North Devon District Council

Annual Status Report 2024

Bureau Veritas

June 2024

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Document Control Sheet

Identification	
Client	North Devon District Council
Document Title	Noth Devon District Council – 2024 Annual Status Report
Bureau Veritas Ref No.	AIR21549351

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Configuration				
Version	**Date**	**Author**	**Reason for Issue/Summary of Changes**	**Status**
1.0	13/06/2024	M Lenehan	First Draft	Draft
1.1	14/06/2024	M Lenehan	Updated following Client comments	Final

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2024 Air Quality Annual Status Report (ASR)

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

Date: June 2024

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Date	June 2024

Executive Summary: Air Quality in Our Area

Air Quality in North Devon

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

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

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

Table ES.1 – Description of Key Pollutants

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

[1] UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

[2] Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

North Devon is a coastal District in Devon, situated in south-west England with neighbouring District's Torridge, Mid Devon and Somerset. The District is one of Britain's established visitor destinations with various holiday parks and Bed and Breakfasts (B&Bs) that support increasing tourism for the area. The District is popular for historical attractions, such as Watermouth Castle, and seeks to encourage countryside tourism through its established areas of geographical interest such as Braunton Burrows Sand Dunes, Woolacombe Beach, Saunton Sands and Croyde Bay. The location also seeks to encourage tourism by hosting several music events and festivals, for example Oceanfest, and promotes active travel through its South West Coast Path and Tarka Trail which involve various integrated walking and cycling routes that connect to the broader Devonshire region.

The area occupies a key strategic position in the South West, with a variety of national railway stations and facilitating access to the M5 motorway system, comparative to neighbouring Council jurisdictions. Thus, the District acts as a gateway for many to visit the coastline, alternate areas of interest within South West England and wider England as well as being recognised as a possible port entryway from England to Wales, and vice versa. North Devon District is also approximately 17.7 miles north-west from Exeter Airport, offering flights for passengers to continental Europe destinations such as Spain and France, and wider United Kingdom destinations such as Ireland, Scotland and northern England for example Newcastle.

North Devon District is approximately 419 square miles and boasts a rich variety of charming landscape, whilst providing access to local Areas of Outstanding Natural Beauty (AONB) such as North Devon Coast AONB covering 66 square miles and approximately 11 miles north-west from the District's largest settlement, Barnstaple. There are also over 200 Sites of Special Scientific Interest (SSSI) and seven Special Areas of Conservation (SAC) in the Devonshire region, with Braunton Burrows within North Devon District jurisdiction.

The District is predominantly a rural environment, with approximately 98,600 people residing there. The largest urban area is the town of Barnstaple where approximately 31,000 people live, followed by Fremington with approximately 5,000 people residing there. Other population centres across the District are Ilfracombe, Braunton, and South Molton. The District is the fifth least densely populated of the South West's 30 local authority areas, and is England's 250th most densely populated area of the 309 local authority areas, as per the Office for National Statistics (ONS).

Air pollution within the District is predominantly caused by road traffic emissions originating from major roads including the A361, A39, A399 and A377 that pass through and around the area. Additionally, car ownership in households in North Devon is higher than the national average, 81% compared to 73.2% respectively, as reported in the RAC Foundation. Vehicles as the major contributor to air pollution in North Devon is reiterated by the North Devon and Torridge Local Plan 2011-2031, which highlights that there is a dire need to minimise the requirement to travel by private car to employment, education and services due to the lack of provision of convenient public transport and sustainable travel modes in the District.

It is noted that major congestion does not often occur in the District due to the strategic nature of the road links in connecting the isolated area to wider England, with the majority of vehicles starting or ending their journeys within North Devon. However, it is acknowledged that the areas geographical attraction encourages through-flow traffic from the wider South West region and United Kingdom countries with approximately 5.88 billion vehicle miles travelled on roads in Devon in 2023 as the Department for Transport (DfT) reports.

Furthermore, the A39 is a gateway to the North Devon Coast AONB and Exmoor National Park, with seasonal traffic flows in the area significantly changing with the influx of tourist-related through-flow traffic, thus this route has a tendency to become heavily congested on a periodic basis, resulting in the stopping and starting of vehicles, which in turns leads to elevated pollutant concentrations.

Other pollution sources including commercial, industrial, and domestic sources also contribute to pollutant concentrations within the District.

Due to North Devon District Council's historic high reported Nitrogen Dioxide (NO_2) concentrations, with some exceedances of the NO_2 Annual Mean Air Quality Standard (AQS) of 40µg/m^3, and some occurrences within 10% of the annual AQS, the District is considered to have some areas where the air quality is poor. An air quality management area (AQMA) has been declared in response to these elevated pollutant concentrations. North Devon District Council declared this AQMA in July 2011 for the NO_2 annual mean objective, with its extent encompassing the B3231 in Braunton between the junction, the square in the Village centre, and the Village Green.

During 2023, concentrations of NO_2 were monitored passively via a diffusion tube network of 28 sites and an automatic monitoring station (Barnstaple A39) operated under the Automatic Urban Rural Network (AURN). Of the 28 passive monitoring sites, two are

located within the AQMA, Site ID's 15 and 19. When compared to the 28 sites that made up the diffusion tube network in the previous reporting year, the NO_2 annual mean concentration decreased at 100% of sites in 2023. No single diffusion tube site recorded an NO_2 annual mean concentration above the air quality objective of 40 µg/m^3, with the maximum concentration within and outside of the AQMA being 27.5 µg/m^3 (DT 15) and 25.2 µg/m^3 (DT 9), respectively. NO_2 annual mean concentrations within North Devon have been below 10% of the AQS objective of 40 µg/m^3 since 2019, with the exception of DT 15 which reported a concentration of 36.1 µg/m^3 in 2019, as such there is sufficient monitoring evidence to support the revoking of the AQMA. This is in agreement with Defra's stance provided in the 2023 ASR appraisal document. It is acknowledged that the AQMA was revoked in June 2024, and the Council are developing an Air Quality Strategy for publication before the 2025 ASR. Engagement with internal stakeholders and key partners is already occurring.

Concentrations of PM_{10} and $PM_{2.5}$ were also routinely monitored during 2023, via the automatic monitoring station AURN Barnstaple A39. The data indicated that the PM_{10} annual mean objective of 40 µg/m^3 was not exceeded in 2023, with an annual mean concentration of 15.0 µg/m^3 being recorded. The 24-hour objective for PM_{10} was also not exceeded in 2023. For $PM_{2.5}$, the annual mean concentration was recorded to be 8 µg/m^3, which is well below the current objective of 20 µg/m^3, and slightly below the 2040 target of 10 µg/m^3 that is not to be exceeded at any monitoring station by 31st December 2040. The data therefore shows that there were no exceedances of either the PM_{10} or $PM_{2.5}$ objective within North Devon during 2023.

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[3] 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 harmful to human health. The Air

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

Quality Strategy[4] 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[5] details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

As part of the North Devon District Council's commitment to reduce the impacts of climate change, and specifically air pollution, the Council declared a climate emergency in May 2019 and continues to progress and aim to hit net-zero carbon emissions by 2050 for Council activities and across the District, as reported in the Devon Carbon Plan. The Climate Plan sets out various actions to reduce Carbon Dioxide (CO_2) emissions, of which also have shared benefits in improving air quality through reducing both NO_2 and Particulate Matter (PM) emissions. Examples include offering smart meters to electricity consumers, support community bike rental schemes, use renewable energy sources to power buildings, adopt Light Emitting Diode (LED) lighting, and further improve public transportation infrastructure across the District.

During 2023, North Devon District Council commissioned an Air Quality Assessment (AQA) at North Devon Hospital, which involved monitoring pollutant concentrations at the site to determine patient, staff and visitor exposure. The Council confirm that the draft report has been submitted to the NHS for review and comment. This project demonstrates the Council's approach to collaborative working with partner organisations to improve air quality within the area and for its residents and visitors' welfare, particularly those who are vulnerable.

North Devon District Council maintains its collaborative relationship with the bicycle mechanic and hire businesses Planet Bike Barnstaple and Bike Shed UK who host free sessions for locals to check that their bikes are safe and make minor adjustments to get them on the road, as well as offering bicycle hire. This relationship promotes the use and benefits of active transport on air quality and health.

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

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

During 2023 the Council has maintained its positive relationship with the bicycle club North Devon Velo who offer cycling activities such as: club rides, touring, time trials, road racing, track racing, sportives, cyclo-cross, mountain biking, and charity events. This relationship promotes the use and benefits of active transport on air quality and health whilst educating the next generation to reduce vehicle uptake.

North Devon District Council maintains to promote the Tarka Trail Cycle Hire and Tidal and Trail innovative bike sharing services launched in 1989 and 1976 respectively. The schemes replicate notable cycle sharing schemes found in large metropolitan areas (e.g., Santander Cycles, Mobike, Lime) and compliment the coastal cycling routes. They also attempt to promote alternative and accessible forms of travel between neighbouring towns and villages across the South West region to help its residents lead active lifestyles and limit vehicular emissions. It is noted that the Tarka Trail is subject to improvements in line with the 'Transport Capital Programme'.

In February 2023 the Council issued the Final Barnstaple with Bideford and Northam Local Cycling and Walking Infrastructure Plan (LCWIP) in partnership with Torridge District Council, with identification of three key areas across the two Council jurisdictions with high propensity for walking and cycling: Barnstaple, Bideford and Northam. Identified routes experience high commuting levels due to key destinations including the population centres as well as existing routes and geographical attractions such as the Tarka Trail and North Devon Coast AONB. Thus, it is proposed that greater active travel infrastructure is established to support the adoption comparative to vehicle commuting to these areas, therefore reducing emissions released.

From 17th May 2023 North Devon District Council established a new collaborative partnership with Zipp Mobility to host a short (hop-on hop-off) and long term rental e-scooter trial, to support the Council's commitment to tackling the declared climate emergency. The scheme offers North Devon residents and visitors a carbon-neutral, flexible and cost-effective alternative to other modes of transport. E-scooters provide an outdoor mode of transport which is convenient, affordable and flexible for point-to-point journeys, whilst having a lower environmental footprint, with vast potential to improve air quality and reduce climate change. They also offer a sustainable solution to tackling transport challenges in North Devon. More information regarding the initiative can be found at: https://www.northdevon.gov.uk/leisure-and-lifestyle/north-devon-e-scooter-trial/about-the-e-scooter-trial

North Devon District Council promotes active travel, and the reduction in vehicle usage and subsequent emissions, through walking with established Core Walking Zones (CWZs) across the District. The CWZs have been assessed and audited to ensure safety and identify any required interventions along the pedestrian corridors within each CWZ. Interventions proposed include improving existing infrastructure as well as introducing new pedestrian facilities such as wayfinding, new pedestrian crossings and benches to improve the public realm.

The Council, alongside neighbouring and far-reach Councils, is host to the National Cycle Network (NCN) as well as having a Local Cycle Network (LCN) that forms the connections between the NCN and destinations such as small town centres and villages. The NCN provides a strategic network for the county with connections to key destinations, towns, villages, transport hubs, employment and housing areas with long distance trails and loops that support the visitor economy in the District.

North Devon District Council in conjunction with Devon County Council continues to promote the free permitted 'Park and Cycle' initiative during 2023, which operates alike the 'Park and Ride' public bus service in Barnstaple as well as broader Devonshire areas such as Exeter, to promote and encourage sustainable transport.

The District continued to promote the cycling initiative 'Bikeability' in 2023, partnered with Devon County Council. The scheme, focussed at school children and adults, involves frequent cycling proficiency courses and has educated circa 100,000 people as of May 2023 with the area named amongst the top ten local authorities for providing cycle training within 2023. The initiative has centred on three core stages, Bikeability: Level 1, Level 2 and Level 3, with individuals required to meet specific criteria to enable being accredited the awards. There is also 'Bikeability Balance' and 'Bikeability Learn to Ride' levels which bode a suite of courses to meet needs and specifically to complement and support the core training delivered. The scheme also offers 'Bikeability Families' and 'Cycle Confidence' courses which provide parents/carers skills to cycle safely with children and allows individuals to develop cycling skills and build confidence. This programme seeks to encourage the uptake of cycling across the District, therefore, seeking to reduce pollutant concentrations imminently and through actions of longevity by also targeting future generations.

North Devon District Council continue to promote the Travel Devon Toolkit in 2023, produced by Devon County Council which assists business with variables such as

reducing car park congestion, improvements to staff health and wellbeing, and becoming more sustainable. Thus, seeking to positively impact air pollution across the District.

The Council promotes its established main rail network with the branch line to Exeter one of the area's sole railway routes, although there are five train stations in operation within North Devon for this route comparable with fewer in more urbanised boroughs of Plymouth and Mid Devon. Additionally, the reopening of the railway 'Dartmoor Line' since Q4 2021 has seen circa 550,000 passenger journeys to Q4 2023, an uplift of approximately 50,000 between journeys in 2022 compared to 2023, with onwards connections via the Tarka Line to Barnstaple in North Devon. Highlighting the benefits well-connected and more frequent services of public transport on air quality comparative to private vehicle use to commute.

North Devon District Council actively encourages developers at the planning stage to install electric charging points or consider suitable infrastructure to allow for future cost-efficient installations.

In 2023 North Devon District Council adopted 'Devon's Electric Vehicle Charging Strategy' which recommends that in collaboration with Devon County Council, circa 2000 Electric Vehicle (EV) charging points are delivered by 2030. There will be a particular focus on charging points on residential streets in rural and remote areas with electric grid constraints, where higher uptakes of EVs are forecast and communities without or with limited access to off-street parking. The scheme, funded by £7 million from Department for Transport's Local Electric Vehicle Infrastructure (LEVI) Fund, is expected to begin in 2025 and will significantly expand on an already growing network of on and off-street EV charging points in North Devon and neighbouring Councils.

The Council have benefitted in 2023 from a collaborative partnership with Devon County Council to roll out a programme of charging points for EVs across the District, with EV development in Hardaway Head car park (Barnstaple), Wilder Road car park (Ilfracombe) and Central car park (South Molton). EV users can view the current charging points in North Devon at zap-map.com.

North Devon District Council has also encouraged Ultra Low Emission Vehicle (ULEV) adoption across the District during the 2023 monitoring year, with infrastructure to support the uptake of ULEVs being implemented as aforementioned with a wider extent planned for implementation.

There is a >£150 million 'Transport Capital Programme' proposed which aims at redeveloping rail and road travel for the county of Devon, inclusive of North Devon, in

response to the climate emergency declared in 2019. The programme set out the Council's transport infrastructure priorities until 2025, with many schemes progressed or delivered as of 2023. The scheme is supported by >£130 million in funded grants from government programmes such as the Large Local Major Schemes, Major Road Network programme, Housing Infrastructure Fund and Levelling Up Fund. Remaining funding would come from the Department for Transport (DfT) and various councils, including £13 million from Devon County Council, and developer contributions. Additional capital programme funding was approved in 2023 for the 2023/24 year by £3.10 million; £2.24 million funded from other external grants, £0.31 million from developer contributions, and £0.55 million from external contributions. The structural amendments to North Devon's railway and road infrastructure seeks to allow easy interchange with other modes of public and active transport, promoting a green, cleaner District and broader, South West region. Improvements proposed, inclusive of but not limited to, are:

- South West Resilience Programme – Enhancement of the coastal rail route between Exeter and Plymouth via Dawlish more resilient in the face of extreme weather;
- Reinstatement of the Tavistock to Bere Alston trainline – Construction of a new single platform station at Tavistock and re-use of approximately 8 kilometres of railway track;
- Construction of a railway line between Cullompton and Wellington; and
- Road improvements to the North Devon Link Road (A361 Landkey Junction).

Conclusions and Priorities

During 2023, the NO_2 annual mean objective was not exceeded at any monitoring location both within and outside of the AQMA boundary. This is a continuing trend that has been observed across the area since 2019, with the know exception of DT15 in 2019, as discussed in this ASR. The PM_{10} and $PM_{2.5}$ annual mean objectives were also not exceeded in 2023, nor since 2019. Therefore, the monitoring data supports the Council's revocation of AQMA No.1.

The Council will continue to use the passive monitoring network to monitor air quality within the district and ensure compliance is maintained with the annual and 1-Hour NO_2 AQS objectives, as well as PM_{10} and $PM_{2.5}$ annual and 24-hour (PM_{10} only) mean objectives.

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

- Greater progression and completion of the Transport Capital Programme to improve rail and road infrastructure and to integrate greater public transport sources;
- Continue to review the current monitoring programme, exploring the need to deploy new monitoring locations in areas where monitoring has not previously been undertaken and where it is believed that there may be elevated concentrations of NO_2 in areas of relevant public exposure, relocate monitoring tubes, or remove locations where necessary;
- Actively engage with developers at planning application stages to promote the installation of electric vehicle (EV) charging or alternatively, provide suitable infrastructure to allow for future cost-efficient installations;
- Implementation of the scheduled EV charging points on streets and in car parks across the District;
- Continue to provide an integrated transport network to facilitate the efficient movement of pedestrian and vehicular traffic, goods, and services across the District;
- Continue to reduce the volume of traffic on the city roads by encouraging effective active transport methods (e.g. public transport, cycling, and walking);
- Continue to improve the existing walking and cycling network by acquiring funding for development; and
- Implement measures within the Devon Carbon Plan to further reduce concentrations of NO_2 and PM.

Local Engagement and How to get Involved

Given the main source of air pollution across North Devon is from transport sources, the public can support the reduction in air pollutant(s) release and improve air quality within the District by participating in active travel.

North Devon District Council have progressed additional public engagement work in 2023 through the below schemes, although the engagement schemes in 2022 are still active:

- The collaborative relationship with Devon County Council to roll out a programme of charging points for EVs across the District through Devon's Electric Vehicle Charging Strategy, with circa 2000 EV charging points scheduled for implementation;

- Successfully implementing EV charging points at Hardaway Head car park (Barnstaple), Wilder Road car park (Ilfracombe) and Central car park (South Molton), alongside Devon County Council;
- Improving the use of ULEVs across the District through improving infrastructure to support the uptake with a wider extent planned for implementation;
- Planned investment via the Transport Capital Programme to further enhance adoption and utilisation of the public transport network;
- Campaigns by local parish councils alongside ACE Rail and the Tarka Rail Association for the reconnection of Bideford to the national rail network, acknowledged as a valuable core proposal with circa 550,000 passenger journeys on the re-opened Dartmoor Line between Q4 2021 and Q4 2023, an uplift of approximately 50,000 between journeys in 2022 compared to 2023;
- Collaboration between local businesses and charities to host events promoting active transport and the benefits as well as promotion of the Travel Devon Toolkit to support businesses in becoming more sustainable and reducing their air pollutant contributions;
- Established a new collaborative relationship with Zipp Mobility to host a short (hop-on hop-off) and long term rental e-scooter trial, to support the Council's commitment to tackling the declared climate emergency. Thus, encouraging transportation methods across the District with lower environmental footprint and vast potential to improve air quality, reducing climate change;
- Continue to offer active transport education to children, the future generation, and adults through cycling proficiency courses via the 'Bikeability' initiative, reducing vehicular pollutant emissions with circa 100,000 people engaging in the scheme;
- Maintained the positive relationship with the bicycle club North Devon Velo who offer cycling activities such as: club rides, road racing, track racing, and charity events thus promoting the use and benefits of active transport on air quality and health whilst educating the next generation to reduce vehicle uptake;
- Promotion of the finalised Barnstaple with Bideford and Northam Local Cycling and Walking Infrastructure Plan (LCWIP) and the Core Walking Zones (CWZs) post COVID-19 lockdown, encouraging active travel across the District and wider South West region, with a community focus;
- Continued promotion of active transport uptake and sustainable travel through the establishment of a free permitted 'Park and Cycle' initiative that operates alike the

'Park and Ride' public bus service in Barnstaple. The scheme is a Business Engagement Programme, with bike lockers managed and rented by Bikeaway Ltd;

- Continued relationships with local active transport businesses Planet Bike Barnstaple and Bike Shed UK to host free bike workshops for locals to ensure bikes are safe and road worthy, as well as bicycle hire, further encouraging active transport and supporting the establishment of a greener, cleaner District; and
- Enhancement and further endorsement of the Tarka Trail Cycle Hire and Tidal and Trail innovative bike sharing services launched in 1989 and 1976 respectively.

The following measures are possible alternatives to private travel and actions that everyone can complete that would contribute to improving air quality within the area:

- Use public transport where available – This reduces the number of private vehicles in operation reducing pollutant concentration through the volume of vehicles and limits congestion;
- Walk or cycle if your journey allows – From choosing to walk or cycle for your journey the number of vehicles is reduced and also there is the added health benefits through exercise;
- Car/lift sharing – Where a number of individuals are making similar journeys, such as travelling to work or to school car sharing reduces the volume of vehicles on the road and therefore the amount of emissions being released. This can be promoted via travel plans through the workplace and within schools;
- Alternative fuel / more efficient vehicles – Choosing a vehicle that meets the specific needs of the owner, fully electric, hybrid fuel and more fuel efficient cars are available, and all have different levels benefits by reducing the amount of emissions being released; and
- Asking your employer, school or college about the possibility of developing a green travel plan.

The public can also engage with air quality issues via North Devon District Council's dedicated Air Quality Website. This provides information on a range of air quality topics, such as the current monitoring locations, declared AQMAs, and copies of previous ASRs.

Local Responsibilities and Commitment

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

- Darren Hale, Lead Environmental Health Officer – Environmental Protection.

This ASR has been approved by:

- Darren Hale, Lead Environmental Health Officer – Environmental Protection.

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

If you have any comments on this ASR please send them to Darren Hale at: North Devon District Council, PO Box 379, Barnstaple, Devon, EX32 2GR.

- Darren Hale
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1 Local Air Quality Management

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

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

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

In June 2024, North Devon District Council revoked its AQMA, declared for exceedances of the NO_2 annual mean objective. The AQMA was implemented in July 2011 and was described as an:

"Area encompassing the B3231 in Braunton between the junction the square in the middle of the village, and the Village Green."

The extent of the AQMA is shown below in Figure 2.1, and details of the AQMA are described in Table 2.1.

The Council has achieved compliance with the NO_2 annual mean objective of 40 µg/m^3 since 2019, with the exception of DT 15 in 2019 that reported a concentration of 36.1 µg/m^3. Therefore, there is sufficient monitoring evidence to revoke the AQMA, as recommended and supported by Defra in the 2023 ASR appraisal document.

Figure 2. 1 – North Devon District Council AQMA No.1 (2011)

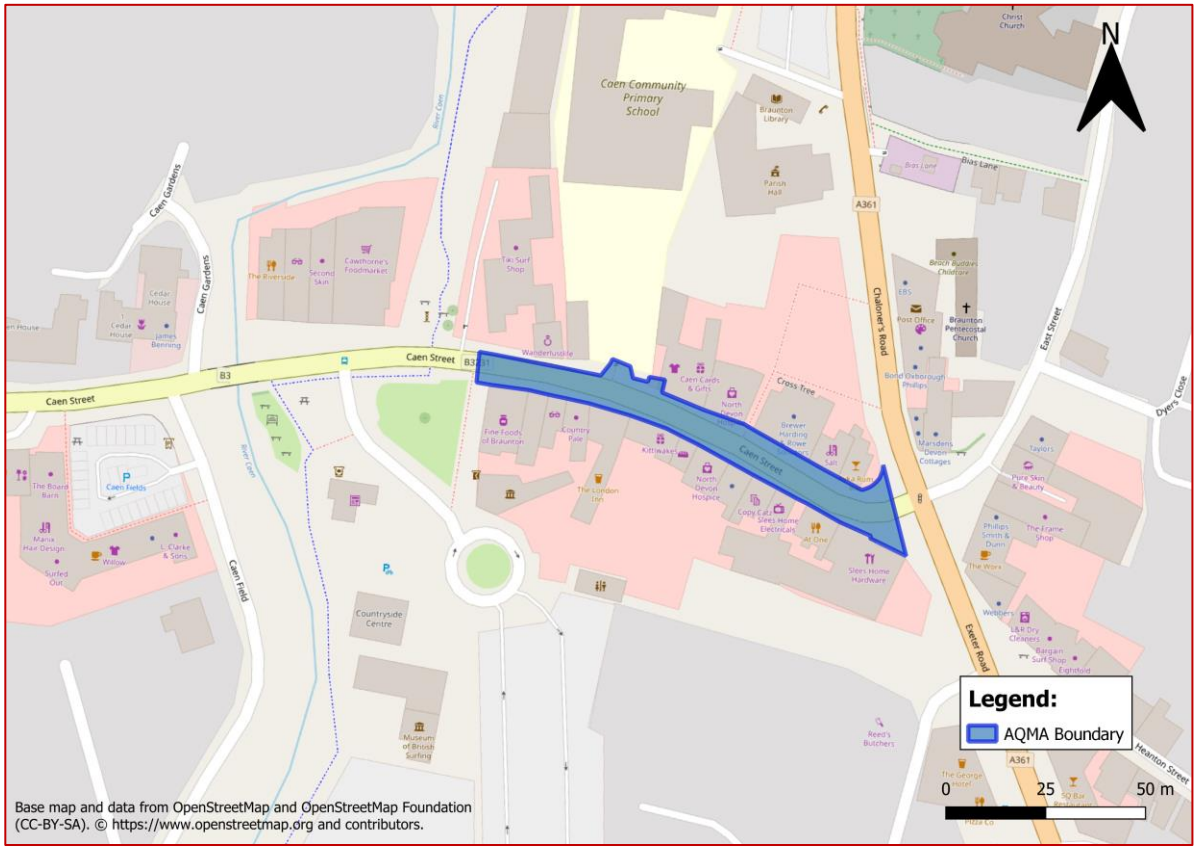


Table 2.1 – Declared Air Quality Management Areas

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
North Devon Air Quality Management Area No.1	11/07/2011	NO_2 Annual Mean	An area encompassing the B3231 in Braunton between the junction, the square in the middle of the village, and the Village Green.	No	44.4 µg/m^3	27.5 µg/m^3 (Site ID 15)	5 years	North Devon District Council – Air Quality Action Plan May 2016	https://www.northdevon.gov.uk/media/377432/final-air-quality-action-plan-2016-published-on-website-august-2016.pdf

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

☒ **North Devon District Council confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in North Devon

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

"The report is well structured, detailed, and provides the information specified in the Guidance."

The following comments were designed to help inform North Devon 2024 ASR:

- There are a couple of cross-referencing errors within the document, particularly within Section 3.2.1. The Council should ensure that cross-references are working correctly throughout the document.
    - The 2024 ASR has been reviewed to ensure that the risk of cross-referencing errors is reduced when published.
- Excellent detail has been provided in terms of $PM_{2.5}$ concentrations. Monitored $PM_{2.5}$ concentrations are supported by a discussion of the modelled Defra background concentrations. This allows for concentrations across the District to be discussed as opposed to the concentrations at the monitoring site. The Council should continue these discussions in future ASRs to ensure that $PM_{2.5}$ concentrations remain below the current objective and the newly introduced objective of 10 µg/m^3 by 2040.
    - Detailed discussion regarding $PM_{2.5}$ concentrations has been maintained in the 2024 ASR, including reference to the newly introduced objective of 10 µg/m^3 by 2040.
- The following comments relate to Table C.4 and Table C.5:
    - The ratio of A_m/P_m does not appear to be correct in Table C.4. The Saltash Callington Road AURN ratio appears to be 1.070 and the Plymouth Centre AURN ratio appears to be 1.022 based on the provided information. However, the average of these ratio gives 1.045, which matches the average ratio in the document. Therefore, the concentration remains correct.
        - The automatic monitoring station AURN Barnstaple A39 achieved annual data capture of 92.3% for PM_{10} and 87.6% for $PM_{2.5}$ in

2023, therefore this station does not require annualisation thus ratio calculations of A_m/P_m are omitted in the 2024 ASR.

- In Table C.5, the heading row does not align with the rows underneath.
  - All tables have been checked in the 2024 ASR to ensure heading rows align with main table text.

- The description of the AQMA has not been completed within the supporting Excel document.
  - Additional documents have been checked to ensure all AQMA information is complete and correct, thus aligned with what is included in the 2024 ASR and on UK-AIR.
- Clear figures have been provided to highlight the location of the AQMA and monitoring network. The figures are provided to a good scale and the locations of the monitoring sites are easy to see. The labels for each monitoring network could be made larger as they are difficult to read for some sites.
  - The monitoring station labels have increased in font size so they are more legible.
- Annualisation has been discussed in full with evidence of the calculations provided for all monitoring sites. This highlights that the correct methodology has been used for annualisation.

North Devon District Council has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2 – Progress on Measures to Improve Air Quality . Four measures are included within Table 2.2 – Progress on Measures to Improve Air Quality , with the type of measure and the progress North Devon District Council have made during the reporting year of 2023 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2 – Progress on Measures to Improve Air Quality .

North Devon District Council's key completed measures are:

- Commissioning an Air Quality Assessment (AQA) at North Devon Hospital, which involved monitoring pollutant concentrations at the site to determine patient, staff and visitor exposure. The Council confirm that the draft report has been submitted to the NHS for review and comment;

- Acquire additional funding for the 2023/24 budget for the Transport Capital Programme;
- Successfully implementing EV charging points at Hardaway Head car park (Barnstaple), Wilder Road car park (Ilfracombe) and Central car park (South Molton), alongside Devon County Council;
- Further encouraged active travel through rail transportation, with greater uptake facilitated through the reopened Dartmoor Line, circa 550,000 passenger journeys between Q4 2021 and Q4 2023, an uplift of approximately 50,000 between journeys in 2022 compared to 2023;
- Continue to offer active transport education to children, the future generation, and adults through cycling proficiency courses via the 'Bikeability' initiative, reducing vehicular pollutant emissions with circa 100,000 people engaging in the scheme confirmed in May 2023;
- Established a new collaborative relationship with Zipp Mobility to host a short (hop-on hop-off) and long term rental e-scooter trial, to support the Council's commitment to tackling the declared climate emergency. Thus, encouraging transportation methods across the District with lower environmental footprint and vast potential to improve air quality, reducing climate change; and
- Issue of the finalised Barnstaple with Bideford and Northam Local Cycling and Walking Infrastructure Plan (LCWIP), encouraging active travel across the District and wider South West region, with a community focus.

North Devon District Council's priorities for the coming year are:

- Further develop the area through the Transport Capital Programme, expanding active transport accessibility and encouraging adoption of it as well as improving road connectivity across the District;
- Review data from the short (hop-on hop-off) and long term rental e-scooter trial with Zipp Mobility to determine whether the initiative could be implemented across the District permanently to further support the Council's commitment in tackling the declared climate emergency; and
- Continue to implement EV charging points throughout the District as part of Devon's Electric Vehicle Charging Strategy to support the uptake of EVs and those residing in remote locations, with circa 2000 charging points planned for development.

North Devon District Council worked to implement measures in partnership with the following stakeholders during 2023:

- National Health Service (NHS);
- UK Government (DfT);
- Local businesses and charities;
- Education centres;
- Neighbouring local authorities; and
- Devon County Council.

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	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	North Devon District Council Supplementary Planning Guidance	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2021	2031	Local Authority Environmental Health, Local Authority Planning	Developers	NO	Funded	< £10k	Completed	0.05	% of NOx, % of PM10	SPD approved and implemented	Reduction in redevelopment / New build properties due to economic conditions.
2	North Devon Hospital Air Quality Assessment	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2022	2024	Local Authority Environmental Health / North Devon District Hospital	Local Authority	NO	Funded	< £10k	Implementation	0.02	% of NOx, % of PM10	Pollution data survey completed and report draft submitted to NHS	Practicalities of adoption of recommended measure.
3	North Devon - Corporate Environmental Assessment Guidance	Public Information	Other	2021	2032	Local Authority	Local Authority	NO	Funded	< £10k	Implementation	0.02	% of NOx, % of PM10	Implemented in Council projects	Other economic and social priorities.
4	Local Authority Vehicle Procurement	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2021	2030	Local Authority	Local Authority	NO	Funded	< £10k	Implementation	0.02	% of NOx, % of PM10	Implemented into Council core business	Other economic and social priorities.

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[6], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter ($PM_{2.5}$). There is clear evidence that $PM_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

$PM_{2.5}$ Monitoring:

There was one Automatic (Continuous) Monitoring station in North Devon in 2023 which operates as part of the AURN to report $PM_{2.5}$ concentrations. During 2023, a $PM_{2.5}$ annual mean concentration of 8 µg/m^3 was recorded, which is below the AQS objective of 10 µg/m^3 that is not to be exceeded at any monitoring station by 31st December 2040.

$PM_{2.5}$ Background Concentrations:

The current Defra 2023 background maps for North Devon District Council (2018 based)[7] show that all background concentrations of $PM_{2.5}$ are significantly below the current annual mean AQS objective of 20 µg/m^3. The highest background concentration is predicted to be 10.6 µg/m^3 within the grid square (1 km x 1 km) with the centroid grid reference 269500, 125500. This grid square encompasses the west of South Molton, including Nadder Lane (B3227), which is a key arterial route into and through South Molton towards the west coast and surrounding areas such as Bideford, where the PM secondary fraction (formed of gaseous pollutants) constitutes as the key contributor to $PM_{2.5}$.

Smoke Control Areas:

Smoke control areas (SCAs) are designated zones in which it is an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler. It is also an offence to acquire an unauthorised fuel for use within a SCA unless it is used within an exempt appliance (exempted from the controls which generally apply in SCAs). There are currently no SCAs declared within Noth Devon. However, the Council have outlined if they

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

[7] Defra Background Mapping (2018 Based). Available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

determine an increase in smoke reports causing a statutory nuisance, they will enforce an SCA with accompanying fines for those who do not comply to the guidelines.

Impact on Human Health:

The Public Health Outcomes Framework data tool[8], compiled by Public Health England quantifies the mortality burden of $PM_{2.5}$ within England on a county and local authority scale. The 2022 fraction of mortality attributable to $PM_{2.5}$ emissions within North Devon is 3.3%, which is lower than the regional average for the South West (4.6%) and England as a whole (5.8%).

Measures to Improve $PM_{2.5}$ Concentrations:

North Devon District Council is taking the following measures to address $PM_{2.5}$:

- Actively encouraging large developers at the planning stage to install EV charging points or the consideration of suitable infrastructure to allow for future cost efficient installations;
- Implementation of the Final Barnstaple with Bideford and Northam Local Cycling and Walking Infrastructure Plan (LCWIP) to reduce the number of vehicle trips generated by North Devon District and subsequent pollutant emission release, due to its moderate population concentration and related hierarchical position in the South West settlements as well as its associated tourism appeal;
- Implementation of an EV charging programme alongside Devon County Council, with approximately 2000 publicly accessible EV charging points scheduled for implementation through Devon's Electric Vehicle Charging Strategy to encourage cleaner vehicle adoption;
- Reinstatement of railway routes across the area and enhancement of existing networks to encourage more sustainable transportation uptake;
- Established a new collaborative relationship with Zipp Mobility to host a short (hop-on hop-off) and long term rental e-scooter trial, to support the Council's commitment to tackling the declared climate emergency. Thus, encouraging transportation methods across the District with lower environmental footprint and vast potential to improve air quality, reducing climate change; and

[8] Public Health England – Public Health Outcomes Framework. Available at: https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/1/gid/1000043/pat/6/ati/501/are/E07000043/iid/93861/age/230/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1/fip/0

- Introduction of strategies within the Devon Carbon Plan to assist achievement of net-zero carbon emissions across the area by 2050 with many of the measures addressing local air quality including $PM_{2.5}$.

The Council acknowledge that the move to electric vehicles is not the only solution for air quality and associated heath concerns due to particulate matter, including $PM_{2.5}$, being sourced from break and tyre wear. As such, the Council have also implemented alternate initiatives with active travel at the forefront:

- Investment into enhancing the existing active travel network for walking and cycling, promoting active travel and supporting the reduction in vehicle volume and associated emission releases;
- Promotion of its established and well-connected main railway branch line to Exeter as well as the reopening of the 'Dartmoor Line' with circa 550,000 passenger journeys between Q4 2021 and Q4 2023, an uplift of approximately 50,000 between journeys in 2022 compared to 2023. Highlighting the benefits of public transport on air quality comparative to private vehicle use to commute;
- Acknowledgment of campaigns and consideration of development plans for the reconnection of Bideford to the national rail network alongside ACE Rail and the Tarka Rail Association;
- Promotion of the Travel Devon Toolkit issued by Devon County Council to support businesses in North Devon becoming more sustainable and reducing their air pollutant contributions;
- Endorsement of the bicycle mechanic and hire businesses Planet Bike Barnstaple and Bike Shed UK who host free sessions for locals to check that their bikes are safe and make minor adjustments to get them on the road, as well as offering bicycle hire. Thus, incentivising active transportation uptake throughout the District whilst seeking to reduce air pollution contributions from frequent vehicular usage;
- Collaboration with North Devon Velo to promote cycling activities such as: club rides, touring, road racing, track racing, and charity events. This relationship promotes the use and benefits of active transport on air quality and health whilst educating the next generation to reduce vehicle uptake thus promoting the area as inclusive and an enabler of active travel for all;
- Promotion of the 'Park and Cycle' initiative that operates alike the 'Park and Ride' public bus service in Barnstaple. The scheme is a Business Engagement Programme, with bike lockers managed and rented by Bikeaway Ltd and

encourages active transportation uptake throughout the District whilst seeking to reduce air pollution contributions from frequent vehicular usage;

- Promotion and development of the National Cycle Network (NCN) as well as the Local Cycle Network (LCN), demonstrating North Devon District Council's commitment to cycling development in the area. The NCN highlights 3 key courses (Route 3, 27, and 51) available to cycle, walk, and run thus promoting alternative forms of travel and reducing emissions.

The Environmental Protection Team of North Devon District Council continues to work collaboratively alongside industrialised organisations in the District with activities permitted by the Council, subject to regular inspections. Inspections are undertaken to establish where combustion and non-combustion processes could lead to anthropogenic emissions of $PM_{2.5}$, thus worsening air quality. The Council seeks to reduce, if not eliminate, additional anthropogenic $PM_{2.5}$ emissions by ensuring that they inspect and review industrialised activities and implement appropriate mitigation where necessary.

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

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

North Devon District Council undertook automatic (continuous) monitoring at one site during 2023, which operates as part of the AURN, Barnstaple A39. Table A.1 in Appendix A shows the details of the automatic monitoring site. The monitoring station is located on A39-Eastern Avenue, 1.2 km east of Barnstaple town centre and within the vicinity of the Howard Avenue industrial units. The UK-AIR website presents automatic monitoring results for North Devon District Council.

Maps showing the location of the monitoring sites are provided in Figure D.1 - Figure D.7. 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

North Devon District Council undertook non-automatic (i.e. passive) monitoring of NO_2 at 28 sites during 2023. 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 Figure D.1 - Figure D.7. 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.

During 2023, the diffusion tube network was well maintained, with an average data capture of approximately 91.9%, with only DT's 11 and 12 having more than 3 months of data missing, therefore requiring annualisation.

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 Figure A. 1 - Figure A. 5 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).

Figure A. 1 - Figure A. 5 highlight a decreasing trend in NO_2 concentrations reported across North Devon between 2019-2023, albeit in 2021 and 2022 there are slight increases shown. These could be attributable to a return to normalised traffic conditions post COVID-19 lockdown where UK Government advice was given to stay at home where possible, resulting in decreased levels of traffic observed across the UK, and as such, reduced annual mean NO_2 concentrations recorded.

Of the 28 sites that made up the diffusion tube monitoring network in 2023, the NO_2 annual mean concentration decreased at all 28 locations, equating to a reduction in pollutant concentration at 100% of sites from 2022. The maximum decrease in NO_2 concentration between the two reporting years was 3.6 µg/m^3 at DT's 4, 8 and 27. These tubes are located on Church Street in Ilfracombe, Exeter Road in Braunton, and Lower Sticklepath Roundabout in Barnstaple respectively, all of which are significantly beyond the extent of the current AQMA boundary. This is in contrast to the previous reporting year, where concentrations increased between 2021 and 2022 at 35.71% of sites, noting DT's 1 and 2 cannot be compared between 2021 and 2022 as 2022 was the first year of deployment.

The diffusion tubes around the edge of the current AQMA boundary showed decreases of 2.4 µg/m^3 (DT 18), 1.8 µg/m^3 (DT 17) and 1.2 µg/m^3 (DT 16) respectively. Only DT 18 highlights a greater decrease than the average decrease observed across the entire diffusion tube network (2.1 µg/m^3). Recent monitoring evidence suggests that there is no need to extend the current boundary for which the AQMA is designated, nor maintain the

AQMA, instead revocation is proposed. It is acknowledged that the AQMA was revoked in June 2024, and the Council are developing an Air Quality Strategy for publication before the 2025 ASR. Engagement with internal stakeholders and key partners is already occurring.

Across the two diffusion tubes that are located within the AQMA (DT 15 and 19), both sites recorded an NO_2 annual mean concentration below the air quality objective of 40 µg/m^3, with the maximum concentration recorded within the AQMA at DT 15, 27.5 µg/m^3.

Additionally, no diffusion tube monitoring site recorded an NO_2 annual mean concentration within 10% of the objective.

The Council has achieved compliance within 10% of the NO_2 annual mean objective of 40 µg/m^3 since 2019 with the exception of DT 15 in 2019 that reported a concentration of 36.1 µg/m^3. Therefore, there is sufficient monitoring evidence to revoke the AQMA, as recommended and supported by Defra in the 2023 ASR appraisal document. As aforementioned, it is acknowledged that the AQMA was revoked in June 2024, and the Council are developing an Air Quality Strategy for publication before the 2025 ASR.

For diffusion tubes, the full 2023 dataset of monthly values is provided in Appendix B, Table B. 1 – NO_2 2023 Diffusion Tube Results (µg/m^3). It is noted that the monitoring dates coincide with the Defra calendar dates. As such, there is a degree of certainty surrounding the monitoring results provided.

It is possible to infer the risk of exceedances of the 1-hour mean NO_2 AQS objective at diffusion tube monitoring sites. LAQM.TG(22) provides an empirical relationship that states exceedances of the 1-hour objective are unlikely when the annual mean concentration is below 60 µg/m^3. Given that the highest recorded annual mean concentration at any of the diffusion tube monitoring sites is 27.5 µg/m^3 in 2023, and 36.1 µg/m^3 since 2019, it is possible to conclude that there have been no exceedances of the hourly mean NO_2 objective at all monitoring locations in the last five years.

3.2.2 Particulate Matter (PM_{10})

Concentrations of PM_{10} have decreased steadily in North Devon since 2019, although there has never been a recorded exceedance of the PM_{10} annual mean AQS objective in the area. The data from the automatic station AURN Barnstaple A39 indicates that the PM_{10} annual mean objective (40 µg/m^3), was not exceeded in 2023, with an annual mean PM_{10} concentration of 15.0 µg/m^3 being recorded, 2.3 µg/m^3 higher than the annual PM_{10}

concentration reported in 2022 and 25 µg/m^3 lower than the annual mean objective. The 24-hour PM_{10} objective of 50 µg/m^3 not to be exceeded on more than 35 occasions was not breached once, with the maximum 24-hour mean PM_{10} concentration that was recorded at the site being 36 µg/m^3. The PM_{10} results from the automatic monitoring station AURN Barnstaple A39 are presented in Table A. 4, Table A. 5 and Figure A. 6.

3.2.3 Particulate Matter ($PM_{2.5}$)

In 2023, the annual mean $PM_{2.5}$ concentration recorded at the automatic monitoring station AURN Barnstaple A39 was 8 µg/m^3, the lowest annual concentration reported since 2019. The 2023 annual concentration is well below the current $PM_{2.5}$ annual objective of 20 µg/m^3 and 2 µg/m^3 below the AQS objective of 10 µg/m^3 that is not to be exceeded at any monitoring station by 31st December 2040. The results provided show little variation in $PM_{2.5}$ concentrations, especially since 2019, with values reported over the last five years significantly below the $PM_{2.5}$ annual mean objective. The $PM_{2.5}$ results from this monitoring station are presented in Table A. 6 and Figure A. 7.

3.2.4 Sulphur Dioxide (SO_2)

Sulphur Dioxide (SO_2) is not monitored in North Devon.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
AURN Barnstaple A39	AURN – Barnstaple A39 (UKA00574)	Roadside	257048	132591	PM_{10}, $PM_{2.5}$	No	BAM 1020 Heated	20	3.0	3.5

Notes:

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

(2) N/A if not applicable

Table A.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)
1	Opp Murco Garage High St, Ilfracombe	Kerbside	251649	147477	NO_2	No	1.8	0.6	No	2.6
2	O/s Melian Pet Supplies, High St Ilfracombe	Kerbside	251784	147588	NO_2	No	2.4	0.5	No	2.8
3	Ilfracombe Convenience Store, High Street, Ilfracombe	Kerbside	251971	147689	NO_2	No	0.0	2.5	No	3.0
4	Church Street, Ilfracombe	Kerbside	251533	147330	NO_2	No	0.5	1.6	No	2.6
5	Exeter Road 1 - Vellator	Kerbside	249042	135903	NO_2	No	11.0	1.3	No	2.7
6	Exeter Road 2 - Wingate	Kerbside	248969	136060	NO_2	No	6.8	2.9	No	2.7
7	Exeter Road 3 - Parklyn	Kerbside	248863	136403	NO_2	No	3.9	1.7	No	2.4
8	Exeter Road 4 - Kaya	Kerbside	248766	136437	NO_2	No	6.1	2.6	No	2.3
9	Exeter Road 5 - Paint a Pot	Kerbside	248862	136372	NO_2	No	3.9	0.5	No	2.5
10	South Street, Newport	Kerbside	256683	132130	NO_2	No	2.5	1.2	No	2.4
11	South Street 1 - Barton Lane	Kerbside	248716	136067	NO_2	No	7.0	0.0	No	3.0
12	South Street 2 - Village End	Kerbside	248787	136498	NO_2	No	2.4	0.0	No	2.8
13	Saunton Road 1 - Field Lane	Kerbside	248417	136610	NO_2	No	3.4	1.5	No	2.5
14	Saunton Road 2 - Sharlands	Kerbside	248363	136630	NO_2	No	9.8	1.4	No	3.9
15	Caen Street - Salt	Kerbside	248771	136591	NO_2	Yes – North Devon AQMA No.1	0.6	1.0	No	2.3
16	Caen Gardens - J Benning	Kerbside	248615	136596	NO_2	No	0.0	3.8	No	2.7
17	Chaloners Road - Parish Hall	Kerbside	248791	136621	NO_2	No	30.0	1.3	No	2.4
17 (OLD)	Picston House, Bickington	Kerbside	253595	132433	NO_2	No	10.2	2.8	No	2.7
18	The Square - Café Bistro	Kerbside	248731	136617	NO_2	No	0.0	6.0	No	2.3
18 (OLD)	Babbages, Bickington	Kerbside	253053	132541	NO_2	No	6.5	0.6	No	2.7

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)
19	The London Inn	Kerbside	248732	136592	NO_2	Yes – North Devon AQMA No.1	0.0	1.1	No	2.4
20	Rolle Street	Kerbside	255556	133583	NO_2	No	2.2	1.3	No	2.5
21	Pilton Causeway	Kerbside	255774	133732	NO_2	No	7.0	1.0	No	2.6
22	Alexandra Road	Kerbside	256186	133164	NO_2	No	2.2	1.6	No	2.5
23	Newport Road	Kerbside	256706	132253	NO_2	No	0.5	1.2	No	2.6
24	Belle Meadow Road	Kerbside	255967	132985	NO_2	No	12.0	1.6	No	2.5
25	Cedars Roundabout	Urban Background	253886	132394	NO_2	No	25.0	1.6	No	2.5
26	Sticklepath School	Kerbside	254197	132354	NO_2	No	2.0	1.7	No	2.7
27	Lower Sticklepath Roundabout	Kerbside	255651	132808	NO_2	No	34.0	2.8	No	2.8
28	Castle Street	Kerbside	255661	133179	NO_2	No	0.0	1.7	No	2.4

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: 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 2023 (%) [2]	2019	2020	2021	2022	2023
1	251649	147477	Kerbside	90.1	90.1	-	-	-	18.0	15.7
2	251784	147588	Kerbside	99.7	99.7	-	-	-	16.1	14.8
3	251971	147689	Kerbside	90.1	90.1	17.6	15.1	14.6	13.6	13.4
4	251533	147330	Kerbside	99.7	99.7	18.5	14.9	17.4	17.0	13.4
5	249042	135903	Kerbside	99.7	99.7	19.7	17.4	19.1	18.5	16.2
6	248969	136060	Kerbside	92.1	92.1	16.1	13.7	14.3	12.5	11.5
7	248863	136403	Kerbside	99.7	99.7	20.2	15.9	17.9	17.8	14.5
8	248766	136437	Kerbside	77	77.0	16.0	11.1	13.0	12.9	9.4
9	248862	136372	Kerbside	75.1	75.1	35.2	26.4	29.2	28.1	25.2
10	256683	132130	Kerbside	99.7	99.7	26.0	19.2	18.5	19.0	17.3
11	248716	136067	Kerbside	69	69.0	10.0	8.1	8.6	8.4	7.6
12	248787	136498	Kerbside	48.5	48.5	13.1	11.0	12.2	11.1	10.0
13	248417	136610	Kerbside	84.7	84.7	23.5	18.9	20.0	18.6	15.5
14	248363	136630	Kerbside	99.7	99.7	18.0	14.9	15.9	13.0	12.1
15	248771	136591	Kerbside	99.7	99.7	36.1	29.3	31.4	30.9	27.5
16	248615	136596	Kerbside	83	83.0	12.4	10.9	11.1	10.8	9.6
17	248791	136621	Kerbside	92.1	92.1	22.3	18.7	19.8	18.2	16.3
17 (OLD)	253595	132433	Kerbside	N/A[3]	N/A[3]	26.5	23.5	25.6	-	-
18	248731	136617	Kerbside	92.3	92.3	30.0	18.8	20.0	19.9	17.5

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 2023 (%) [2]	2019	2020	2021	2022	2023
18 (OLD)	253053	132541	Kerbside	N/A[3]	N/A[3]	18.3	15.1	16.5	-	-
19	248732	136592	Kerbside	99.7	99.7	31.1	26.4	27.2	26.4	24.5
20	255556	133583	Kerbside	99.7	99.7	23.8	20.4	20.8	20.9	19.0
21	255774	133732	Kerbside	99.7	99.7	25.6	20.4	22.9	21.6	19.9
22	256186	133164	Kerbside	99.7	99.7	25.2	21.5	21.7	22.9	20.2
23	256706	132253	Kerbside	92.3	92.3	25.8	22.3	22.7	23.0	20.7
24	255967	132985	Kerbside	99.7	99.7	21.3	19.6	19.8	20.5	18.6
25	253886	132394	Urban Background	90.1	90.1	15.7	14.0	13.9	14.9	12.5
26	254197	132354	Kerbside	99.7	99.7	23.9	20.8	21.2	19.8	18.2
27	255651	132808	Kerbside	99.7	99.7	22.1	18.5	20.3	21.0	17.4
28	255661	133179	Kerbside	99.7	99.7	13.7	10.7	11.6	12.1	9.9

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

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

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

Notes:

The annual mean concentrations are presented as 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%).

(3) N/A = Not Applicable (the site was removed).

Figure A. 1 – Trends in Annual Mean NO_2 – Diffusion Tubes (Within AQMA)

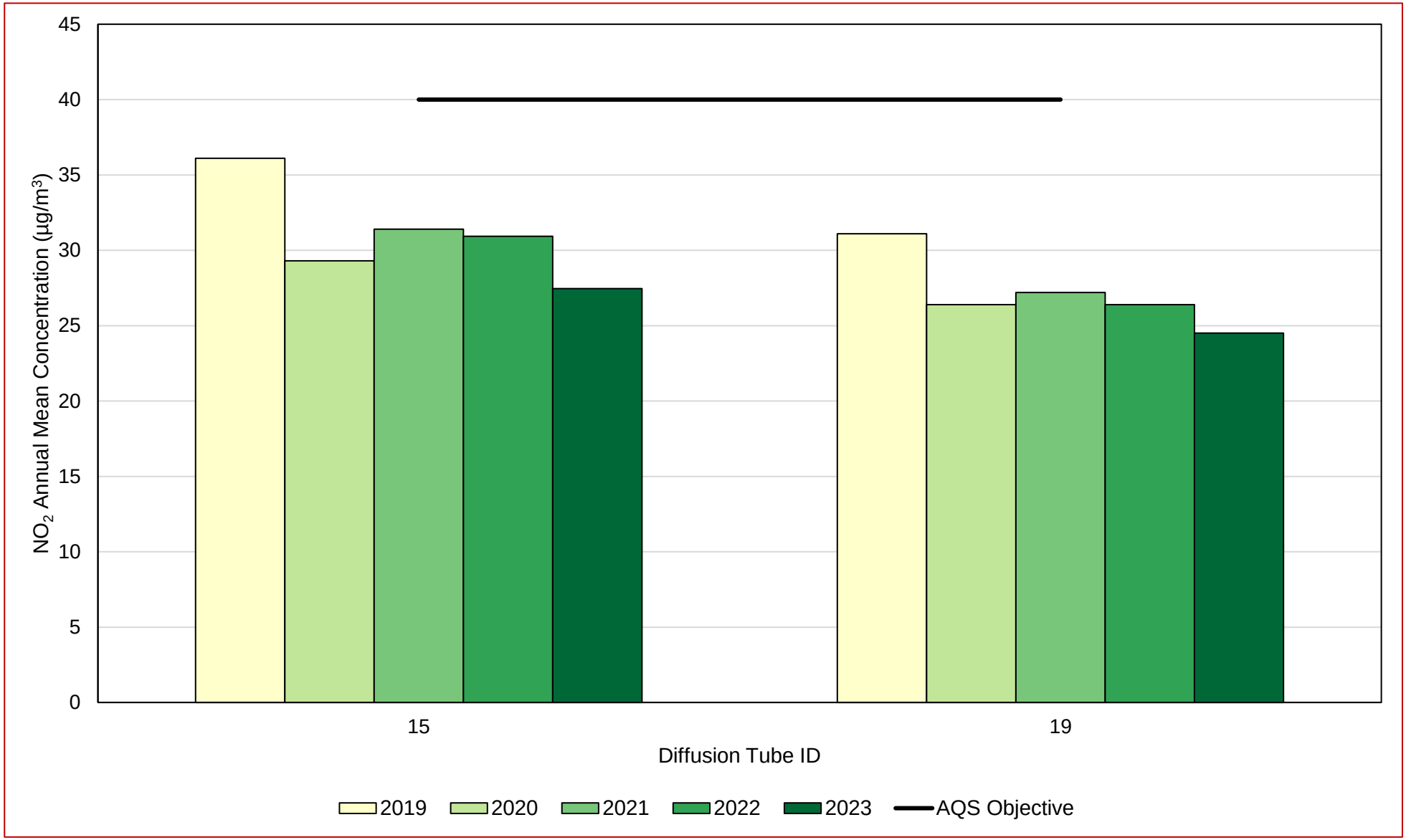


Figure A. 2 – Trends in Annual Mean NO_2 – Diffusion Tubes (Sites 1 – 6)

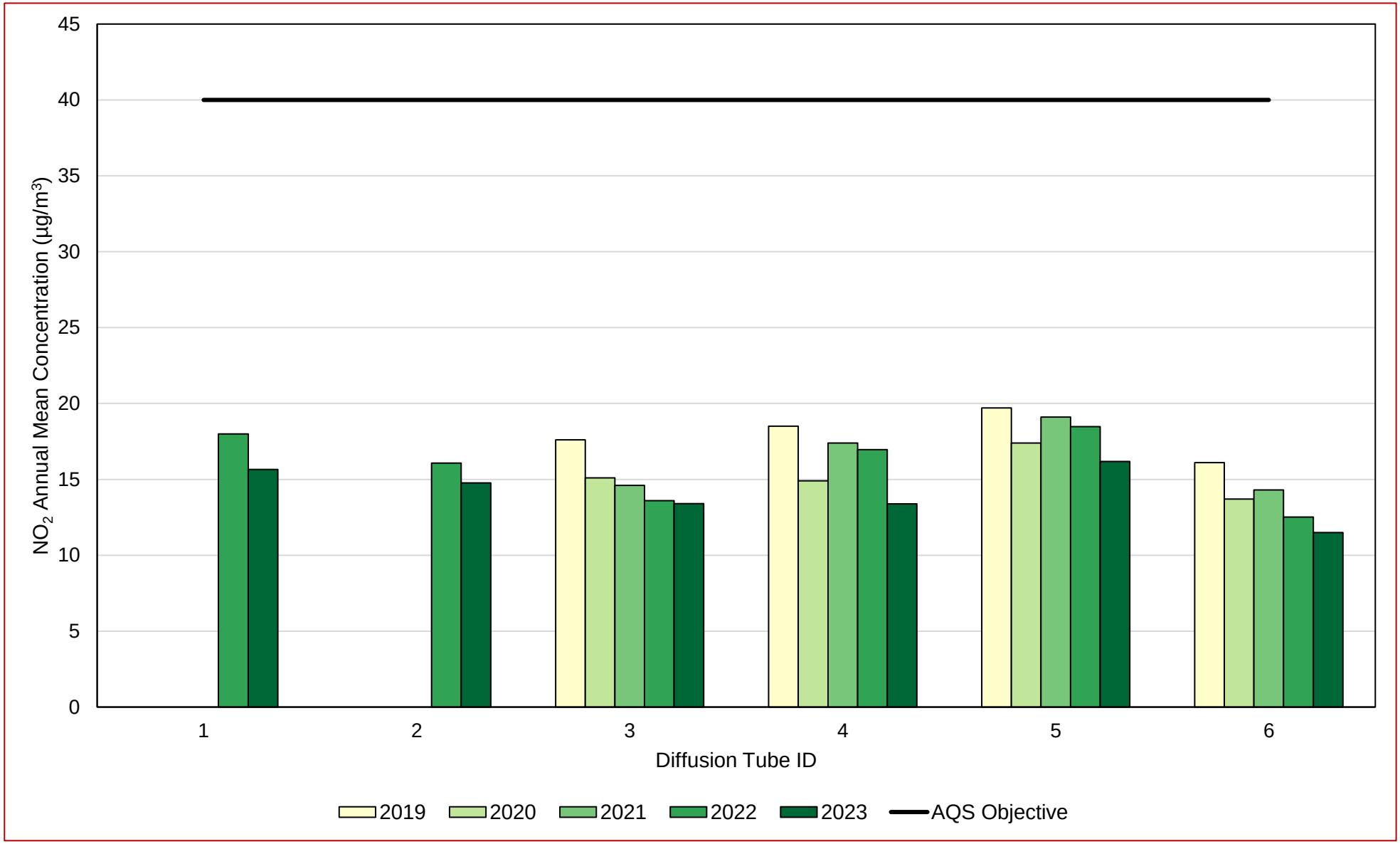


Figure A. 3 – Trends in Annual Mean NO_2 – Diffusion Tubes (Sites 7 – 13)

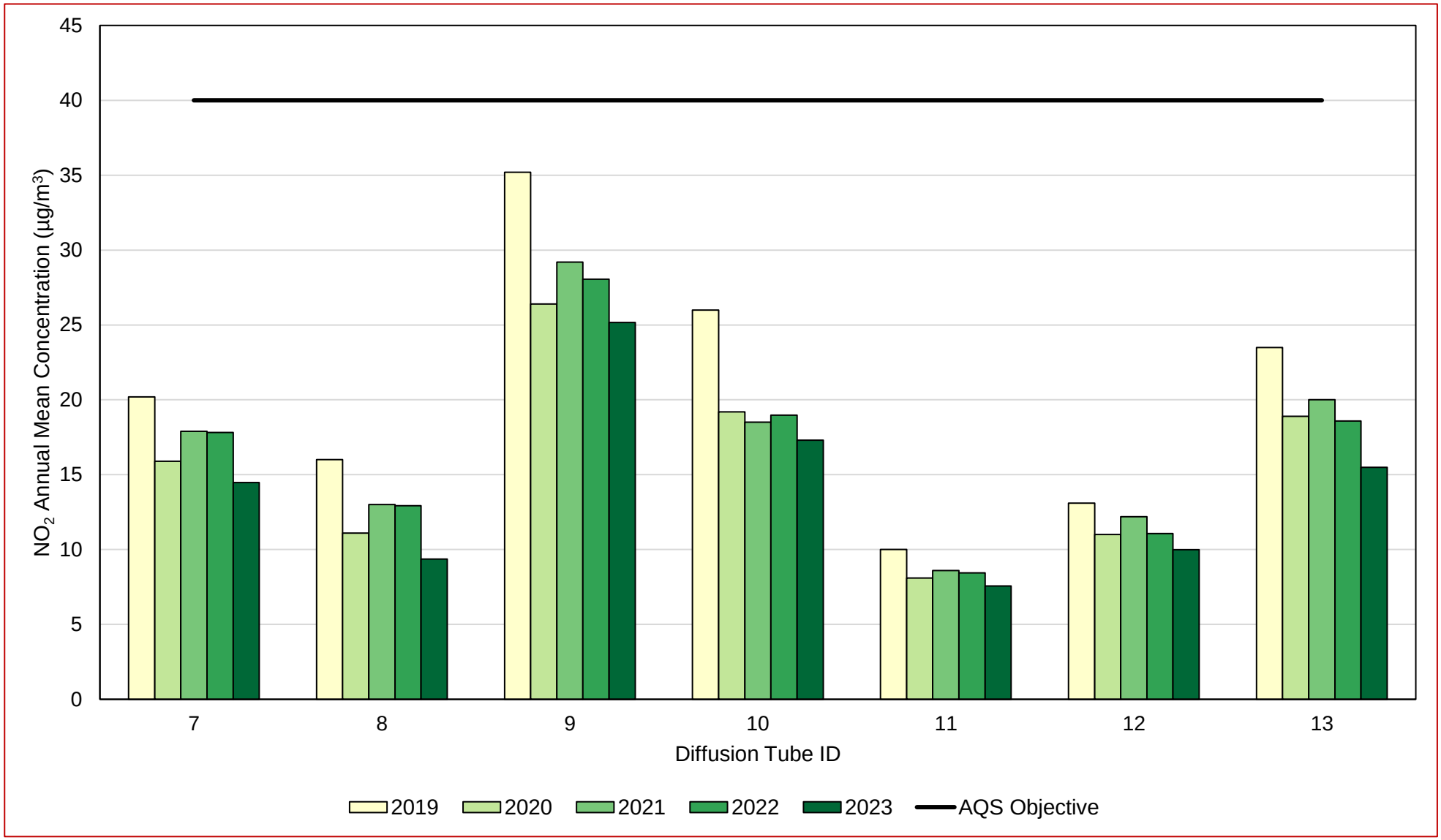


Figure A. 4 – Trends in Annual Mean NO_2 – Diffusion Tubes (Sites 14 – 20)

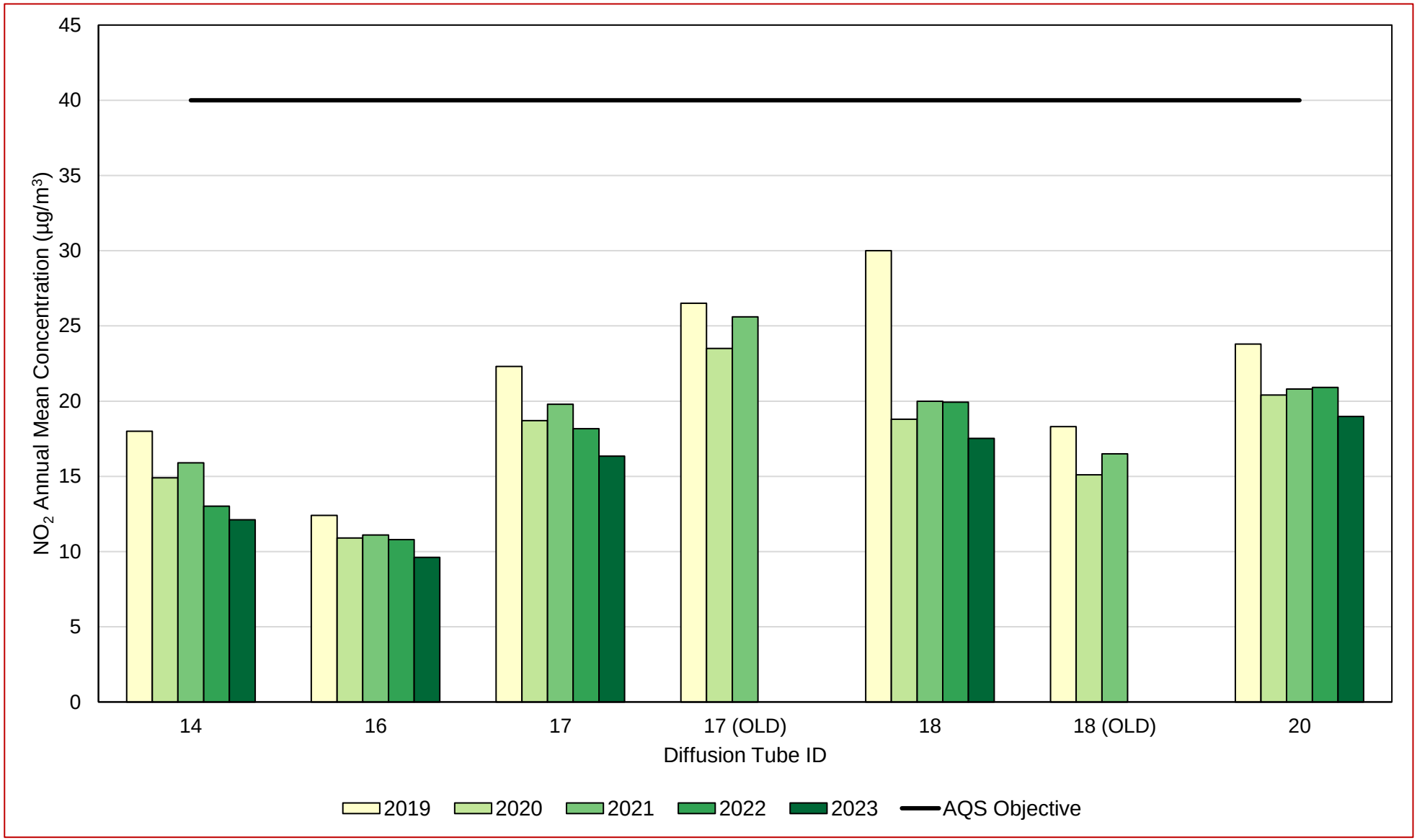


Figure A. 5 – Trends in Annual Mean NO_2 – Diffusion Tubes (Sites 21 – 28)

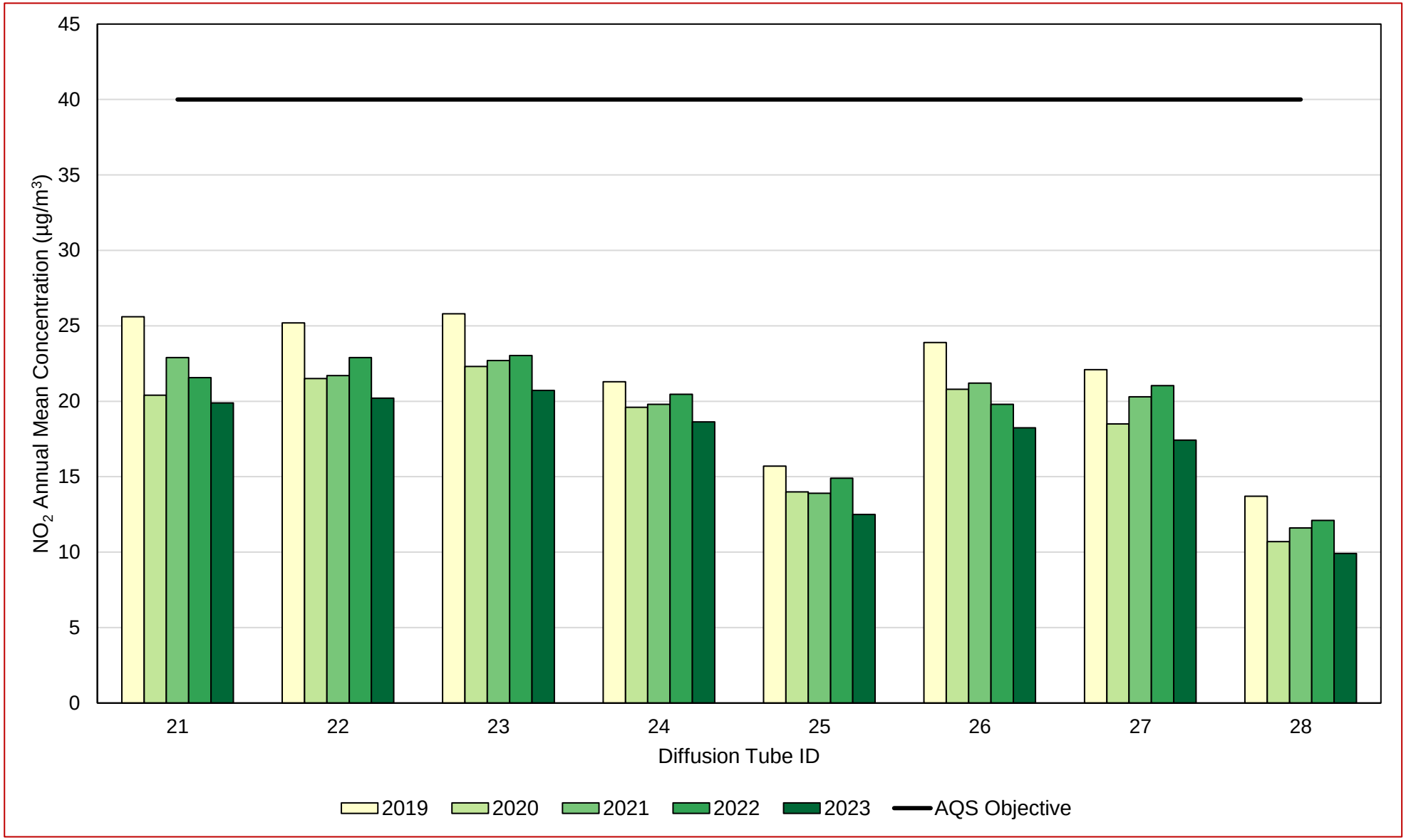


Table A. 4 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
AURN Barnstaple A39	257048	132591	Roadside	92.3	92.3	16.6	14.2	13.2	12.7	15.0

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

Notes:

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

Exceedances of the PM_{10} 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.

(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. 6 – Trends in Annual Mean PM_{10} – AURN Barnstaple A39

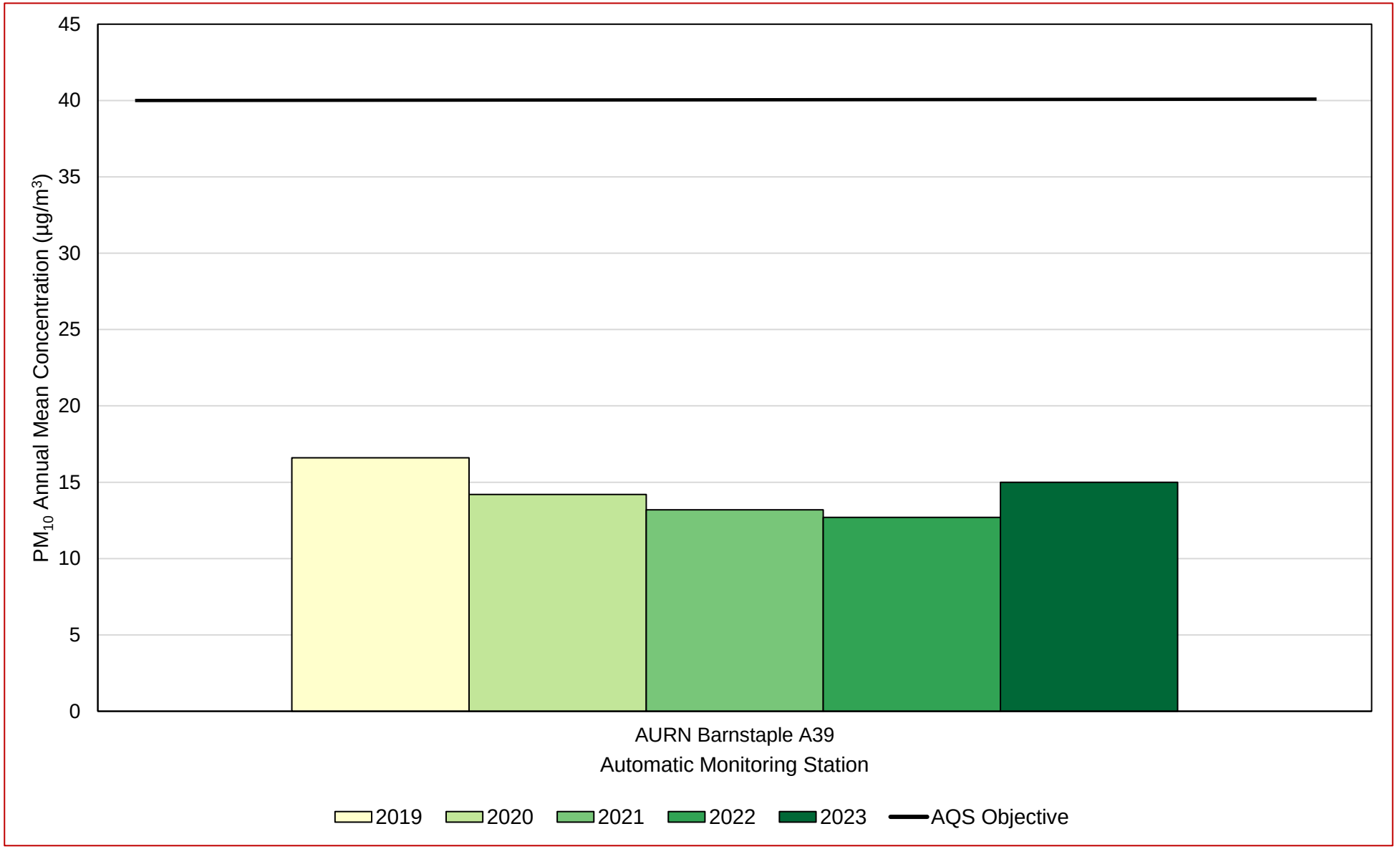


Table A. 5 – 24-Hour Mean PM_{10} Monitoring Results, 24-Hour Means > 50 µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2019	2020	2021	2022	2023
AURN Barnstaple A39	257048	132591	Roadside	92.3	92.3	2	0	1	0 (18.0)	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%).

Table A. 6 – Annual Mean $PM_{2.5}$ Monitoring Results (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 2023 (%) (2)	2019	2020	2021	2022	2023
AURN Barnstaple A39	257048	132591	Roadside	87.6	87.6	8.1	8.4	8.2	8.2	8.0

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

Notes:

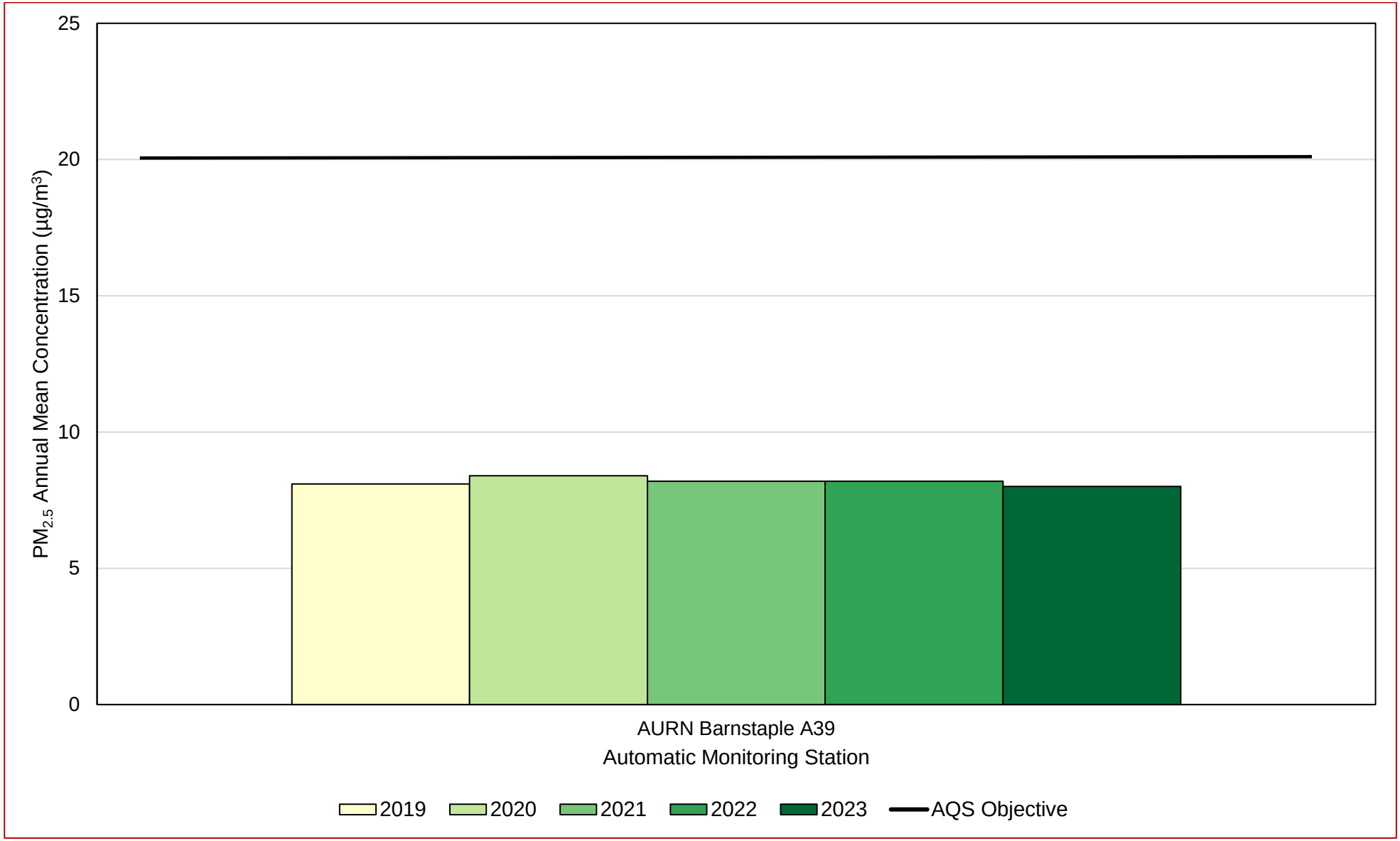
The annual mean concentrations are presented as µg/m^3.

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. 7 – Trends in Annual Mean $PM_{2.5}$ – AURN Barnstaple A39



Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B. 1 – NO_2 2023 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 (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
1	251649	147477	20.4	19.7	21.3	18.0	18.7	19.5	19.3	19.5	20.0	19.8		16.4	19.3	15.7		
2	251784	147588	20.8	22.8	19.1	17.9	15.3	13.0	18.3	17.8	19.4	19.6	18.1	16.5	18.2	14.8		
3	251971	147689	17.5	20.9		14.0	14.7	15.8	19.2	17.5	15.8	14.8	16.2	15.6	16.6	13.4		
4	251533	147330	19.5	17.0	14.4	19.8	18.2	20.8	10.5	15.8	18.7	17.1	15.4	11.2	16.5	13.4		
5	249042	135903	20.3	23.4	21.2	21.9	20.7	21.6	14.7	16.5	21.5	22.5	19.1	16.6	20.0	16.2		
6	248969	136060	15.9	18.9	14.7	14.9	14.9	13.0	10.6	12.3	14.0		14.9	12.0	14.2	11.5		
7	248863	136403	20.2	22.4	17.4	19.0	19.7	19.1	13.6	17.8	16.5	17.5	17.9	13.3	17.9	14.5		
8	248766	136437			13.0	12.8		13.6	7.1	10.0	13.6	13.9	12.0	8.1	11.6	9.4		
9	248862	136372			27.8	30.7	32.1	36.5	30.1	32.3	33.8	31.7		24.8	31.1	25.2		
10	256683	132130	27.0	25.0	21.7	20.5	19.5	19.4	17.7	18.2	22.0	22.2	24.7	18.6	21.4	17.3		
11	248716	136067		11.8	9.5			8.2	6.0	7.4	9.1		10.5	7.5	8.7	7.6		
12	248787	136498				12.6			7.7	10.7	12.6	13.3		8.6	10.9	10.0		
13	248417	136610			18.1	22.7	22.3	23.5	14.2	18.5	22.0	20.7	17.9	11.4	19.1	15.5		
14	248363	136630	16.4	18.4	12.4	16.3	13.6	17.4	10.7	15.0	17.2	17.3	15.0	9.8	15.0	12.1		
15	248771	136591	34.9	36.3	35.6	38.0	35.6	37.7	27.3	32.4	38.0	35.0	30.1	26.0	33.9	27.5		
16	248615	136596	12.1	15.3	11.0	12.1	11.1	12.9	9.7		13.1		12.3	9.2	11.9	9.6		
17	248791	136621	22.0		20.0	21.6	18.9	21.4	17.9	18.9	23.4	23.3	18.9	15.7	20.2	16.3		
18	248731	136617		25.7	23.2	24.9	20.7	22.3	17.3	19.0	23.6	24.6	20.3	16.6	21.6	17.5		
19	248732	136592	29.4	31.3	30.8	35.4	24.9	31.6	29.8	27.4	36.0	35.7	27.1	23.9	30.3	24.5		
20	255556	133583	28.4	30.0	22.9	25.0	22.5	22.3	16.2	20.7	23.1	24.7	26.0	19.4	23.4	19.0		
21	255774	133732	36.6	27.5	26.9	26.4	23.9	24.1	14.8	18.4	26.2	28.0	24.6	17.1	24.6	19.9		
22	256186	133164	34.5	29.2	29.0	23.9	20.0	19.7	18.9	19.2	25.9	28.6	26.0	24.7	25.0	20.2		
23	256706	132253		32.0	26.4	26.2	20.2	22.2	21.2	21.4	29.6	29.0	28.6	24.6	25.6	20.7		
24	255967	132985	29.7	29.8	24.2	24.0	22.6	21.7	15.5	18.7	20.6	24.5	24.9	19.8	23.0	18.6		
25	253886	132394	19.3	17.9	16.0	16.2	11.6	14.3	12.4	12.0	18.1	19.1		12.8	15.4	12.5		
26	254197	132354	25.3	25.4	21.9	23.8	17.8	22.9	18.9	18.5	25.0	27.7	23.5	19.6	22.5	18.2		
27	255651	132808	26.5	27.3	25.0	21.5	15.9	17.0	15.5	17.2	22.5	25.7	23.3	20.6	21.5	17.4		

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 (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
28	255661	133179	17.0	17.0	12.7	11.7	8.5	9.5	8.1	9.6	13.1	14.1	15.2	10.4	12.2	9.9		

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

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

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

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

☒ **North Devon District Council confirm that all 2023 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 QA/QC

New or Changed Sources Identified Within North Devon During 2023

North Devon District Council has identified two new developments, one residential application and one onshore/offshore infrastructure application, that required an Air Quality Assessment (AQA) within the reporting year of 2023 Further investigation between the Council's Planning Department and Environmental Protection Department has identified that they are not expected to significantly impact the air quality objectives within the area as development progresses into the 2024 monitoring year and onwards. It is acknowledged that the applications are confidential, therefore specific information cannot be disclosed in the ASR. More detail regarding the specific applications can be obtained by contacting the Council.

Additional Air Quality Works Undertaken by North Devon District Council During 2023

During 2023, North Devon District Council commissioned an Air Quality Assessment (AQA) at North Devon Hospital, which involved monitoring pollutant concentrations at the site to determine patient, staff and visitor exposure. The Council confirm that the draft report has been submitted to the NHS for review and comment. This project demonstrates the Council's approach to collaborative working with partner organisations to improve air quality within the area and for its residents and visitors' welfare, particularly those who are vulnerable.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes for the year 2023 were supplied and analysed by Gradko International, using the 20% Triethanolamine (TEA) in water preparation method. Gradko International, a UKAS accredited laboratory, participate in the AIR-PT scheme for NO_2 diffusion tube analysis and Annual Field Intercomparison Exercise. These provide strict criteria relating to performance that participating laboratories must meet, ensuring that the reported NO_2 concentrations are of a high calibre. From the most recent set of AIR-PT results (AR058,

July – August and AR059, September – October), in which Gradko scored 100% – the percentage score reflects the results deemed satisfactory based upon the z-score of ± 2.

There were 23 local authority co-location studies which used tubes supplied by Gradko with the 20% TEA in water preparation method in 2023, 22 were rated as 'good', as shown by the precision summary results. This precision reflects the laboratory's performance and consistency in preparing and analysing the tubes, as well as the subsequent handling of the tubes in the field. Tubes are considered to have a "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more monitoring periods during a year is less than 20%.

Monitoring in 2023 throughout North Devon District was completed in adherence with the 2023 Diffusion Tube Monitoring Calendar, whereby all changeovers throughout the monitoring year were completed in line with Defra guidance.

Diffusion Tube Annualisation

For any site where data capture is below 75%, annualisation is to be performed. This is because section 7.196 of TG(22) states that:

"If data capture is below 75% for the year, then it is necessary to annualise the data… [as] the concentration varies throughout the year, and the instrument may have been operational for a period of above or below average concentrations".

During 2023, there were two diffusion tube sites that required annualisation, owing to the fact that there was insufficient data capture at both locations (Diffusion Tube IDs: 11 and 12). The sites reported data capture of 69% and 48.5% respectively, and over three months of data. In order to complete the annualisation process, data has been taken from a number of background monitoring station that are part of the AURN – Yarner Woods, Honiton, Charlton Mackrell, and Plymouth Centre. This is in line with Box T-9 of TG(22), which states to annualise data:

"Identify two to four nearby, long-term, continuous monitoring sites, ideally those forming part of the national network. The data capture for each of these sites should be at least 85%. These sites should be background (Urban Background, Suburban or Rural) sites to avoid any very local effects that may occur at Urban Centre, Roadside or Kerbside sites, and should, wherever possible lie within a radius of about 50 miles".

It is noted that the automatic monitor within North Devon, AURN Barnstaple A39, does not monitor NO_2, therefore could not be used for annualisation. Furthermore, AURN Honiton

did not achieve ≥85% data capture in 2023, therefore this site was rejected for annualisation.

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

Diffusion Tube ID	Annualisation Factor AURN Yarner Woods	Annualisation Factor AURN Charlton Mackrell	Annualisation Factor AURN Plymouth Centre	Average Annualisation Factor	Raw Data Simple Annual Mean (µg/m^3)	Annualised Data Simple Annual Mean (µg/m^3)
11	1.0630	1.1048	1.0367	1.0682	8.7	9.3
12	1.0489	1.2285	1.1113	1.1296	10.9	12.3

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

North Devon District Council have applied a national bias adjustment factor of 0.81 to the 2023 monitoring data. A summary of bias adjustment factors used by North Devon District Council over the past five years is presented in Table C. 2.

No co-location studies are carried out by North Devon District Council therefore only a national factor can be applied. The national factor for Gradko 20% TEA in water, as presented in the Diffusion Tube Bias Factors Spreadsheet v03/24, was 0.81 based on 23 studies. The National Bias Adjustment Spreadsheet is presented in Figure C. 1.

Table C. 2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.81
2022	National	09/23	0.85
2021	National	03/22	0.84
2020	National	03/21	0.81
2019	National	09/20	0.93

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 – NO_2 2023 Diffusion Tube Results ($\mu g/m^3$). No diffusion tube monitoring location within North Devon District Council required distance correction during 2023.

QA/QC of Automatic Monitoring

The North Devon District Council outsources the data management of automatic monitoring data to Bureau Veritas UK Ltd in conjunction with their responsibilities for the Automatic Urban and Rural Network (AURN). The Barnstaple A39 automatic monitoring station is part of the AURN that is run by the Environment Agency (EA). It is the largest automatic monitoring network within the UK, and is the main network used for compliance reporting against the air quality objectives. As such, the PM_{10} and $PM_{2.5}$ monitoring at AURN Barnstaple A39 is completed in line with the operational procedures set out by the Central Management and Coordination Unit (CMCU) for the AURN, with data ratification completed by the Quality Assurance and Quality Control Unit (QA/QC Unit).

Members of North Devon District Council team regularly attend the monitoring site, acting as the Local Site Operator (LSO) to complete routine site calibrations and maintenance thus ensuring a consistent, accurate data flow. Equipment servicing is completed every six months by an Equipment Support Unit (ESU) for the site, and the QA/QC Unit completes scheduled site audits in accordance with the AURN Site Operators Manual.

Due to the monitoring site being operated by the Environment Agency, North Devon District Council do not have first-hand access to any data that has been manipulated or removed through the QA/QC procedure completed. The data presented within the 2024 ASR has been downloaded from the UK-Air website and all is shown as ratified.

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

The PM_{10} and $PM_{2.5}$ monitors utilised within North Devon do not require the application of a correction factor.

Automatic Monitoring Annualisation

The automatic monitoring station within North Devon recorded data capture greater than 75% during 2023 for PM_{10} (92.3%) and $PM_{2.5}$ (87.6%). Therefore, the data did not require annualisation in 2023.

Figure C. 1 - National Bias Adjustment Factor Spreadsheet (03/24)

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/24

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 2024

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]

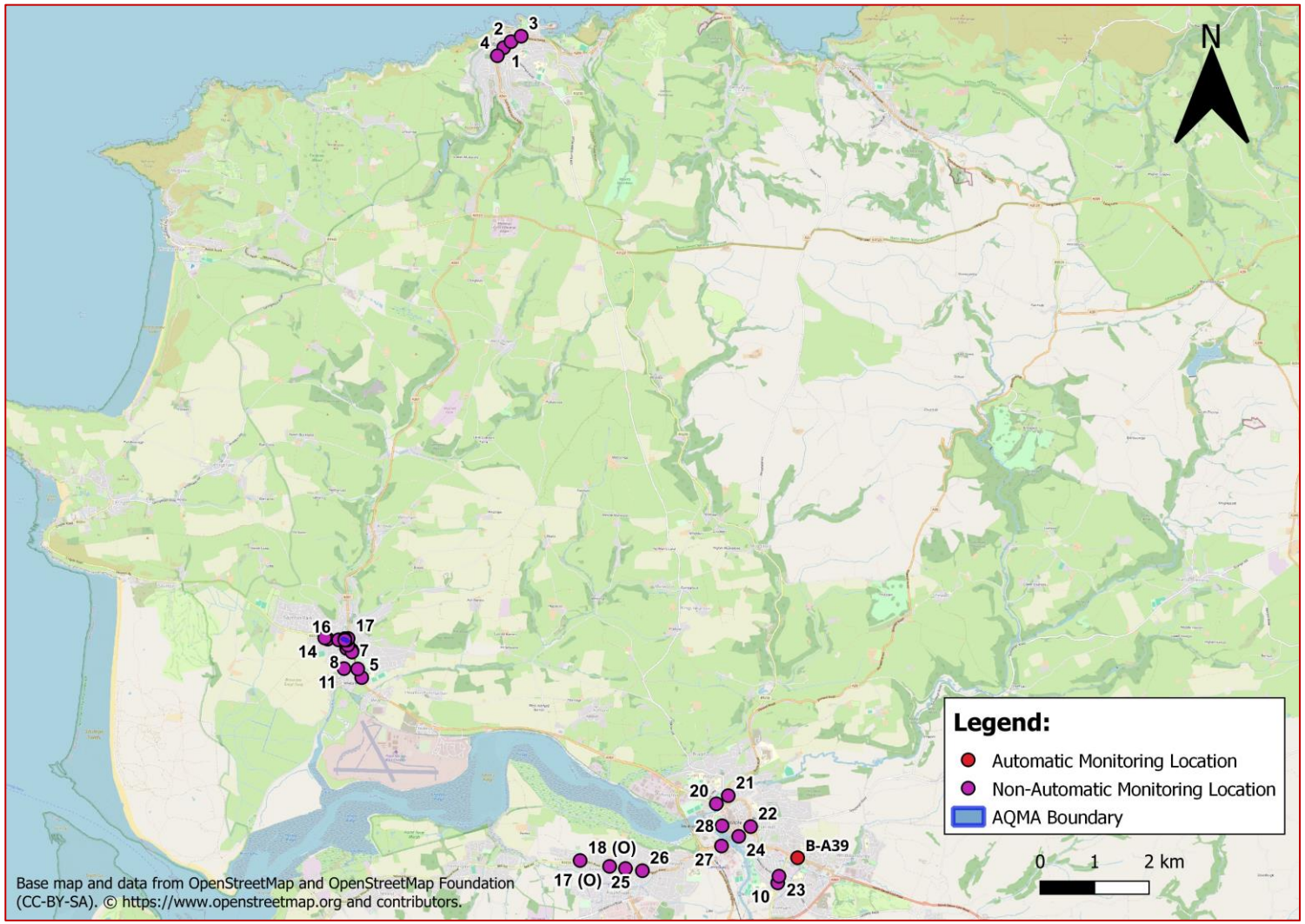
Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

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 (To undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	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)
Gradko	20% TEA in Water	2023	R	Monmouthshire County Council	11	33	26	26.5%	G	**0.79**
Gradko	20% TEA in water	2023	R	Blackburn With Darwen Bc	12	23	16	43.8%	G	**0.70**
Gradko	20% TEA in water	2023	R	Lancaster City Council	10	35	27	28.6%	G	**0.78**
Gradko	20% TEA in water	2023	R	Eastleigh Borough Council	12	33	26	26.4%	G	**0.79**
Gradko	20% TEA in water	2023	R	Eastleigh Borough Council	12	22	19	12.5%	G	**0.89**
Gradko	20% TEA in water	2023	R	Plymouth City Council	12	35	26	38.3%	S	**0.72**
Gradko	20% TEA in water	2023	R	Plymouth City Council	10	39	31	24.2%	S	**0.80**
Gradko	20% TEA in water	2023	UC	Belfast City Council	10	26	19	38.3%	G	**0.72**
Gradko	20% TEA in water	2023	R	Cheshire West And Chester	12	35	32	10.0%	G	**0.91**
Gradko	20% TEA in water	2023	R	Cheshire West And Chester	10	32	28	14.6%	G	**0.87**
Gradko	20% TEA in water	2023	R	Dudley Mbc	12	27	23	17.1%	G	**0.85**
Gradko	20% TEA in water	2023	UB	Dudley Mbc	12	19	13	45.4%	G	**0.69**
Gradko	20% TEA in water	2023	R	Dudley Mbc	12	40	37	7.7%	G	**0.93**
Gradko	20% TEA in water	2023	R	Gateshead Council	12	23	20	17.7%	G	**0.85**
Gradko	20% TEA in water	2023	R	Gateshead Council	11	23	18	26.9%	G	**0.79**
Gradko	20% TEA in water	2023	R	Gateshead Council	12	27	22	20.7%	G	**0.83**
Gradko	20% TEA in water	2023	R	Gateshead Council	12	29	23	25.9%	G	**0.79**
Gradko	20% TEA in water	2023	R	Gateshead Council	12	30	33	-7.8%	G	**1.08**
Gradko	20% TEA in water	2023	KS	Marylebone Road intercomparison	11	45	38	20.3%	G	**0.83**
Gradko	20% TEA in water	2023	B	South Holland District Council	10	8	7	12.4%	G	**0.89**
Gradko	20% TEA in water	2023	R	Worcestershire	12	12	11	17.4%	G	**0.85**
Gradko	20% TEA in Water	2023	R	Ards And North Down Borough Council	12	33	21	60.2%	G	**0.62**
Gradko	20% TEA in Water	2023	R	Lisburn & Castlereagh City Council	11	24	20	22.1%	G	**0.82**
Gradko	20% TEA in water	2023		**Overall Factor[3] (23 studies)**				Use		**0.81**

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – All Monitoring Locations in North Devon



NOTE:

Automatic monitoring station AURN Barnstaple A39 has been abbreviated and labelled as B-A39 in map Figure D.1.

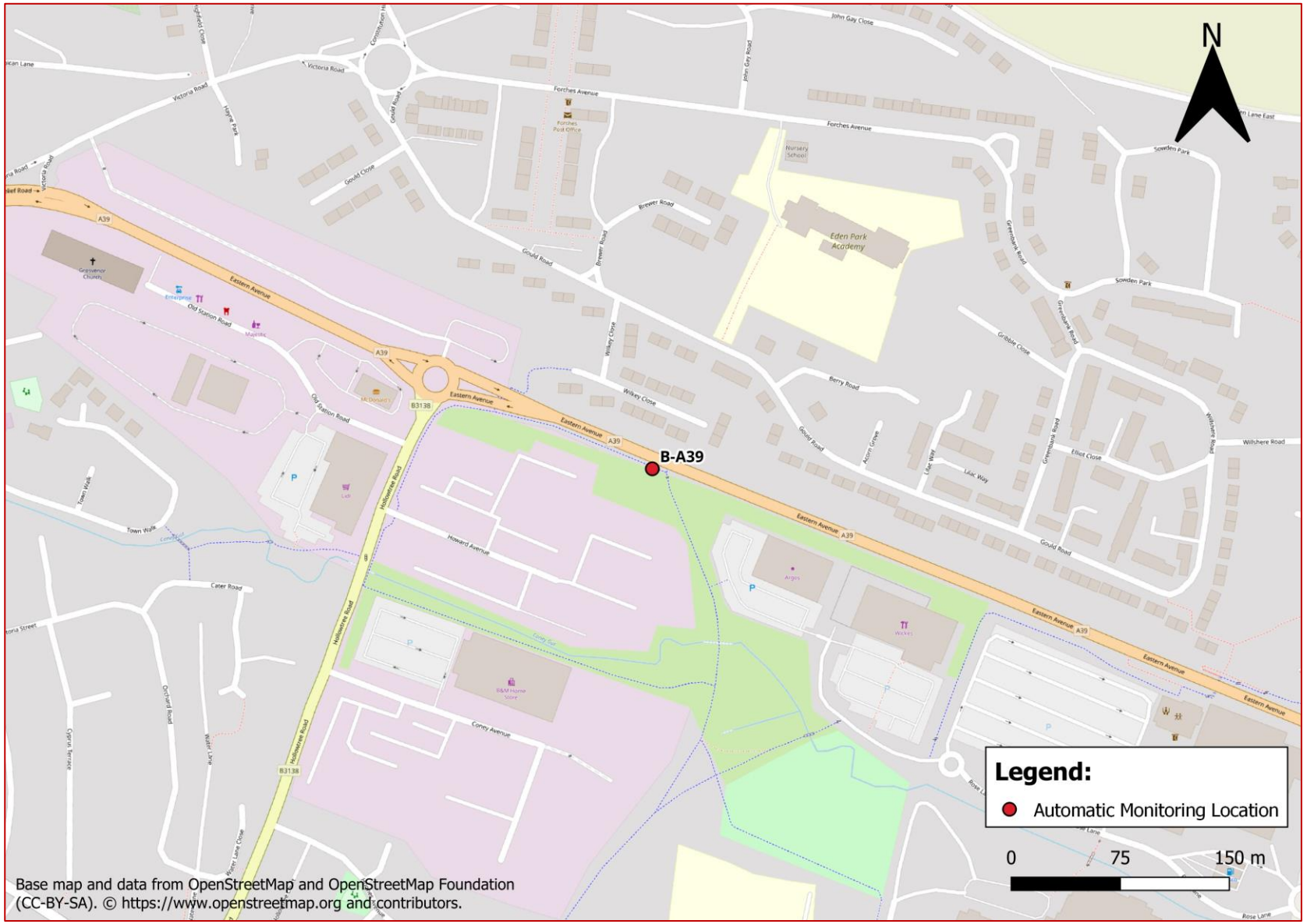
Figure D.1 North Devon AQMA overlaps Site IDs: 15, 17, 18 and 19.

Site IDs 17 (O) and 18 (O) abbreviate the Site IDs 17 (OLD) and 18 (OLD).

Non-automatic monitoring stations Site IDs that overlap on Figure D.1 due to locational proximity:

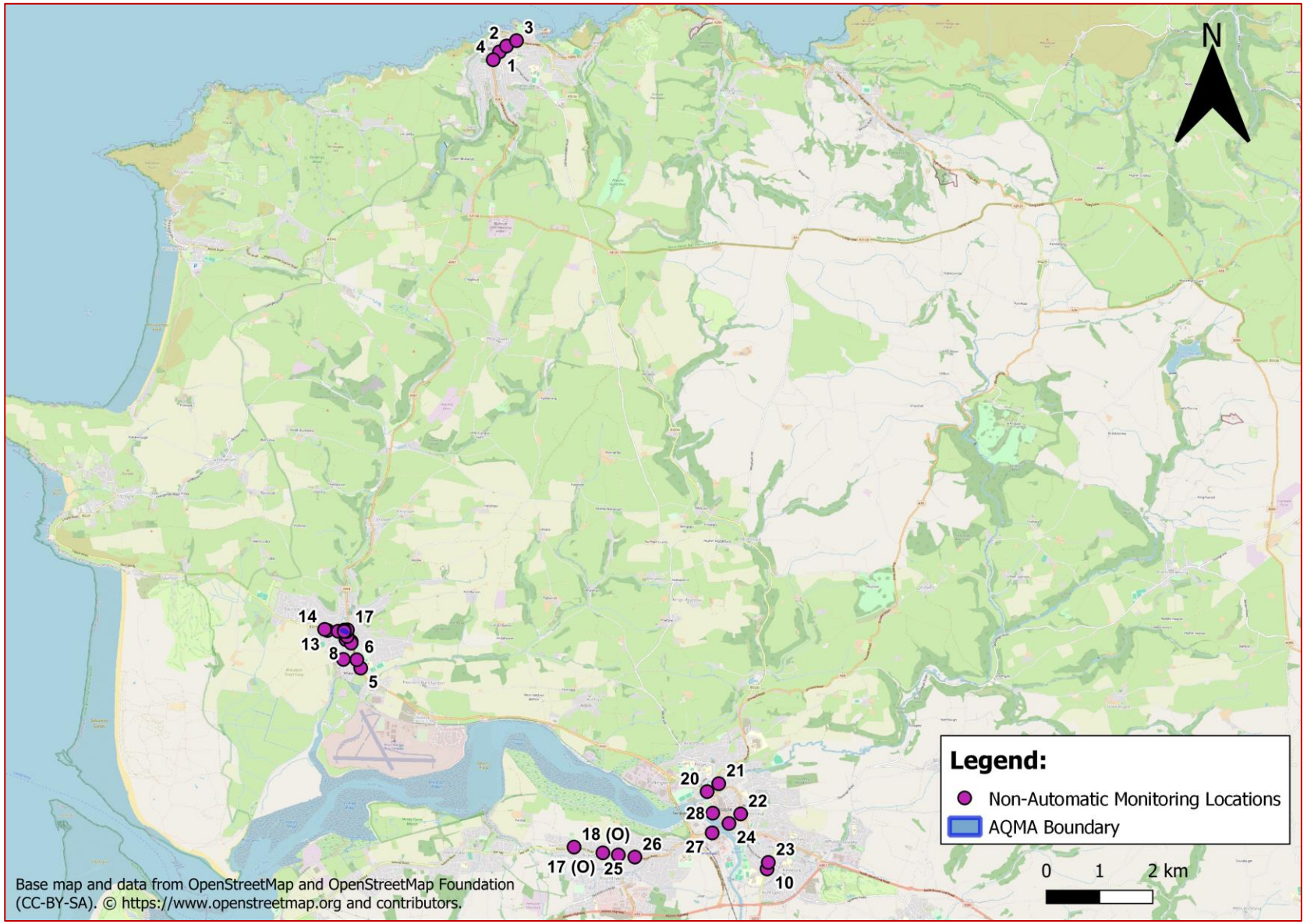
- 13 and 14;
- 8 and 12;
- 7 and 9;
- 15, 17, 18 and 19.

Figure D.2 – Automatic Monitoring Location (AURN Barnstaple A39)



NOTE: Automatic monitoring station AURN Barnstaple A39 has been abbreviated and labelled as B-A39 in map Figure D.2.

Figure D.3 – Non-Automatic Monitoring Locations



NOTE:

Figure D.3 North Devon AQMA overlaps Site IDs: 15, 17, 18 and 19.

Site IDs 17 (O) and 18 (O) abbreviate the Site IDs 17 (OLD) and 18 (OLD).

Non-automatic monitoring stations Site IDs that overlap on Figure D.3 due to locational proximity:

- 13 and 14;
- 8 and 12;
- 7 and 9;
- 15, 17, 18 and 19.

Figure D.4 – Non-Automatic Monitoring Locations - Ilfracombe

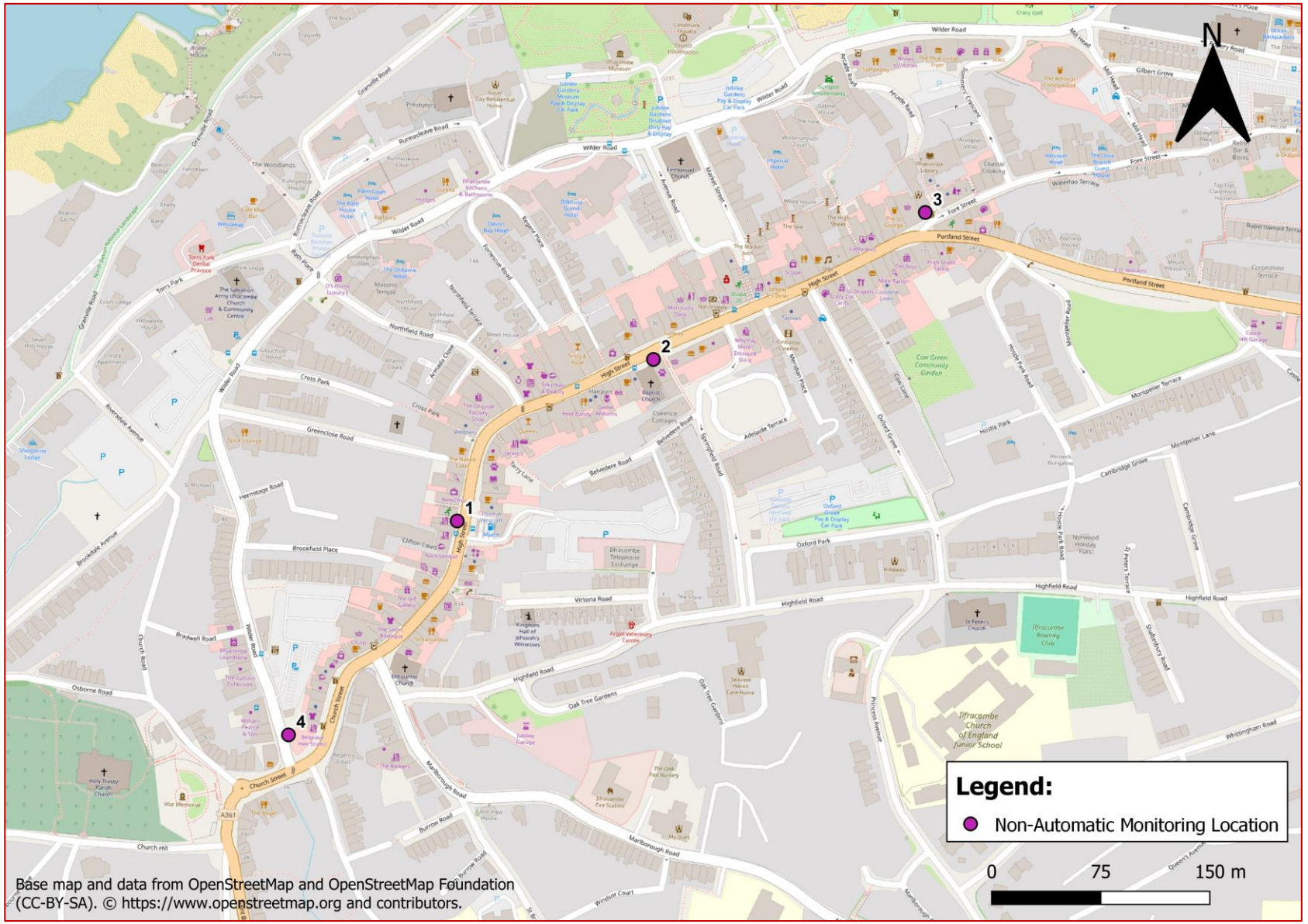
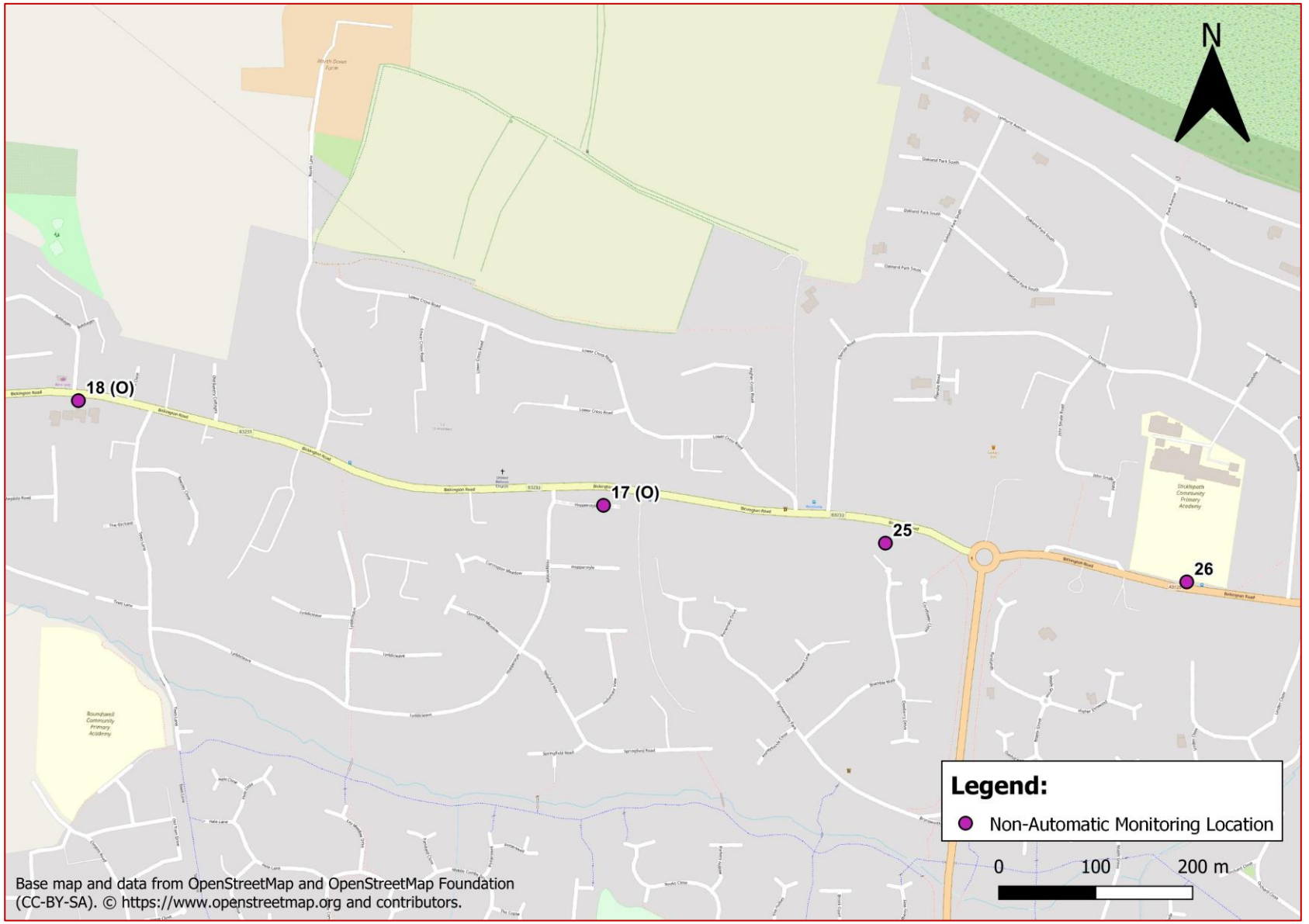


Figure D.5 – Non-Automatic Monitoring Locations – Braunton

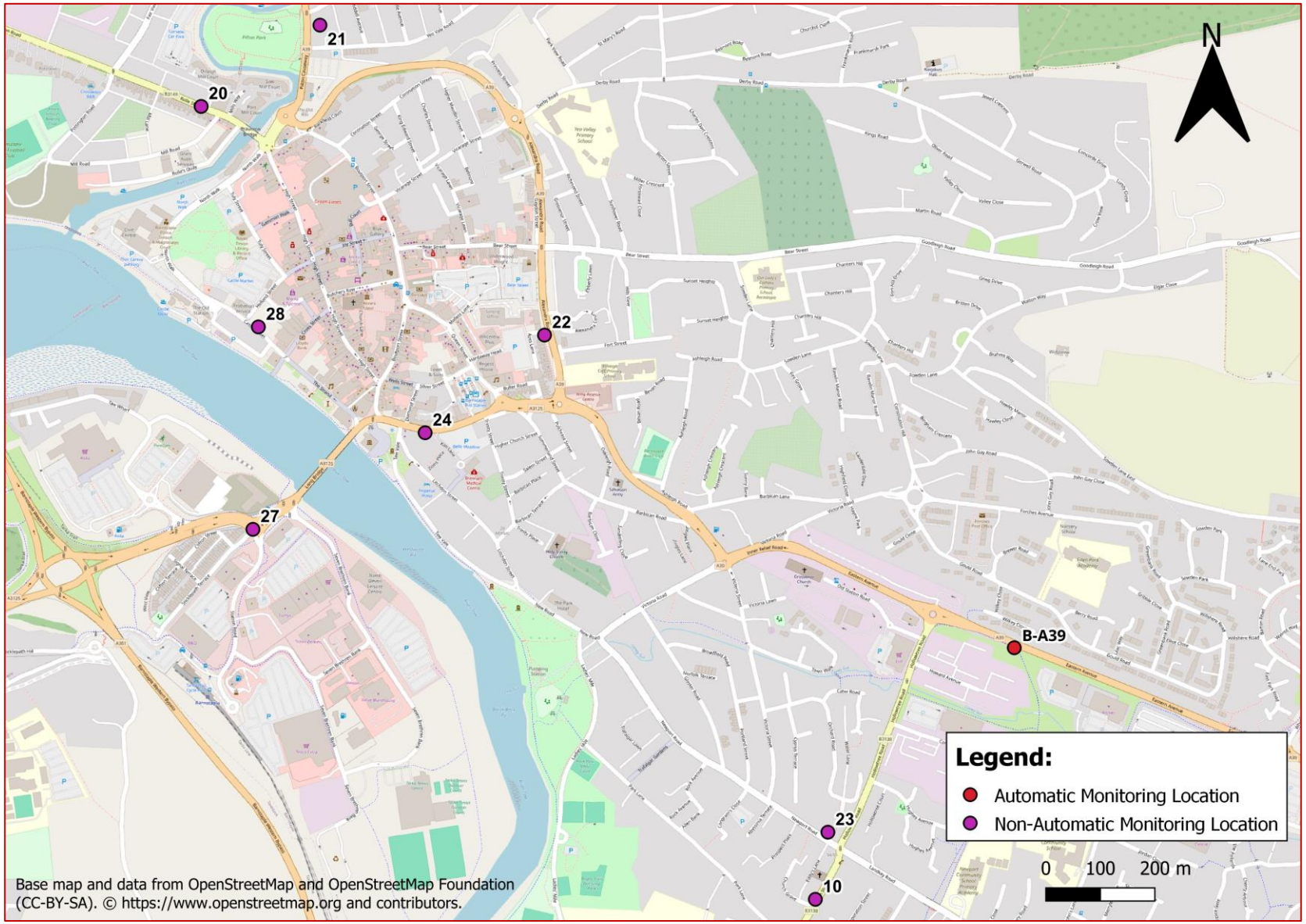
Figure D.6 – Non-Automatic Monitoring Locations – Bickington



NOTE:

Non-automatic monitoring stations Site IDs 17 (O) and 18 (O) abbreviate the Site IDs 17 (OLD) and 18 (OLD).

Figure D.7 – Automatic and Non-Automatic Monitoring Locations - Barnstaple



NOTE: Automatic monitoring station AURN Barnstaple A39 has been abbreviated and labelled as B-A39 in map Figure D.7.

Figure D. 8 – 2023 Annual NO_2 Concentrations All Non-Automatic Monitoring Locations

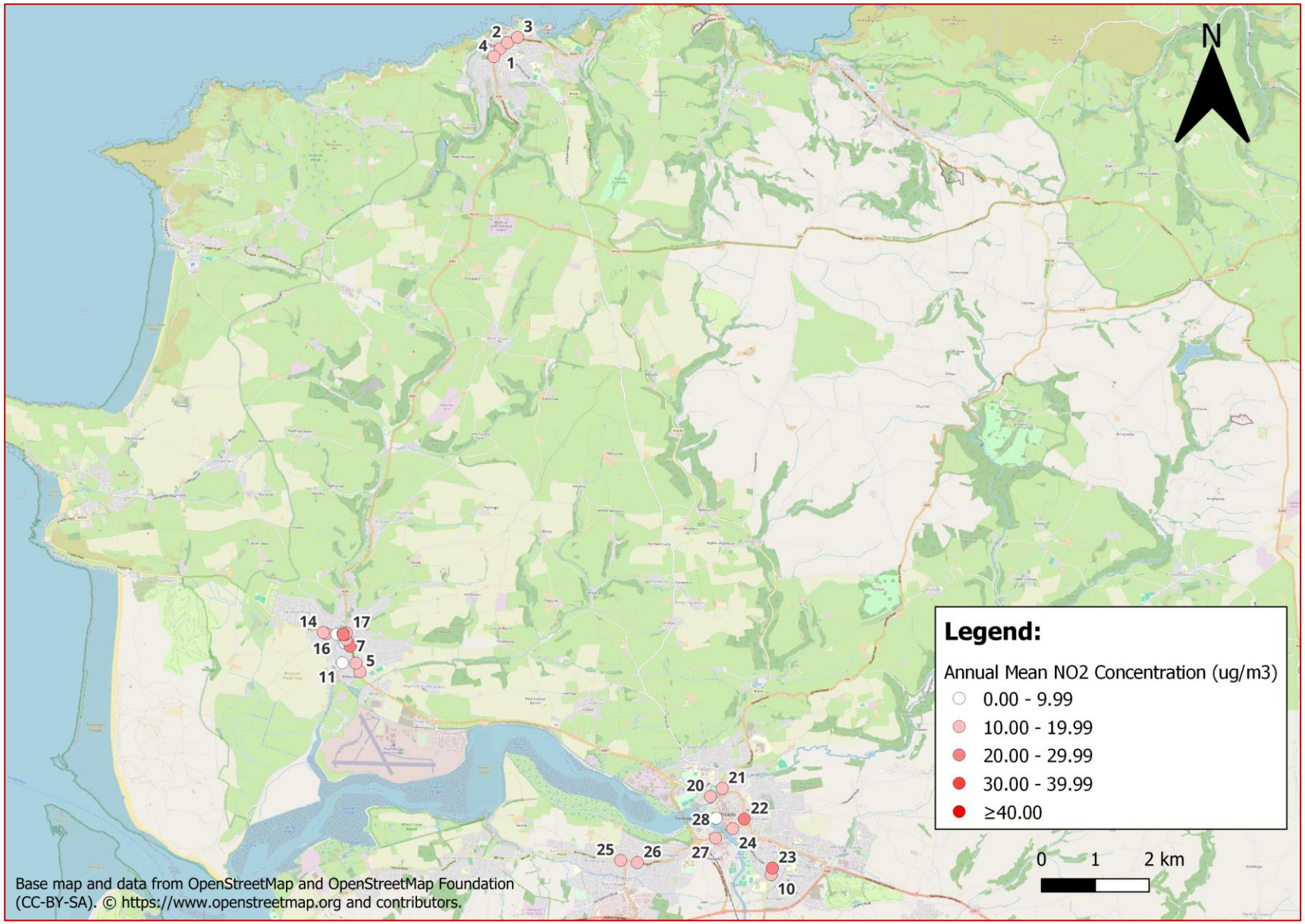


Figure D. 9 – 2023 Annual NO_2 Concentrations All Non-Automatic Monitoring Locations - Ilfracombe

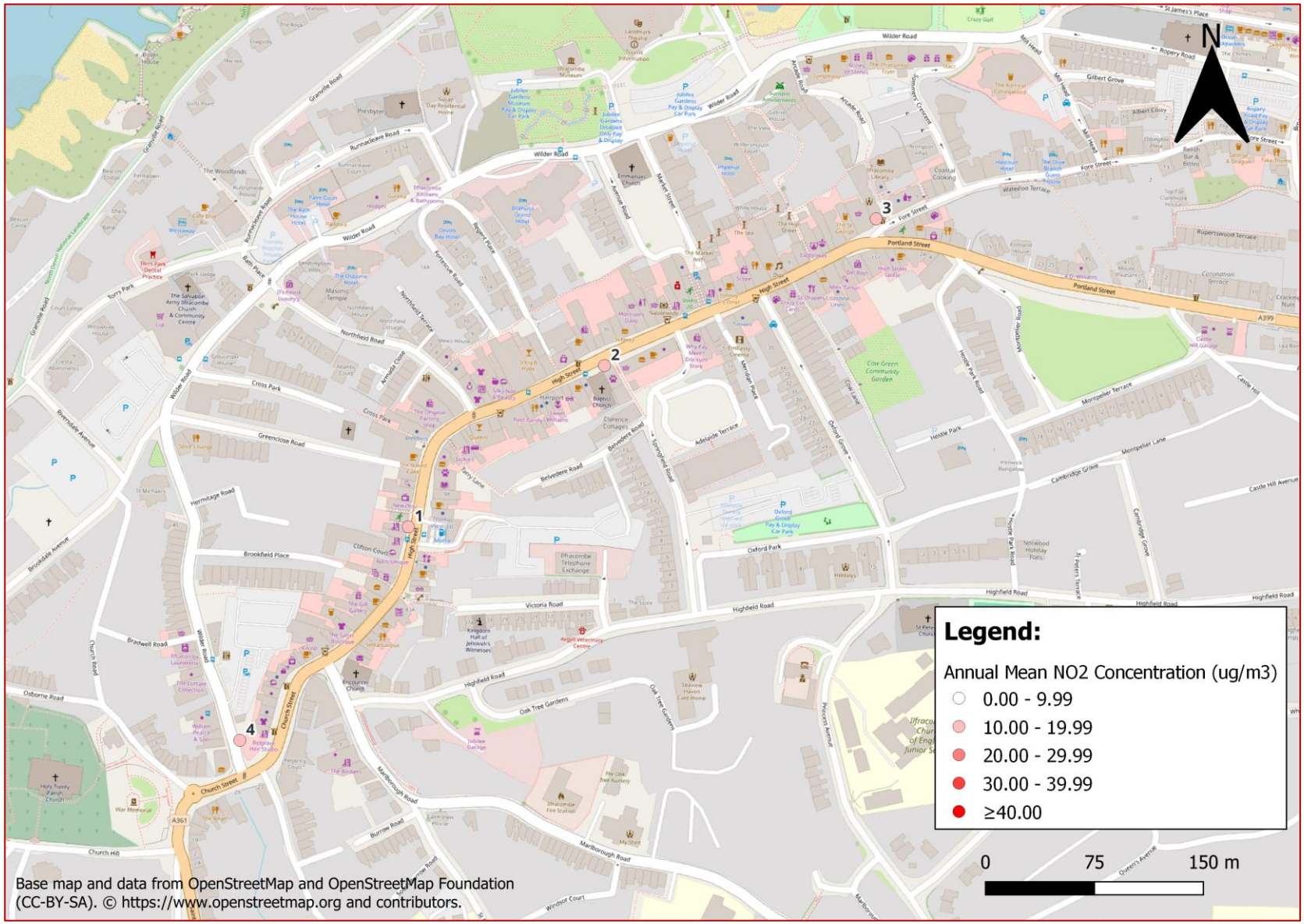


Figure D. 10 – 2023 Annual NO_2 Concentrations All Non-Automatic Monitoring Locations - Braunton

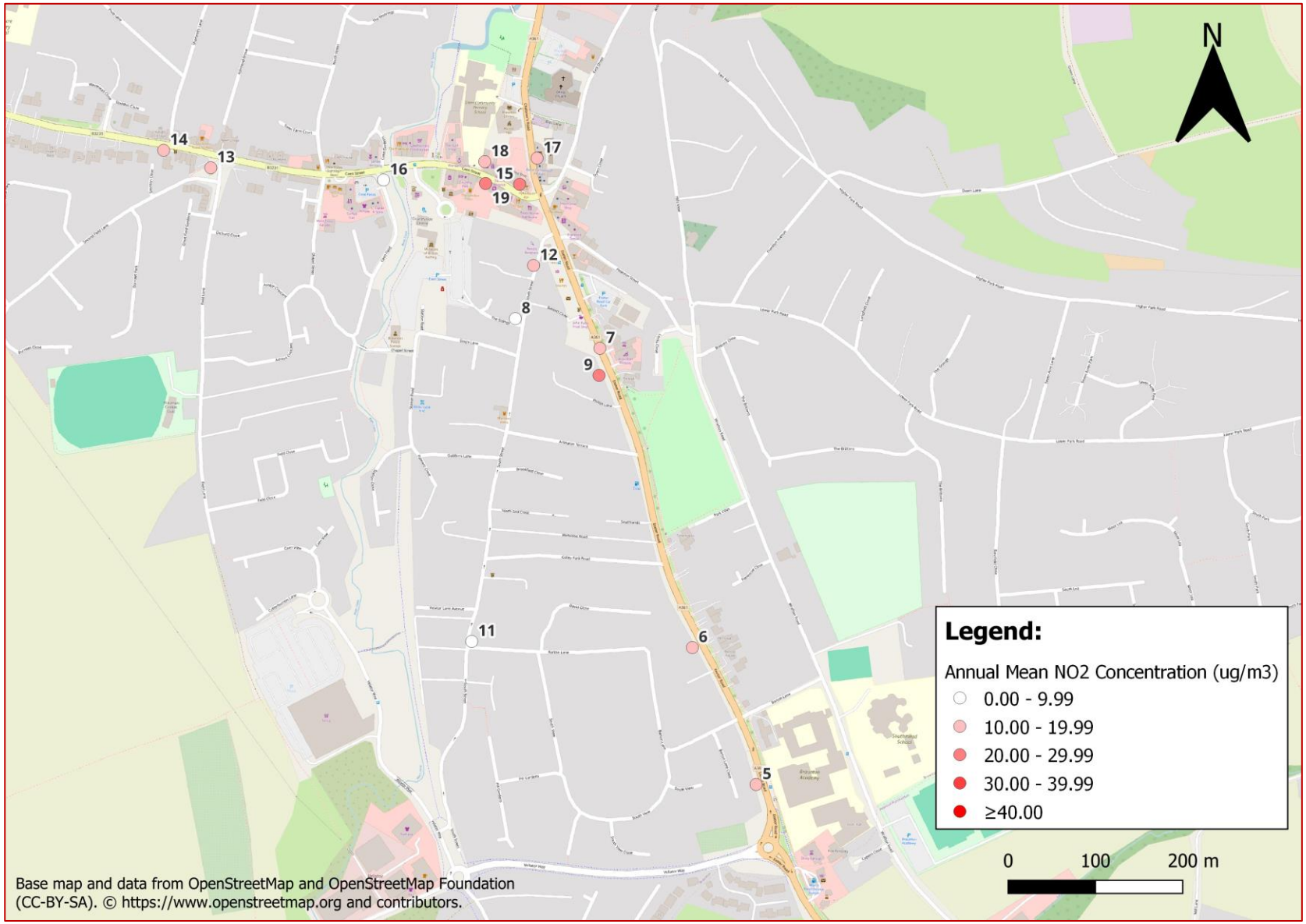


Figure D. 11 – 2023 Annual NO_2 Concentrations All Non-Automatic Monitoring Locations - Bickington

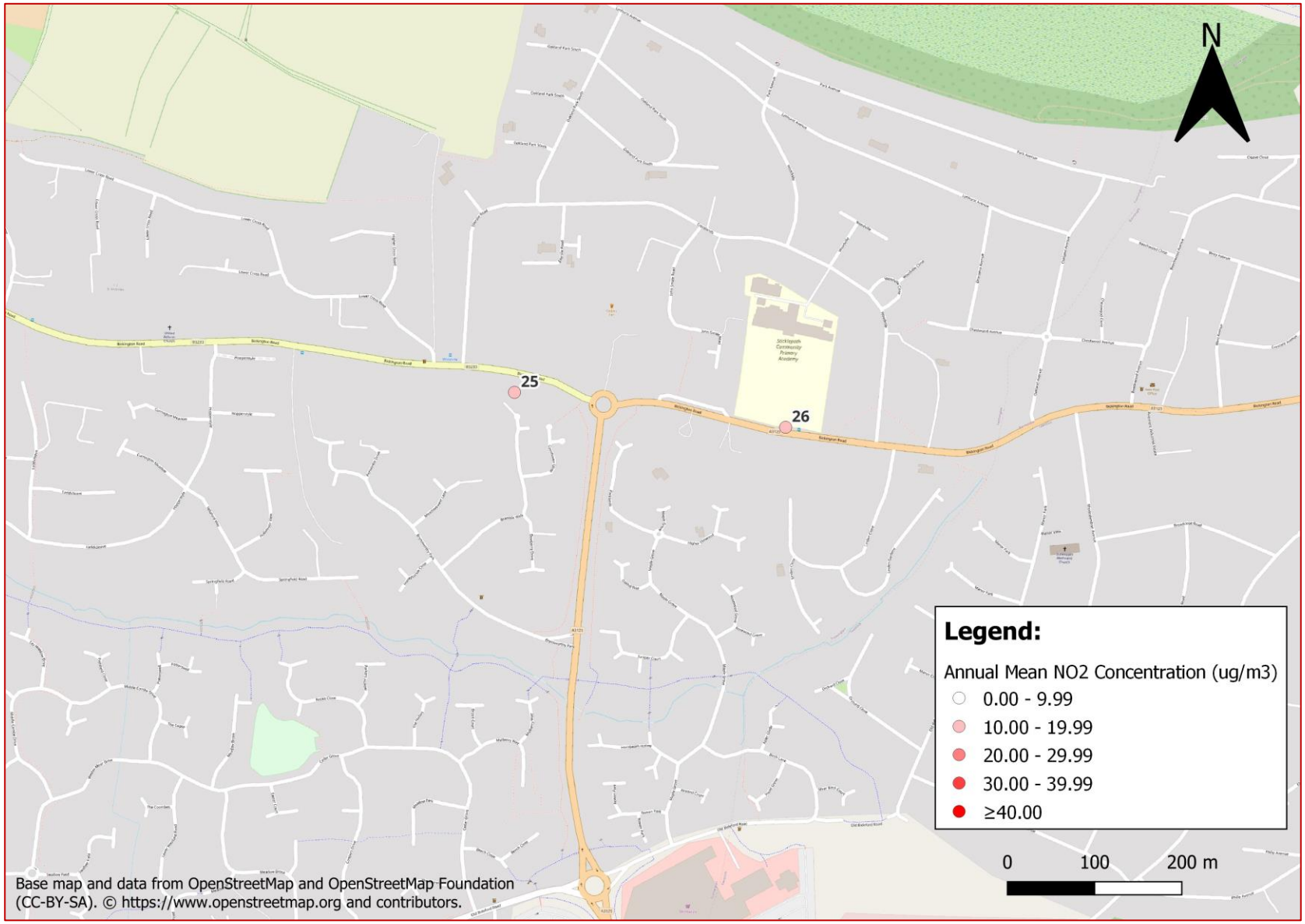
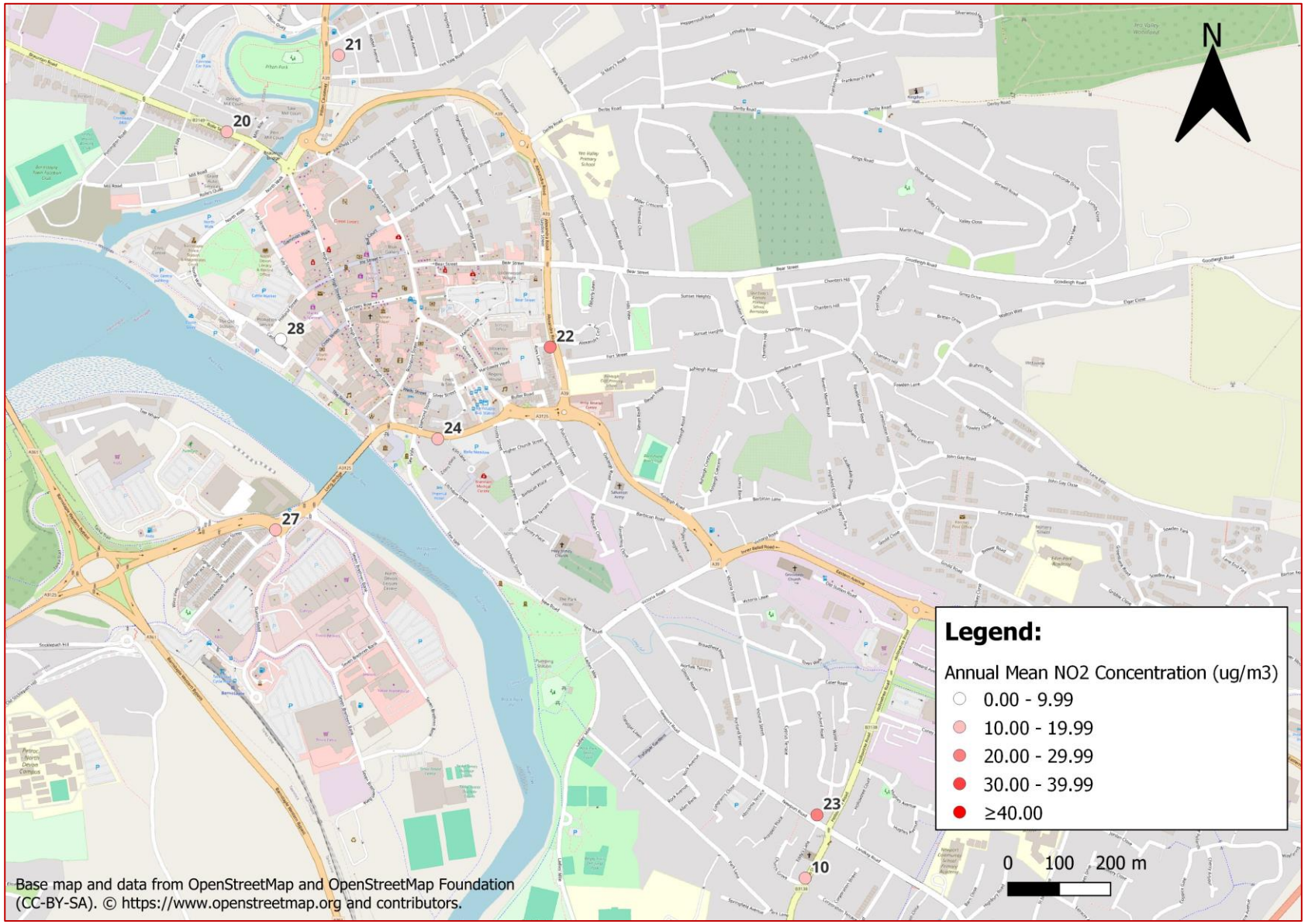


Figure D. 12 – 2023 Annual NO_2 Concentrations All Non-Automatic Monitoring Locations - Barnstaple



Appendix E: Summary of Air Quality Objectives in England

Table E. 1 – Air Quality Objectives in England[9]

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

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

Glossary of Terms

Abbreviation	Description
AIR-PT	Air and Stack Emissions
AONB	Areas of Outstanding Natural Beauty
AQA	Air Quality Assessment
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
AQS	Air Quality Standard
ASR	Annual Status Report
AURN	Automatic Urban Rural Network
B&B	Bed and Breakfasts
CMCU	Central Management and Coordination Unit
CO_2	Carbon Dioxide
COVID-19	Coronavirus-19
CWZ	Core Walking Zones
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
DT	Diffusion Tube
EA	Environment Agency
ESU	Equipment Support Unit
EU	European Union
EV	Electric Vehicle
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
LCN	Local Cycle Network

LCWIP	Local Cycling and Walking Infrastructure Plan
LEVI	Local Electric Vehicle Infrastructure
LED	Light Emitting Diode
LSO	Local Site Operator
NCN	National Cycle Network
NHS	National Health Service
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
ONS	Office for National Statistics
PG	Policy Guidance
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
SAC	Special Areas of Conservation
SCA	Smoke Control Area
SO_2	Sulphur Dioxide
SSSI	Sites of Special Scientific Interest
TEA	Triethanolamine
TG	Technical Guidance
UKAS	United Kingdom Accreditation Service
ULEV	Ultra Low Emission Vehicle

References

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- 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.
- North Devon District Council Air Quality Annual Status Report. November 2023.