Northumberland
County Council

2024 Air Quality Annual Status Report (ASR)

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

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Executive Summary: Air Quality in Our Area

Air Quality in Northumberland County Council

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

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 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.

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.

Below is a summary of the actions/projects in Northumberland which are likely to have a direct or indirect improvement in air quality. These are described in more detail in Section 3 of this report and a full list is contained in Table 3.

- **Northumberland Line** – restoration of a passenger rail service to some of the larger towns in south-east Northumberland (Seaton Delaval, Blyth Newsham, Blyth Bebside, Bedlington and Ashington).

  Major construction works began in 2022 on the Ashington branch railway line, work on all five stations in Northumberland is nearing completion (development of the Bebside Station is behind the others because of specific issues with that development) along with improvements to the railway infrastructure and bridges,

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

[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

including a footbridge over the A192 near Blyth for access from Blyth to Bebside Station by foot.

https://www.northumberlandline.uk/

Currently the resumption of the passenger service is expected to begin in Summer 2024 and the uptake and benefits of that will be reported in next year's ASR.

- **Taxi Fleets** – a regional approach to taxi fleets is to be consulted on and there are plans to establish a regional approach based on EURO 6 standards (allowing for existing fleets) and determine emission standards for new taxis and for how long they will be required.
- **Air Quality Strategy for Northumberland** – for the first time ever, Northumberland is developing an AQS report for submission to DEFRA after consultation internally within the council and with stakeholders and interested parties. This document will define the future of how Northumberland County Council addresses particular air quality issues.
- **Transforming Cities Fund (TCF)** - a bid to central government for up to £377M for the north-east to include; £99m earmarked to help support the "Northumberland Line" project.
- **A1 Dualling in Northumberland** - Morpeth to Felton and Alnwick to Ellingham.

  Dualling of the A1 Road north of Morpeth was planned to start in 2022, this is to be carried out by National Highways (formerly Highways England).

  The government decision has already been deferred four times since January 2022, however, as of the 5 June 2024 it has been announced that this project has been given the ministerial "green light" but no start date has been given.
- **Biomass Appliances** – identification of commercial biomass appliances through the planning process and requiring additional information about them under The Clean Air Act 1993.
- **Planning Process** - requirement for an air quality assessment for larger applications where the IAQM trigger for vehicle flows Annual Average Daily Traffic (AADT) are exceeded.

- **Council Fleet Vehicles** - driver management systems installed to improve overall fuel consumption and emissions. This has now been extended to more fleet vehicles, including “pool cars”. All new fleet vehicles over 3.5 tonne to be either Euro 5 or 6.
- **Agile Working at Northumberland County Council** - enabling staff to work from alternative locations and reduce travel and therefore reduce emissions.
- **Northumberland County Council Local Transport Plan (2011-2026)** and Climate Change Action Plan 2021-23– continuing commitment the Council to reduce carbon emissions and “decarbonise” its fleet vehicles.
- **Northumberland Environment & Climate Fund** - Groups can apply for up to £5,000 to help fund projects which enhance nature and reduce greenhouse gas emissions.
- **Traffic Regulation Orders for Moving Traffic (TROM)** - ongoing programme of introducing urban speed reduction areas in Northumberland with a consequential improvement in emissions from road vehicles.
- **New Air Quality Legislation -** On the 1 May 2021, The Air Quality (Domestic Solid Fuel Standards) (England) Regulations 2020 came into force, this places widespread controls over manufactured solid fuels and wood fuels (biomass). This means that in areas where solid fuels are still used, they must now be manufactured smokeless coal.
- **Northumberland County Council School Run Initiatives -** Promoting alternatives to traditional car school run trips and improving local air quality around school sites through reduction in private car use and idling of vehicles.

Conclusions and Priorities

No exceedances for any objective for NO_2 (diffusion tubes) were identified in Northumberland during 2023. Data capture for the two particulate monitors fell well below 25 per cent and therefore little commentary can be made about the results from these monitors or comparison with the national Air Quality Objectives or previous years data.

Northumberland has consistently met the national Air Quality Objective (AQO) limits since at least the formation of the Northumberland unitary authority in 2009. No detailed assessment for any pollutant has been identified from the 2023 data.

Because of compliance with the air quality objectives, there has never been any impetus to develop any air quality action plans or strategies, however Northumberland County Council are in the process of producing an Air Quality Strategy document for submission in 2024. These are now required when no AQMAs are declared.

Momentum now seems to be growing (in conjunction with other regional Authorities and Agencies), towards improving air quality above and beyond the national AQS limits.

It is envisaged that the Environmental Protection Team at Northumberland County Council will play a pivotal role in future co-ordination of projects which have a positive improvement in general air quality, such as attending the North-East Combined Authority (NECA) air quality strategy meeting with Environmental Health professionals and transport planners.

Within the Public Protection Service Plan, there is a priority to proactively engage with internal and external partners to raise awareness of LAQM. We have already initiated engagement with the Director of Public Health for Northumberland, other council departments, agencies and groups to inform and influence decisions where air quality is a consideration.

Areas where further information may be needed are:

- Further engagement with the Director of Public Health, to raise awareness of air quality in relation to the Public Health Outcomes Framework.
- Engaging with other council departments to feed into projects or programmes which have any aspect relating to air quality.
- Raising public awareness of air quality issues through members of the public being able to contact the Environmental Protection Team for information and advice on air quality included on the Council website:

  http://www.northumberland.gov.uk/Protection/Pollution/Air.aspx

Our webpage content in relation to air quality will be reviewed and updated again in 2024.

Northumberland County Council will continue to monitor particulates at the two air quality monitoring stations in Blyth and nitrogen dioxide through our network of diffusion tubes, the two Osiris particulate monitors, one purchased and one refurbished, will be deployed in 2024 at least one urban background location.

No further detailed assessment is required for any of the pollutants monitored within Northumberland for 2023 and we will progress to an LAQM Annual Status Report in 2025 reporting the data collected in 2024.

Local Engagement and How to Get Involved

Members of the public can contact the Environmental Protection Team for information and advice on air quality using the contact details in this report and further information is included on the Council website:

http://www.northumberland.gov.uk/Protection/Pollution/Air.aspx

Previous annual air quality reports can be found under the “Useful air quality documents” section on the webpage above. There is also a link on the website to live data from our two continuous particulate monitors at Blyth Library and on Cowpen Road, Blyth.

We are not aware of any local groups involved in local air quality in Northumberland but members of the public can join local Friends of the Earth groups at:

https://friendsoftheearth.uk/take-action/join-group-near-you

There are also a number of national groups and organisations who promote improvements in local air quality and provide information, such as UK Clean Air: https://www.ukcleanair.org/

Members of the public can also participate in the National Clean Air Day which in 2024 is the on the 20 June:https://www.actionforcleanair.org.uk/campaigns/clean-air-day

Public Advice on the Use of Motor Vehicles

Road vehicles are a major source of many pollutants in urban areas. They produce over 50% of the emissions of nitrogen oxides in the UK.

Consider the Impact of Vehicular Trips

Before making any vehicular journey, consider:

- Is the trip necessary ?
- Could the trip instead be done by walking or cycling ?
- For greater distances, could the trip instead be done by using bus or train ?
- There is mounting evidence that vehicular trips involved in “school runs” increase pollutant levels in proximity to the schools and the more vulnerable children using

those schools[6]. Using vehicles to transport children to school should be avoided wherever possible,

If there is no alternative to driving:

- Drive smoothly and do not rev the engine. This will save fuel, and the engine will also produce less emissions;
- Maintain your vehicle. Keep the engine properly tuned and the tyres at the right pressure; and
- Turn off the engine when your car is stationary.

Consider Your Actions at Home

- Avoid burning solid fuels if possible and if you live in a smoke control area you can only burn authorised smokeless fuels (your local authority or approved fuel merchant can advise you).
- Avoid lighting bonfires, but if you must, don't light them when pollution levels are high or while the weather is still and cold. Only burn dry material and never burn household waste, especially plastic, rubber, foam or paint. Levels of pollution can be quite high on "bonfire night" and other events/festivals with open fires. People with respiratory conditions, may notice some effects on these occasions, however, exposure can be considerably reduced by remaining indoors and keeping windows closed.
- Wood-burning stoves are becoming increasing popular, but burning wood produces a lot of air pollutants. If you have or intending to have such an appliance in your home, minimise your contribution to air pollution, buy a Defra approved stove, only use a certified/authorised fuel (now a legal requirement everywhere), and only light it when you really have to. Further information about Smoke Control Areas, Wood Burning Stoves and Open Fires and The Air Quality (Domestic Solid Fuel Standards) (England) Regulations 2020 can be found at:

  https://www.northumberland.gov.uk/Protection/Pollution/Smoke.aspx

[6] UKHSA Chemical Hazards and Poisons Report: Issue 28 – June 2022

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Protection Team at Northumberland County Council and was carried out completely internally within the Public Protection Service.

There is no internal requirement to have this ASR approved by anyone other than managers within the Public Protection Service and this ASR has not been signed off by the Director of Public Health, however the DPH is aware of the annual air quality reports to DEFRA as part of the development of the Northumberland Air Quality Strategy.

If you have any comments on this ASR please send them to the Environmental Protection Team at:

Address: Environmental Protection Team, Public Protection Service, Northumberland County Council, West Hartford Business Park, Cramlington, Northumberland, NE23 3JP

Telephone: 01670 623870

Email: public.protection@northumberland.gov.uk

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1 Local Air Quality Management

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

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

2 DEFRA's Appraisal Comments for Northumberland's 2023 Annual Status Report

Bureau Veritas on behalf of DEFRA made a number of comments on last year's report which are designed to help inform future reports and are listed below with our responses:

1. The Blyth Library achieved very low data capture in 2022 (10.6%). The council has included the mean PM values for reference in text and mentioned the low data capture, which is acceptable. However, these values should not be included in data tables. This data must not be reported going forward as the data capture is below 25% and thus the data is not representative.

Acknowledged and this applies also to the 2023 data presented in this report.

2. Comments from previous appraisals have been included and directly responded to. This is welcomed and encouraged for future reports.

Acknowledged.

3. Clear and detailed discussed is provided relating to measures being undertaken by the Council. This is appreciated.

Acknowledged.

4. The council has not used the Defra template and formatting. The most up to date template should be used when producing ASRs.

This is incorrect.

This has been a comment in a number of previous appraisals of our ASR documents and is the reason why we include an ASR Document Details table on the first page of the report to confirm that the most recent report template has been used – we have now included the date on which the template was downloaded by ourselves.

As for formatting – for the main body of the report the font is Arial 12pt, 1.5 line spacing, 6pt paragraph spacing above and below each line and left-aligned. The titles are changed to black text rather than green to aid legibility.

This section and the ASR Document Details do not form part of the Defra template document, however we have been praised for this commentary section on a number of years running by Bureau Veritas (see point 2 above).

5. The council have included a link to their website in their Local Engagement and How to get Involved section, which is useful. However, the council could consider including a summary of things the public can do to get involved in improving air quality in the county. This would be helpful for members of the public reading the report.

We have now included some additional information in this section, partly following the "good examples" which DEFRA acknowledge, however there do not appear to be many groups involved in air quality in Northumberland with the exception of Friends of the Earth who have been involved in air quality campaigns including within Northumberland. We have provided a link to find local FoE groups as well as other information.

6. Pollutant names are not subscripted correctly throughout the report, in text and tables. Whilst this does not affect the readability of the report, the council should ensure the report is checked for such formatting errors going forward.

Acknowledged and this was corrected before the final report was published on our website.

7. The Council has included time serious plots from their automatic PM monitors. However, these graphs do not have axis labels, so it is not clear what the units and timescales of the plots are.

Acknowledged and this was corrected before the final report was published on our website.

8. The Council has robust QA/QC procedure and the QAQC section is clear, detailed and includes all the necessary information. This level of detail is encouraged for future reports. However, the Council should include screenshot of the National Bias Adjustment Factor Spreadsheet.

This was an omission and corrected before the final report was published on our website.

3 Actions to Improve Air Quality

3.1 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.

Northumberland County Council currently does not have any declared Air Quality Management Areas (AQMAs) and there is no current expectation that any would need to be declared in the county based upon current and previous air quality monitoring results.

A local Air Quality Strategy is under development to prevent and reduce polluting activities and provide forward plan for maintaining and improving local air quality in Northumberland. The Local Air Quality Strategy will be made available on the council's website once it has been consulted upon, reviewed, submitted to DEFRA and any necessary changes made.

3.2 Progress and Impact of Measures to Address Air Quality in Northumberland

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

- The report is well structured, detailed, and provides the information specified in the Guidance.
- On the basis of the evidence provided by the local authority the conclusions reached are accepted for all sources and pollutants. Following the completion of this report, Northumberland County Council should submit an Annual Status Report in 2024.

Specific points raised by Bureau Veritas's review of Northumberland County Council's 2023 ASR are addressed in Section 2 of this report.

Northumberland County 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 3. Twenty five measures are included within Table 3, with the type of measure and the progress Northumberland County 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 3.

It should be noted that the Public Protection Service have not been the initiators or even a stakeholder or consultee in many of the projects brought about by Northumberland County Council (as shown in Table 2.2) and therefore it is difficult to report upon many of these projects, especially relating to status, costs, funding, timescales, hinderances to progression etc.. It is hoped that this position changes with the development of Northumberland's first Air Quality Strategy document in 2024.

More detail on these measures will be available in Northumberland County Council's Air Quality Strategy, the Environmental Policy Statement and on the council's website.

Northumberland County Council expects the following measures to be completed over the course of the next reporting year:

- The Northumberland Line is due to begin passenger operations during the summer of 2024 and this will be reported upon in the 2025 ASR. It is expected that this will have an important impact upon reducing vehicular trips within Northumberland and to and from Newcastle.
- Ensuring all new taxis are EURO 6 compliant and that existing taxis are less than eight years old. This will have an important impact upon town centre locations where these vehicles wait at taxi ranks and other collection locations, reducing the emissions in town centres especially.
- The creation of Northumberland County's first Air Quality Strategy document. The specific air quality issues to be addressed are being currently being discussed and developed, but this will be an important document in addressing and improving air quality in Northumberland into the future.

Northumberland County Council's priorities for the coming year are:

- Completion of the Air Quality Strategy for submission DEFRA for review after consultation with stakeholders.
- Deployment of two new Osiris particulate monitors – at least one to target smoke control and urban background monitoring.

Northumberland County Council worked to implement these measures in partnership with the following stakeholders during 2024:

- Strategic Planning within Northumberland County Council, the agents for the Northumberland Line scheme and Network Rail.
- Taxi companies, operators and the Licensing Team within Northumberland.

- Director of Public Health in Northumberland – Ms Gill O'Neill.

The principal challenges and barriers to implementation that Northumberland County Council anticipates facing are:

- Successful engagement with internal departments within the council and external agents.
- Lack of positive and proactive publicity / communications regarding air quality issues and the profile of our public website and council social media.

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

- Northumberland Line - unexpected contamination issues, rerouting of the A1061 and creation of a new road overpass.
- A1 Dualling - certainty around Government support for the project and delayed ministerial approval.

Whilst the measures stated above and in Table 3 will help to contribute towards compliance, Northumberland County Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance.

An Air Quality Strategy is being developed in conjunction with Public Health Department within Northumberland County Council and will go out to wider consultation within the North East Region before being finalised. This strategy will include measures relating to :

- Ensuring developers mitigate air pollution during development / construction.
- Working with local industry and businesses to reduce air pollution.
- Increasing awareness of indoor air quality issues / solid fuel burning / carbon monoxide / radon gas.
- Promoting and engaging in regional and public engagement about air quality.
- Promoting Northumberland as a clean air destination for visitors via Tourism.

Following the election of a NE Mayor in May 2024, we expect to have closer working relationship with North East Combined Authority (NECA) Transport Planning on air quality matters.

The Environmental Protection Team have purchased a new Osiris monitor which will be deployed as a further permanent urban background monitor in South-East Northumberland.

The Environmental Protection Team have actively worked with DEFRA in agreeing and facilitating the additional location of PM2.5 monitors in West Northumberland (Hexham, Anick) and South-East Northumberland (Ashington).

We continue to look at air quality impacts of developments through our consultation process with Northumberland County Council Local Planning Authority (1344 responded to in 2023/24).

Northumberland County Council have also produced an Environment Policy Statement which was ratified at committee on the 10 October 2023:

https://www.northumberland.gov.uk/News/2023/Oct/Council-agrees-ambitious-policy-to-protect-the-env.aspx

Table 3 – 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	Northumberland Line	Promoting Travel Alternatives	Other	2019	2024/25	NCC	NCC / Central Government	NO	Funded	> £10 million	Unknown	Reduced vehicle emissions	Reduction in motor vehicle journeys	2024 (Phase 1) - 2025 (Phase 2)	https://www.northumberlandline.uk/
2	All taxis to be EURO 6	Promoting Low Emission Transport	Taxi emission incentives	2023	2024	NCC	Taxi Operators	NO	Funded	Cost borne by taxi operators/companies	Unknown	Reduced vehicle emissions	Complete conversion of taxi fleets to Euro 6	Yet to commence	https://www.northumberland.gov.uk/Protection/Licences/Taxi.aspx
3	Air Quality Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2024	NCC	NCC	NO	Funded	Unknown	Planning	Various	N/A	Commenced 2024	/
4	For special events (Morpeth Gathering & Fair Day, Tall Ships at Blyth)	Alternatives to private vehicle use	Bus based Park & Ride	Unknown	2021	NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	N/A	On going	/
5	HGV routing used by the LPA for some quarries / surface mine schemes	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	Unknown	2022	NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	N/A	On going	/
6	Home working some departments (such as IT)	Promoting Travel Alternatives	Promoting Travel Alternatives	2017/18		NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	/	On going	/
7	Go Smarter	Promoting Travel Alternatives	Personalised Travel Planning			NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	/	On Going	From LSTF funding. http://gosmarter.co.uk/
8	Go Smarter, Cyclescheme offering VAT free cycles with up to 50% of prices with salary sacrifice scheme	Promoting Travel Alternatives	Promotion of cycling			NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	/	On going	http://gosmarter.co.uk/
9	Go Smarter promoting Modeshift STARS	Promoting Travel Alternatives	School Travel Plans			NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	/	On going	http://modeshiftstars.org/
10	Travel planner and cycle routes	Public Information	Via the Internet			NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	/	On going	http://www.northumberland.gov.uk/Highways/Cycling.aspx
11	Informal anti-idling policy through taxi licensing	Traffic Management	Anti-idling enforcement			NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	/	On going	/
12	20mph zones imposed in many residential areas especially surrounding schools	Traffic Management	Reduction of speed limits, 20mph zones			NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	/	On going	http://www.northumberland.gov.uk/Highways/Roads/Traffic.aspx#4trafficregulationorderprepared
13	Parking enforcement on highways carried out by Council	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway			NCC	Unknown	NO	Unknown	Unknown	Unknown	/	/	On going	http://www.northumberland.gov.uk/Highways/Parking.aspx#civilparkingenforcement
14	Several cycle networks, including; Coast & Castles, Pennine Cycleway, Reivers Route and	Transport Planning and Infrastructure	Cycle network			NCC	Unknown	NO	Unknown	Unknown	Unknown	/	/	On going	http://www.northumberland.gov.uk/Highways/Cycling.aspx

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
	Hadrian's Cycleway. Several others which aren't part of the Sustrans network.														
15	Over 110 fleet vehicles fitted with Ashwoods Lightfoot to encourage more efficient driving styles.	Vehicle Fleet Efficiency	Driver training and ECO driving aids			NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	N/A	On going	https://www.lightfoot.co.uk/case-study/northumberland-county-council
16	Over 800 fleet vehicles fitted with Masternaut vehicle tracking	Vehicle Fleet Efficiency	Driver training and ECO driving aids			NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	N/A	On going	http://www.masternaut.com/
17	Bid for Euro 6 buses	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport			NECA	Unknown	NO	Unknown	Unknown	Unknown	/	/	On going	http://www.simplygo.com/news/greener-cleaner-buses-for-go-north-east/
18	Vehicle emission testing as part of fleet MOT testing, all taxis and service to public	Vehicle Fleet Efficiency	Testing Vehicle Emissions			NCC	Unknown	NO	Unknown	Unknown	Unknown	/	N/A	On going	http://www.northumberland.gov.uk/Highways/Roads/Commercial.aspx#mottesting
19	Proactively engage with internal and external partners to raise awareness of Local Air Quality Management	Public Information	Via other mechanisms			NCC	Unknown	NO	Unknown	Unknown	Unknown	/	Internal KPI / Stakeholder Engagement Day	Annual	/
20	Agile working for NCC staff	Promoting Travel Alternatives	Encourage / Facilitate home-working			NCC	Unknown	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions	N/A	On going	/
21	Liaise with the Director for Public Health for Northumberland on issues and measures to improve AQ	Other Policy	Policy Guidance and Development Control	N/A		NCC	Unknown	NO	Unknown	Unknown	Unknown	/	N/A	On going	http://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/JSNA/strategy%20documents/DPH-Annual-Report-Northumberland-2016-3.pdf
22	A1 Dualling	Transport Planning and Infrastructure	Other	2022		Highways England	Highways England / Central Government	NO	Unknown	Unknown	Unknown	Reduced vehicle emissions		2024/25	
23	Sustainable transport for schools	Promoting Travel Alternatives	School Travel Plans	2022		NCC	NCC / External	NO	Unknown	Unknown	Unknown	/		On going	https://highwaysengland.co.uk/projects/morpeth-to-ellingham-dualling/
24	Funding for environmental projects	Other		2023	2023	NCC	NCC	NO	Funded	£50k - £100k	Completed	Various	N/A	Completed in 2023	https://www.northumberland.gov.uk/Education/Schools/School-transport-1/Sustainable.aspx
25	Environmental Policy Statement	Policy Guidance and Development Control	Other policy	2023	2023	NCC	NCC	NO	Funded		Completed	Various	N/A	On Going	https://www.northumberland.gov.uk/News/2023/Oct/Funding-for-environmental-projects-in-Northumberla.aspx

3.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations.

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[7], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter ($PM_{2.5}$)). There is clear evidence that $PM_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Northumberland County Council is taking the following measures to address $PM_{2.5}$:

- **Northumberland Line** – resumption of a passenger rail network serving the towns of Ashington, Bedlington, Blyth (x2) and Seaton Delaval to Newcastle, replacing vehicle journeys with railcars. Initially the railcars are going to be diesel (DMUs, but it is expected within a few years these will be replaced with electric railcars (EMUs). Expected to restart in summer 2024 and take-up and the number of car journeys avoided will be reported on in subsequent ASRs. This is an existing measure but not yet implemented.
- **EURO 6 Standard Taxis** – From the 01 April 2024 all new vehicles licensed by the Northumberland County Council will have to be a maximum of 4 years old and will be required to be Euro 6 compliant. Also, from the 01 April 2027 existing licensed vehicles coming up for renewal will need to be 8 years old or less and from the 01 April 2029 existing wheelchair access licensed vehicles coming up for renewal will need to be 8 years old or less. This is new measure and will be reported upon in subsequent ASRs, however whilst it is acknowledged that this will have a positive impact upon PM2.5 emissions at the roadside and within towns, it is a difficult to quantify the positive impact of this measure.
- **Northumberland Air Quality Strategy** – whilst the exact content of this document is yet to be released, it is important to recognise that because the production of this is being led by the Director of Public Health and the Public Health Service any proposals will have weight in their implementation by Northumberland County Council. The Public Protection Service is contributing its technical expertise to this process and the production of the document and consultation is currently held with internal partners within the council and then to be consulted upon externally. This is

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

the first air quality strategy for Northumberland, and it cannot be underestimated that this will be an important document in the future for air quality improvements in Northumberland. This is a new measure.

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

Key indicators of the state of public health have been developed through the Public Health Outcomes Framework (PHOF) following the Health and Social Care Act 2012. The Public Health Outcomes Framework data tool, compiled by the Office for Health Improvement and Disparities (formerly Public Health England). The data which was accessed and reviewed for last year's ASR seems to have been changed and a new method indicator is presented for "concentrations of total PM2.5", the results for comparison are:

Fraction of mortality attributable to particulate air pollution (old method) 2021:

- 3.8% (Northumberland) 4.8% (NE Region) 5.5% (UK)

Air pollution: fine particulate matter (historic indicator) 2020:

- 4.1% (Northumberland) 4.8% (NE Region) 6.9% (UK)

Fraction of mortality attributable to particulate air pollution (new method) 2022:

- 4.3% (Northumberland) 5.8% (NE Region) 5.8% (UK)

Air pollution: fine particulate matter (new method - concentrations of total PM2.5) 2022:

- 5.8% (Northumberland) 7.8% (NE Region) 7.8% (UK)

For Northumberland, this represents around 10,000 deaths per year attributable to fine particulate air pollution in 2023. The trend in deaths associated with this indicator has been downward since 2010 although the decrease has been less pronounced at the national level than in Northumberland or the North-East Region. From 2010 to 2019 the modelling suggests a drop in some 2300 deaths attributable to fine particulate pollution over this nine-year period.

Within the national Air Quality Objectives an annual mean limit of 20 $\mu g/m^3$ to be achieved by 1 January 2020, this was brought about by The Environment (Miscellaneous

Amendments) (EU Exit) Regulations 2020 and modified the previous 25 $\mu g/m^3$ (cap limit) that had to be achieved by 1 January 2015.

However, The Environment Act 2021 requires long-term targets to be set for fine particulate matter (PM2.5), these were set in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 and are as follows:

- Annual Mean Concentration Target ("concentration target") – a target of 10 micrograms per cubic metre (µg m-3) to be met across England by 2040.
- Population Exposure Reduction Target ("exposure reduction target") – a 35% reduction in population exposure by 2040 (compared to a base year of 2018).

These are long-term targets and Northumberland is still looking to meet the compliance with the 20 $\mu g/m^3$ within The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (S.I. 2020/1313), regs. 1(2), 2

Within the county of Northumberland, this limit of 20 $\mu g/m^3$ is comfortably met.at the roadside of one of the county's busiest urban roads (A193 - Cowpen Road, Blyth).

The Authority invested in new monitoring equipment in 2013 in anticipation that monitoring of $PM_{2.5}$ was to become a statutory requirement of LAQM. However, as TG22 (August 2022) states:

"*It is acknowledged that many local authorities do not presently monitor PM2.5 concentrations within their local authority area; PM2.5 is still not at present incorporated into LAQM Regulations, and therefore there is no statutory requirement to review and assess PM2.5 for LAQM purposes (except in Scotland). An increase in local authorities monitoring PM2.5 across the UK is desirable given the links to the Public Health Outcomes Frameworks, however, it is recognised that the costs involved can be prohibitive.*"

Northumberland County Council is taking the following measures to address $PM_{2.5}$:

- Continuing to monitor $PM_{2.5}$ at two specific locations in Northumberland.
- Increasing its monitoring of urban background PM2.5 $\mu g/m^3$ and/or other specific sources with the addition of two additional Osiris particulate monitors.
- Reporting the levels of $PM_{2.5}$ at these locations on an annual basis.
- Monitoring for any exceedance of the limit of 20 $\mu g/m^3$.

- Continuing to instigate and support initiatives which directly or indirectly improve air quality within Northumberland and especially those which may impact fine particulates.
- Initiate better engagement with the Director of Public Health in Northumberland and look towards better integration of air quality and the Public Health Outcomes Framework.

Additionally, thirty-eight smoke control areas were created historically in the former districts and boroughs of Northumberland including the whole of the south-east area (former Wansbeck and Blyth Valley areas). This is the most populated part of Northumberland with some 46 percent of the county's population within this area:

https://www.northumberland.gov.uk/Protection/Pollution/Smoke.aspx

No enforcement action has been taken in respect of smoke control areas in 2023.

However, with the introduction of The Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020, the focus of any investigations may be changing to enforcement under these regulations rather than The Clean Air Act 1993.

With the introduction of The Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020, solid manufactured fuels can only be burned on domestic fires if they comply with being smokeless and are certified under the regulations. Wood fuels are also controlled in respect of their moisture content. This effectively replicates the impact the creation of smoke controls areas would have and makes the whole of England an effective smoke control area. This will undoubtably have a positive impact upon emissions of fine particulates in coal burning locations not already covered by any smoke control areas.

Seven years of $PM_{2.5}$ monitoring data adjacent to Cowpen Road and Blyth Library has shown compliance with the limit of 20 $\mu g/m^3$ and also compliance with the stricter 10 $\mu g/m^3$ objective imposed in Scotland.

DEFRA background maps for $PM_{2.5}$ (2023 modelled data) provide a useful tool for looking at the rest of the County as a whole, which correlates with our approach that there is no significant $PM_{2.5}$ levels in Northumberland and there are no modelled levels above 10 $\mu g/m^3$ in county (maximum 7.7 $\mu g/m^3$ and mean of 5.0 $\mu g/m^3$).

Northumberland County Council will continue to monitor $PM_{2.5}$ and the two existing and two new locations and review its compliance with this air quality objectives.

4 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance.

This section sets out the monitoring undertaken within 2023 by Northumberland County Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a six-year period between 2018 and 2023 to allow monitoring trends to be identified and discussed.

4.1 Summary of Monitoring Undertaken

4.1.1 Automatic Monitoring Sites

Northumberland County Council undertook automatic, continuous monitoring at two sites during 2023. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

The two continuous particulate monitors are located at the Cowpen Road (CR) and Blyth Library (BL) sites, both instruments have comprehensive service contracts in place and are returned to Turnkey Instruments for service and calibration annually.

These are indicative monitors and were, in part, purchased to replace older equipment specifically when it was indicated that monitoring of $PM_{2.5}$ was to become a statutory requirement by local authorities in England. The suitability of these monitors is discussed in Appendix C.

Data capture for the Blyth Library and Cowpen Road sites in 2023 was 17.3 and 15.1 per cent, respectively. The poor data capture for the station was as a result of resourcing issues, support contract changes and resulting servicing requirements and intermittent electricity supply issue which has now been rectified at the Blyth Library site.

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

4.1.2 Non-Automatic Monitoring Sites

Northumberland County Council deployed passive diffusion tube monitoring NO_2 at nineteen sites during 2023. During the year, three locations were ceased and redeployed to new locations:

- Old Location - HALT1 - New Location - PRUD1

- Old Location - B16/17 - New Location - SD2
- Old Location - C1 - New Location - ROTH1

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

Maps showing the location of all monitoring sites are provided in Appendix D.

Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualization and/or distance correction), are included in Appendix C.

4.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualization (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.

4.2.1 Nitrogen Dioxide (NO_2)

Northumberland County Council no longer routinely monitors for nitrogen dioxide through automatic monitors.

For nitrogen dioxide assessed through passive diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 does not include distance corrected values, as no results exceeded 36 $\mu g/m^3$.

The apparent widespread drop in NO_2 levels detected in the eleven long-term diffusion tubes in 2020 would appear to be related to the reduction in road traffic because of Covid-19 lockdowns and restrictions. In 2021 there was an apparent overall increase back to pre-Covid-19 levels but in the subsequent two years there appears to have been an overall drop in measured NO_2 levels across these eleven long-term sites.

When compared to the baseline levels on 2021 (post-Covid-19 reduced levels), for the eleven long-term monitoring locations there has been an overall drop of 3.6 per cent in the measured NO_2 levels between 2021 and 2022 and a 16.0 drop between 2021 and 2023. There was also a 12.6 per cent drop between 2022 to 2023. We will look at this further in subsequent results to see if this downward trend continues.

4.2.2 Particulate Matter (PM_{10})

Data capture for the Blyth Library and Cowpen Road sites in 2023 was 17.3 and 15.1 per cent, respectively. Although the data is presented in the appendicies, comparision with the air quality objectives for this pollutant with such low data capture would be unsound.

Table A.1 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past six years with the air quality objective of 40 $\mu g/m^3$ (2023 is omitted from this and the previous five years to 2023 are presented).

Table A.4 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past six years with the air quality objective of 50 $\mu g/m^3$, not to be exceeded more than 35 times per year (2023 is omitted from this and the previous five years to 2023 are presented).

No discussion of the results for PM_{10} is made given the low data capture, the presented trend chart for PM_{10} is for the last six-years (no data for 2023) and the discussion of an apparent downward trend is covered in last years's ASR.

4.2.3 Particulate Matter ($PM_{2.5}$)

Data capture for the Blyth Library and Cowpen Road sites in 2023 was 17.3 and 15.1 per cent, respectively. Although the data is presented in the appendicies, comparision with the air quality objectives for this pollutant with such low data capture would be unsound.

Table A.4 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past six years (2023 is omitted from this and the previous five years to 2023 are presented).

No discussion of the results for $PM_{2.5}$ is made given the low data capture, the presented trend chart for $PM_{2.5}$ is for the last six-years (no data for 2023) and the discussion of an apparent downward trend is covered in last years's ASR.

4.2.4 Sulphur Dioxide (SO_2)

Northumberland County Council does not routinely monitor for sulphur dioxide.

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)
BL	Blyth Library	Urban Centre	431536	581531	PM_{10}; $PM_{2.5}$	NO	Nephelometer	3	3	3
CR	Cowpen Road	Roadside	428817	581815	PM_{10}; $PM_{2.5}$	NO	Nephelometer	3	3	3

Notes:
(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).
(2) N/A if not applicable

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
8N	Bondgate Without, Alnwick	Roadside	419025	613070	NO_2	NO	2	2	NO	3
B1	Waterloo Road, Blyth	Urban Centre	431537	581537	NO_2	NO	28	1	NO	3
B3	Cowpen Rd. West, Blyth	Roadside	428815	581813	NO_2	NO	13.5	2	NO	3
BER1	32 Castlegate, Berwick	Roadside	399596	653213	NO_2	NO	1	2	NO	1.5
B11	Blyth YCMA, Blyth	Urban Centre	431160	581415	NO_2	NO	2	1	NO	3
CM8	Entrance to Cecil Court, Ponteland	Urban Centre	416820	572840	NO_2	NO	21	1.5	NO	3
B15	South Newsham Road, Blyth	Roadside	430552	578950	NO_2	NO	8	1.7	NO	3
C1	High Pit Road, Cramlington	Roadside	427593	576555	NO_2	NO	4	1.7	NO	3
BER2	Prince Edward Road, Tweedmouth	Roadside	399345	625512	NO_2	NO	11	1	NO	2.5
HEX1	4 Haugh Lane, Hexham	Roadside	393684	564214	NO_2	NO	1	1.5	NO	2
C11	Storey Street (B1505), Cramlington	Roadside	427523	576136	NO_2	NO	8	1.7	NO	3
CM2	Newgate St, Morpeth	Roadside	419525	586380	NO_2	NO	1	1	NO	1.5
CM4	Bridge St, Morpeth	Roadside	419947	585937	NO_2	NO	70	3	NO	3
CM5	Thorpe Ave, Morpeth	Roadside	420134	586329	NO_2	NO	9	1.7	NO	2
HALT1	Westgate Road, Haltwhistle	Roadside	370647	564060	NO_2	NO	17	1	NO	1.5
B16	24 Cowpen Road	Roadside	430666	581604	NO_2	NO	7	2	NO	2
W17	Front Street East, Bedlington	Urban Centre	426014	581879	NO_2	NO	20	1	NO	3
W21	Newbiggin Road, Ashington	Roadside	427939	586210	NO_2	NO	5	1	NO	2.5
SD1	Salvation Army, Seaton Delaval	Roadside	430387	575433	NO_2	NO	6	1.7	NO	3
PRUD1	Corner of Front St and Neale St (LP)	Roadside	409878	562974	NO_2	NO	2	2	NO	2.5
SD2	Entrance to Delaval Court (LP)	Roadside	429604	575801	NO_2	NO	3	2	NO	2.5
ROTH1	Corner of Front St and Bridge St (SP)	Roadside	405812	601756	NO_2	NO	12	0	NO	2.5

Notes:
(1) Zero metres 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.

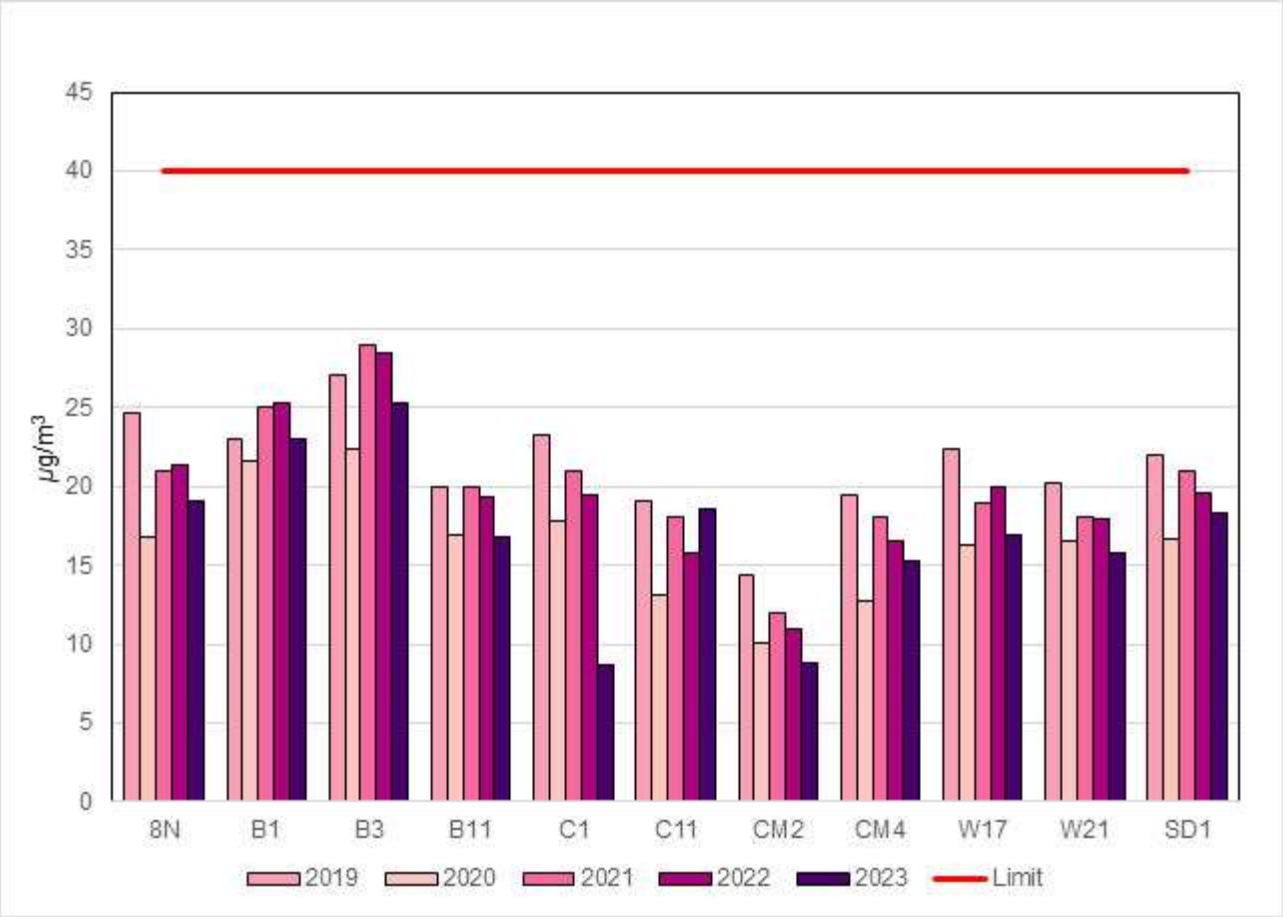
Table A.3 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture for 2023 (%) [2]	NO_2 Annual Mean Concentration(µm/m3) [3 4]				
							2019	2020	2021	2022	2023
8N	419025	613070	Roadside	Diffusion Tube	N/A	91.7	24.7	16.8	21.1	21.3	19.1
B1	431537	581537	Urban Centre	Diffusion Tube	N/A	100.0	27.8	21.5	25.3	25.3	23.0
B3	428815	581813	Roadside	Diffusion Tube	N/A	100.0	31.0	22.4	29.3	28.4	25.3
BER1	399596	653213	Roadside	Diffusion Tube	N/A	100.0	16.6	13.3	14.2	12.8	12.1
B11	431160	581415	Urban Centre	Diffusion Tube	N/A	100.0	21.2	16.9	19.6	19.3	16.8
CM8	416820	572840	Urban Centre	Diffusion Tube	N/A	100.0	17.9	12.5	15.3	13.5	12.3
B15	430552	578950	Roadside	Diffusion Tube	N/A	100.0	17.2	11.4	14.2	14.4	14.5
C1	427593	576555	Roadside	Diffusion Tube	100	100.0	23.2	17.8	21.3	19.4	8.0
BER2	399345	625512	Roadside	Diffusion Tube	N/A	100.0	13.5	9.3	10.8	10.7	9.5
HEX1	393684	564214	Roadside	Diffusion Tube	N/A	100.0	28.0	21.1	23.8	23.2	23.9
C11	427523	576136	Roadside	Diffusion Tube	N/A	100.0	19.1	13.1	17.6	15.8	18.6
CM2	419525	586380	Roadside	Diffusion Tube	N/A	100.0	14.3	10.1	11.8	10.9	8.8
CM4	419947	585937	Roadside	Diffusion Tube	N/A	100.0	19.4	12.7	18.1	16.6	15.3
CM5	420134	586329	Roadside	Diffusion Tube	N/A	100.0	15.8	11.5	13.8	13.2	11.6
HALT1	370647	564060	Roadside	Diffusion Tube	N/A	41.7	12.6	9.5	10.6	9.7	13.1
B17	430666	581604	Roadside	Diffusion Tube	100.0	41.7	23.7	18.5	22.3	22.1	13.0
W17	426014	581879	Urban Centre	Diffusion Tube	N/A	91.7	22.3	16.3	18.9	20.0	13.9
W21	427939	586210	Roadside	Diffusion Tube	N/A	100.0	20.2	16.5	18.0	17.9	15.8
SD1	430387	575433	Roadside	Diffusion Tube	N/A	100.0	22.0	16.7	20.7	19.6	18.3
PRUD1	409878	562974	Roadside	Diffusion Tube	100.0	58.3	N/A	N/A	N/A	N/A	20.5
SD2	429604	575801	Roadside	Diffusion Tube	100.0	58.3	N/A	N/A	N/A	N/A	12.8
ROTH1	405812	601756	Roadside	Diffusion Tube	71.4	41.7	N/A	N/A	N/A	N/A	10.1

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**
☒ **Diffusion tube data has been bias adjusted.**
☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.**

Notes:
The annual mean concentrations are presented as $\mu g/m^3$.
Exceedances of the NO_2 annual mean objective of $40\mu g/m^3$ are shown in **bold**.
NO_2 annual means exceeding $60\mu g/m^3$, 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%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations



This represents the results from eleven of Northumberland County Council's more long-established diffusion tube locations.

Table A.4 – Annual Mean PM_{10} Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture for 2023 (%) [2]	PM_{10} Annual Mean Concentration(µm/m3) [3 4]				
						2019	2020	2021	2022	2023
BL	431536	581531	Urban Centre	N/A	17.3	14.3 (13.3)	13.6 (13.1)	10.4	5.0	ND
CR	428817	581815	Roadside	N/A	15.1	16.2	12.2	8.3 (8.7)	13.3	ND

☐ **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/m³.
Exceedances of the PM_{10} annual mean objective of 40µg/m³ are shown in **bold**.
Where data capture has been below 50% - no data is presented (ND)
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%).

Table A.5 – Blyth Library Particulates (PM_{10}) - Air Quality Data Summary

	PM_{10}
Number Very High	0
Number High	0
Number Moderate	0
Number Low	64
Maximum 15-minute Mean	99.6 µg/m³
Maximum Hourly Mean	48.6 µg/m³³
Maximum running 8-hour Mean	31.3 µg/m³
Maximum running 24-hour Mean	28.3 µg/m³
Maximum Daily Mean	36.3 µg/m³
90.4th Percentile (PM) - Daily	N/A
Average	10.1 µg/m³
Data Capture	17.3 %

Figure A.2 – Blyth Library Particulates (PM_{10}) – Hourly Time Series Plot (µg/m3)

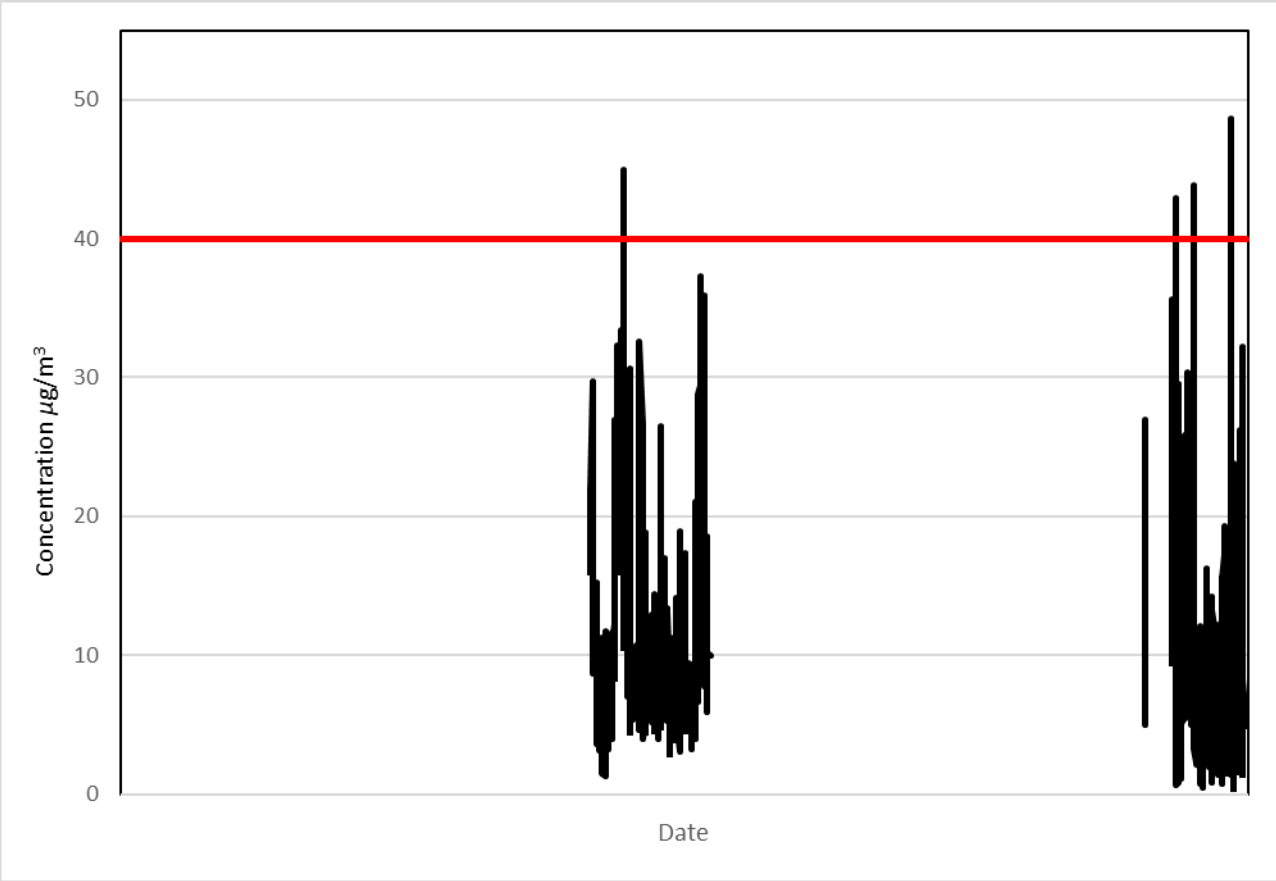


Table A.6 – Cowpen R Particulates (PM_{10}) - Air Quality Data Summary

d	PM_{10}
Number Very High	0
Number High	0
Number Moderate	4
Number Low	360
Maximum 15-minute Mean	40.3 µg/m³
Maximum Hourly Mean	26.8 µg/m³
Maximum running 8-hour Mean	19.6 µg/m³
Maximum running 24-hour Mean	14.6 µg/m³
Maximum Daily Mean	51.1 µg/m³
90.4th Percentile (PM) - Daily	-
Average	3.9 µg/m³
Data Capture	15.1 %

Figure A.3 – Cowpen Rd Particulates (PM_{10}) – Hourly Time Series Plot (µg/m3)

Figure A.4 – Trends in Annual Mean PM_{10} Concentrations

Where data capture has been below 50% - no data is presented (ND)

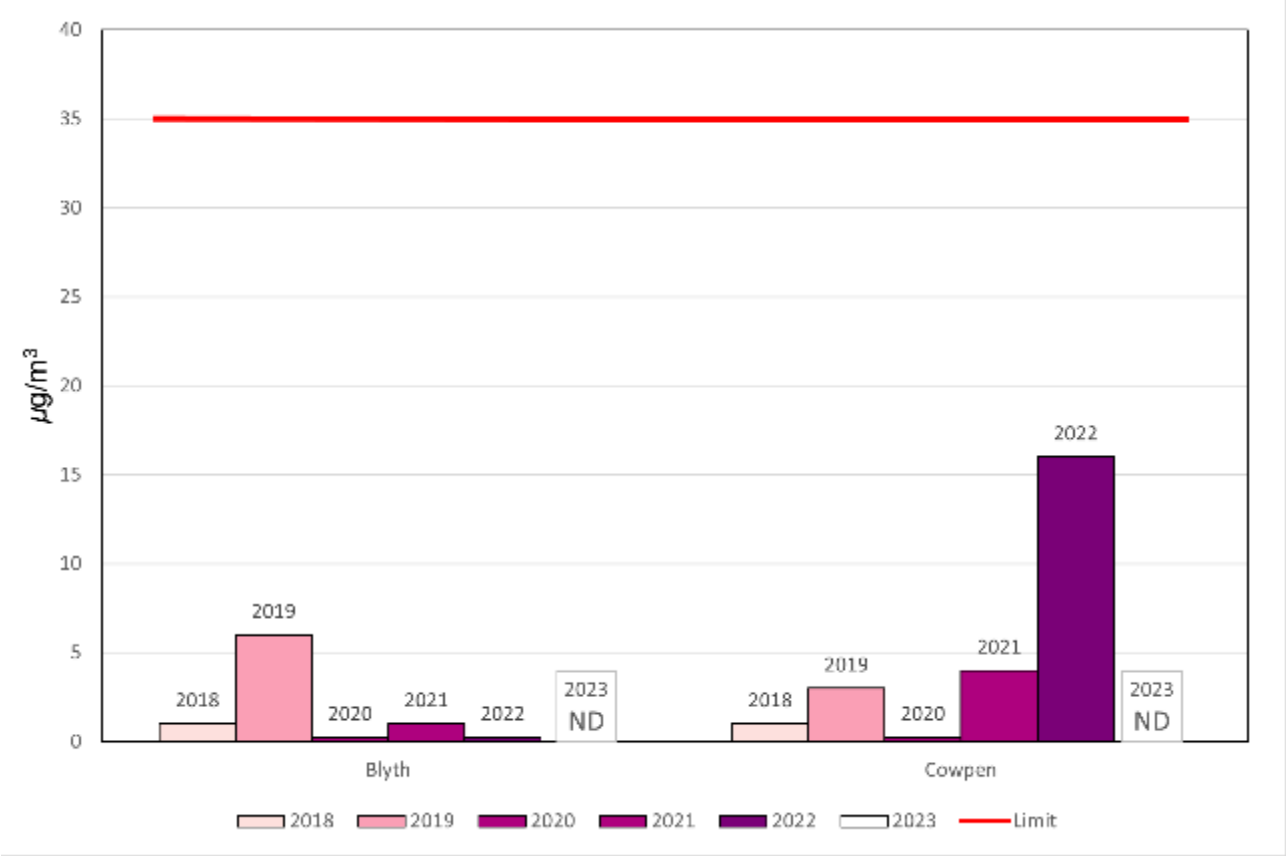
Table A.4 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture for 2023 (%) [2]	PM_{10} 24-Hour Means > 50µg/m^3				
						2019	2020	2021	2022	2023
BL	431536	581531	Urban Centre	N/A	17.3	3 (26)	0 (27)	4	0	ND
CR	428817	581815	Roadside	N/A	15.1	6	0	1 (13)	16	ND

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**.
Where data capture has been below 50% - no data is presented (ND)
If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.5 – Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m³



Where data capture has been below 50% - no data is presented (ND)

Table A.5 – Annual Mean $PM_{2.5}$ Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) 1	Valid Data Capture for 2023 (%) 2	$PM_{2.5}$ Annual Mean Concentration (µg/m³)				
						2019	2020	2021	2022	2023
BL	431536	581531	Urban Centre	N/A	17.3	8.0 (7.6)	5.7 (6.0)	5.2	2.6	ND
CR	428817	581815	Roadside	N/A	15.1	7.2	6.8	6.1 (6.3)	7.6	ND

☐ **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/m³.

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.

Where data capture has been below 50% - no data is presented (ND)

(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.9 – Blyth Library Particulates ($PM_{2.5}$) - Air Quality Data Summary

	$PM_{2.5}$
Number Very High	0
Number High	0
Number Moderate	0
Number Low	64
Maximum 15-minute Mean	99.6 µg/m³
Maximum Hourly Mean	48.6 µg/m³
Maximum running 8-hour Mean	31.3 µg/m³
Maximum running 24-hour Mean	28.3 µg/m³
Maximum Daily Mean	36.3 µg/m³
90.4th Percentile (PM) - Daily	-
Average	10.1 µg/m³
Data Capture	17.3 %

Figure A.6 – Blyth Library Fine Particulates ($PM_{2.5}$) – Hourly Time Series Plot (µg/m3)

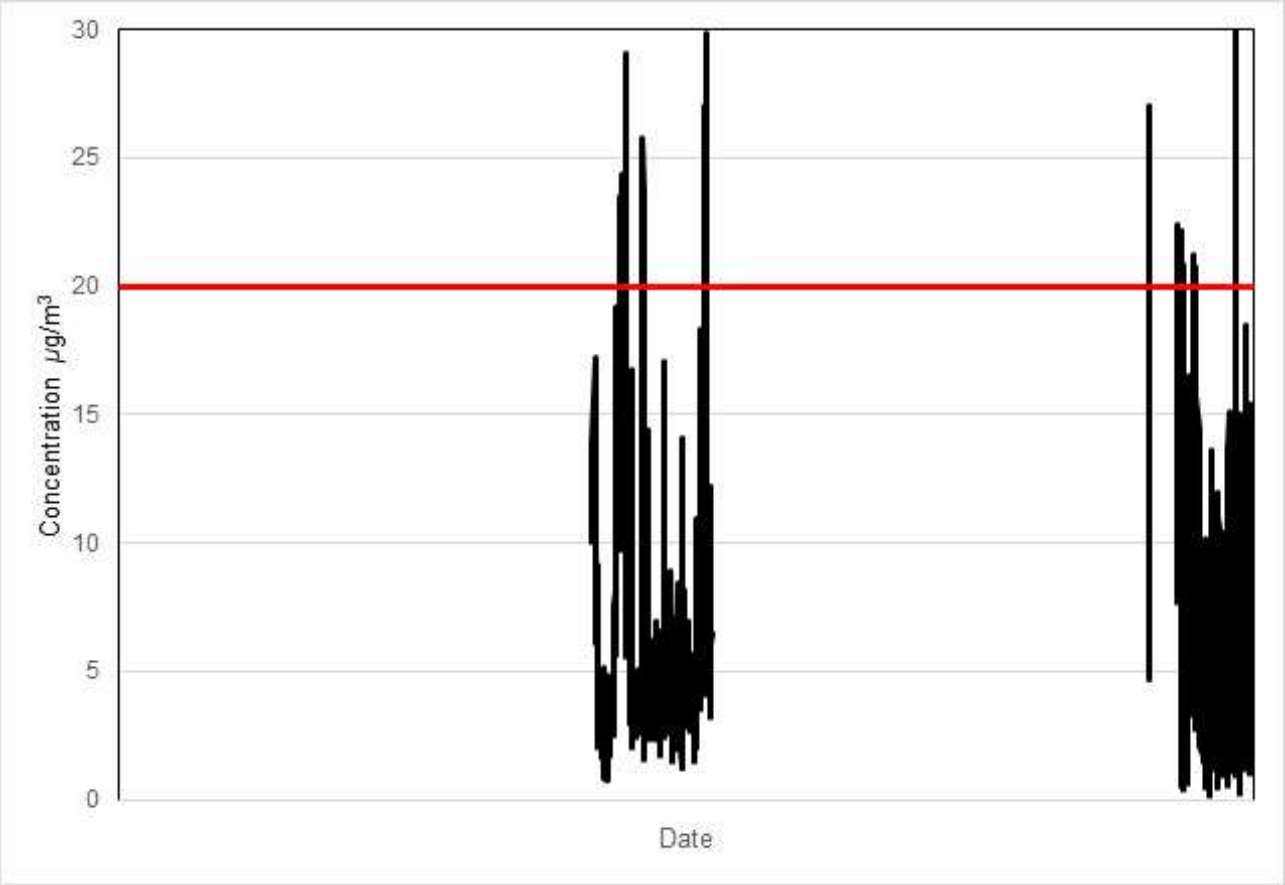


Table A.10 – Cowpen Rd Particulates ($PM_{2.5}$) - Air Quality Data Summary

	$PM_{2.5}$
Number Very High	0
Number High	0
Number Moderate	0
Number Low	365
Maximum 15-minute Mean	27.3 µg/m³
Maximum Hourly Mean	27.0 µg/m³
Maximum running 8-hour Mean	17.7 µg/m³
Maximum running 24-hour Mean	12.9 µg/m³
Maximum Daily Mean	29.4 µg/m³
90.4th Percentile (PM) - Daily	-
Average	3.5 µg/m³
Data Capture	15.1 %

Figure A.7 – Cowpen Rd Fine Particulates ($PM_{2.5}$) – Hourly Time Series Plot (µg/m3)

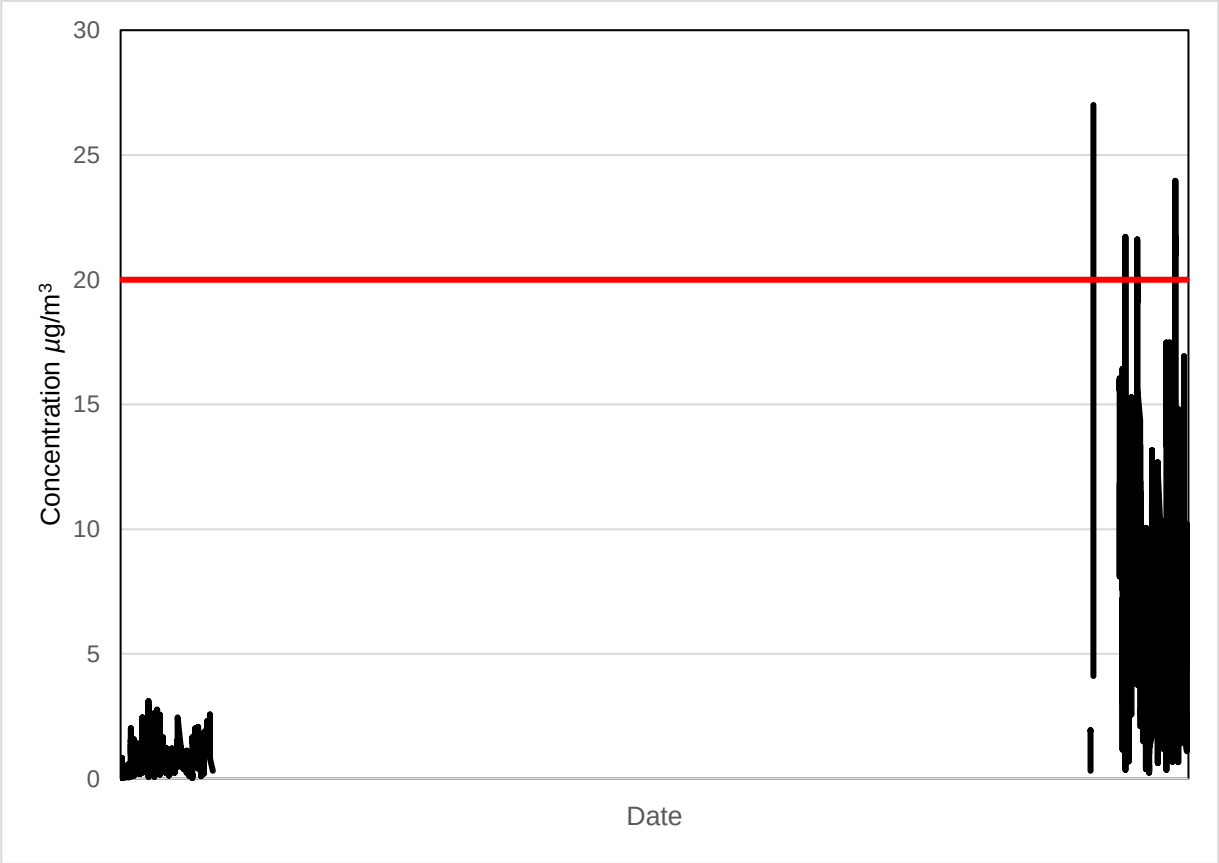


Figure A.8 – Trends in Annual Mean $PM_{2.5}$ Concentrations

Where data capture has been below 50% - no data is presented (ND)

Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO_2 2023 Diffusion Tube Results (µg/m³)

Site 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 (x.x)	Annual Mean: Distance Corrected to Nearest Exposure
B1	431537	581537	50.4	33.2	33.7	27.7	26.2	22.3	25.1	25.4	28.1	24.4	33.4	28.0	29.8	23.0	N/A
B3	428815	581813	36.1	26.8	38.7	30.6	32.5	29.6	34.0	33.5	38.8	27.5	37.3	28.3	32.8	25.3	N/A
BER1	399596	653213	10.8	4.4	18.9	23.6	21.8	18.9	16.0	16.9	14.1	17.0	14.4	12.4	15.8	12.1	N/A
B11	431160	581415	27.6	27.6	28.1	26.9	28.4	18.2	19.8	19.0	18.0	21.8	10.5	16.0	21.8	16.8	N/A
CM8	416820	572840	16.8	10.7	17.7	18.5	16.9	13.7	14.1	12.4	16.8	15.3	20.4	17.9	15.9	12.3	N/A
B15	430552	578950	18.1	13.9	19.5	25.6	19.6	16.6	16.2	17.4	21.6	19.7	19.3	17.7	18.8	14.5	N/A
C1	427593	576555	14.7	7.3	12.2	11.7	10.9								11.4	8.0	N/A
BER2	399345	625512	12.1	6.1		15.6	14.5	12.9	11.9	11.7	13.9	10.1	14.8	11.9	12.3	9.5	N/A
HEX1	393684	564214	34.5	22.7	34.0	28.2	24.9	24.3	33.7	32.4	37.5	34.8	37.8	28.0	31.1	23.9	N/A
C11	427523	576136	15.2	12.1	23.6	32.3	25.4	22.4	22.6	22.7	27.1	24.1	32.1	30.2	24.2	18.6	N/A
CM2	419525	586380		2.3	14.9	14.1	11.5	8.3	9.6	8.4	13.9	15.0	13.5	14.6	11.5	8.8	N/A
W17	426014	581879	26.2	22.0	21.3	23.9	23.5	20.4	19.2	20.6	22.3	18.0	23.8	22.4	22.0	16.9	N/A
8N	419025	613070	27.2	20.1	27.0	24.6	25.7	23.1	21.7	22.2	26.3	25.7	26.6	27.2	24.8	19.1	N/A
W21	427939	586210	25.7	20.5	26.3	21.5	17.5	15.3	14.9	17.4	22.0	16.0	23.1	25.5	20.5	15.8	N/A
CM5	420134	586329		3.0	17.5	17.8	19.8	15.6	13.1	11.3	16.8	15.9	18.7	15.5	15.0	11.6	N/A
CM4	419947	585937		10.6	23.4	26.5	24.9	19.0	17.6	17.4	20.8	20.7	16.5	20.6	19.8	15.3	N/A
SD1	430387	575433	28.4	18.3	29.0	26.3	19.3	19.2	19.3	21.5	22.8	25.2	31.4	24.6	23.8	18.3	N/A
HALT1	370647	564060	22.1	15.9	17.9	20.0	17.1								18.6	13.1	N/A
B17	430666	581604	12.9	14.1	20.5	20.1	16.7								16.9	11.9	N/A
ROTH 1 (formerly C15)	405812	601756						9.7		10.7	11.0	12.4		14.4	11.6	10.1	N/A
PRUD 1 (formerly HALT1)	409878	562974						19.1	16.0	14.7	16.3	17.8	23.6	19.3	18.1	20.5	N/A
SD2 (formerly B17)	429604	575801						15.5	12.4	15.4	14.9	15.4	20.5	15.5	15.7	12.8	N/A

☐ **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.**
☒ **Northumberland County 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/m³ are shown in **bold**.
NO_2 annual means exceeding 60µg/m³, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.
See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Northumberland County Council During 2023

Northumberland County Council has not identified any new sources relating to air quality within the reporting year of 2023.

Additional Air Quality Works Undertaken by Northumberland County Council During 2023

Northumberland County Council has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

The supplier of Northumberland County Council's diffusion tubes for the whole of 2023 was SOCOTEC Didcot and the tubes were prepared using the acetone - triethanolamine (50:50) method.

The diffusion tubes in Northumberland County Council were collected/deployed within one day of the dates contained within the 2023 Diffusion Tube Monitoring Calendar.

SOCOTEC took part in the AIR NO_2 Proficiency Testing Scheme (AIR-PT) and for the four quarters of 2023 when the diffusion tubes from Northumberland County Council were analysed, they achieved:

January - February 2023 (AIR PT AR055)	–	100 per cent
May - June 2023 (AIR PT AR056)	–	100 per cent
July - August 2023 (AIR PT AR058)	–	100 per cent
August - October 2023 (AIR PT AR059)	–	100 per cent

Post-October 2023 reports are not provided on the DEFRA LAQM website.

Source:

https://laqm.defra.gov.uk/wp-content/uploads/2023/11/LAQM-NO2-Performance-data_Up-to-Oct-2023_V1_Final.pdf

Diffusion Tube Annualisation

Three diffusion tube monitoring locations within Northumberland County Council were relocated “in year” resulting in less than 75 per cent data capture at the three old locations and at the three new locations.

Whilst data capture was over 75 per cent for the monitoring periods at all six locations, annualisation has been carried out for consistency and to demonstrate that this affect the annual mean very little – by 6 per cent at two sites, by 8 per cent in two others and by 12 per cent in one (compared to the captured period mean).

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

Site ID	Annualisation Factor Newcastle City Centre	Annualisation Factor Newcastle Cradlewell	Annualisation Factor Sunderland Wessington Way	Annualisation Factor Sunderland Silksworth	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
C1	0.90	0.95	0.89	0.92	0.92	8.7	8.0
HALT1	0.90	0.95	0.89	0.92	0.92	14.3	13.1
B17	0.90	0.95	0.89	0.92	0.92	13.0	11.9
ROTH1	1.13	1.04	1.18	1.15	1.13	9.0	10.1
PRUD1	1.07	1.03	1.08	1.06	1.06	19.3	20.5
SD2	1.07	1.03	1.08	1.06	1.06	12.1	12.8

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within this 2024 ASR have been corrected for bias using a national 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.

Northumberland County Council have applied a national bias adjustment factor of 0.77 to the 2023 monitoring data. A summary of bias adjustment factors used by Northumberland County Council over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2019	National	06/20	0.75
2020	National	06/21	0.76
2021	National	06/22	0.78
2022	National	03/23	0.76
2023	National	03/24	0.77

Fig C.1 – National Diffusion 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

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

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

Step 3: Select a Year from the Drop Down List

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

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

Analysed By[1]	Method	Year	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[5]	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	50% TEA in acetone	2023	UB	City Of York Council	11	15	12	27.5%	G	0.78
SOCOTEC Didcot	50% TEA in acetone	2023	R	City Of York Council	11	22	17	26.6%	G	0.79
SOCOTEC Didcot	50% TEA in acetone	2023	R	City Of York Council	9	22	17	33.7%	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2023	R	City Of York Council	10	31	25	26.1%	G	0.79
SOCOTEC Didcot	50% TEA in acetone	2023	UB	Gravesham Borough Council	12	19	15	25.0%	G	0.80
SOCOTEC Didcot	50% TEA in acetone	2023	UB	Gravesham Borough Council	12	23	19	19.4%	G	0.84
SOCOTEC Didcot	50% TEA in acetone	2023	R	Ipswich Borough Council	9	26	20	33.0%	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2023	R	Ipswich Borough Council	12	36	27	34.3%	G	0.74
SOCOTEC Didcot	50% TEA in acetone	2023	R	North East Lincolnshire Council	12	43	26	61.9%	G	0.62
SOCOTEC Didcot	50% TEA in acetone	2023	UB	North East Lincolnshire Council	10	13	10	29.1%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2023	R	North East Lincolnshire Council	11	24	21	16.0%	G	0.85
SOCOTEC Didcot	50% TEA in acetone	2023	R	Cardiff Council / Shared Regulatory Services	11	41	34	22.2%	G	0.82
SOCOTEC Didcot	50% TEA in acetone	2023	UB	Torfaen County Borough Council	11	12	9	43.5%	G	0.70
SOCOTEC Didcot	50% TEA in Acetone	2023	R	East Suffolk Council	12	29	21	38.5%	G	0.72
SOCOTEC Didcot	50% TEA in Acetone	2023	R	Wrexham County Borough Council	11	17	14	25.2%	G	0.80
SOCOTEC Didcot	50% TEA in Acetone	2023	R	Horsham District Council	12	21	17	23.5%	G	0.81
SOCOTEC Didcot	50% TEA in Acetone	2023	R	Horsham District Council	10	25	17	43.5%	G	0.70
SOCOTEC Didcot	50% TEA in Acetone	2023	R	Horsham District Council	10	23	24	-5.4%	G	1.06
SOCOTEC Didcot	50% TEA in Acetone	2023	UI	North Lincolnshire Council	10	14	11	26.2%	G	0.79
SOCOTEC Didcot	50% TEA in acetone	2023	R	Bridgend Council	11	32	27	20.8%	G	0.83
SOCOTEC Didcot	50% TEA in acetone	2023	R	Cambridge City Council	12	22	18	24.8%	G	0.80
SOCOTEC Didcot	50% TEA in acetone	2023	R	Leeds City Council	10	30	23	32.3%	G	0.76
SOCOTEC Didcot	50% TEA in acetone	2023	KS	Leeds City Council	10	30	20	49.5%	G	0.67
SOCOTEC Didcot	50% TEA in acetone	2023	R	Leeds City Council	12	25	19	30.0%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2023	UC	Leeds City Council	11	26	19	40.0%	G	0.71
SOCOTEC Didcot	50% TEA in acetone	2023	KS	Marylebone Road Intercomparison	11	53	38	41.4%	G	0.71
SOCOTEC Didcot	50% TEA in acetone	2023	R	Vale Of White Horse District Council	10	22	18	21.2%	G	0.83
SOCOTEC Didcot	50% TEA in acetone	2023	UB	Wirral Council	11	15	13	16.7%	G	0.86
SOCOTEC Didcot	50% TEA in acetone	2023		**Overall Factor[3] (28 studies)**				**Use**		**0.77**

[1] In this situation it would be reasonable to use data from the nearest year.

[2] Overall factors have been calculated using orthogonal regression to allow for uncertainty in both the automatic monitor and diffusion tube. The uncertainty of the diffusion tube has been assumed to be double that of the automatic monitor.

[4] If you have your own co-location study, please send your data to us, so that it can be included here. If this is not possible, but you wish to combine these factors with your own, select and copy the relevant data from this spreadsheet and paste them into a new one (otherwise your calculations will include hidden data). Then add your own data and calculate the bias. To obtain a new correction factor that includes your data, average the bias (B) values, expressed as a fraction, i.e. -16% is -0.16. Next add 1 to this value, e.g. -0.16 + 1.00 = 0.84 in this example, then take the inverse to give the bias adjustment factor (0.84 = 1.19). (This will not be exactly the same as the correction factor calculated using orthogonal regression as used in this spreadsheet, but will be reasonably close).

To add data download a questionnaire

[5] Where an annual data set falls into two years it has been ascribed to the year in which most of the data has taken.

[6] Tube precision is determined as follows: G = Good precision - coefficient of variation (CV) of diffusion tube replicates is considered G when the CV of eight or more periods is less than 20%, and the average CV of all monitoring periods is less than 10%; P = Poor precision - CV of four or more periods > 20% and/or average CV > 10%; S = Single tube, therefore not applicable; na = not available.

NO_2 Fall-off with Distance from the Road

The bias-adjusted and annualised diffusion tube annual mean results do not exceed 36 µg/m3 at the monitoring locations and therefore none of the results require or have been annualised in any presentation of these results in this report.

QA/QC of Automatic Monitoring

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

The Turnkey Instruments Osiris particulate monitors (PM_{10} and $PM_{2.5}$) utilised within Northumberland County Council do not require the application of a correction factor and any adjustment to the reported particulate levels.

Automatic Monitoring Annualisation

The data capture for both the automatic particulate monitors fell below 25 per cent and therefore no annualisation of this data has calculated or presented in this report.

NO_2 Fall-off with Distance from the Road

Northumberland County Council do not operate any automatic nitrogen dioxide monitors.

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

Figure D.1 – Central Blyth Automatic and NO_2 Diffusion Tube Monitoring Locations

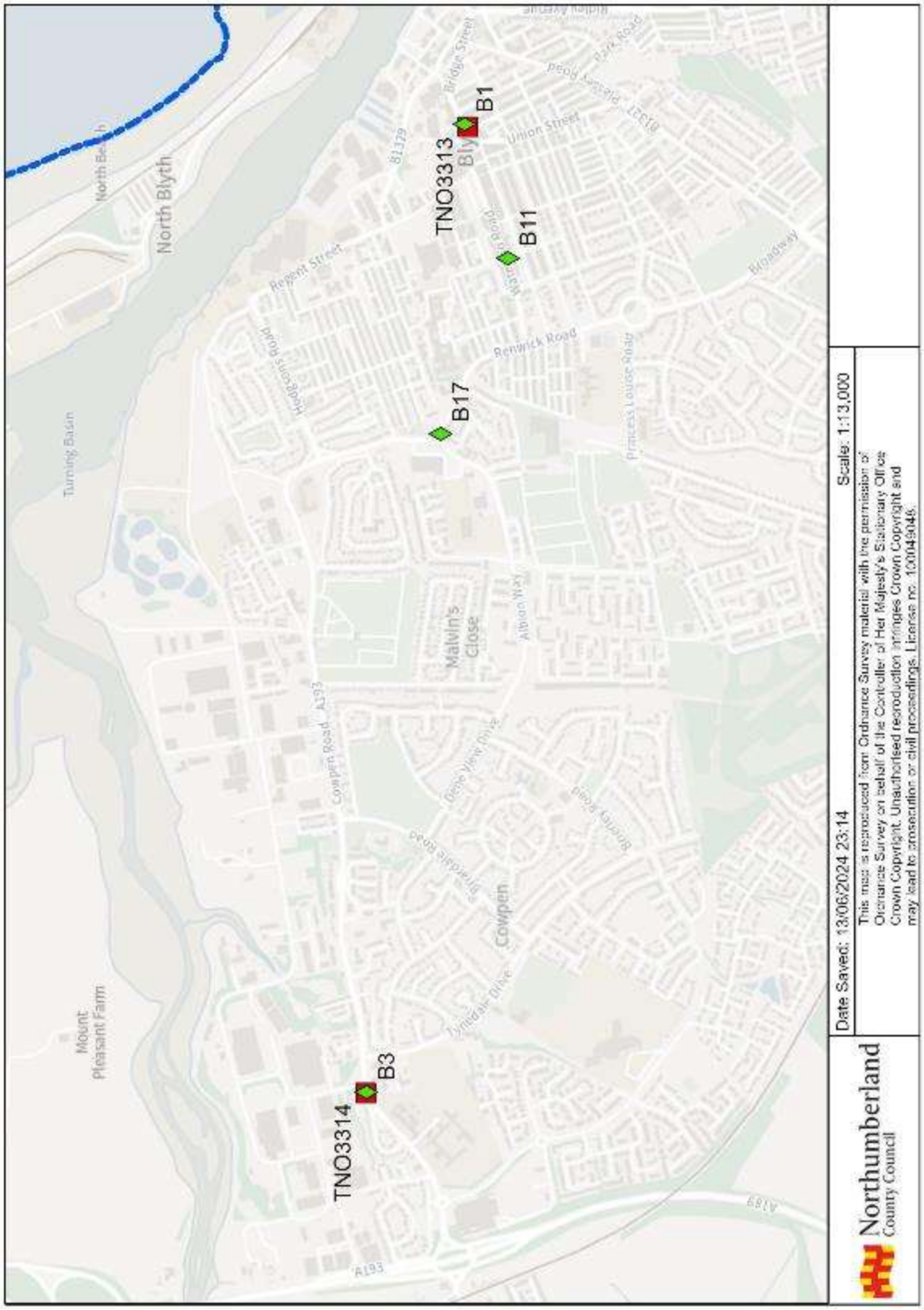


Figure D.2 – Cowpen Rd Automatic and NO_2 Diffusion Tube Monitoring Locations

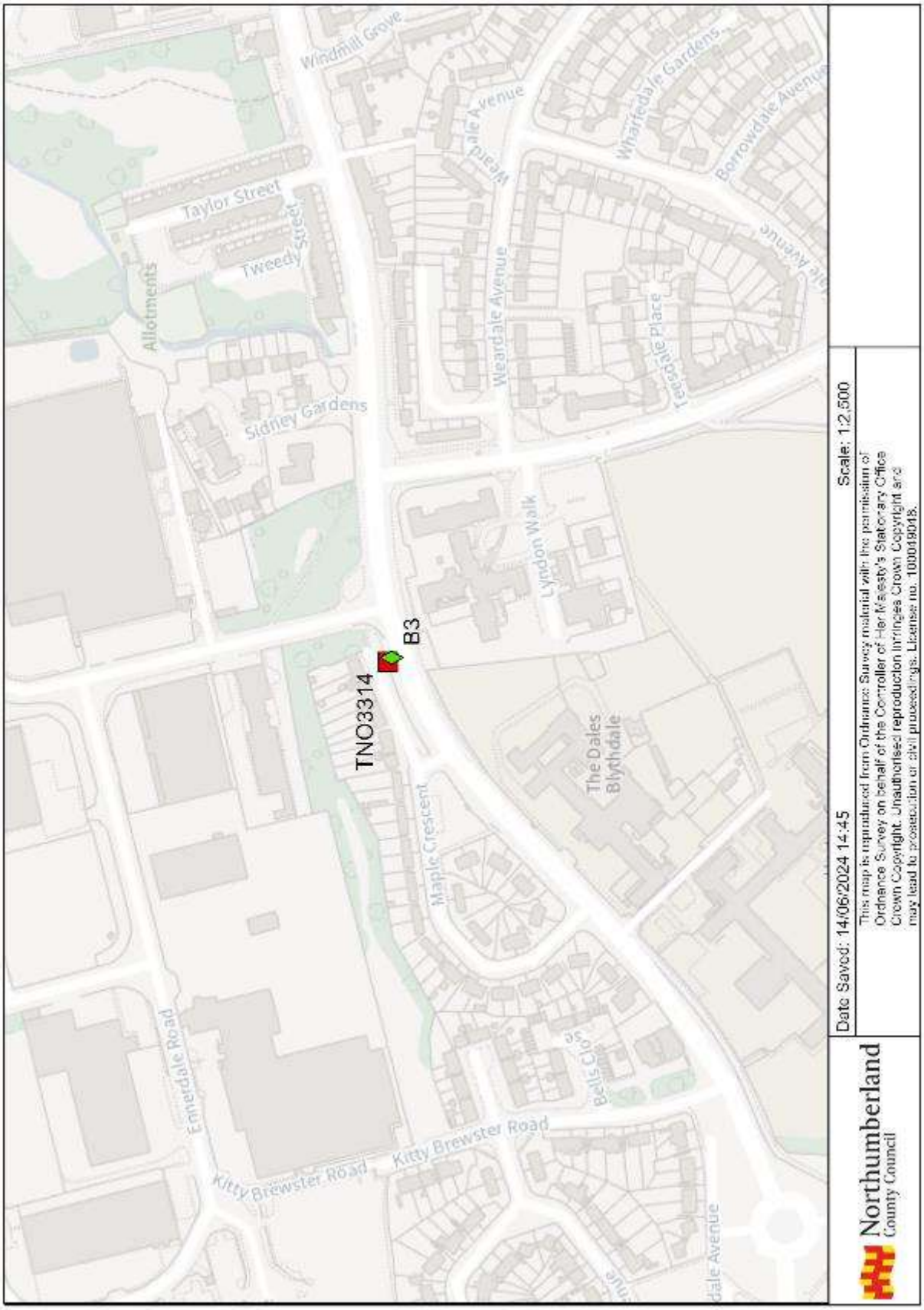


Figure D.3 – NO_2 Diffusion Tube Monitoring Locations Across Northumberland

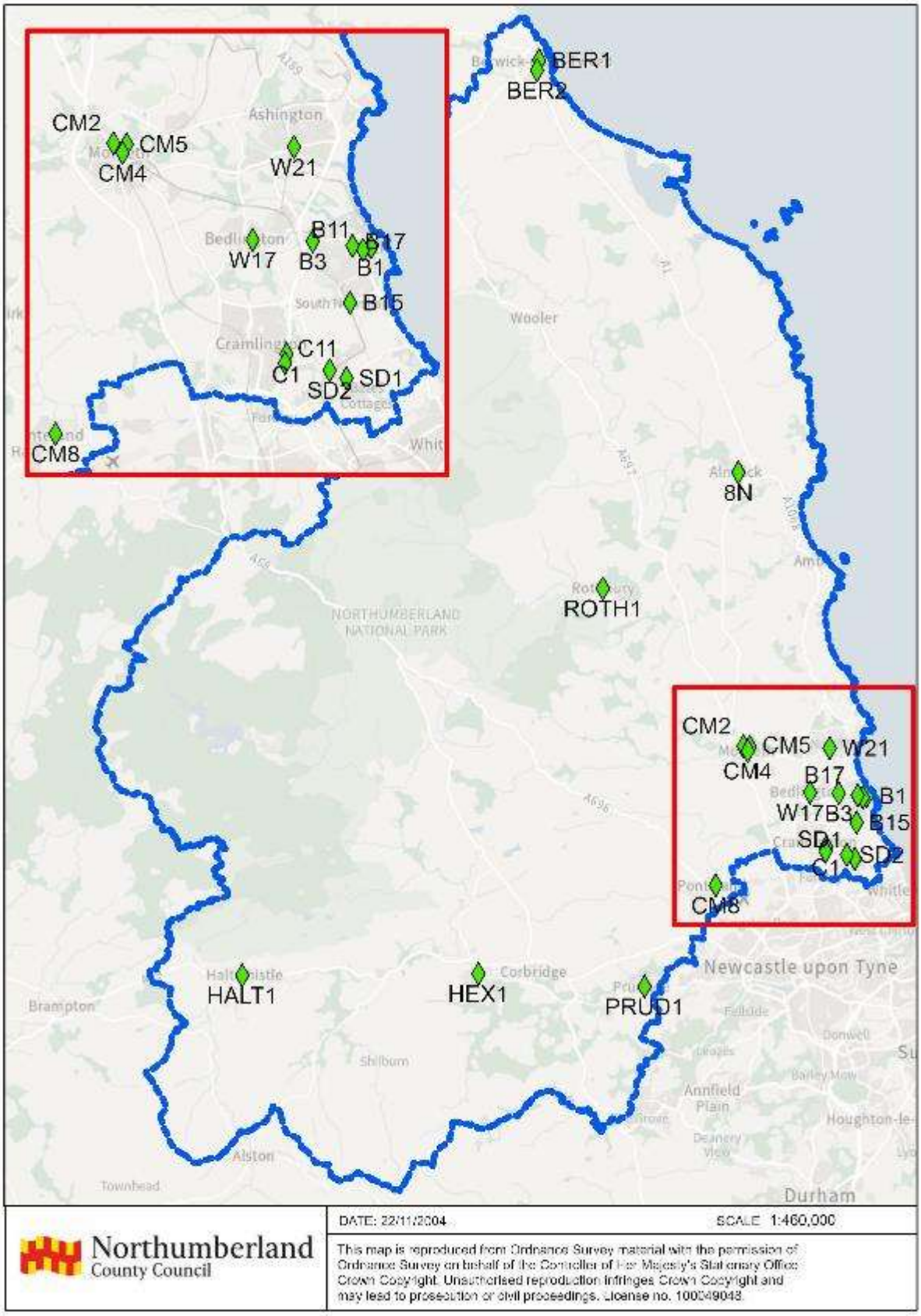


Figure D.4 – Alnwick NO_2 Diffusion Tube Monitoring Locations

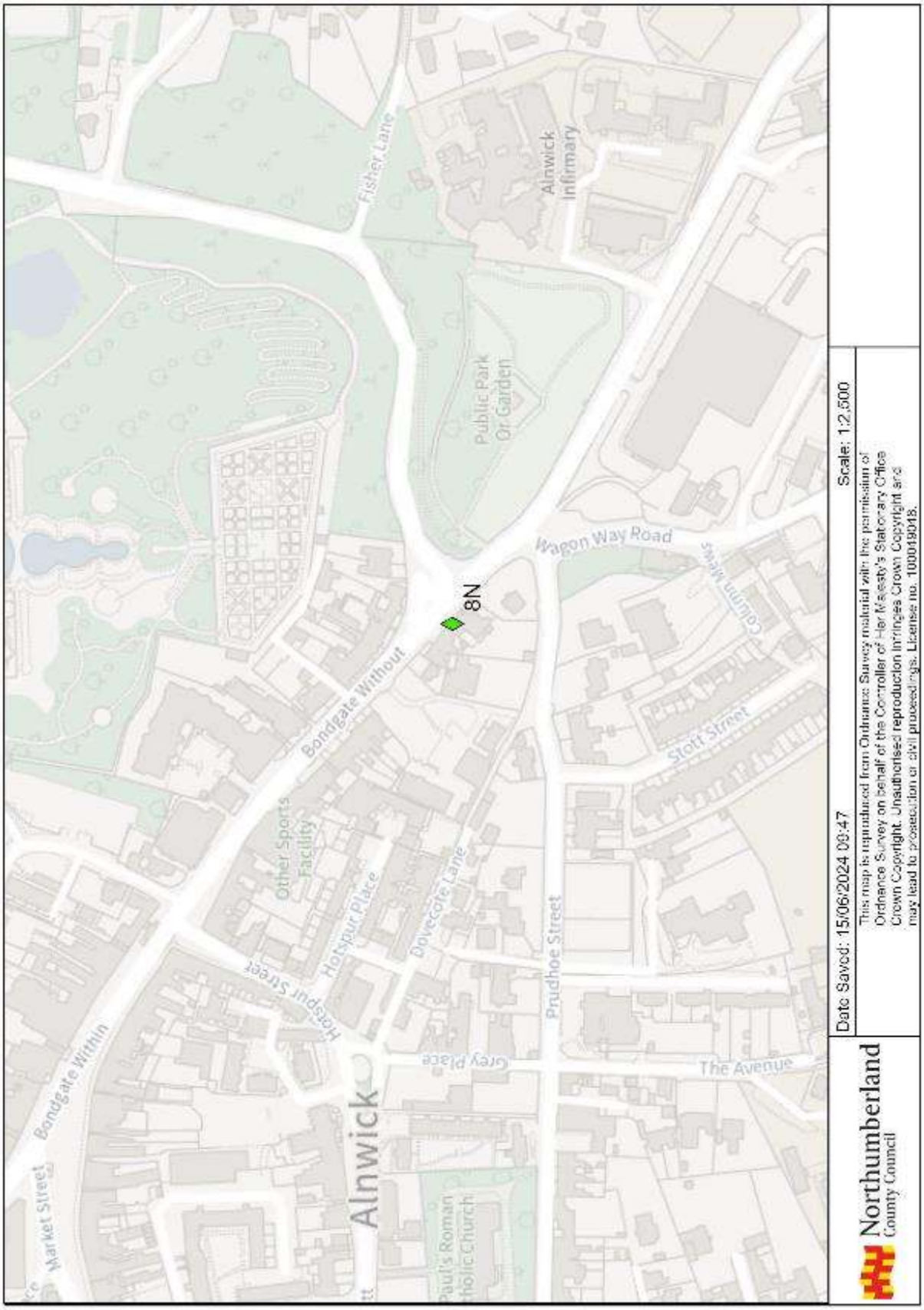


Figure D.5 – Morpeth NO_2 Diffusion Tube Monitoring Locations

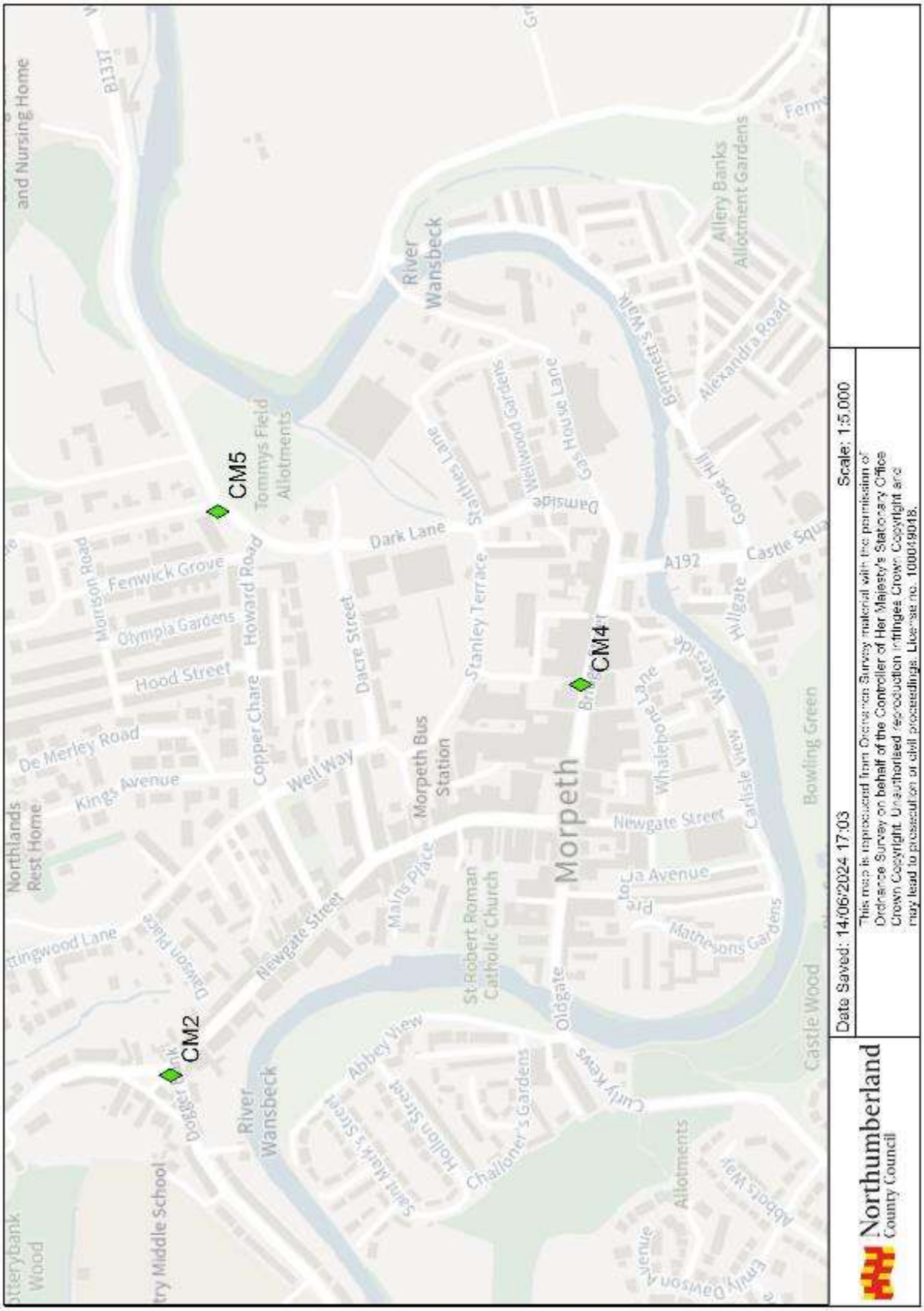


Figure D.6 – Ponteland NO_2 Diffusion Tube Monitoring Location

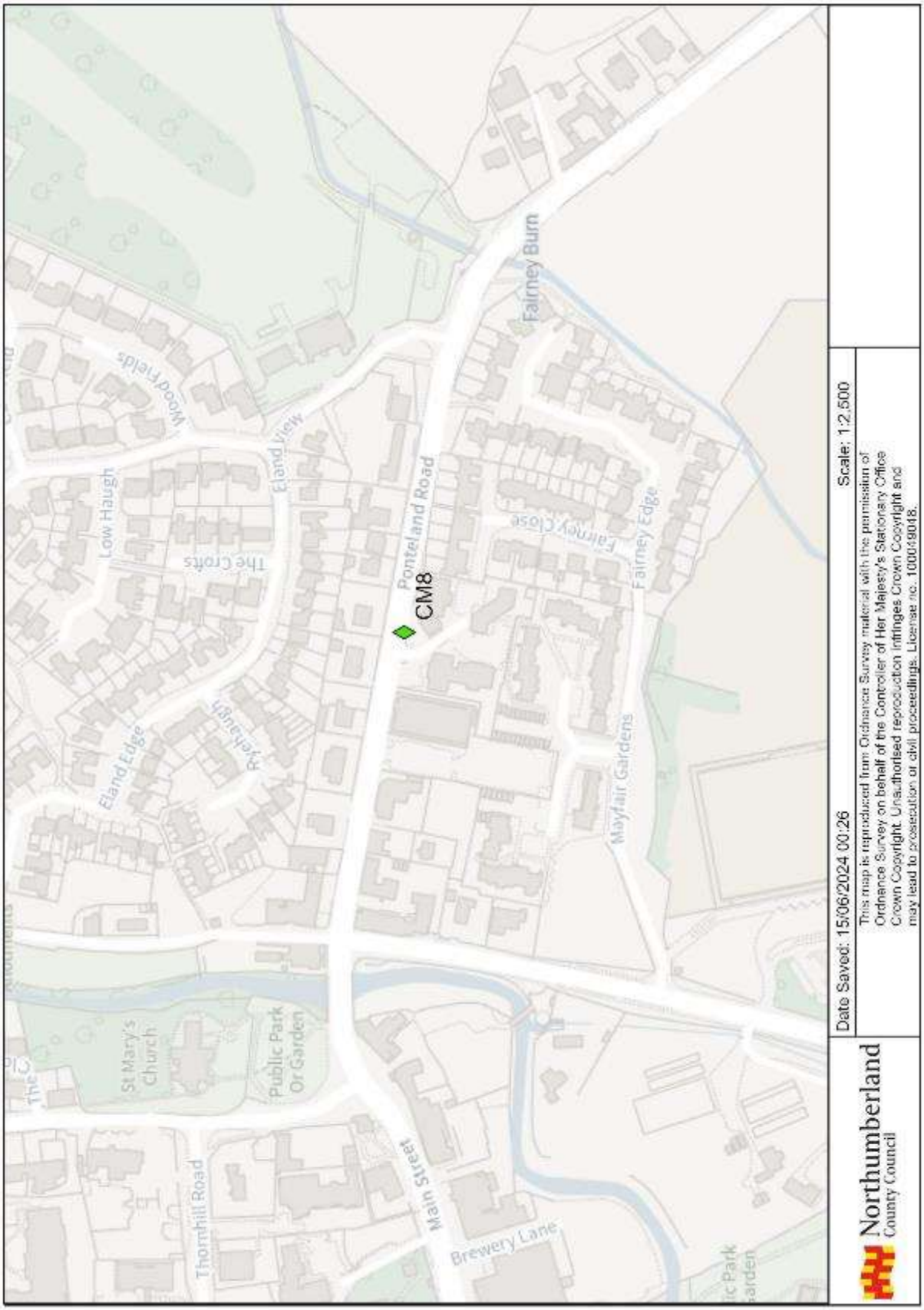


Figure D.7 – East Cramlington NO_2 Diffusion Tube Monitoring Locations

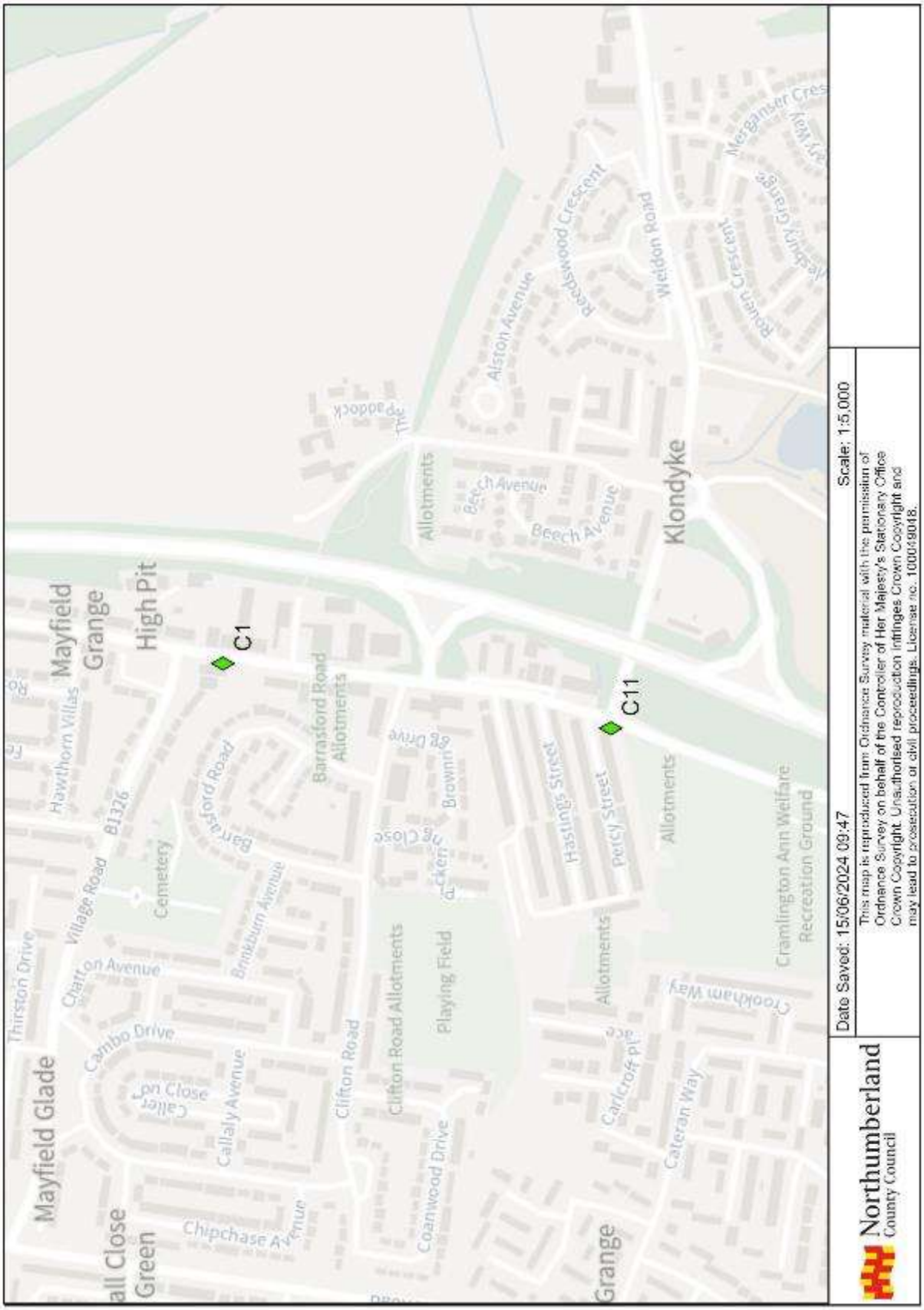


Figure D.8 – Berwick and Tweedmouth NO_2 Diffusion Tube Monitoring Locations

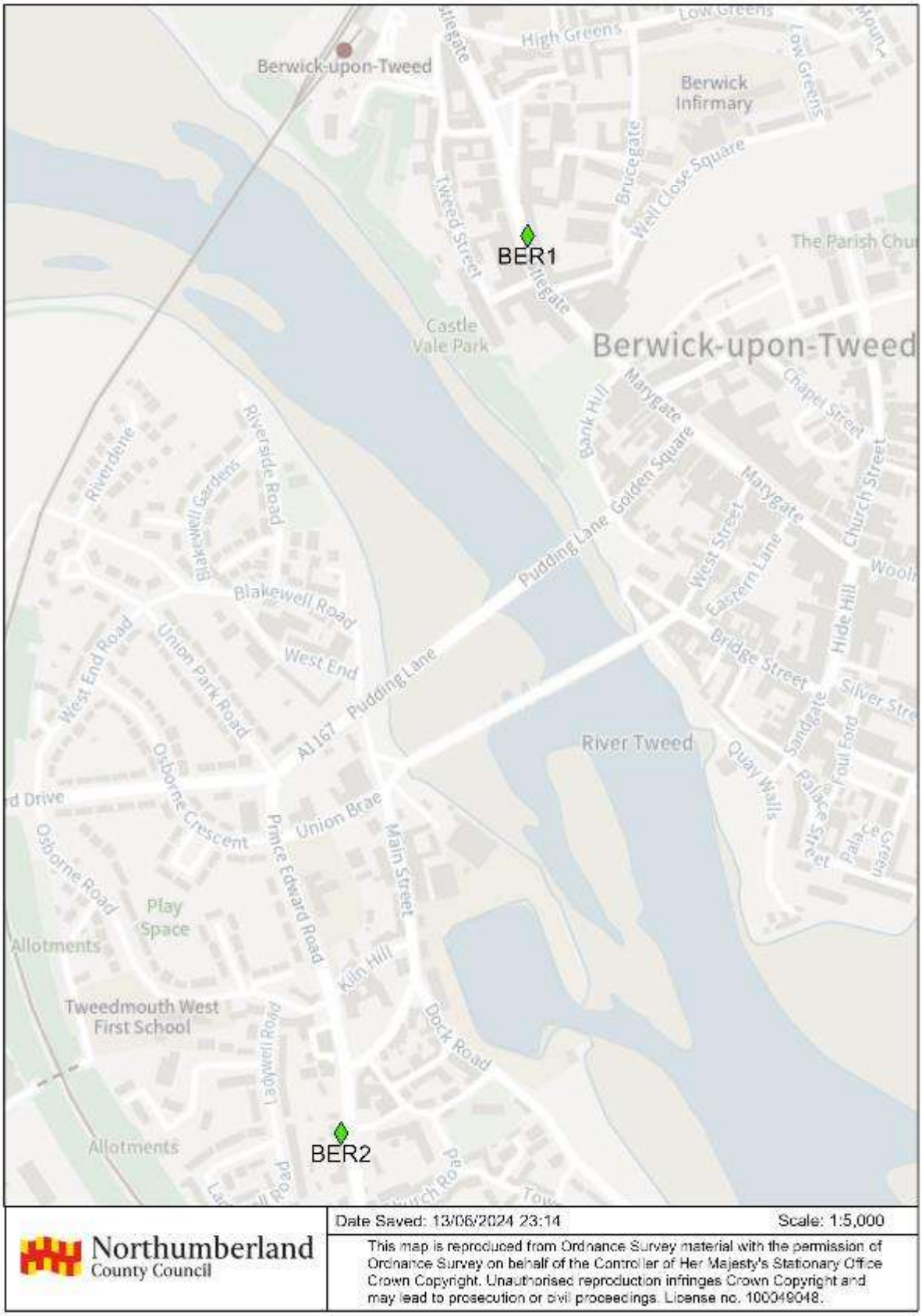


Figure D.9 – Ashington NO_2 Diffusion Tube Monitoring Locations

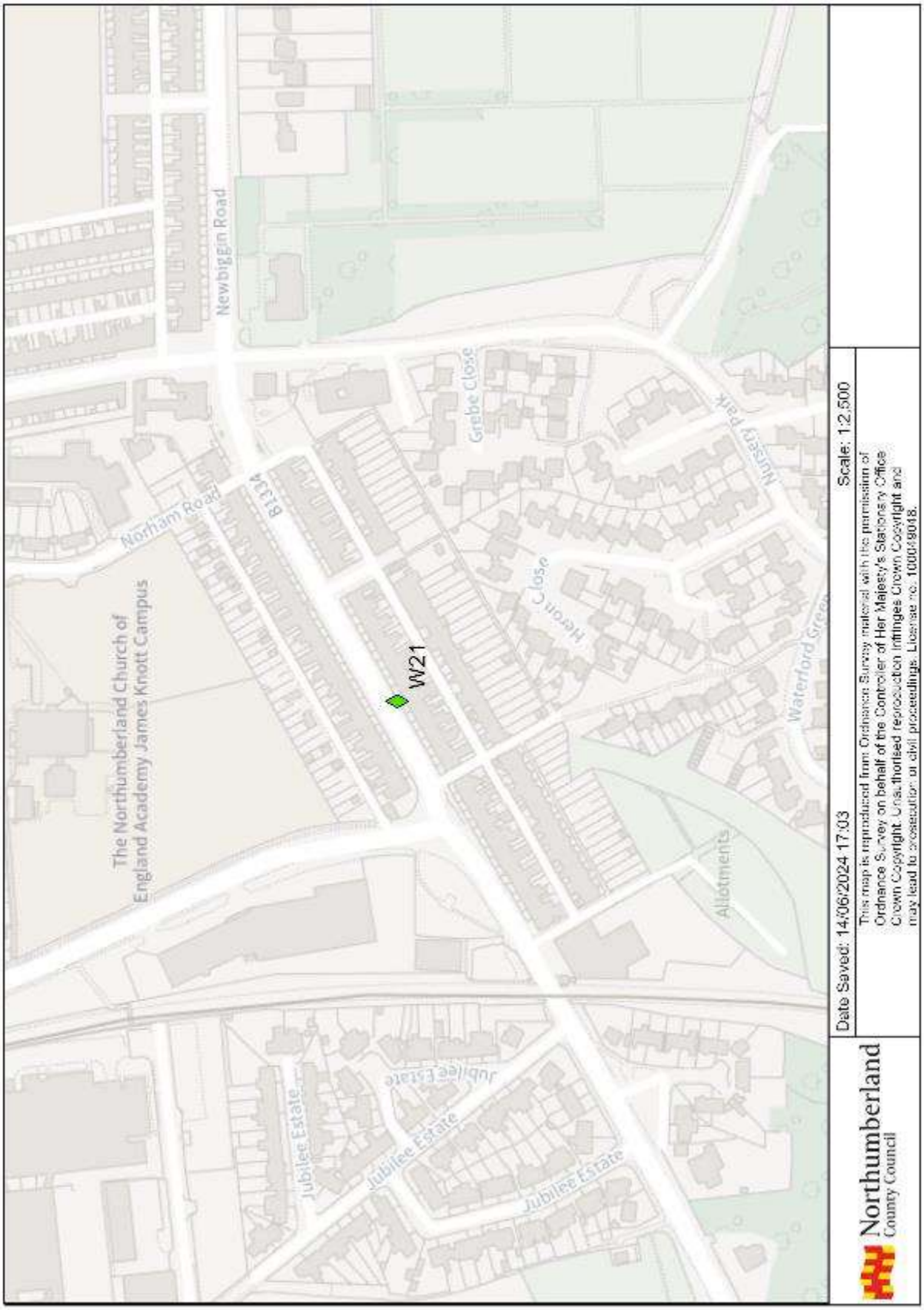


Figure D.10 – Bedlington NO_2 Diffusion Tube Monitoring Locations

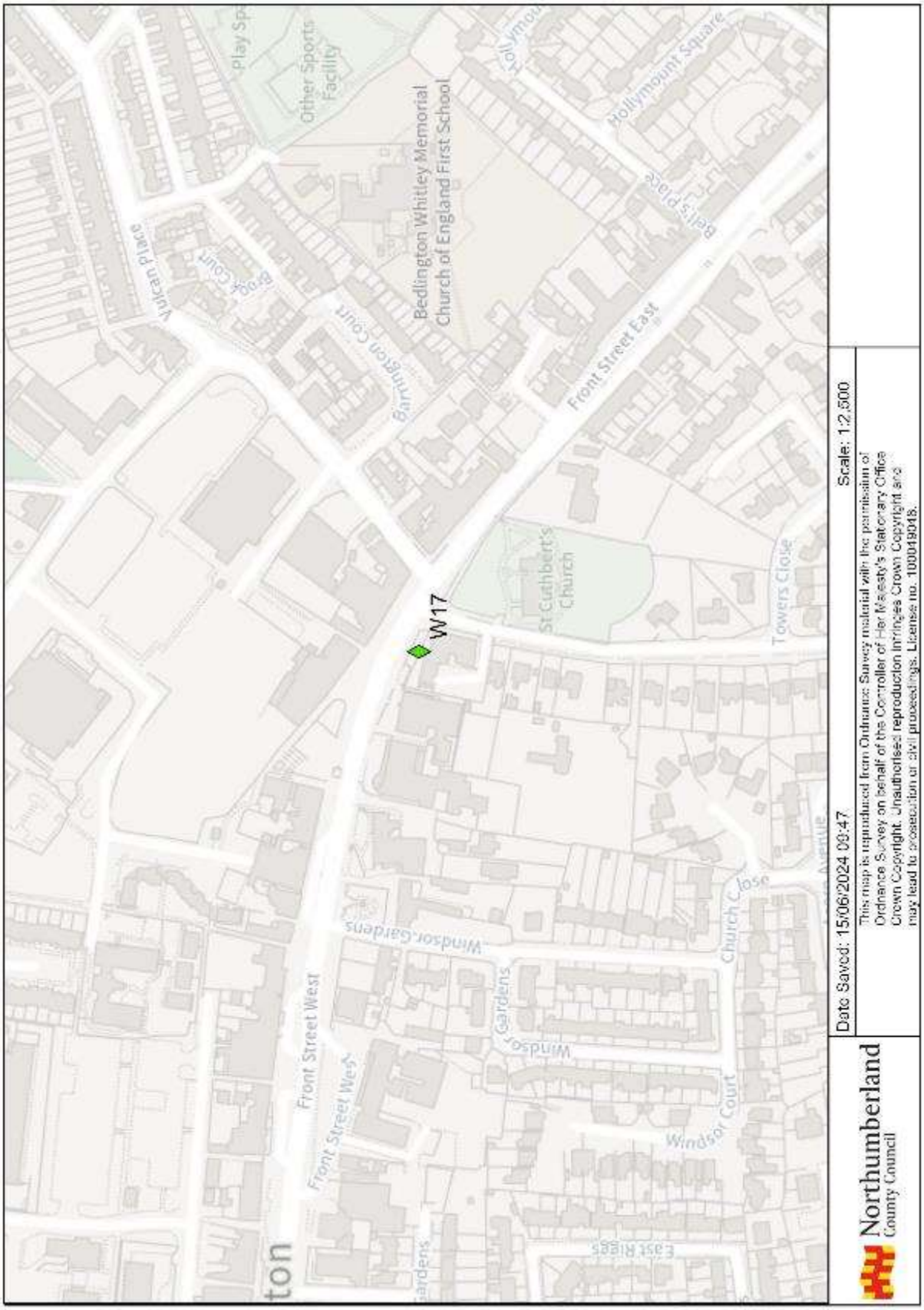


Figure D.11 – Hexham NO_2 Diffusion Tube Monitoring Location

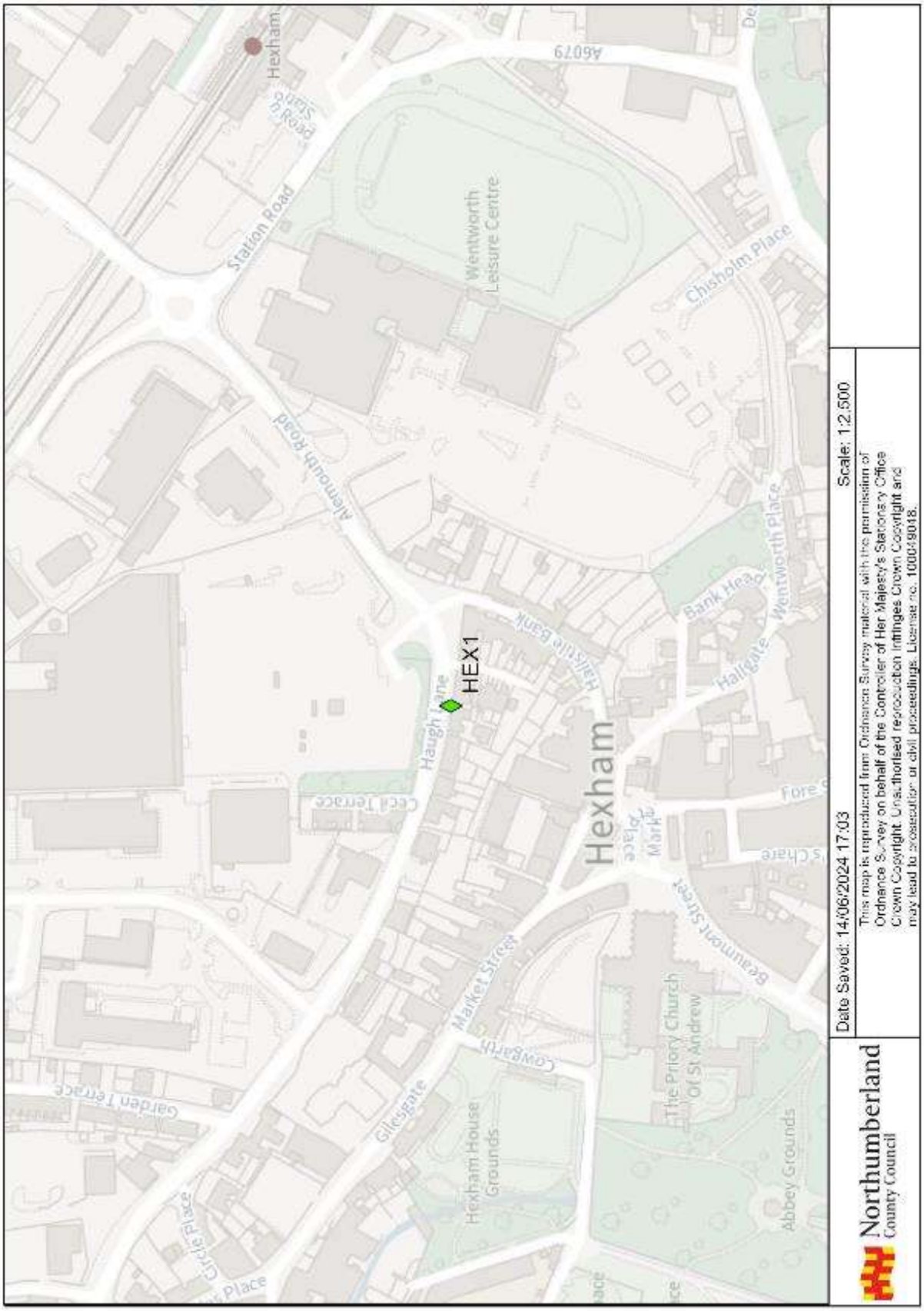


Figure D.12 – Haltwhistle NO_2 Diffusion Tube Monitoring Location

Figure D.13 – Rothbury NO_2 Diffusion Tube Monitoring Location

Figure D.14 – Prudhoe NO_2 Diffusion Tube Monitoring Location

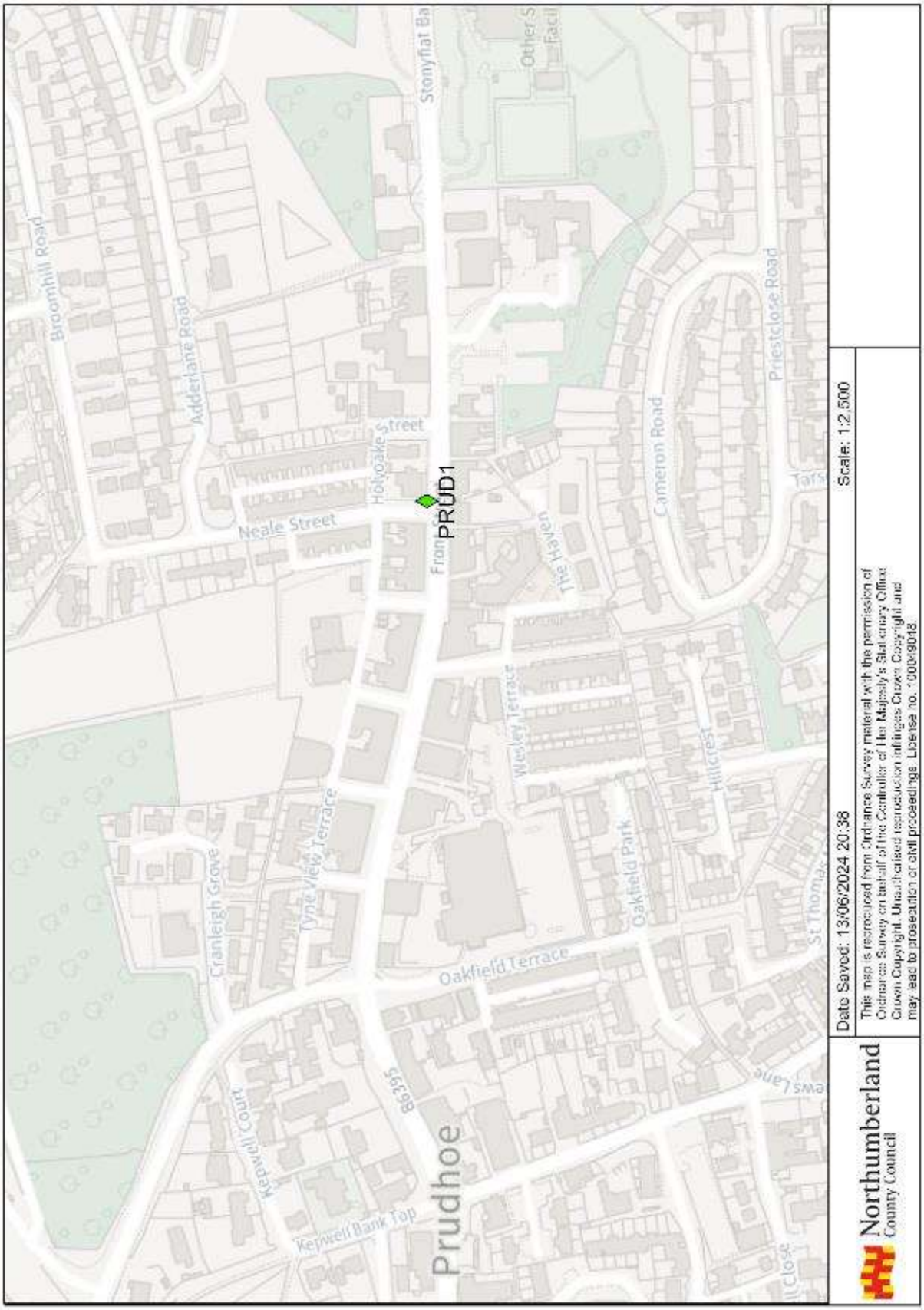


Figure D.15 – Seaton Delaval 2 NO_2 Diffusion Tube Monitoring Location

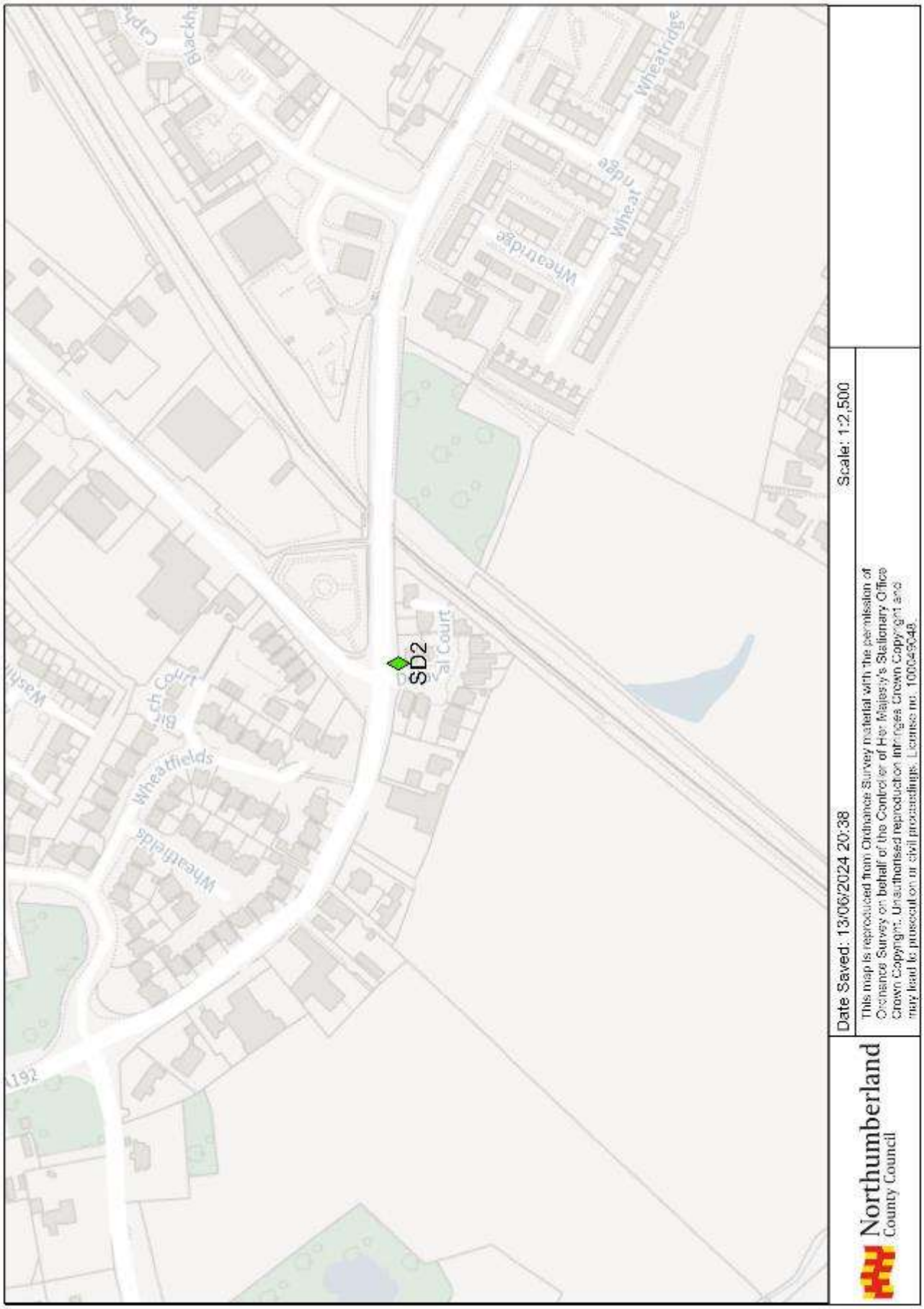


Figure D.16 – Seaton Delaval 2 NO2 Diffusion Tube Monitoring Location

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[8]

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
Particulate Matter ($PM_{2.5}$)	20µg/m^3	Annual mean
Particulate Matter ($PM_{2.5}$) - Urban Areas	Target of 15% reduction in concentrations in urban background	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

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

Glossary of Terms

Abbreviation	Description
AM	Annual Mean
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
AQO	Air Quality Objectives, sometimes referred to as the Air Quality Standards (AQS)
ASR	Annual Status Report (for air quality)
AURN	Automatic Urban Rural Network
BAM	Beta Attenuation Monitor
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
DEFRA	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – includes an air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LGR	Local Government Reorganisation
LOGN	Normal logarithmic value – log-normal
LSO	Local Site Operatives
LTP	Local Transport Plan
NO	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PAH	Poly-Aromatic Hydrocarbons
PM	Period Mean
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10 μm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5 μm or less
QA/QC	Quality Assurance / Quality Control
SO_2	Sulphur Dioxide
…	…

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