North Somerset Council

Annual Status Report 2024

Bureau Veritas

July 2024

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Document Control Sheet

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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: July 2024

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Executive Summary: Air Quality in Our Area

North Somerset is a unitary authority in the county of Somerset, England, with a recorded population during the 2021 census of approximately 216,700[1]. North Somerset is classified as 'urban with significant rural' with up to 40% of residents living in rural communities or 'rural hub towns'. The largest town is Weston-super-Mare followed by a number of other highly populated areas including Portishead, Clevedon and Nailsea. North Somerset also contains Bristol Airport, the Royal Portbury Dock and the M5 motorway which represent potentially significant sources of air pollution.

Air Quality in North Somerset 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[2].

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[3].

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.

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[1] www.ons.gov.uk/visualisations/censusareachanges/E06000024/

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

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

Pollutant	Description
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.

In 2023, North Somerset Council undertook monitoring of NO_2 at 21 locations throughout their area of jurisdiction. Concentrations of annual mean NO_2 were below the Air Quality Strategy Objective (AQSO) of 40µg/m^3 at all monitoring positions during 2023. Following bias adjustment, the maximum concentration recorded during 2023 was 21.8µg/m^3 at DT22 – Banwell Primary School. This site also recorded the largest increase in annual mean NO_2 concentrations observed across the survey locations when compared to 2022 of 6.6µg/m^3. However, concentrations at this location are still considerably below the annual mean AQSO.

During 2023, 17 diffusion tube sites reported a decrease and three reported an increase in annual mean NO_2 concentrations when compared to 2022 levels. It should be noted that although three positions reported an increase in concentrations, levels in 2023 are still lower than those recorded in 2019 at the majority of monitoring sites.

There have been no reported exceedances of any AQSO in North Somerset within the last six years. As such, there are no Air Quality Management Areas declared within district. The main pollutant of concern for North Somerset Council continues to be NO_2 associated with road vehicle exhaust emissions, particularly from the M5, A370, A38 and A369.

For the 2023 monitoring sites, the following pollutant sources were considered, as detailed in the Department for Environment, Food and Rural Affairs (Defra) Local Air Quality Management (LAQM) Technical Guidance (LAQM.TG22):

- Road Traffic Sources;
- Non-road Traffic Sources;
- Industrial Sources;
- Commercial and Domestic Sources; and,
- Fugitive and Uncontrolled Sources.

These locations are constantly reviewed with respect to any hotspot area(s) of pollution being identified. The current monitoring network will remain in place and will be updated where necessary.

In March 2023, planning permission was granted for the road bypass of Banwell Village. The bypass will run to the north of Banwell Village and will aim to remove congestion from a key route between the A38 and Weston-super-Mare. The new bypass represents a new source of pollution within North Somerset although it is considered that it will improve air quality throughout Banwell.

Previous Annual Air Quality Status Reports can be viewed [here](#).

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

The Road to Zero[6] details the Government's approach to reduce exhaust emissions from road transport 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.

The following air quality actions have been progressed during the 2023 reporting year.

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

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

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

Supporting Carbon Reduction

North Somerset Council have declared a climate change emergency and produced an associated [Climate Emergency Strategy](#) which outlines seven key principles for how the council will address the causes and consequences of climate change, with the aim of becoming carbon neutral by 2030.

North Somerset have also produced a [Climate Emergency Action Plan](#) which underpins a number of strategies and measures in North Somerset to address climate change and deliver improvements in air quality across the district.

Green Infrastructure Strategy

Plants and trees can be used effectively in all settings to reduce emissions of particulates and minimise erosion. Shelter belts are one or more rows of trees or shrubs planted in positions where they maximise shelter from prevailing winds and reduce runoff. They help to reduce soil erosion by slowing down the flow of water and encouraging infiltration through leaf litter. Lower wind speeds created by shelter belts prevent wind whipping of soil helping to reduce fugitive particulate emissions particularly during dusty operations such as ploughing.

Some species of plants (mainly those with broad leaves) can be effective at capturing fugitive dust emissions and help to contain fugitive dust emissions within the localised area. Other advantages of shelter belts include protection of newly planted seeds and young plants, creation of habitats and improved soil nutrition.

North Somerset Council has developed the following [Green Infrastructure Strategy](#).

Active Travel Strategy

In 2021, North Somerset Council adopted an [Active Travel Strategy](#). This outlined the policy approach to active travel within the district. Since adaptation, North Somerset has been developing a more detailed approach through the Place and Movement Framework resulting in Active Travel Action Plans (ATAPs). This will help North Somerset make active travel strategy commitments and interventions a reality.

Walking and Cycling

As part of North Somerset's [Active Travel Strategy](#), the council aspires to ensure that high-quality walking and cycling networks are delivered, enabling residents and visitors to make active journeys more frequently alongside improved public realm with access to local shops, facilities and green spaces.

Initiatives to promote cycling can be found here.

Initiatives to promote walking can be found here.

North Somerset Council have also produced a Joint Health & Wellbeing Strategy which sets out a vision, shared ambitions, principles and actions to improve health and wellbeing.

Borrow a Bike Scheme

The borrow a bike scheme, allows those within North Somerset to trial a bike (electric, hybrid or folding bike) for a two-week period, free of charge.

Go Ultra Low West

North Somerset Council participates in the Go Ultra Low West project, to encourage the widespread use of electric vehicles across the west of England's Local Authorities.

Electric Vehicle Strategy

The North Somerset Electric Vehicle Strategy sets out council's ambition to create a network of Electric Vehicle (EV) charging points capable of supporting the demands of the area's communities as the transition to zero emission vehicles continues. The strategy outlines the forecast requirements up until 2030, in line with EV uptake so far. This will make sure that North Somerset is aware of the likely demand for EVs and charging infrastructure. It will also help set out how North Somerset will integrate EVs within the wider transport hierarchy, the commercial features of the EV network and how and where EV charging should be delivered in North Somerset. Having an EV strategy is crucial in securing future funding for North Somerset for the development of the network.

North Somerset Council recently invited residents to take part in a consultation to have their say on the Electric Vehicle Strategy.

The council also encourages and promotes the drivers of licensed private hire taxis and Hackney Carriages to convert to electric vehicles. At present there is no formal requirement within the taxi policy for the use of electric vehicles, however collaboration with the licensing team aims to encourage the use of electric vehicles through the taxi policy.

Electric Vehicle Charging

North Somerset Council's first EV rapid charging hub opened at Portishead's Parish Wharf Leisure Centre in 2021. The site, near Portishead Marina, has two rapid chargers (50kW) and four charging bays, allowing drivers to charge their EVs in just 30 to 60 minutes.

Portishead's hub comes complete with a solar canopy and is part of the West of England's Revive network of charging points. The location was chosen as it is close to the leisure centre, to shops and to other local amenities. More information can be found here.

Joint Local Transport Plan

North Somerset is part of The Joint Local Transport Plan 4, led by the West of England Combined Authority (WECA), which sets out aims for a sustainable transport network and addresses poor air quality. The current plan runs up to the year 2036.

Council Fleet

North Somerset Council owns and operates a wide range of vehicles and equipment to support building and highways maintenance, waste management as well as delivery of other services. The council has effective vehicle procurement policies which help to ensure that the energy, carbon and air quality impacts of vehicles purchased or leased by North Somerset Council are considered as part of the fleet replacement programme or contract renewal process.

Parking Management Strategy

North Somerset Council is reviewing and developing its approach to parking management. When this is complete, the council will consult on the proposed strategy to see how it could be strengthened further.

Car Sharing

North Somerset promotes Travelwest's range of car sharing websites to help people find a suitable person to share journeys with across the West of England.

Bus Improvement Plan

Public transport is set to be transformed over the next two years in North Somerset. The Bus Service Improvement Plan (BSIP) outlines a major investment programme by North Somerset Council in partnership with the WECA. The ambition is to improve the quality and provision of bus services to a level that creates an attractive alternative to the use of private vehicles. It will also accelerate the decarbonisation of transport which is a key priority for the council as part of its commitment to tackle the climate emergency.

Quality Bus Partnership

North Somerset has launched an enhanced partnership with the WECA to improve bus services across the region, Bus Strategy.

The [West of England Enhanced Partnership Plan](#) centres around a legally binding agreement with bus operators in the region to provide:

- Better ticketing and passenger information;
- Lower fares;
- Investment in bus priority measures; and,
- New and improved services.

The region has secured £105.5m from the Government by creating an enhanced partnership. This will allow North Somerset to improve bus services across the area and improve key bus corridors in North Somerset, on top of the £48m already secured to improve bus travel in the region.

The funding means that North Somerset, along with the WECA, will:

- Make changes to help buses get through traffic, so they run more reliably;
- Improve the frequency of buses on well-used routes; and,
- Develop demand responsive transport to meet the needs of more rural communities.

Weston Bus Hub

North Somerset Council and First Bus worked together to open Weston-super-Mare's new town centre [Bus Hub](#) in February 2022. Providing dedicated coach and bus pickup facilities to help alleviate traffic-related issues, reduce emissions and improve local air quality. Anti-idling signage has also helped to further reduce emissions from stationary coaches and buses.

WESTlink

[Westlink](#) is an on-demand minibus service that allows residents to book their bus journeys through an app, website, or phone. It forms part of the largest on-demand bus scheme in the UK. It aims to reconnect communities by offering people currently without a local service the opportunity to get back on the bus. More information about the bus services can be found [here](#).

WESTlink Virtual Bus Stops

Individuals may want to be picked up or dropped off in an area that does not currently have a physical bus stop. This could be a doctor's surgery, pharmacy or a local shop. If there is a public need for an additional bus stop, the council can create a virtual one that people can choose when booking via WESTlink.

Park & Ride

The Long Ashton Park & Ride is a form of integrated transport that allows private car users to park their vehicles at a large car park in Long Ashton and travel into Bristol using public transport. The Long Ashton Park & Ride is designed to relieve road congestion and improve air quality in the city and along key approach roads by redirecting car journeys away from the centre of Bristol. Once the user pays for the relevant bus services, they can park their car free of charge. The dedicated bus services consist of modern low floor, wheelchair accessible buses that offer a high service frequency throughout the day, particularly during peak periods.

Prioritised traffic lights and dedicated bus lanes along key routes allow Park and Ride buses to get to these destinations quickly. Generally, the Park and Ride services are much faster and cheaper than driving into the city at peak times.

Park and Ride services are also encouraged for travel to and from the city centre for events as sports and music, to aid in continuously reducing congestion along the existing road network.

Park & Rail

A Park and Rail scheme (Metrowest Phase 1) is planned for Portishead in North Somerset. It will allow private car users to park their vehicles close to a new rail station at Portishead and use a refurbished rail track connection to travel into Bristol using a new rail service connection. The Park and Rail scheme will allow the consolidation of multiple individual car journeys into one single rail journey resulting in less congestion, lower emissions and improved air quality.

Energy and Heating

North Somerset Council provides information to residents on how best to conserve energy and heat their homes. The Council will continue to promote, educate and provide advice about home energy efficiency and carbon reduction, working in partnership with organisations such as the Centre for Sustainable Energy. The council has commissioned a stock condition survey of properties in North Somerset to guide next steps for improving thermal efficiency among lower-income households. The council will support and expand the Warmer Homes, Advice and Money (WHAM) project helping the most vulnerable residents in cold homes to access advice on energy, money, benefits and carry out home repairs.

Solar Together

A key part of reaching carbon neutrality is access to green energy sources, such as solar photovoltaic (PV) panels and batteries.

With this in mind the council has partnered with an independent group-buying collective, iChoosr Ltd, as well as neighbouring West of England authorities, to make the purchase of solar panels more accessible.

Solar Together is an innovative scheme which uses the collective bargaining power of local households to access panels and installation at a competitive price. Registration closed in October 2023 with expected installation by the end of June 2024.

Effective Regulation – Environmental Permitting

North Somerset Council's Regulatory teams work with operators to secure compliance, but where necessary, enforcement tools are available ranging from enforcement notices to prohibition notices and/or prosecution.

Smoke Control

North Somerset Council is not in a smoke control area. However, it takes robust and effective action on reports smoke nuisance, clean air offences and breaches of domestic solid fuels regulations.

Low Emission Farming

The council is launching the second round of the North Somerset Rural England Prosperity Programme in May 2024. The programme aims to benefit both businesses and community organisations. One of the key objectives is to encourage productivity through enhancing, energy efficient, low carbon technologies and techniques in rural communities including agriculture.

Procurement and Decision Making

The council has introduced a requirement for commissioned services and decision-making processes to incorporate actions that address climate change and improve the environment.

Conclusions and Priorities

During 2023, there were no reported exceedances of the annual mean AQSO for NO_2 within North Somerset Council. As a predominately rural district, pollutant levels continue to remain low. Monitoring will ensure any changes in concentration trends are quickly identified.

Notwithstanding this, North Somerset Council will continue to promote measures to improve air quality in the district and assess new developments submitted through the planning process to ensure that any proposed developments are not detrimental to local air quality. These measures will be presented within an Air Quality Strategy document in line with LAQM Policy Guidance (22).

In March 2023, planning permission was granted for the road bypass of Banwell Village. The bypass will run to the north of Banwell Village and will aim to remove congestion from a key route between the A38 and Weston-super-Mare. The new bypass represents a new source of pollution within North Somerset although it is considered that it will improve air quality throughout Banwell.

Local Engagement and How to get Involved

North Somerset Council continues to engage with the community on air quality. During 2023, the council posted across its social media platforms about Clean Air Day and individuals can get involved in improving air quality within their area.

Everyone can help to improve air quality on a local scale within North Somerset and beyond by making informed personal choices, particularly with regards to travel. Through these choices we can help to improve air quality, as well as health and wellbeing. The following includes a number of key actions members of the public can take:

- Substitute car use. Where possible, utilise public transport by taking a bus or train, or preferably walk or cycle. Details regarding North Somerset's active travel options are available at: https://www.n-somerset.gov.uk/my-services/parking-travel-roads/transport-travel;
- If possible, share lifts with colleagues to work. This will save you money on fuel and parking as well as reducing the number of vehicles on the road network. Information about Liftshare is available at: https://liftshare.com/uk;
- Look into travelling outside of peak hours or work from home, where practicable; and,

- When contemplating changing your vehicle, consider air pollution and opt for the cleaning vehicle you feasibly can. Low emission electric and/or hybrid vehicles are becoming increasingly more affordable with government funding and grants often available.

Whilst most air pollution in North Somerset is produced by road traffic, predominately NO_2, there are other sources. Domestic heating and wood-burning are responsible for generating pollutants within North Somerset, especially of particulates (PM_{10} and $PM_{2.5}$). Measures that could be considered to reduce air pollution from domestic heating include:

- Upgrading domestic boilers to fuel-efficient condensing boilers with the lowest associated oxides of nitrogen (NO_x) (and carbon) emissions;
- "Clean" renewable energy generation. For example, solar photovoltaics and/or Air/Ground Source Heat Pumps;
- Using Defra approved appliances and smokeless fuels suitable for use in a smoke control area, whether you are in a smoke control area or not[7]. More information about wood burners/open fires can be found here: Ready to Burn.

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[7] Defra. Exempt Appliances England. Available at:
https://smokecontrol.defra.gov.uk/appliances.php?country=england

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Protection Department of North Somerset Council with the support and agreement of the following officers and departments:

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Lindsay Howe – Senior Environmental Health Officer, Environmental Protection Team, North Somerset Council

This ASR has been approved and signed off by:

Matt Lenny, Director of Public Health and Regulatory Services at North Somerset Council

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Local Air Quality Management

This report provides an overview of air quality in North Somerset Council during 2023. It fulfils the requirements of 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 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 ASR is an annual requirement showing the strategies employed by North Somerset 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.

1 Local Air Quality Management

This report provides an overview of air quality in North Somerset Council during 2023. It fulfils the requirements of 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 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 ASR is an annual requirement showing the strategies employed by North Somerset Council to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

North Somerset Council currently does not have any declared AQMAs. A local Air Quality Strategy is currently under development to prevent and reduce polluting activities in line with LAQM Policy Guidance (22).

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

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 are designed to help inform North Somerset Council's 2024 ASR:

1. Continue with Reference to the Public Health Outcomes Framework, following the positive work made in this submission.
   - *Reference to the Public Health Outcomes Framework have been provided in Section 2.3.*

2. Continue analysis of trends in the air quality data in comparison to the Air Quality Objectives.
   - *Analysis of trends have been provided in Section 3.2.*

3. Continue maintaining high standards of QA/QC procedures with sufficient supporting evidence provided., with robust analysis shown in this submission.
   - *Details regarding QA/QC procedures have been provided in Appendix C.*

4. In this submission, during 2022, the diffusion tubes were not deployed as per the Defra calendar for some months. The Council should aim to deploy the diffusion tubes for the next monitoring year as per the Defra calendar.
   - *During 2023, diffusion tubes were deployed in line with the Defra calendar for the majority of the year. In September, diffusion tubes were deployed one day late on 7th September 2023.*

5. It would be useful to see an example calculation for annualisation using the national bias factor (0.83) mentioned in text. The LAQM-TG22 guidance (page 137) has information on such a calculation.
   - *The national bias adjustment spreadsheet (version 03/24) was used to derive the national bias adjustment factor for diffusion tubes analysed by Gradko International Limited during 2023. The 2023 National Bias Adjustment Factor spreadsheet can be seen in Figure C.1.*

6. It would be useful to have the Actions to Improve Air Quality within a table, to make it easier to follow and see the progress of these during the reporting year. The

Council have outlined 25 measures in the initial sections of the report, however it is unclear if this is the total number of air quality initiatives.

- o *Eight key performance measures have been identified and detailed within Table 2.1.*

The comments made in the 2023 appraisal have been detailed and responded to within this 2024 ASR as outlined above.

North Somerset 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 2.1. Eight measures are included within Table 2.1, with the type of measure and the progress North Somerset 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 2.1.

As discussed in Section 2.1, North Somerset Council has not declared any AQMAs. As such, an AQAP has not been produced. However, a number of strategies and plans in place, which will have a beneficial impact on air quality and are discussed further below. These will be incorporated into an Air Quality Strategy document in line with LAQM.PG(22).

2.2.1 Climate Emergency

In 2018, North Somerset Council updated its Climate Local Agreement[8], and in February 2019 passed a motion to declare a climate change emergency. The overarching goal of this strategy is for North Somerset to become carbon neutral by 2030.

A new Climate Emergency Strategy and Action Plan[9] was adopted in November 2022. This action plan will be monitored every six months and updated each year.

The key principles of the Climate Emergency Strategy are to:

- Become a net zero carbon council;

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[8] North Somerset Climate Local Commitment. Available at: https://www.n-somerset.gov.uk/sites/default/files/2020-03/Climate%20Local%20Commitment%202018.pdf.

[9] North Somerset plan to tackle Climate Change. Available at: https://n-somerset.gov.uk/council-democracy/priorities-strategies/climate-emergency/our-plans-tackle-climate-change.

- An energy efficient built environment;
- Renewable energy generation;
- Repair, reuse, reduce and recycle;
- Replenish our carbon stores;
- Reduce emissions from transport; and,
- Adapting to climate change.

The Climate Action Plan has additional benefits that tackle multiple issues. For example, an initiative to increase cycling in a particular community, with a primary objective of reducing carbon emissions from transport locally, will also deliver the co-benefit of improved physical and mental health for residents through increased physical activity and improved air quality. Over time, this will also result in fewer NHS interventions, saving money.

2.2.2 Active Travel Strategy

North Somerset Council has developed an Active Travel Strategy 2020-2030[10], which aims to harness the huge rise in walking and cycling seen during 2020 and increase walking and cycling trips by at least 300% by 2030.

The district has already delivered some flagship strategic active travel routes, for example the Festival Way commuter-route into Bristol from Nailsea and Backwell. Between March 2017 and March 2020, North Somerset saw an increase of 25% in cycling trips (pre-COVID-19, Annual Average Daily Cycle Trips), which was significantly higher than the national trend of that period.

This Strategy ties in with North Somerset's Joint Health & Wellbeing Strategy 2021-2024[11], of which a priority theme is physical activity and mental health and wellbeing. An aim of the Joint Health & Wellbeing Strategy is to promote active travel for school journeys.

North Somerset Council worked to implement these measures in partnership with the Local Authority Departments during 2023.

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[10] North Somerset Active Travel Strategy 2020-2030. Available at: https://www.n-somerset.gov.uk/sites/default/files/2021-08/30511%20ATS%20book%20ACC%200821_0.pdf.

[11] North Somerset's Joint Health & Wellbeing Strategy 2021-2024. Available at: https://n-somerset.gov.uk/council-democracy/priorities-strategies/health-wellbeing-strategy-2021-24.

The principal challenges and barriers to implementation that North Somerset Council anticipates facing are increasing costs, revenue budget pressures, insufficient staff capacity to take advantage of grant funding opportunities and that significant transformative, societal and behavioural changes are needed to meet targets.

A local Air Quality Strategy is currently under development to further prevent and reduce polluting activities.

Table 2.1 – 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	Banwell Bypass	Transport Planning and Infrastructure	Other	2022	2025	Placemaking and Growth	Homes England	No	Fully Funded	>£10 million	Implementation	Road improvement scheme to improve congestion and reduce emissions	Deliver Banwell Bypass and associated flood mitigation, local active travel improvements to achieve a decrease in traffic through the village of Banwell	Ongoing	Increasing costs
2	Metrowest	Promoting Travel Alternatives	Promote use of rail and inland waterways	2022	2028	Neighbourhoods and Transport	Local Authority, Department for Transport (DfT), WECA	No	Fully Funded	>£10 million	Implementation	Reducing emissions of NO_2, PM_{10}, $PM_{2.5}$ and Carbon Dioxide (CO_2)	Re-opened the Portishead Rail Line with stations at Portishead and Pill and an increase in rail use	Ongoing	Increasing costs
3	Promoting use of Alternative Methods of Travel	Promoting Travel Alternatives	Personalised Travel Planning	2020	2030	All Local Authority Departments	DfT, Active Travel Fund, Highways England, Rail Operators, Local Enterprise Partnership, Local Growth Fund	No	Partially Funded	<£10k	Implementation	Reducing emissions of NO_2, PM_{10}, $PM_{2.5}$ and CO_2	Improve active and sustainable travel choices and promote use	Ongoing	Significant transformative, societal and behavioural changes are needed
4	Supporting Carbon Reduction – Climate Emergency Action Plan	Policy Guidance and Development Control	Other Policy	2019	2023	All Local Authority Departments	Local Authority and Public Sector Decarbonisation Scheme	No	Partially Funded	>£10 million	Implementation	Deliver a net zero council in terms of carbon emissions by 2030	A decreasing tend in carbon emissions	Ongoing	Significant transformative, societal and behavioural changes are needed to meet target
5	Green Infrastructure (GI) Strategy	Policy Guidance and Development Control	Other Policy	2021	2030	All Local Authority Departments	Planning Conditions, obligations and/or Community Infrastructure Levy (CIL) placed on developers Developers integrating the principles into their proposals North Somerset Council including it in actions e.g. land management Special projects that draw on external funding or grant schemes Local community action including fundraising and use of the voluntary sector Charitable Trusts Land and landowners – where land falls	No	Partially Funded	£1 million - £10 million	Implementation	An increase in the number of trees and shrubs planted year on year to 2028	Protect and enhance the GI Network within North Somerset by delivering the actions in the GI Strategy	Ongoing	Some planning policy evidence bases are out of date, such as the evidence base for open space standards/provision Insufficient staff capacity to take advantage of grant funding opportunities

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
							within the Nature Recovery Network and/or strategic GI corridors/GI network (or other opportunity areas) The Council and partners should work with landowners and promote funding opportunities									
6	Active Travel Strategy	Promoting Travel Alternatives	Other Policy	2020	2030	All Local Authority Departments	DfT, Active Travel Fund, Highways England, Rail Operators, Local Enterprise Partnership, Local Growth Fund	No	Partially Funded	£1 million - £10 million	Implementation	Improved air quality from the reduction in motor vehicles in town and village areas and along our strategic cycle routes between places	Improve active and sustainable travel choices and promote use	Ongoing	Revenue budget pressures
7	Electric Vehicle Strategy	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure to promote low emission vehicles, EV recharging and gas fuel recharging	2022	2030	Neighbourhoods and Transport	Local Authority, Central government funding and private sector investment	No	Partially Funded	£1 million - £10 million	Implementation	Encouraging electric vehicles helps to reduce tailpipe emissions	Ensure there are 1,989 publicly accessible charge points in North Somerset by 2030	Ongoing	Revenue budget pressures
8	Bus Service Improvement Plan	Promoting Travel Alternatives	Other	2022	2026	Neighbourhoods and Transport	DfT	No	Fully Funded	>£10 million	Implementation	Reducing emissions (assuming bus patronage increases)	An increase in bus use	Ongoing	Significant transformative, societal and behavioural changes are needed

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

As detailed in Policy Guidance LAQM.TG22 (Chapter 8) and the Air Quality Strategy[12], 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.

The Public Health Outcomes Framework data tool[13] compiled by Public Heath England (PHE) 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$_{2.5}$ pollution across England is 5.8%. North Somerset is 1% lower at 4.8%, while the South West region average is 4.6%. When compared to historical data, 2018 to 2022, the estimated fractions of mortality attributable to particulate air pollution have shown a decreasing trend within North Somerset. The estimated fraction for North Somerset has reduced by 1.3% between 2018 and 2022.

North Somerset Council continues to recognise that local authorities are expected to work towards reducing emissions and concentrations of PM$_{2.5}$ in their area of jurisdiction. Currently, there is no PM$_{10}$ or PM$_{2.5}$ monitoring undertaken within the unitary authority of North Somerset. As such, PM$_{10}$ or PM$_{2.5}$ concentrations have not been reported.

The current Defra background maps[14] for North Somerset, which utilised the 2018 reference year, show that all 2023 background concentrations of PM$_{2.5}$ are significantly below the annual mean AQSO[15] for PM$_{2.5}$ of 20µg/m^3. The highest concentration predicted was 8.93µg/m^3 within the 1km x 1km grid square with the centroid grid reference of 351500, 176500. This is an area northwest of Pill, comprising the east port parking slots

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

[13] PHE. Public Health Outcomes Framework. Available at: https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data

[14] Defra UK Air. Background maps. Available at: https://uk-air.defra.gov.uk/data/laqm-background-home

[15] Defra UK Air. Air quality objectives. Available at: https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update_20230403.pdf

and the M5. For 2023, the annual average background level of $PM_{2.5}$ in North Somerset was 7.17μg/m³. In September 2021, the WHO Air Quality Guidelines[16] set out a new recommended level annual average concentration of $PM_{2.5}$ of 5μg/m³. Although the WHO guideline does not represent a standard or legally binding criterion. It is noted that the predicted annual average background level of $PM_{2.5}$ in North Somerset is higher than the WHO guideline concentration.

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

- The Joint Local Transport Plan and the Active Travel Strategy, will reduce emissions of particulates from transport;
- Continue work with the Director of Public Health to promote measures to improve air quality, including active transport, implementation of measures to increase healthy, active lifestyles and ensures measures are implemented through improved urban planning e.g. improved cycle highways;
- Ensuring that air quality continues to be considered as part of the Joint Strategic Needs Assessment (JSNA);
- Dust Management Plans, which are usually incorporated into Construction Environmental Management Plans (CEMPs), are routinely conditioned on major development planning permissions to control and minimise the risk of construction dust impacts, and therefore $PM_{2.5}$, to nearby receptors; and,
- Regular inspections of industrial processes permitted by the Council where combustion and non-combustion processes lead to anthropogenic emissions of $PM_{2.5}$.

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[16] WHO. What are the air quality guidelines? Available at: https://www.who.int/news-room/feature-stories/detail/what-are-the-who-air-quality-guidelines

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 Somerset 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

No automatic monitoring was undertaken by North Somerset Council in 2023.

3.1.2 Non-Automatic Monitoring Sites

North Somerset Council undertook non- automatic (i.e. passive) monitoring of NO2 at 21 sites during 2023.

 in Appendix A presents the details of the non-automatic sites. No changes to the passive monitoring programme occurred in 2023.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO$_2$)

Table A.1 and Table A.2 in Appendix A compare the ratified and adjusted monitored NO$_2$ annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

During 2023, 17 diffusion tube sites reported a decrease and three reported an increase in annual mean NO$_2$ concentrations when compared to 2022 levels. Concentrations at one location, DT15 – Nailsea, remained consistent. It should be noted that all 21 locations recorded concentrations below the annual mean AQSO (40µg/m^3).

Following bias adjustment, the maximum concentration recorded during 2023 was 21.8µg/m^3 at DT22 – Banwell Primary School which is located at a roadside position in the southwest of North Somerset's area of jurisdiction. This site also recorded the largest increase observed across the survey locations when compared to 2022, 6.6µg/m^3. However, concentrations at this location are still considerably below the annual mean AQSO.

Figure A.1 shows annual mean NO$_2$ concentration trends over the last 5 years, there is a general decreasing trend in the majority of passive monitoring locations from 2019 to 2023. The reduction in levels at 17 sites during 2023 further supports the declining trend in concentrations.

No passive monitoring sites reported an annual mean NO$_2$ concentration greater than 60µg/m^3 in 2023, therefore it can be assumed that there are no sites where there is likely to be a risk of exceeding the 1-hour mean NO$_2$ AQSO, in accordance with the guidance provided in LAQM.TG(22).

3.2.2 Particulate Matter (PM$_{10}$)

No PM$_{10}$ monitoring was undertaken by North Somerset Council in 2023.

3.2.3 Particulate Matter (PM2.5)

No $PM_{2.5}$ monitoring was undertaken by North Somerset Council in 2023.

3.2.4 Sulphur Dioxide (SO2)

No sulphur dioxide monitoring was undertaken by North Somerset Council in 2023.

3.2.5 Other Monitoring – Bristol Airport

Bristol Airport is located within the unitary authority of North Somerset. In 2011, the airport was granted planning permission to expand and accommodate 10 million passengers per annum. As part of the consent, a Section 106 agreement was introduced, which amongst other things required the airport to undertake air quality monitoring in the vicinity its operational extents.

In 2012, Bristol Airport installed a continuous air quality monitoring station, recording NO_2 and PM_{10} concentrations, as well as nine NO_2 diffusion tube survey sites. The concentrations recorded during 2023 have been published by Bristol Airport within their Annual Monitoring Report[17].

There has been a significant growth in the development of low-cost sensor systems. However, the accuracy and precision of measurements recorded utilising this form of monitoring equipment can be inconsistent. A European Certification Scheme is currently under development for gaseous and particulate sensor systems, including NO_2, PM_{10} and $PM_{2.5}$. Additionally, for particulates, there are a number of monitors that have been certified as suitable for indicative monitoring within the UK. Further information can be found in LAQM.TG22.

Figure 3-1 and Figure 3-2 show the monitoring results for Bristol Airport from 2018 to 2023. The location of each monitoring position is shown in Appendix D: Maps of Monitoring Locations, Figure D.19.

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[17] Bristol Airport. Annual Monitoring Report 2023. Available at:
https://www.bristolairport.co.uk/media/mkpaeyqk/annual-monitoring-report-2023.pdf

Figure 3-1 – Bristol Airport NO₂ Diffusion Tube Monitoring Results
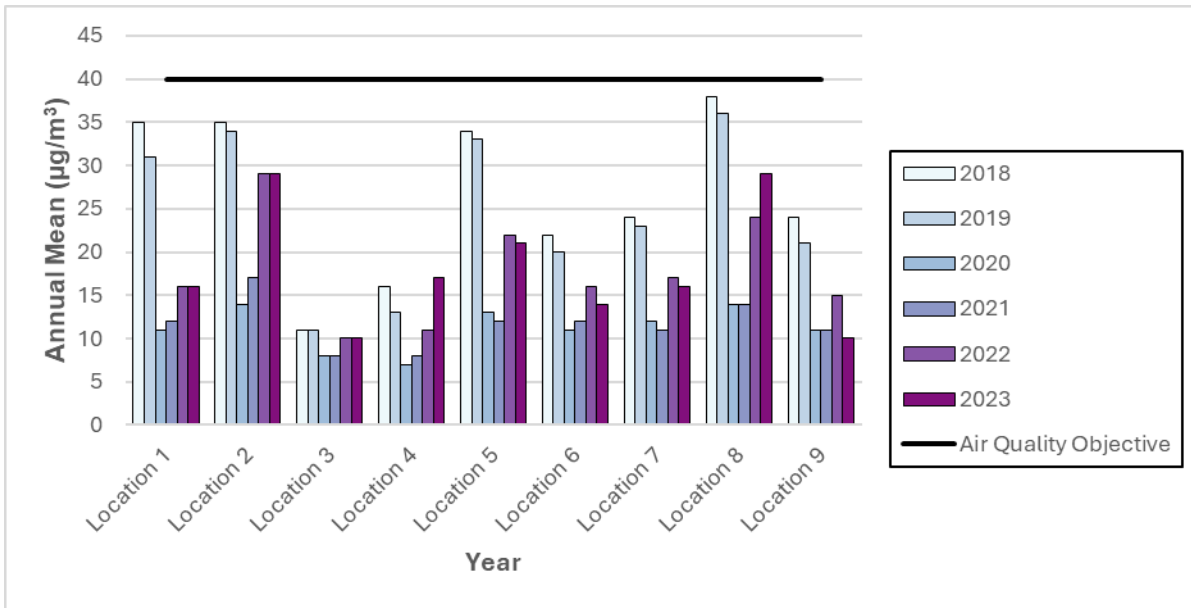
Figure 3-2 – Bristol Airport Continuous Monitoring Results
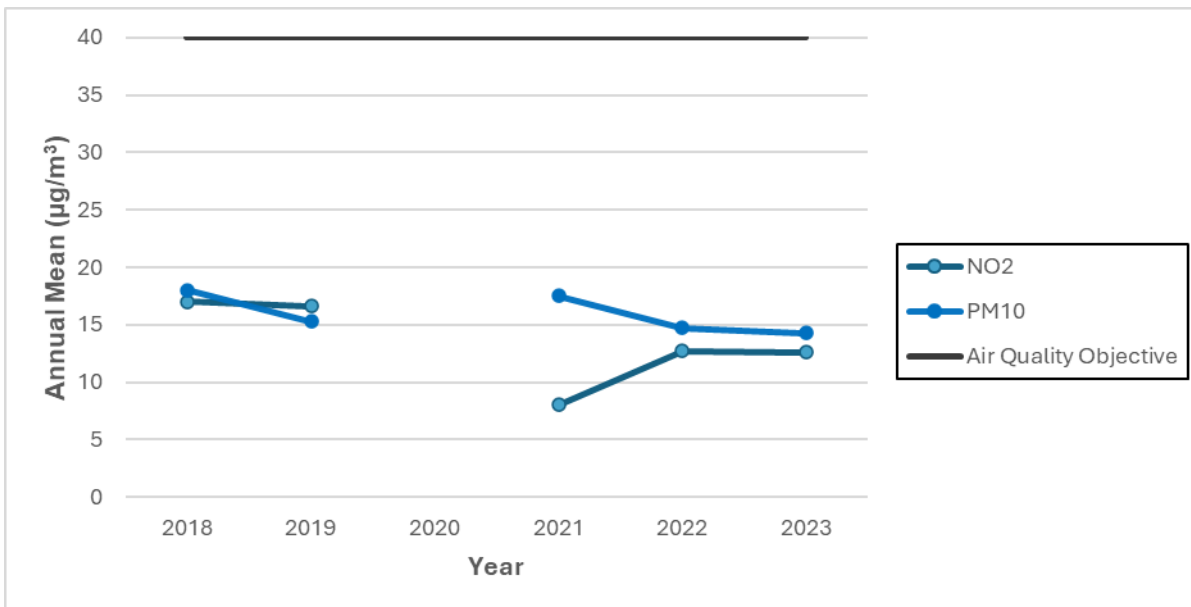
Levels of NO₂ and PM₁₀ were below the AQSO between 2018 and 2023. A gradual decreasing trend in pollutant concentrations has been observed across the site, excluding years that were affected by the COVID-19 pandemic and significantly reduced airport activity.

An Emissions & Climate Change Action Plan has been produced by Bristol Airport that sets out numerous commitments to achieving net zero operations by 2030.

Appendix A: Monitoring Results

Table A.1 – 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)
DT1	Drove Road	Roadside	332653	160737	NO_2	No	3.0	1.0	No	2.5
DT2	Winterstoke Road	Kerbside	333515	160069	NO_2	No	17.0	3.0	No	2.5
DT3	Worle Community College	Roadside	335489	162434	NO_2	No	24.0	1.0	No	2.5
DT4	St Annes (A370)	Roadside	339753	164204	NO_2	No	8.0	1.5	No	2.5
DT5	Congressbury (Station Road)	Kerbside	343662	163860	NO_2	No	6.0	1.0	No	2.5
DT7	Mary Elton School, Clevedon	Roadside	339878	170252	NO_2	No	28.0	2.0	No	2.5
DT8	Bristol Rd, Portishead	Roadside	347054	175534	NO_2	No	25.0	3.0	No	2.5
DT11	Pill (A369)	Roadside	353177	174620	NO_2	No	15.0	2.0	No	2.5
DT12	Long Ashton Road, Long Ashton	Kerbside	353544	170088	NO_2	No	15.0	2.0	No	2.5
DT13	Flax Bourton (A370)	Kerbside	350773	169334	NO_2	No	7.0	1.0	No	2.5
DT14	Wraxall School	Kerbside	348941	171877	NO_2	No	34.0	4.0	No	2.5
DT15	Nailsea	Roadside	347641	170943	NO_2	No	10.0	5.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT18	Downside Road (Top 8)	Kerbside	351054	165665	NO_2	No	4.0	3.0	No	2.5
DT19	Winford Primary School	Roadside	353978	165103	NO_2	No	13.0	8.5	No	2.5
DT20	Lulsgate Bottom	Kerbside	351391	165698	NO_2	No	10.0	2.0	No	2.5
DT21	Sandford Primary School	Kerbside	342603	159682	NO_2	No	18.0	2.0	No	2.5
DT22	Banwell Primary School	Roadside	339705	159177	NO_2	No	8.0	1.0	No	2.5
DT23	Centre of Banwell	Kerbside	339802	159151	NO_2	No	3.0	1.0	No	2.5
DT24A, DT24B, DT24C	Bowling Green	Other	339838	159166	NO_2	No	N/A	-	No	2.5
DT25	Cleeve site 1	Kerbside	345592	165597	NO_2	No	20.4	2.0	No	2.5
DT26	Cleeve site 2	Kerbside	345507	165538	NO_2	No	17.0	2.0	No	2.5

Notes:

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

(2) N/A if not applicable.

Table A.2 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

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
DT1	332653	160737	Roadside	92.0	92.0	23.3	18.1	19.8	20.2	17.0
DT2	333515	160069	Kerbside	82.4	82.4		18.8	19.6	20.6	18.0
DT3	335489	162434	Roadside	99.7	99.7			15.9	15.5	14.2
DT4	339753	164204	Roadside	99.7	99.7	22.4	17.2	18.7	17.6	15.9
DT5	343662	163860	Kerbside	99.7	99.7	29.0	20.1	24.1	23.1	20.6
DT7	339878	170252	Roadside	99.7	99.7		11.3	13.4	11.9	11.7
DT8	347054	175534	Roadside	99.7	99.7		14.3	15.8	13.7	12.4
DT11	353177	174620	Roadside	99.7	99.7	25.5	17.0	19.0	18.6	10.4
DT12	353544	170088	Kerbside	99.7	99.7		15.9	17.9	16.4	13.7
DT13	350773	169334	Kerbside	99.7	99.7	26.6	19.5	19.5	17.6	17.1
DT14	348941	171877	Kerbside	99.7	99.7		16.1	18.1	17.0	13.1
DT15	347641	170943	Roadside	99.7	99.7		16.5	16.6	16.2	16.2
DT18	351054	165665	Kerbside	99.7	99.7	23.1	13.6	13.9	17.1	13.7
DT19	353978	165103	Roadside	99.7	99.7		14.1	13.3	15.1	14.2
DT20	351391	165698	Kerbside	99.7	99.7		19.5	19.3	20.3	17.1
DT21	342603	159682	Kerbside	99.7	99.7	14.3	11.3	10.8	12.0	12.7
DT22	339705	159177	Roadside	99.7	99.7	19.8	14.9	15.5	15.2	21.8

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
DT23	339802	159151	Kerbside	90.1	90.1	24.7	16.8	18.7	15.3	10.6
DT24A, DT24B, DT24C	339838	159166	Other	99.7	99.7		8.5	10.1	8.3	12.0
DT25	345592	165597	Kerbside	99.7	99.7				12.8	7.6
DT26	345507	165538	Kerbside	99.7	99.7				14.5	7.7

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

☒ **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 NO₂ Concentrations
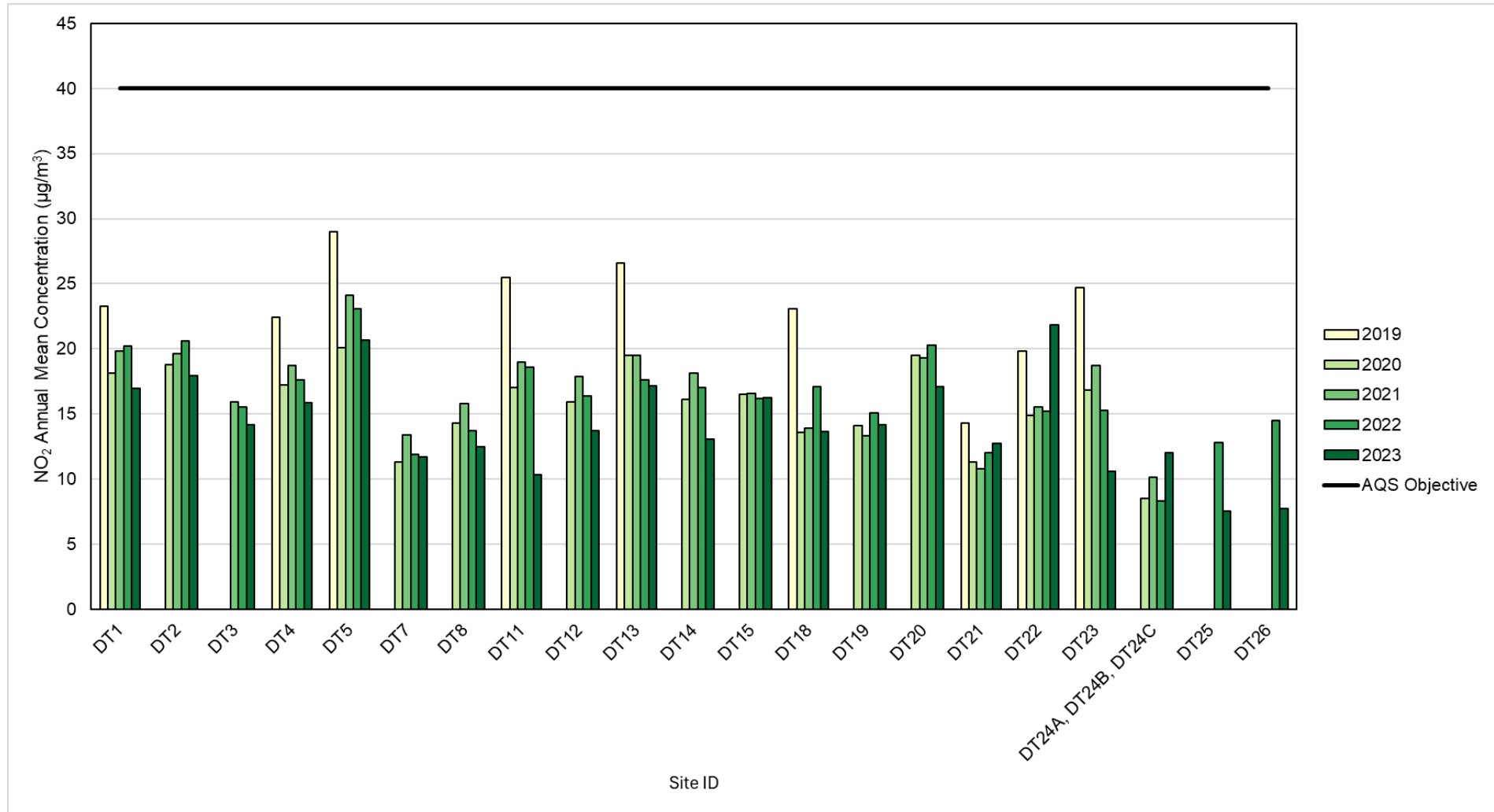
Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO₂ 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
DT1	332653	160737	27.9	27.8	23.6	22.9	18.7	18.3	11.4	18.3	20.6		25.4	15.6	21.0	17.0		Diffusion tube missing October
DT2	333515	160069	29.0	28.7	25.1	26.1	21.3	18.5	13.7	20.0	22.4			17.1	22.2	18.0		Diffusion tube missing October and November
DT3	335489	162434	25.2	24.1	17.3	15.3	13.1	12.5	11.6	13.5	17.4	19.8	22.4	17.7	17.5	14.2		
DT4	339753	164204	26.3	23.3	17.9	18.6	17.3	19.3	15.4	17.4	20.2	22.2	21.8	15.1	19.6	15.9		
DT5	343662	163860	29.2	28.4	26.5	26.2	23.1	25.4	20.5	23.2	27.1	28.6	26.8	20.8	25.5	20.6		
DT7	339878	170252	18.2	18.6	14.6	15.0	15.6	12.1	9.0	10.4	13.5	16.2	18.6	10.9	14.4	11.7		
DT8	347054	175534	18.4	21.9	15.5	18.3	11.7	16.8	10.5	15.0	15.0	15.1	15.4	11.0	15.4	12.4		
DT11	353177	174620	19.7	17.8	13.4	14.2	10.8	10.1	5.4	10.7	11.4	13.6	17.9	8.5	12.8	10.4		
DT12	353544	170088	23.7	22.6	16.9	16.4	13.8	15.2	10.1	12.3	16.7	19.5	22.2	13.9	16.9	13.7		
DT13	350773	169334	25.7	24.3	19.7	23.3	16.2	19.1	16.3	20.7	23.5	25.3	23.5	16.7	21.2	17.1		
DT14	348941	171877	19.2	21.2	17.3	15.6	12.2	13.7	10.6	13.8	16.6	18.7	21.3	13.4	16.1	13.1		
DT15	347641	170943	28.3	23.8	19.2	19.4	14.2	18.4	18.7	18.3	20.5	21.3	22.4	16.2	20.0	16.2		
DT18	351054	165665	22.3	25.7	18.7	19.3	17.2	17.8	11.1	13.9	15.7	17.5	9.7	13.3	16.9	13.7		
DT19	353978	165103	25.5	24.2	17.1	19.4	14.0	13.3	8.4	13.7	17.5	19.9	22.3	14.5	17.5	14.2		
DT20	351391	165698	15.9	22.2	19.1	21.8	16.1	19.1	20.1	21.2	27.1	28.9	22.1	19.3	21.1	17.1		
DT21	342603	159682	20.6	18.9	15.7	16.4	13.5	13.0	11.5	14.4	16.4	16.8	19.3	12.0	15.7	12.7		
DT22	339705	159177	28.7	27.1	24.2	23.1	28.1	29.3	24.1	25.8	31.4	30.7	29.6	21.4	27.0	21.8		
DT23	339802	159151	19.7	17.3	14.5	11.9	11.1	10.3	8.0		11.7	12.1	16.9	10.7	13.1	10.6		Diffusion tube missing August
DT24A	339838	159166	23.6	23.9	22.7	20.9	21.6	19.1	13.1	16.1		16.6	19.2	13.7	-	-		Diffusion tube missing September Triplicate Site with DT24A, DT24B and DT24C - Annual data provided for DT24C only
DT24B	339838	159166	26.8	23.8	17.1	15.3	13.5	14.1	13.2	16.0		17.7	20.8	15.2	-	-		Diffusion tube missing September Triplicate Site with DT24A, DT24B and DT24C - Annual data provided for DT24C only
DT24C	339838	159166	17.1	13.9	8.8	8.1	6.6	6.1	5.5	7.2	8.2	9.5	13.0	8.5	14.8	12.0		Triplicate Site with DT24A, DT24B and DT24C - Annual data provided for DT24C only
DT25	345592	165597	16.1	13.5	9.0	8.7	6.3	6.5	5.6	7.4	8.1	9.5	12.8	8.3	9.3	7.6		
DT26	345507	165538	17.3	13.6	8.7	8.6	6.6	6.4	5.9	7.3	7.9	10.2	14.1	8.0	9.6	7.7		

☒ **All erroneous data has been removed from the NO₂ 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 Somerset Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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 North Somerset Council During 2023

In March 2023, planning permission was granted for the road bypass of Banwell Village. The bypass will run to the north of Banwell Village and will aim to remove congestion from a key route between the A38 and Weston-super-Mare.

Additional Air Quality Works Undertaken by North Somerset Council During 2023

North Somerset Council has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

In 2023, North Somerset Council's diffusion tubes were supplied and analysed by Gradko International Limited. Gradko are amongst the market leaders in the preparation, supply and analysis of NO_2 diffusion tubes in the UK. The diffusion tubes utilised by North Somerset Council use the 20% Triethanolamine (TEA) in water preparation method. Analysis is carried out in accordance with Gradko's documented UKAS accredited in-house laboratory method GLM7 and follows the harmonisation practical guidance for diffusion tube.

Gradko participate in AIR, an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT started in April 2014 and offers a number of test samples designed to test the proficiency of laboratories undertaking analysis of chemical pollutants in ambient, indoor, stack and workplace air. One such sample is the AIR NO_2 test sample type that is distributed to participants in a quarterly basis.

AIR NO_2 PT forms an integral part of the UK NO_2 Network's QA/QC and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of LAQM. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of

a high calibre. In the latest available AIR-PT results, AIR PT January – October 2023 (AIR PT AR055, AR056, AR058 and AR059), Gradko scored 100%. No results had been published for November and December 2023 at the time of writing.

Further information on the precision summary results can be found on the LAQM website.

It is noted that diffusion tube monitoring date for tube colocation in September 2023 did not coincide with the Diffusion Tube Monitoring Calendar as it was deployed one day late on 7th September 2023. As such, there is a degree of uncertainty surrounding the monitoring result provided for this month.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within North Somerset Council recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 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 Somerset 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 Somerset Council over the past five years is presented in Table C.1.

The national bias adjustment spreadsheet (version 03/24) was used to derive the national bias adjustment factor for diffusion tubes analysed by Gradko during 2023. The national bias adjustment factor for Gradko was 0.81 and was based on 23 studies. As shown in Figure C.1.

Figure C.1 – 2023 National Bias Adjustment Factor for Gradko

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.

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 shown in blue at the foot of the final column. If you have your own co-location study then see footnote. 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[2]	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**

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.81
2022	National	03/23	0.83
2021	National	03/22	0.84
2020	National	03/21	0.93
2019	National	03/20	0.93

NO₂ 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.

No diffusion tube NO_2 monitoring locations within North Somerset Council required distance correction during 2023.

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

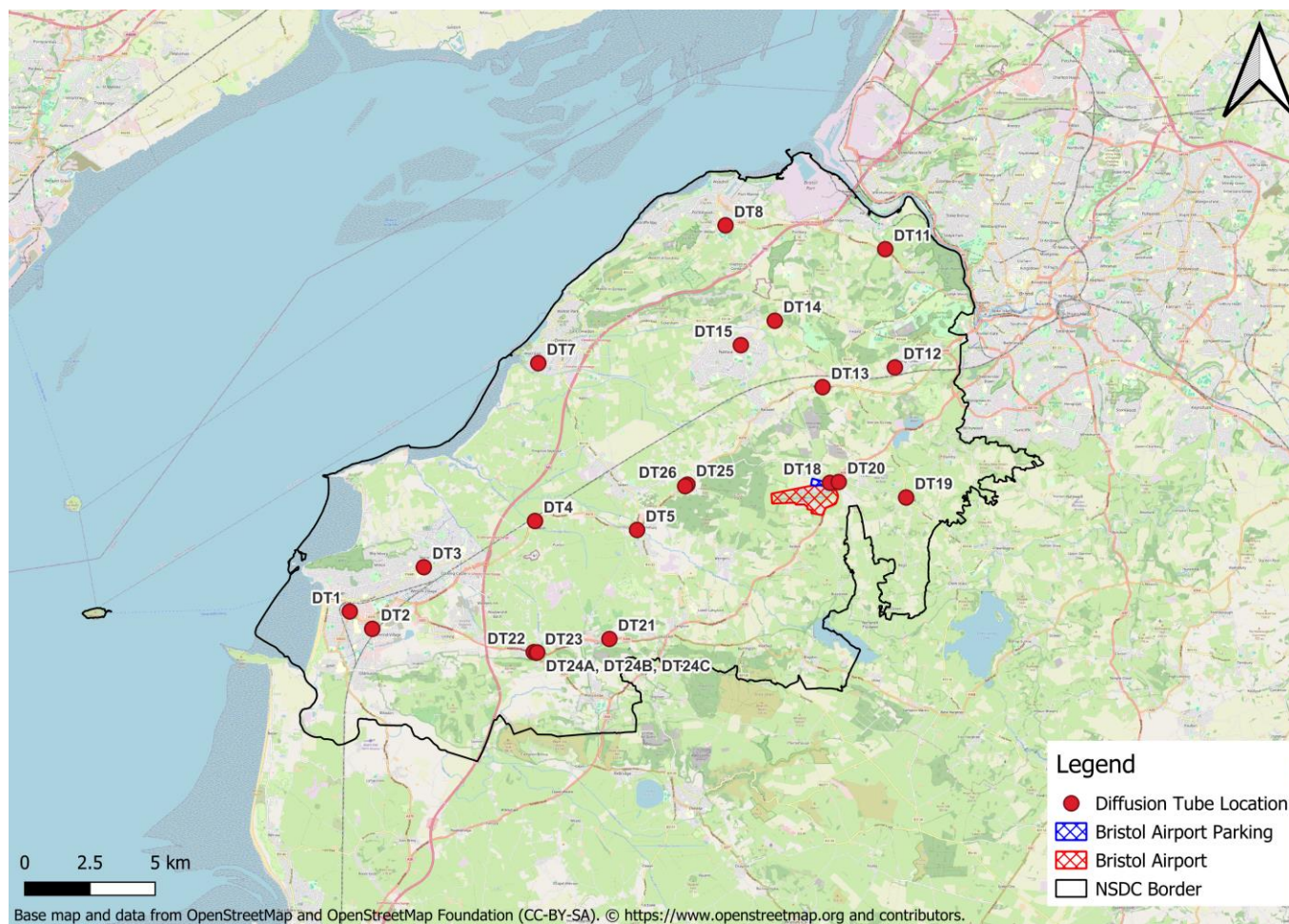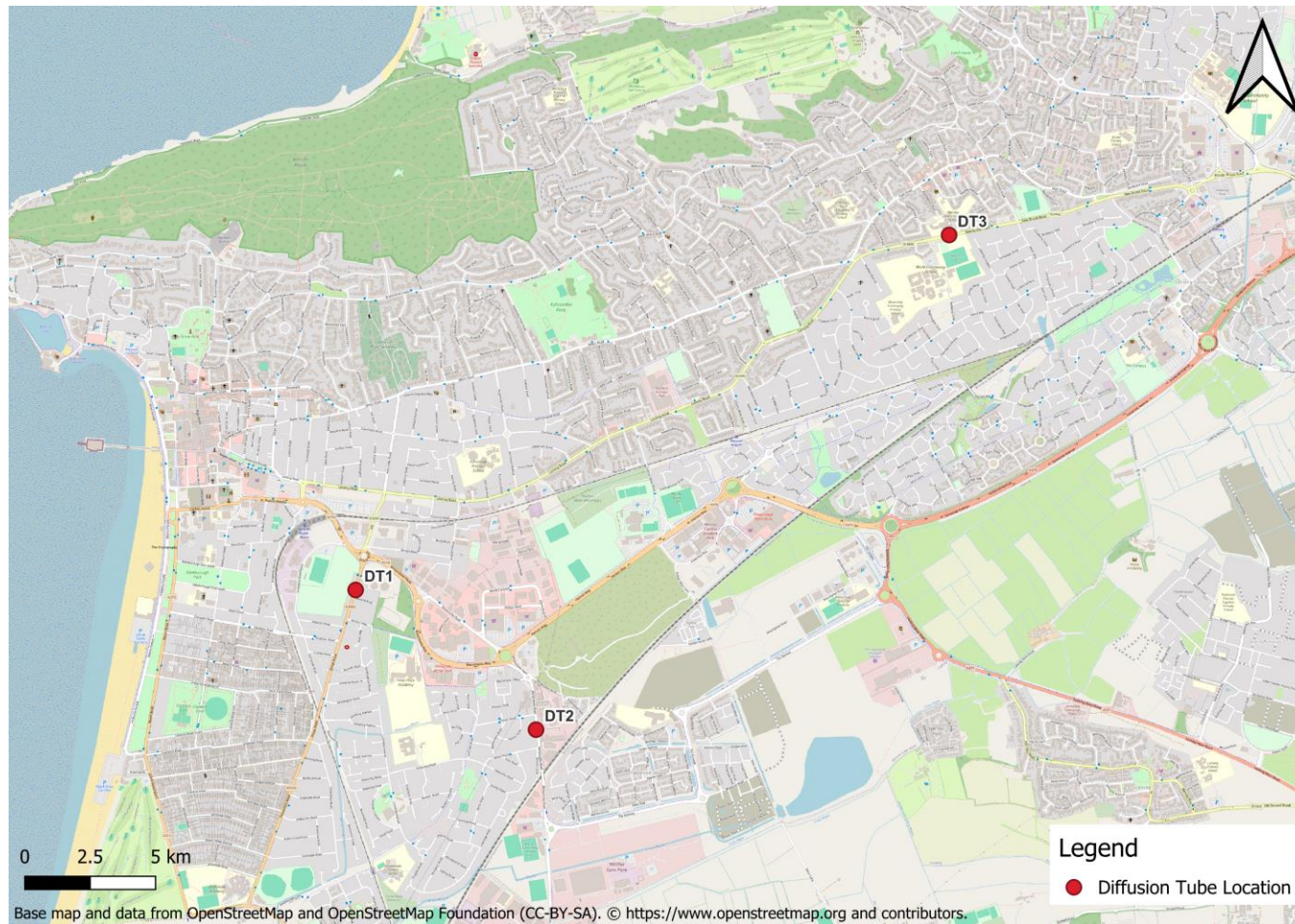**Figure D.1 – Map of Non-Automatic Monitoring Sites**

Figure D.2 – Map of Non-Automatic Monitoring Sites: Weston-super-Mare

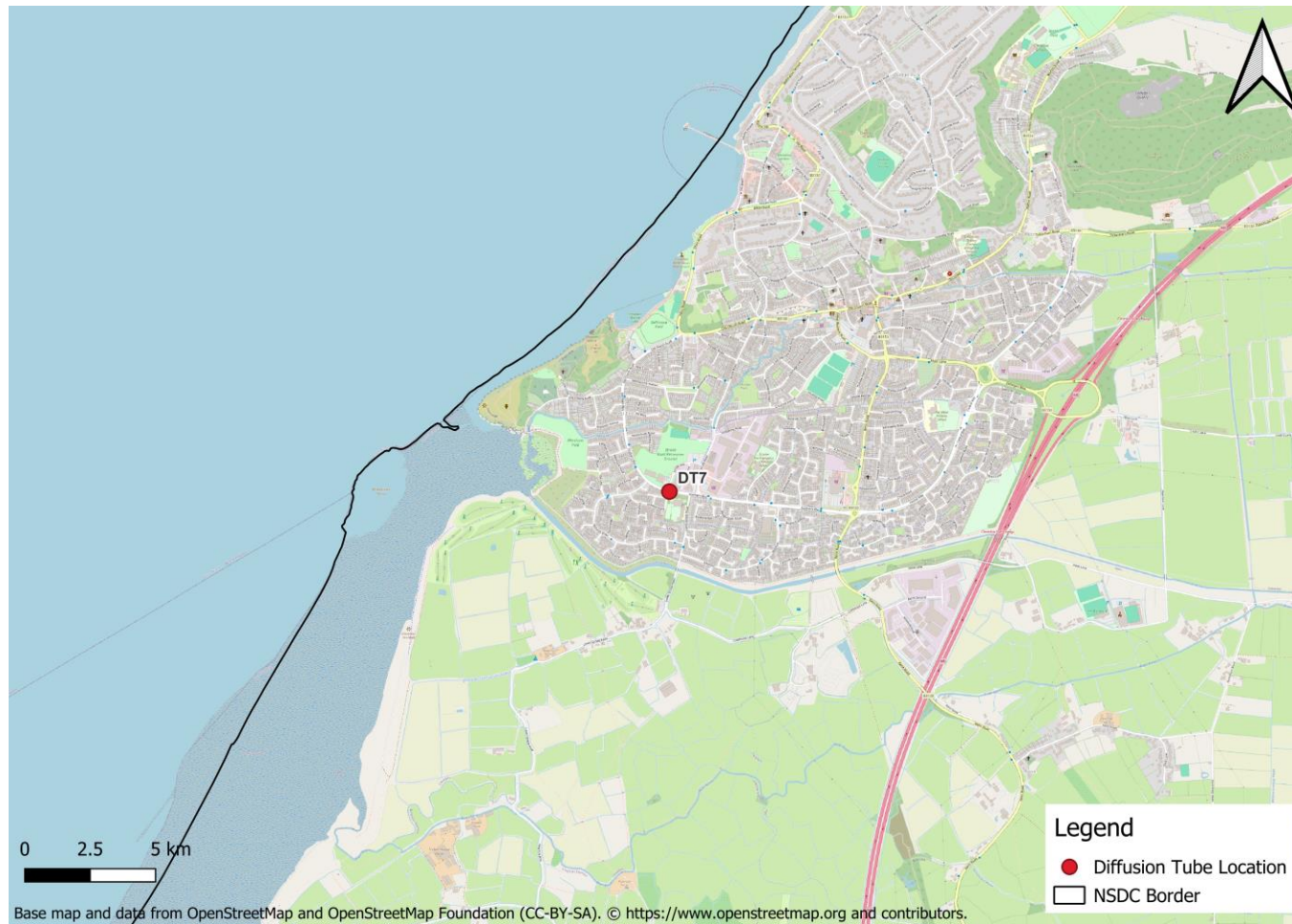**Figure D.3 – Map of Non-Automatic Monitoring Sites: Hewish**

Figure D.4 – Map of Non-Automatic Monitoring Sites: Congresbury

Figure D.5 – Map of Non-Automatic Monitoring Sites: Clevedon
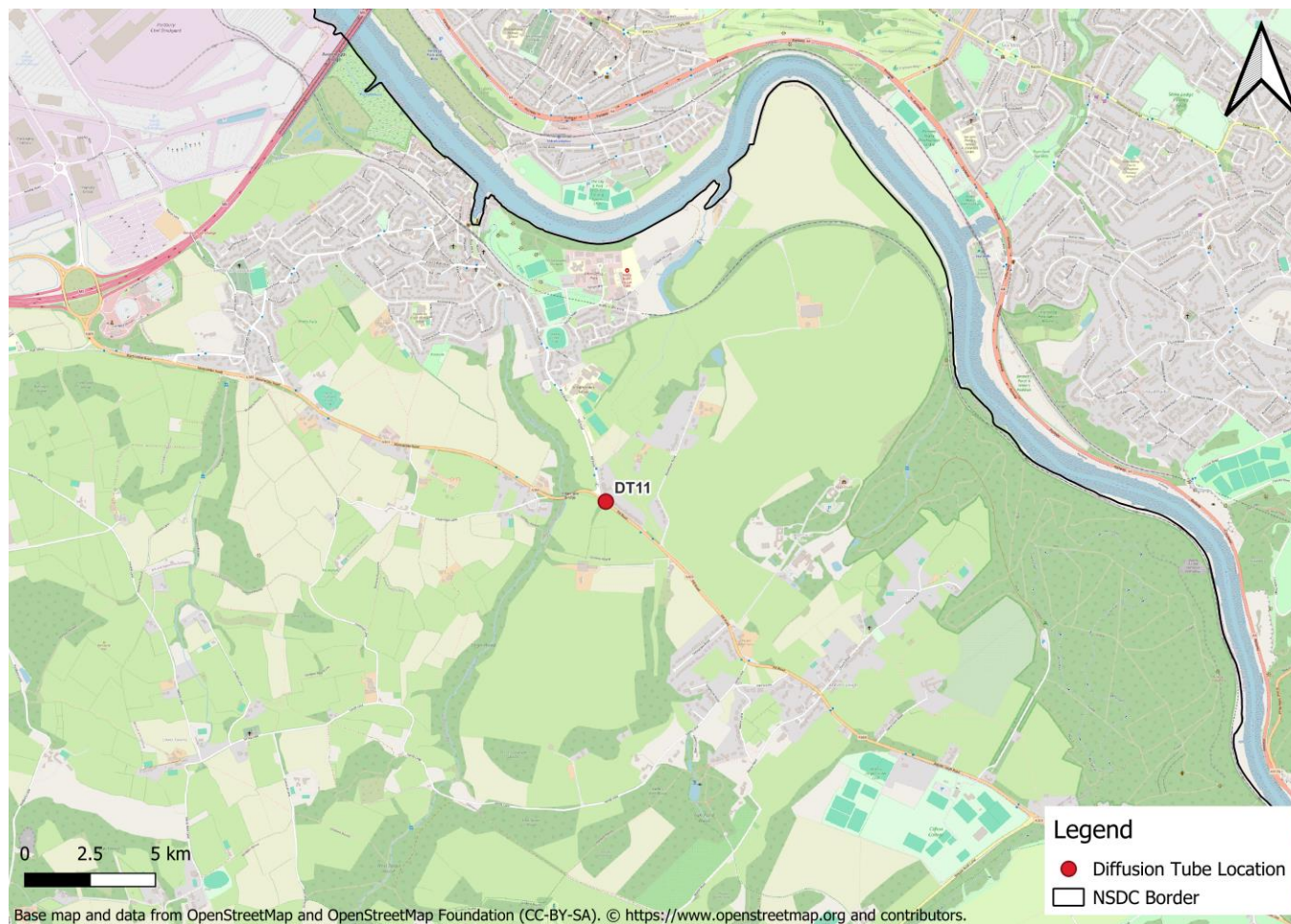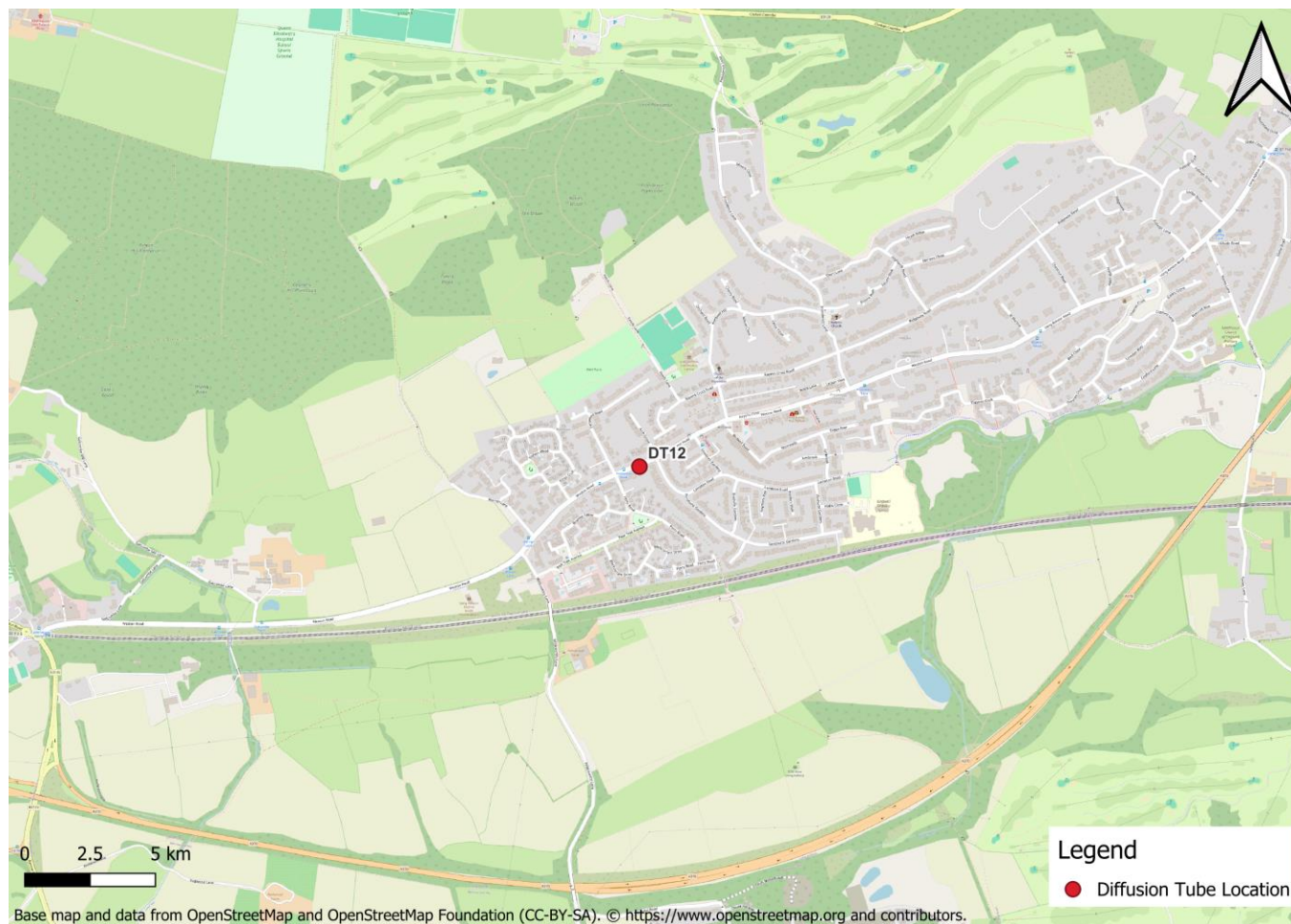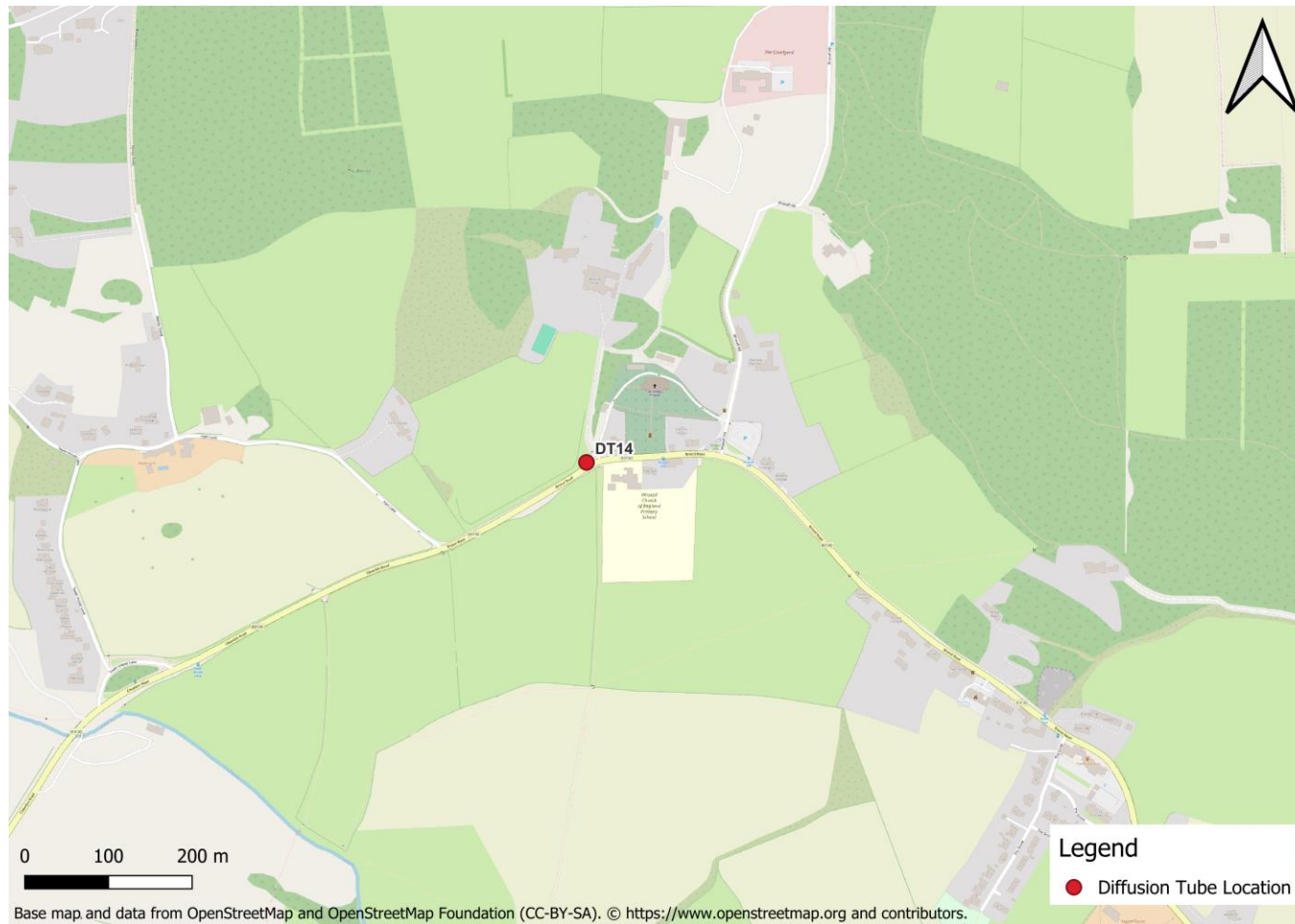
Figure D.6 – Map of Non-Automatic Monitoring Sites: Portishead

Figure D.7 – Map of Non-Automatic Monitoring Sites: Pill

Figure D.8 – Map of Non-Automatic Monitoring Sites: Long Ashton

Figure D.9 – Map of Non-Automatic Monitoring Sites: Flax Bourton

Figure D.10 – Map of Non-Automatic Monitoring Sites: Wraxall

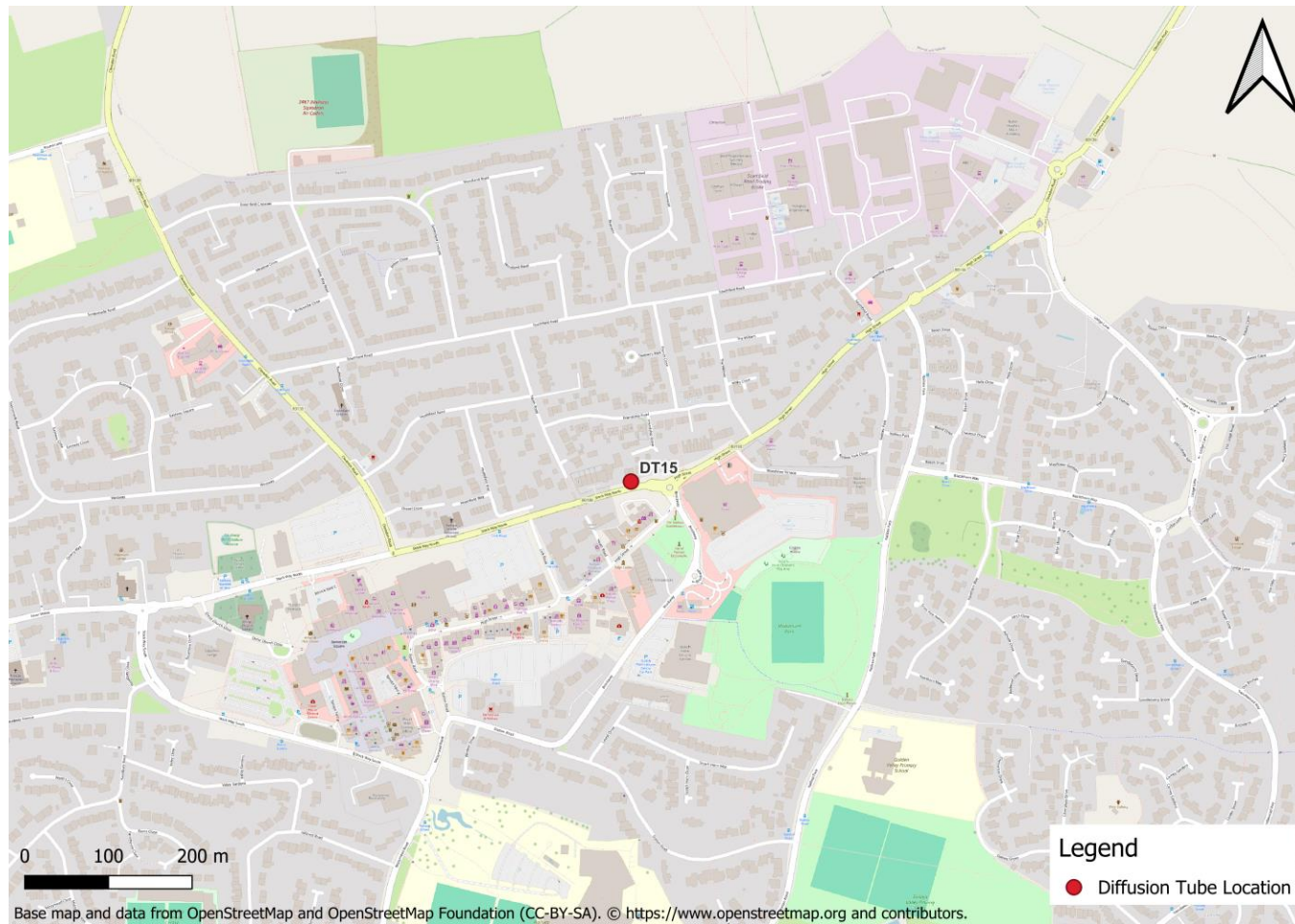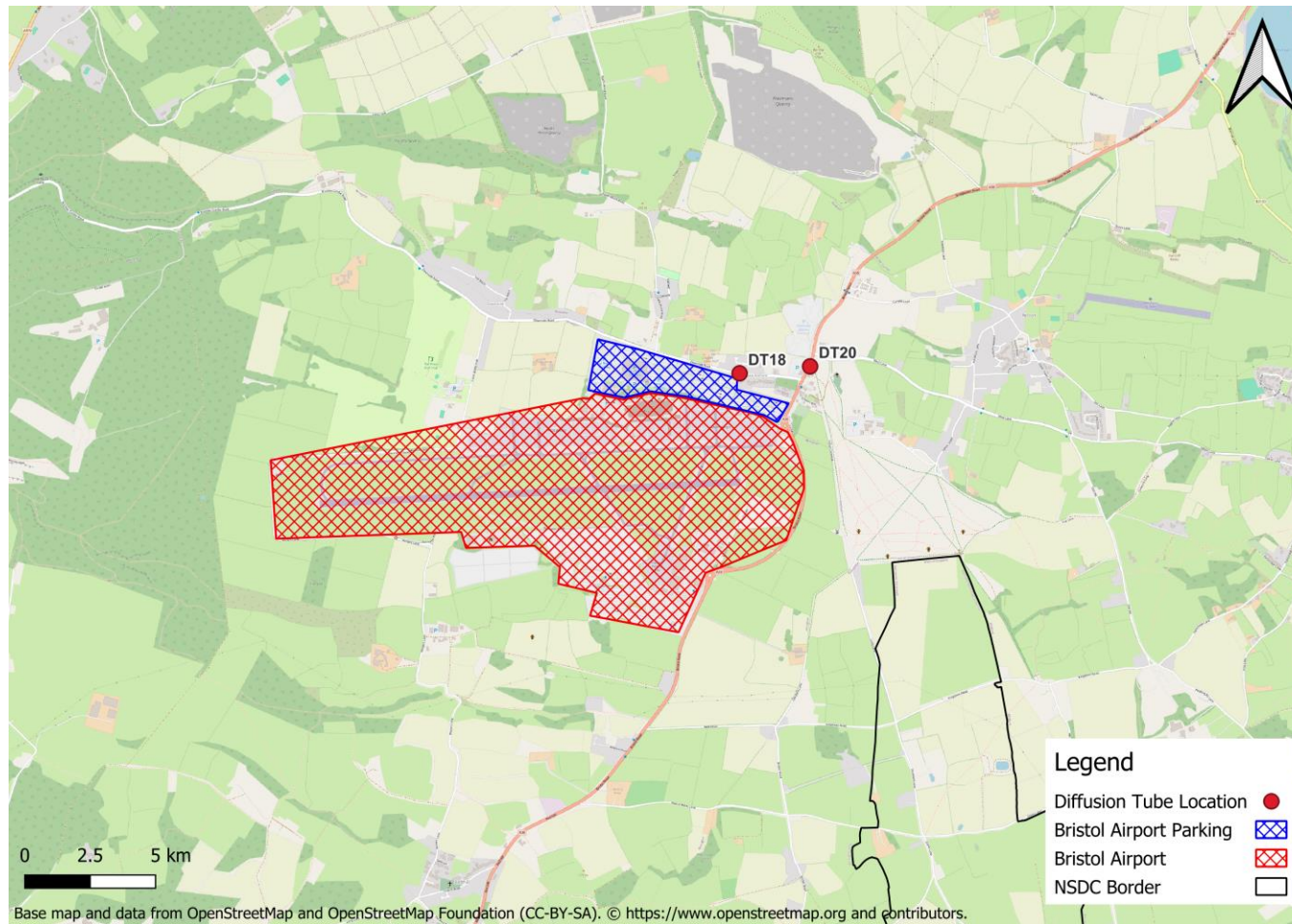**Figure D.11 – Map of Non-Automatic Monitoring Sites: Nailsea**

Figure D.12 – Map of Non-Automatic Monitoring Sites: Vicinity of Bristol Airport

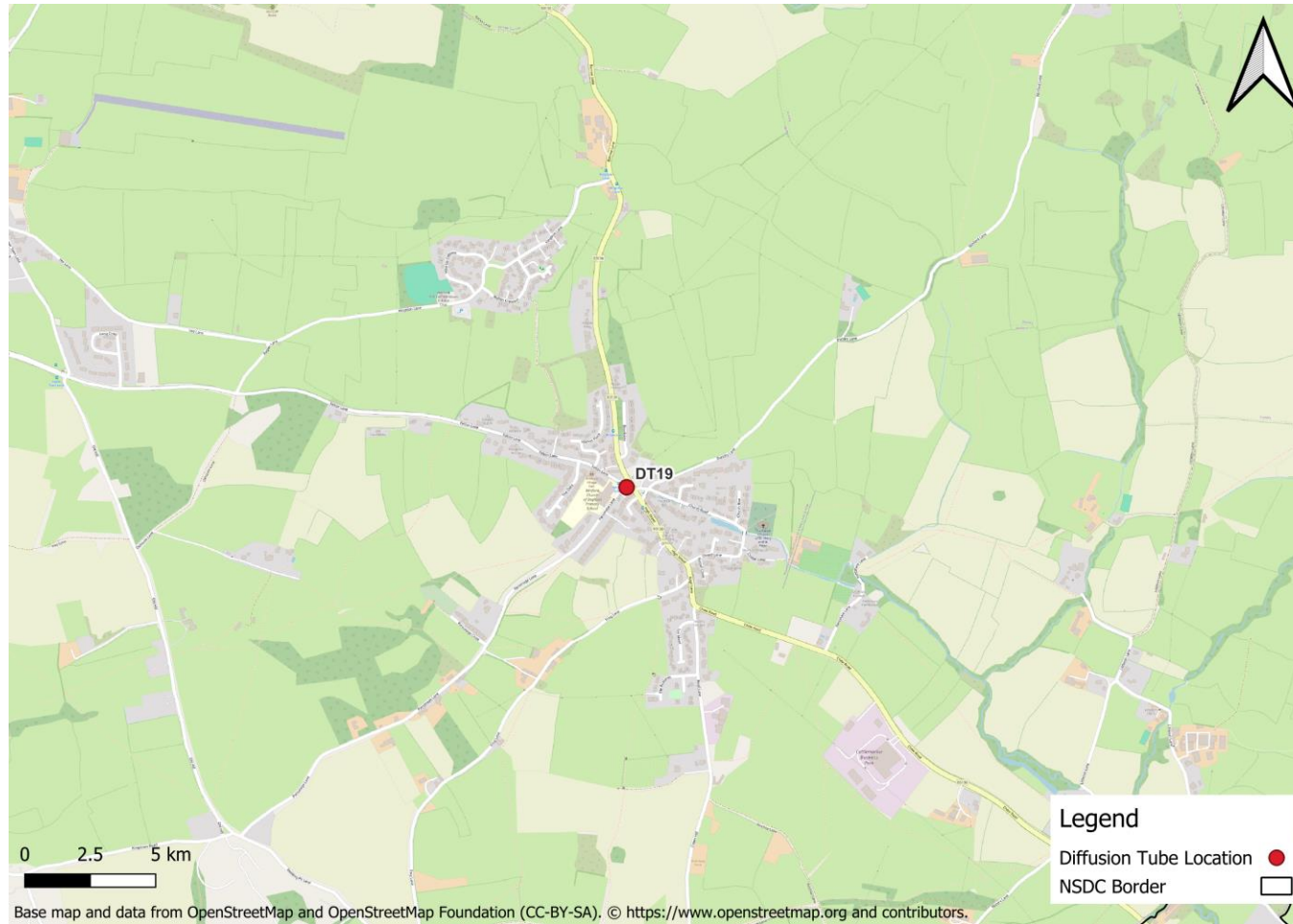**Figure D.13 – Map of Non-Automatic Monitoring Sites: Winford**

Figure D.14 – Map of Non-Automatic Monitoring Sites: Sandford

Figure D.15 – Map of Non-Automatic Monitoring Sites: Banwell

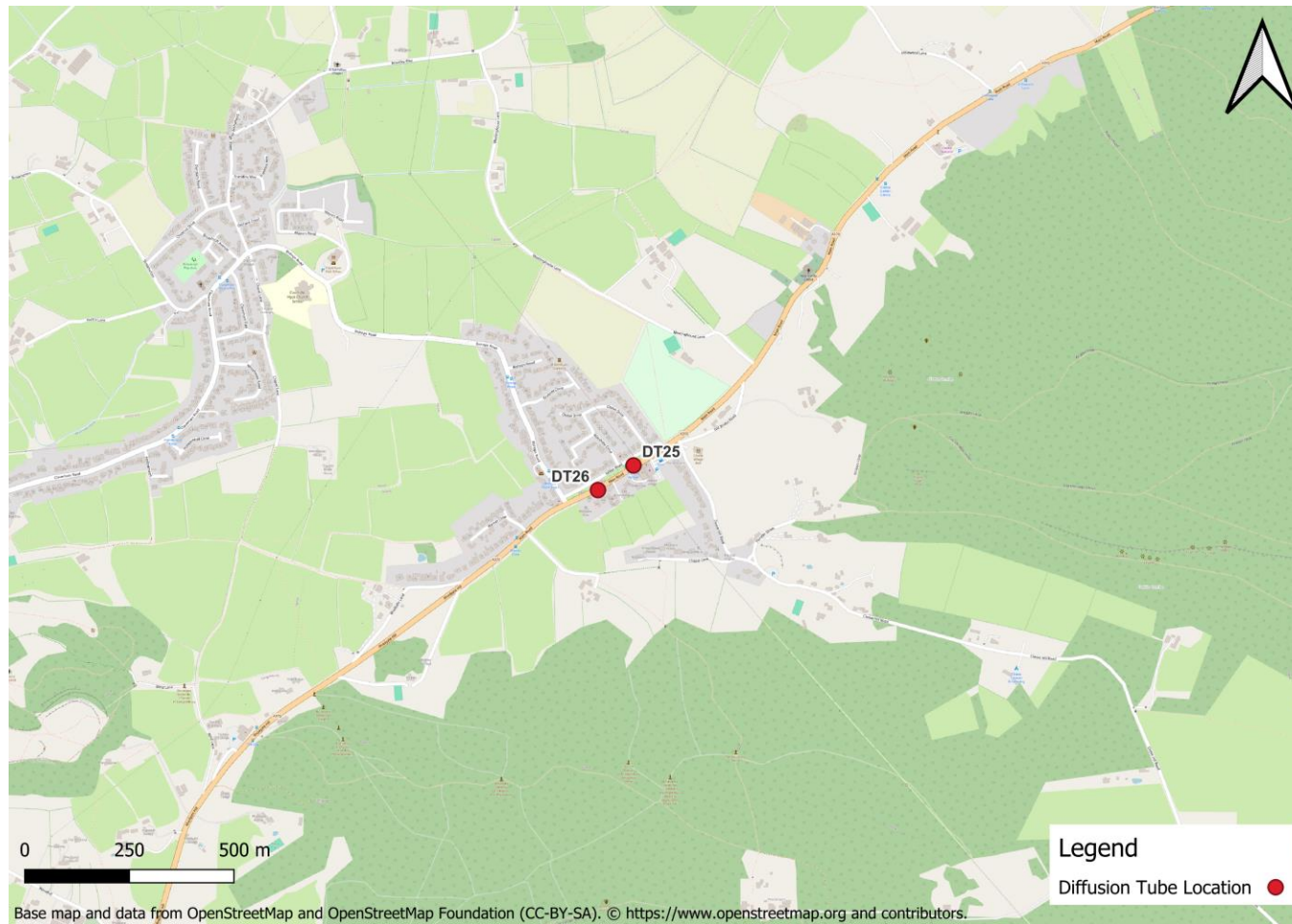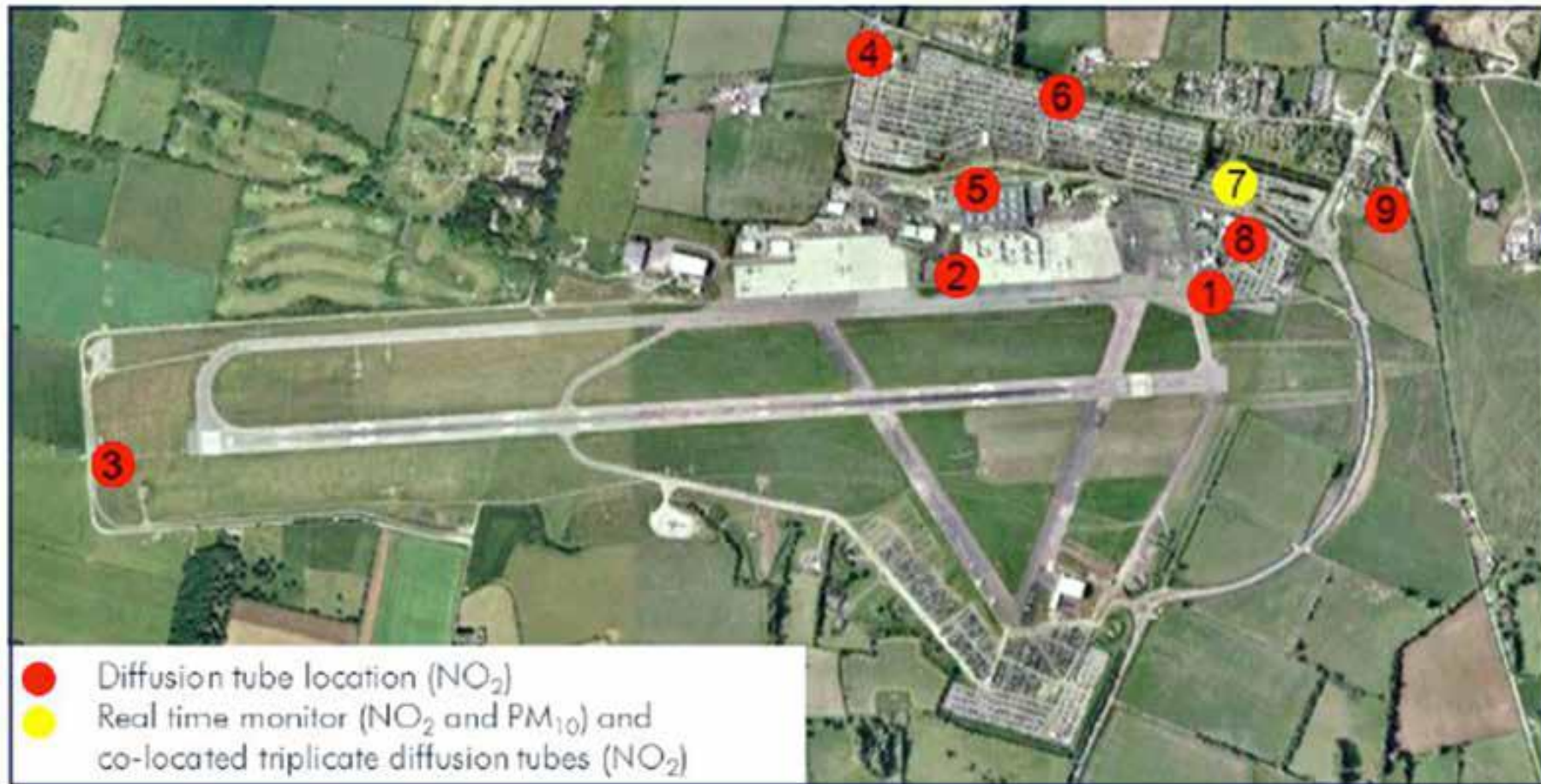**Figure D.16 – Map of Non-Automatic Monitoring Sites: Cleeve**

Figure D.17 – Bristol Airport Monitoring Locations

Diffusion tube location (NO$_2$)
Real time monitor (NO$_2$ and PM$_{10}$) and co-located triplicate diffusion tubes (NO$_2$)

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[18]

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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
AQSO	Air Quality Standard Objective
ASR	Annual Status Report
ATAP	Active Travel Action Plans
BSIP	Bus Service Improvement Plan
CEMP	Construction Environmental Management Plans
CIL	Community Infrastructure Levy
CO_2	Carbon Dioxide
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EV	Electric Vehicle
GI	Green Infrastructure
JSNA	Joint Strategic Needs Assessment
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PHE	Public Health England
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
PV	Photovoltaic
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide
WECA	West of England Combined Authority
WHAM	Warmer Homes, Advice and Money

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.

- 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.

- Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006. Published by Defra.

- Environmental Improvement Plan 2023. January 2023. Published by Defra.

- The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy. July 2018. Published by DfT.

- Defra Exempt Appliances England. Available at: https://smokecontrol.defra.gov.uk/appliances.php?country=england

- North Somerset Climate Local Commitment. Available at: https://www.n-somerset.gov.uk/sites/default/files/2020-03/Climate%20Local%20Commitment%202018.pdf.

- North Somerset plan to tackle Climate Change. Available at: https://n-somerset.gov.uk/council-democracy/priorities-strategies/climate-emergency/our-plans-tackle-climate-change.

- North Somerset Active Travel Strategy 2020-2030. Available at: https://www.n-somerset.gov.uk/sites/default/files/2021-08/30511%20ATS%20book%20ACC%200821_0.pdf.

- North Somerset's Joint Health & Wellbeing Strategy 2021-2024. Available at: https://n-somerset.gov.uk/council-democracy/priorities-strategies/health-wellbeing-strategy-2021-24.

- PHE. Public Health Outcomes Framework. Available at: https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data.

- Defra UK Air. Background maps. Available at: https://uk-air.defra.gov.uk/data/laqm-background-home.

- Defra UK Air. Air quality objectives. Available at: https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update_20230403.pdf

- WHO. What are the air quality guidelines? Available at: https://www.who.int/news-room/feature-stories/detail/what-are-the-who-air-quality-guidelines.