roadside	100.0	65.8	25.1	27.8	28.8	27.5	25.2
DT118a (N12a) DT118b (N12b) DT118c (N12c)	382934	353388	Roadside	100.0	65.8	18.5	20.8	21.4	19.7	17.7
DT119a (N13 a) DT119b (N13 b) DT119c (N13 c)	382600	354062	Roadside	100.0	65.8	18.0	20.6	21.6	21.2	19.9
DT120a (N14a) DT120b (N14b), DT120c (N14c)	382707	354305	Roadside	100.0	65.8	24.2	28.7	29.1	29.0	24.2
DT121a (N15a) DT121b (N15b) DT121c (N15c)	382736	354385	Roadside	100.0	65.8	20.4	21.4	21.6	21.3	20.7
DT122a (N16a) DT122b (N16b) DT122c (N16c)	384261	354207	Roadside	100.0	65.8	20.8	23.0	22.4	23.3	20.4
DT123a (N17a) DT123b (N17b) DT123c (N17c)	384638	354133	Roadside	100.0	56.6	20.5	22.1	22.6	24.5	20.0
DT124a (N18a) DT124b (N18b) DT124c (N18c)	385019	353832	Roadside	100.0	65.8	32.3	31.7	33.0	33.4	30.7
DT125a (N19a) DT125b (N19b) DT125c (N19c)	385387	348389	Roadside	100.0	65.8	20.5	22.9	24.9	23.1	21.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT126a (N20a) DT126b (N20b) DT126c (N20c)	385556	348224	Roadside	100.0	65.8	18.3	19.8	21.5	20.5	19.2
DT127a (N21a) DT127b (N21b) DT127c (N21c)	385416	347424	Roadside	100.0	65.8	17.7	19.8	21.6	19.7	18.5
DT128a (N22a) DT128b (N22b) DT128c (N22c)	385512	347373	Roadside	100.0	47.2	22.7	24.5	25.8	24.9	21.1
DT129a (N23a) DT129b (N23b) DT129c (N23c)	384968	346228	Roadside	100.0	65.8	19.8	23.6	24.8	22.5	20.0
DT130a (N24a) DT130b (N24b) DT130c (N24c)	385098	346395	Roadside	100.0	65.8	24.9	27.4	29.6	29.1	24.4
DT131a (N25a) DT131b (N25b) DT131c (N25c)	385463	346374	Kerbside	100.0	65.8	28.9	28.2	30.4	30.8	27.2
DT132a (N26a) DT132b (N26b) DT132c (N26c)	385612	346436	Roadside	100.0	65.8	25.2	27.7	28.8	30.2	25.8
DT133a (N27a) DT133b (N27b) DT133c (N27c)	385926	346580	Roadside	100.0	65.8	31.9	29.5	33.0	31.6	28.5
DT134a (N28a) DT134b (N28b) DT134c (N28c)	386009	346600	Roadside	100.0	65.8	24.0	25.0	28.1	29.2	22.7
DT135a (N29a) DT135b (N29b) DT135c (N29c)	385518	346128	Roadside	100.0	46.9	22.8	25.7	28.1	25.1	22.0
DT136a (N30a) DT136b (N30b) DT136c (N30c)	385078	345687	Roadside	100.0	65.8	22.2	25.9	28.4	26.4	24.5
DT137a (N31a) DT137b (N31b) DT137c (N31c)	382795	346011	Roadside	100.0	56.6	15.8	17.2	19.8	18.8	17.3
DT138a (N32a) DT138b (N32b) DT138c (N32c)	383113	346592	Roadside	100.0	56.6	19.5	19.9	21.0	20.9	17.6
DT139a (N33a) DT139b (N33b) DT139c (N33c)	383302	346727	Roadside	100.0	65.8	13.7	13.9	14.7	13.7	13.5
DT140a (N34a) DT140b (N34b) DT140c (N34c)	383930	347273	Roadside	100.0	65.8	21.9	23.5	25.2	24.6	22.2
DT141a (N35a) DT141b (N35b) DT141c (N35c)	384337	347534	Roadside	100.0	65.8	26.1	28.6	27.5	28.5	26.1
DT142a (N36a) DT142b (N36b) DT142c (N36c)	384207	347915	Roadside	100.0	65.8	20.8	21.9	24.9	22.7	20.6

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT143a (N37a) DT143b (N37b) DT143c (N37c)	384021	348925	Roadside	100.0	65.8	30.7	33.9	34.6	34.8	32.1
DT144a (N38a) DT144b (N38b) DT144c (N38c)	383764	349912	Roadside	100.0	65.8	16.7	17.7	18.3	17.6	15.5
DT145a (N39a) DT145b (N39b) DT145c (N39c)	383670	350326	Roadside	100.0	65.8	38.0	38.6	**40.5**	39.5	35.5
DT146a (N40a) DT146b (N40b) DT146c (N40c)	383587	350790	Roadside	100.0	65.8	21.9	24.2	25.5	23.5	22.6

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

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

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

Notes:

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

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

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

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

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

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

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

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

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
CM1	385054	346134	Roadside	97.7	97.7	0	0	0	0	0

Notes:

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

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

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

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

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

Figure A-0) Trends in annual mean NO_2 concentrations 2020 to 2024 – Continuous Monitoring Station (Queens Gardens) (Within AQMA 2).

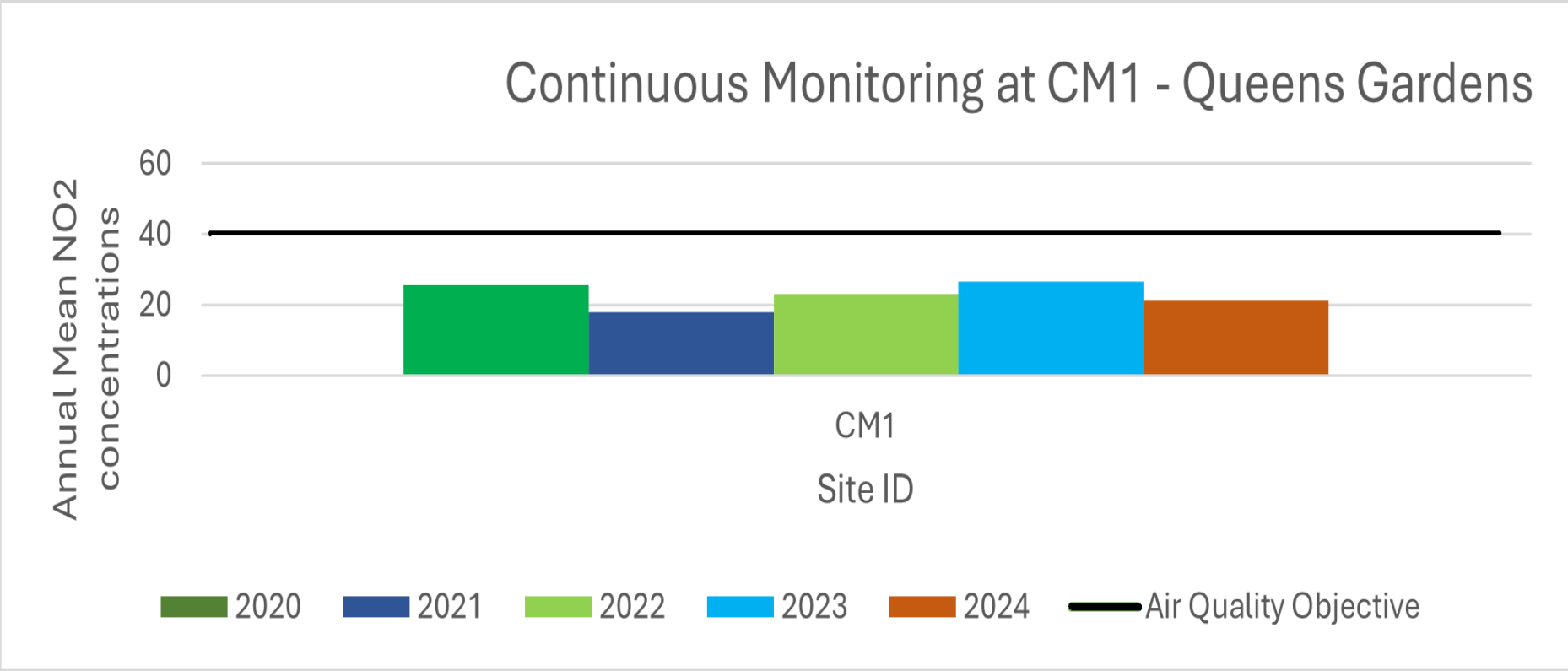


Figure A.0 presents NO_2 annual mean concentrations obtained by the continuous monitoring station within the Queens Gardens, Barracks Road. The monitoring location is shown within figure D9.

Figure A-1 Trends in annual mean NO_2 concentrations 2020 to 2024 – AQMA 1 Kidsgrove.

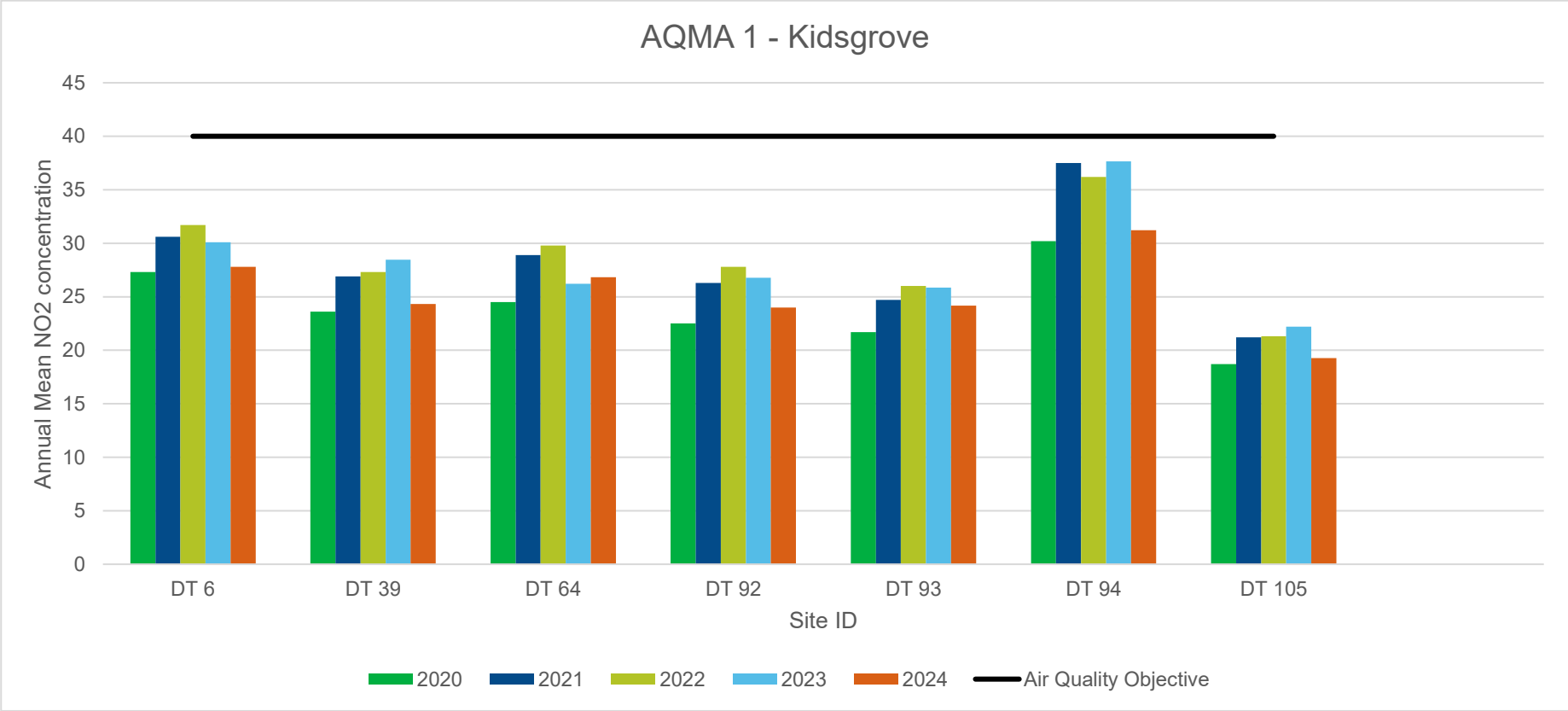


Figure A.1 presents NO_2 annual mean concentrations for sites within AQMA1 - Kidsgrove between years 2020 to 2024.The monitoring locations are shown within figure D2

Figure A-2) Trends in annual mean NO_2 concentrations 2020 to 2024 – AQMA 2 Newcastle under Lyme (Town Centre and A53 Corridor)

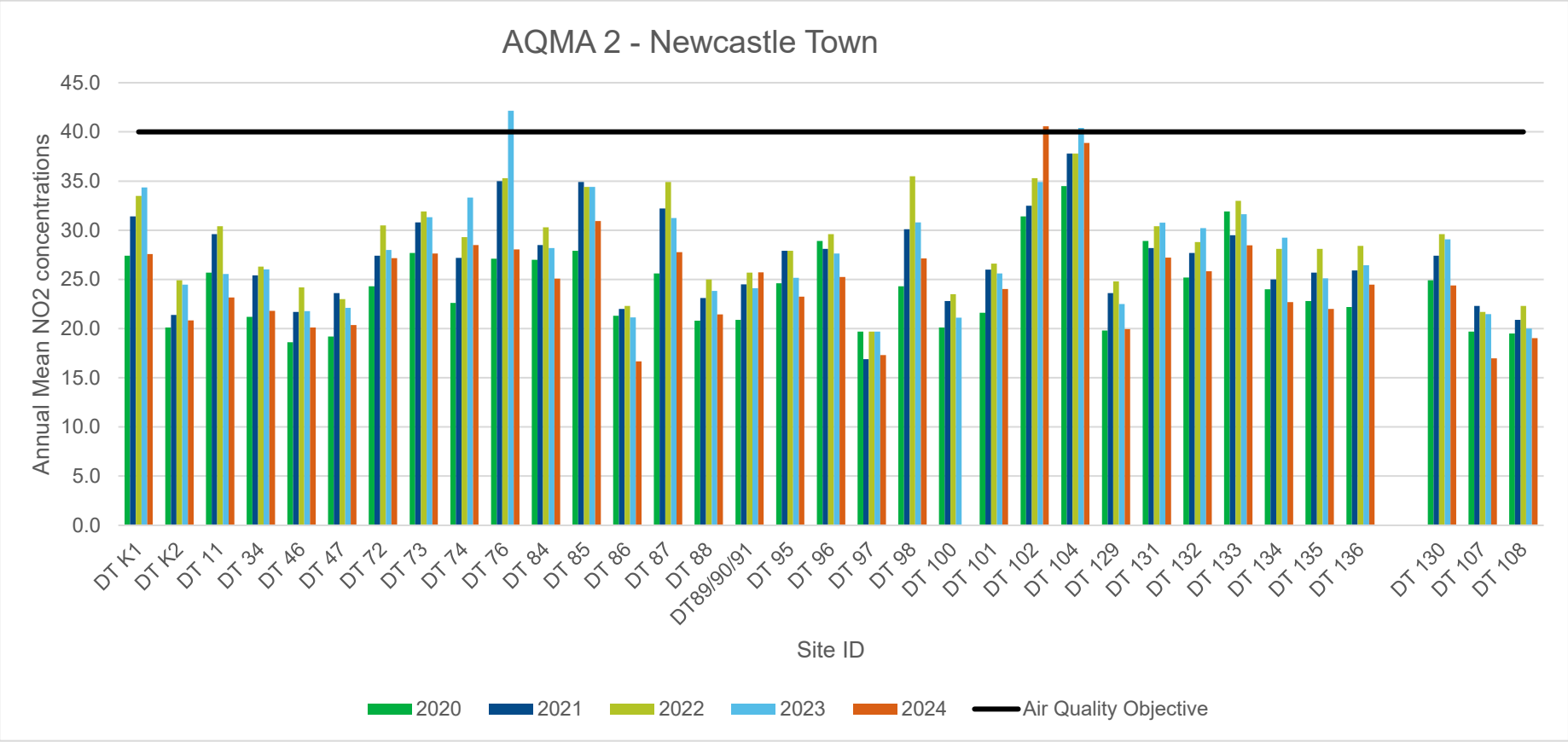


Figure A.2 presents NO_2 annual mean concentrations for sites within AQMA 2 – Newcastle Town between years 2020 to 2024. The monitoring locations are shown within figure D9 and figure D10. Note: DT107, DT108 and DT130 are not located within the AQMA but are in close proximity to it.

Figure A-3) Trends in annual mean NO_2 concentrations 2020 to 2024 – AQMA 3 Maybank, Wolstanton & Porthill

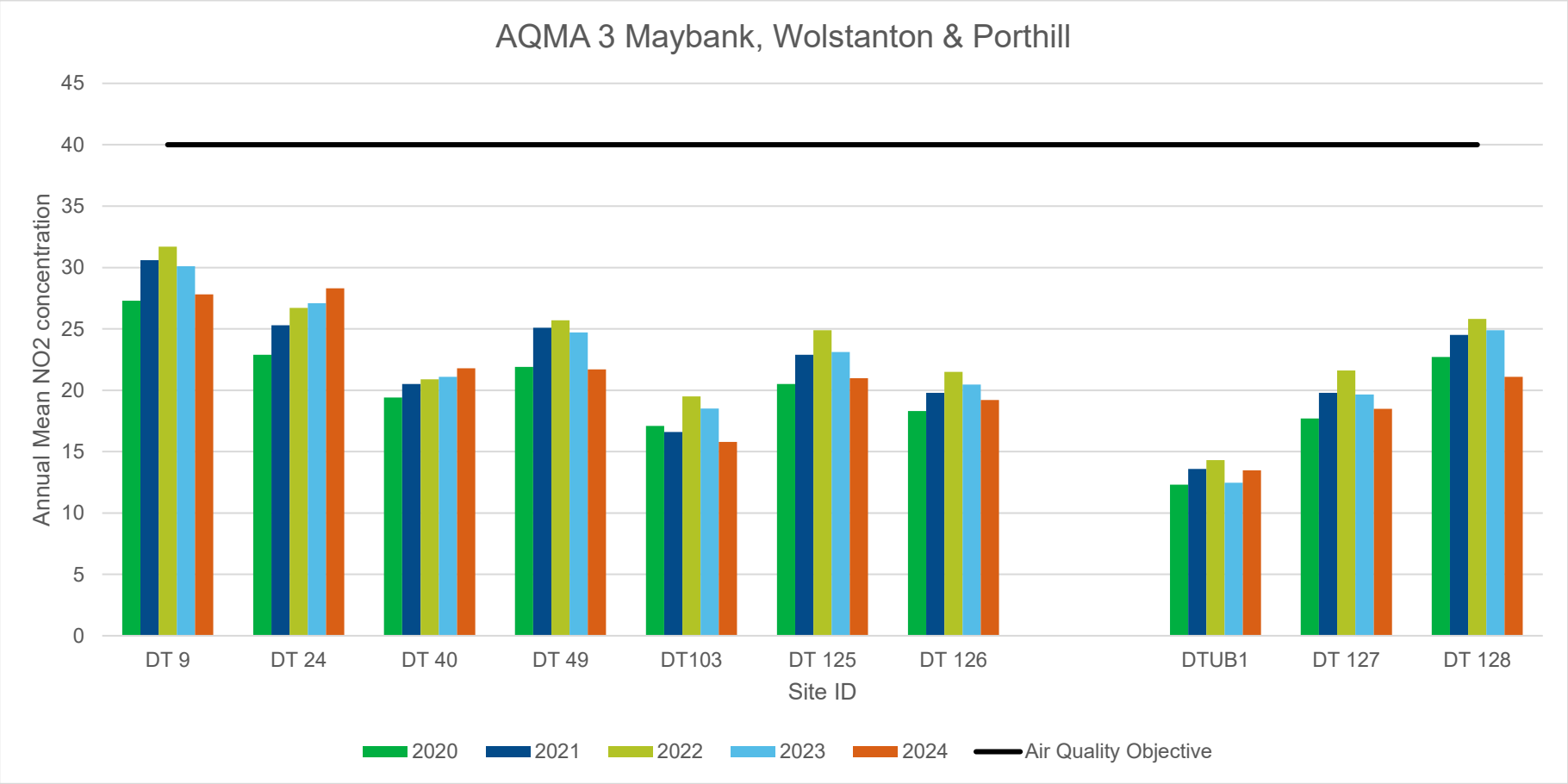


Figure A.3 presents NO_2 annual mean concentrations for sites within AQMA 3 Maybank, Wolstanton and Porthill between years 2020 to 2024. The monitoring locations are shown within figures D6 and D7. Notes: DTUB1, D127 and D128 are not located within AQMA3 but are in close proximity to it.

Figure A-4) Trends in annual mean NO_2 concentrations 2012 to 2024 – Kidsgrove East and West (outside AQMA 1)

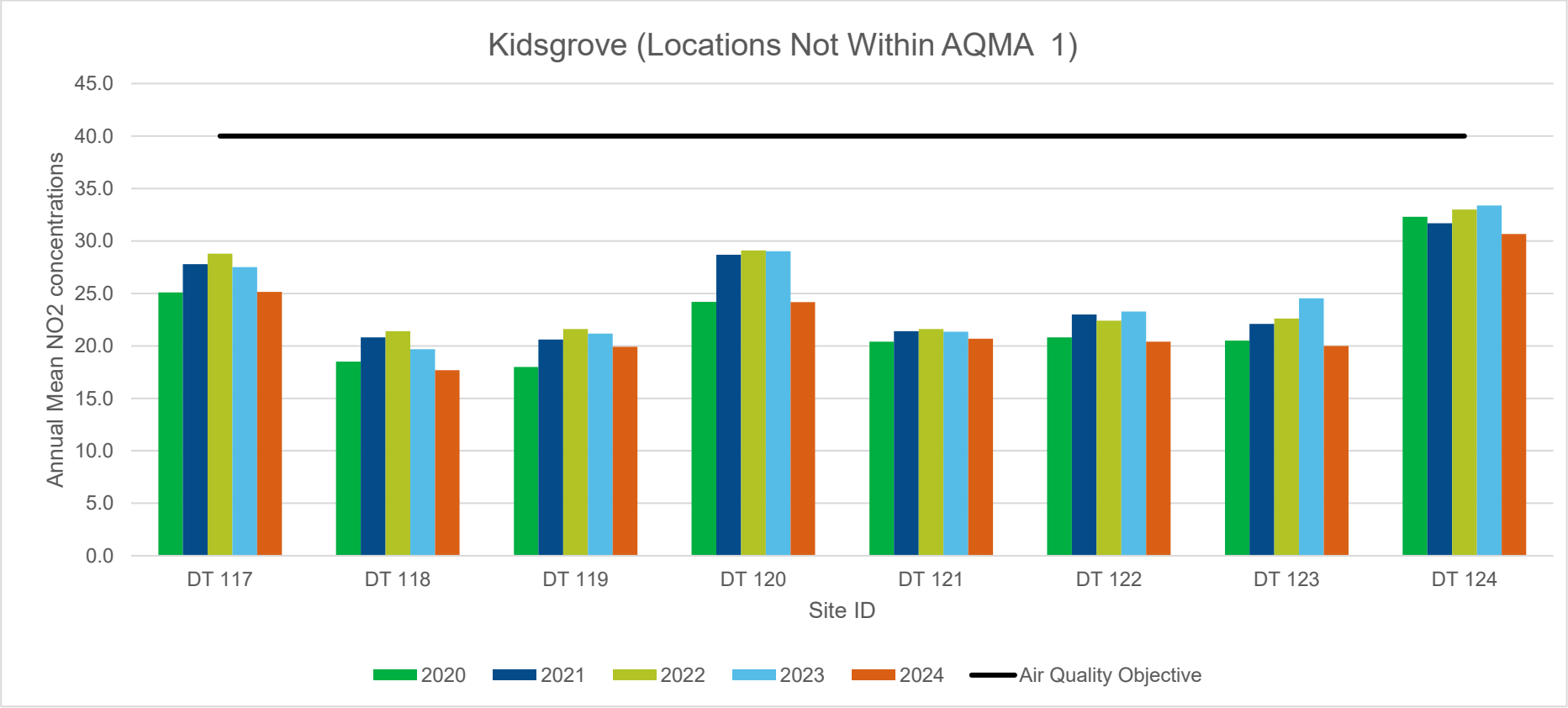


Figure A.4 presents NO_2 annual mean concentrations for sites within areas of Kidsgrove, which are outside of AQMA1, between years 2020 to 2024. The monitoring locations are shown within figures D3 and D4.

Figure A-5) Trends in annual mean NO_2 concentrations 2020 to 2024 – Chesterton Talke and Bradwell (A34 Corridor)(Not within an AQMA)

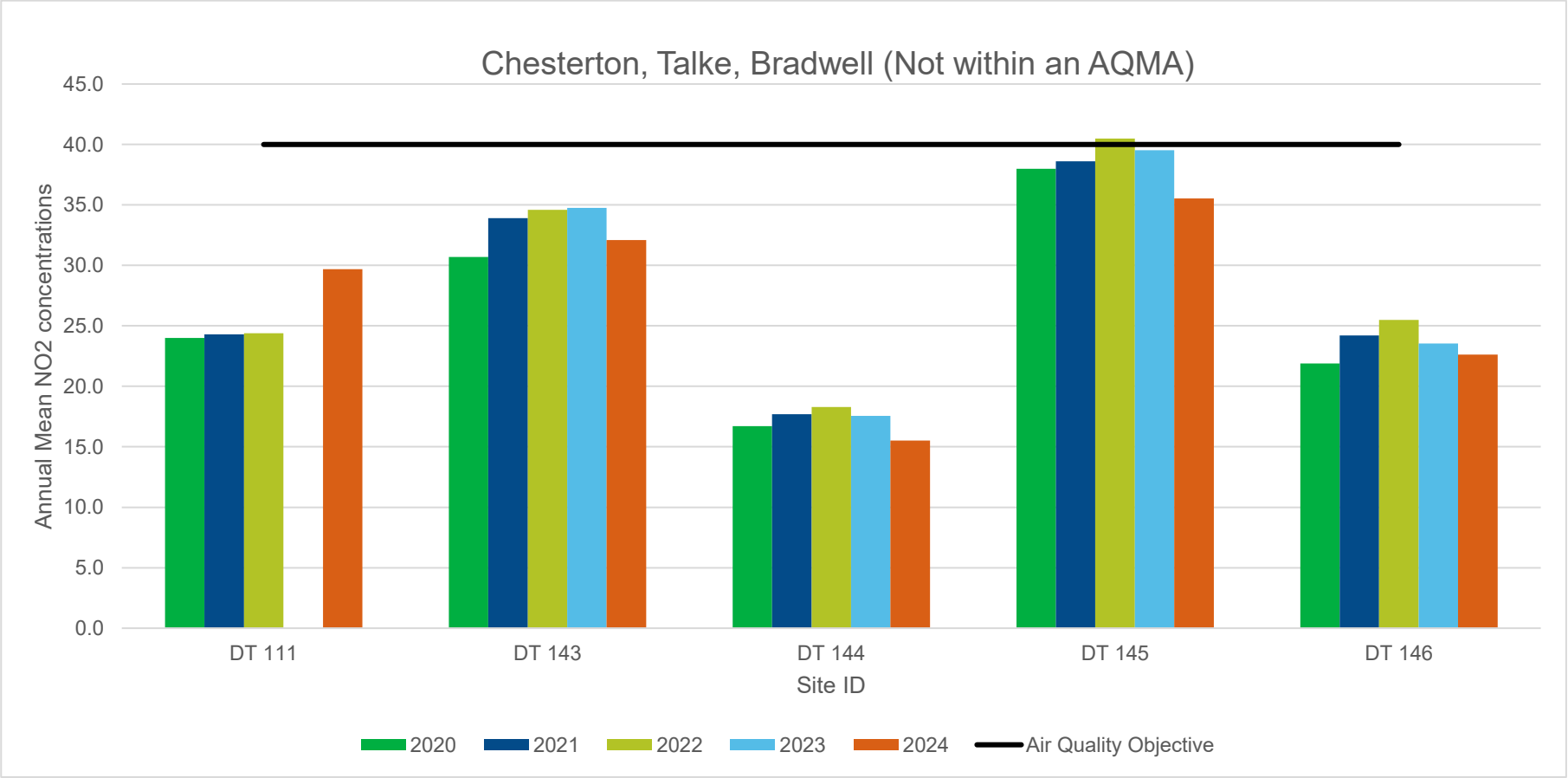


Figure A.5 presents NO_2 annual mean concentrations for sites within Chesterton, Talke and Bradwell between years 2020 to 2024. The monitoring locations are shown within figure D5.

Figure A-6) Trends in annual mean NO_2 concentrations 2020 to 2024 – Silverdale, Knutton and Cross Heath.

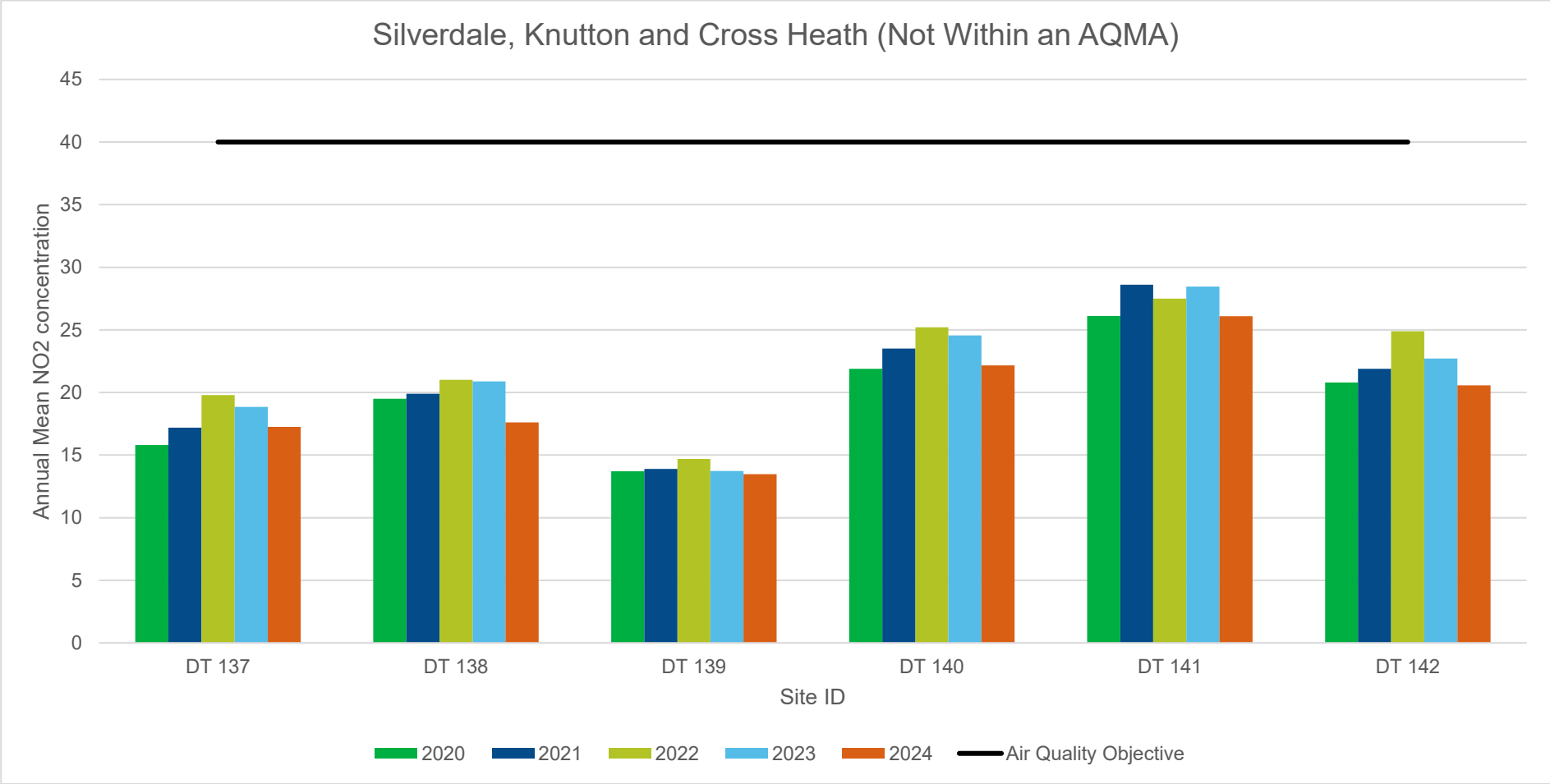


Figure A.6 presents NO_2 annual mean concentrations for sites within Silverdale, Knutton and Cross Heath. The monitoring locations are shown within figure D8.

Figure A-7) Trends in annual mean NO_2 concentrations 2020 to 2024 – Thistleberry, Clayton & Seabridge. (Not within an AQMA)

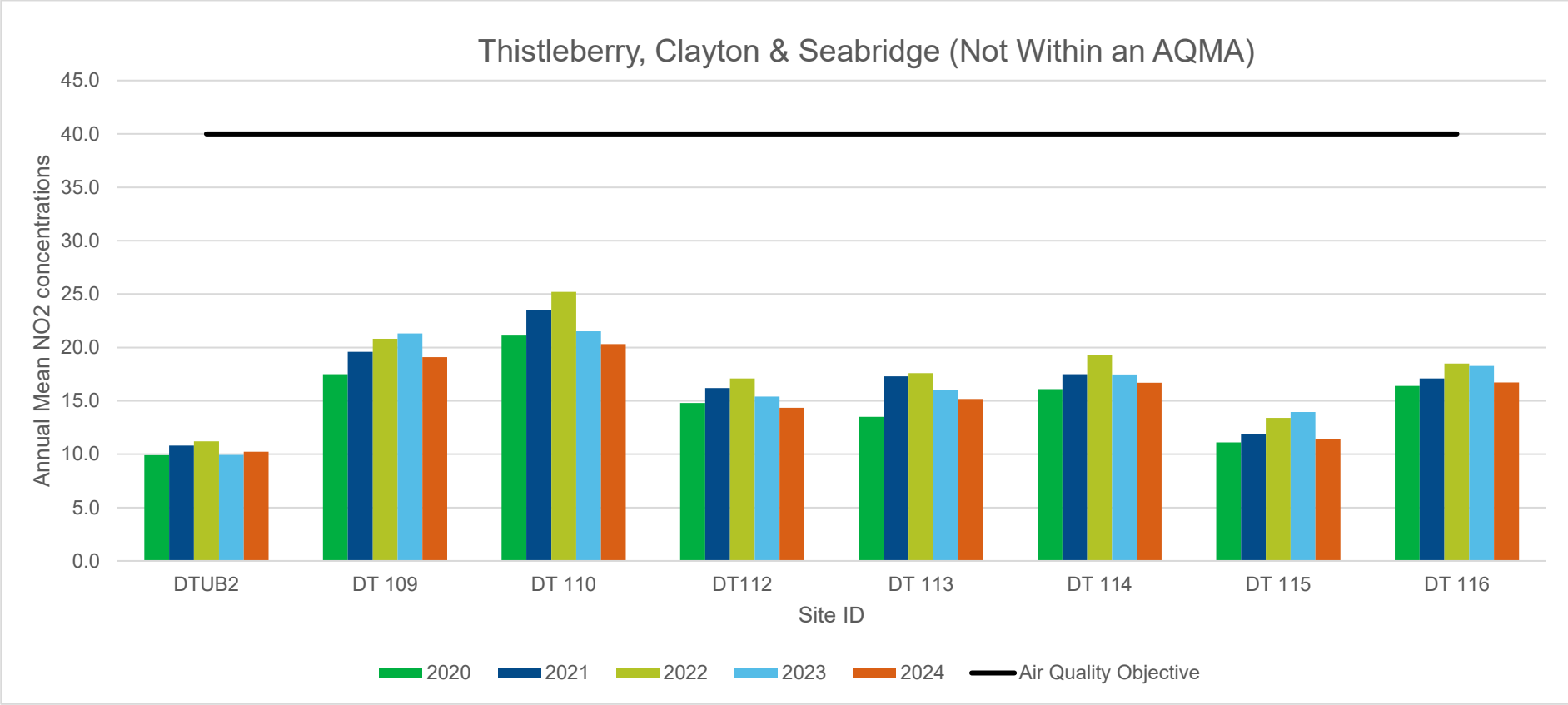


Figure A.7 presents NO_2 annual mean concentrations for sites within Thistleberry, Clayton and Seabridge. The monitoring locations are shown within figures D11 and D12.

Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 Diffusion Tube Results (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations (µg/m^3)												Time Weighted Annual Mean (µg/m^3)			Comment
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.82) and Annualised	Distance Corrected to Nearest Exposure	
DTK1	385051	345726							32.9	28.2	37.7	38.6	44.8	27.7	34.8	27.6	-	
DTK2	385469	346362	34.8					19.1	23.2	20.1	25.1		31.4	24.5	25.2	20.8	-	
DTUB1	384739	348326	21.2					19.9	11.7	11.0	14.5	15.9	23.3	16.6	16.8	13.5	-	
DTUB2	383916	345059	17.1					8.2	9.2	7.4	11.2	15.8	20.2	13.2	12.8	10.2	-	
DT6	384014	354429	43.0					30.4	32.6	I/S	42.2	36.5	40.0	34.7	37.0	27.8	-	
DT9	385519	349055	41.2					25.3	28.2	25.5	29.4	29.6	35.9	34.0	31.0	24.8	-	
DT11	385112	345636	39.6						26.9	22.9	29.1	31.3	37.4	30.3	31.0	23.2	-	
DT24	385574	347530	42.2					24.8	26.1	25.9	29.8				29.6	28.3	-	
DT34	385059	345840	41.2					21.4	24.3	23.1		28.8	31.6	25.2	27.7	21.8	-	
DT39	383560	354739	35.7					24.2	24.6	24.6	34.7	33.6	36.6		30.6	24.3	-	
DT40	385128	348811	31.6					37.9	18.6	18.4	24.0	27.2	29.9	27.5	27.2	21.8	-	
DT46	385073	345685	35.3					16.2	24.0	21.7	23.5	25.3	32.1	25.3	25.2	20.1	-	
DT47	385023	345678	35.9						20.8	17.6	28.9	26.6	28.7	31.6	27.2	20.4	-	
DT49	385595	349129	35.3					25.5	25.4	21.1	27.0	27.9	35.4	21.6	27.2	21.7	-	
DT64	383950	354445	41.3					26.3	30.8	27.9	32.8	35.7	41.8	33.1	33.6	26.8	-	
DT72	384981	345750	45.8						28.1	25.4		54.3	38.6	29.2	37.4	27.2	-	
DT73	385070	345738	47.9					25.1	30.0	25.1	36.9	38.2	42.0		34.8	27.6	-	

DT74	385132	345640	38.0					22.3	26.9	20.2		34.7		52.7	32.7	28.5	-	
DT76	385226	346156	46.1						38.6	34.0	36.3	38.8	43.5	28.0	37.5	28.0	-	
DT84	385548	346400	39.0					27.1	30.9	27.3	33.7	31.5	39.3	24.8	31.4	25.1	-	
DT85	385575	346413	43.5					37.1	40.3	30.2	43.4	38.0	43.0	I/S	38.9	30.9	-	
DT86	385075	345910	37.7					4.9	17.2		20.6	22.6	30.0	23.8	22.2	16.7	-	
DT87	385105	346225	43.4					31.3	33.8	29.2	39.2	34.8	36.4	31.9	34.7	27.8	-	
DT88	384709	345881	39.3						24.1	21.6	29.2	27.3	32.2	27.9	28.7	21.5	-	
DT89	385054	346134	29.3					36.5	22.2	20.3		52.6	33.4	25.6	-	-	-	Triplicate Site with DT89, DT90 and DT91 - Annual data provided for DT91 only
DT90	385054	346134	34.9					31.0	21.7	20.6		49.7	37.1	24.1	-	-	-	Triplicate Site with DT89, DT90 and DT91 - Annual data provided for DT91 only
DT91	385054	346134	31.9					37.2	25.2	20.2		49.6	46.5		32.7	25.7	-	Triplicate Site with DT89, DT90 and DT91 - Annual data provided for DT91 only
DT92	383890	354461	40.8					22.8	24.9		27.3	34.9	40.3	31.3	31.9	24.0	-	
DT93	384056	354393	36.5					27.9	28.2	24.6	34.1	31.3	33.8	26.8	30.2	24.2	-	
DT94	384030	354416	47.1						38.7	31.2	53.3	45.2	41.8	36.3	41.7	31.2	-	
DT95	385171	345539	41.7					23.6	26.8	21.3	28.8	32.1	32.0	28.0	29.1	23.3	-	
DT96	385131	345601	46.0						28.6	23.1	32.1	33.6	42.6	31.6	33.8	25.2	-	
DT97	384795	345796	31.5						15.5	14.8	22.9	24.5	30.5	21.7	23.2	17.3	-	
DT98	385327	346148	43.3					26.8	33.5	29.2	30.7	37.9	39.2		34.2	27.1	-	
DT100	384689	346284														-	-	
DT101	384806	345842	40.3					21.6	24.6	21.9	36.3	32.9	37.4	26.8	30.0	24.0	-	
DT102	384609	346007	52.0					59.1	37.9	34.0	37.7			38.1	43.4	**40.6**	**40.3**	
DT103	385682	347909	26.6						15.1	13.9	18.2	24.2	28.7	20.2	21.1	15.8	-	
DT104	385213	346270						29.0	39.5	28.0	51.9	44.3	67.8	61.3	45.7	38.9	38.2	
DT105	383991	354418	30.0					19.0	20.6		24.3	29.9	31.8	22.9	25.6	19.3	-	

DT107 (N1a)	384495	346298	27.9					16.0	15.9	14.2	25.0	25.9	29.4	20.4	-	-	-	Triplicate Site with DT107 (N1a, DT107 (N1b and DT107 (N1C - Annual data provided for DT107 (N1C only
DT107 (N1b)	384495	346298	27.3					14.6	15.0	13.9	24.0	26.0	28.5		-	-	-	Triplicate Site with DT107 (N1a, DT107 (N1b and DT107 (N1C - Annual data provided for DT107 (N1C only
DT107 (N1C)	384495	346298	24.8					15.0	14.7	13.4	23.8	24.5	28.1		21.2	17.0	-	Triplicate Site with DT107 (N1a, DT107 (N1b and DT107 (N1C - Annual data provided for DT107 (N1C only
DT108 (N2a)	384961	345346	30.6					19.9	19.1	17.9	24.0	24.4	31.7	25.0	-	-	-	Triplicate Site with DT108 (N2a, DT108 (N2b and DT108 (N2c - Annual data provided for DT108 (N2c only
DT108 (N2b)	384961	345346	31.4					20.9	19.6	17.9	24.0	17.8	31.7	25.0	-	-	-	Triplicate Site with DT108 (N2a, DT108 (N2b and DT108 (N2c - Annual data provided for DT108 (N2c only
DT108 (N2c)	384961	345346	32.0					19.8	20.3	16.5	22.1	23.6	32.0	26.5	23.8	19.0	-	Triplicate Site with DT108 (N2a, DT108 (N2b and DT108 (N2c - Annual data provided for DT108 (N2c only
DT109 (N3a)	385190	343318	28.9					32.8	20.1	18.1	19.1	24.0	30.5	18.6	-	-	-	Triplicate Site with DT109 (N3a, DT109 (N3b and DT109 (N3c - Annual data provided for DT109 (N3c only
DT109 (N3b)	385190	343318	27.7					36.1	19.9	18.7	18.8	23.5	32.0	19.5	-	-	-	Triplicate Site with DT109 (N3a, DT109 (N3b and DT109 (N3c - Annual data provided for DT109 (N3c only
DT109 (N3c)	385190	343318	31.1					17.6	21.2	17.8	19.1	24.7	32.7	20.6	23.9	19.1	-	Triplicate Site with DT109 (N3a, DT109 (N3b and DT109 (N3c - Annual data provided for DT109 (N3c only
DT110 (N4a)	385110	342314	31.8					26.3	30.1		26.7	26.7	30.1	22.6	-	-	-	Triplicate Site with DT110 (N4a, DT110 (N4b and DT110 (N4c - Annual data provided for DT110 (N4c only
DT110 (N4b)	385110	342314	32.4					25.9	28.8		26.7	26.4	30.4	22.1	-	-	-	Triplicate Site with DT110 (N4a, DT110 (N4b and DT110 (N4c - Annual data provided for DT110 (N4c only
DT110 (N4c)	385110	342314	29.8					25.2	29.0		27.0	26.7	26.4	22.8	27.0	20.3	-	Triplicate Site with DT110 (N4a, DT110 (N4b and DT110 (N4c - Annual data provided for DT110 (N4c only
DT111 (N5a)	383882	349558							30.6	27.6	30.5			27.2	-	-	-	Triplicate Site with DT111 (N5a, DT111 (N5b and DT111 (N5c - Annual data provided for DT111 (N5c only
DT111 (N5b)	383882	349558							27.2		27.5			32.6	-	-	-	Triplicate Site with DT111 (N5a, DT111 (N5b and DT111 (N5c - Annual data provided for DT111 (N5c only
DT111 (N5c)	383882	349558							29.2		29.5			33.6	29.2	29.7	-	Triplicate Site with DT111 (N5a, DT111 (N5b and DT111 (N5c - Annual data provided for DT111 (N5c only
DT112 (N6a)	382286	341956	23.4					12.8	15.0	15.6	14.9		24.8	15.9	-	-	-	Triplicate Site with DT112 (N6a, DT112 (N6b and DT112 (N6c - Annual data provided for DT112 (N6c only
DT112 (N6b)	382286	341956	19.9					12.0	16.7	15.9	16.0		25.0	I/S	-	-	-	Triplicate Site with DT112 (N6a, DT112 (N6b and DT112 (N6c - Annual data provided for DT112 (N6c only
DT112 (N6c)	382286	341956	20.2					12.9	15.8	15.4	14.7		27.8	16.5	17.4	14.3	-	Triplicate Site with DT112 (N6a, DT112 (N6b and DT112 (N6c - Annual data provided for DT112 (N6c only
DT113 (N7a)	383052	343666	20.8					17.6	19.7		18.2	21.6	22.9	16.1	-	-	-	Triplicate Site with DT113 (N7a, DT113 (N7b and DT113 (N7c - Annual data provided for DT113 (N7c only
DT113 (N7b)	383052	343666	20.5					15.5	19.4	20.7	18.0	22.2	25.5	16.3	-	-	-	Triplicate Site with DT113 (N7a, DT113 (N7b and DT113 (N7c - Annual data provided for DT113 (N7c only

DT113 (N7c)	383052	343666	21.4					16.7	17.9	15.3	18.8	22.6	12.6	18.0	19.0	15.2	-	Triplicate Site with DT113 (N7a, DT113 (N7b and DT113 (N7c - Annual data provided for DT113 (N7c only
DT114 (N8a)	383953	344832	27.9					15.1	13.8	12.8	21.1	24.3	34.6	22.4	-	-	-	Triplicate Site with DT114 (N8a, DT114 (N8b and DT114 (N8c - Annual data provided for DT114 (N8c only
DT114 (N8b)	383953	344832	26.2					14.7	15.3	13.8	20.6	23.5	33.0		-	-	-	Triplicate Site with DT114 (N8a, DT114 (N8b and DT114 (N8c - Annual data provided for DT114 (N8c only
DT114 (N8c)	383953	344832	I/S					14.6	15.4	13.2	19.5	22.4	30.0	19.2	20.9	16.7	-	Triplicate Site with DT114 (N8a, DT114 (N8b and DT114 (N8c - Annual data provided for DT114 (N8c only
DT115 (N9a)	383545	345195	18.6					10.5	10.6		16.0	14.9	22.1	12.1	-	-	-	Triplicate Site with DT115 (N9a, DT115 (N9b and DT115 (N9c - Annual data provided for DT115 (N9c only
DT115 (N9b)	383545	345195	18.8					10.4	12.5			14.8	21.5	14.4	-	-	-	Triplicate Site with DT115 (N9a, DT115 (N9b and DT115 (N9c - Annual data provided for DT115 (N9c only
DT115 (N9c)	383545	345195	18.0						11.0				21.0	14.7	15.2	11.4	-	Triplicate Site with DT115 (N9a, DT115 (N9b and DT115 (N9c - Annual data provided for DT115 (N9c only
DT116 (N10a)	383157	345431	17.2						16.4	14.6	24.7	24.0	32.1	19.1	-	-	-	Triplicate Site with DT116 (N10a, DT116 (N10b and DT116 (N10c - Annual data provided for DT116 (N10c only
DT116 (N10b)	383157	345431	24.7					16.4	16.3	14.7	25.4	24.8	28.9	18.0	-	-	-	Triplicate Site with DT116 (N10a, DT116 (N10b and DT116 (N10c - Annual data provided for DT116 (N10c only
DT116 (N10c)	383157	345431	24.5						16.4	14.5	25.4	22.6			20.9	16.7	-	Triplicate Site with DT116 (N10a, DT116 (N10b and DT116 (N10c - Annual data provided for DT116 (N10c only
DT117 (N11a)	383199	352740	37.6					31.1	29.2	28.8	28.2	32.2	36.8	29.1	-	-	-	Triplicate Site with DT117 (N11a, DT117 (N11b and DT117 (N11c - Annual data provided for DT117 (N11c only
DT117 (N11b)	383199	352740	35.8					29.7	29.4	27.6	33.2	33.7	44.2	26.6	-	-	-	Triplicate Site with DT117 (N11a, DT117 (N11b and DT117 (N11c - Annual data provided for DT117 (N11c only
DT117 (N11c)	383199	352740	37.9					28.0	29.7	26.1	30.2	31.5	38.1	24.0	31.5	25.2	-	Triplicate Site with DT117 (N11a, DT117 (N11b and DT117 (N11c - Annual data provided for DT117 (N11c only
DT118 (N12a)	382934	353388	27.8					18.4	19.1	18.3	21.5	26.2	29.7	18.8	-	-	-	Triplicate Site with DT118 (N12a, DT118 (N12b and DT118 (N12c - Annual data provided for DT118 (N12c only
DT118 (N12b)	382934	353388	26.5					17.5	18.1	16.9	23.0	27.6	29.0	18.8	-	-	-	Triplicate Site with DT118 (N12a, DT118 (N12b and DT118 (N12c - Annual data provided for DT118 (N12c only
DT118 (N12c)	382934	353388	28.8					13.5	18.7	17.2	21.3	27.8	26.9	20.0	22.1	17.7	-	Triplicate Site with DT118 (N12a, DT118 (N12b and DT118 (N12c - Annual data provided for DT118 (N12c only
DT119 (N13a)	382600	354062	29.7					16.9	21.3	18.2	27.2	30.7	30.2	16.3	-	-	-	Triplicate Site with DT119 (N13a, DT119 (N13b and DT119 (N13c - Annual data provided for DT119 (N13c only
DT119 (N13b)	382600	354062	27.9					41.1	20.9	19.1	24.4	30.8		19.8	-	-	-	Triplicate Site with DT119 (N13a, DT119 (N13b and DT119 (N13c - Annual data provided for DT119 (N13c only
DT119 (N13c)	382600	354062	28.8					16.8	20.7	19.7	26.0	30.1	31.4	I/S	24.9	19.9	-	Triplicate Site with DT119 (N13a, DT119 (N13b and DT119 (N13c - Annual data provided for DT119 (N13c only
DT120 (N14a)	382707	354305	26.0					29.5	28.4	26.4	35.3	25.3	40.1	29.5	-	-	-	Triplicate Site with DT120 (N14a, DT120 (N14b and DT120 (N14c - Annual data provided for DT120 (N14c only

DT120 (N14b)	382707	354305	30.8					28.0	31.1	28.0	29.3	25.6	42.2	27.7	-	-	-	Triplicate Site with DT120 (N14a, DT120 (N14b and DT120 (N14c - Annual data provided for DT120 (N14c only
DT120 (N14c)	382707	354305	29.8					30.0	29.9	27.1	34.8	25.7	40.7	30.3	30.2	24.2	-	Triplicate Site with DT120 (N14a, DT120 (N14b and DT120 (N14c - Annual data provided for DT120 (N14c only
DT121 (N15a)	382736	354385	36.2					18.7	1.6	19.4	23.6	36.1	30.8	20.8	-	-	-	Triplicate Site with DT121 (N15a, DT121 (N15b and DT121 (N15c - Annual data provided for DT121 (N15c only
DT121 (N15b)	382736	354385	41.1					18.4	20.2	28.7	24.0	35.2	30.6	24.1	-	-	-	Triplicate Site with DT121 (N15a, DT121 (N15b and DT121 (N15c - Annual data provided for DT121 (N15c only
DT121 (N15c)	382736	354385	36.5					17.7	19.4	18.9	22.8	34.2	31.2	20.5	25.9	20.7	-	Triplicate Site with DT121 (N15a, DT121 (N15b and DT121 (N15c - Annual data provided for DT121 (N15c only
DT122 (N16a)	384261	354207	36.6					20.4	18.7	18.8			24.5	26.5	-	-	-	Triplicate Site with DT122 (N16a, DT122 (N16b and DT122 (N16c - Annual data provided for DT122 (N16c only
DT122 (N16b)	384261	354207	36.3					20.1	20.8		27.5		30.6	27.3	-	-	-	Triplicate Site with DT122 (N16a, DT122 (N16b and DT122 (N16c - Annual data provided for DT122 (N16c only
DT122 (N16c)	384261	354207	32.2					20.3	19.5		28.9	27.2		27.8	25.5	20.4	-	Triplicate Site with DT122 (N16a, DT122 (N16b and DT122 (N16c - Annual data provided for DT122 (N16c only
DT123 (N17a)	384638	354133	33.0					I/S	22.3		21.7	31.1	35.8	21.9	-	-	-	Triplicate Site with DT123 (N17a, DT123 (N17b and DT123 (N17c - Annual data provided for DT123 (N17c only
DT123 (N17b)	384638	354133	39.8					I/S	24.6	19.1	23.5	27.4	33.9	24.9	-	-	-	Triplicate Site with DT123 (N17a, DT123 (N17b and DT123 (N17c - Annual data provided for DT123 (N17c only
DT123 (N17c)	384638	354133	38.4					I/S	22.3	21.6	23.5	28.4	25.1	24.3	26.7	20.0	-	Triplicate Site with DT123 (N17a, DT123 (N17b and DT123 (N17c - Annual data provided for DT123 (N17c only
DT124 (N18a)	385019	353832	52.7					31.9	32.7	33.4	37.8	37.4	47.7	32.7	-	-	-	Triplicate Site with DT124 (N18a, DT124 (N18b and DT124 (N18c - Annual data provided for DT124 (N18c only
DT124 (N18b)	385019	353832	53.4					31.9	34.0		39.0	35.8	46.6	37.5	-	-	-	Triplicate Site with DT124 (N18a, DT124 (N18b and DT124 (N18c - Annual data provided for DT124 (N18c only
DT124 (N18c)	385019	353832	56.3					27.8	35.0	32.9	34.5	35.6	50.7	37.1	38.4	30.7	-	Triplicate Site with DT124 (N18a, DT124 (N18b and DT124 (N18c - Annual data provided for DT124 (N18c only
DT125 (N19a)	385387	348389	33.9					20.1	23.5	19.8	23.1	28.0	35.7	27.7	-	-	-	Triplicate Site with DT125 (N19a, DT125 (N19b and DT125 (N19c - Annual data provided for DT125 (N19c only
DT125 (N19b)	385387	348389	36.1					21.1	23.4	20.1	22.3	29.9	31.3	26.4	-	-	-	Triplicate Site with DT125 (N19a, DT125 (N19b and DT125 (N19c - Annual data provided for DT125 (N19c only
DT125 (N19c)	385387	348389	36.5					21.8	22.8	19.7	21.9	28.7	33.9	24.7	26.2	21.0	-	Triplicate Site with DT125 (N19a, DT125 (N19b and DT125 (N19c - Annual data provided for DT125 (N19c only
DT126 (N20a)	385556	348224	32.9					18.1	20.1	15.2	22.2	27.0	36.5	25.6	-	-	-	Triplicate Site with DT126 (N20a, DT126 (N20b and DT126 (N20c - Annual data provided for DT126 (N20c only
DT126 (N20b)	385556	348224	33.4					17.7	19.4	16.8	22.0	25.3	35.1	23.8	-	-	-	Triplicate Site with DT126 (N20a, DT126 (N20b and DT126 (N20c - Annual data provided for DT126 (N20c only
DT126 (N20c)	385556	348224	30.0					17.3	20.9	16.6	21.7			20.6	24.0	19.2	-	Triplicate Site with DT126 (N20a, DT126 (N20b and DT126 (N20c - Annual data provided for DT126 (N20c only

DT127 (N21a)	385416	347424	27.8						20.8	17.1	23.6	26.5	30.9	21.9	-	-	-	Triplicate Site with DT127 (N21a, DT127 (N21b and DT127 (N21c - Annual data provided for DT127 (N21c only
DT127 (N21b)	385416	347424	30.5					16.2	18.5	17.5	21.4	27.6	29.7	24.6	-	-	-	Triplicate Site with DT127 (N21a, DT127 (N21b and DT127 (N21c - Annual data provided for DT127 (N21c only
DT127 (N21c)	385416	347424	I/S					15.9	19.7	16.8	22.3	26.8	31.2	23.7	23.1	18.5	-	Triplicate Site with DT127 (N21a, DT127 (N21b and DT127 (N21c - Annual data provided for DT127 (N21c only
DT128 (N22a)	385512	347373	35.9						18.0			30.6	40.0	25.5	-	-	-	Triplicate Site with DT128 (N22a, DT128 (N22b and DT128 (N22c - Annual data provided for DT128 (N22c only
DT128 (N22b)	385512	347373	36.0						24.8			32.0	34.9	26.1	-	-	-	Triplicate Site with DT128 (N22a, DT128 (N22b and DT128 (N22c - Annual data provided for DT128 (N22c only
DT128 (N22c)	385512	347373							24.9		28.8	32.6	33.2	28.0	30.6	21.1	-	Triplicate Site with DT128 (N22a, DT128 (N22b and DT128 (N22c - Annual data provided for DT128 (N22c only
DT129 (N23a)	384968	346228	35.1						19.9	18.7	25.1	29.9	33.0	23.2	-	-	-	Triplicate Site with DT129 (N23a, DT129 (N23b and DT129 (N23c - Annual data provided for DT129 (N23c only
DT129 (N23b)	384968	346228	34.8					17.1	19.4	18.4	24.8	28.1	33.3	24.1	-	-	-	Triplicate Site with DT129 (N23a, DT129 (N23b and DT129 (N23c - Annual data provided for DT129 (N23c only
DT129 (N23c)	384968	346228	33.8						20.7	17.5	24.9	28.7	34.2	22.2	25.0	20.0	-	Triplicate Site with DT129 (N23a, DT129 (N23b and DT129 (N23c - Annual data provided for DT129 (N23c only
DT130 (N24a)	385098	346395	38.2					24.0	32.4	24.7	28.8	32.8	37.9	25.8	-	-	-	Triplicate Site with DT130 (N24a, DT130 (N24b and DT130 (N24c - Annual data provided for DT130 (N24c only
DT130 (N24b)	385098	346395	40.5					23.5	32.8	24.8	1.0	32.6	40.1	24.9	-	-	-	Triplicate Site with DT130 (N24a, DT130 (N24b and DT130 (N24c - Annual data provided for DT130 (N24c only
DT130 (N24c)	385098	346395	39.7					20.7	29.4	24.5	29.3	55.3	36.7	35.4	30.5	24.4	-	Triplicate Site with DT130 (N24a, DT130 (N24b and DT130 (N24c - Annual data provided for DT130 (N24c only
DT131 (N25a)	385463	346374	45.2					26.3	28.8	26.7	37.0	34.8	46.7	31.5	-	-	-	Triplicate Site with DT131 (N25a, DT131 (N25b and DT131 (N25c - Annual data provided for DT131 (N25c only
DT131 (N25b)	385463	346374	45.4					28.1	29.0	25.6	35.1	33.8	46.6	32.5	-	-	-	Triplicate Site with DT131 (N25a, DT131 (N25b and DT131 (N25c - Annual data provided for DT131 (N25c only
DT131 (N25c)	385463	346374	42.1						27.8	25.8	33.7	36.3	43.4		34.0	27.2	-	Triplicate Site with DT131 (N25a, DT131 (N25b and DT131 (N25c - Annual data provided for DT131 (N25c only
DT132 (N26a)	385612	346436	43.2					30.6	28.4	27.9	35.0	30.2	40.3	37.4	-	-	-	Triplicate Site with DT132 (N26a, DT132 (N26b and DT132 (N26c - Annual data provided for DT132 (N26c only
DT132 (N26b)	385612	346436	41.5					28.4	28.7	26.5	33.6	28.5	38.3	29.9	-	-	-	Triplicate Site with DT132 (N26a, DT132 (N26b and DT132 (N26c - Annual data provided for DT132 (N26c only
DT132 (N26c)	385612	346436	42.4					29.2	30.1	27.3	33.5	29.6	23.8	34.6	32.3	25.8	-	Triplicate Site with DT132 (N26a, DT132 (N26b and DT132 (N26c - Annual data provided for DT132 (N26c only
DT133 (N27a)	385926	346580	47.3					29.0	31.7	30.0	28.9	41.6	41.0	32.9	-	-	-	Triplicate Site with DT133 (N27a, DT133 (N27b and DT133 (N27c - Annual data provided for DT133 (N27c only
DT133 (N27b)	385926	346580	45.3					51.0	31.8	28.6	28.6	37.6	51.6	30.2	-	-	-	Triplicate Site with DT133 (N27a, DT133 (N27b and DT133 (N27c - Annual data provided for DT133 (N27c only

DT133 (N27c)	385926	346580	43.9						31.1	28.3	28.0	40.9	39.4	16.1	35.6	28.5	-	Triplicate Site with DT133 (N27a, DT133 (N27b and DT133 (N27c - Annual data provided for DT133 (N27c only
DT134 (N28a)	386009	346600	43.3					25.3	26.0	25.2	26.3	30.9	34.5	25.2	-	-	-	Triplicate Site with DT134 (N28a, DT134 (N28b and DT134 (N28c - Annual data provided for DT134 (N28c only
DT134 (N28b)	386009	346600	38.2					23.8	26.1		27.1	28.5	33.8	12.7	-	-	-	Triplicate Site with DT134 (N28a, DT134 (N28b and DT134 (N28c - Annual data provided for DT134 (N28c only
DT134 (N28c)	386009	346600	< 1.2					23.3	25.8	23.9	28.3	27.3	34.0	32.3	28.4	22.7	-	Triplicate Site with DT134 (N28a, DT134 (N28b and DT134 (N28c - Annual data provided for DT134 (N28c only
DT135 (N29a)	385518	346128	42.1						22.7	20.9	29.3		28.4	28.2	-	-	-	Triplicate Site with DT135 (N29a, DT135 (N29b and DT135 (N29c - Annual data provided for DT135 (N29c only
DT135 (N29b)	385518	346128	40.9						23.1	19.4	28.9		29.5	23.8	-	-	-	Triplicate Site with DT135 (N29a, DT135 (N29b and DT135 (N29c - Annual data provided for DT135 (N29c only
DT135 (N29c)	385518	346128	42.7						23.9		30.9		33.4	30.9	28.8	22.0	-	Triplicate Site with DT135 (N29a, DT135 (N29b and DT135 (N29c - Annual data provided for DT135 (N29c only
DT136 (N30a)	385078	345687	47.1					23.7	27.3	22.0	29.1	32.0	40.9		-	-	-	Triplicate Site with DT136 (N30a, DT136 (N30b and DT136 (N30c - Annual data provided for DT136 (N30c only
DT136 (N30b)	385078	345687	43.7						25.0	20.5	28.8	30.6	38.8	30.2	-	-	-	Triplicate Site with DT136 (N30a, DT136 (N30b and DT136 (N30c - Annual data provided for DT136 (N30c only
DT136 (N30c)	385078	345687	44.8					24.2	27.7	24.1	29.4	29.5		28.8	30.6	24.5	-	Triplicate Site with DT136 (N30a, DT136 (N30b and DT136 (N30c - Annual data provided for DT136 (N30c only
DT137 (N31a)	382795	346011	23.2					14.7	20.2	16.1	22.9	24.7	29.0		-	-	-	Triplicate Site with DT137 (N31a, DT137 (N31b and DT137 (N31c - Annual data provided for DT137 (N31c only
DT137 (N31b)	382795	346011	24.6					14.7	16.0	15.5	24.9	27.6	29.8		-	-	-	Triplicate Site with DT137 (N31a, DT137 (N31b and DT137 (N31c - Annual data provided for DT137 (N31c only
DT137 (N31c)	382795	346011	22.9					14.6	18.0	15.8	25.4	28.1	27.6		21.7	17.3	-	Triplicate Site with DT137 (N31a, DT137 (N31b and DT137 (N31c - Annual data provided for DT137 (N31c only
DT133 (N32a)	383113	346592	21.8						21.3	22.7	22.1	27.6	30.6	21.4	-	-	-	Triplicate Site with DT133 (N32a, DT133 (N32b and DT133 (N32c - Annual data provided for DT133 (N32c only
DT133 (N32b)	383113	346592	18.1						21.8	21.1	23.2	27.6	29.7	18.4	-	-	-	Triplicate Site with DT133 (N32a, DT133 (N32b and DT133 (N32c - Annual data provided for DT133 (N32c only
DT133 (N32c)	383113	346592							22.5	21.9	21.7	24.8	31.4	22.8	23.5	17.6	-	Triplicate Site with DT133 (N32a, DT133 (N32b and DT133 (N32c - Annual data provided for DT133 (N32c only
DT139 (N33a)	383302	346727	29.0					9.7	12.8	11.6	11.2	20.4	24.8	16.2	-	-	-	Triplicate Site with DT139 (N33a, DT139 (N33b and DT139 (N33c - Annual data provided for DT139 (N33c only
DT139 (N33b)	383302	346727	27.5					10.4	13.0	11.1	13.8	19.5	23.4	15.9	-	-	-	Triplicate Site with DT139 (N33a, DT139 (N33b and DT139 (N33c - Annual data provided for DT139 (N33c only
DT139 (N33c)	383302	346727	27.5						12.4	11.7	14.9	19.1	23.8	16.7	16.9	13.5	-	Triplicate Site with DT139 (N33a, DT139 (N33b and DT139 (N33c - Annual data provided for DT139 (N33c only
DT140 (N34a)	383930	347273	34.4					39.4	22.9	23.0	25.8	29.8	37.4	26.9	-	-	-	Triplicate Site with DT140 (N34a, DT140 (N34b and DT140 (N34c - Annual data provided for DT140 (N34c only

DT140 (N34b)	383930	347273	31.6					18.1	22.7	21.7	25.3	30.8	37.2	24.8	-	-	-	Triplicate Site with DT140 (N34a, DT140 (N34b and DT140 (N34c - Annual data provided for DT140 (N34c only
DT140 (N34c)	383930	347273	32.2					18.2	21.7	21.1	26.5	32.2	34.1	25.9	27.7	22.2	-	Triplicate Site with DT140 (N34a, DT140 (N34b and DT140 (N34c - Annual data provided for DT140 (N34c only
DT141 (N35a)	384337	347534	39.5					25.1	28.7	25.3	34.5	36.8	41.3	32.2	-	-	-	Triplicate Site with DT141 (N35a, DT141 (N35b and DT141 (N35c - Annual data provided for DT141 (N35c only
DT141 (N35b)	384337	347534	40.0					25.8	27.9	24.1	35.3	36.4	40.8	30.7	-	-	-	Triplicate Site with DT141 (N35a, DT141 (N35b and DT141 (N35c - Annual data provided for DT141 (N35c only
DT141 (N35c)	384337	347534	37.9					26.3	28.2	23.8	34.4	37.0	44.9	29.1	32.6	26.1	-	Triplicate Site with DT141 (N35a, DT141 (N35b and DT141 (N35c - Annual data provided for DT141 (N35c only
DT142 (N36a)	384207	347915	25.2					18.3	19.5	21.3	27.4	28.2	34.0	26.0	-	-	-	Triplicate Site with DT142 (N36a, DT142 (N36b and DT142 (N36c - Annual data provided for DT142 (N36c only
DT142 (N36b)	384207	347915	34.9					18.8	18.2	19.5	26.4	30.8	34.2	25.3	-	-	-	Triplicate Site with DT142 (N36a, DT142 (N36b and DT142 (N36c - Annual data provided for DT142 (N36c only
DT142 (N36c)	384207	347915	36.7					18.6	19.4	19.9	25.4	27.3	36.7	24.1	25.7	20.6	-	Triplicate Site with DT142 (N36a, DT142 (N36b and DT142 (N36c - Annual data provided for DT142 (N36c only
DT143 (N37a)	384021	348925	44.5					I/S	37.8	33.8	41.2	38.9	47.0	37.4	-	-	-	Triplicate Site with DT143 (N37a, DT143 (N37b and DT143 (N37c - Annual data provided for DT143 (N37c only
DT143 (N37b)	384021	348925	46.4					33.7	32.4	34.7	43.0	33.5	45.7	34.2	-	-	-	Triplicate Site with DT143 (N37a, DT143 (N37b and DT143 (N37c - Annual data provided for DT143 (N37c only
DT143 (N37c)	384021	348925	45.0					63.4	36.1	33.8	40.8	34.8	40.3	36.9	40.1	32.1	-	Triplicate Site with DT143 (N37a, DT143 (N37b and DT143 (N37c - Annual data provided for DT143 (N37c only
DT144 (N38a)	383764	349912	26.3					13.4	16.9	14.4	21.5	21.8	28.3	18.3	-	-	-	Triplicate Site with DT144 (N38a, DT144 (N38b and DT144 (N38c - Annual data provided for DT144 (N38c only
DT144 (N38b)	383764	349912	27.4					11.9	16.1	12.6	21.5	23.3	28.0	8.5	-	-	-	Triplicate Site with DT144 (N38a, DT144 (N38b and DT144 (N38c - Annual data provided for DT144 (N38c only
DT144 (N38c)	383764	349912	27.3					12.3	16.6	12.7	23.8	22.9	27.6	17.7	19.4	15.5	-	Triplicate Site with DT144 (N38a, DT144 (N38b and DT144 (N38c - Annual data provided for DT144 (N38c only
DT145 (N39a)	383670	350326	52.1					41.9	41.7	44.5	40.7	49.8	48.0	37.1	-	-	-	Triplicate Site with DT145 (N39a, DT145 (N39b and DT145 (N39c - Annual data provided for DT145 (N39c only
DT145 (N39b)	383670	350326	53.7					40.5	44.6	42.1	46.5	48.7	48.5	36.5	-	-	-	Triplicate Site with DT145 (N39a, DT145 (N39b and DT145 (N39c - Annual data provided for DT145 (N39c only
DT145 (N39c)	383670	350326	53.7					44.7	43.4	42.7	44.0	43.9	49.1	32.7	44.5	35.5	-	Triplicate Site with DT145 (N39a, DT145 (N39b and DT145 (N39c - Annual data provided for DT145 (N39c only
DT146 (N40a)	383587	350790	31.1					25.0	25.3	24.3	26.6	28.4	36.4	22.3	-	-	-	Triplicate Site with DT146 (N40a, DT146 (N40b and DT146 (N40c - Annual data provided for DT146 (N40c only
DT146 (N40b)	383587	350790	32.3					45.0	30.1	26.1	26.4	27.7	36.2	22.2	-	-	-	Triplicate Site with DT146 (N40a, DT146 (N40b and DT146 (N40c - Annual data provided for DT146 (N40c only
DT146 (N40c)	383587	350790	30.1					26.3	26.5	24.1	26.3	27.3	32.5	23.4	28.3	22.6	-	Triplicate Site with DT146 (N40a, DT146 (N40b and DT146 (N40c - Annual data provided for DT146 (N40c only

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

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

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

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

☒ **confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**.

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Newcastle under Lyme During 2024

New sources of emission identified within Newcastle under Lyme are identified below:

Castle carpark, Liverpool Road, is now operational. An air quality impact assessment was carried out during the planning phase which identified a potential exceedance on the NO_2 annual mean at Deakins Yard, Brunswick Street. The model used was identified as `overpredicting` and Deakins Yard is currently unoccupied due to planning restrictions relating to occupancy and unresolved technical matters. Once an occupation date is known. additional diffusion tubes may be deployed to carry out monitoring at Deakins Yard, if appropriate.

Willoughbridge Lodge Farm – Poultry Farm, a planning application is currently being determined in relation to a new poultry farm. A screening assessment was carried out prior to application being received which identified that there was no risk of the relevant PM10 air quality objectives being exceeded. However, an air quality impact assessment was submitted with the application and is being considered.

Land to Southeast Junction 16 M6 -, a planning application is currently being determined in relation to a new distribution Centre comprising of 220,000m2 of storage and distribution units. The potential air quality impacts will be considered as part of the application.

Additional Air Quality Works Undertaken by Newcastle under Lyme During 2024

Newcastle under Lyme has not completed any additional works within the reporting year of 2024.

QA/QC of Diffusion Tube Monitoring

All diffusion tubes were supplied and analysed by Staffordshire County Council (Staffordshire Highways Laboratory) and used the 20% TEA in water preparation method. The laboratory is UKAS accredited to ISO/IEC 17025:2017 [8] and participates in the AIR-PT scheme run by LGC [9] and the Field Intercomparison Scheme run by NPL.[10]

Staffordshire Highways Laboratory performance for all Field Intercomparison results of 2024 was classified as 'GOOD' (CoV <20) and the laboratory`s performance within the AIR PT Scheme (LGC) was 100% satisfactory in each of the four rounds (rounds 62 to 66) within 2024.

Bias adjustment factor

The bias adjustment factor spreadsheet on the Defra website was updated on 28th March 2025. The overall bias factor for Staffordshire Highways Laboratory (see Staffordshire County Council) for 2024 (including the Field Intercomparison result and all the co-location results from participating local authorities, total of 16 studies) was 0.82 and the tube precision for all co-location studies was 'Good'

Deployment Dates

No diffusion tubes were deployed during February, March, April or, May of the 2024 monitoring period due to staffing problems.

Diffusion tube DT100 was not deployed at all during the 2024 monitoring period as the site was not accessible due to construction work taking place at that location.

Diffusion tubes were collected a week late in June monitoring period (being exchanged on the 10th July rather than the 3rd July) thereby lengthening the June deployment period and shortening the July deployment period.

Otherwise, tubes were generally deployed in accordance with the 2024 Diffusion Tube Calendar, being collected plus or minus two days of the specified date.

8 https://www.ukas.com/wp-content/uploads/schedule_uploads/00002/0719Testing-Multiple.pdf

9 https://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html

10 https://laqm.defra.gov.uk/air-quality/air-quality-assessment/precision-and-accuracy/

The subsequent valid data capture for the whole 2024 monitoring period was 100%

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. Except for location DT100, where no diffusion tube was deployed at all during the 2024 monitoring period, all diffusion tubes were subject to annualisation due to the low data capture rate. A summary of the annualised data is given below in table C.1.

Diffusion Tube Locations

The distances of Diffusion Tubes to relevant exposure and to the kerb of the nearest road were reviewed and updated. The locations of the monitoring locations upon the maps within appendix D were updated and, where necessary, corrected.

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

Diffusion Tube ID	Annualisation Factor Stoke on Trent Centre	Annualisation Factor Crewe Coppenhall	Annualisation Factor Telford Hollinswood	Annualisation Factor Burton on Trent Horninglow	Average Annualisation Factor	Raw Data Time Weighted Annual Mean (µg/m^3)	Annualised Data Time Weighted Annual Mean (µg/m^3)	Comments
DTK1	0.9734	0.9586	0.9608	0.9733	0.9665	34.8	33.6	
DTK2	0.9781	1.0090	1.0225	1.0222	1.0079	25.2	25.4	
DTUB1	0.9619	0.9740	0.9812	0.9830	0.9750	16.8	16.4	
DTUB2	0.9619	0.9740	0.9812	0.9830	0.9750	12.8	12.5	
DT6	0.9176	0.9052	0.9137	0.9279	0.9161	37.0	33.9	
DT9	0.9619	0.9740	0.9812	0.9830	0.9750	31.0	30.2	
DT11	0.9227	0.8982	0.9033	0.9229	0.9118	31.0	28.3	
DT24	1.0606	1.2057	1.2142	1.1794	1.1650	29.6	34.5	
DT34	0.9511	0.9556	0.9673	0.9610	0.9588	27.7	26.6	
DT39	0.9538	0.9686	0.9751	0.9781	0.9689	30.6	29.7	
DT40	0.9619	0.9740	0.9812	0.9830	0.9750	27.2	26.6	
DT46	0.9619	0.9740	0.9812	0.9830	0.9750	25.2	24.5	

DT47	0.9227	0.8982	0.9033	0.9229	0.9118	27.2	24.8	
DT49	0.9619	0.9740	0.9812	0.9830	0.9750	27.2	26.5	
DT64	0.9619	0.9740	0.9812	0.9830	0.9750	33.6	32.7	
DT72	0.9049	0.8684	0.8776	0.8908	0.8854	37.4	33.1	
DT73	0.9538	0.9686	0.9751	0.9781	0.9689	34.8	33.7	
DT74	1.0165	1.0860	1.0915	1.0587	1.0632	32.7	34.8	
DT76	0.9227	0.8982	0.9033	0.9229	0.9118	37.5	34.2	
DT84	0.9619	0.9740	0.9812	0.9830	0.9750	31.4	30.6	
DT85	0.9538	0.9686	0.9751	0.9781	0.9689	38.9	37.7	
DT86	0.9176	0.9052	0.9137	0.9279	0.9161	22.2	20.3	
DT87	0.9619	0.9740	0.9812	0.9830	0.9750	34.7	33.9	
DT88	0.9227	0.8982	0.9033	0.9229	0.9118	28.7	26.2	
DT89	0.9511	0.9556	0.9673	0.9610	0.9588	-	-	*Triplicate Site with DT89, DT90 and DT91 - Annual data provided for DT91 only*
DT90	0.9511	0.9556	0.9673	0.9610	0.9588	-	-	*Triplicate Site with DT89, DT90 and DT91 - Annual data provided for DT91 only*
DT91	0.9511	0.9556	0.9673	0.9610	0.9588	32.7	31.4	*Triplicate Site with DT89, DT90 and DT91 - Annual data provided for DT91 only*
DT92	0.9176	0.9052	0.9137	0.9279	0.9161	31.9	29.2	

DT93	0.9619	0.9740	0.9812	0.9830	0.9750	30.2	29.5	
DT94	0.9227	0.8982	0.9033	0.9229	0.9118	41.7	38.1	
DT95	0.9619	0.9740	0.9812	0.9830	0.9750	29.1	28.4	
DT96	0.9227	0.8982	0.9033	0.9229	0.9118	33.8	30.8	
DT97	0.9227	0.8982	0.9033	0.9229	0.9118	23.2	21.1	
DT98	0.9538	0.9686	0.9751	0.9781	0.9689	34.2	33.1	
DT101	0.9619	0.9740	0.9812	0.9830	0.9750	30.0	29.3	
DT102	1.0559	1.1721	1.1820	1.1523	1.1406	43.4	49.5	
DT103	0.9227	0.8982	0.9033	0.9229	0.9118	21.1	19.3	
DT104	1.0137	1.0456	1.0506	1.0402	1.0375	45.7	47.4	
DT105	0.9176	0.9052	0.9137	0.9279	0.9161	25.6	23.5	
DT107 (N1a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT107 (N1a, DT107 (N1b and DT107 (N1C - Annual data provided for DT107 (N1C only*
DT107 (N1b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT107 (N1a, DT107 (N1b and DT107 (N1C - Annual data provided for DT107 (N1C only*
DT107 (N1C	0.9619	0.9740	0.9812	0.9830	0.9750	21.2	20.7	*Triplicate Site with DT107 (N1a, DT107 (N1b and DT107 (N1C - Annual data provided for DT107 (N1C only*
DT108 (N2a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT108 (N2a, DT108 (N2b and DT108 (N2c -*

								Annual data provided for DT108 (N2c only
DT108 (N2b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT108 (N2a, DT108 (N2b and DT108 (N2c - Annual data provided for DT108 (N2c only*
DT108 (N2c	0.9619	0.9740	0.9812	0.9830	0.9750	23.8	23.2	*Triplicate Site with DT108 (N2a, DT108 (N2b and DT108 (N2c - Annual data provided for DT108 (N2c only*
DT109 (N3a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT109 (N3a, DT109 (N3b and DT109 (N3c - Annual data provided for DT109 (N3c only*
DT109 (N3b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT109 (N3a, DT109 (N3b and DT109 (N3c - Annual data provided for DT109 (N3c only*
DT109 (N3c	0.9619	0.9740	0.9812	0.9830	0.9750	23.9	23.3	*Triplicate Site with DT109 (N3a, DT109 (N3b and DT109 (N3c - Annual data provided for DT109 (N3c only*
DT110 (N4a	0.9176	0.9052	0.9137	0.9279	0.9161	-	-	*Triplicate Site with DT110 (N4a, DT110 (N4b and DT110 (N4c - Annual data provided for DT110 (N4c only*
DT110 (N4b	0.9176	0.9052	0.9137	0.9279	0.9161	-	-	*Triplicate Site with DT110 (N4a, DT110 (N4b and DT110 (N4c - Annual data provided for DT110 (N4c only*
DT110 (N4c	0.9176	0.9052	0.9137	0.9279	0.9161	27.0	24.8	*Triplicate Site with DT110 (N4a, DT110 (N4b and DT110 (N4c - Annual data provided for DT110 (N4c only*
DT111 (N5a	1.1432	1.2810	1.2774	1.2507	1.2381	-	-	*Triplicate Site with DT111 (N5a, DT111 (N5b and DT111 (N5c - Annual data provided for DT111 (N5c only*

DT111 (N5b	1.1432	1.2810	1.2774	1.2507	1.2381	-	-	*Triplicate Site with DT111 (N5a, DT111 (N5b and DT111 (N5c - Annual data provided for DT111 (N5c only*
DT111 (N5c	1.1432	1.2810	1.2774	1.2507	1.2381	29.2	36.2	*Triplicate Site with DT111 (N5a, DT111 (N5b and DT111 (N5c - Annual data provided for DT111 (N5c only*
DT112 (N6a	0.9781	1.0090	1.0225	1.0222	1.0079	-	-	*Triplicate Site with DT112 (N6a, DT112 (N6b and DT112 (N6c - Annual data provided for DT112 (N6c only*
DT112 (N6b	0.9781	1.0090	1.0225	1.0222	1.0079	-	-	*Triplicate Site with DT112 (N6a, DT112 (N6b and DT112 (N6c - Annual data provided for DT112 (N6c only*
DT112 (N6c	0.9781	1.0090	1.0225	1.0222	1.0079	17.4	17.5	*Triplicate Site with DT112 (N6a, DT112 (N6b and DT112 (N6c - Annual data provided for DT112 (N6c only*
DT113 (N7a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT113 (N7a, DT113 (N7b and DT113 (N7c - Annual data provided for DT113 (N7c only*
DT113 (N7b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT113 (N7a, DT113 (N7b and DT113 (N7c - Annual data provided for DT113 (N7c only*
DT113 (N7c	0.9619	0.9740	0.9812	0.9830	0.9750	19.0	18.5	*Triplicate Site with DT113 (N7a, DT113 (N7b and DT113 (N7c - Annual data provided for DT113 (N7c only*
DT114 (N8a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT114 (N8a, DT114 (N8b and DT114 (N8c - Annual data provided for DT114 (N8c only*
DT114 (N8b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT114 (N8a, DT114 (N8b and DT114 (N8c -*

								Annual data provided for DT114 (N8c only
DT114 (N8c	0.9619	0.9740	0.9812	0.9830	0.9750	20.9	20.3	*Triplicate Site with DT114 (N8a, DT114 (N8b and DT114 (N8c - Annual data provided for DT114 (N8c only*
DT115 (N9a	0.9176	0.9052	0.9137	0.9279	0.9161	-	-	*Triplicate Site with DT115 (N9a, DT115 (N9b and DT115 (N9c - Annual data provided for DT115 (N9c only*
DT115 (N9b	0.9176	0.9052	0.9137	0.9279	0.9161	-	-	*Triplicate Site with DT115 (N9a, DT115 (N9b and DT115 (N9c - Annual data provided for DT115 (N9c only*
DT115 (N9c	0.9176	0.9052	0.9137	0.9279	0.9161	15.2	13.9	*Triplicate Site with DT115 (N9a, DT115 (N9b and DT115 (N9c - Annual data provided for DT115 (N9c only*
DT116 (N10a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT116 (N10a, DT116 (N10b and DT116 (N10c - Annual data provided for DT116 (N10c only*
DT116 (N10b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT116 (N10a, DT116 (N10b and DT116 (N10c - Annual data provided for DT116 (N10c only*
DT116 (N10c	0.9619	0.9740	0.9812	0.9830	0.9750	20.9	20.4	*Triplicate Site with DT116 (N10a, DT116 (N10b and DT116 (N10c - Annual data provided for DT116 (N10c only*
DT117 (N11a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT117 (N11a, DT117 (N11b and DT117 (N11c - Annual data provided for DT117 (N11c only*
DT117 (N11b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT117 (N11a, DT117 (N11b and DT117 (N11c - Annual data provided for DT117 (N11c only*

DT117 (N11c	0.9619	0.9740	0.9812	0.9830	0.9750	31.5	30.7	*Triplicate Site with DT117 (N11a, DT117 (N11b and DT117 (N11c - Annual data provided for DT117 (N11c only*
DT118 (N12a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT118 (N12a, DT118 (N12b and DT118 (N12c - Annual data provided for DT118 (N12c only*
DT118 (N12b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT118 (N12a, DT118 (N12b and DT118 (N12c - Annual data provided for DT118 (N12c only*
DT118 (N12c	0.9619	0.9740	0.9812	0.9830	0.9750	22.1	21.6	*Triplicate Site with DT118 (N12a, DT118 (N12b and DT118 (N12c - Annual data provided for DT118 (N12c only*
DT119 (N13a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT119 (N13a, DT119 (N13b and DT119 (N13c - Annual data provided for DT119 (N13c only*
DT119 (N13b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT119 (N13a, DT119 (N13b and DT119 (N13c - Annual data provided for DT119 (N13c only*
DT119 (N13c	0.9619	0.9740	0.9812	0.9830	0.9750	24.9	24.3	*Triplicate Site with DT119 (N13a, DT119 (N13b and DT119 (N13c - Annual data provided for DT119 (N13c only*
DT120 (N14a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT120 (N14a, DT120 (N14b and DT120 (N14c - Annual data provided for DT120 (N14c only*
DT120 (N14b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT120 (N14a, DT120 (N14b and DT120 (N14c - Annual data provided for DT120 (N14c only*
DT120 (N14c	0.9619	0.9740	0.9812	0.9830	0.9750	30.2	29.5	*Triplicate Site with DT120 (N14a, DT120 (N14b and DT120*

								(N14c - Annual data provided for DT120 (N14c only
DT121 (N15a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT121 (N15a, DT121 (N15b and DT121 (N15c - Annual data provided for DT121 (N15c only*
DT121 (N15b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT121 (N15a, DT121 (N15b and DT121 (N15c - Annual data provided for DT121 (N15c only*
DT121 (N15c	0.9619	0.9740	0.9812	0.9830	0.9750	25.9	25.2	*Triplicate Site with DT121 (N15a, DT121 (N15b and DT121 (N15c - Annual data provided for DT121 (N15c only*
DT122 (N16a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT122 (N16a, DT122 (N16b and DT122 (N16c - Annual data provided for DT122 (N16c only*
DT122 (N16b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT122 (N16a, DT122 (N16b and DT122 (N16c - Annual data provided for DT122 (N16c only*
DT122 (N16c	0.9619	0.9740	0.9812	0.9830	0.9750	25.5	24.9	*Triplicate Site with DT122 (N16a, DT122 (N16b and DT122 (N16c - Annual data provided for DT122 (N16c only*
DT123 (N17a	0.9227	0.8982	0.9033	0.9229	0.9118	-	-	*Triplicate Site with DT123 (N17a, DT123 (N17b and DT123 (N17c - Annual data provided for DT123 (N17c only*
DT123 (N17b	0.9227	0.8982	0.9033	0.9229	0.9118	-	-	*Triplicate Site with DT123 (N17a, DT123 (N17b and DT123 (N17c - Annual data provided for DT123 (N17c only*
DT123 (N17c	0.9227	0.8982	0.9033	0.9229	0.9118	26.7	24.4	*Triplicate Site with DT123 (N17a, DT123 (N17b and DT123 (N17c - Annual data provided for DT123 (N17c only*

DT124 (N18a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT124 (N18a, DT124 (N18b and DT124 (N18c - Annual data provided for DT124 (N18c only*
DT124 (N18b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT124 (N18a, DT124 (N18b and DT124 (N18c - Annual data provided for DT124 (N18c only*
DT124 (N18c	0.9619	0.9740	0.9812	0.9830	0.9750	38.4	37.4	*Triplicate Site with DT124 (N18a, DT124 (N18b and DT124 (N18c - Annual data provided for DT124 (N18c only*
DT125 (N19a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT125 (N19a, DT125 (N19b and DT125 (N19c - Annual data provided for DT125 (N19c only*
DT125 (N19b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT125 (N19a, DT125 (N19b and DT125 (N19c - Annual data provided for DT125 (N19c only*
DT125 (N19c	0.9619	0.9740	0.9812	0.9830	0.9750	26.2	25.6	*Triplicate Site with DT125 (N19a, DT125 (N19b and DT125 (N19c - Annual data provided for DT125 (N19c only*
DT126 (N20a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT126 (N20a, DT126 (N20b and DT126 (N20c - Annual data provided for DT126 (N20c only*
DT126 (N20b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT126 (N20a, DT126 (N20b and DT126 (N20c - Annual data provided for DT126 (N20c only*
DT126 (N20c	0.9619	0.9740	0.9812	0.9830	0.9750	24.0	23.4	*Triplicate Site with DT126 (N20a, DT126 (N20b and DT126 (N20c - Annual data provided for DT126 (N20c only*
DT127 (N21a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT127 (N21a, DT127 (N21b and DT127*

								(N21c - Annual data provided for DT127 (N21c only
DT127 (N21b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT127 (N21a, DT127 (N21b and DT127 (N21c - Annual data provided for DT127 (N21c only*
DT127 (N21c	0.9619	0.9740	0.9812	0.9830	0.9750	23.1	22.5	*Triplicate Site with DT127 (N21a, DT127 (N21b and DT127 (N21c - Annual data provided for DT127 (N21c only*
DT128 (N22a	0.8670	0.8158	0.8224	0.8547	0.8400	-	-	*Triplicate Site with DT128 (N22a, DT128 (N22b and DT128 (N22c - Annual data provided for DT128 (N22c only*
DT128 (N22b	0.8670	0.8158	0.8224	0.8547	0.8400	-	-	*Triplicate Site with DT128 (N22a, DT128 (N22b and DT128 (N22c - Annual data provided for DT128 (N22c only*
DT128 (N22c	0.8670	0.8158	0.8224	0.8547	0.8400	30.6	25.7	*Triplicate Site with DT128 (N22a, DT128 (N22b and DT128 (N22c - Annual data provided for DT128 (N22c only*
DT129 (N23a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT129 (N23a, DT129 (N23b and DT129 (N23c - Annual data provided for DT129 (N23c only*
DT129 (N23b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT129 (N23a, DT129 (N23b and DT129 (N23c - Annual data provided for DT129 (N23c only*
DT129 (N23c	0.9619	0.9740	0.9812	0.9830	0.9750	25.0	24.3	*Triplicate Site with DT129 (N23a, DT129 (N23b and DT129 (N23c - Annual data provided for DT129 (N23c only*
DT130 (N24a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT130 (N24a, DT130 (N24b and DT130 (N24c - Annual data provided for DT130 (N24c only*

DT130 (N24b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT130 (N24a, DT130 (N24b and DT130 (N24c - Annual data provided for DT130 (N24c only*
DT130 (N24c	0.9619	0.9740	0.9812	0.9830	0.9750	30.5	29.7	*Triplicate Site with DT130 (N24a, DT130 (N24b and DT130 (N24c - Annual data provided for DT130 (N24c only*
DT131 (N25a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT131 (N25a, DT131 (N25b and DT131 (N25c - Annual data provided for DT131 (N25c only*
DT131 (N25b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT131 (N25a, DT131 (N25b and DT131 (N25c - Annual data provided for DT131 (N25c only*
DT131 (N25c	0.9619	0.9740	0.9812	0.9830	0.9750	34.0	33.2	*Triplicate Site with DT131 (N25a, DT131 (N25b and DT131 (N25c - Annual data provided for DT131 (N25c only*
DT132 (N26a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT132 (N26a, DT132 (N26b and DT132 (N26c - Annual data provided for DT132 (N26c only*
DT132 (N26b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT132 (N26a, DT132 (N26b and DT132 (N26c - Annual data provided for DT132 (N26c only*
DT132 (N26c	0.9619	0.9740	0.9812	0.9830	0.9750	32.3	31.5	*Triplicate Site with DT132 (N26a, DT132 (N26b and DT132 (N26c - Annual data provided for DT132 (N26c only*
DT133 (N27a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT133 (N27a, DT133 (N27b and DT133 (N27c - Annual data provided for DT133 (N27c only*
DT133 (N27b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT133 (N27a, DT133 (N27b and DT133*

								(N27c - Annual data provided for DT133 (N27c only
DT133 (N27c	0.9619	0.9740	0.9812	0.9830	0.9750	35.6	34.7	*Triplicate Site with DT133 (N27a, DT133 (N27b and DT133 (N27c - Annual data provided for DT133 (N27c only*
DT134 (N28a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT134 (N28a, DT134 (N28b and DT134 (N28c - Annual data provided for DT134 (N28c only*
DT134 (N28b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT134 (N28a, DT134 (N28b and DT134 (N28c - Annual data provided for DT134 (N28c only*
DT134 (N28c	0.9619	0.9740	0.9812	0.9830	0.9750	28.4	27.7	*Triplicate Site with DT134 (N28a, DT134 (N28b and DT134 (N28c - Annual data provided for DT134 (N28c only*
DT135 (N29a	0.9324	0.9196	0.9287	0.9515	0.9331	-	-	*Triplicate Site with DT135 (N29a, DT135 (N29b and DT135 (N29c - Annual data provided for DT135 (N29c only*
DT135 (N29b	0.9324	0.9196	0.9287	0.9515	0.9331	-	-	*Triplicate Site with DT135 (N29a, DT135 (N29b and DT135 (N29c - Annual data provided for DT135 (N29c only*
DT135 (N29c	0.9324	0.9196	0.9287	0.9515	0.9331	28.8	26.8	*Triplicate Site with DT135 (N29a, DT135 (N29b and DT135 (N29c - Annual data provided for DT135 (N29c only*
DT136 (N30a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT136 (N30a, DT136 (N30b and DT136 (N30c - Annual data provided for DT136 (N30c only*
DT136 (N30b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT136 (N30a, DT136 (N30b and DT136 (N30c - Annual data provided for DT136 (N30c only*

DT136 (N30c	0.9619	0.9740	0.9812	0.9830	0.9750	30.6	29.9	*Triplicate Site with DT136 (N30a, DT136 (N30b and DT136 (N30c - Annual data provided for DT136 (N30c only*
DT137 (N31a	0.9538	0.9686	0.9751	0.9781	0.9689	-	-	*Triplicate Site with DT137 (N31a, DT137 (N31b and DT137 (N31c - Annual data provided for DT137 (N31c only*
DT137 (N31b	0.9538	0.9686	0.9751	0.9781	0.9689	-	-	*Triplicate Site with DT137 (N31a, DT137 (N31b and DT137 (N31c - Annual data provided for DT137 (N31c only*
DT137 (N31c	0.9538	0.9686	0.9751	0.9781	0.9689	21.7	21.0	*Triplicate Site with DT137 (N31a, DT137 (N31b and DT137 (N31c - Annual data provided for DT137 (N31c only*
DT133 (N32a	0.9227	0.8982	0.9033	0.9229	0.9118	-	-	*Triplicate Site with DT133 (N32a, DT133 (N32b and DT133 (N32c - Annual data provided for DT133 (N32c only*
DT133 (N32b	0.9227	0.8982	0.9033	0.9229	0.9118	-	-	*Triplicate Site with DT133 (N32a, DT133 (N32b and DT133 (N32c - Annual data provided for DT133 (N32c only*
DT133 (N32c	0.9227	0.8982	0.9033	0.9229	0.9118	23.5	21.5	*Triplicate Site with DT133 (N32a, DT133 (N32b and DT133 (N32c - Annual data provided for DT133 (N32c only*
DT139 (N33a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT139 (N33a, DT139 (N33b and DT139 (N33c - Annual data provided for DT139 (N33c only*
DT139 (N33b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT139 (N33a, DT139 (N33b and DT139 (N33c - Annual data provided for DT139 (N33c only*
DT139 (N33c	0.9619	0.9740	0.9812	0.9830	0.9750	16.9	16.4	*Triplicate Site with DT139 (N33a, DT139 (N33b and DT139*

								(N33c - Annual data provided for DT139 (N33c only
DT140 (N34a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT140 (N34a, DT140 (N34b and DT140 (N34c - Annual data provided for DT140 (N34c only*
DT140 (N34b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT140 (N34a, DT140 (N34b and DT140 (N34c - Annual data provided for DT140 (N34c only*
DT140 (N34c	0.9619	0.9740	0.9812	0.9830	0.9750	27.7	27.0	*Triplicate Site with DT140 (N34a, DT140 (N34b and DT140 (N34c - Annual data provided for DT140 (N34c only*
DT141 (N35a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT141 (N35a, DT141 (N35b and DT141 (N35c - Annual data provided for DT141 (N35c only*
DT141 (N35b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT141 (N35a, DT141 (N35b and DT141 (N35c - Annual data provided for DT141 (N35c only*
DT141 (N35c	0.9619	0.9740	0.9812	0.9830	0.9750	32.6	31.8	*Triplicate Site with DT141 (N35a, DT141 (N35b and DT141 (N35c - Annual data provided for DT141 (N35c only*
DT142 (N36a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT142 (N36a, DT142 (N36b and DT142 (N36c - Annual data provided for DT142 (N36c only*
DT142 (N36b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT142 (N36a, DT142 (N36b and DT142 (N36c - Annual data provided for DT142 (N36c only*
DT142 (N36c	0.9619	0.9740	0.9812	0.9830	0.9750	25.7	25.1	*Triplicate Site with DT142 (N36a, DT142 (N36b and DT142 (N36c - Annual data provided for DT142 (N36c only*

DT143 (N37a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT143 (N37a, DT143 (N37b and DT143 (N37c - Annual data provided for DT143 (N37c only*
DT143 (N37b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT143 (N37a, DT143 (N37b and DT143 (N37c - Annual data provided for DT143 (N37c only*
DT143 (N37c	0.9619	0.9740	0.9812	0.9830	0.9750	40.1	39.1	*Triplicate Site with DT143 (N37a, DT143 (N37b and DT143 (N37c - Annual data provided for DT143 (N37c only*
DT144 (N38a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT144 (N38a, DT144 (N38b and DT144 (N38c - Annual data provided for DT144 (N38c only*
DT144 (N38b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT144 (N38a, DT144 (N38b and DT144 (N38c - Annual data provided for DT144 (N38c only*
DT144 (N38c	0.9619	0.9740	0.9812	0.9830	0.9750	19.4	18.9	*Triplicate Site with DT144 (N38a, DT144 (N38b and DT144 (N38c - Annual data provided for DT144 (N38c only*
DT145 (N39a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT145 (N39a, DT145 (N39b and DT145 (N39c - Annual data provided for DT145 (N39c only*
DT145 (N39b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT145 (N39a, DT145 (N39b and DT145 (N39c - Annual data provided for DT145 (N39c only*
DT145 (N39c	0.9619	0.9740	0.9812	0.9830	0.9750	44.5	43.4	*Triplicate Site with DT145 (N39a, DT145 (N39b and DT145 (N39c - Annual data provided for DT145 (N39c only*
DT146 (N40a	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT146 (N40a, DT146 (N40b and*

								DT146 (N40c - Annual data provided for DT146 (N40c only
DT146 (N40b	0.9619	0.9740	0.9812	0.9830	0.9750	-	-	*Triplicate Site with DT146 (N40a, DT146 (N40b and DT146 (N40c - Annual data provided for DT146 (N40c only*
DT146 (N40c	0.9619	0.9740	0.9812	0.9830	0.9750	28.3	27.6	*Triplicate Site with DT146 (N40a, DT146 (N40b and DT146 (N40c - Annual data provided for DT146 (N40c only*

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2025 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance regarding the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Newcastle under Lyme have applied a national bias adjustment factor of 0.82 to the 2024 monitoring data. The national bias adjustment factor was taken from the Diffusion Tube Bias Adjustment Factors Spreadsheet released by Defra in April 2025. The factor from Staffordshire County Council for 20% TEA in acetone was applied. A total of 16 studies were used to calculate the bias adjustment factor.

A summary of bias adjustment factors used by Newcastle under Lyme over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	National	04/25	0.82
2023	National	06/24	0.86
2022	National	06/23	0.86
2021	National	09/22	0.85
2020	National	09/21	0.85

DEFRA, in their ASR Appraisal Report for 2023, recommended that "It would be beneficial for the Council to derive a local bias adjustment factor using the automatic monitor and the co-located triplicate diffusion tube site DT89 at Queen's Garden". A local bias adjustment factor has therefore been calculated as shown below.

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1
Periods used to calculate bias	6
Bias Factor A	0.59 (0.42 - 1)
Bias Factor B	70% (0% - 141%)
Diffusion Tube Mean (µg/m^3)	32.1
Mean CV (Precision)	7.3%
Automatic Mean (µg/m^3)	18.9
Data Capture	100%
Overall Data Capture	148%
Adjusted Tube Mean (µg/m^3)	19 (13-32)
Overall Diffusion Tube Precision	**Good Overall Precision**
Overall Continuous Monitoring Data Capture	**Good Overall Data Capture**
Local Bias Adjustment Factor	0.59

A comparison of the national and local bias adjustment factors, and the data from the real-time analyser and from the triplicate diffusion tubes at monitoring location DT89 ,from 2019 to 2024 is provided in the table below.

Table C.4a – Local Bias Adjustment Trend

Monitoring Method	Monitoring Year				
	2020	2021	2022	2023	2024
Chemiluminescent (CM1)	18	23.2	26	26.5	21.2
Triplicate Diffusion Tube (DT89)	20.9	24.5	25.7	24.1	25.7
Local Bias Correction	0.86	0.95	1.01	1.10	0.59
National Bias Correction	0.85	0.85	0.86	0.86	0.82

The local bias in 20020 was broadly consistent with the observed national bias for Staffordshire Scientific Services Laboratory 20% TEA in water preparation method. However there appears to be an upward drift in this local factor from 2020 until 2023 to the

extent that NULBC officers were not satisfied that the calculated local bias correction could be used with confidence.

In 2024, the local bias adjustment factor for 2024 was calculated to be 0.59, which is significantly lower than the national bias adjustment factor. Diffusion tube data at the collocated diffusion tubes was only available for seven of the twelve months and local site operator checks were not carried out at the monitoring station during 2024

For these reasons, Officers have no confidence in the local bias adjustment factor calculated for the 2024 monitoring period and the national bias adjustment factor has been used for correction within this ASR. For these reasons, and as the station was not located within an area of poor air quality, the continuous monitoring station has now been decommissioned and so the national bias adjustment factor will continue to be used in future years.

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Non-automatic annual mean NO_2 concentrations corrected for distance are presented in table C.4.

Table C.5 – Non-Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Diffusion Tube ID	Distance (m)		NO_2 Annual Mean Concentration (µg/m^3)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Bias Adjusted and Annualised	Background	Predicted at Receptor	
DT102	6.0	6.2	40.6	10.3	**40.3**	*Predicted concentration at Receptor above AQS objective.*
DT104	2.0	2.2	38.9	10.3	***38.2***	*Predicted concentration at Receptor within 10% the AQS objective.*

QA/QC of Automatic Monitoring

The continuous monitoring data contained within this report is the ratified data. Neither the live data, nor the historic data, are available upon our website. However, it can be provided upon request by emailing environmental_health@newcastle-staffs.gov.uk.

Data Management.

Air Quality Data Management (AQDM) http://www.aqdm.co.uk were responsible for data management in relation to the measurements obtained from the automatic continuous monitoring instrument located within Queens Gardens. This included validation and ratification to the standards described in the Local Air Quality Management – Technical Guidance LAQM (TG22) https://laqm.defra.gov.uk/technical-guidance.

Validation

This process is carried out at the data collection stage with all data being continually screened, algorithmically and manually, to identify anomalies, spurious data and unusual measurements. These anomalies may be due to equipment failure, human error, power failures, interference or other disturbances. Automatic screening can only safely identify spurious results which then need further manual investigation.

Raw data from the instrument is scaled into concentrations using information derived from manual and automatic calibrations. The measurements from the instruments are not absolute, the instrument suffers drifts and both the zero baseline and the sensitivity may change over time. Regular calibrations are used to establish the zero and sensitivity, but the original raw data is retained while the processed data is edited and dynamically scaled.

Ratification

Ratification 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 at three-, six- or twelve-monthly intervals. However, unexpected faults can be identified during the instrument routine services. 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 including:

- 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_2 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 and experience. Instruments and infrastructure can fail in numerous ways that 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

Calibration and Servicing.

All servicing, maintenance and calibration was carried out by ESU1 www.esu1.co.uk. This was carried out in accordance with the maintenance schedule for the duration of the monitoring period.

Local Site Operator duties, consisting of inlet filter replacement, remedial actions and fortnightly span and zero calibrations, would typically be carried out by officers of the

Council`s Environmental Protection Team. However, resourcing issues within that team have resulted in these duties not being carried out over the 2024 monitoring period.

Automatic Monitoring Annualisation

All automatic monitoring locations within Newcastle under Lyme recorded data capture of greater than 75% therefore it was necessary to annualise any monitoring data.

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO_2 concentrations corrected for distance are presented in Table A.3.

However, no automatic NO_2 monitoring locations within Newcastle under Lyme required distance correction during 2024.

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D1 – Overview of Location of AQMAs and Areas Where Air Quality monitoring is Carried Out.

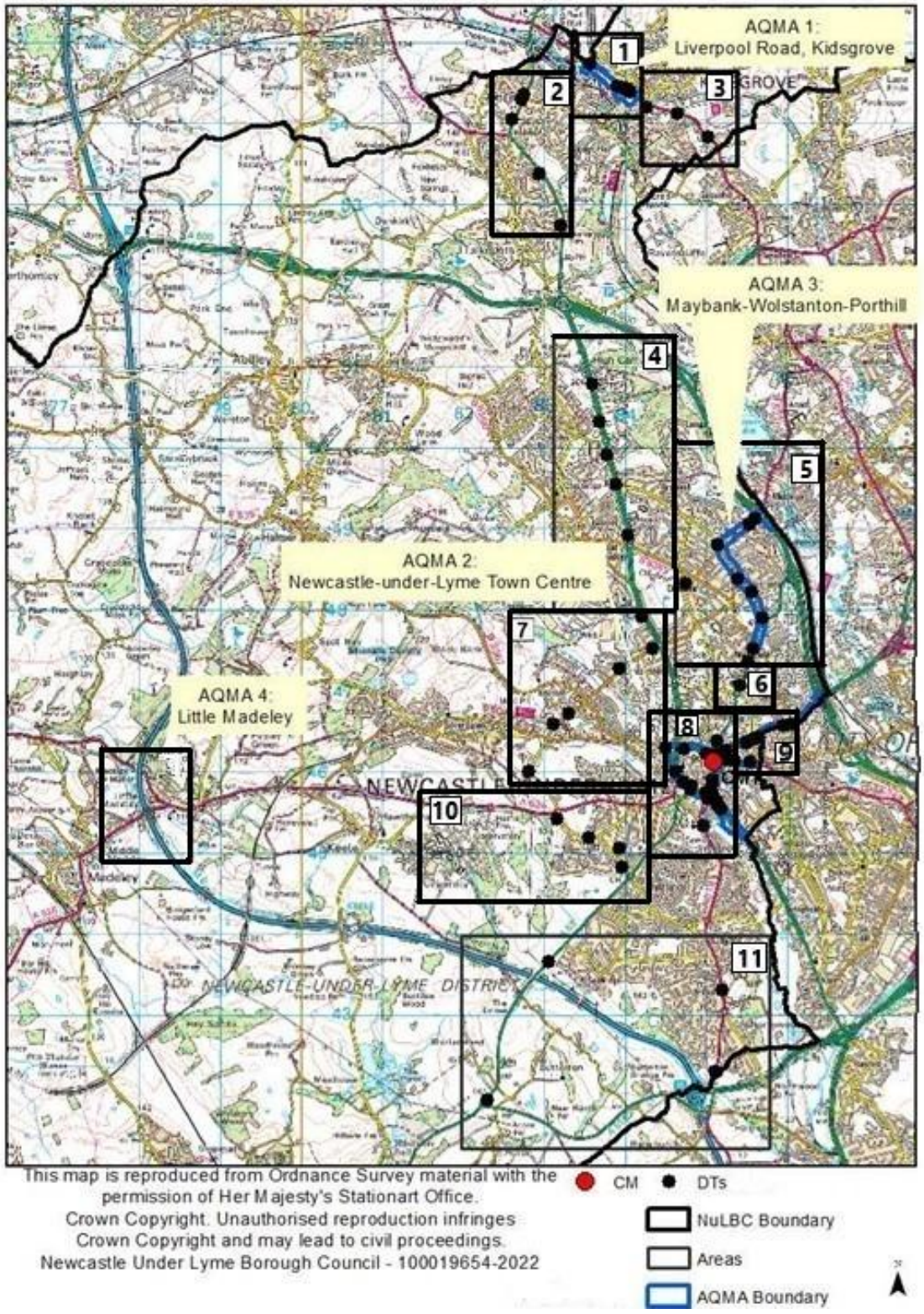


Figure D-2 – Map of Monitoring Area 1 (AQMA 1: Liverpool Road, Kidsgrove)

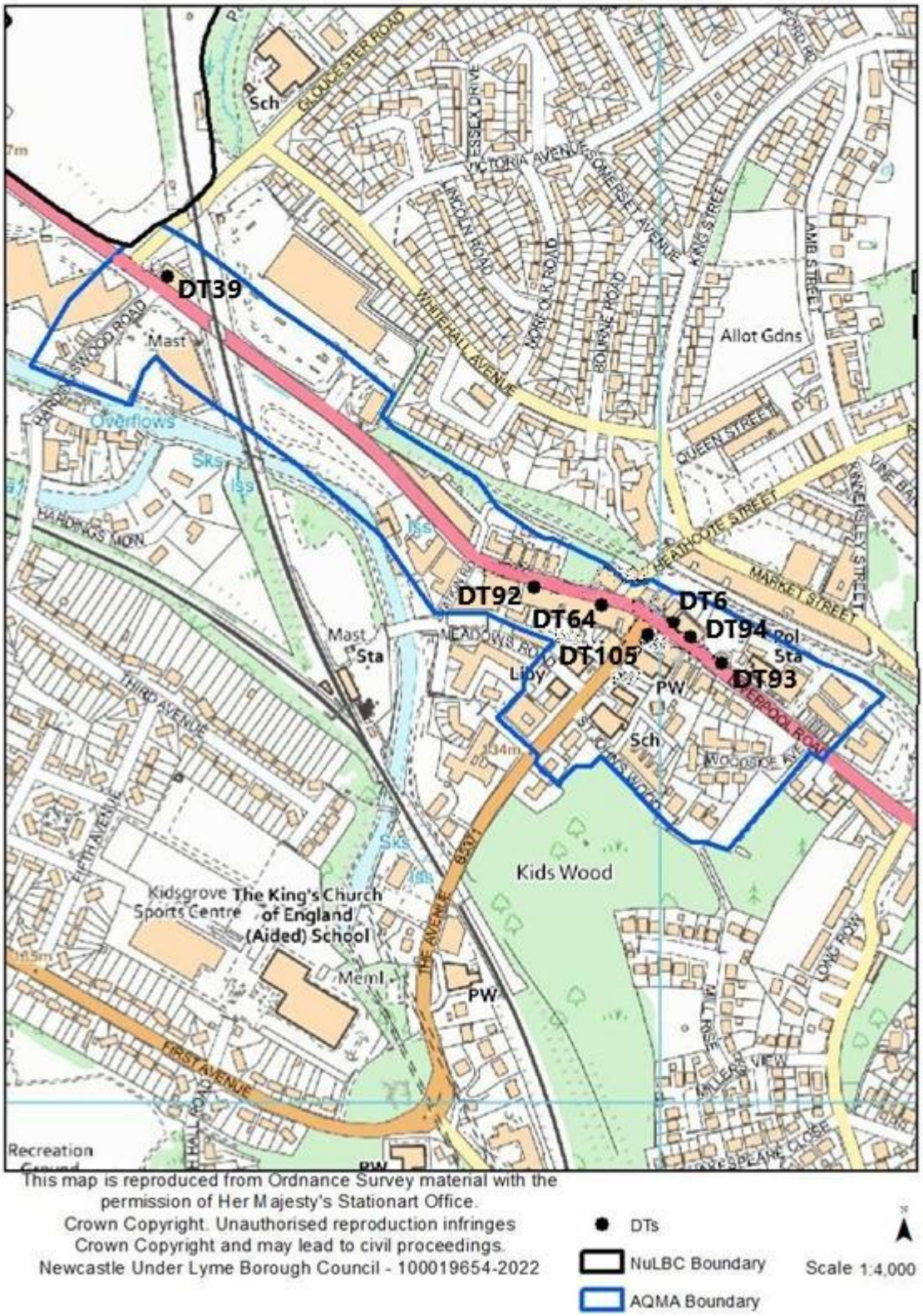


Figure D-3 – Map of monitoring area 2, A34 Kidsgrove West (Outside Kidsgrove

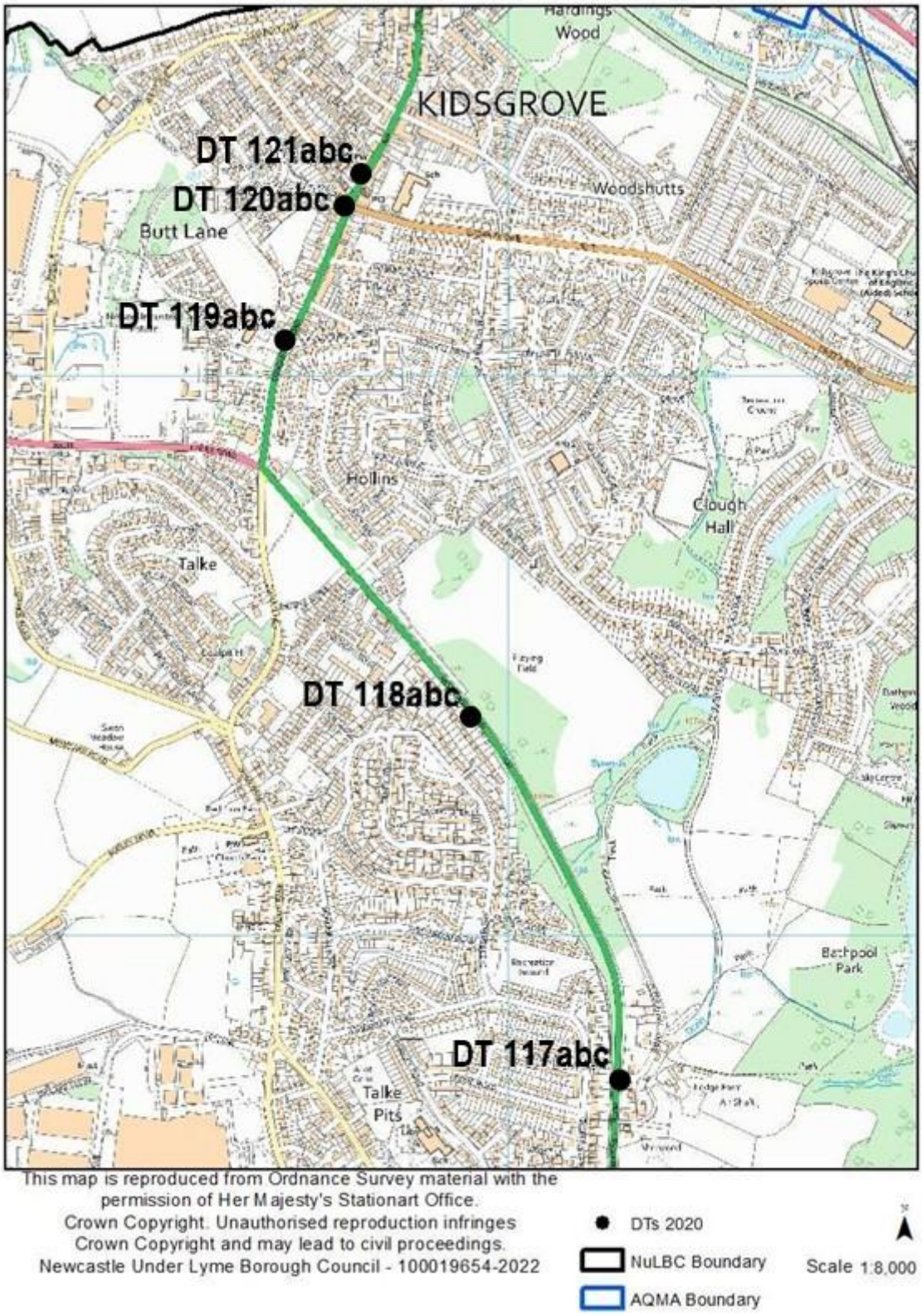


Figure D-4 - Map of monitoring area 3, A50 Kidsgrove East – (Just Outside AQMA1 Kidsgrove AQMA).

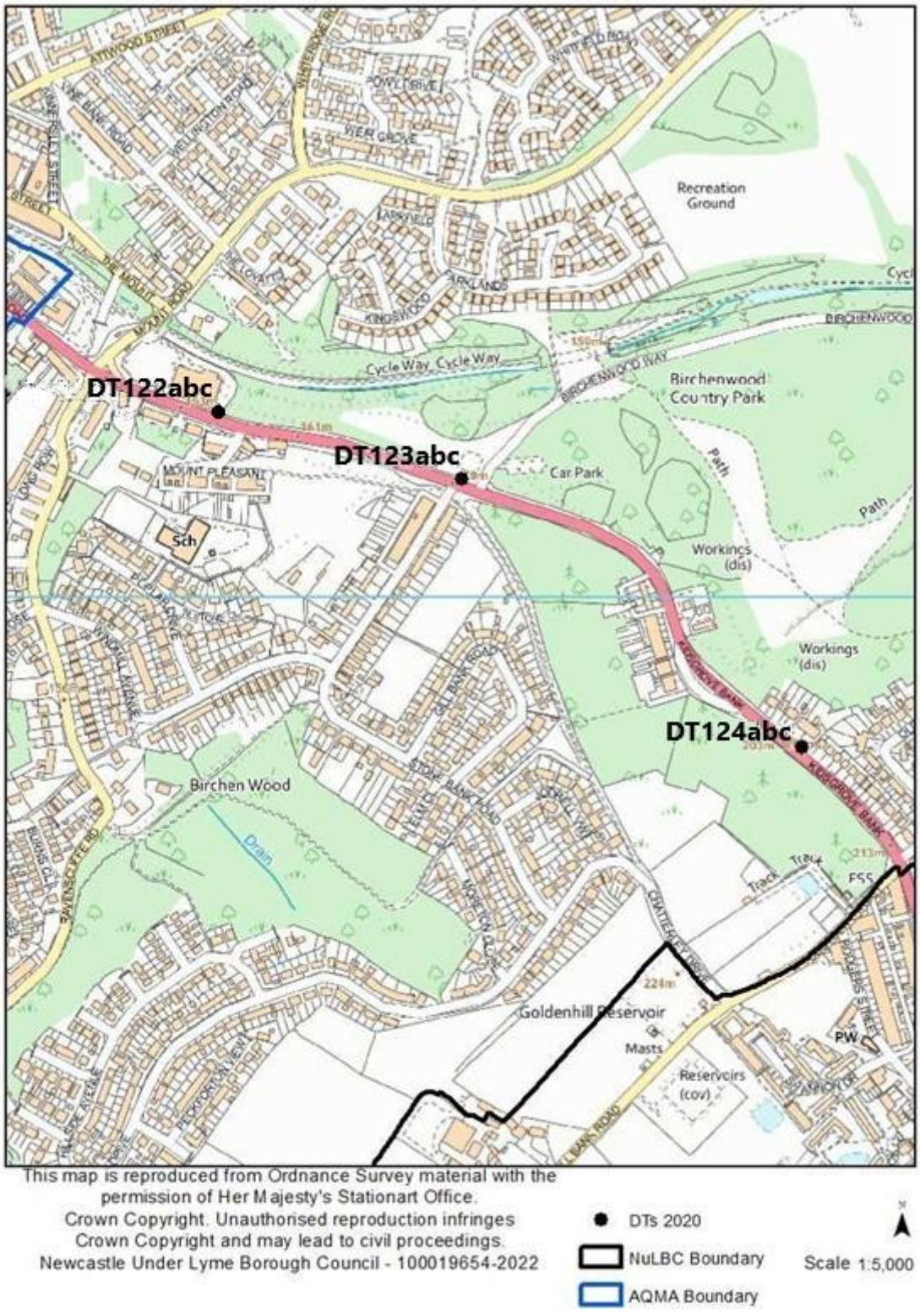


Figure D-5 - Map of monitoring Area 4 – A34 Corridor Through Chesterton (not within an AQMA)

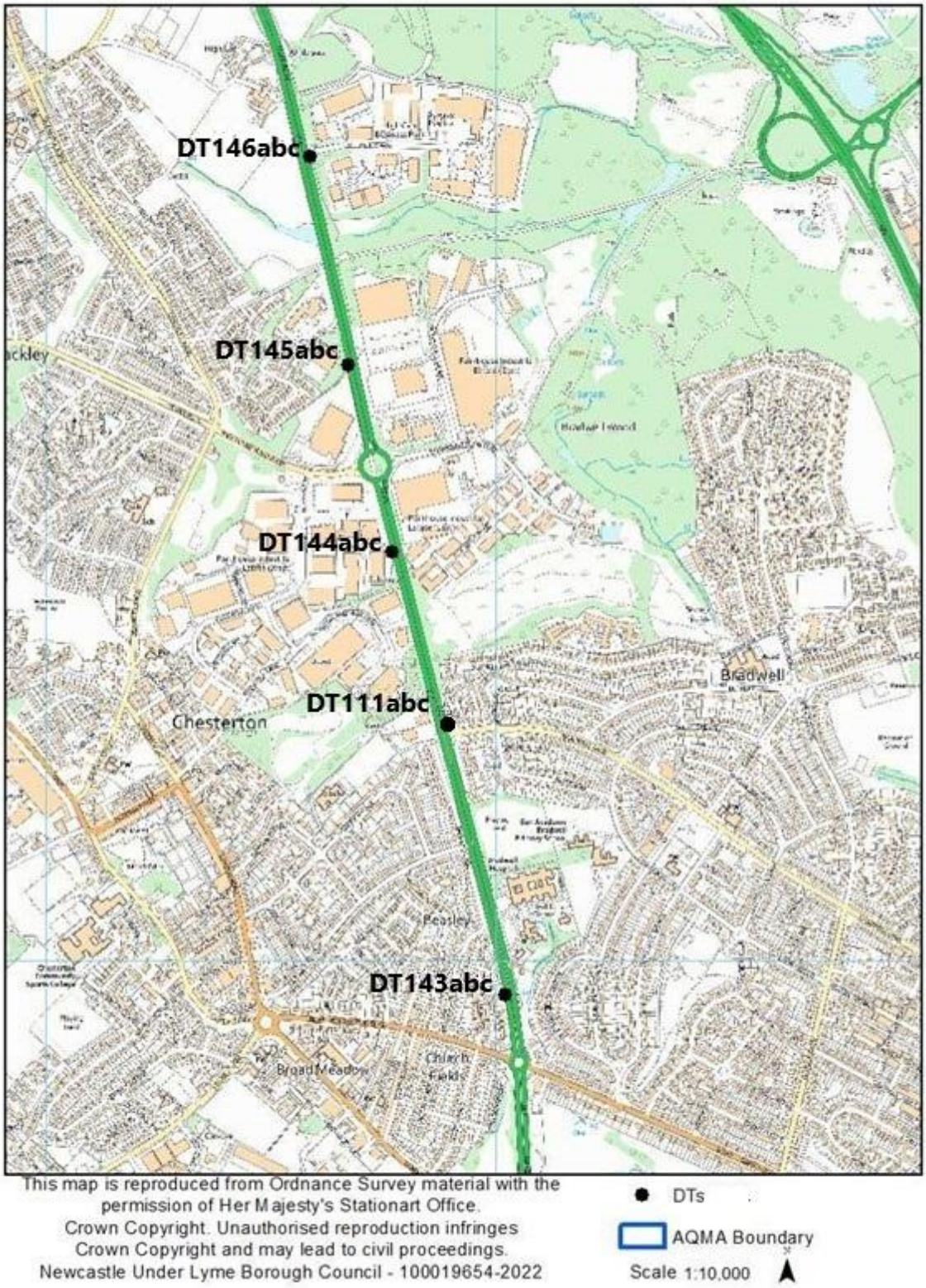


Figure D-6 - Map of monitoring Area 5 – AQMA 3: Maybank-Wolstanton-Porthill

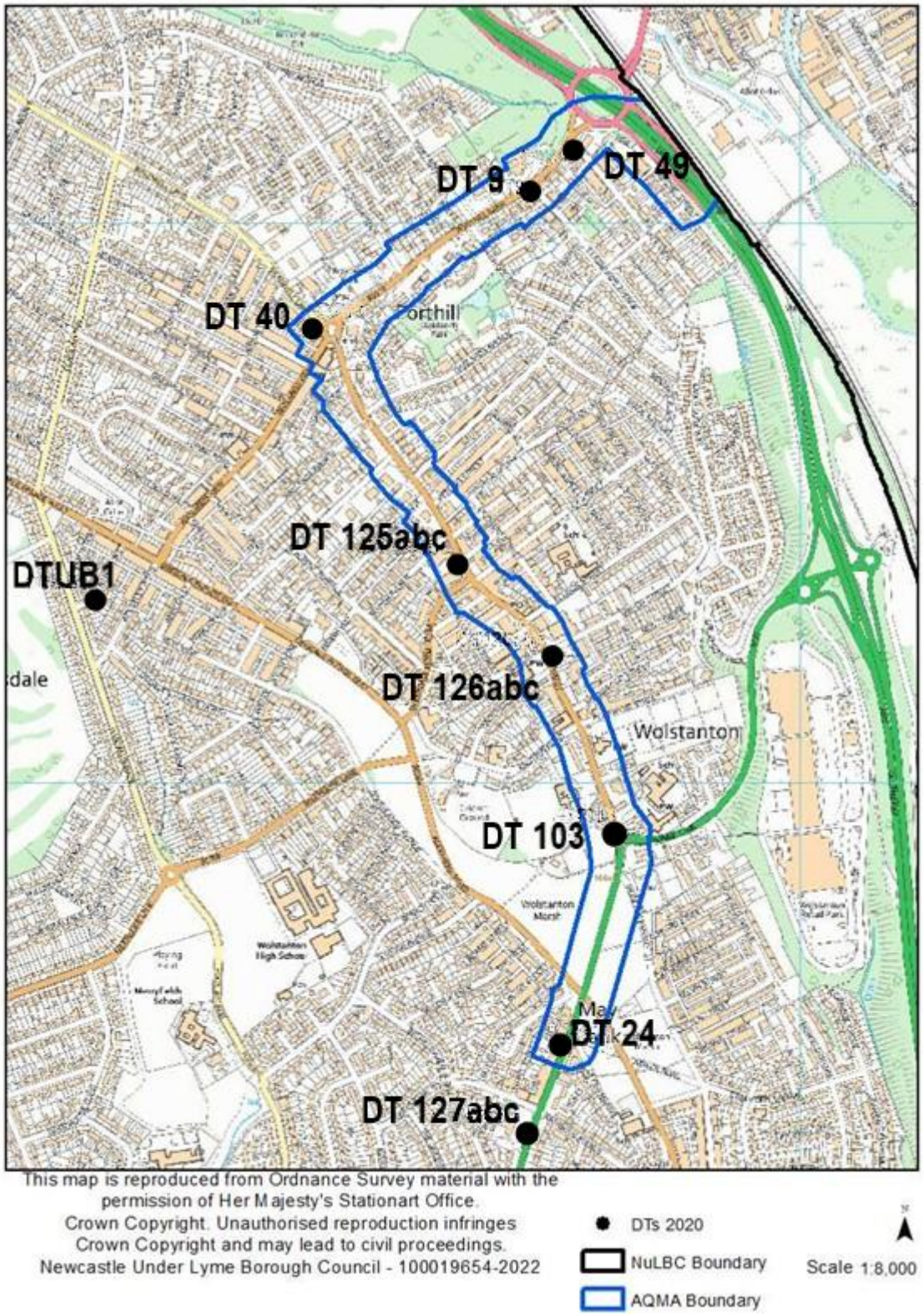


Figure D-7 - Map of monitoring Area 6 – Maybank (Between AQMA 3 and AQMA 2 and not within an AQMA)

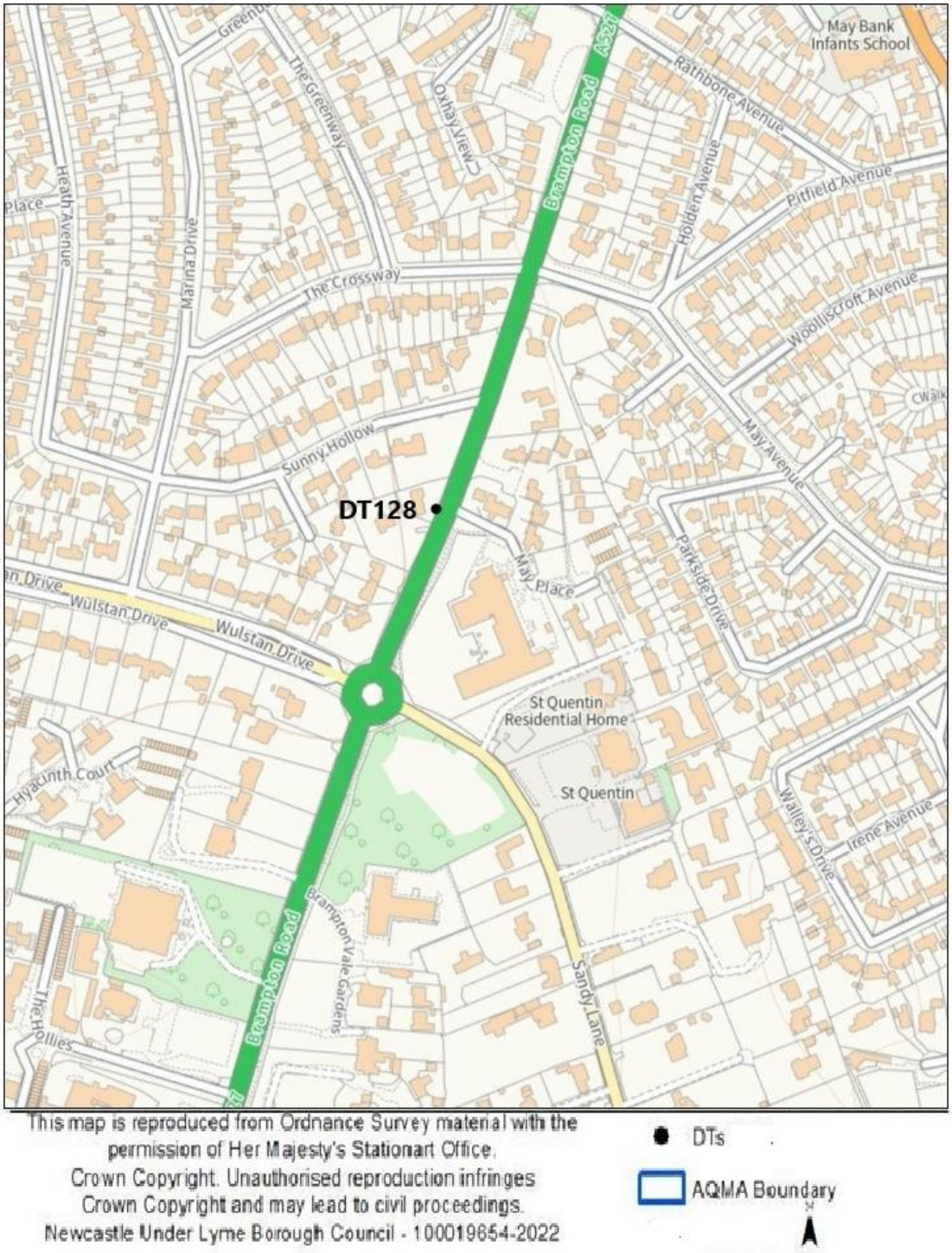


Figure D-8 - Map of monitoring Area 7 – Silverdale, Knutton and Cross Heath (not within an AQMA)

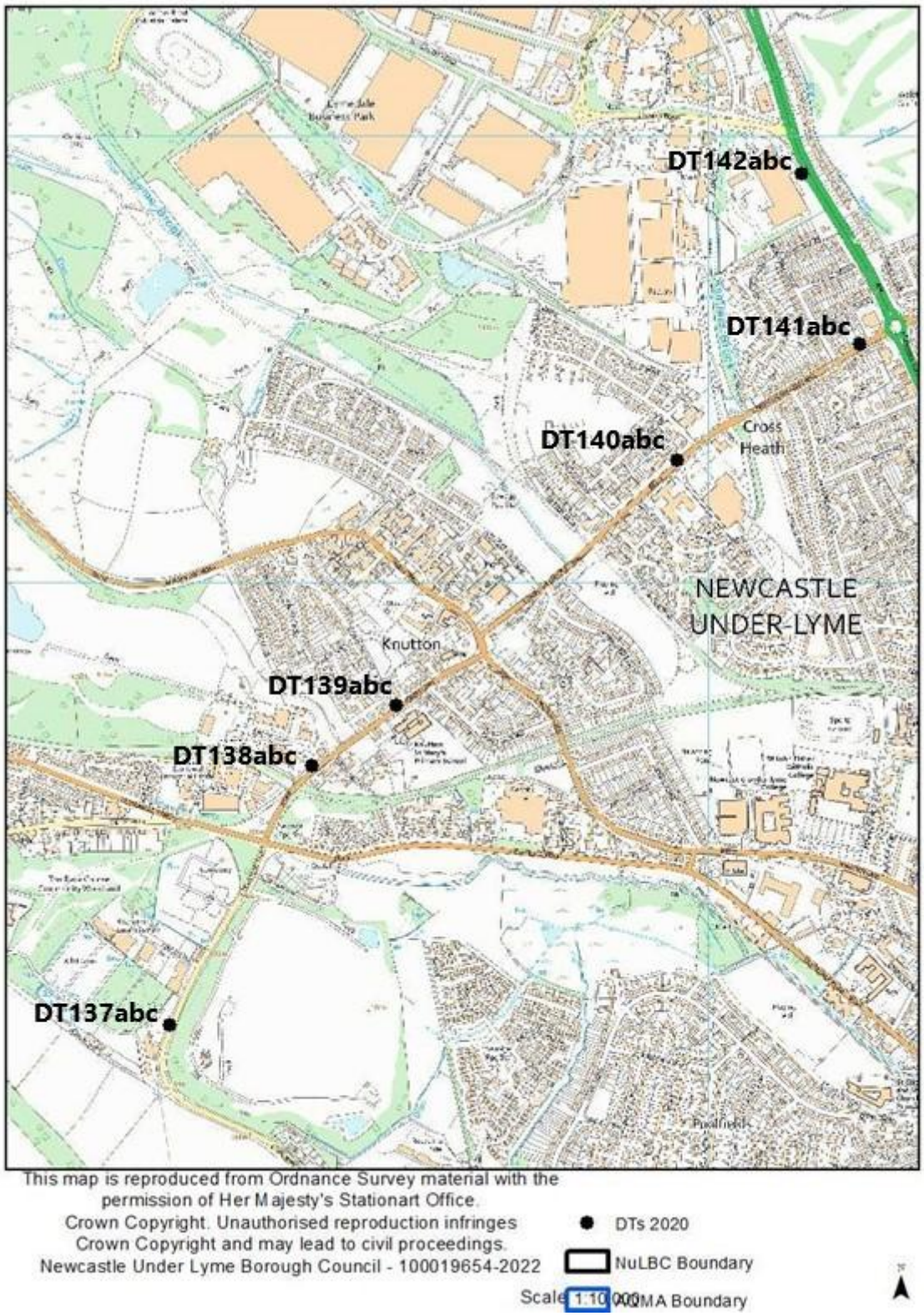


Figure D-9 - Map of monitoring Area 8 - AQMA 2: Newcastle-under-Lyme Town Centre (West)

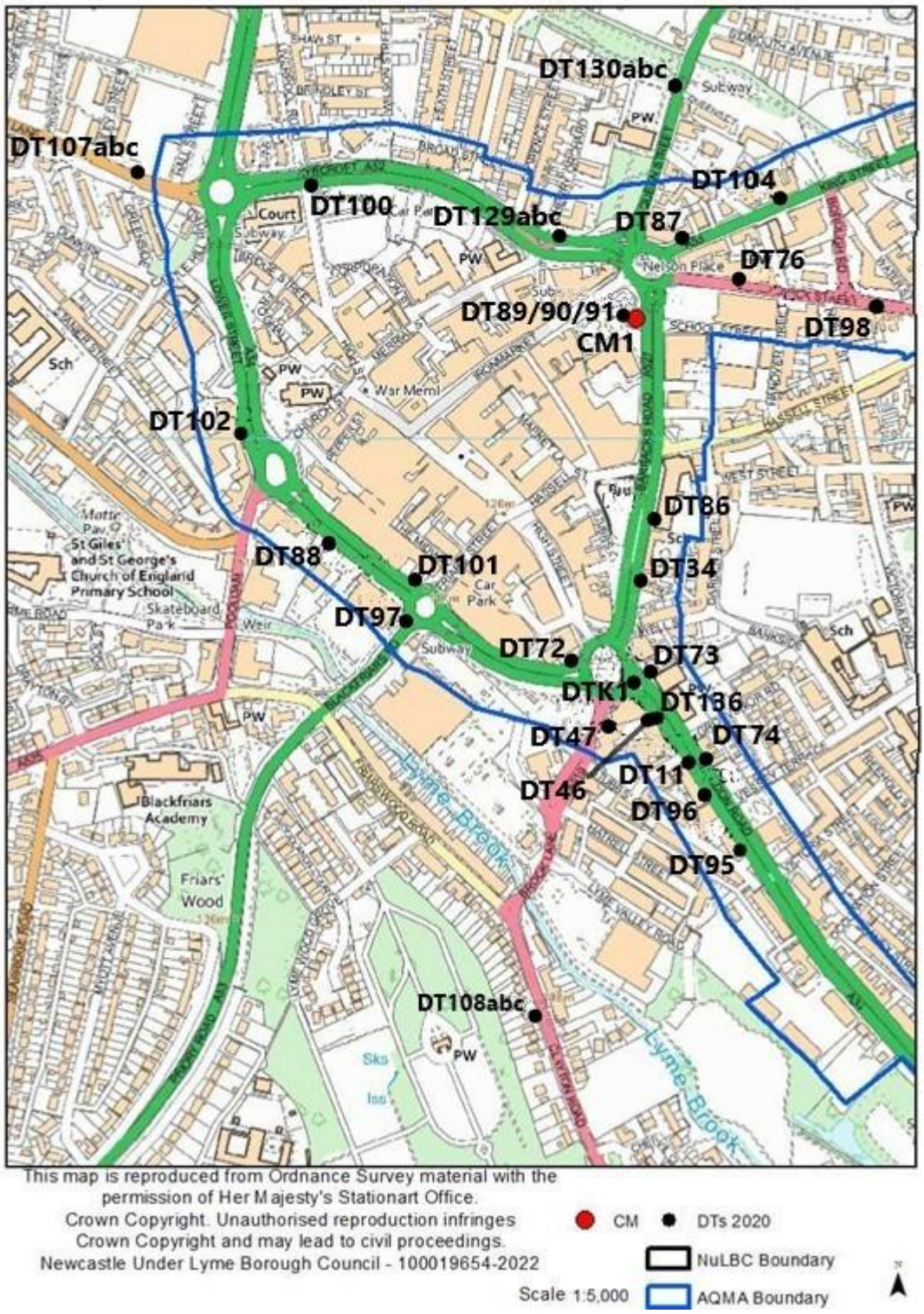


Figure D-10 - Map of monitoring Area 9 - AQMA 2: Newcastle-under-Lyme Town Centre (East) and A53.

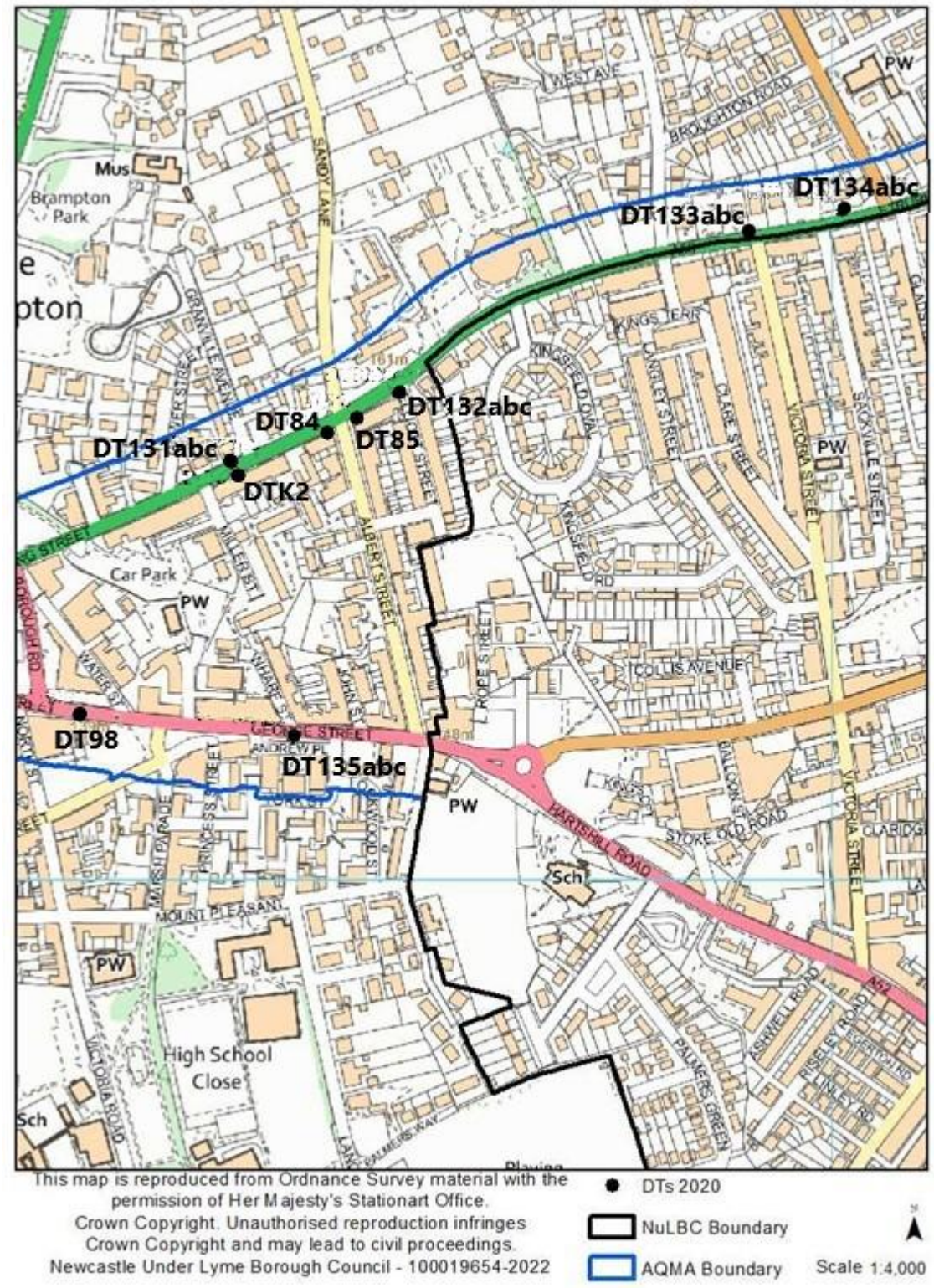


Figure D-11 - Map of monitoring Area 10 – Thistleberry and Westlands (Not within an AQMA)

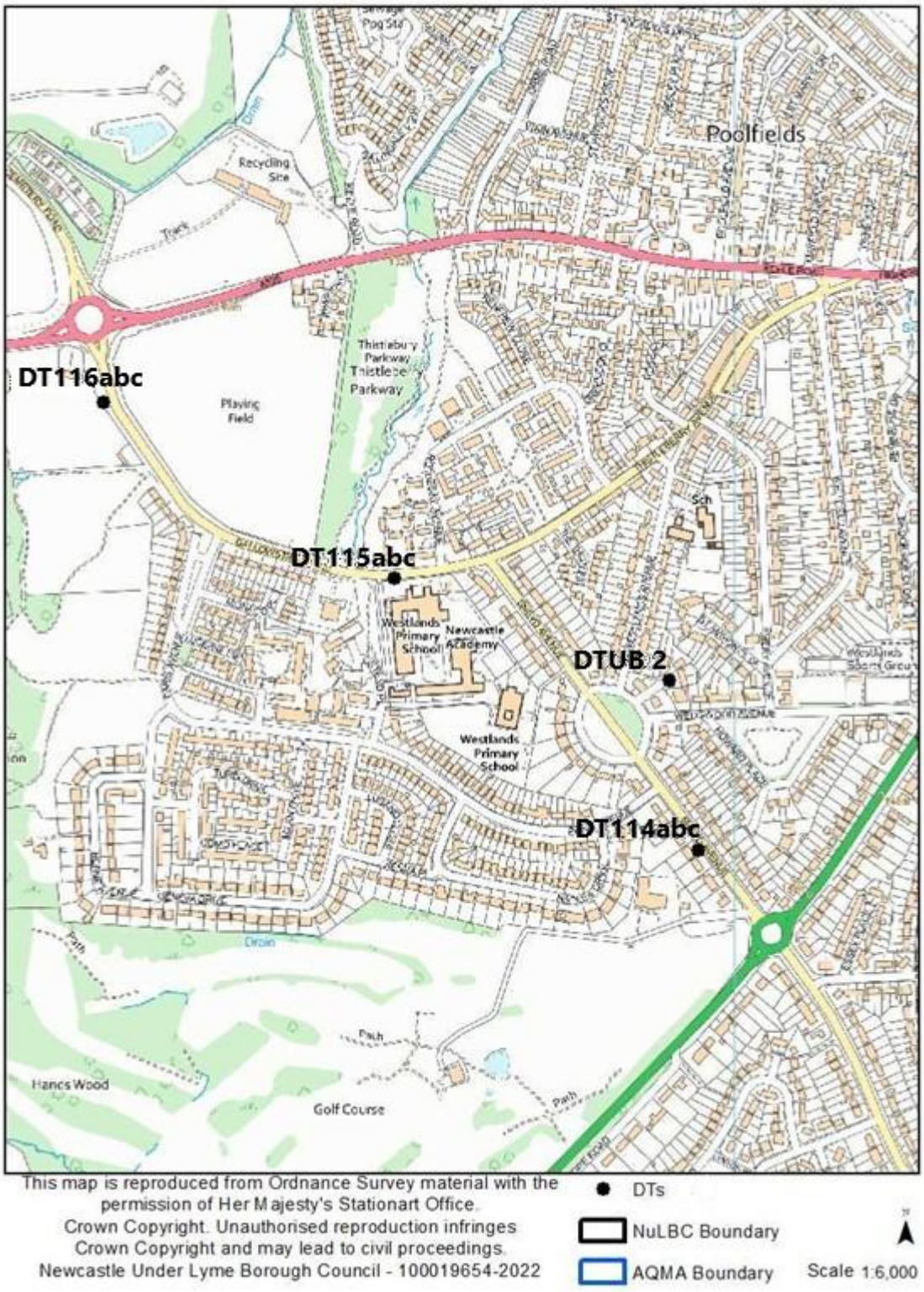


Figure D-12 - Map of monitoring Area 11 – Clayton / Seabridge A53 and A519. (Not within an AQMA)

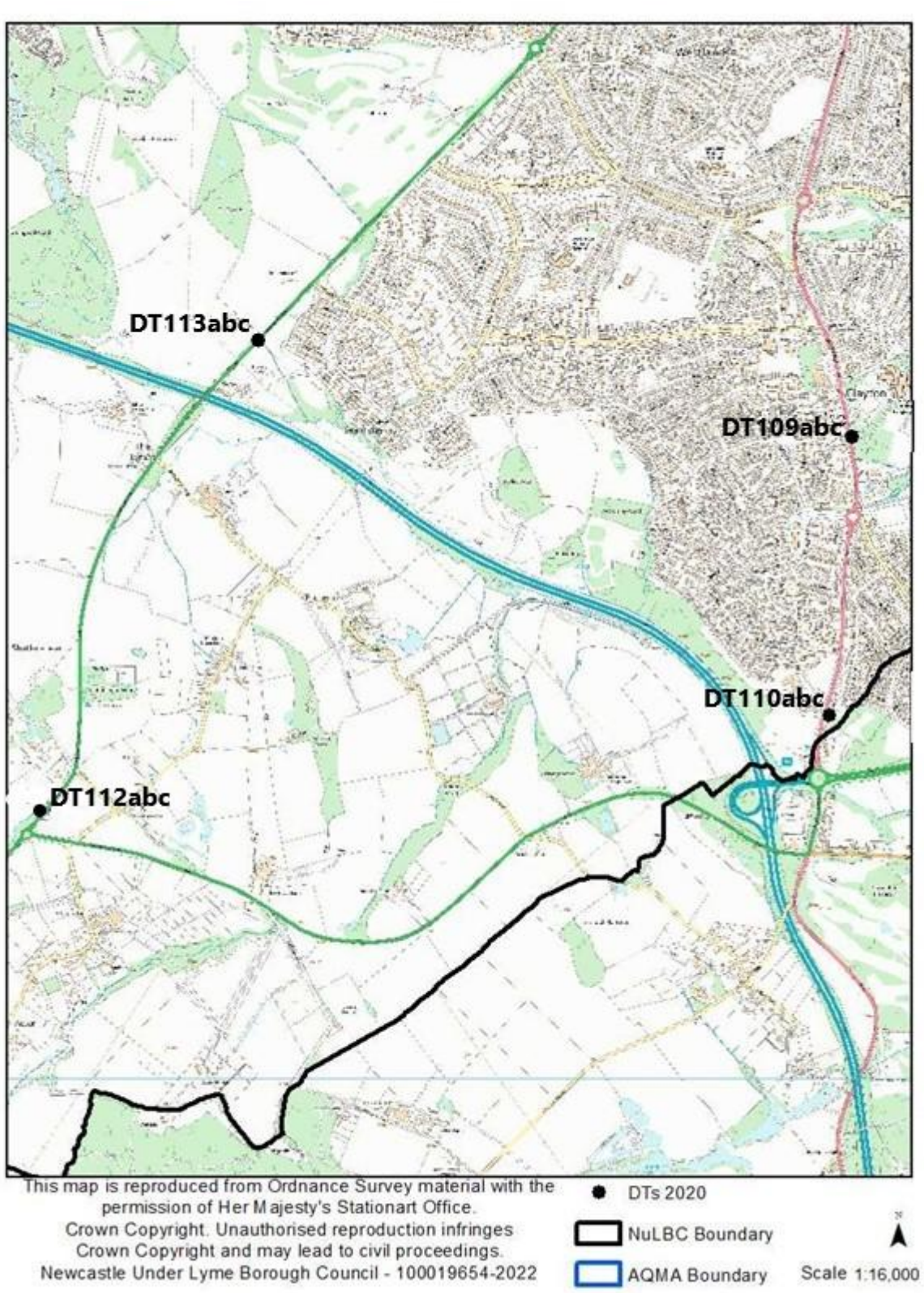


Figure D-13 - Map of AQMA 1 – Kidsgrove.

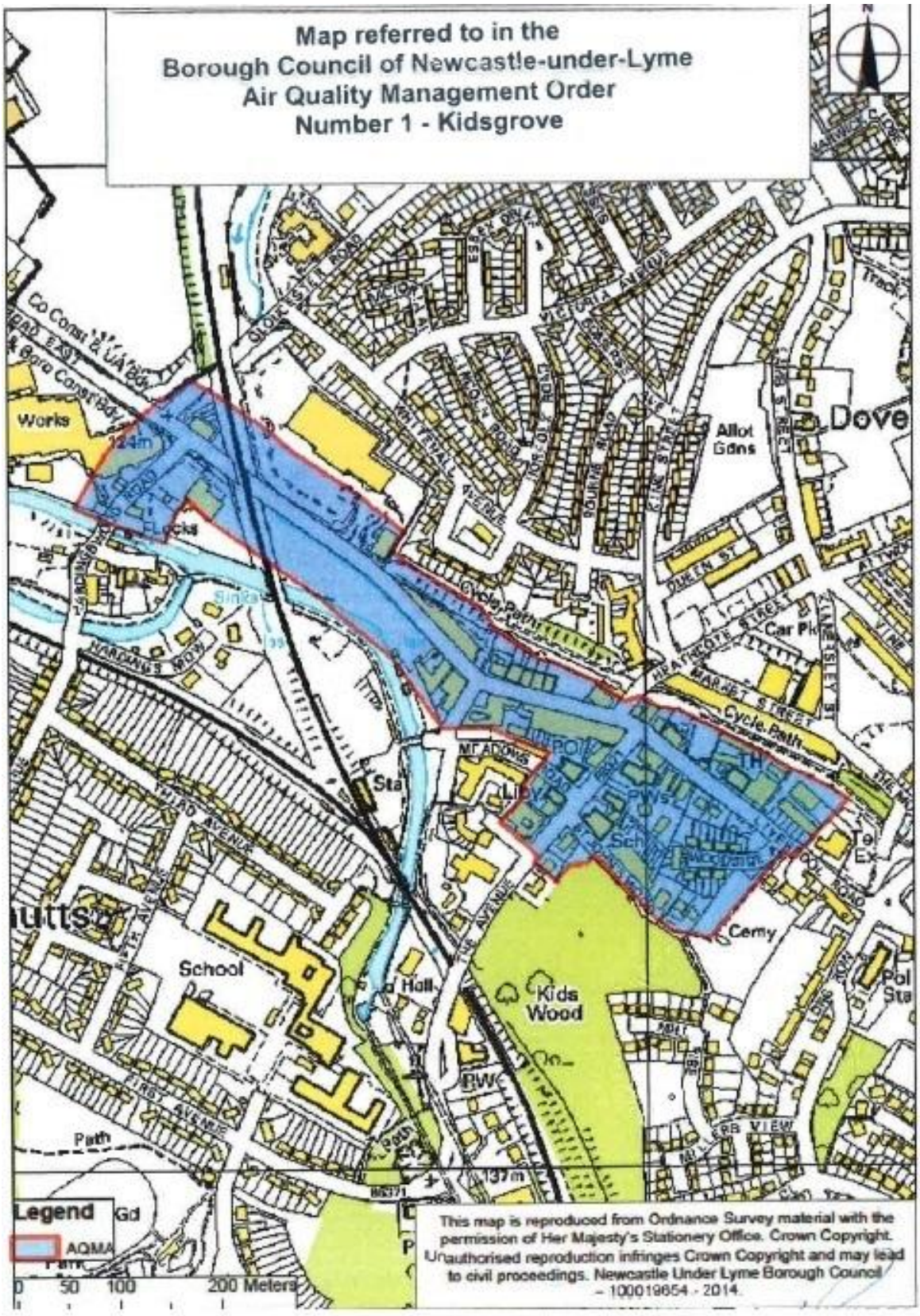


Figure D-14 - Map of AQMA 2 – Newcastle under Lyme.

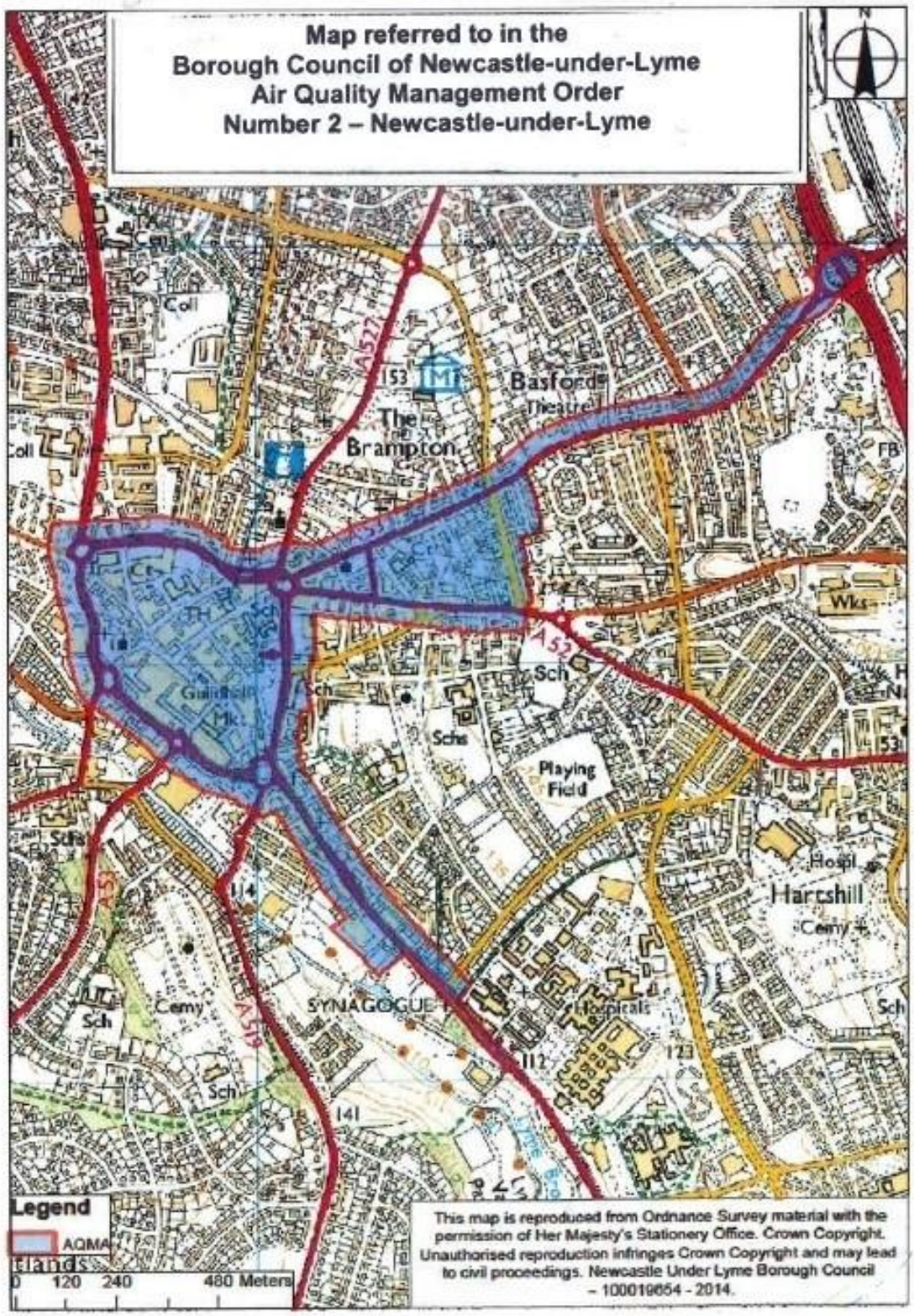


Figure D-15 - Map of AQMA 3 – Maybank, Wolstanton & Porthill.

Classification: NULBC **UNCLASSIFIED**

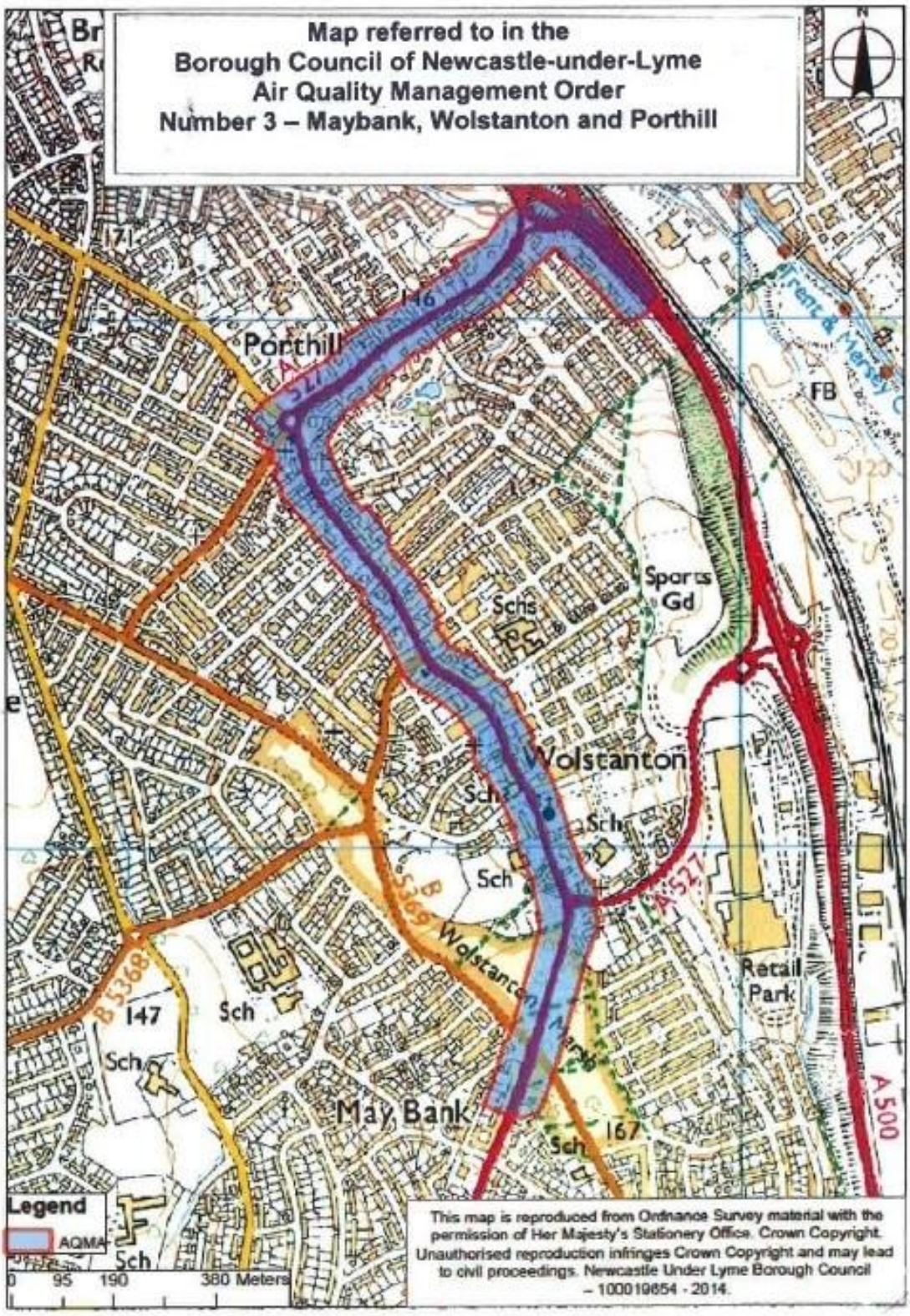
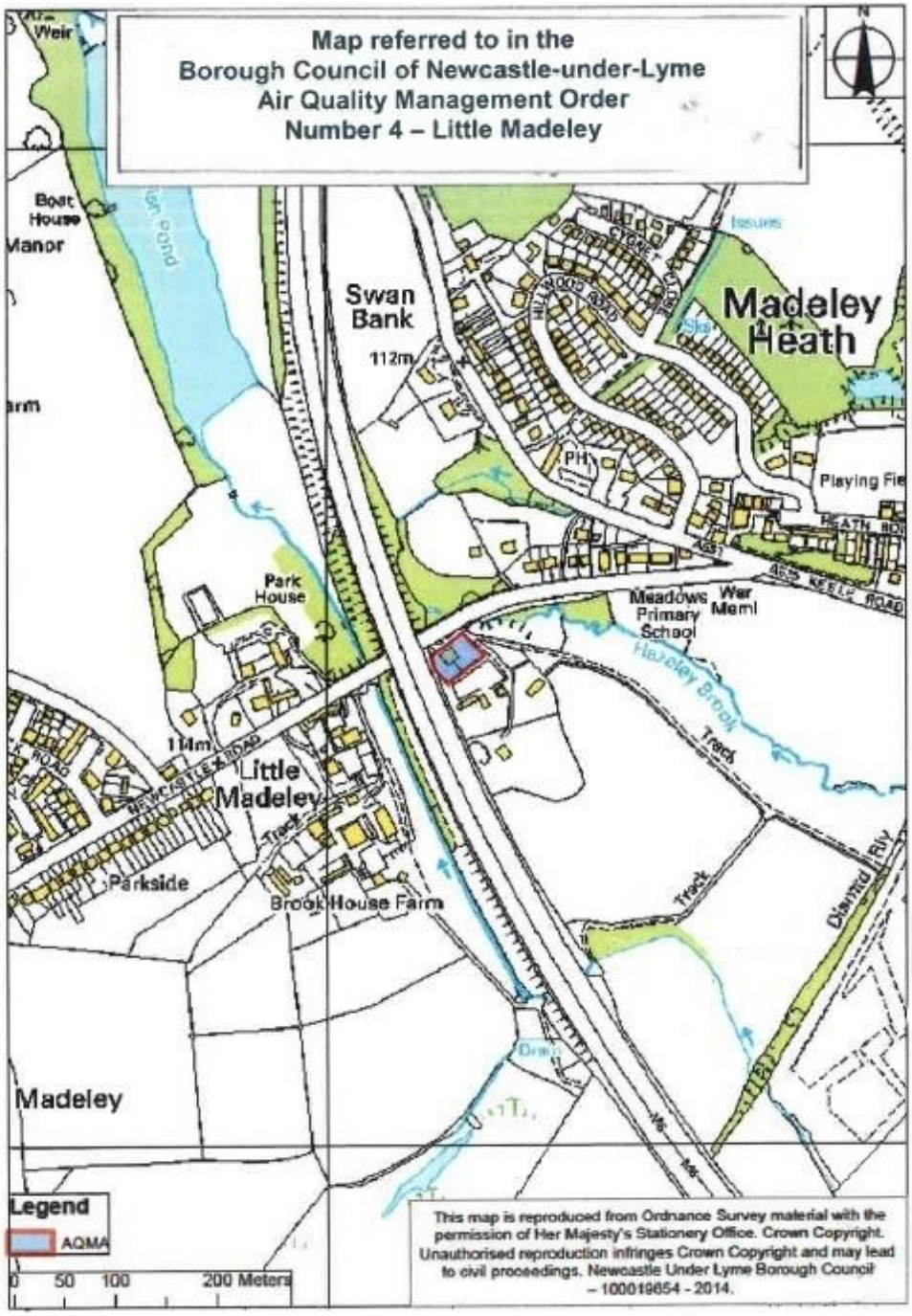


Figure D-16 - Map of AQMA 4 – Little Madeley (Revoked 1st April, 2025).



Appendix E: Summary of Air Quality Objectives in England

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

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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

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