Newcastle City Council

2025 Air Quality Annual Status Report

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

Date: April 2025

Information	Newcastle City Council Details
Local Authority Officer	Michael Terry
Department	Environmental Protection, Public Safety and Regulation
Address	Newcastle City Council, 7th Floor, Civic Centre, Newcastle upon Tyne NE1 8QH
Telephone	0191 2116102
E-mail	psr@newcastle.gov.uk
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Local Responsibilities and Commitment

This Annual Status Report (ASR) was prepared by AECOM on behalf of the Environmental Health Department of NCC with the support and agreement of Michael Terry, Public Safety and Regulation.

This ASR has been signed off by Ed Foster, Head of Public Safety and Regulation

If you have any comments on this ASR please send them to Michael Terry at:

Newcastle City Council, 7th Floor, Civic Centre, Newcastle upon Tyne NE1 8QH

0191 2116102 or email psr@newcastle.gov.uk

Executive Summary: Air Quality in Our Area

Air Quality in Newcastle upon Tyne

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 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.

In the City of Newcastle, the main pollutant of concern is NO_2, with the largest contribution being from road vehicles. Newcastle City Council (NCC) has declared two Air Quality Management Areas (AQMAs) due to monitored exceedances of the annual mean NO_2 objective, in the city centre and Gosforth.

Further information can be found here: Air quality, pollution and monitoring | Newcastle City Council

Annual mean concentrations measured in 2024 did not exceed the annual mean objective at any monitoring sites across NCC's jurisdiction (after distance correction). Two monitoring sites measured concentrations which were within 10% of the objective (after distance correction); DT8 with 38.5 µg/m^3, and triplicate site DT5, DT115 and DT116 with 36.3 µg/m^3, both of which are located within the city centre AQMA (AQMA 1b).

At DT81, annual mean NO_2 concentrations measured 64.5 µg/m^3 in 2024 prior to distance correction. As this concentration is above 60 µg/m^3, it is likely to exceed the short term NO_2 1-hour objective.

Overall, monitored annual mean NO_2 concentrations in Newcastle have shown a decrease compared to 2023.

Overall, it seems that there was a significant reduction in NO_2 concentrations when the Covid-19 restrictions were in place in 2020. Since then, NO_2 concentrations have increased from these low concentrations, however, have not returned to pre-pandemic concentrations. Furthermore, in the 2024 data, an average drop of 9%, in the NO_2 concentrations can be observed compared to 2023. This downward trend in NO_2 concentrations is expected to continue.

City Centre AQMA (AQMA 1b) has not yet achieved compliance with the annual mean NO_2 Air Quality Objective, so NCC are required to keep this in place and continue monitoring. Gosforth AQMA (AQMA 5) has been compliant (monitoring below 36 µg/m^3 when corrected to relevant exposure) for 5 years now so NCC will pursue its revocation.

No significant new emission sources have been identified since the previous ASR, and the most significant source of atmospheric pollution continues to be emissions from road traffic. The concern is predominately elevated concentrations of NO_2 in the city of Newcastle, although it is recognised that particulate matter (PM_{10} and $PM_{2.5}$) can also have health effects at concentrations below the relevant air quality objectives.

Actions to Improve Air Quality

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

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

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

NCC has set up a Clean Air Zone (CAZ) in partnership with Gateshead Council in response to a governmental legal order. This requires NCC to take action to reduce NO/NO_2 emissions from vehicles. The zone covers most of Newcastle city centre, including routes over the Tyne bridge, Swing bridge, Redheugh bridge and High-Level bridge.

The CAZ went into operation in January 2023, charging certain vehicles to enter the zone, excluding private cars, motorbikes or any vehicle that meets national CAZ emissions standards. Operators of taxis, vans, buses, coaches and heavy goods vehicles (HGV) may be charged if the vehicles do not comply with government emission standards. The introduction of the CAZ is likely to have contributed to decreasing NO_2, PM_{10} and $PM_{2.5}$ concentrations. Further details are available online here: Newcastle and Gateshead Clean Air Zone | Newcastle City Council.

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

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

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

During 2023 and 2024 the Newcastle/Gateshead CAZ team awarded £4,760,647.10 allowing 1141 vehicles that enter the CAZ on a regular basis to be replaced with compliant models. Applicants continue to access funding to replace their non-compliant vehicles when a suitable replacement has been sourced.

Conclusions and Priorities

The main priority of the Council is to update the AQAP in 2025 and to evaluate the effectiveness of the Newcastle/Gateshead CAZ. The updated AQAP is scheduled to be completed in 2025, and an evaluation of the effectiveness of the CAZ is scheduled to be submitted to JAQU in 2025 as well.

How to get Involved

The Newcastle city centre and Gosforth AQAPs include several measures that will require a high level of public support and buy-in to ensure they are successful, such as:

- Increasing access to alternative modes of travel to the private motor car.
- Increased use of low emission vehicles.
- Increased use of cycle-ways to encourage modal shift across the city of Newcastle; and
- Use of car loan schemes and car clubs, including the uptake of car sharing and pooling or the use of alternative forms of travel.

NCC will continue to provide information about air quality and pollution control:

- Paper copies, or alternative formats, of any of the electronic reports are published online here: Air quality, pollution and monitoring | Newcastle City Council;
- Information on how individuals can reduce their impact on air pollution is published online here: Air quality - ways to help reduce air pollution | Newcastle City Council;
- Information on previous review and assessment reports; and
- Any questions or concerns about the city answered.

Table of Contents

Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in Newcastle 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 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 City Council to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

AQMAs are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an 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 can be found in Table 2.1. The table presents a description of the two AQMAs that are currently designated within NCC. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are NO_2 annual mean.

The AQAP for both the City Centre and Gosforth AQMAs have not been updated within the last 5 years. NCC are in consultation with air quality consultants to produce an updated AQAP for the City Centre AQMA in 2025. NCC intends to pursue the revocation of Gosforth AQMA following five years of compliance.

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 No. 1b (city centre)	Declared April 2008	NO_2 Annual Mean	An area encompassing the previous AQMAs 1-3, covering Newcastle city centre	NO	127.3 µg/m^3 (measured 2004 concentration)	38.5	0 years	City of Newcastle upon Tyne Air Quality Action Plan – Newcastle city centre AQMA January 2006	AQMA 1b
AQMA No. 5 (Gosforth)	Declared April 2008	NO_2 Annual Mean	An area encompassing parts of the A189 and B1318 in Gosforth	YES	46.9 µg/m^3	30.1	5 years	Air Quality Action Plan: South Gosforth, NCC May 2011	AQMA 5

☒ **NCC confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **NCC confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Newcastle upon Tyne

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed, and provided the information specified in the Guidance. The following comments were made to help inform future reports. The responses of the Council, where required, are provided in italic.

1. The appraisal comments from last year's ASR have been mentioned and addressed. This is welcomed and encouraged for future ASRs.
2. The Council has two AQMAs which both have less than three years of compliance. The council should continue to monitor air quality within the AQMAs to determine any trends in pollutant concentrations. *Gosforth AQMA has five years (2020, 2021, 2022, 2023, and 2024) compliance of <36 µg/m^3 at relevant exposure and therefore NCC intends to pursue revocation of this AQMA. In 2021 an annual mean NO_2 concentration of 36.4 µg/m^3 was recorded at DT45 but this monitor is not at relevant exposure; when distance corrected this site was 33.3 µg/m^3 making this site and year compliant. Newcastle Centre AQMA remains non-compliant in 2024 and therefore the council will continue to monitor air quality in this AQMA.*
3. Maps are included within the ASR of both the AQMA boundaries and the monitoring locations across NCC. The boundary of the full extent of AQMA 1b is not clear within these maps. It would be beneficial to include this in future ASRs. *An overview of both AQMAs has been included in this ASR.*
4. Minor inconsistencies between Table 2.1 and Table A.2 are present, i.e. DT50 is stated as 32.2 in Table 2.1, but as 32.1 in Table A.2. Although this does not impact the outcome of the ASR, this should be thoroughly checked in future reports. *Consistencies within tables have been checked thoroughly in this ASR.*
5. Monitoring at DT161 in the July period appears to be abnormally low. The Local Authority is recommended to screen data for any anomalous results and provide commentary where appropriate in future reports. *Diffusion tube data has been screened and outliers removed. Where uncertainty about whether to*

remove or keep data was identified, the Practical Guidance[4] was followed. For example, DT65 which only had one month's data was excluded from annualisation and bias adjustment as it was decided an accurate result could not be obtained.

6. The annual average concentration of NO_2 at the time of declaration of AQMA No.5 is not included within Table 2.1. This should be included in future ASRs. *This information is now included.*

7. The measures outlined within Table 2.2 do not include all which are currently funded or active. This should be completed in its entirety in the 2025 ASR and should also align with the measures included within the updated AQAPs. *The AQAP is currently being updated.*

8. The council has identified their priorities for the 2024 reporting year such as evaluating the implementation of the CAZ and producing updated AQAPs. This is welcomed, however more detail would be beneficial to help inform the public of key timelines and assessments. *The updated AQAP is scheduled to be completed in 2025, and the evaluation of the effectiveness of the CAZ is scheduled to be submitted to JAQU in 2025 as well.*

9. The Council has justified the use of a local bias adjustment factor as this is a more conservative approach and has clearly discussed this within the text. A screenshot of the national bias adjustment factor sheet was included as outlined in the previous appraisal letter which is welcomed.

10. The Council has stated they are in the process of drafting new AQAPs for both AQMAs. A statement on timescales for this should be given in future reports as both AQAPs are over five years old and therefore require updating. *The AQAP is currently being updated and scheduled to be published in 2025.*

11. Overall, the report is detailed, thorough and satisfies the criteria of relevant standards. The council should continue their good work.

NCC has taken forward several direct measures during the current reporting year of 2024 in pursuit of improving local air quality. Details of all measures completed, in

[4] AEA Energy & Environment (2008), Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users. Available at: Microsoft Word - NO2_WG_PracticalGuidance_Issue1a.doc

progress or planned are set out in Table 2.2. Note that the AQAP is currently being updated and the table refers to the previous AQAPs (2006 and 2011). 35 measures are included within Table 2.2, with the type of measure and the progress NCC have made during the reporting year of 2024 presented. 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 their respective Action Plans.

Key completed measures are:

- Decriminalized parking enforcement.
- Switch EV Council trial.
- Switch EV Public trial; and
- Switch EV Car Club trial.

NCC worked to implement these measures in partnership with the following stakeholders during 2024:

- Neighbouring authorities – particularly Gateshead regarding the joint CAZ.
- Monitoring with National Highways – ceased end of December 2024.
- Monitoring with DEFRA's JAQU – ongoing.
- Internal depts, Transport Planning, Planning Development; and
- DEFRA's AQ unit regarding the revocation of old Smoke Control Orders and creation of new, city wide Smoke Control Order.

Furthermore, NCC's main priority is to update the AQAP in 2025 and to evaluate the effectiveness of the Newcastle/Gateshead CAZ. These pieces of work have been commissioned and are underway. The updated AQAP is scheduled to be completed in 2025, and the evaluation of the effectiveness of the CAZ is scheduled to be submitted to JAQU in 2025 as well.

The principal challenges and barriers to implementation that NCC anticipates facing are whilst the CAZ aims to reduce NO_2 concentrations, NCC recognise that they need to focus more closely on particulate matter (PM). The number of sources of PM make reducing PM levels more challenging than reducing NO_2 concentrations. With few industrial sources of concern in Newcastle, and traffic being targeted through the CAZ, domestic heating will be the next challenge. The primary source of NO_2 is traffic and this has enabled Environmental Health and Safety departments to work closely with Transport colleagues to reduce NO_2 concentrations. Domestic heating, especially wood

burning, has brought pollution into more residential areas and to the most sensitive receptors, yet there is little Environmental Health and Safety departments can do to address this source of pollution except for implementing smoke control legislation which deals with individuals rather than areas. Partners such as Public Health do not have the budget Transport departments have, therefore, support in dealing with PM might be harder to source.

Progress on the following measures has been slower than expected due to:

- Changing public perception and behaviour.
- Challenges relating to the most suitable and effective method of raising and communicating AQ awareness.
- Funding - reliance on other departments and organisations due to small budget within Local Authority Environmental Health department.
- Ability to deliver measures. Reliance on other departments who have greater control over transport related measures.
- Political buy-in; and
- Impact from CAZ evaluation – will it stay or be revoked.

NCC will be working hard to continue to accelerate the measures described here and included in both AQAPs. NCC recognises that to deliver improved air quality across AQMAs, it must work with its neighbouring authorities and other stakeholders such as National Highways. In addition, NCC understands that unintended consequences of low emission measures are very likely but will be ameliorated by working closely with the Transportation Authority and the UK Health Security Agency. Further information regarding the challenges, barriers and measures that have taken longer to implement will be discussed further in the updated air quality action plan that NCC is currently working on.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, NCC anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Newcastle Centre AQMA (AQMA 1b).

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
1A	Enabling people to choose active travel and public transport	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2023	2035	Tyne and Wear local authorities working with the North East Joint Transport Committee	Central and local government	Funded	£500 million	Approved	Low to medium	Number of public and alternative transport passengers	North East Active Travel Strategy introduced June 2023	Accessibility, affordability, integration and journey times
1B	Improving the emissions from road transport (electric charging infrastructure and CAZ)	Promoting Low Emission Transport	CAZ and procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging.	2011	2030	NCC Transport department	Central and local government	Partially funded (Central gov, local gov and new developments)	>£1 million	Implemented	Medium (< 2 µg/m^3 NO_2)	Number of chargers installed and reduction in NO_2 within CAZ	Range of rapid and standard chargers installed. New chargers to be installed when funding available or through development management	Low public charging available, battery capacity, location of chargers, grid capacity
1C	Encourage the correct use of solid fuel appliances	Public Information	Other	2022	2030	NCC Environmental Health	Local and central government	Funded	£20k	Implemented	Reduced emissions from solid fuel appliances	Reduction in number of smoky chimney complaints. Reduction in PM levels	Implemented and ongoing	LA resources, access to media, difficult to promote without appearing to condone
1	Residents' parking permits	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2001	2030	NCC	NCC	-	-	ONGOING	Low-Medium	Issue residents parking permits to discourage free city centre all-day commuter parking	18,000 residents/visitor parking permits issued	-
2	Specific bus corridors including bus lanes, or segregation of buses.	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2001	2025	NCC	Central Government	Partly funded	£1-10m	ONGOING	Low (in some targeted areas)	Miles of bus lane delivered	St. Mary's Place bus corridor scheme implemented. Further bus priority to be delivered through Transforming Cities Fund and Bus Service Improvement Plan	-

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4	Higher priority for pedestrians and cyclists (in terms of highway space)	Promoting Travel Alternatives	Promotion of cycling	2011	2025	NCC	Central Government	Partly funded	£10-20m	ONGOING	Low	Miles of cycling infrastructure delivered	Ongoing – Cycle City Ambition Fund now complete. Further development through Transforming Cities Fund	-
5	Decriminalized parking enforcement	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2008	2009	NCC	NCC	-	-	COMPLETE	Low	Improve enforcement of parking controls to reduce congestion caused by illegally parked cars, by transferring enforcement to local authority.	Introduced on 15 April 2009. The transfer of enforcement powers from the police to the Council to help reduce congestion and improve road safety.	-
6	Urban traffic management control (UTMC)	Traffic Management	UTC, Congestion management, traffic reduction	2011	2025	Tyne and Wear Authorities	Tyne and Wear Authorities	Funded	£1-10m	ONGOING	Low	Journey time variability on key routes (minutes)	Ongoing - further development through the Transforming Cities Fund	-
7	Encourage low emission/ zero emission buses	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2004	2030	North East Authorities	Central Government	Partly funded	£10m+	ONGOING	Low	Number of zero emission buses registered	Funding through Ultra Low Emission Bus fund - first all-electric buses now operating in Newcastle (53/54). Future funding through ZEBRA scheme	-
7b	Encourage low emission/ zero emission vehicles	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2013	2022	North East Authorities	Central Government	Partly funded	£1-10m	ONGOING	Low	Anticipated reduction in NO_X and PM emissions due to increased use of low/zero emission vehicles.	Multiple rounds of Clean Bus Technology Fund completed to retrofit buses to EURO VI. Future rounds through Clean Air Fund	-
8	Enforcing idling engines legislation	Policy Guidance and Development Control	Other policy	2008	2020	NCC	NCC	-	-	Implementation	Low	Anticipated reduction in NO_X and PM emissions due to less idling vehicles.	All staff within RSPP are authorised to issue fixed penalty notices, and periodic enforcement is currently carried out.	-

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
9	Delivery times outside peak hour	Freight and Delivery Management	Quiet & out of hours delivery	2006	2030	NCC	NCC	Not funded	£1-5m	YET TO START	Low	Anticipated reduction in NO_X and PM emissions due to decreased congestion caused by delivery vehicles parking in congested streets.	A freight consolidation centre operational in Newburn from July 2011. Future freight consolidation being considered as part of climate change commitments	-
10	Taxi emissions	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2011	2020	NCC	NCC	-	-	-	Low	Anticipated reduction in NO_X and PM emissions due to stricter standards for taxis and private hire vehicles.	Taxi licensing strategy was reviewed in 2011 and emission standard will be gradually introduced. Not completed in 2011 - now underway in 2017 to include age limitations	-
12	Clean Air Zone	Policy Guidance and Development Control	Low Emissions Strategy	2017	2021	NCC	NCC	Funded	£10m+	ONGOING	Medium-High (High: > 2 $\mu g/m^3$ NO_2) (in zone)	Number of vehicles travelling within Clean Air Zone	Part of Urban Core Area Action Plan 2016. Draft Full Business Case submitted 2020 as part of Air Quality Direction	-
13	Speed Restrictions	Traffic Management	Reduction of speed limits, 20mph zones	2009	2022	NCC	NCC	Partly funded	£0-500k	ONGOING	Low	85th %ile speed in affected areas	The speed restriction scheme '"20's Plenty" has been rolled out across large parts of the Gosforth area of Newcastle and is an advisory scheme to encourage people to reduce their speed on selected streets and roads across Newcastle.	-
15	Park and Ride	Promoting Travel Alternatives	Other	2014	2025	NCC	NCC	Partly funded	£1-10m	ONGOING	Low-Medium	Number of journeys on park and ride services	To be implemented through both bus and Metro. Metro Park and Rides in operation along with Great Park bus & Soccerbus. Potential expansion of Metro Park and Ride at Callerton	-
16	Promotion of Cycling	Promoting Travel Alternatives	Promotion of cycling	2011	2022	NCC	Central Government	Partly funded	£0-1m	ONGOING	Low	Number of cyclists in annual	Ongoing - dependent on revenue funding from DfT	-

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17	Annual Travel Card discount	Promoting Travel Alternatives	Workplace Travel Planning	2010	2022	NCC, Nexus	Nexus	Funded	£0	ONGOING	Low	Number of travelcards issues	This has been rolled out to Newcastle Council staff, and major employers are being encouraged by Nexus to join the scheme.	-
18	Enhanced Partnerships/Franchising	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2021	2022	NCC, North East Authorities, Nexus, Bus Operators	Central Government	Unfunded	Unknown	ONGOING	Low	Number of passengers on bus services	Discussions ongoing in line with Bus Back Better strategy and requirement to enter into Enhanced Partnership/Franchising	-
19	Travel Plans for businesses/ schools	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2005	2025	NCC	NCC	Partly funded	£0-250k	ONGOING	Low	Number of travel plans	School travel plans achieved and refreshed where appropriate. Engagement with businesses to sign up to travel plans	-
21	Car Loan schemes	Promoting Travel Alternatives	Workplace Travel Planning	2005	2020	NCC	NCC	-	-	Implementation	Low	-	Ongoing	-
22	Use of car parking charges to encourage alternatives.	Promoting Travel Alternatives	Workplace Travel Planning	2014	2020	NCC	NCC	-	-	Implementation	Medium (< 2 $\mu g/m^3$ NO_2)	-	Ongoing	-
23	Car Clubs	Promoting Travel Alternatives	Workplace Travel Planning	2011	2025	NCC	NCC	Funding not required	£0	ONGOING	Low	Number of car club vehicles	Car clubs are being developed and new cars added as demand rises for this	-
25	Electric Vehicle charging Infrastructure	Promoting Travel Alternatives	Other	2011	2025	NCC	NCC, Office for Zero Emission Vehicles	Funding not required	£0	ONGOING	Medium (< 2 $\mu g/m^3$ NO_2)	Number of chargers installed	Range of rapid and standard chargers installed, future contract subject to procurement	-
26	Electric by default policy, meaning consideration must be given to procuring electric vehicles prior to petrol or	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2019	2025	NCC	NCC	-	< £10k	Implementation	Low	Electric vehicles in fleet and anticipated reduction in	Ongoing - 51 electric vehicles already in fleet.	NCC operate an Electric by default policy, meaning consideration

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	diesel and a case made for anything other than electric.											NOX and PM emissions due to increased use of electric vehicles		must be given to procuring electric vehicles prior to petrol or diesel and a business case made for anything other than electric.
27	Switch EV Council Trial	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2014	2014	NCC	NCC	Funded	£0-1m	COMPLETE	Low	Number of zero emission vehicles registered	Trialled electric vehicles amongst existing Council services along with new technologies.	-
28	Switch EV Public Trial	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2014	2015	NCC	NCC	Funded	£0-1m	COMPLETE	Low	Number of zero emission vehicles registered	Trials to increase public awareness of the viability of electric vehicles, and hence their future uptake	-
29	Switch EV Car club trial	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2014	2015	NCC	NCC	Funded	£0-1m	COMPLETE	Low	Number of zero emission vehicles registered	Trials to increase public awareness of the viability of electric vehicles, and hence their future uptake	-
30	Eco driving training	Vehicle Fleet Efficiency	Driver training and ECO driving aids	2011	2020	NCC, North East Freight Partnership	NCC	Unfunded	£0-1m	AWAITING FUNDING	Low	Number of training sessions delivered	Previously completed. Requires ongoing resource to continue.	-
31	Subsidise public transport	Promoting Travel Alternatives	Other	2011	2030	NCC	NCC	Unfunded	£0-50m	AWAITING FUNDING	Low	Number of public transport passengers	Previously implemented through English National Concessionary Travel Scheme and co-ordinated of 16-19yr fares. Further work through Bus Service Improvement Plans and potential Enhanced Partnership/Franchising	-
32	Create extra capacity on Metro/buses	Promoting Travel Alternatives	Other	2010	2024	NCC, Nexus, Bus Operators	Central Government	Funded	£300m+	ONGOING	Low-Medium	Number of new Metrocars delivered	Nexus and contractor working on delivery of new Metro fleet	-
33	Flexible work times/ school hours/ home working	Promoting Travel Alternatives	Encourage / Facilitate home-working	2014	2030	NCC	NCC	No funding required	£0	ONGOING	Low	Number of organisations signed up to flexible working	NCC has already implemented this scheme. Many school hours now outwith LA control as schools become academies.	-

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
34	Provision of Real Time Information (RTI) at bus stops	Public Information	via other mechanisms	2010	2024	NCC, Nexus	NCC	Partly funded	£0-5m	ONGOING	Low	Number of bus stops with real time information	Real time information system installed at a number of bus stops and being upgraded as part of Transforming Cities Fund	-
37	One off events	Public Information	via other mechanisms	2014	2030	NCC	NCC	Partly funded	£0-1m	ONGOING	Low	Number of events held	Sky Rides, Cycle Cross, Make the Switch and similar events held. Other events held as funding becomes available	-
39	Provision of information on ‘High Pollution Days’	Traffic Management	UTC, Congestion management, traffic reduction	2014	2020	Tyne and Wear Authorities	Tyne and Wear Authorities	Funded	£0	ONGOING	Low	Access to real-time air quality information on the urban observatory website.	Air quality data available on the Urban Observatory website for both high precision and indicative sensors	-

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[5], 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 than 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

One of the major sources of $PM_{2.5}$ in the city of Newcastle are road traffic emissions (comprising engine exhaust, road and tyre/brake abrasion). The AQAP measures designed to either reduce vehicle use or congestion, and to a lesser extent, those to encourage a switch to alternative fuels, should therefore also assist in the reduction of $PM_{2.5}$ emissions.

NCC is taking the following measures to address $PM_{2.5}$:

- In March 2019, NCC adopted the World Health Organisation (WHO) recommended air pollution limits to be legally binding by 2030. Whilst NCC have no exceedances of the permitted levels for particulates (PM_{10} and $PM_{2.5}$), the WHO have stated that there is no level of particulate matter at which health is not damaged. Although there are no specific measures targeting the reduction of $PM_{2.5}$ currently, it is expected that the combination of actions that are currently in force or coming into force will help to bring about a reduction of $PM_{2.5}$. However, discussions are being held with UK Health Security Agency to devise policies that will specifically target the reduction of $PM_{2.5}$.
- Whilst the CAZ is aiming to primarily reduce NO_2 concentrations, it will also help reduce $PM_{2.5}$ concentrations by increasing the emission standard of vehicles.
- NCC have developed a Smoke Control Area and Solid Fuel Enforcement Policy. With the legislation surrounding the use of solid fuel changing in the last few years, NCC have revoked all 77 old Smoke Control Orders established between 1958 and 1977, and created a new, city wide Smoke Control Order. It is hoped this will help deal with smoky chimney complaints from a nuisance perspective but also help

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

reduce the emissions of harmful PM concentrations. The change in the Smoke Control Order will help enforce amendments to the CAA93 under the EA21.

- Suppliers of wood have been inspected to ensure compliance with the EA21.
- The Public Health Outcomes Framework has published statistics on the health effects of exposure of the public to fine particulate pollution (Public Health Outcomes Framework - at a glance summary (phe.org.uk)). The fraction of mortality attributable to particulate air pollution (Indicator D01) was 4.6% in 2023 for Newcastle upon Tyne. This is lower than the national value of 5.2% in 2023; and
- NCC measures $PM_{2.5}$ concentrations at the automatic monitor Newcastle centre. Annual mean $PM_{2.5}$ concentrations increased from 6.3 µg/m^3 in 2023 to 6.9 µg/m^3 in 2024, but remain lower than concentrations recorded in the pandemic, 7.4 µg/m^3 in 2019.

Future actions to address $PM_{2.5}$ are:

- Action planning/measured to reduce $PM_{2.5}$ to be included in the updated AQAP.
- Source apportion the fraction of $PM_{2.5}$ generated within Newcastle, and estimate concentrations from those of PM_{10};
- Investigate further $PM_{2.5}$ monitoring, and model $PM_{2.5}$ sources; and
- Work with partners to raise awareness.

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

This section sets out the monitoring undertaken within 2024 by NCC 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

NCC undertook automatic (continuous) monitoring at four sites during 2024. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem.

The Air Quality in the United Kingdom (ukairquality.net) page presents automatic monitoring results for Newcastle upon Tyne, with automatic monitoring results also available through the UK-Air website (Home - Defra, UK) .

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

3.1.2 Non-Automatic Monitoring Sites

NCC undertook non-automatic (i.e. passive) monitoring of NO_2 at 62 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.

The monitoring network is regularly reviewed by NCC which means existing monitoring locations are removed and new locations added.

Added monitoring locations in 2024 are:

- DT167, DT168 and DT169 Strawberry Place.
- DT170 Westgate Road; and
- DT171 Haddricks Mill Road.

Dormant monitoring locations in 2024 are:

- DT10, DT103, DT157 and DT158 were inaccessible during 2024 due to construction work. As soon as the work is completed, monitoring will resume at these locations.

Decommissioned locations in 2024 are:

- DT65 was removed as it was only a short-term monitoring site, put up to assess the air quality on Blackett St ahead of possibly pedestrianising the street. Although it measured a concentration above the annual mean objective value in 2023, this was not representative of relevant exposure. There is a further triplicate site on Blackett Street (DT64, DT139, DT140), and this site is considered representative of relevant exposure and has been maintained in 2024.

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.

The LAQM.TG22 Guidance recommends that the 'revocation of an AQMA should be considered following three consecutive years of annual mean NO_2 concentrations being lower than 36 µg/m^3 (i.e. within 10% of the annual mean NO_2 objective).

Locations which were within 10% of the annual mean objective (>36 µg/m^3 and <40 µg/m^3) and above annual mean objective (>40 µg/m^3) following bias adjustment at the monitoring site, which may indicate a risk of potential exceedance, are listed below:

- DT8 (10 Market Street) with 38.5 µg/m^3
- DT102 (John Dobson Street) with 36.4 µg/m^3
- Triplicate site DT5, DT115 and DT116 (St Mary's Place) with 36.3 µg/m^3
- Triplicate site DT29, DT30, DT31 (Percy Street Romon 3) with 44.0 µg/m^3
- DT81 (Stephenson Rd, entrance to Jesmond Pk West) with 64.5 µg/m^3
- Percy Street CMS with 41.1 µg/m^3

However, many of these sites are not at relevant exposure so require distance correction. The concentrations for the exceeding sites above, following distance correction at relevant exposure, are listed below:

- DT8 (10 Market Street) – did not require distance correction as at relevant exposure so remained at 38.5 µg/m^3
- DT102 (John Dobson Street) – is not representative of relevant exposure
- Triplicate site DT5, DT115 and DT116 (St Mary's Place) – did not require distance correction as at relevant exposure so remained at 36.3 µg/m^3
- Triplicate site DT29, DT30, DT31 (Percy Street Romon 3) – distance corrected to 25.7 µg/m^3
- DT81 (Stephenson Rd, entrance to Jesmond Pk West) with 64.5 µg/m^3 – distance corrected to 35.8 µg/m^3
- Percy Street with 41.1 µg/m^3 – distance corrected to 31.9 µg/m^3

Therefore, the remaining sites that are within 10% of the annual mean objective (>36 µg/m^3 and <40 µg/m^3) or above annual mean objective (>40 µg/m^3), are listed below:

- DT8 (10 Market Street)
- Triplicate site DT5, DT115 and DT116 (St Mary's Place)

Additionally, as the monitored concentration at DT81 is above 60 µg/m^3 and is located on a pedestrian pathway that is representative of relevant short-term exposure, it is likely to exceed the short term NO_2 1-hour objective.

Overall, monitored annual mean NO_2 concentrations in Newcastle have shown a decrease compared to 2023.

Overall, it seems that there was a significant reduction in NO_2 concentrations when the Covid-19 restrictions were in place in 2020. Since then, NO_2 concentrations have increased from these low concentrations, however, have not returned to pre-pandemic concentrations. The introduction of the CAZ in 2023 has also likely contributed to decreases in pollutant concentrations.

Results for 2024 suggest that the City Centre AQMA (AQMA 1b) has not been compliant this year and NCC should continue monitoring. However, Gosforth AQMA (AQMA 5) has been compliant for 5 years as of 2024, and therefore NCC intend to pursue revocation of this AQMA, in line with LAQM TG(22) Guidance.

3.2.2 Particulate Matter (PM_{10})

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

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

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

NCC undertook PM_{10} monitoring at two locations in 2024 (Newcastle Centre AURN and Newcastle Cradlewell AURN); concentrations in 2024 were all well below the objective, as they have been for all past five years. The trends recorded at these locations are shown in Figure A.12. Overall, a slight decreasing trend in PM_{10} concentrations was observed at Newcastle Centre AURN while a slight increasing trend was observed at Newcastle Cradlewell AURN.

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

The objective was not exceeded at either the Newcastle Centre AURN or the Newcastle Cradlewell AURN, with no days above 50 µg/m^3, in 2024.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

The concentration in 2024 was well below the objective, as it has been for all of the past five years.

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? (1)	Monitoring Technique	Distance to Relevant Exposure (m) (2)	Distance to kerb of nearest road (m) (1)	Inlet Height (m)
Newcastle Centre AURN	St Mary's Place	Urban Background	425029	564916	NO, NO_2, NO_x, PM_{10}, $PM_{2.5}$, O_3	Yes	AQMA 1b (City Centre)	Chemiluminescent, TEOM-FDMS, UV-absorption	N/A	20.0	2.5
Cradlewell AURN	Jesmond Road, Cradlewell	Roadside	425992	333555	NO_2, PM_{10}, O_3	Yes	AQMA 1b (City Centre)	Chemiluminescent, TEOM-FDMS, UV-absorption	7.0	3.0	2.5
Pilgrim Street	Swan House, Pilgrim Street	Roadside	425124	564112	NO_2	Yes	AQMA 1b (City Centre)	Chemiluminescent	20.0	3.0	1.8
Percy Street	Percy Street	Roadside	424776	564861	NO_2	Yes	AQMA 1b (City Centre)	Chemiluminescent	10.0	2.0	1.8

Notes:

(1) N/A if not applicable

(2) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

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)
DT2, DT3, DT4	St Mary's Place	Urban Background	425028	564917	NO_2	YES - AQMA 1b	0.0	20.0	Yes	2.5
DT6	John Dobson St/North Street	Roadside	425003	564713	NO_2	YES - AQMA 1b	0.0	2.0	No	2.5
DT7	Blackett Street/Northumberland Street	Roadside	424933	564475	NO_2	YES - AQMA 1b	0.0	1.0	No	2.5
DT8	10 Market Street (sign 87M34)	Roadside	424936	564333	NO_2	YES - AQMA 1b	0.0	1.0	No	2.5
DT9	98 - 100 Pilgrim Street	Roadside	425056	564197	NO_2	YES - AQMA 1b	0.0	4.0	No	2.5
DT10	Pilgrim Street/Swan House roundabout	Roadside	425081	564166	NO_2	YES - AQMA 1b	41.0	8.0	No	2.5
DT13	Neville Street/Westgate Road	Roadside	424737	563933	NO_2	YES - AQMA 1b	0.0	1.0	No	2.5
DT14	Waterloo Street/Westmoreland Road	Roadside	424303	563841	NO_2	YES - AQMA 1b	2.0	1.0	No	2.5
DT16	3 Nexus House, St James Boulevard	Roadside	424271	564103	NO_2	YES - AQMA 1b	40.0	1.0	No	2.5
DT19	Gallowgate/Percy Street	Roadside	424586	564472	NO_2	YES - AQMA 1b	10.0	1.0	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)
DT20	Newgate Street/Grainger Street	Roadside	424736	564172	NO_2	YES - AQMA 1b	5.0	1.0	No	2.5
DT26	Leazes Lane/Percy Street	Roadside	424616	564561	NO_2	YES - AQMA 1b	10.0	1.0	No	2.5
DT28	101 Percy Street/St Thomas Street	Roadside	424725	564771	NO_2	YES - AQMA 1b	1.0	4.0	No	2.5
DT29, DT30, DT31	Percy Street Romon 3	Roadside	424776	564864	NO_2	YES - AQMA 1b	25.0	1.0	Yes	2.5
DT37	Sandhill/Swing Bridge	Roadside	425149	563811	NO_2	YES - AQMA 1b	15.0	1.0	No	2.5
DT42	Blue House Roundabout (North)	Roadside	424624	566876	NO_2	YES - AQMA 5	10.0	2.0	No	2.5
DT43	53 High Street, Gosforth	Roadside	424394	567634	NO_2	YES - AQMA 5	1.0	3.0	No	2.5
DT44	102 - 104 High Street, Gosforth	Roadside	424400	567833	NO_2	YES - AQMA 5	2.0	4.0	No	2.5
DT45	201 Gosforth High St (formerly Gosforth Hog 1)	Roadside	424412	568082	NO_2	YES - AQMA 5	2.0	3.0	No	2.5
DT50	84 Station Road	Roadside	425499	568111	NO_2	YES - AQMA 5	1.0	2.0	No	2.5
DT56	263 Shields Road	Roadside	427236	564896	NO_2	NO	1.0	3.0	No	2.5
DT57	124 Shields Road	Roadside	426837	564775	NO_2	NO	1.0	3.0	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)
DT62	5 Birchfield Gardens	Roadside	419449	565149	NO_2	NO	3.0	2.0	No	2.5
DT63	Bewick House, Neville Street	Roadside	424550	563900	NO_2	YES - AQMA 1b	N/A	2.0	No	2.5
DT65	Blackett Street, Old Eldon Sq	Roadside	424666	564465	NO_2	YES - AQMA 1b	N/A	1.0	No	2.5
DT73	Stamfordham Rd	Roadside	420384	566927	NO_2	NO	12.0	3.0	No	2.5
DT80	A167 AQ Mesh	Roadside	425286	564422	NO_2	YES - AQMA 1b	N/A	2.0	No	2.5
DT81	Stephenson Rd, entrance to Jesmond Pk West	Roadside	426546	566260	NO_2	YES - AQMA 1b	15.0	1.0	No	2.5
DT82	A1058 Coast Rd, to front of 101 Coast Rd	Roadside	427444	566674	NO_2	NO	16.0	2.0	No	2.5
DT84	A1058 Coast Rd, Wills Building	Roadside	428141	566885	NO_2	NO	40.0	1.0	No	2.5
DT87	Cowgate Roundabout	Roadside	422087	566233	NO_2	NO	14.0	3.0	No	2.5
DT89	West Road A186 (Nr Denton PH)	Roadside	420400	565339	NO_2	NO	6.0	2.0	No	2.5
DT94	Clayton St West (outside 18)	Roadside	424457	563984	NO_2	NO	8.0	1.0	No	2.5
DT102	John Dobson Street (outside Portland Ho)	Roadside	425106	564466	NO_2	NO	N/A	1.0	No	2.5
DT5, DT115, DT116	St Marys Place, John Dobson Street	Roadside	424948	564872	NO_2	YES - AQMA 1b	0.0	1.0	No	2.5
DT12, DT117, DT118	8 Mosley Street on sign	Roadside	425072	564119	NO_2	YES - AQMA 1b	0.0	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)
DT17, DT119, DT120	96 - 98 Westgate Road/Cross Street junction	Roadside	424439	564057	NO_2	YES - AQMA 1b	2.0	2.0	No	2.5
DT18, DT121, DT122	Gallowgate/St Andrews St	Roadside	424431	564394	NO_2	YES - AQMA 1b	30.0	2.0	No	2.5
DT21, DT123, DT124	115 - 119 Grainger Street/Market Street junction	Roadside	424793	564283	NO_2	YES - AQMA 1b	5.0	3.0	No	2.5
DT23, DT125, DT126	Leazes Lane near Romon (formerly Leazes Lane Romon 2)	Roadside	424519	564765	NO_2	YES - AQMA 1b	12.0	2.0	No	2.5
DT25, DT127, DT128	Strawberry Place, west end Shearer's Bar	Roadside	424336	564492	NO_2	YES - AQMA 1b	0.0	2.0	No	2.5
DT32, DT129, DT130	City Road near former Tyne Tees Television Studios	Roadside	425821	564241	NO_2	NO	30.0	2.0	No	2.5
DT34, DT131, DT132	Quayside, outside Trinity Chambers	Roadside	425415	563908	NO_2	YES - AQMA 1b	2.0	2.0	No	2.5
DT36, DT133, DT134	The Side Dean Street junction	Roadside	425092	563942	NO_2	YES - AQMA 1b	15.0	1.0	No	2.5
DT53, DT135, DT136	2 - 3 Osborne Terrace	Roadside	425425	565360	NO_2	YES - AQMA 1b	5.0	2.0	No	2.5
DT54, DT137, DT138	178 Sandyford Road	Roadside	425732	565371	NO_2	YES - AQMA 1b	6.0	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)
DT64, DT139, DT140	Blackett St, to front of Waterstones	Roadside	424826	564451	NO_2	YES - AQMA 1b	N/A	2.0	No	2.5
DT76, DT141, DT142	Tyne Bridge (Cale Cross Ho)	Roadside	425185	563987	NO_2	YES - AQMA 1b	N/A	1.0	No	2.5
DT77, DT143, DT144	Tyne Bridge (West tower)	Roadside	425277	563834	NO_2	YES - AQMA 1b	N/A	4.0	No	2.5
DT78, DT145, DT146	Tyne Bridge (East tower)	Roadside	425294	563844	NO_2	YES - AQMA 1b	N/A	4.0	No	2.5
DT79, DT147, DT148	Tyne Bridge (Spire)	Roadside	425199	564002	NO_2	YES - AQMA 1b	N/A	1.0	No	2.5
DT85, DT149, DT150	St James Boulevard (Nat Express)	Roadside	424225	563769	NO_2	YES - AQMA 1b	N/A	1.0	No	2.5
DT86, DT151, DT152	St James Boulevard (Dance City)	Roadside	424252	564014	NO_2	YES - AQMA 1b	N/A	1.0	No	2.5
DT92, DT153, DT154	A695 Scotswood Road (south of Noble St)	Roadside	422610	563272	NO_2	NO	N/A	3.0	No	2.5
DT95, DT155, DT156	Clayton St West (front of church)	Roadside	424445	563901	NO_2	YES - AQMA 1b	18.0	2.0	No	2.5
DT105, DT159, DT160	Collingwood Street (south side)	Roadside	424874	563991	NO_2	YES - AQMA 1b	N/A	1.0	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)
DT106, DT161, DT162	Collingwood Street (north side)	Roadside	424862	563996	NO_2	YES - AQMA 1b	N/A	1.0	No	2.0
DT111, DT163, DT164	Bewick Street (Bewick Ho)	Roadside	424514	563919	NO_2	YES - AQMA 1b	4.0	1.0	No	2.0
DT165	Osborne Road (nursery)	Kerbside	425364	565632	NO_2	NO	60.0	0.5	No	2.5
DT167, DT168, DT169	Strawberry Place, opposite DT25	Roadside	424340	564482	NO_2	YES - AQMA 1b	N/A	1.0	No	2.0
DT170	Westgate Rd	Kerbside	422813	564455	NO_2	NO	N/A	0.5	No	2.0
DT171	Haddricks Mill Rd	Kerbside	425461	567771	NO_2	YES - AQMA 5	N/A	0.5	No	2.0

Notes:

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

(2) N/A if not applicable.

Table A.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
Newcastle Centre AURN	425029	564916	Urban Background	94.9	94.9	23.4	28.3	27.5	19.2	17.5
Cradlewell AURN	425992	333555	Roadside	94.1	94.1	28.5	32.5	34.4	31.8	28.3
Pilgrim street	424776	564861	Roadside	84.3	84.3	28	30.2	34.9	32.5	27.7
Percy Street	425124	564112	Roadside	99.9	99.9	39	**42**	**43**	**42.4**	**41.1**

☒ **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
DT2, DT3, DT4	425028	564917	Urban Background	100.0	100.0	17.6	22.0	21.3	17.3	17.0
DT6	425003	564713	Roadside	83.0	83.0	23.3	30.3	31.4	27.5	26.0
DT7	424933	564475	Roadside	100.0	100.0	32.4	**41.2**	37.0	31.9	28.3
DT8	424936	564333	Roadside	66.0	66.0	29.8	39.9	**44.7**	**42.2**	38.5
DT9	425056	564197	Roadside	100.0	100.0	21.3	32.1	30.2	20.0	20.2
DT10	425081	564166	Roadside	0.0	0.0	28.2	36.5	35.4	25.9	-
DT13	424737	563933	Roadside	100.0	100.0	32.5	**42.1**	**43.5**	35.2	31.9
DT14	424303	563841	Roadside	60.4	60.4	21.0	31.9	30.1	25.7	23.9
DT16	424271	564103	Roadside	100.0	100.0	22.1	28.4	26.8	21.6	19.3
DT19	424586	564472	Roadside	92.5	92.5	23.8	34.5	33.6	28.6	26.7
DT20	424736	564172	Roadside	83.0	83.0	34.8	**45.4**	**41.3**	36.4	34.3
DT26	424616	564561	Roadside	90.6	90.6	27.4	36.3	34.6	30.5	29.4
DT28	424725	564771	Roadside	100.0	100.0	24.8	31.8	30.2	28.7	27.1
DT29, DT30, DT31	424776	564864	Roadside	100.0	100.0	39.5	**50.8**	**53.3**	**45.9**	**44.0**
DT37	425149	563811	Roadside	100.0	100.0	25.6	35.2	30.1	26.4	23.1
DT42	424624	566876	Roadside	83.0	83.0	19.4	28.0	26.4	22.4	20.8
DT43	424394	567634	Roadside	100.0	100.0	25.8	34.6	33.8	29.5	27.6
DT44	424400	567833	Roadside	100.0	100.0	21.0	28.7	27.3	23.8	23.2
DT45	424412	568082	Roadside	100.0	100.0	28.3	32.9	36.4	29.4	30.1
DT50	425499	568111	Roadside	100.0	100.0	26.2	37.4	35.5	31.2	28.4
DT56	427236	564896	Roadside	100.0	100.0	20.4	26.6	25.4	23.4	18.7
DT57	426837	564775	Roadside	100.0	100.0	21.5	27.6	29.4	24.8	21.2
DT62	419449	565149	Roadside	83.0	83.0	23.1	26.8	25.9	26.5	24.6
DT63	424550	563900	Roadside	90.6	90.6	27.4	36.8	35.0	31.7	29.9
DT65	424666	564465	Roadside	7.5	7.5	36.7	**45.4**	**46.6**	**40.9**	-

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
DT73	420384	566927	Roadside	100.0	100.0	19.2	24.6	22.0	18.1	18.4
DT80	425286	564422	Roadside	100.0	100.0	28.1	**43.4**	37.7	30.0	31.5
DT81	426546	566260	Roadside	90.6	90.6	**56.8**	**97.7**	**92.2**	**67.1**	**64.5***
DT82	427444	566674	Roadside	90.6	90.6	24.6	31.3	31.8	25.8	23.9
DT84	428141	566885	Roadside	100.0	100.0	24.5	30.8	31.9	23.3	31.4
DT87	422087	566233	Roadside	100.0	100.0	32.9	**42.4**	**41.4**	29.7	25.2
DT89	420400	565339	Roadside	100.0	100.0	25.3	34.2	31.0	27.7	25.8
DT94	424457	563984	Roadside	90.6	90.6	31.1	39.8	39.1	32.4	30.2
DT102	425106	564466	Roadside	100.0	100.0	23.4	32.5	**45.1**	33.1	36.4
DT5, DT115, DT116	424948	564872	Roadside	100.0	100.0	37.5	**44.2**	**46.3**	**40.3**	36.3
DT12, DT117, DT118	425072	564119	Roadside	100.0	100.0	31.7	**48.7**	**-**	35.1	33.1
DT17, DT119, DT120	424439	564057	Roadside	100.0	100.0	19.2	26.6	24.6	22.1	19.7
DT18, DT121, DT122	424431	564394	Roadside	100.0	100.0	20.1	26.0	27.1	22.8	22.2
DT21, DT123, DT124	424793	564283	Roadside	100.0	100.0	30.2	37.9	35.9	33.7	29.7
DT23, DT125, DT126	424519	564765	Roadside	100.0	100.0	20.7	28.6	26.3	23.3	21.3
DT25, DT127, DT128	424336	564492	Roadside	100.0	100.0	36.6	**54.1**	**46.4**	38.5	23.5

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
DT32, DT129, DT130	425821	564241	Roadside	100.0	100.0	22.0	31.9	28.7	23.5	21.6
DT34, DT131, DT132	425415	563908	Roadside	100.0	100.0	22.9	30.8	28.6	25.3	23.5
DT36, DT133, DT134	425092	563942	Roadside	100.0	100.0	25.1	31.9	28.9	24.6	22.7
DT53, DT135, DT136	425425	565360	Roadside	100.0	100.0	23.0	31.5	30.6	25.1	23.3
DT54, DT137, DT138	425732	565371	Roadside	100.0	100.0	30.5	39.9	39.4	32.0	28.0
DT64, DT139, DT140	424826	564451	Roadside	75.0	75.0	22.4	27.4	28.5	26.3	22.7
DT76, DT141, DT142	425185	563987	Roadside	83.0	83.0	33.4	38.8	39.1	31.2	30.0
DT77, DT143, DT144	425277	563834	Roadside	92.5	92.5	22.2	30.8	28.3	24.9	28.0
DT78, DT145, DT146	425294	563844	Roadside	92.5	92.5	33.2	39.1	38.0	31.2	21.8
DT79, DT147, DT148	425199	564002	Roadside	100.0	100.0	33.8	**42.9**	36.2	31.3	27.6

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
DT85, DT149, DT150	424225	563769	Roadside	100.0	100.0	26.3	36.6	33.1	28.8	27.6
DT86, DT151, DT152	424252	564014	Roadside	100.0	100.0	21.8	32.0	30.9	22.3	21.4
DT92, DT153, DT154	422610	563272	Roadside	100.0	100.0	16.8	23.8	22.8	18.0	17.1
DT95, DT155, DT156	424445	563901	Roadside	92.5	92.5	23.4	32.5	28.8	28.1	26.5
DT105, DT159, DT160	424874	563991	Roadside	100.0	100.0	25.5	36.1	-	-	27.8
DT106, DT161, DT162	424862	563996	Roadside	75.0	75.0	28.2	38.1	35.6	32.0	32.4
DT111, DT163, DT164	424514	563919	Roadside	100.0	100.0	-	-	27.8	26.3	22.6
DT165	425364	565632	Roadside	50.9	50.9	-	-	-	27.9	24.0
DT167, DT168, DT169	424340	564482	Roadside	92.5	92.5	-	-	-	-	20.3
DT170	422813	564455	Roadside	90.6	90.6	-	-	-	-	23.8
DT171	425461	567771	Roadside	100.0	100.0	-	-	-	-	20.3

☒ **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%).

*At Site DT81, NO_2 annual means are predicted to exceed 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective.

Figure A.1 – Trends in Annual Mean NO_2 Concentrations in the Newcastle Centre AQMA (AQMA 1b) (a)

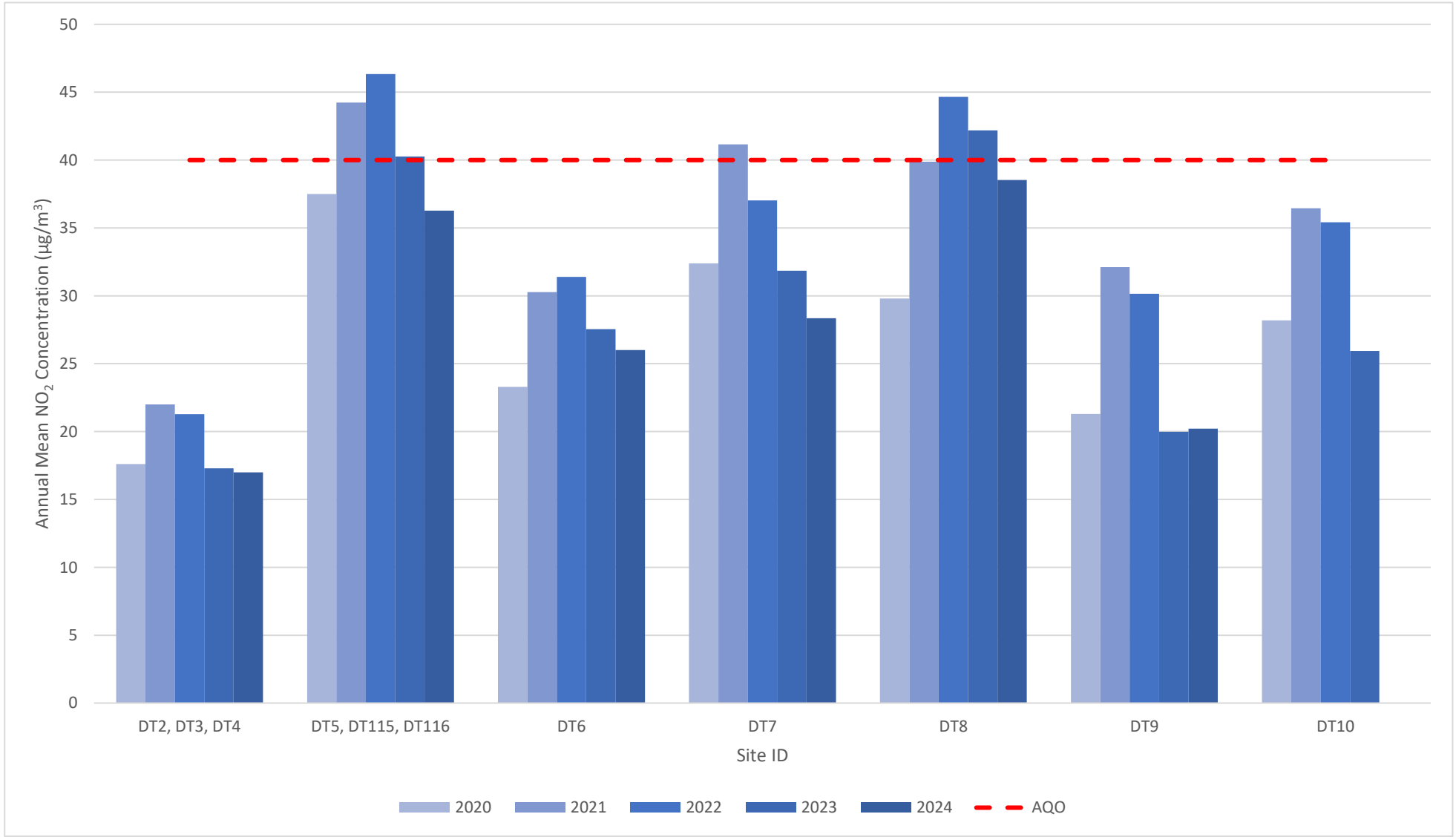


Figure A.2 – Trends in Annual Mean NO_2 Concentrations in the Newcastle Centre AQMA (AQMA 1b) (b)

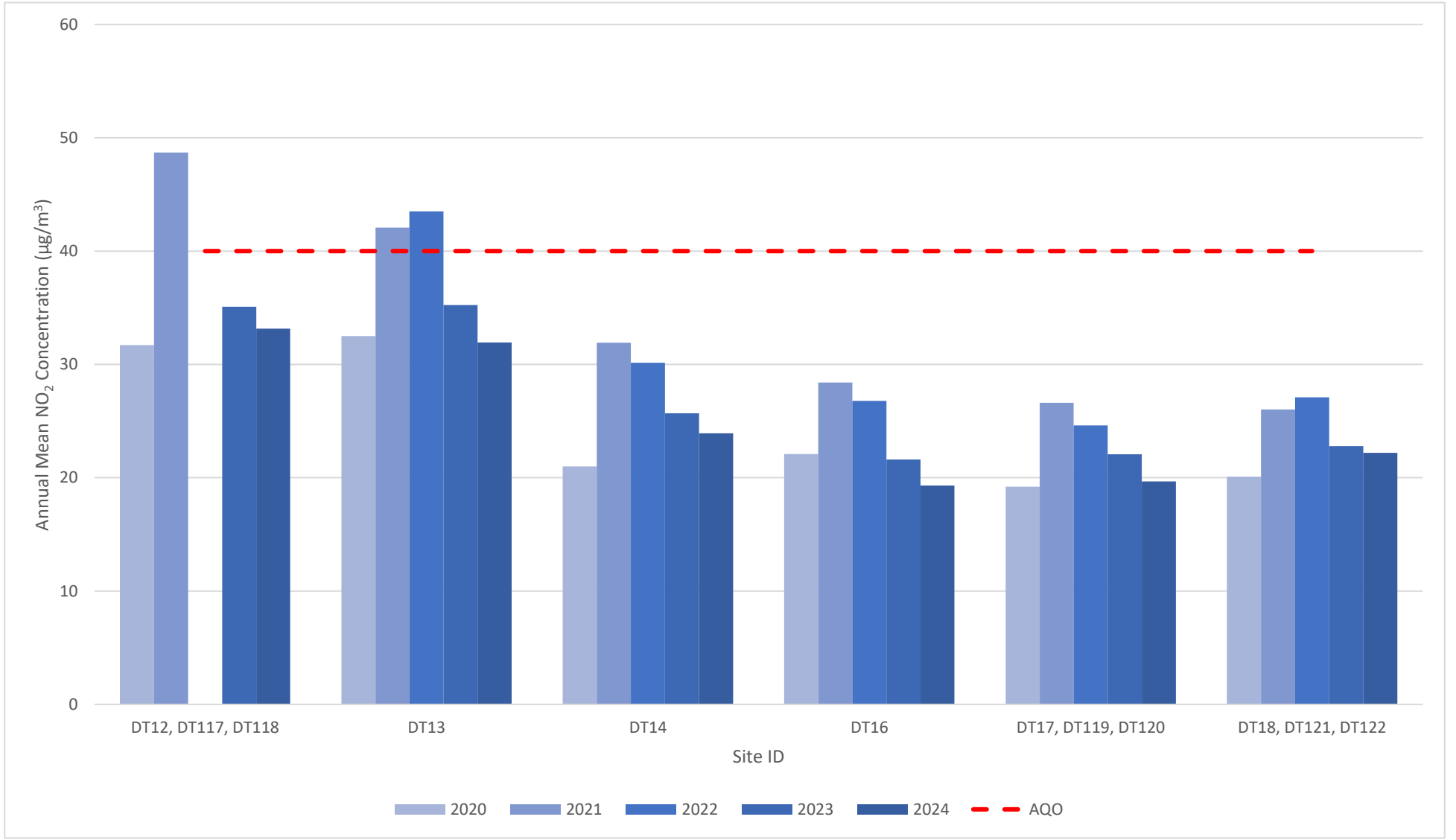


Figure A.3 – Trends in Annual Mean NO_2 Concentrations in the Newcastle Centre AQMA (AQMA 1b) (c)

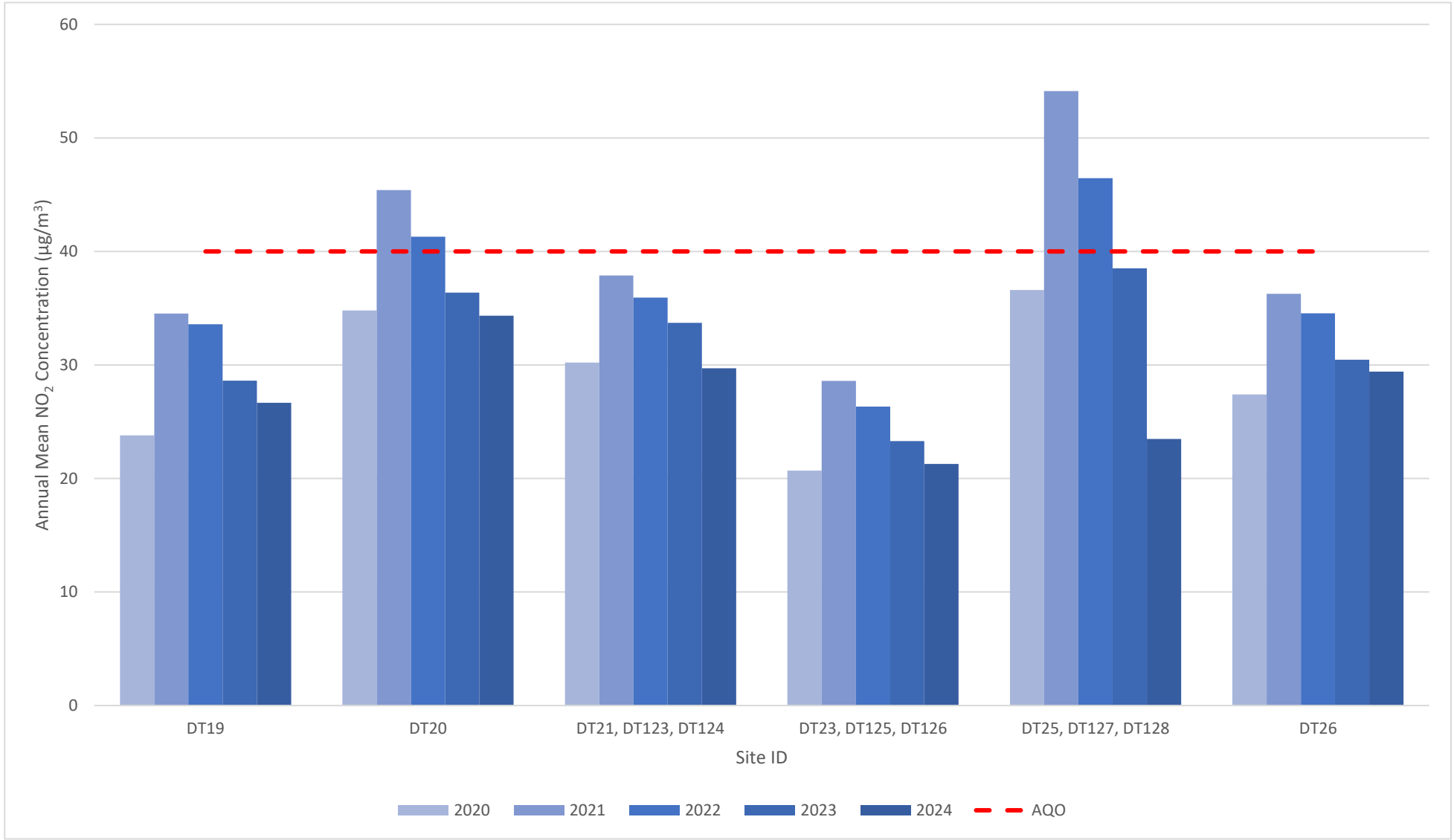


Figure A.4 – Trends in Annual Mean NO_2 Concentrations in the Newcastle Centre AQMA (AQMA 1b) (d)

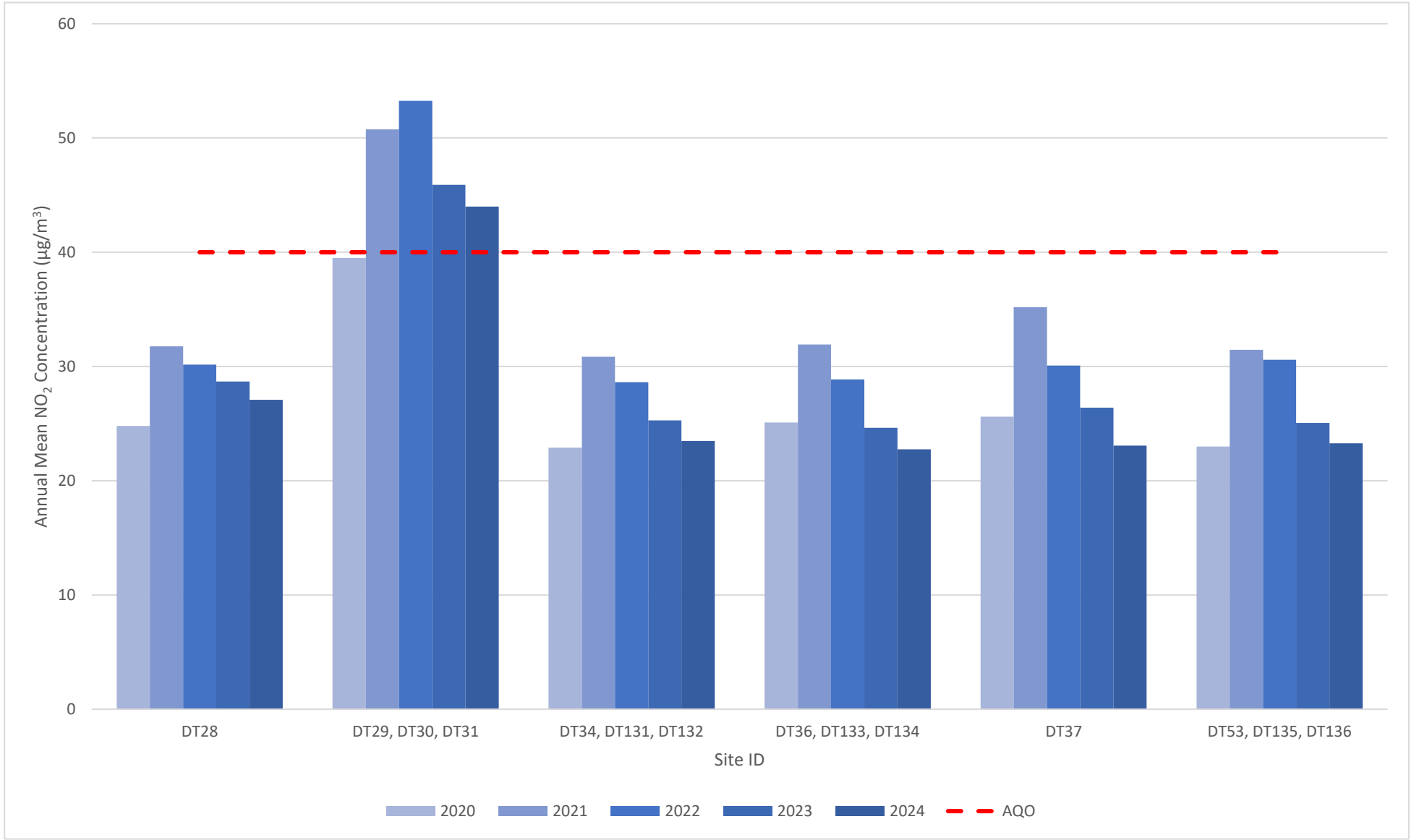


Figure A.5 – Trends in Annual Mean NO_2 Concentrations in the Newcastle Centre AQMA (AQMA 1b) (e)

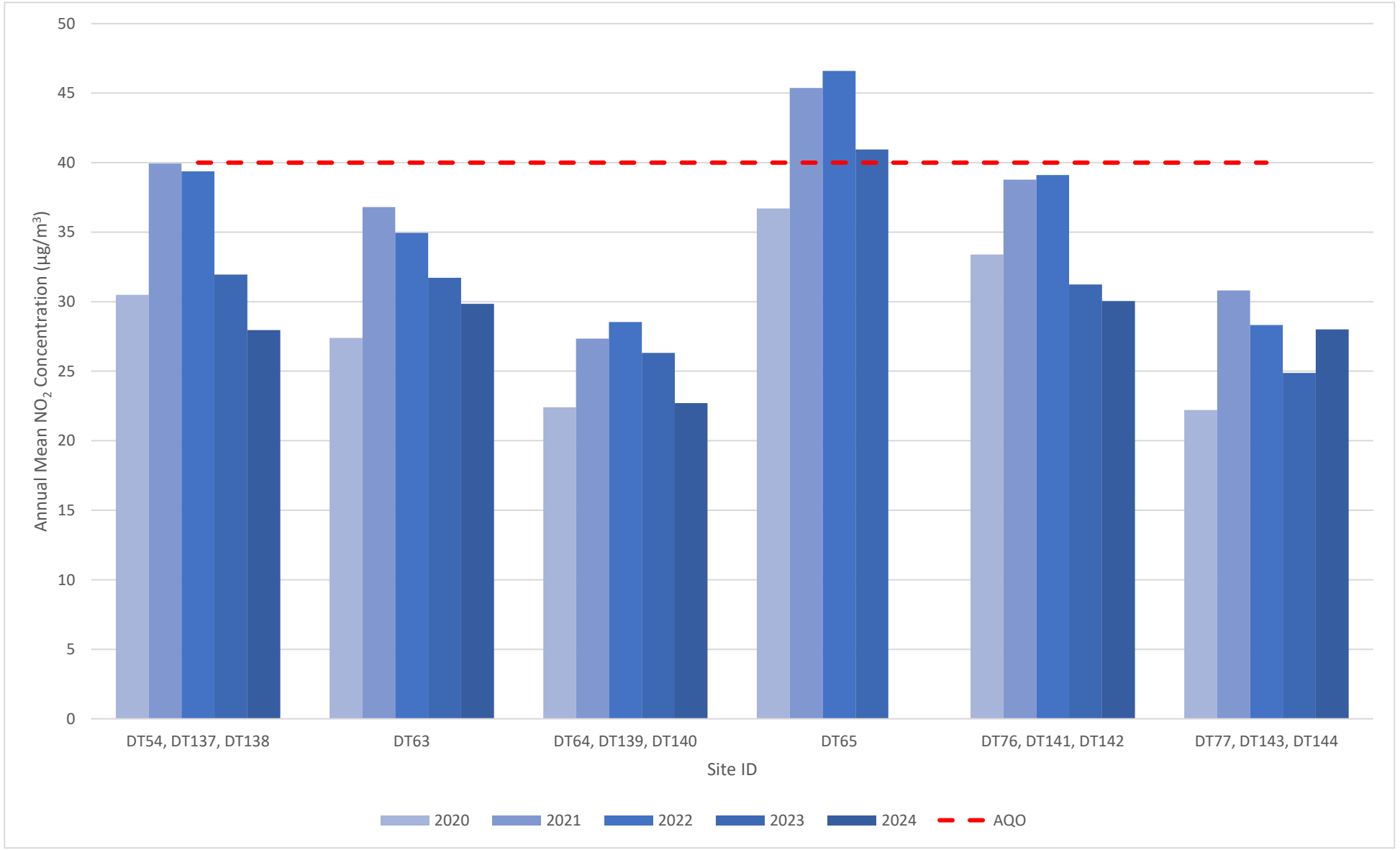


Figure A.6 – Trends in Annual Mean NO_2 Concentrations in the Newcastle Centre AQMA (AQMA 1b) (f)

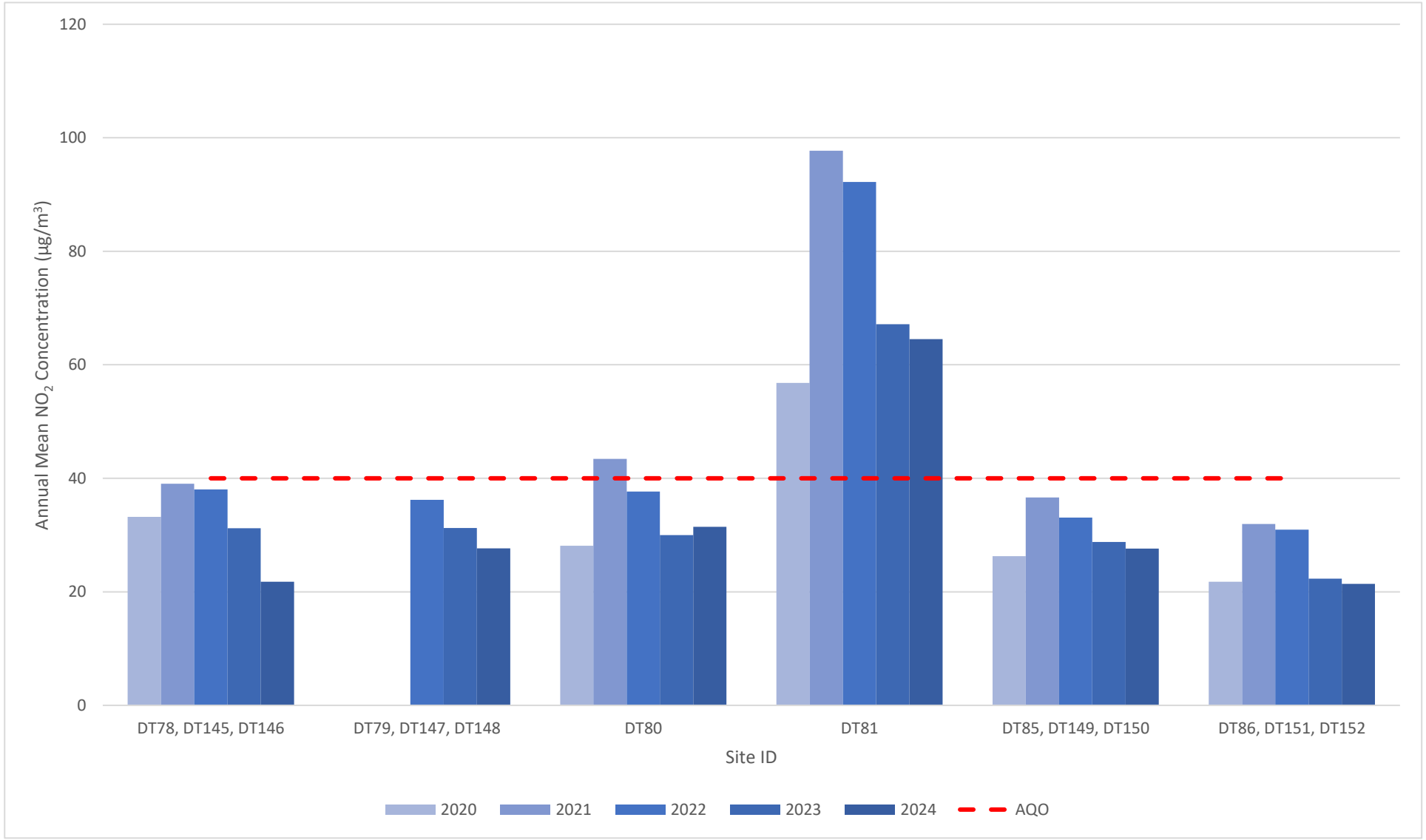


Figure A.7 – Trends in Annual Mean NO_2 Concentrations in the Newcastle Centre AQMA (AQMA 1b) (g)

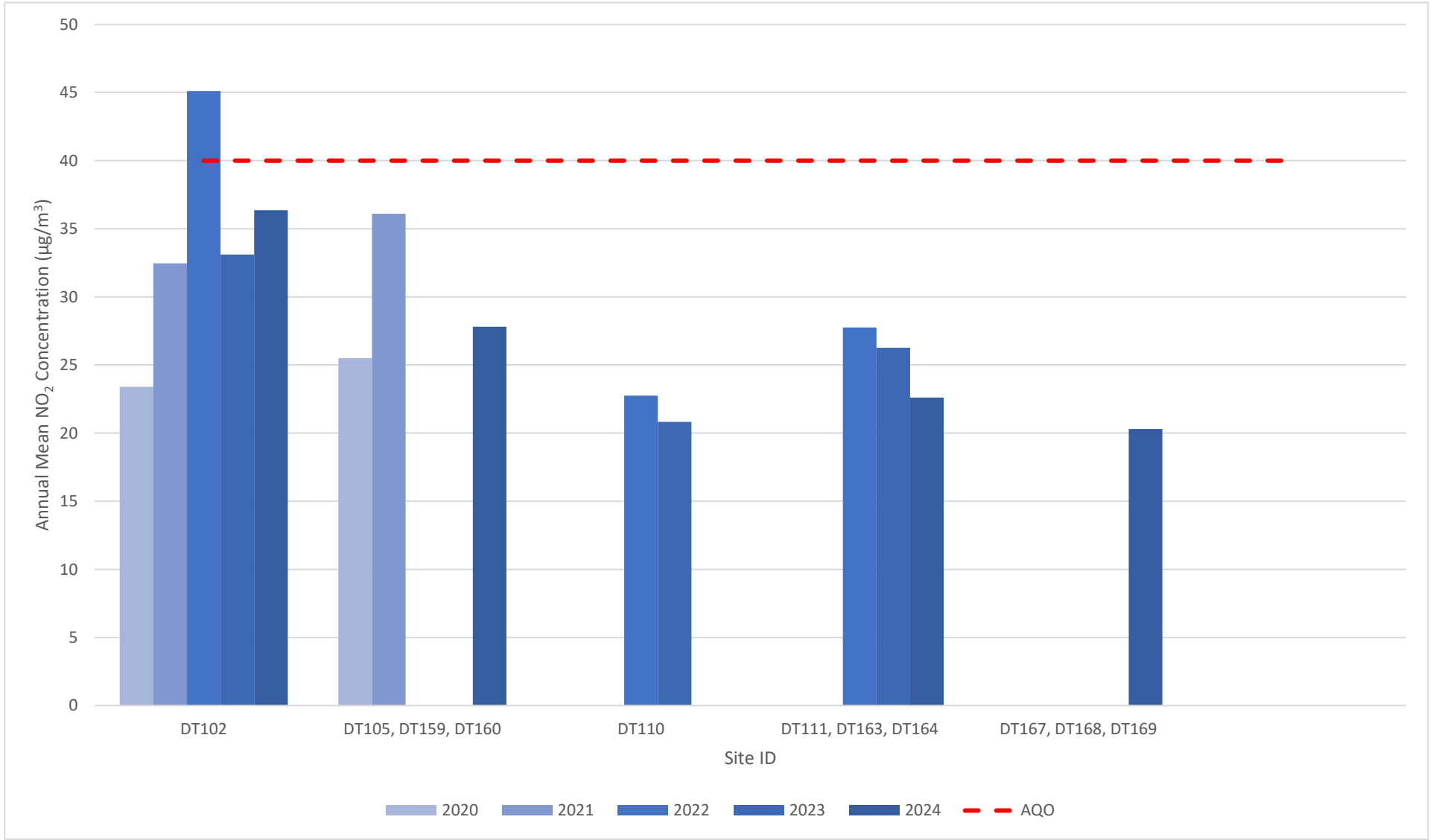


Figure A.8 – Trends in Annual Mean NO_2 Concentrations in the Gosforth AQMA (AQMA 5) (a)

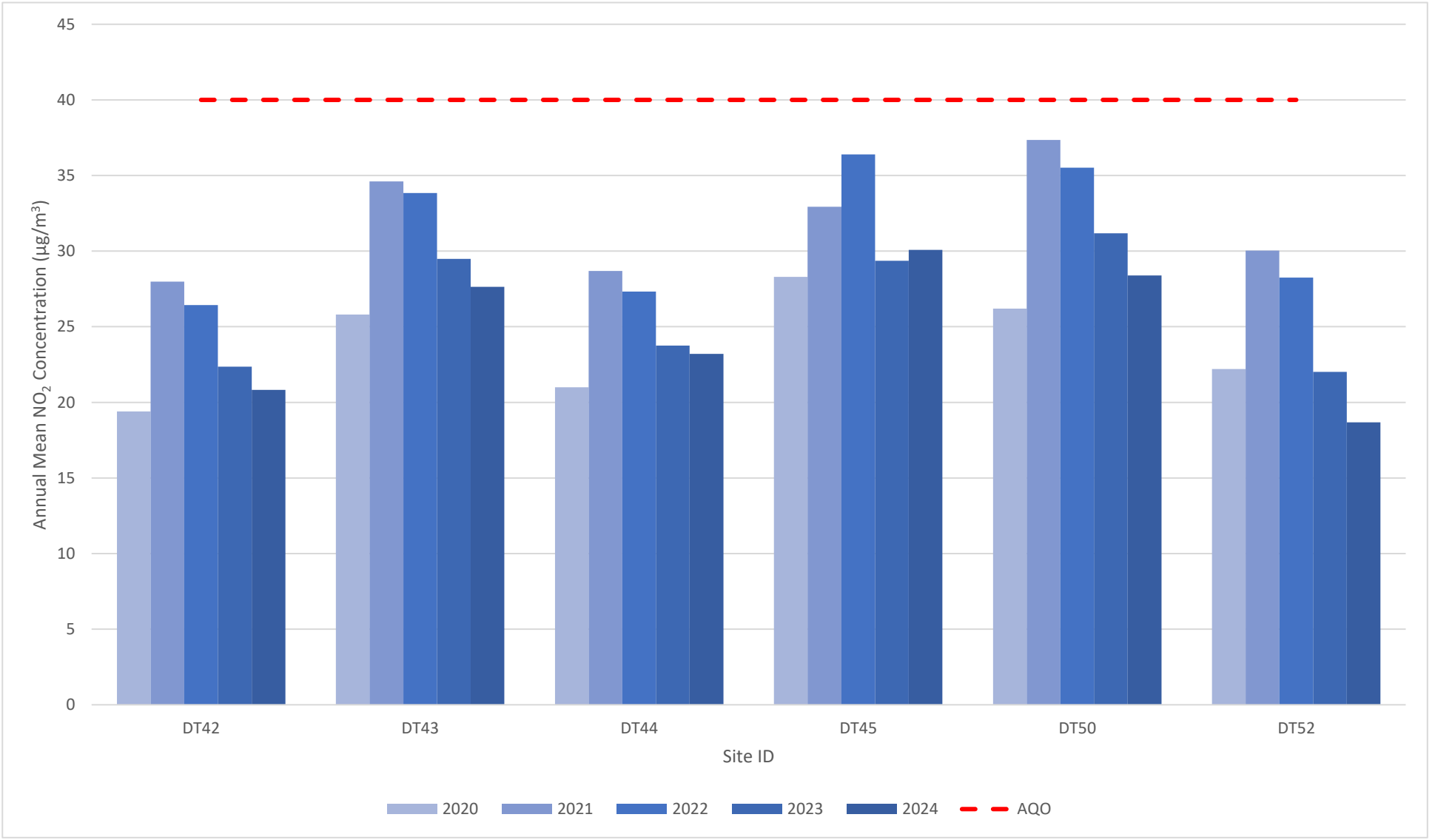


Figure A.9 – Trends in Annual Mean NO_2 Concentrations in the Gosforth AQMA (AQMA 5) (b)

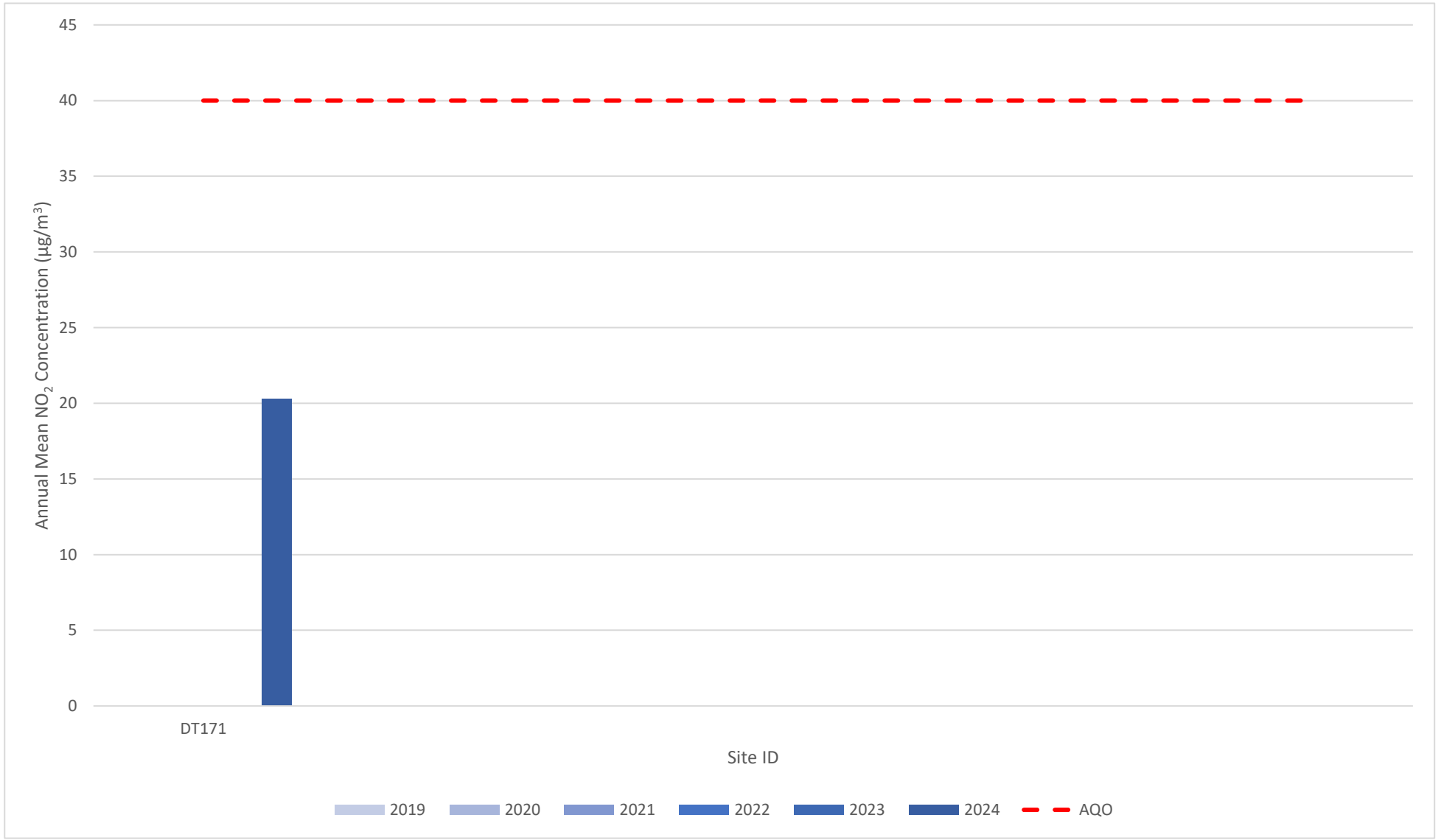


Figure A.10 – Trends in Annual Mean NO_2 Concentrations outside any AQMA (a)

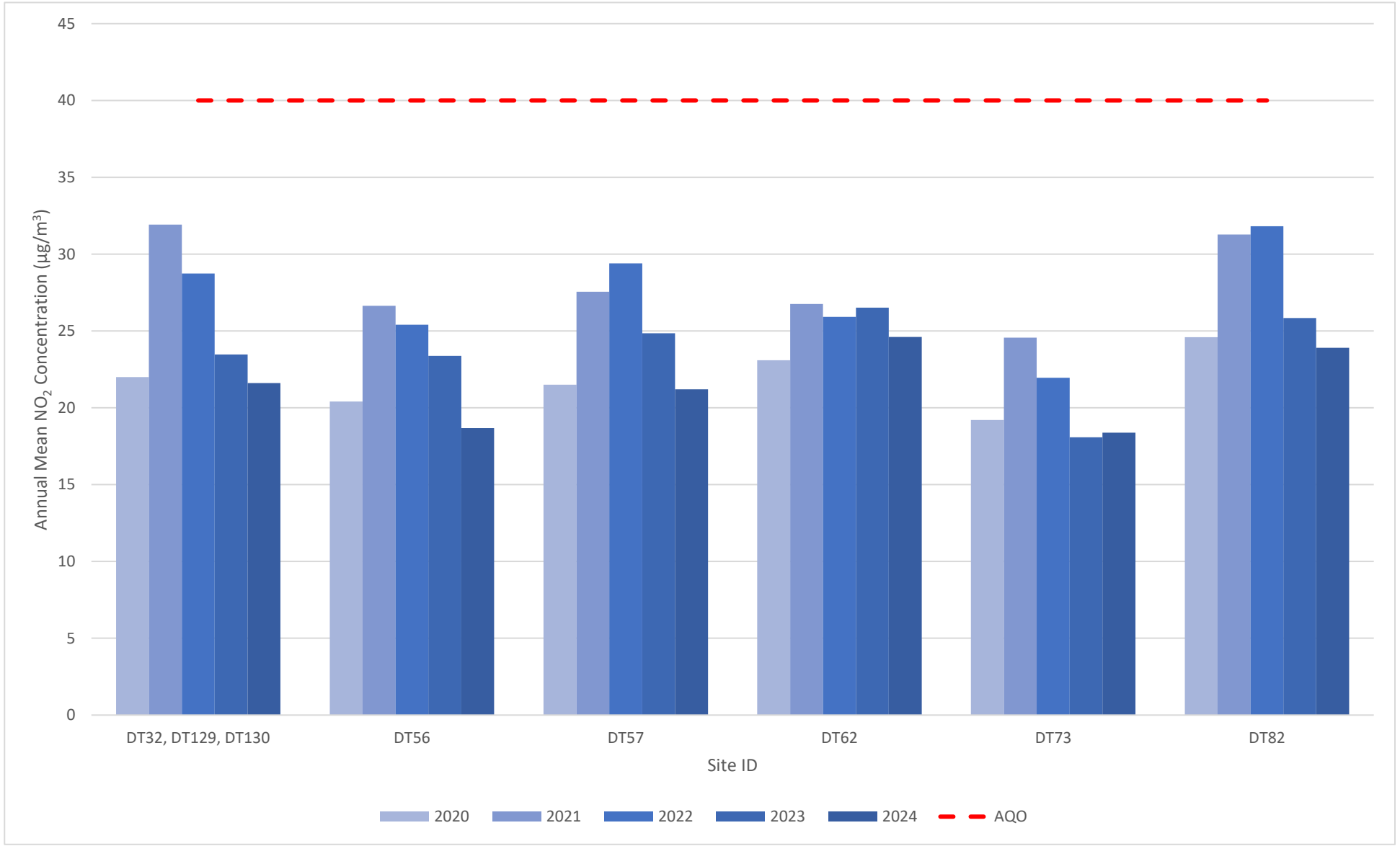


Figure A.11 – Trends in Annual Mean NO_2 Concentrations outside any AQMA (b)

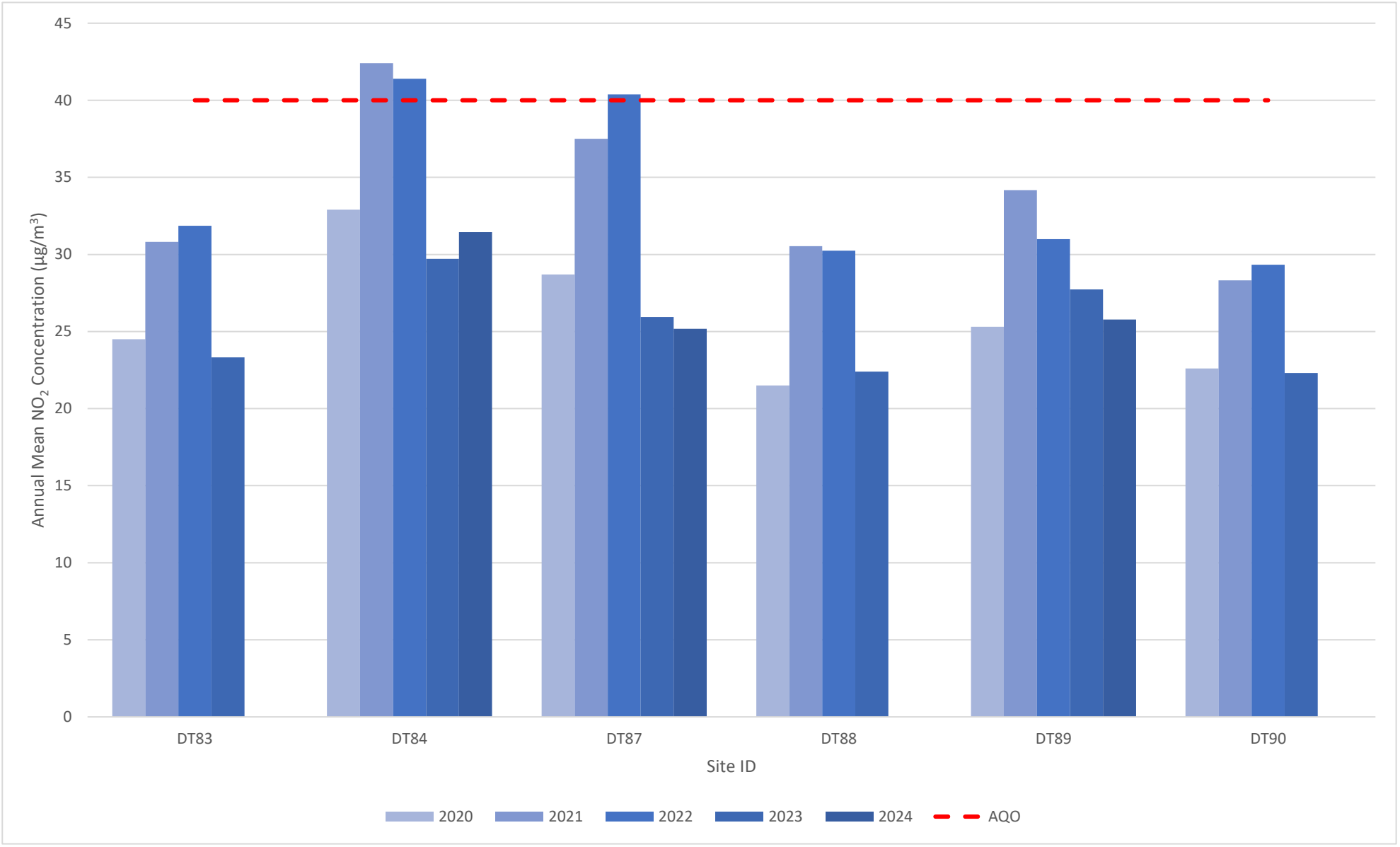


Figure A.12 – Trends in Annual Mean NO_2 Concentrations outside any AQMA (c)

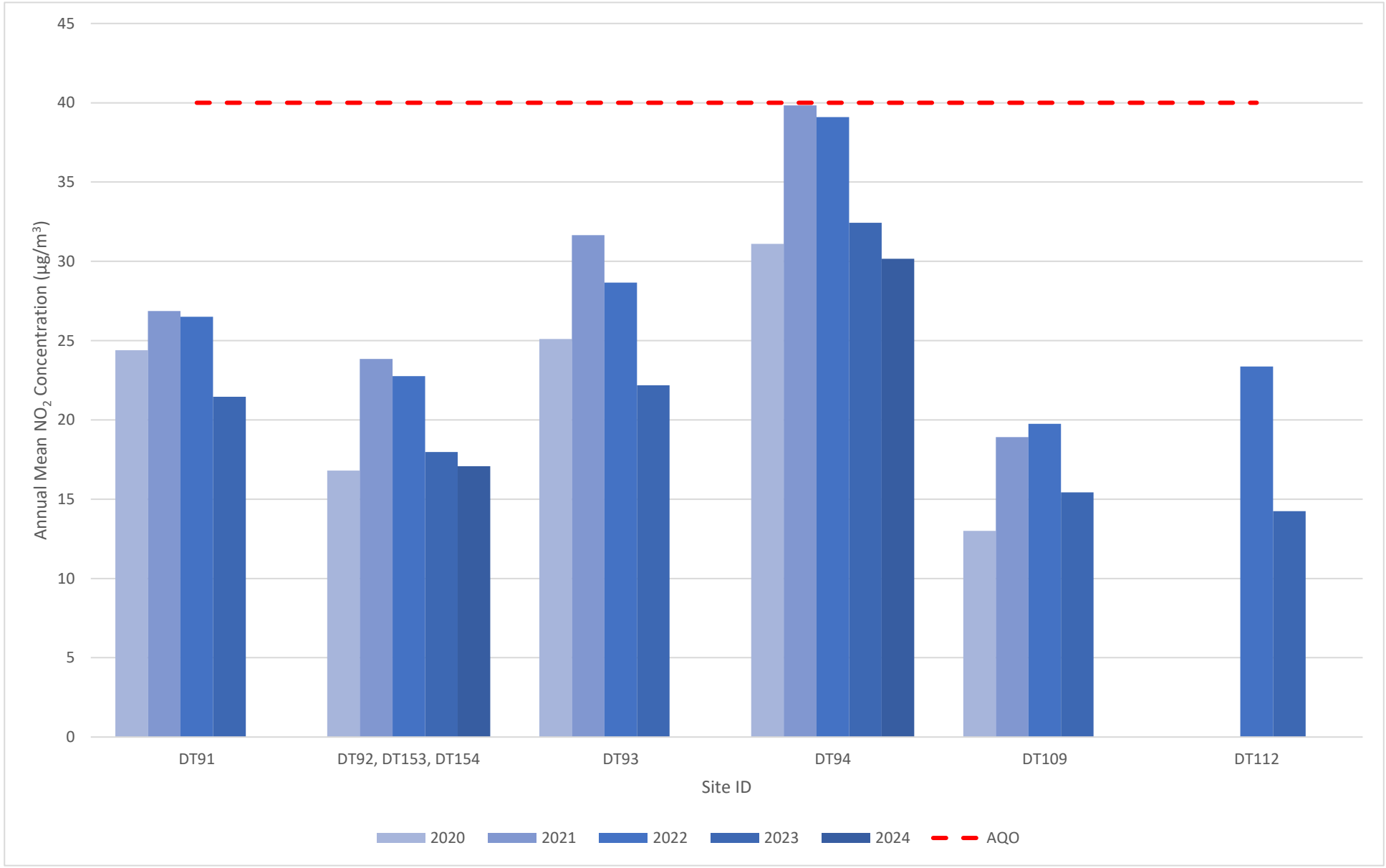


Figure A.13 – Trends in Annual Mean NO_2 Concentrations outside any AQMA (d)

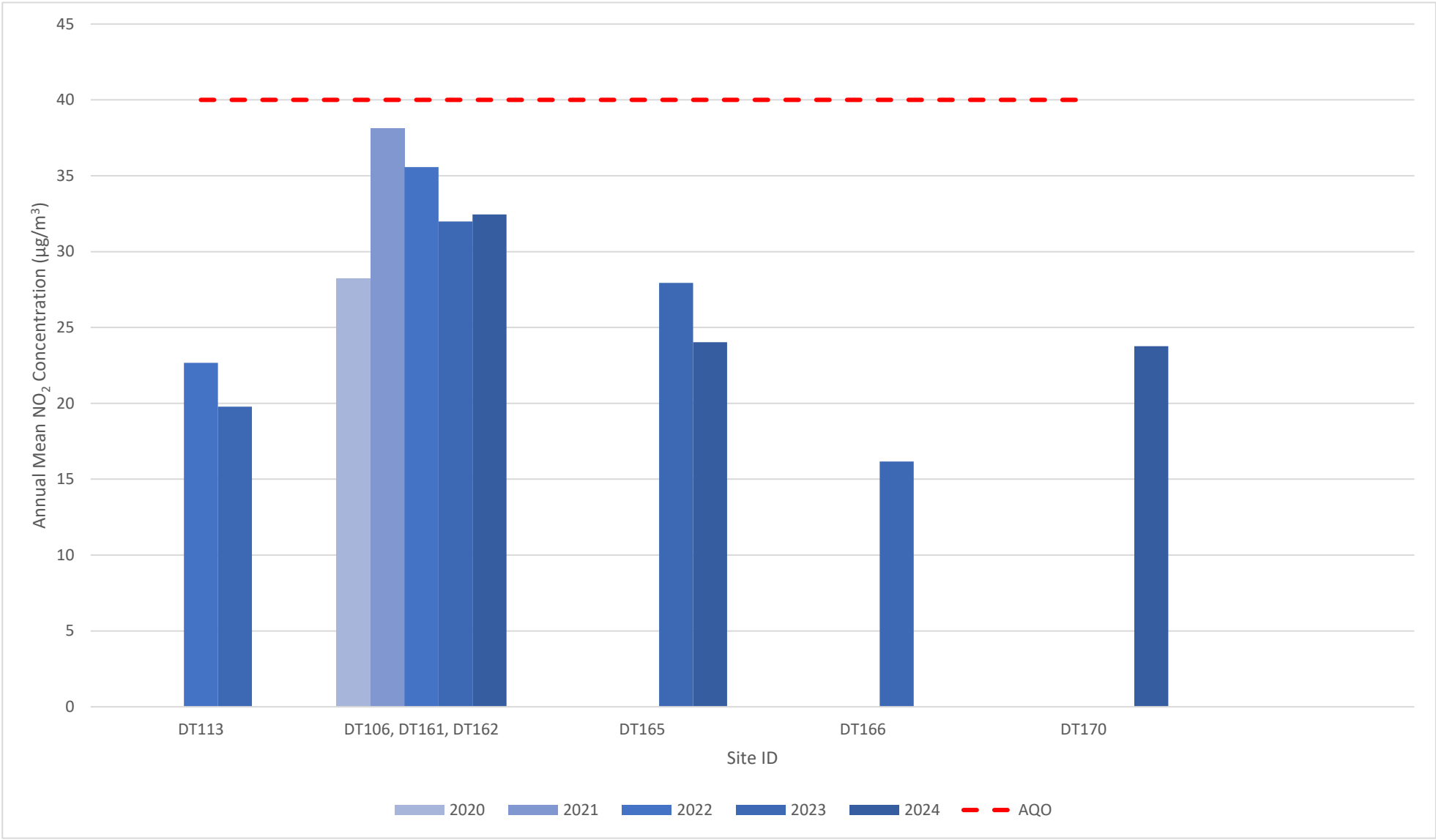


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

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
Newcastle Centre AURN	425029	564916	Urban Background	94.9	94.9	0	0	0	0	0
Cradlewell AURN	425992	333555	Roadside	94.1	94.1	0	0	0	0	0
Pilgrim street	424776	564861	Roadside	84.3	84.3	0	0	0	0	0 (91)
Percy Street	425124	564112	Roadside	99.9	99.9	0	0	0	0	1

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.14 – Trends in Number of NO_2 1-Hour Means > 200µg/m³

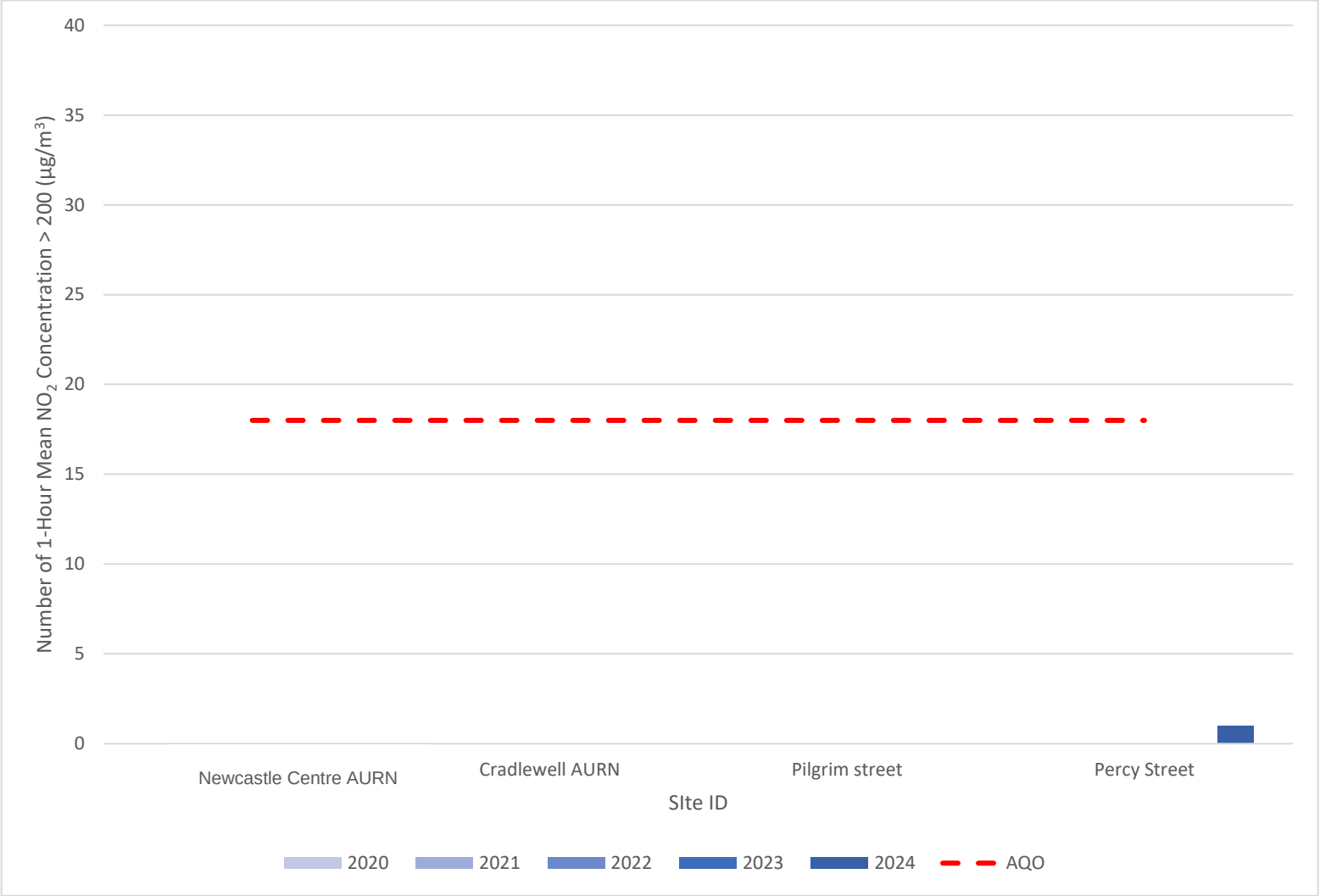


Table A.6 – Annual Mean PM_{10} Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
Newcastle Centre AURN	425029	564916	Urban Background	93.5	93.5	13.4	14.3	12.4	10.7	12.7
Cradlewell AURN	425992	333555	Roadside	90.8	90.8	13.8	12.9	12.8	13.2	13.0

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

Notes:

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

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

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

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

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

Figure A.15 – Trends in Annual Mean PM_{10} Concentrations

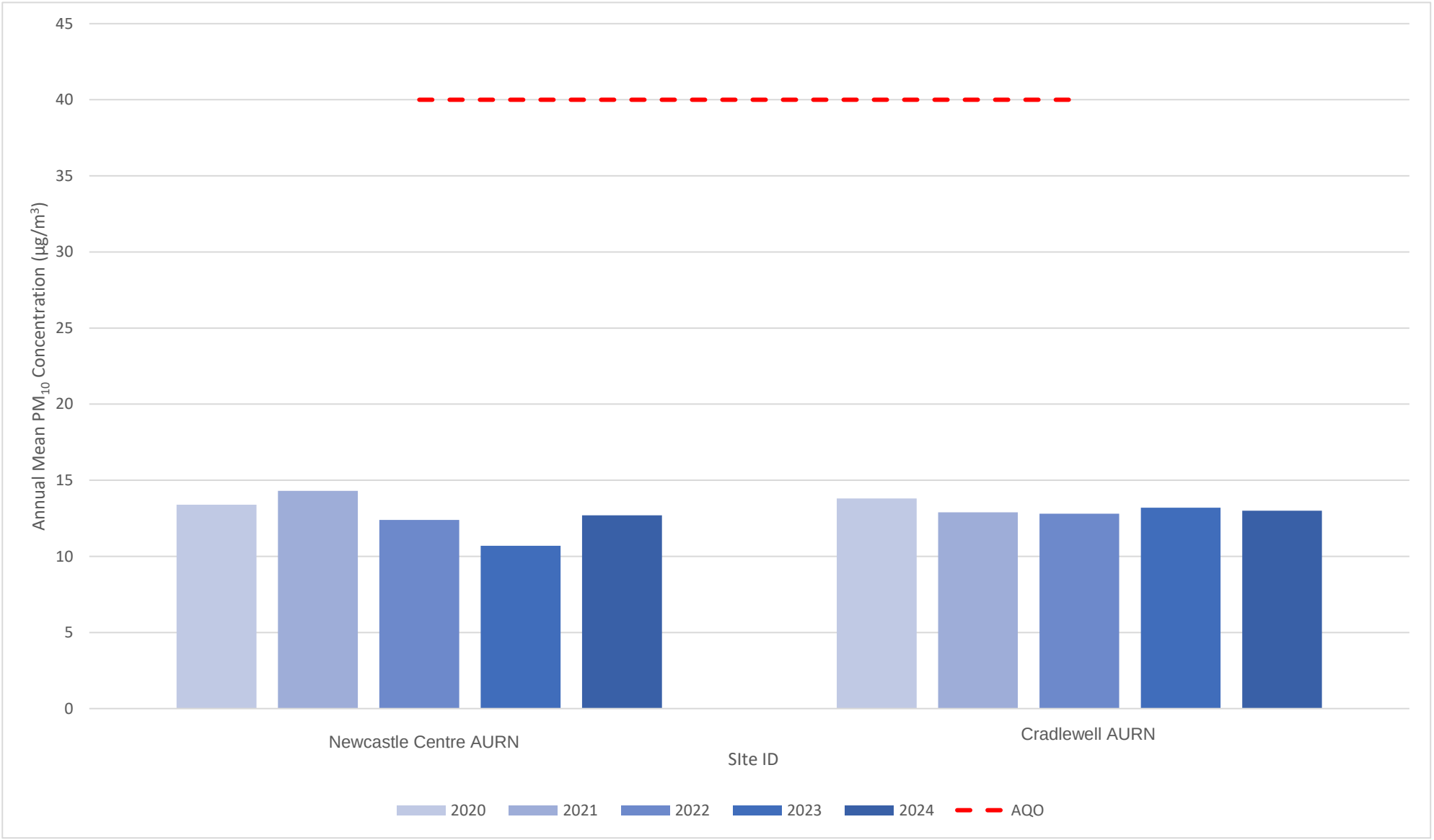


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
Newcastle Centre AURN	425029	564916	Urban Background	93.5	93.5	1	0	5	0	0
Cradlewell AURN	425992	333555	Roadside	90.8	90.8	0	0	3	0	0

Notes:

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

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

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

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

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

Figure A.16 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m^3

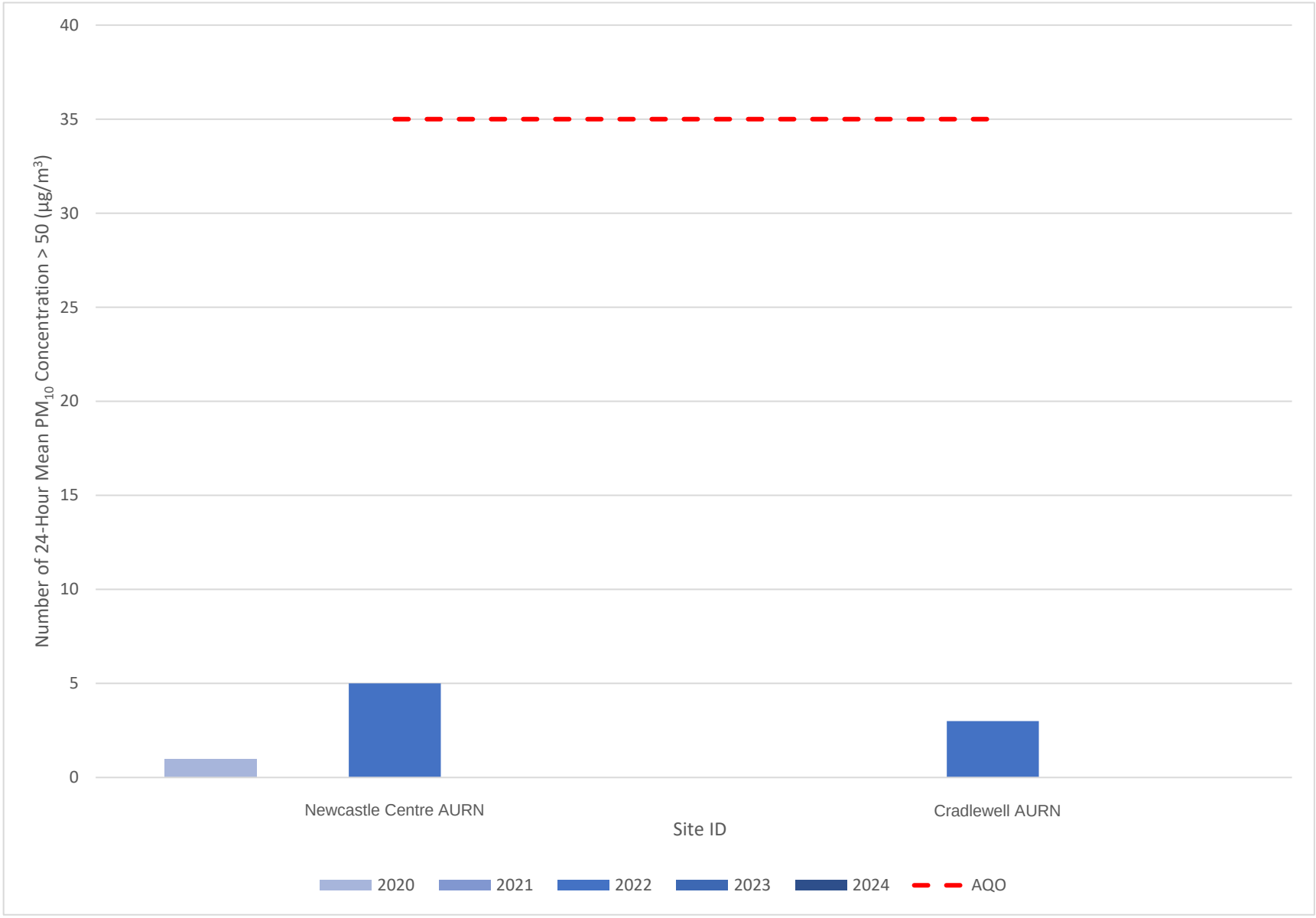


Table A.8 – Annual Mean $PM_{2.5}$ Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2024 (%) (2)	2020	2021	2022	2023	2024
Newcastle Centre AURN	425029	564916	Urban Background	92.6	92.6	5.5	7.1	6.5	6.3	7.2

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

Notes:

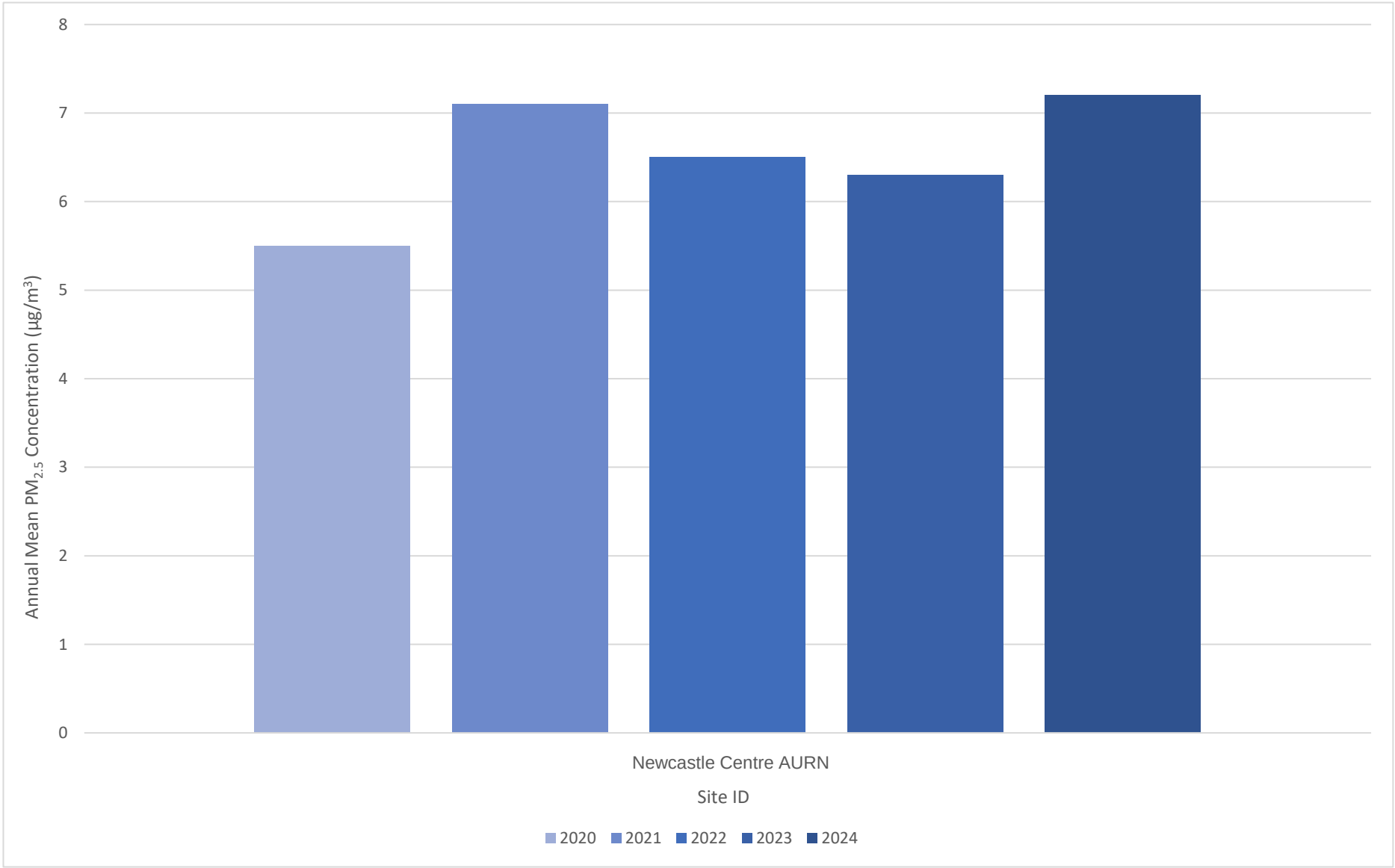
The annual mean concentrations are presented as $\mu g/m^3$.

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

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

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

Figure A.17 – Trends in Annual Mean $PM_{2.5}$ Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO_2 2024 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.80)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT2	425028	564917	25.5	28.3	26.8	20.4	19.2	15.1	13.2	20.0	19.7	27.8	32.5	21.9	-	-	-	Triplicate Site with DT2, DT3 and DT4 - Annual data provided for DT4 only
DT3	425028	564917	23.6	29.7	23.6	17.5	20.0	13.3	12.4	19.2	19.5	26.1	30.2	22.9	-	-	-	Triplicate Site with DT2, DT3 and DT4 - Annual data provided for DT4 only
DT4	425028	564917	18.6	27.1	22.6	15.8	18.4	15.0	13.0	15.3	19.6	27.7	28.1	14.8	21.2	17.0	-	Triplicate Site with DT2, DT3 and DT4 - Annual data provided for DT4 only
DT5	424948	564872	**45.3**	**53.1**	**47.4**	34.1	39.5	**42.2**	39.8	**48.4**	37.0	**54.0**	**59.0**	**45.2**	-	-	-	Triplicate Site with DT5, DT115 and DT116 - Annual data provided for DT116 only
DT6	425003	564713	38.4	36.3		26.0		26.1	30.3	28.0	31.0	32.9	**41.0**	35.0	32.5	26.0	-	
DT7	424933	564475	38.7	**44.3**	25.5	28.7	36.6	30.6	37.4	33.1	35.4	**43.0**	**41.2**	30.7	35.4	28.3	-	
DT8	424936	564333	**48.3**		**72.1**				**40.3**	**40.4**	**43.3**	**55.0**	**49.8**	**55.4**	**50.6**	38.5	-	
DT9	425056	564197	28.9	31.6	34.5	15.1	25.1	18.0	22.5	17.6	20.6	31.6	31.7	26.1	25.3	20.2	-	
DT10	425081	564166														-	-	
DT12	425072	564119		**47.9**	40.0	34.3		37.0	41.2	36.8	40.0	**52.8**	39.6	36.3	-	-	-	Triplicate Site with DT12, DT117 and DT118 - Annual data provided for DT118 only
DT13	424737	563933	37.0	48.1	49.6	35.1	36.3	36.8	32.9	38.6	26.3	**51.6**	**55.5**	31.3	39.9	31.9	-	
DT14	424303	563841	35.0	36.3		25.6	27.0				29.3	30.3		33.6	31.0	23.9	-	
DT16	424271	564103	29.4	31.5	35.5	24.5	27.3	19.5	20.7	20.5	19.2	13.0	32.8	15.7	24.1	19.3	-	
DT17	424439	564057	29.5		27.3	22.6		18.6	23.8	20.5		33.3	27.9	23.3	-	-	-	Triplicate Site with DT17, DT119 and DT120 - Annual data provided for DT120 only
DT18	424431	564394	28.7	29.0	32.5	27.6	29.3	23.4	27.8	22.0	30.5	29.4	35.8	32.8	-	-	-	Triplicate Site with DT18, DT121 and DT122 - Annual data provided for DT122 only
DT19	424586	564472	39.8	39.7	32.5	25.4	27.6	30.7	33.3	27.2		39.7	**43.0**	27.9	33.3	26.7	-	
DT20	424736	564172	**45.0**	**49.9**	**52.4**	39.4	**46.1**	38.5			**49.2**	**53.6**	34.9	20.3	**42.9**	34.3	-	
DT21	424793	564283	**41.9**	**49.3**	**42.1**	33.7	37.1	38.6		34.4		**45.7**	**45.4**	**40.6**	-	-	-	Triplicate Site with DT21, DT123 and DT124 - Annual data provided for DT124 only
DT23	424519	564765	23.3	35.9	29.3	23.3	26.0	23.1	18.6	24.6	24.8	32.9	29.7	30.2	-	-	-	Triplicate Site with DT23, DT125 and DT126 - Annual data provided for DT126 only
DT25	424336	564492	35.8	33.5	30.6	26.5	27.2		27.5	20.5	25.1	34.4	32.8	32.0	-	-	-	Triplicate Site with DT25, DT127 and DT128 - Annual data provided for DT128 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.80)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT26	424616	564561	**44.8**		**44.0**	**41.5**	38.5	36.4	37.1	31.3	36.9	38.0	14.9	**41.0**	36.8	29.4	-	
DT28	424725	564771	33.0	40.0	32.5	36.8	**42.7**	25.7	31.5	25.8	**43.0**	39.6	32.5	23.3	33.9	27.1	-	
DT29	424776	564864	**61.9**	**56.1**	**52.5**	**53.6**	**57.8**	**57.6**	**44.5**	**61.6**	**54.4**	**63.1**	**45.9**	**55.4**	-	-	-	Triplicate Site with DT29, DT30 and DT31 - Annual data provided for DT31 only
DT30	424776	564864	**57.7**	**65.5**	**55.6**	**51.5**	**52.8**	**50.4**	**44.7**	**66.1**	**58.2**	**55.4**	**62.3**	**44.2**	-	-	-	Triplicate Site with DT29, DT30 and DT31 - Annual data provided for DT31 only
DT31	424776	564864	**56.2**	**57.8**	**56.4**	**50.6**	35.4	**55.1**	**45.4**	**66.5**	**49.0**	**64.3**	**63.6**	**51.0**	**55.0**	**44.0**	25.7	Triplicate Site with DT29, DT30 and DT31 - Annual data provided for DT31 only
DT32	425821	564241	27.7	23.8	29.9	24.0	28.8	23.0	24.5		25.7		39.0	27.4	-	-	-	Triplicate Site with DT32, DT129 and DT130 - Annual data provided for DT130 only
DT34	425415	563908	34.8	33.0	35.9	26.4	**44.1**	28.1	26.6	20.3	30.3	31.6	38.7	31.1	-	-	-	Triplicate Site with DT34, DT131 and DT132 - Annual data provided for DT132 only
DT36	425092	563942	31.1	31.4	29.2	28.5	25.4	24.4	23.9	21.9	20.0	31.8	**40.9**	16.4	-	-	-	Triplicate Site with DT36, DT133 and DT134 - Annual data provided for DT134 only
DT37	425149	563811	30.6	26.8	33.3	26.7	35.3	25.3	21.0	19.4	29.0	30.4	35.7	32.7	28.9	23.1	-	
DT42	424624	566876	23.9	27.2	30.6	24.9	28.1	24.2	27.9	19.9		27.4	26.1		26.0	20.8	-	
DT43	424394	567634	33.8	**40.6**	28.8	34.1	36.4	30.1	34.8	27.7	37.2	32.4	**45.5**	33.2	34.6	27.6	-	
DT44	424400	567833	32.1	34.1	36.5	30.2	34.9	20.1	24.9	12.0	34.1	32.2	33.8	23.1	29.0	23.2	-	
DT45	424412	568082	**40.5**	**49.7**	39.8	37.6	31.4	34.4	32.9	38.0	20.0	**48.1**	38.8	**40.0**	37.6	30.1	-	
DT50	425499	568111	**43.6**	38.9	36.1	38.0	33.7	30.2	31.9	25.2	33.5	**40.1**	**43.0**	31.7	35.5	28.4	-	
DT53	425425	565360	34.2	33.4	37.2	28.6	37.3	22.5	18.3	9.5	29.9	32.0	32.4	23.3	-	-	-	Triplicate Site with DT53, DT135 and DT136 - Annual data provided for DT136 only
DT54	425732	565371	**44.1**	37.3	32.9	27.1	38.7	20.8	29.6	27.7	38.5	**41.7**	35.4	32.9	-	-	-	Triplicate Site with DT54, DT137 and DT138 - Annual data provided for DT138 only
DT56	427236	564896	26.7	28.7	25.8	23.9	15.6	21.1	24.1	14.1	24.1	28.6	29.6	17.8	23.3	18.7	-	
DT57	426837	564775	28.0	31.9	29.9	22.1	24.9	23.8	24.0	23.8	21.5	33.1	31.9	23.1	26.5	21.2	-	
DT62	419449	565149	32.8	32.4	37.1	29.9	35.7		25.5	20.7	38.7		28.0	26.8	30.8	24.6	-	
DT63 (249 in 2015)	424550	563900	39.5	37.4	39.5	36.0	32.7	30.6	35.5		**40.2**	**43.2**	**44.8**	31.1	37.3	29.9	-	
DT64	424826	564451	31.8	34.4	30.6	26.0		23.9	26.6	25.4		36.9	15.2	33.4	-	-	-	Triplicate Site with DT64, DT139 and DT140 - Annual data provided for DT140 only
DT65	424666	564465	**53.1**												-	-	-	An accurate annualised and bias adjusted mean cannot be calculated as site only obtained 1 month of data.
DT73	420384	566927	27.5	27.2	29.6	18.7	22.4	15.1	18.5	19.0	18.9	31.2	27.4	20.3	23.0	18.4	-	

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DT76	425185	563987	**47.4**	16.6	42.9	38.1	38.0	36.3		**40.2**	30.8			**43.4**	-	-	-	Triplicate Site with DT76, DT141 and DT142 - Annual data provided for DT142 only
DT77	425277	563834		39.7	33.9	27.9			31.9	31.4	32.1		**52.1**	38.3	-	-	-	Triplicate Site with DT77, DT143 and DT144 - Annual data provided for DT144 only
DT78	425294	563844		32.5	**40.5**	26.6	29.7		25.5	20.0	19.5	30.7	32.4	25.2	-	-	-	Triplicate Site with DT78, DT145 and DT146 - Annual data provided for DT146 only
DT79	425199	564002	**41.3**	**41.6**	**46.3**	32.9	32.8	26.6	31.5	30.2	33.7	36.9	41.7	28.1	-	-	-	Triplicate Site with DT79, DT147 and DT148 - Annual data provided for DT148 only
DT80	425286	564422	**46.9**	**41.3**	38.4	33.6	34.8	29.0	23.8	35.7	34.5	**77.9**	36.6	39.3	39.3	31.5	-	
DT81	426546	566260	**95.6**	**84.2**	**83.8**	**84.7**	**84.0**	**79.5**	**87.3**		**86.5**	**40.0**	**82.9**	**78.6**	**80.6**	**64.5**	35.8	
DT82	427444	566674	35.4	37.1	32.4	24.7	27.8	25.4	30.1		21.2	29.8	**40.5**	24.3	29.9	23.9	-	
DT84	428141	566885	**41.6**	**45.2**	**44.2**	36.7	37.4	35.5	34.9	**65.1**	**40.0**	**45.1**	26.4	19.6	39.3	31.4	-	
DT85	424225	563769	39.2	30.2	**42.7**	34.6	40.9		34.3	27.2	**45.8**	39.5	35.4	29.4	-	-	-	Triplicate Site with DT85, DT149 and DT150 - Annual data provided for DT150 only
DT86	424252	564014	28.4	30.6	32.8	22.5	28.6	19.3	24.3	19.4	22.2	27.7	31.0	18.1	-	-	-	Triplicate Site with DT86, DT151 and DT152 - Annual data provided for DT152 only
DT87	422087	566233	**40.1**	**40.7**	34.9	29.3	26.4	29.2	27.1	30.5	28.4	31.6	37.4	22.0	31.5	25.2	-	
DT89	420400	565339	**41.7**	30.7	**40.3**	29.6	35.9	26.7	27.6	20.9	33.4	37.2	33.5	29.1	32.2	25.8	-	
DT92	422610	563272	30.0	25.4	22.4	19.3	20.7	16.4	15.6	16.4	20.7	27.0	30.8	20.6	-	-	-	Triplicate Site with DT92, DT153 and DT154 - Annual data provided for DT154 only
DT94	424457	563984	20.1	39.2	28.0	37.1		34.1	**40.1**	36.1	**42.5**	**54.7**	**51.0**	31.9	37.7	30.2	-	
DT95	424445	563901	34.7	39.1	**41.9**		36.4	27.7	28.1	23.2	36.3	**40.2**		7.5	-	-	-	Triplicate Site with DT95, DT155 and DT156 - Annual data provided for DT156 only
DT102	425106	564466	**45.8**	**48.2**	**49.6**	31.7	**42.2**	39.7	**41.9**	38.4	36.1	**48.0**	**74.0**	**49.8**	**45.5**	36.4	-	
DT103	425086	564405													-	-	-	Triplicate Site with DT103, DT157 and DT158 - Annual data provided for DT158 only
DT105	424874	563991	22.7	33.2	**43.4**	29.5	40.0		34.8	30.1	26.2	**41.9**	**41.7**		-	-	-	Triplicate Site with DT105, DT159 and DT160 - Annual data provided for DT160 only
DT106	424862	563996		36.6		**41.5**		35.9	38.1	32.1	**45.4**	**44.7**	**41.6**	28.5	-	-	-	Triplicate Site with DT106, DT161 and DT162 - Annual data provided for DT162 only
DT111	424514	563919	35.5	31.9	35.1	27.7	29.6	21.9	22.1	18.4	29.2	28.1	33.4	29.6	-	-	-	Triplicate Site with DT111, DT163 and DT164 - Annual data provided for DT164 only
DT115	424948	564872	38.2	**58.5**	**48.5**	39.3	39.8	38.4	29.9		39.4	**49.6**	**54.9**	**43.2**	-	-	-	Triplicate Site with DT5, DT115 and DT116 - Annual data provided for DT116 only
DT116	424948	564872	**50.4**	**53.5**	**49.1**	38.7		**46.2**	**44.7**		37.4	**48.0**	**54.0**	**48.9**	**45.3**	36.3	-	Triplicate Site with DT5, DT115 and DT116 - Annual data provided for DT116 only

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DT117	425072	564119		**45.8**	**47.8**	**43.5**	**45.9**	35.1	37.7	37.9	36.1	**42.1**	**46.1**		-	**-**	-	Triplicate Site with DT12, DT117 and DT118 - Annual data provided for DT118 only
DT118	425072	564119	**41.5**	**40.2**	**54.2**	**42.4**	**46.1**		35.2	38.1	36.0	**49.2**		39.2	**41.4**	33.1	-	Triplicate Site with DT12, DT117 and DT118 - Annual data provided for DT118 only
DT119	424439	564057	29.2	26.7	25.8	23.0	23.8	19.0	21.8	20.9	18.7	35.1	30.5	25.8	-	**-**	-	Triplicate Site with DT17, DT119 and DT120 - Annual data provided for DT120 only
DT120	424439	564057	28.1	30.1	16.5	21.7		17.3	22.4	20.4		34.6	31.9	21.9	24.6	19.7	-	Triplicate Site with DT17, DT119 and DT120 - Annual data provided for DT120 only
DT121	424431	564394	35.1	24.7	34.8	29.9	25.6	23.5	25.2	23.7	32.5	31.4	35.3	24.8	-	**-**	-	Triplicate Site with DT18, DT121 and DT122 - Annual data provided for DT122 only
DT122	424431	564394	30.9	5.8	31.5		29.9	18.0	26.9	20.7	22.5	28.6	34.2	26.2	27.8	22.2	-	Triplicate Site with DT18, DT121 and DT122 - Annual data provided for DT122 only
DT123	424793	564283	27.2	**47.9**	**45.3**	35.5	35.5		19.0	37.8		**44.9**	23.0	36.3	-	**-**	-	Triplicate Site with DT21, DT123 and DT124 - Annual data provided for DT124 only
DT124	424793	564283	**43.1**	12.9	36.3	37.5	36.5		31.6	34.0	35.4	**52.5**	**49.1**	33.0	37.1	29.7	-	Triplicate Site with DT21, DT123 and DT124 - Annual data provided for DT124 only
DT125	424519	564765	28.3	31.3	30.8	22.6	24.1	22.9	19.7	24.0	22.0	33.0	30.9	26.7	-	**-**	-	Triplicate Site with DT23, DT125 and DT126 - Annual data provided for DT126 only
DT126	424519	564765	29.2	35.1	28.3	22.1	26.9	21.3	21.1	22.9	25.3		30.6	23.9	26.6	21.3	-	Triplicate Site with DT23, DT125 and DT126 - Annual data provided for DT126 only
DT127	424336	564492	25.7	36.1	29.7	31.3	25.3	25.2	27.5	20.3	28.5	29.2	**41.3**	30.3	-	**-**	-	Triplicate Site with DT25, DT127 and DT128 - Annual data provided for DT128 only
DT128	424336	564492	35.7	35.5	16.9	25.1	30.0	26.4	26.1	21.8	33.9	33.7	34.5	34.7	29.3	23.5	-	Triplicate Site with DT25, DT127 and DT128 - Annual data provided for DT128 only
DT129	425821	564241	35.7	30.1	30.8	24.7	27.3	20.3	24.3		16.0	32.5	36.2	24.7	-	**-**	-	Triplicate Site with DT32, DT129 and DT130 - Annual data provided for DT130 only
DT130	425821	564241	39.6	29.7	30.4	25.0	29.3	22.6	23.8	14.8	27.5		34.0	24.5	27.0	21.6	-	Triplicate Site with DT32, DT129 and DT130 - Annual data provided for DT130 only
DT131	425415	563908	34.7		30.9	24.5	30.8	25.3	27.0		24.1	34.0	35.1	30.6	-	**-**	-	Triplicate Site with DT34, DT131 and DT132 - Annual data provided for DT132 only
DT132	425415	563908	19.0	30.4	29.3	27.4	33.6	26.4		20.9	32.3	33.8	33.2	13.3	29.4	23.5	-	Triplicate Site with DT34, DT131 and DT132 - Annual data provided for DT132 only
DT133	425092	563942	39.2	31.1	33.9	26.6	25.9	21.7	23.8	21.3	23.8	32.2	38.3	29.6	-	**-**	-	Triplicate Site with DT36, DT133 and DT134 - Annual data provided for DT134 only
DT134	425092	563942	36.5	31.7	32.6	25.7	25.6	21.3	22.4		25.9	33.1	**42.0**	32.7	28.4	22.7	-	Triplicate Site with DT36, DT133 and DT134 - Annual data provided for DT134 only

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DT135	425425	565360	30.7	30.5	36.3	29.3	33.5	21.6	25.2	17.3	31.8	30.1	34.5	27.5	-	-	-	Triplicate Site with DT53, DT135 and DT136 - Annual data provided for DT136 only
DT136	425425	565360	34.1	32.9	36.7	30.8	35.2	23.8	25.8	18.1	30.9	31.7	31.0	29.8	29.1	23.3	-	Triplicate Site with DT53, DT135 and DT136 - Annual data provided for DT136 only
DT137	425732	565371	37.1	**40.7**	38.4	29.4		31.6	36.4	31.2	36.2	**41.9**	**40.4**	28.0	-	-	-	Triplicate Site with DT54, DT137 and DT138 - Annual data provided for DT138 only
DT138	425732	565371	39.1	**45.2**	**40.2**	32.2	36.9		31.9	29.6	**42.1**	36.1	37.7	25.2	35.0	28.0	-	Triplicate Site with DT54, DT137 and DT138 - Annual data provided for DT138 only
DT139	424826	564451	34.3	32.1	29.3	25.5		24.5	17.8	23.4		32.2	35.9	24.3	-	-	-	Triplicate Site with DT64, DT139 and DT140 - Annual data provided for DT140 only
DT140	424826	564451	35.8	30.5	27.1			23.8	28.4	28.9		30.7	38.4	18.3	28.4	22.7	-	Triplicate Site with DT64, DT139 and DT140 - Annual data provided for DT140 only
DT141	425185	563987	**41.4**	22.3	38.9		38.1		31.0	**42.0**	36.5				-	-	-	Triplicate Site with DT76, DT141 and DT142 - Annual data provided for DT142 only
DT142	425185	563987	**51.9**	**49.3**		34.3	34.6		28.1	**42.5**	35.9				37.6	30.0	-	Triplicate Site with DT76, DT141 and DT142 - Annual data provided for DT142 only
DT143	425277	563834		**43.7**	19.7	26.7		37.2	24.0	34.0	26.7	25.6		33.2	-	-	-	Triplicate Site with DT77, DT143 and DT144 - Annual data provided for DT144 only
DT144	425277	563834		**46.5**	31.3	24.9	36.5	34.9	32.4	32.0	31.6	**42.3**	**45.8**	**47.0**	35.0	28.0	-	Triplicate Site with DT77, DT143 and DT144 - Annual data provided for DT144 only
DT145	425294	563844		33.9	13.8	26.7	26.2	22.9	23.4		22.1	31.3	32.2	26.6	-	-	-	Triplicate Site with DT78, DT145 and DT146 - Annual data provided for DT146 only
DT146	425294	563844		31.7	39.6	27.9	28.1	22.5	25.4	19.2	27.3	32.2	31.9	28.9	27.2	21.8	-	Triplicate Site with DT78, DT145 and DT146 - Annual data provided for DT146 only
DT147	425199	564002	**41.2**	**44.8**	**45.5**	29.4	32.6	28.1	28.3	29.9	29.2	29.5	34.6	36.1	-	-	-	Triplicate Site with DT79, DT147 and DT148 - Annual data provided for DT148 only
DT148	425199	564002	**41.2**	39.4	**46.8**		31.3	26.1	30.7	28.6	33.6	35.2	33.3	33.9	34.6	27.6	-	Triplicate Site with DT79, DT147 and DT148 - Annual data provided for DT148 only
DT149	424225	563769	36.9	34.5	39.8	33.4	39.7		34.5	24.8	**45.7**	39.5	37.8	20.3	-	-	-	Triplicate Site with DT85, DT149 and DT150 - Annual data provided for DT150 only
DT150	424225	563769	32.0	27.2	39.4	35.2	37.6	27.3	35.0	27.5	38.8	**41.2**	36.0	24.7	34.5	27.6	-	Triplicate Site with DT85, DT149 and DT150 - Annual data provided for DT150 only
DT151	424252	564014	26.4	30.3	34.5	29.1	28.8	29.3	21.5	20.1	24.3	36.5	31.8	20.6	-	-	-	Triplicate Site with DT86, DT151 and DT152 - Annual data provided for DT152 only
DT152	424252	564014	28.1	30.4	34.5	24.4	29.0	19.7	23.5	19.4	28.4	33.4	30.5	24.0	26.8	21.4	-	Triplicate Site with DT86, DT151 and DT152 - Annual data provided for DT152 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.80)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT153	422610	563272	31.1	20.5	25.3	17.3	20.3	17.6	15.9	16.1	20.7	21.2	26.6	17.2	-	-	-	Triplicate Site with DT92, DT153 and DT154 - Annual data provided for DT154 only
DT154	422610	563272	25.9	25.0	17.9	17.3	19.7	15.2	17.4		23.4	23.7	30.7	21.2	21.4	17.1	-	Triplicate Site with DT92, DT153 and DT154 - Annual data provided for DT154 only
DT155	424445	563901	27.1	**40.6**	**40.7**	28.1	39.2	26.6	30.3	30.2	35.6	**45.8**		31.7	-	-	-	Triplicate Site with DT95, DT155 and DT156 - Annual data provided for DT156 only
DT156	424445	563901	37.9			31.4		26.3	30.1	29.1	20.5	**46.1**		32.3	33.1	26.5	-	Triplicate Site with DT95, DT155 and DT156 - Annual data provided for DT156 only
DT157	425086	564405													-	-	-	Triplicate Site with DT103, DT157 and DT158 - Annual data provided for DT158 only
DT158	425086	564405														-	-	Triplicate Site with DT103, DT157 and DT158 - Annual data provided for DT158 only
DT159	424874	563991		36.4	42.3	32.5	38.7			30.2	32.8	39.2	34.7	37.4	-	-	-	Triplicate Site with DT105, DT159 and DT160 - Annual data provided for DT160 only
DT160	424874	563991	37.2	39.3	39.2	29.3	36.5	32.5	36.7	36.3	38.1	**46.7**	35.3	17.5	34.7	27.8	-	Triplicate Site with DT105, DT159 and DT160 - Annual data provided for DT160 only
DT161	424862	563996	38.6	**42.0**		37.5	**42.2**	36.0	39.4	37.9	**49.7**	**50.8**	**49.5**	**42.6**	-	-	-	Triplicate Site with DT106, DT161 and DT162 - Annual data provided for DT162 only
DT162	424862	563996	**46.4**	**43.6**		**41.3**		38.0		27.8	**44.9**	34.5	**48.3**	37.2	40.6	32.4	-	Triplicate Site with DT106, DT161 and DT162 - Annual data provided for DT162 only
DT163	424514	563919	31.2	34.1	36.6	28.4	28.8	19.3	26.0	20.7	23.7	34.2	32.4	28.6	-	-	-	Triplicate Site with DT111, DT163 and DT164 - Annual data provided for DT164 only
DT164	424514	563919	32.5	28.1	35.5	28.1	31.1	22.4	22.2	38.2	19.4	32.5	12.0	29.1	28.3	22.6	-	Triplicate Site with DT111, DT163 and DT164 - Annual data provided for DT164 only
DT165	425364	565632	**41.6**	35.5				24.1		22.6			**42.6**	24.5	31.8	24.0	-	
DT167	424340	564482	27.9	28.3	26.9		29.4	8.8	21.8	17.9		34.1	30.3	30.7	-	-	-	Triplicate Site with DT167, DT168 and DT169 - Annual data provided for DT169 only
DT168	424340	564482	29.0	30.3	28.4		20.7	20.5	18.8	17.9	23.2	33.9	29.7	26.3	-	-	-	Triplicate Site with DT167, DT168 and DT169 - Annual data provided for DT169 only
DT169	424340	564482	30.8	21.5	25.9		24.7	20.7	21.3	17.3	25.4	34.2	28.2	30.0	25.4	20.3	-	Triplicate Site with DT167, DT168 and DT169 - Annual data provided for DT169 only
DT170	422813	564455	38.6		32.8	26.3	30.6	30.5	28.9	27.3	25.1	38.3	26.9	21.4	29.7	23.8	-	
DT171	425461	567771	29.8	37.1	24.9	24.3	24.0	18.5	20.9	18.8	22.8	29.8	32.4	20.8	25.3	20.3	-	

☒ **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.**

☒ **NCC 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 City Council During 2024

Newcastle has not identified any new sources relating to air quality within the reporting year of 2024. However, there are a number of housing developments undergoing construction, particularly to the west of the city. These will increase the number of cars on the roads, therefore, increasing emissions.

Additional Air Quality Works Undertaken Newcastle City Council During 2024

Newcastle has not completed any additional works within the reporting year of 2024. However, Newcastle City Council is planning to review the AQMAs and develop an updated AQAP, however, the effectiveness of the CAZ needs to be assessed first so that CAZ measures and AQAP align.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes are supplied and analysed by Socotec Didcot using the 50% triethanolamine (TEA) in acetone method. Socotec Didcot participates in the Annual Field Inter-Comparison Exercise and the laboratory also participates in DEFRA's AIR (previously WASP) NO_2 Proficiency Testing (PT) Scheme. The Socotec Didcot laboratory follows the procedures set out in the Harmonisation Practical Guidance and is UKAS accredited.

In 2024, Socotec Didcot performed as follows in the AIR PT rounds: https://laqm.defra.gov.uk/wp-content/uploads/2021/02/AIR-PT-Rounds-50-to-63-June-2022-to-June-2024.pdf):

AR050 (May – June 2022): 100%
AR052 (July – August 2022): 100%
AR053 (September – October 2022): 100%
AR055 (January – February 2023): 100%
AR056 (May – June 2023): 100%

AR058 (July – August 2023): 100%

AR059 (September – October 2023): 100%

AR062 (January – February 2024): 100%

AR063 (April -June 2024): 100%

The diffusion tubes have been deployed in line with the DEFRA diffusion tube calendar in 2024.

Diffusion Tube Annualisation

Three diffusion tube sites recorded <75% data capture in 2024, thus requiring annualisation of the results. All sites had a data capture of >25%. The data were annualised by comparison to three regional background automatic monitoring stations operated as part of the DEFRA Automatic Urban and Rural Network (AURN) as per Boxes 7 – 9 and 7-10 in the Technical Guidance LAQM.TG22. These sites all had sufficient data capture (>85%), and are listed below:

Newcastle Centre

Sunderland Silkworth

Hartlepool St Abbs Walk

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

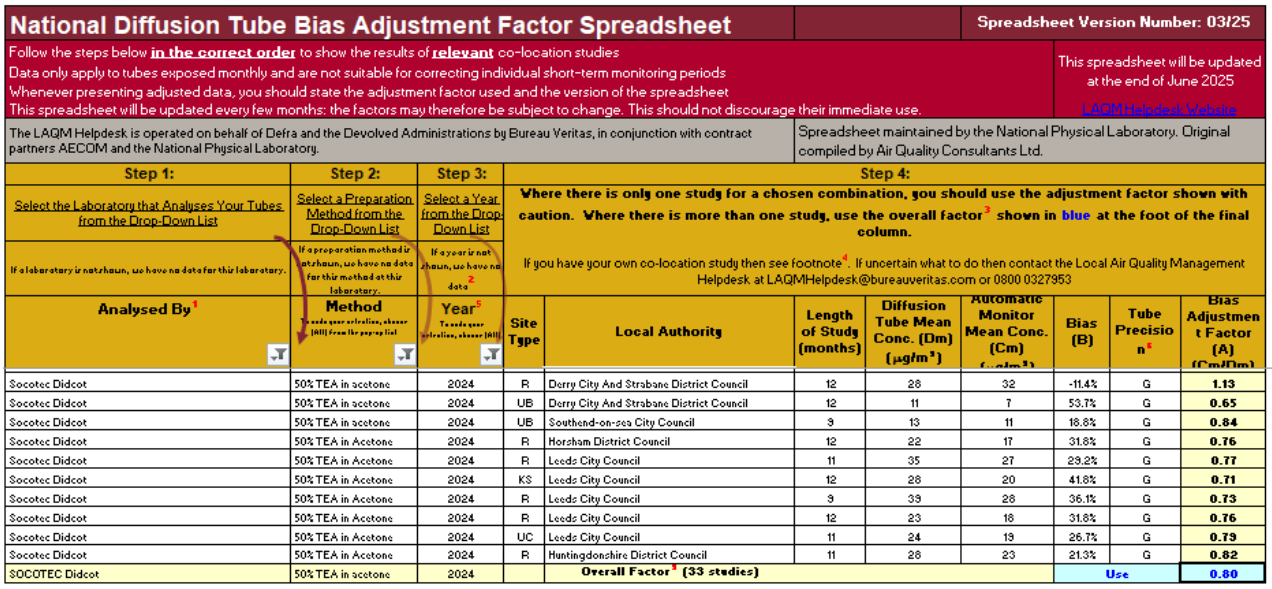
Site ID	Annualisation Factor Newcastle Centre AURN	Annualisation Factor Sunderland Silkworth	Annualisation Factor Hartlepool St Abbs Walk	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
DT8	0.9638	0.9830	0.9101	0.9523	50.6	48.2
DT14	0.9534	0.9760	0.9621	0.9638	31.0	29.9
DT165	0.9471	0.9816	0.9030	0.9439	31.8	30.0

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.

NCC have applied a national bias adjustment factor of 0.80 to the 2024 monitoring data as the national bias adjustment factor is more conservative than the local bias adjustment factor of 0.77. There is also uncertainty in the calculation of the local bias factor, as outlier concentrations were recorded during the co-location. This is another reason for using the national bias adjustment factor in preference to the local bias factor this year. A summary of bias adjustment factors used by NCC over the past five years is presented in Table C.2.



National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/25

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2025

LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data [2]

Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor [3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote [4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By [1]	Method	Year [5]	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision [6]	Bias Adjustment Factor (A) (Cm/Dm)
Socotec Didcot	50% TEA in acetone	2024	R	Derry City And Strabane District Council	12	28	32	-11.4%	G	**1.13**
Socotec Didcot	50% TEA in acetone	2024	UB	Derry City And Strabane District Council	12	11	7	53.7%	G	**0.65**
Socotec Didcot	50% TEA in acetone	2024	UB	Southend-on-sea City Council	9	13	11	18.8%	G	**0.84**
Socotec Didcot	50% TEA in Acetone	2024	R	Horsham District Council	12	22	17	31.8%	G	**0.76**
Socotec Didcot	50% TEA in Acetone	2024	R	Leeds City Council	11	35	27	29.2%	G	**0.77**
Socotec Didcot	50% TEA in Acetone	2024	KS	Leeds City Council	12	28	20	41.6%	G	**0.71**
Socotec Didcot	50% TEA in Acetone	2024	R	Leeds City Council	9	39	28	36.1%	G	**0.73**
Socotec Didcot	50% TEA in Acetone	2024	R	Leeds City Council	12	23	18	31.8%	G	**0.76**
Socotec Didcot	50% TEA in Acetone	2024	UC	Leeds City Council	11	24	19	26.7%	G	**0.79**
Socotec Didcot	50% TEA in Acetone	2024	R	Huntingdonshire District Council	11	28	23	21.3%	G	**0.82**
SOCOTEC Didcot	50% TEA in acetone	2024		**Overall Factor [3] (33 studies)**				Use		**0.80**

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	National	03/25	0.80
2023	Local	-	0.79
2022	Local	-	0.87
2021	Local	-	0.89
2020	National	03/21	0.77

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2
Periods used to calculate bias	10	11
Bias Factor A	0.8 (0.75 - 0.86)	0.74 (0.69 - 0.79)
Bias Factor B	25% (17% - 33%)	35% (26% - 44%)

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2
Diffusion Tube Mean (µg/m^3)	21.2	55.8
Mean CV (Precision)	6.7%	7.6%
Automatic Mean (µg/m^3)	17.0	41.4
Data Capture	93%	98%
Adjusted Tube Mean (µg/m^3)	17 (16 - 18)	41 (38 - 44)

Notes:

A combined local bias adjustment factor of 0.77 was calculated but was not used to bias adjust the 2024 diffusion tube results.

NO_2 Fall-off with Distance from the Road

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

In the monitoring year of 2024, three monitoring locations in Newcastle required fall-off-with-distance calculations, as follows:

DT29, DT30 and DT31 ((Percy Street)

DT81 (Stephenson Road)

DT102 (John Dobson Street)

Table C.4 – Non-Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
DT29, DT30, DT31	1.0	26.0	44.0	16.1	25.7	*Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.*
DT81	1.0	16.0	64.5	13.1	35.8	

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
DT102	1.0		36.4	16.9	-	*No distance corrected concentration provided as distance to relevant exposure not applicable*

QA/QC of Automatic Monitoring

NCC is the Local Site Operator (LSO) for the AURN monitoring sites (Newcastle Centre and Newcastle Cradlewell) and has adopted DEFRA's quality control procedures. Officers have been trained by DEFRA in the operation and maintenance of the AURN air quality monitoring equipment and they adhere to AEA Technology's Site Operator's Manual for the AURN. The AURNs are calibrated monthly by LSOs and serviced at six monthly intervals by Matts Monitors. Data from the AURNs are quality controlled and ratified by Bureau Veritas. The rest of the continuous monitoring sites (Percy Street and Pilgrim Street) are operated by the NCC and are serviced and maintained by Air Quality Management ADQM, and all data presented within this ASR is ratified.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The type of PM_{10}/$PM_{2.5}$ monitor(s) utilised within Newcastle (TEOM-FDMS) do not require the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations Newcastle recorded data capture of greater than 75%, therefore, it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

NO_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.

The Percy Street Automatic NO_2 monitoring Site required distance correction during 2024 as it was not representative of relevant exposure.

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

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
Percy Street	2.0	10.0	41.1	16.1	31.7	

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

Figure D.1 – Air Quality Monitoring in Newcastle upon Tyne City Centre

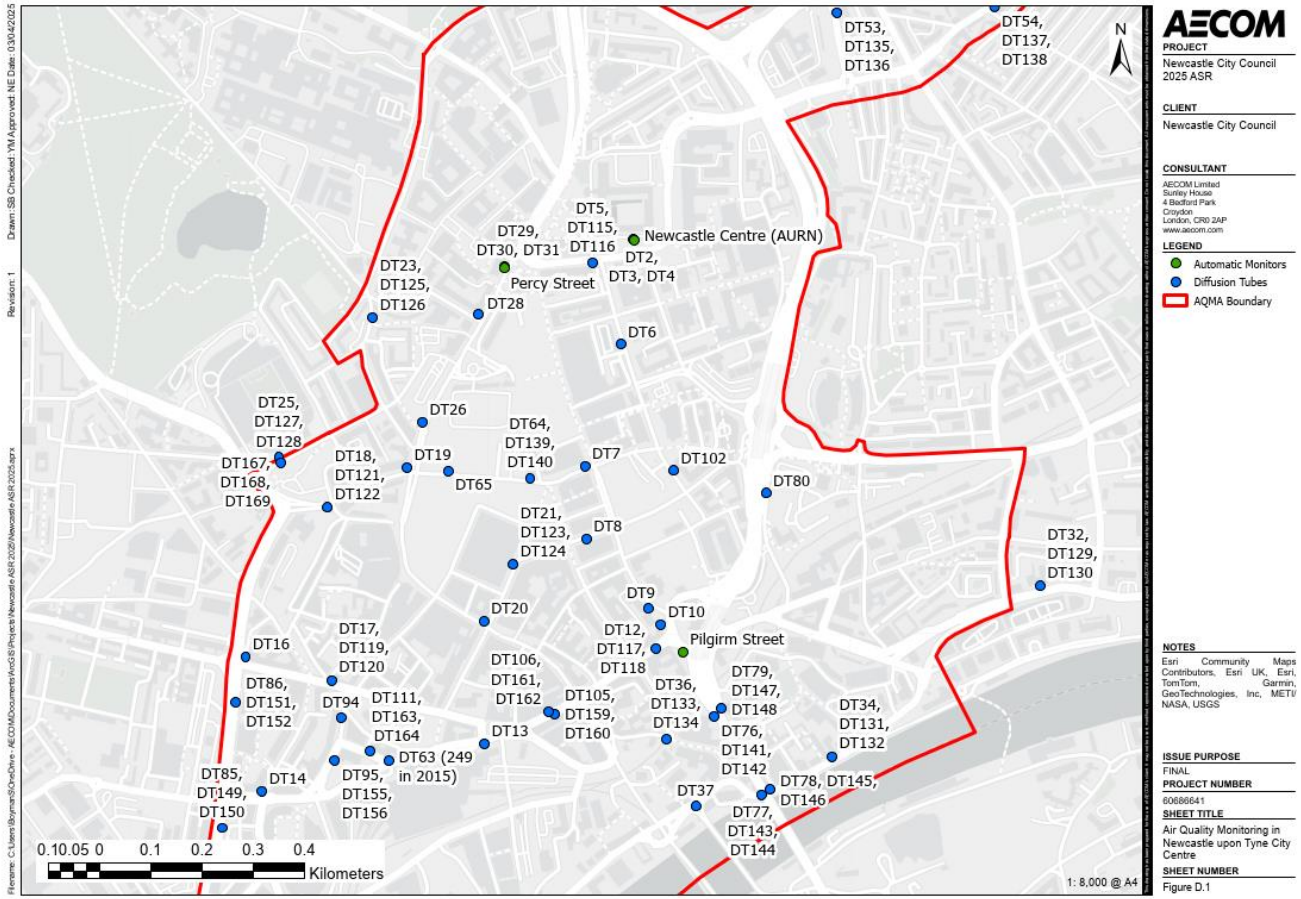


Figure D.2 – Air Quality Monitoring East of Newcastle upon Tyne City Centre

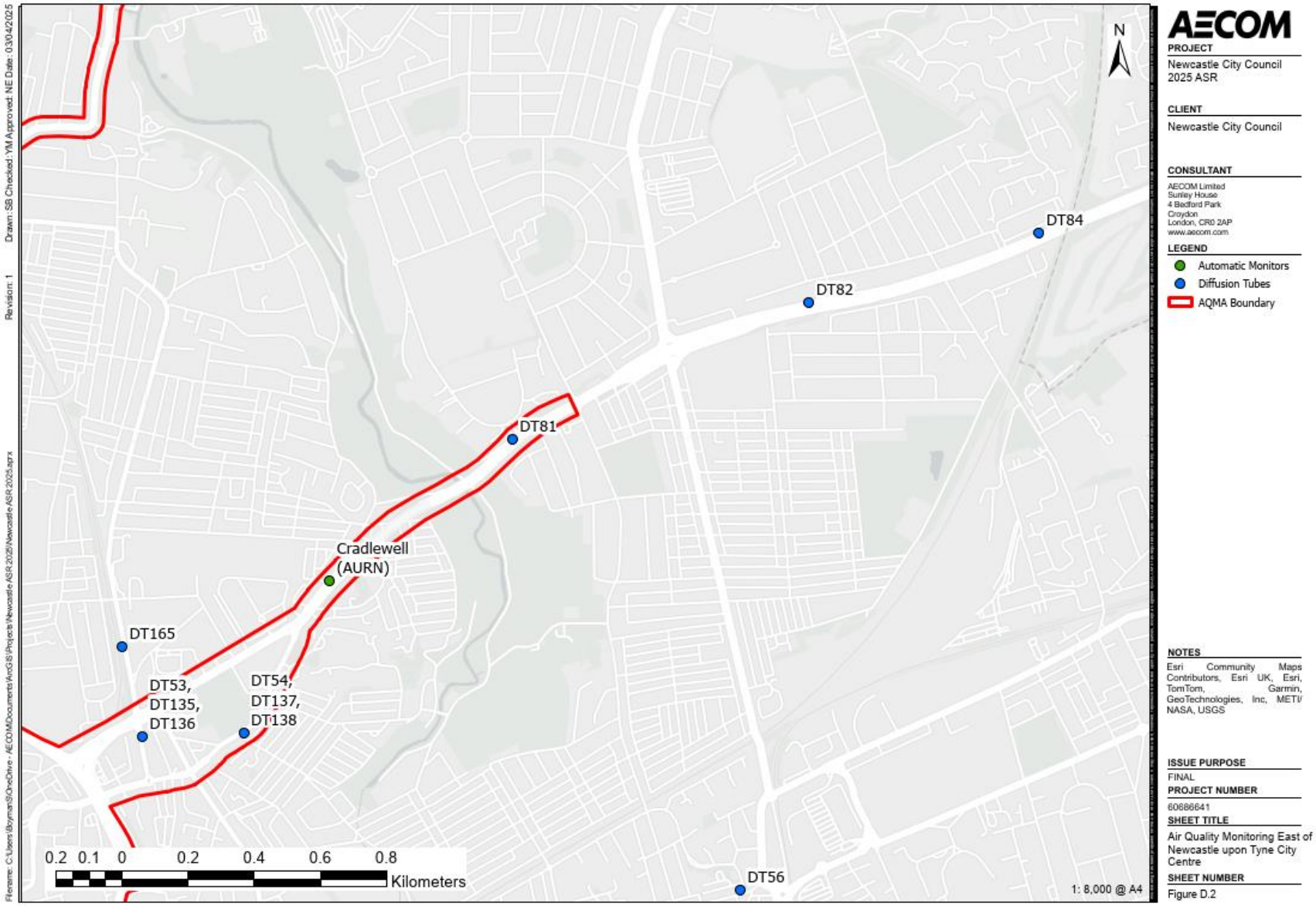


Figure D.3 – Air Quality Monitoring West of Newcastle upon Tyne City Centre

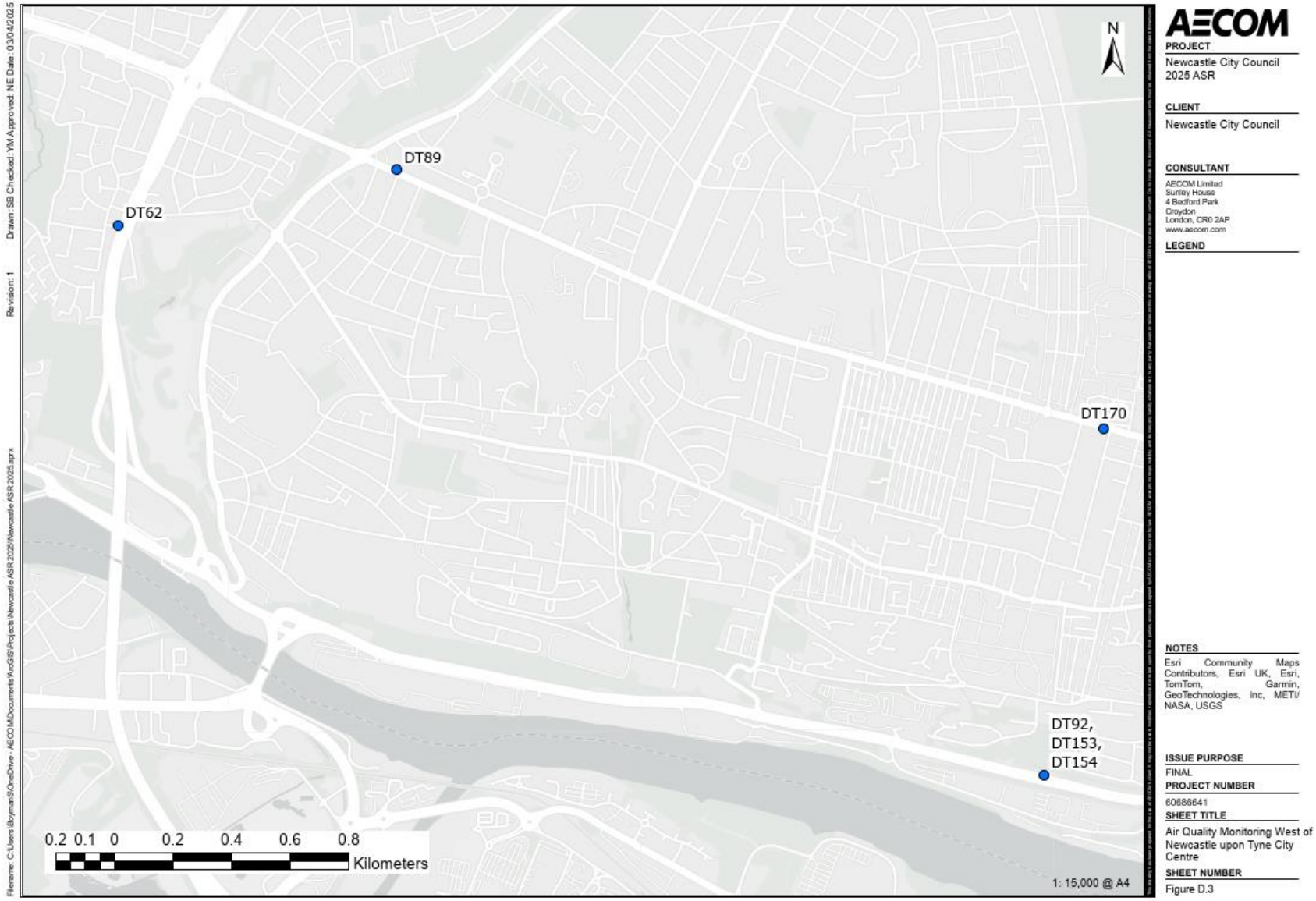


Figure D.4 – Air Quality Monitoring in Gosforth

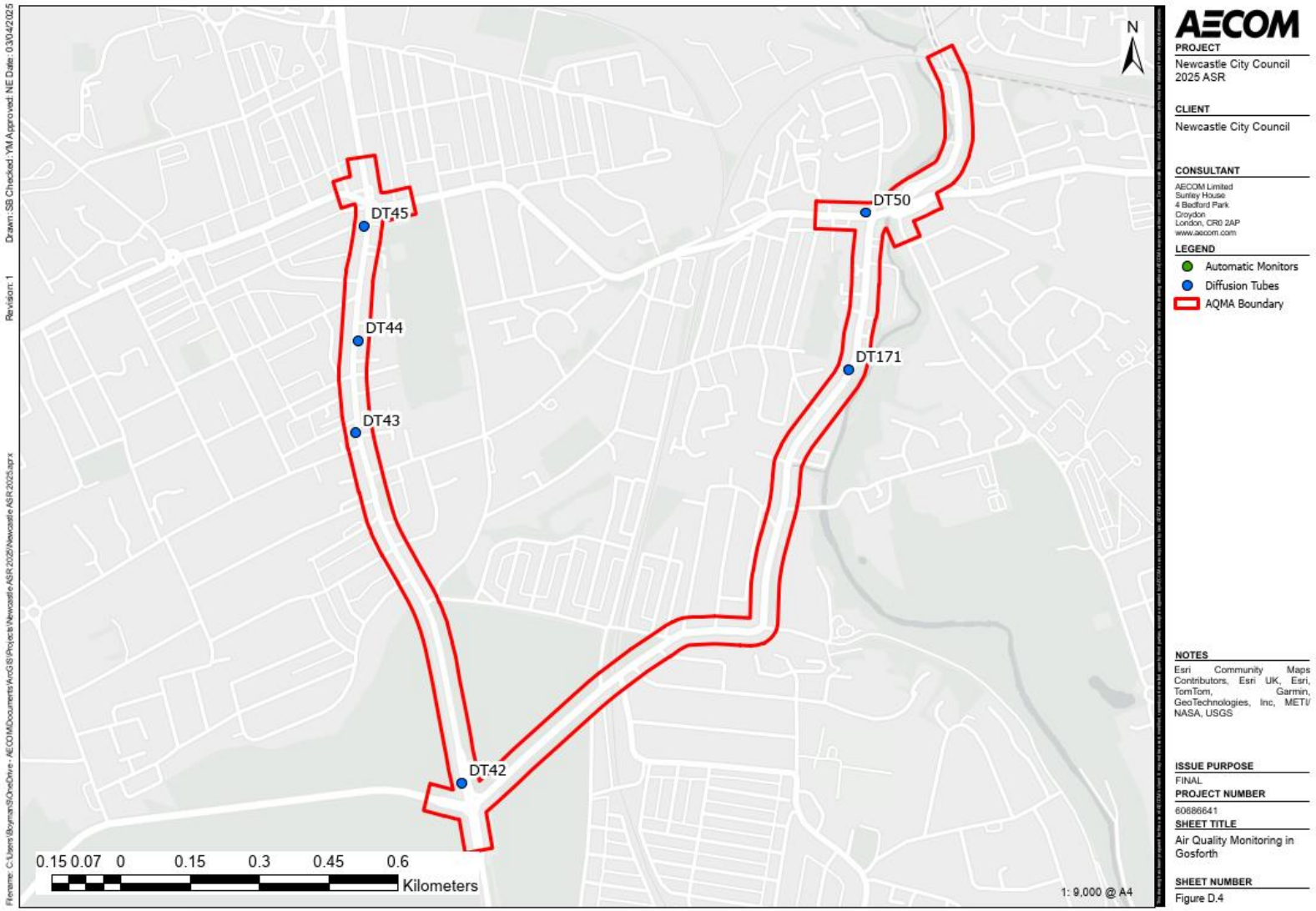


Figure D.5 – Air Quality Monitoring in Denton Burn

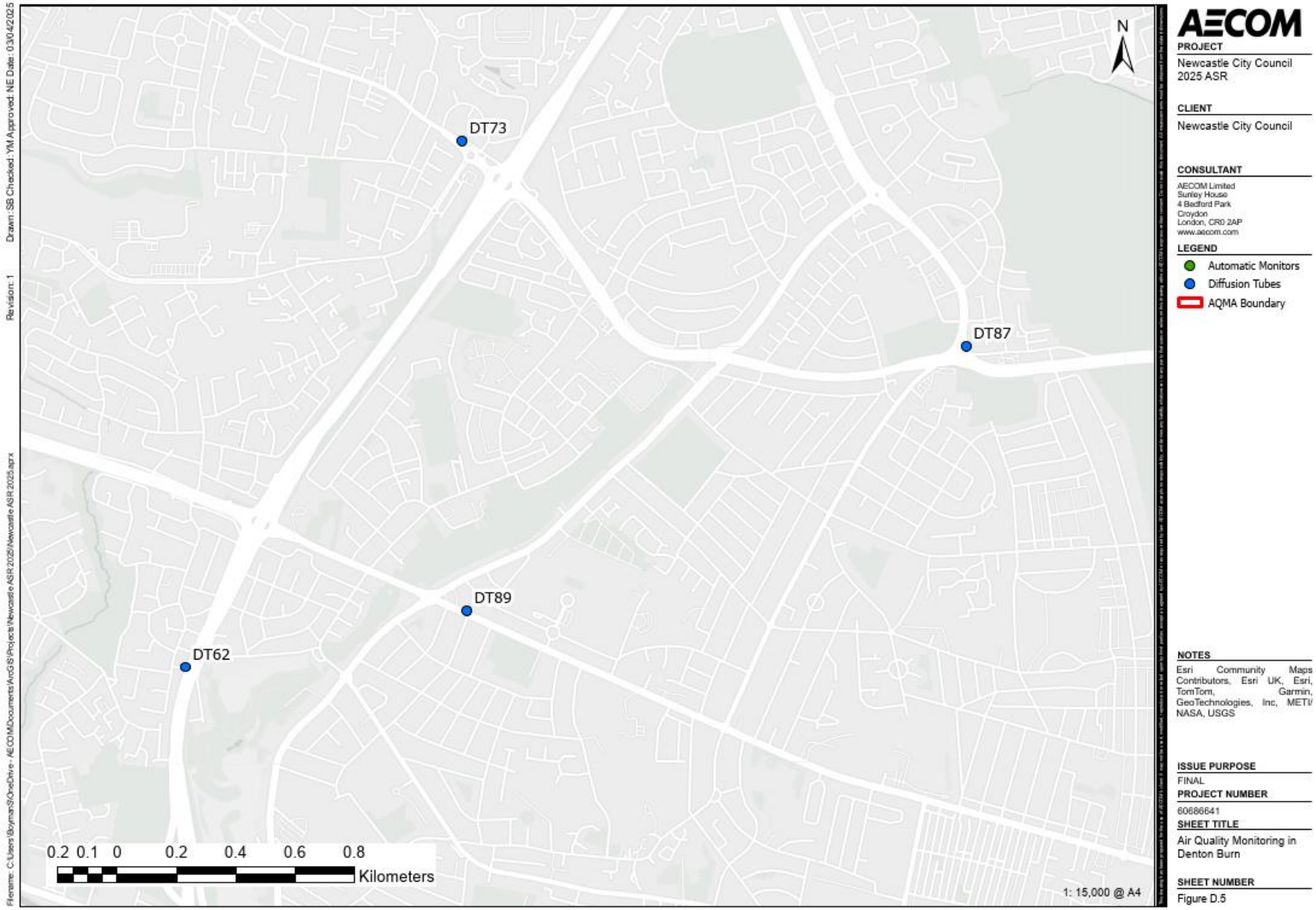


Figure D.6 – Air Quality Monitoring in South-East of Newcastle upon Tyne City Centre

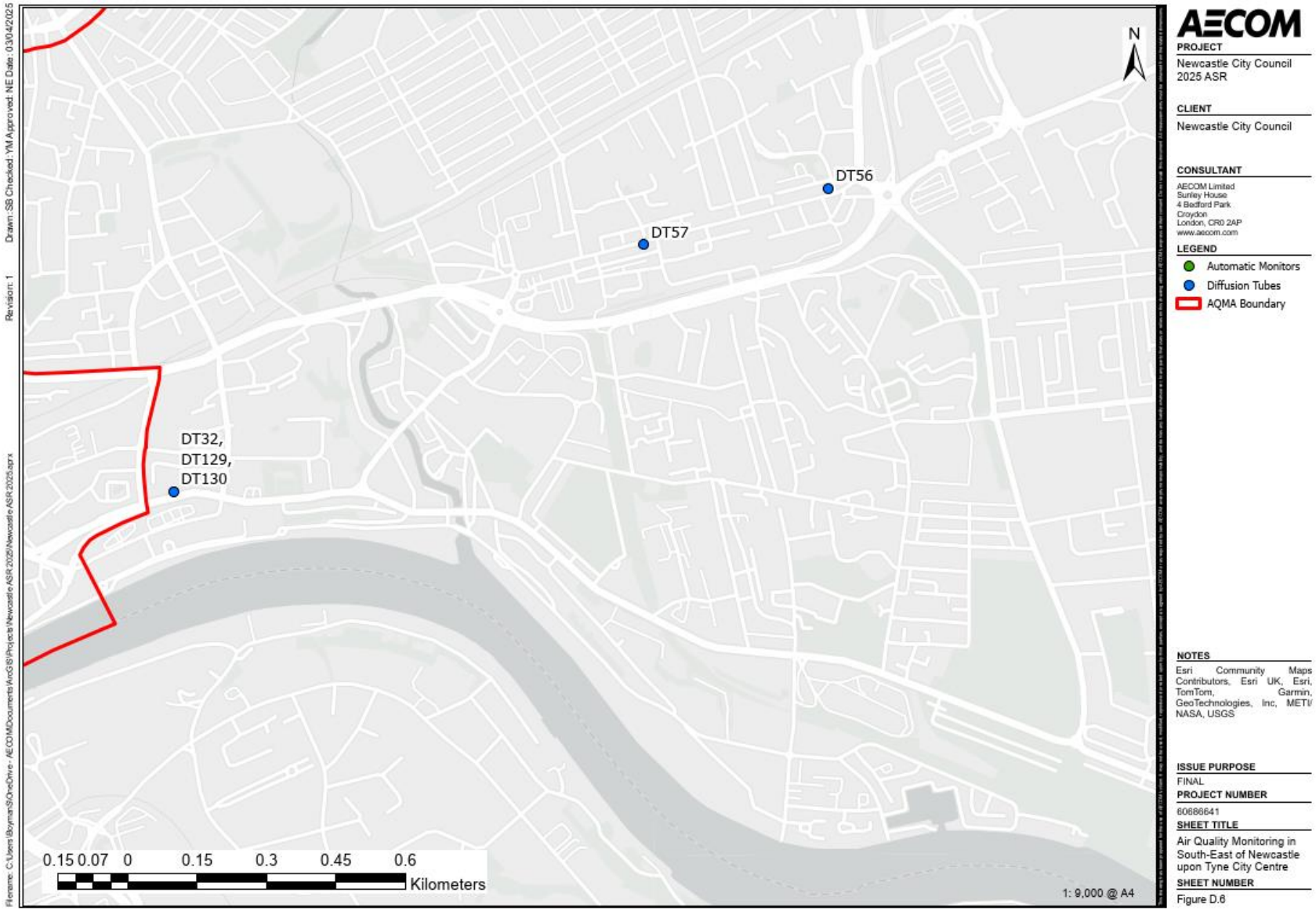
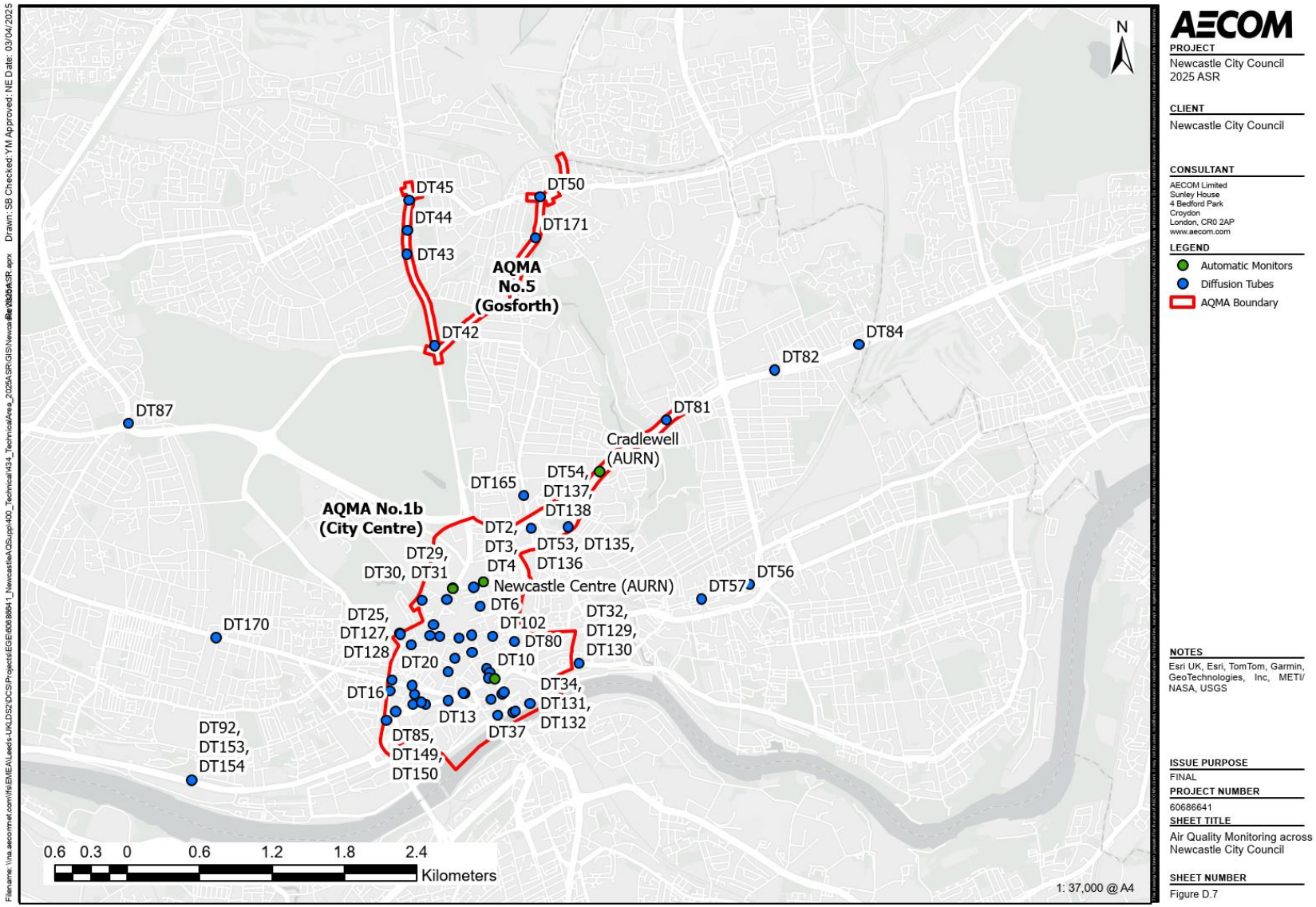


Figure D.7 – Air Quality monitoring across Newcastle City Council



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[6]

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

[6] 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
CAZ	Clean Air Zone
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
NCC	Newcastle City Council
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.