2025 Air Quality Annual Status Report (ASR)

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

Date: August 2025

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Local Responsibilities and Commitment

This ASR was prepared by the Regulatory Services department of Bedford Borough Council with the support and agreement of the following officers and departments:

- Transport
- Highways
- Public Health
- Planning
- Transport Policy
- Planning Policy

This ASR has been approved by: Vicky Head

This ASR has been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to Victoria Persen at:

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Executive Summary: Air Quality in Our Area

Air Quality in Bedford

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

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

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

Table ES 1 - Description of Key Pollutants

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

Air quality in Bedford Borough is mostly very good, however, there are locations where pollutants build up and are slow to disperse due to traffic volumes and road traffic routes with unfavourable layouts/local geography.

The main pollutant of concern in Bedford Borough is Nitrogen dioxide (NO_2), the primary source of which is road traffic emissions. Bedford has several strategic transport routes including the A1, A421 and A6 which carry high levels of traffic. Traffic routes are constrained in and around the town centre by river, road and rail bridges, and one-way traffic systems have evolved in response to pinch points created by these constraints. This combined with high levels of car ownership and use results in congestion hotspots.

In 2024 Bedford Borough Council were undertaking air quality monitoring for NO_2 at one automatic site and at 62 passive diffusion tube sites. The 2024 monitoring results have determined that there is one exceedance of the annual mean NO_2 objective at diffusion tube sites within the Borough.

The 2024 monitoring results, utilising the more conservative local bias adjustment factor, have determined that there was one exceedance of the annual mean NO_2 objective of 40 $\mu g/m^3$ at diffusion tube sites within the Borough (40.2 $\mu g/m^3$). This is the same location as historically has been above the limit for a number of years, with one location within 10% (above 36 $\mu g/m^3$) the other values are all below 36 $\mu g/m^3$.

Five Earthsense Zephyr air quality monitors have been situated around Bedford Borough. It is understood that results from such monitors should not be included within the formal reporting for this return however these can provide indicative data for particulate matter in the area. One of the zephyrs was located at the location of the NO_2 exceedance (Prebend Street) the others located as part of the school streets project provide a good indication of the levels in the Borough.

Table ES 2 – Annual averages for PM$_{2.5}$/PM$_{10}$ & recorded PM$_{10}$ exceedances at 5 locations within the Borough

Location	PM$_{2.5}$ annual average ($\mu g/m^3$)	PM$_{10}$ annual average ($\mu g/m^3$)	No. of exceedances of PM$_{10}$ over 50$\mu g/m^3$ (24 hr average)
Ampthill Rd – Morrisons	7.04	10.77	0
Ampthill Rd – Brittania Rd	7.27	11.13	0
Slade Walk	10.35	11.43	0
Goldington Rd	10.86	12.05	0
Prebend St	11.36	12.57	0

The Air Quality Standards Regulations (2010) require that concentrations of PM in the UK must not exceed:

- An annual average of 40 µg/m^3 for PM$_{10}$;
- A 24-hour average of 50 µg/m^3 more than 35 times in a single year for PM$_{10}$;
- An annual average of 20 µg/m^3 for PM$_{2.5}$.

Therefore, the indicative data does not suggest an exceedance of any of these objectives.

The Environment Act 2021 established a legally binding duty on Government to set an annual mean target on the level of fine particulate matter (PM$_{2.5}$), in addition to a longer-term target. This resulted in the Environmental Targets (Fine Particulate Matter) (England) Regulations (2023) setting a requirement that in England by the end of 2040 the:

- Annual average of 10 µg/m^3 for PM$_{2.5}$ is not exceeded at any monitoring station (the Annual Mean Concentration Target or AMCT).

The Environmental Improvement Plan 2023 for England set interim targets that by January 2028:

- An annual average of 12 µg/m^3 for PM$_{2.5}$ is not exceeded at any monitoring station.

Although these are not reference standard accredited monitoring stations the levels indicated by the Zephyrs show levels below 12 µg/m^3 for PM$_{2.5}$. During 2024, Bedford Borough Council carried out projects and work to highlight the impact of local sources of PM$_{2.5}$ and educating residents on how to reduce these levels and providing information to retail businesses selling certain solid fuels.

Bedford Borough Council has one Air Quality Management Area (AQMA) - AQMA 5 Bedford Town Centre which was declared in 2009 - AQMA Details - DEFRA UK Air - GOV.UK. The results from 2024 and the previous 5 years have been reviewed and provide some evidence to support considerations for reducing the size of the current AQMA. The only data within 10% of the annual mean objective for NO$_2$ has been in the centre of the AQMA and the areas to the East, North and South have not been within 10% for a number of years. It will be necessary to obtain robust data to support any decisions relating to the size of the current AQMA and therefore data will continue to be gathered during 2025, including undertaking a source apportionment exercise as part of reviewing local sources bend contributions to NO$_2$ with a view to further considering options during 2026 as part of the ASR process and review of the Air Quality Action plan.

In 2022 the Covanta Resource Recovery Facility located at Rookery Pit, Stewartby on the border of Bedford Borough and Central Bedfordshire became operational. This is an Environment Agency permitted activity with limits on emissions from the stack set as conditions within the permit for the site, and compliance regulated by the Environment Agency. The air quality with respect to NO_2 in this area is good with the site located approximately 10 Kilometres away from AQMA 5, with modelling accepted by the Environment Agency indicating no significant impact on levels within the AQMA. A diffusion tube is located outside of the site entrance to the facility, to consider potential air quality impacts relating to vehicle movements, in 2021 this showed the annual average NO_2 data remained significantly below the current government objective of 40 µg/m^3 at 13.6 µg/m^3, with this continuing to be the case in 2024 with an annual average of 14.4 µg/m^3. A diffusion tube measuring background levels in Stewartby was established at the same time which measured 11.2 µg/m^3 in 2024. Bedford Borough has reviewed compliance records for 2024 which indicated good compliance with permit conditions, and no identified failures that would lead to significant environmental impacts. The service will engage with the Environment Agency during 2025 in relation to the sites permit compliance/performance.

Bedford Borough Council has published an updated Air Quality Action Plan for the AQMA 5 Bedford Town Centre which was accepted by DEFRA in 2021. The Council is also working in partnership with Transport, Public Health, Planning and other council departments to continue to identify pollution hotspots and key sources of pollution across the Borough, and opportunities and actions to improve local air quality.

In late 2023, the possibility of a significant development incorporating a theme park and resort complex to the south of the Borough was announced. At the time of writing, the developer is undertaking a range of assessments and engaging with a range of local partners, progress will continue to be considered as project progress and announcements are made with the oversight and assessment of the of the development and application for permission being untaken by MHCLG.

The service continues to monitor progress with the East West Rail; details of the project can be found on the following webpages: East West Rail | Home.

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.

Data relating to the continuous monitor situated on Lurke Street was reviewed during 2022, and this identified results from the monitor as being well below 40 µg/m^3 (not above 30 µg/m^3 for the last 5 years) with no exceedances of the 1-hour objective. During 2022, following the reduction of the High Street to a single lane the annual average NO$_2$ concentration was 21 µg/m^3, therefore the decision was made to cease operation of the monitor in December 2022. Diffusion tubes remained in place at the location in order that NO$_2$ concentrations can continue to be monitored and considered. The three diffusion tubes measured an average of 21.9 ug/m^3 over 2024 well below the exceedance limit. It is therefore recommended that the 3 diffusion tubes in this location are reduced to one single tube in 2025.

Bedford Borough Council has published an updated Air Quality Action Plan for the Town Centre AQMA 5 in 2021 covering the years 2021 to 2026, with the ultimate aim to achieve stable and compliant air quality concentrations across the Borough and allow for the consideration of reduction of the Town Centre AQMA 5 by 2026.

Bedford has seen an overall decrease in measured NO$_2$ levels over the past five years with just a single location exceeding the recommended level. Direct comparison using the local bias adjustment would show NO$_2$ levels decrease at all locations from 2023. This is believed to be due to a number of measures implemented as well as a general increase in the use of less polluting vehicles, and shifts towards renewable energy sources and active travel.

Bedford Borough Council applied for a DEFRA air quality grant in 2022 and was notified of the successful bid in early 2023. This grant allowed for the implementation of an air care journeys project aimed at educating pupils, parents and community groups from wards within and surrounding the AQMA around air quality impacts associated with travel choices. The objectives included the promotion of alternative travel options. This work was carried out throughout 2024 and continued into 2025. In addition, funding was awarded to support a behavioural change project aimed at educating residents further around the domestic burning of solid fuels and impacts on PM$_{2.5}$, this work commenced in 2024.

Bedford Borough Council is one of the first authorities in the country to be awarded funding from the UK government's Local Electric Vehicle Infrastructure (LEVI) Fund. This investment will increase the number of on-street charging points for electric vehicles across the whole Borough.

Following a successful application, the Borough has received just over £1m for the installation and connection of new charge points over a 15-year contract, with installations

hoped to begin in 2026. Locations include the borough's main urban areas and rural sites which currently have little or no provision.

The Council currently provides just over 100 charge-points, and with the new funding expects to install additional charge points with a capacity of 500 charging sockets. This will provide a step-change in public charge-point facilities and open up the option of Electric Vehicle ownership to many residents who do not have off-street parking where they can charge at home.

Conclusions and Priorities

This Annual Status Report identifies that the annual mean objective for Nitrogen dioxide (NO_2) was exceeded at one location across the Borough during 2024. This exceedance was on Prebend Street, which is within the AQMA, at 40.2 $\mu g/m^3$. There was one diffusion tube result within 10% of the 40 $\mu g/m^3$ limit situated in the AQMA which was on St Peters Street at 36.6 $\mu g/m^3$.

The local bias adjustment factor was used for 2024 data due to good data capture. This value is more conservative than the national bias adjustment factor. For context should the national factor have been used there would have been a minor change to these headline observations with no sites over 40 $\mu g/m^3$, similar to 2022 when the national bias adjustment was used. Data using the national bias adjustment figure to compare 2024 results against those for 2022 show that all diffusion tube locations values would have decreased. There has been a slight decrease in comparison to 2023 data which also used the local bias adjustment factor.

Current priorities include continuing actions within the AQAP, monitoring data to consider opportunities to reduce the size of the AQMA, and to develop an understanding of current levels in areas that may be impacted by future infrastructure projects such as EWR and Univeral`. Other priorities include the delivery of LEVI project and continuing to develop the infrastructure in support of electric vehicle use, as well as restarting the air quality steering group following a period of staff vacancy and restructuring to promote co-benefits.

Bedford Borough continues to participate in the Herts and Beds and Neighbouring Authorities Air Quality Forum that meets to discuss air quality matters affecting the County as a whole.

How to get Involved

Bedford Boroughs air quality webpages were updated during 2024 and include historic Annual Status Reports and the Air Quality Action Plan, and members of the public are also able to report air quality issues via contact details provided on these pages.

Information relating to the 'Air Care Journeys' project has been made available on the council's webpages, providing details on what the council is currently doing to improve air quality, additionally information relating to the domestic burning of solid fuels was also reviewed and update, these pages provide advice on what residents can do which includes:

- Drive less - for shorter trips try to walk or cycle.
- Stop car idling (an idling vehicle is one that has its engine running without moving anywhere).
  - Idling car fumes are more harmful inside than outside a car.
  - Idling vehicles create as much, or even more, carbon emissions and air polluting emissions than moving vehicles.
  - It is illegal leave a vehicle's engine running unnecessarily while that vehicle is stationary on a public road.
  - If you will be somewhere for more than 30 seconds – turn your engine off.
- At home, limiting the use of wood burning stoves and open fires, advising on how to burn more efficiently to reduce the impact of their use. Guidance is also provided recommending to avoid burning household and garden waste: take it to the tip instead.
- Talk to your friends and family about air pollution, just because you can't see it, doesn't mean it's not affecting us all.

Social media has been and will be used to continue to raise awareness associated to air quality, reiterating messaging around the domestic burning of solid fuels and promoting alternative transport choices.

DEFRA funded project work was also delivered during 2024, engaging with community groups and schools to educate and promote air quality matters including highlighting $PM_{2.5}$ and how everyone can reduce the impact of particulate matter.

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1 Local Air Quality Management

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

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether 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 Bedford Borough 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

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

A summary of AQMAs declared by Bedford Borough Council can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within Bedford. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of the AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO_2 annual mean

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 5 Bedford Town Centre	Declared 06/11/2009	NO$_2$ Annual Mean	An area encompassing the majority of properties within Bedford town centre, and incorporating the 2 previous AQMAs in the town centre	NO	Annual mean NO$_2$ concentration 59µg/m^3	Annual mean NO$_2$ concentration 40.2 µg/m^3	0	AQAP for AQMA 5 August 2021	Air Quality Action Plan 2021-2026 (bedford.gov.uk)

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

☒ **Bedford Borough Council confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Bedford.

Defra's appraisal of last year's ASR concluded that the report is well structured, detailed, and provides the information specified in the Guidance. However, the following comments were designed to help inform future reports:

1. This ASR has been signed off by a Director of Public Health. This is welcomed and should be continued in future ASRs.

2. The site names for the annualisation factors should be included within the headers in Table C.1. It is also recommended, but not required, that the Council uses more than two automatic monitoring sites for annualisation. LAQM.TG(22) guidance states that two to four sites should be used, and therefore the current methodology is correct.

3. The Council should compare the calculated local bias adjustment factor to the relevant national bias adjustment factor in future reports to ensure that a more conservative factor is being used to adjust raw data. In this instance, as the local bias adjustment factor was so high, this factor was the more appropriate factor to use. This could be supported by the inclusion of a screen capture of the appropriate national bias adjustment factor spreadsheet.

4. Additional passive monitoring sites have been introduced in response to works undertaken by East West Rail and in relation to a bypass of the main town in Clapham. The Council is commended for ensuring the current monitoring network is capturing possible hot spots of poor air quality and should continue to review their monitoring network periodically.

5. Figures have been included which highlight the locations of monitoring sites across the borough. The location of the AQMA does not appear to have been included. It is recommended that the Council include a figure to show the location of the AQMA in future reports. The labels on the current figures are quite difficult to read and should be made clearer, possibly by including a white background on the text.

6. There are several instances throughout the report where $\mu g/m^3$, NO_2, PM_{10}, or $PM_{2.5}$ do not include a subscript, or have been superscripted rather than

subscripted. Subscripts should be included on all instances of $\mu g/m^3$, NO_2, PM_{10}, or $PM_{2.5}$ throughout the report and should be consistent.

The above feedback from DEFRA is welcomed and have been addressed in this year's report.

Bedford Borough Council has taken forward a number of direct measures during the current reporting year of 2024 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 32 measures are included within Table 2.2, with the type of measure and the progress Bedford Borough have made during the reporting year of 2024 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans. Key completed measures are:

- Issue of the Electric Vehicle Charging Strategy for Bedford Borough 2024-2027.
- Funding granted for the LEVI project.
- Implementation of DEFRA lot 1 project in relation to engaging with community groups and schools within 5 identified wards to educate on sources air pollution and measures to reduce exposure and impacts on local air quality.
- Implementation of DEFRA funded $PM_{2.5}$ project.
- Issue of the Carbon Reduction Delivery Action Plan 2024-2026
- During 2024 one school was converted from gas central heating to alternative energy air source heat pump as part of the Carbon Reduction Delivery Action Plan 2024-2026.

Bedford Borough expects the following measures to be completed over the course of the next reporting year:

- Preparation of a campaign on reducing idling levels within the council's fleet.
- Begin to implement measures set out in the Electric Vehicle Charging Strategy including on-street charge points.
- Delivery of the Carbon Reduction Delivery Action Plan 2024-2026.
- Delivery of Electric Vehicle Charging Strategy for Bedford Borough 2024-2027.
- Transporting Bedford 2030 involves the reconfiguration of the Greyfriars Junction with construction due to start September 2025. This will include enhancements to the pedestrian and cycling infrastructure at the junction.

- St. Paul's Square and Harpur Square Regeneration due to start February 2025, this will improve traffic flow allowing vehicles to access a new filter lane to move away from the town centre earlier removing the need for a longer journey into the town centre due to the current one-way system.
- Review and assess monitoring locations within the Borough.

Bedford Borough's priorities for the coming year are improving air quality, education of residents through project work, continuing to encourage and support electric and low emission vehicles use and highlighting areas of congestion.

To continue air quality monitoring to assess results over 2025 and consider potential for the reduction to the size of the current AQMA.

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

- Public Health
- Transport Policy
- Sustainable Transport
- Planning Development
- Planning Strategy
- Highways

The principal challenges and barriers to implementation that Bedford Borough anticipates facing are:

- Possible funding changes
- Increase in demands associated to high priority service delivery.
- Maintaining Staffing resource

Bedford Borough anticipates that the measures stated above and in Table 2.2 combined with national actions aimed at improving air quality, could result in compliance being achieved in AQMA 5.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Bedford Borough anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of AQMA 5.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	School & Community focused campaign to highlight engine idling	Traffic Management	Anti-idling enforcement	2023	2025	Bedford Borough Council - Public Health/sustainable transport	DEFRA & BBC	Funded	Delivered by DEFRA funded Air Quality Project Officer	Completed	NO_2	School workshops and accompanying campaign and monitoring at location	Completed as part of DEFRA lot 1 project activities in 2024	
2	School streets project - (pedestrian and cycling zones)	Traffic Management	Anti-idling enforcement	2022	2023	Local Authority Environmental Health, Local Authority Transport Dept	DEFRA and LA	Funded		Completed	NO_2	Reduction of car journeys and anti-idling	Completed within Air Care Journeys project previously funded by DEFRA	Project has been completed ongoing activity will be reviewed by sustainable transport officer/team
3	Increase 20mph zones outside schools	Traffic Management	Reduction of speed limits, 20mph zones	2021	Ongoing	Bedford Borough Council - Transport				Ongoing	NO_2	Increased number of 20 mph zones outside schools	More than 15 already in place	The implementation of 20mph speed limits is part of the Local Transport Plan (LTP3) to promote reduced speeds in residential areas and around schools
4	High street reduction to 20 mph	Traffic Management	Reduction of speed limits, 20mph zones	2019	2020	Bedford Borough Council - Transport				Completed	NO_2	High street reduced to 20mph	Work commenced as part of transporting Bedford 2020. Completed 2021	
5	Transporting Bedford 2020 - reducing High street to single lane	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, Inc. Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2019	2020	Bedford Borough Council - Transport				Completed	NO_2	reduced traffic on high street	Grant obtained - work commenced Summer 2020. Completed 2021/2022	
6	Transporting Bedford 2020 - Ampthill road smart corridor including bus lanes, cycle lanes	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, Inc. Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2019	2021	Bedford Borough Council - Transport				Completed	NO_2	improved traffic flow/reduced congestion monitored	Completed	Air quality monitoring in 2 zephyr monitors in place places on Ampthill Rd.
7	Provide road safety education and training for pedestrians and cyclists at schools (bikeability)	Promoting travel alternatives	Intensive active travel campaign & infrastructure	2019	ongoing	Bedford Borough Council				Ongoing	NO_2	Increased number educated	Ongoing, funding available to continue during 2024/25	
8	Provide road safety education and training for pedestrians and cyclists at workplaces to residents.	Promoting travel alternatives	Intensive active travel campaign & infrastructure	2019	2022	Bedford Borough Council				Completed	NO_2	Increased number educated	Undertaken as part of mode shift stars scheme completed 2022/23	This is being reviewed as part of active travel officer and sustainable transport team work streams
9	Access funding and capability funding	Promoting travel alternatives and creating Travel Plans for schools and businesses	Intensive active travel campaign & infrastructure	2019	ongoing	Bedford Borough Council				Extended contract	NO_2	Work with schools and businesses continues	ongoing	Funding available 2024/25
10	New Train Stations	Promoting travel alternatives	Promote use of rail and inland waterways	2020	2021	Bedford Borough Council/Network rail				Ongoing	NO_2	New train station open	Initial proposals drafted	Wixams train station due to open 2026
11	Promote and support Cycle to work	Promoting travel alternatives	Promotion of cycling	2019	ongoing	Bedford Borough Council/sustainable transport				Ongoing	NO_2	Number of employees cycling to work	Number of cycle to work increased	Reintroducing electric bike pool for staff during 2025/26
12	Cyclescheme – help to buy bike scheme	Promoting travel alternatives	Promotion of cycling	2019	ongoing	Bedford Borough Council				Ongoing	NO_2	Number using help to buy scheme	Underway	Remains in place 2025/26

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	promoting cycle to work													
13	Promotion of cycle routes	Promoting travel alternatives	Promotion of cycling	2019	ongoing	Bedford Borough Council/sustainable transport	DEFRA & BBC			Ongoing	NO$_2$	Increase in cycling	Ongoing, during 2024 this was promoted via lot 1 DEFRA project officer campaign initiatives	
14	Bike repair scheme	Promoting travel alternatives	Promotion of cycling	2019	ongoing	Bedford Borough Council/sustainable transport	DEFRA & BBC			Ongoing	NO$_2$	Increase in cycling	Periodic bike repairs continued to be delivered as part of DEFRA Project work with schools and community groups during 2024/25	Reviewing opportunities to deliver similar initiatives during 2025/26 as part of sustainable transport team work streams
15	Promotion of walking routes/organised walks	Promoting travel alternatives	Promotion of walking		ongoing	Bedford Borough Council/sustainable transport				Ongoing	NO$_2$	Increase in walking	Ongoing, during 2024 this promoted via lot 1 defra project officer campaign initiatives	web site of walking routes and schemes http://www.travelbedford.co.uk/Walking.html
16	Schools participating in school modeshift stars scheme	Promoting travel alternatives	School travel plans		ongoing	Bedford Borough Council/sustainable transport				Ongoing	NO$_2$	Number of school signed up	Schools are still able to achieve modeshift stars, sustainable transport officer will be supporting schools settings during 2025/26.	
17	Enforcement of business compliance with restrictions on sale of regulation relating to the sale of solid fuels	Policy guidance and development control	Low emissions strategy	2024	2025/Ongoing	Bedford Borough Council	DEFRA & BBC			Ongoing	PM	Compliance with regulations	Business visited as part of DEFRA lot 2 Project – Information and guidance provided to support compliance	
18	Reviewing taxi licencing policy	Promoting low emission transport	Taxi licencing conditions	2020	Ongoing	Bedford Borough Council				2025/26	NO$_2$	Introduction of new policy with incentive for cleaner vehicles	Public consultation took place in 2024/25. Results will be reviewed to identify options	
19	Implement and enforce bus priority measures	Transport planning and infrastructure	Bus route improvements	2020	2021	Bedford Borough Council				Completed	NO$_2$	New bus lanes - Ampthill Rd	In place and operational	
20	Electrifying train line	Alternatives to private vehicle use	Other			Network Rail				Ongoing	NO$_2$	Train line electrified		BBC will continue to review, currently EWR has indicated the line will be Electrified via two different systems.
21	PM$_{2.5}$ education project	Public Information	Other	2024	2025	DEFRA and Local Authority	DEFRA & BBC	Funded		Implementation	PM$_{2.5}$ from wood burning	Greater awareness of PM$_{2.5}$ and behaviour changes for reduction	Project Complete	Short term funding and use of agency staff impacted delivery, Significant delivery of proposal achieved.
22	Electric Vehicle Charging Strategy	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2024	2027	Local Electric Vehicle Infrastructure (LEVI) Fund	Local Electric Vehicle Infrastructure (LEVI) Fund	Funded	£1,010,000	Ongoing	NO$_2$		Funding success, public consultation, planning phase	Anticipate installations commencing during 2026
24	Transporting Bedford 2030	Promoting Travel Alternatives	Promotion of cycling	2023	2030	Local authority, Active travel, Transport		N/A	£1 million - £10 million	Ongoing	Not yet known			
25	Air Quality steering group in place	Policy guidance and development control	Regional groups coordinating programmes to develop area wide strategies to reduce emissions and improve air quality	2019	Ongoing	Local Authority	N/A	N/A	N/A	Ongoing	NO$_2$	Inter-departmental communication	Reinstated after period of vacant post	

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
26	Herts and Beds Air Quality group meetings	Policy guidance and development control	Regional groups coordinating programmes to develop area wide strategies to reduce emissions and improve air quality		Ongoing	Various	N/A	N/A	N/A	Ongoing				
27	Transitioning of Fleet vehicles to electric	Promoting Low Emission Plant	Low emission fuels for stationary and mobile sources in public procurement	2022	ongoing	Local Authority	LA	N/A	N/A	Ongoing	NO_2	reduction in car use may lead to a NO_2 reduction	20 EV's on the fleet, with a 2 being added in 2024.	Funding shortfall and supply issues.
28	Tree Planting	Transport planning and infrastructure	Other	2021	ongoing	Local Authority, Forest of Marston Vale	DEFRA, LA, Resident sponsorship			Ongoing	Immeasurable		Nearly £1m in funding secured for tree planting projects and operations to date.	In 2024-25 planting season 2285 trees planted
29	Review of smoke control area and map updates for web site	Promoting Low Emission Plant	Regulations for fuel quality for low emission fuels for stationary and mobile sources	2020	2020	Local Authority				Completed	NO_2/PM	Smoke control maps reviewed	Reviewed again in 2024 and updated with additional content and information	
30	Publishing annual results and AQMA updates	Public information	Via internet	2020	ongoing	Local Authority	LA	N/A		Ongoing	NO_2	ASR reports are published annually on updated webpages	2024 ASR available September 2024	
31	Alternative travel leaflets distributed to encourage cycling/walking	Public information	Via leaflets	2021	2024	Local Authority	DEFRA & LA			Completed	NO_2		This was delivered in 2024 via DEFRA funded Lot Project Officer community and school outreach sessions.	
32	Continued compliance to ensure inspection permitted processed are fully compliant	Environmental permits	Other measure through permit systems and economic instruments	In place	Ongoing	Local Authority				Ongoing	NO_2/PM	All compliance inspections carried out and up to date		

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[1], 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.

Bedford Borough is taking the following measures to address PM$_{2.5}$:

In Bedford in 2023 (most current data at the time of writing) the fraction of mortality attributable to particulate air pollution (new method) was 5.3% according to the public health outcomes framework. This value is the lower than the East of England (5.4%) but higher than England (5.2%). The overall trend is a decrease since 2022.

[Public Health Outcomes Framework - Data - OHID (phe.org.uk)](#)

Bedford Borough Council does not currently monitor PM$_{2.5}$ concentrations via reference standard monitoring equipment, however, there are 6 Zephyr air quality monitors placed around the borough.

The results showed PM$_{10}$ and PM$_{2.5}$ levels below the limits required.

Modelled PM$_{2.5}$ background data from DEFRA for 2024 ([Background Mapping data for local authorities - 2018 - Defra, UK](#)) shows the maximum background level of 10.6 µg/m^3 at Elstow Interchange, Elstow, Kempston at a roundabout on the A421, some distance from residential properties or pedestrians. The second highest is Abbey Fields, close to the A421 with a value of 10.0 µg/m^3. The averaged modelled background PM$_{2.5}$ value for Bedford Borough in 2024 was 8.7 µg/m^3, a slight reduction from 2023 which was 8.8 µg/m^3.

Guidance on the impacts of burning solid fuels has been published on the Bedford Borough Council website to advise and educate residents regarding appliances used to burn solid fuels such as wood. Corporate social media has also been used to promote best practice and raise awareness, sharing DEFRA guidance on best practice to limit the

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

impacts of burning solid fuels. This was devised to enable ongoing use in the build up to colder months each year.

Education and promotional activities alongside the actions detailed for tackling NO_2 are anticipated to support the management of local sources of $PM_{2.5}$, within the limited fraction that can be impacted by actions within the Borough (traffic sources and wood burning etc.). Industrial sources will be controlled by the permitting process which limits emissions as required in the permitting legislation.

DEFRA funded was obtained in 2023/24 to undertake project work raising awareness of the domestic burning of solid fuels this included investigating compliance with restrictions and legal requirements relating to the sale of solid fuels. The project ran from June 2024 to January 2025.

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

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Bedford Borough Council undertook automatic (continuous) monitoring at 1 sites during 2024. Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The Hertfordshire and Bedfordshire - Air Quality monitoring service page presents automatic monitoring results for Bedford Borough with automatic monitoring results also available through the UK-Air website.

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

3.1.2 Non-Automatic Monitoring Sites

Bedford Borough Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 62 sites during 2024. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

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 (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

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

Figure A.2(b)– Trends in Annual Mean NO₂ Concentrations at diffusion tube locations

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

In 2024 there was one exceedances of the annual mean NO₂ objective of 40µg/m³ after bias adjustment and annualisation.

This was the same as the number of exceedances in 2023 which was also one, the local bias adjustment factor was also used in 2023.

There was one diffusion tube result within 10% of the 40 µg/m³ limit situated in the AQMA. This exceedance was on St Peters Street at 36.6 µg/m³ .

There were no exceedances of the hourly objective for the eighth year running. Breaches of the short-term hourly objective can relate to short term peaks in congestion/emissions where emissions of NO₂ can build up and be slow to disperse. Therefore, this

demonstrates reductions in this area are being maintained and follow the trend seen in annual mean results of reductions to NO_2.

Justification for the use of the local bias adjustment factor is provided in Appendix C, however, for context should the national factor have been used there would have been a minor change to these headline observations with no sites over 40 µg/m^3 similar to 2022 when the national bias adjustment was used due to poor data capture.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Which AQMA? [1]	Monitoring Technique	Distance to Relevant Exposure (m) [2]	Distance to kerb of nearest road (m) [1]	Inlet Height (m)
CM1	Prebend Street	Roadside	504496	249625	NO_2	Yes	AQMA 5	Chemiluminescent	1.0	4.2	1.5

Notes:

(1) N/A if not applicable

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

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT5	Bromham Road, Bedford	Roadside	503830	250070	NO_2	No	15.0	3.1	No	2.5
DT7	4 Bunyan Road, Kempston	Roadside	503160	247690	NO_2	No	1.8	1.4	No	2.5
DT10	1 Kirkstall Close, Bedford	Other	505968	248300	NO_2	No	5.0	2.0	No	2.5
DT12	8 The Lane, Wyboston	Roadside	516320	256640	NO_2	No	10.0	2.7	No	3.0

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)
DT13	Gt Nth Road, Wyboston - A1 South	Other	504790	248790	NO$_2$	No	8.0	2.6	No	3.0
DT14	Home Lane, Bedford	Roadside	505606	248632	NO$_2$	Yes - AQMA 5	2.6	2.7	No	2.4
DT16	Kempston Road, Bedford	Roadside	505590	250620	NO$_2$	Yes - AQMA 5	6.0	3.9	No	2.2
DT17	Ampthill Road, Bedford	Roadside	504570	249510	NO$_2$	Yes - AQMA 5	4.0	4.4	No	2.5
DT19	Kimbolton Road, Bedford	Roadside	505795	248855	NO$_2$	Yes - AQMA 5	9.0	1.1	No	0.3
DT20	Prebend Street, Bedford	Roadside	505395	248613	NO$_2$	Yes - AQMA 5	0.1	2.0	No	2.5
DT25	London Road crossroads	Roadside	505567	248723	NO$_2$	Yes - AQMA 5	2.9	2.4	No	3.0
DT28	Prebend St corner of commercial road	Roadside	503776	249930	NO$_2$	Yes - AQMA 5	2.8	2.5	No	2.4
DT29	Goldington Road opp uni	Roadside	506630	250281	NO$_2$	Yes - AQMA 5	4.0	2.5	No	2.0
DT30	High St collins jewlers	Urban Centre	505643	248748	NO$_2$	Yes - AQMA 5	2.0	1.4	No	2.3
DT31	High St Barovic jewellers	Urban Centre	505490	248792	NO$_2$	Yes - AQMA 5	0.1	2.0	No	3.0
DT33	Shakespeare Road/Bromham Rd Junction	Roadside	505380	248435	NO$_2$	Yes - AQMA 5	5.0	2.6	No	3.0
DT34	St Marys St Kings Arms PH	Roadside	505537	248445	NO$_2$	Yes - AQMA 5	0.5	2.4	No	3.0
DT35	Prebend St Crown Quay	Roadside	503794	249853	NO$_2$	Yes - AQMA 5	3.0	3.3	No	2.2

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)
DT36	37 Ashburnham Road	Roadside	505362	248485	NO_2	Yes - AQMA 5	2.0	2.0	No	3.0
DT40	YMCA Tavistock St	Roadside	505679	248776	NO_2	Yes - AQMA 5	6.0	2.1	No	2.5
DT42	28 St Johns St	Roadside	505569	248329	NO_2	Yes - AQMA 5	9.0	3.3	No	2.5
DT43	45 Dame Alice St	Roadside	505547	248743	NO_2	Yes - AQMA 5	0.6	2.3	No	3.0
DT44	Midland Road- outside No. 137,139A	Roadside	505437	248644	NO_2	Yes - AQMA 5	0.2	2.4	No	2.0
DT46	Midland Rd- outside Beegees opp Priory St	Urban Centre	505651	248729	NO_2	Yes - AQMA 5	1.4	1.2	No	3.0
DT47	On corner Harpur St – opp 51A	Urban Background	505514	248739	NO_2	Yes - AQMA 5	8.0	2.7	No	2.0
DT48	Outside Sound & Vision – Tavistock St	Urban Centre	505541	248898	NO_2	Yes - AQMA 5	3.0	1.9	No	2.5
DT50	Outside Seven Oak – St Peters St	Urban Centre	505771	248758	NO_2	Yes - AQMA 5	0.3	1.9	No	3.5
DT53	Outside Longstaff Gentle & Co – Harpur St	Roadside	505539	248768	NO_2	Yes - AQMA 5	1.9	2.5	No	2.5
DT54	Outside 63 – Union St	Roadside	505376	248896	NO_2	Yes - AQMA 5	1.7	2.3	No	3.0
DT55	Opp urban & Rural on corner – Bromham Rd	Roadside	505344	248670	NO_2	Yes - AQMA 5	4.0	2.4	No	2.5
DT57	Outside 110 Newnham Av	Roadside	506664	250199	NO_2	Yes - AQMA 5	2.4	1.2	No	2.2

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)
DT61	Outside 185 Goldington Rd	Kerbside	506542	250296	NO$_2$	Yes - AQMA 5	5.0	0.9	No	2.2
DT62	Outside 139 Goldington Rd	Kerbside	506655	250302	NO$_2$	Yes - AQMA 5	6.0	1.0	No	2.2
DT65	Outside no. 43 London Rd	Roadside	505634	248634	NO$_2$	Yes - AQMA 5	3.0	1.5	No	2.5
DT66, DT67, DT68	Monitoring station	Roadside	504496	249623	NO$_2$	Yes - AQMA 5	1.7	3.7	Yes	2.0
DT69	River Street, opposite chinese	Urban Centre	504646	249602	NO$_2$	Yes - AQMA 5	0.3	3.8	No	3.0
DT70	Outside bus station	Urban Centre	504636	249570	NO$_2$	Yes - AQMA 5	5.0	2.5	No	2.0
DT71	174 Ampthill Road , Bedford	Roadside	504625	248169	NO$_2$	No	3.0	4.4	No	2.5
DT72	150 Ampthill Road , Bedford	Roadside	504648	248257	NO$_2$	No	3.0	2.3	No	2.5
DT73	112 Ampthill Road , Bedford	Kerbside	504684	248388	NO$_2$	No	8.0	1.0	No	2.5
DT74, DT75, DT76	LS Monitor	Roadside	505044	249980	NO$_2$	Yes - AQMA 5	2.0	5.0	No	1.5
DT77	Green Lane, Stewartby	Roadside	501574	242181	NO$_2$	No	250.0	2.3	No	3.0
DT78	Churchill Close, Stewartby	Suburban	501878	242176	NO$_2$	No	5.0	1.9	No	2.5
DT80	Shakespeare Road/Clapham Rd junction	Roadside	503946	250765	NO$_2$	No	5.0	1.8	No	2.5
DT81	Brooklands Avenue, Wixams	Suburban	505273	245175	NO$_2$	No	4.0	1.7	No	3.0

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)
DT82	32 Fields Road, Wootton	Roadside	500968	244911	NO_2	No	5.0	1.6	No	2.5
DT83	37 Cemetery Rd, off Branston Way	Suburban	501595	247537	NO_2	No	7.0	1.7	No	2.5
DT85	Rope Walk/Cardington Road	Roadside	505493	249254	NO_2	No	10.0	1.5	No	2.5
DT86	Outside 33 Goldington Road (Rugby Club)	Roadside	505464	250142	NO_2	Yes - AQMA 5	2.0	1.5	No	2.5
DT89	St Peters street/High st junction	Roadside	505046	250040	NO_2	Yes - AQMA 5	2.0	1.9	No	2.5
DT91	High st (debenhams)	Roadside	505034	249844	NO_2	Yes - AQMA 5	15.0	2.0	No	3.5
DT92	Chesterton Mews (off Sidney Mews)	Urban Background	503762	250386	NO_2	No	10.0	1.0	No	2.0
DT93	Bell Farm Colesden Rd (outside Auto Sportivo)	Rural	512728	255827	NO_2	No	20.0	1.0	No	2.0
DT94	Chequers Hill (opp No 25), Wilden	Rural	509935	256019	NO_2	No	12.0	2.8	No	2.0
DT95	Chequers Hill, Wilden	Rural	510196	255468	NO_2	No	24.0	2.0	No	2.0
DT96	Entrance to Rectory Farm, Wilden	Rural	509098	255515	NO_2	No	150.0	1.5	No	2.0
DT97	Henley Rd outside block 65-79	Urban Background	504122	249639	NO_2	No	12.0	1.0	No	2.0

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)
DT98	205 Champion Way	Urban Background	504352	248823	NO$_2$	No	20.0	1.0	No	2.0

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (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 2024 (%) (2)	2020	2021	2022	2023	2024
CM1	504496	249625	Roadside	99.8	99.8	26	32	34	29	29.1

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

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

☒ **Where exceedances of the NO₂ annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2024.**

Notes:

The annual mean concentrations are presented as µg/m³.

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

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

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

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

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

Table A.4 – Annual Mean 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 2024 (%) (2)	2020	2021	2022	2023	2024
DT5	503830	250070	Roadside	100.0	100.0	17.9	22.8	20.4	22.7	24.4
DT7	503160	247690	Roadside	100.0	83.0	23.2	24.6	22.5	24.6	22.3
DT10	505968	248300	Other	100.0	83.0	19.3	18.9	17.9	18.9	18.9
DT12	516320	256640	Roadside	100.0	100.0	14.6	16.1	14.1	15.7	14.5
DT13	504790	248790	Other	100.0	90.6	21.6	22.5	18.2	18.5	17.1
DT14	505606	248632	Roadside	100.0	100.0	22.0	25.5	24.2	28.5	27.4
DT16	505590	250620	Roadside	100.0	84.9	21.1	26.0	23.8	27.0	28.8
DT17	504570	249510	Roadside	100.0	0.0	23.8	27.7	25.4	28.7	-
DT19	505795	248855	Roadside	100.0	100.0	21.1	21.4	19.4	19.9	21.0
DT20	505395	248613	Roadside	100.0	100.0	**41.3**	**43.3**	39.4	**40.9**	**40.5**
DT25	505567	248723	Roadside	100.0	92.5	30.6	34.0	29.8	32.3	31.9
DT28	503776	249930	Roadside	100.0	100.0	27.3	31.5	28.9	31.9	32.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT29	506630	250281	Roadside	100.0	100.0	26.4	30.7	28.2	28.2	29.7
DT30	505643	248748	Urban Centre	100.0	100.0	31.4	27.8	31.9	33.7	33.5
DT31	505490	248792	Urban Centre	100.0	100.0	28.2	24.0	33.8	36.1	36.0
DT33	505380	248435	Roadside	100.0	81.1	27.5	34.1	30.2	34.9	35.2
DT34	505537	248445	Roadside	100.0	92.5	30.1	31.2	31.4	34.4	32.9
DT35	503794	249853	Roadside	100.0	100.0	29.1	32.0	28.3	32.1	31.6
DT36	505362	248485	Roadside	100.0	100.0	26.8	30.1	27.0	28.5	27.8
DT40	505679	248776	Roadside	100.0	100.0	20.6	21.2	21.4	24.5	24.8
DT42	505569	248329	Roadside	100.0	100.0	30.1	35.0	30.8	33.5	31.9
DT43	505547	248743	Roadside	100.0	100.0	22.9	28.5	25.6	28.9	28.5
DT44	505437	248644	Roadside	100.0	92.5	33.3	35.8	30.5	33.6	33.0
DT46	505651	248729	Urban Centre	100.0	100.0	32.1	33.8	29.2	31.5	30.2
DT47	505514	248739	Urban Background	100.0	100.0	21.2	24.1	23.7	26.1	24.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT48	505541	248898	Urban Centre	100.0	100.0	29.6	31.4	29.3	30.7	29.2
DT50	505771	248758	Urban Centre	100.0	100.0	36.1	38.1	35.8	39.0	37.5
DT53	505539	248768	Roadside	100.0	100.0	25.7	27.5	26.5	27.3	24.5
DT54	505376	248896	Roadside	100.0	100.0	24.2	27.1	24.4	27.5	27.1
DT55	505344	248670	Roadside	100.0	100.0	22.5	27.1	25.6	28.0	28.4
DT57	506664	250199	Roadside	100.0	100.0	25.2	27.3	26.6	28.9	29.2
DT61	506542	250296	Kerbside	100.0	100.0	27.9	29.3	25.6	27.8	28.1
DT62	506655	250302	Kerbside	100.0	100.0	21.7	23.2	23.1	25.0	23.1
DT65	505634	248634	Roadside	100.0	83.0	26.3	25.6	25.8	28.8	29.3
DT66, DT67, DT68	504496	249623	Roadside	100.0	100.0	28.0	30.9	27.4	30.0	29.4
DT69	504646	249602	Urban Centre	100.0	100.0	24.0	26.5	25.2	27.4	28.1
DT70	504636	249570	Urban Centre	100.0	75.0	24.6	28.0	27.0	28.5	27.9
DT71	504625	248169	Roadside	100.0	90.6	26.7	29.2	26.3	27.3	25.1

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT72	504648	248257	Roadside	100.0	100.0	28.6	31.0	27.0	29.9	29.7
DT73	504684	248388	Kerbside	100.0	75.0	27.3	29.7	26.9	29.7	27.6
DT74, DT75, DT76	505044	249980	Roadside	100.0	100.0	21.5	18.0	19.8	21.9	20.6
DT77	501574	242181	Roadside	100.0	90.6	12.6	13.6	13.5	14.7	14.4
DT78	501878	242176	Suburban	100.0	100.0	10.4	11.4	10.8	11.2	11.2
DT80	503946	250765	Roadside	100.0	92.5	27.1	29.9	27.3	30.4	32.0
DT81	505273	245175	Suburban	100.0	100.0	15.2	17.2	14.6	16.8	16.1
DT82	500968	244911	Roadside	100.0	100.0	14.6	15.4	14.9	14.5	14.1
DT83	501595	247537	Suburban	100.0	100.0	18.4	19.9	18.7	19.2	18.4
DT85	505493	249254	Roadside	100.0	100.0	23.7	26.2	24.7	27.9	26.6
DT86	505464	250142	Roadside	100.0	92.5	23.4	25.6	23.6	24.6	23.8
DT89	505046	250040	Roadside	100.0	100.0			36.6	**40.6**	**40.2**
DT91	505034	249844	Roadside	100.0	75.0			22.7	23.4	24.1

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
DT92	503762	250386	Urban Background	100.0	81.1				14.2	15.6
DT93	512728	255827	Rural	100.0	92.5					6.5
DT94	509935	256019	Rural	100.0	100.0					9.0
DT95	510196	255468	Rural	100.0	67.9					8.9
DT96	509098	255515	Rural	100.0	100.0					8.1
DT97	504122	249639	Urban Background	100.0	75.0					14.8
DT98	504352	248823	Urban Background	100.0	100.0					16.5

☒ **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 NO₂ Concentrations at automatic station

Annual Mean NO₂ concentrations at automatic stations 2020-2024
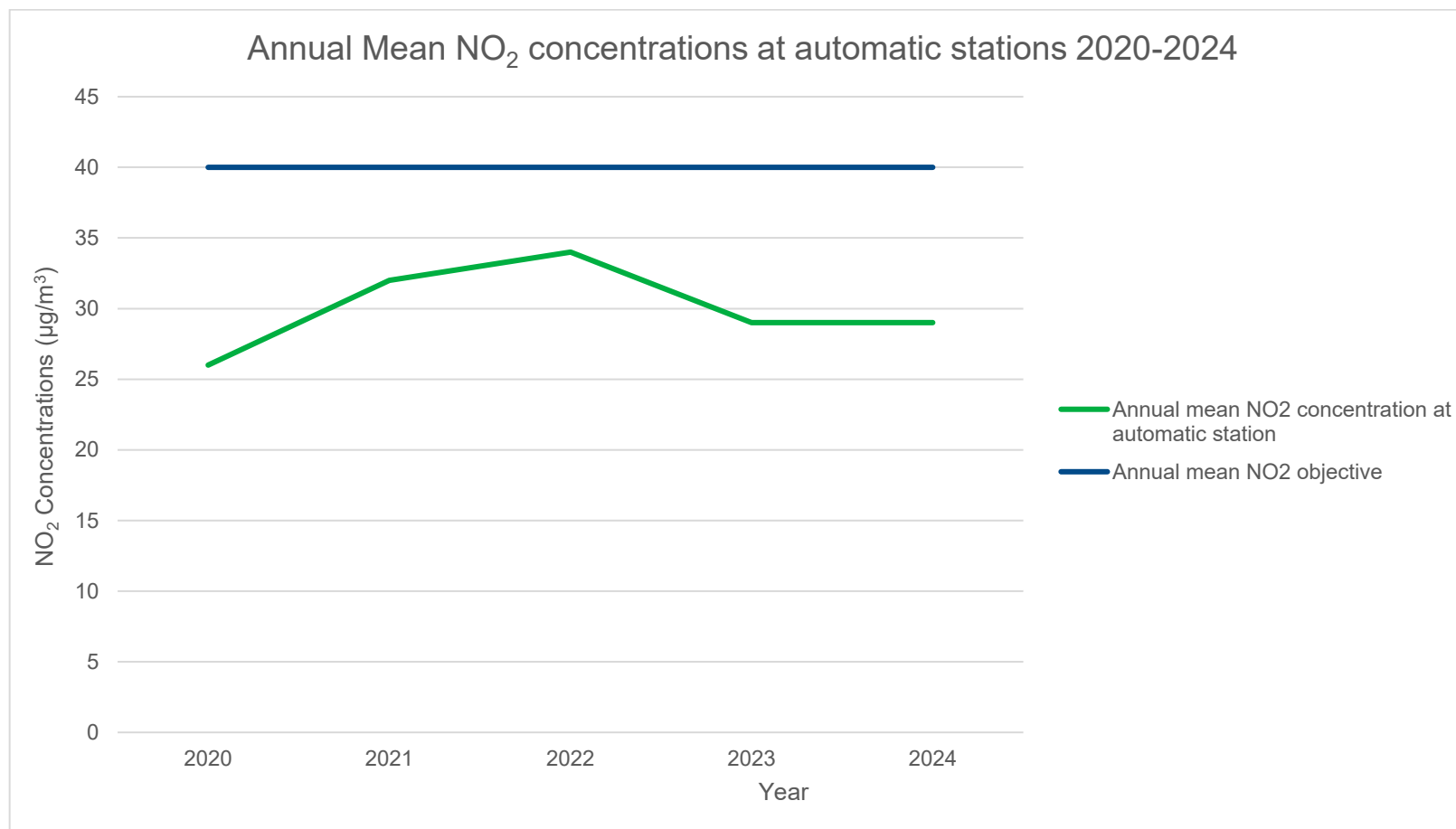
Figure A.2(a)– Trends in Annual Mean NO₂ Concentrations at diffusion tube locations
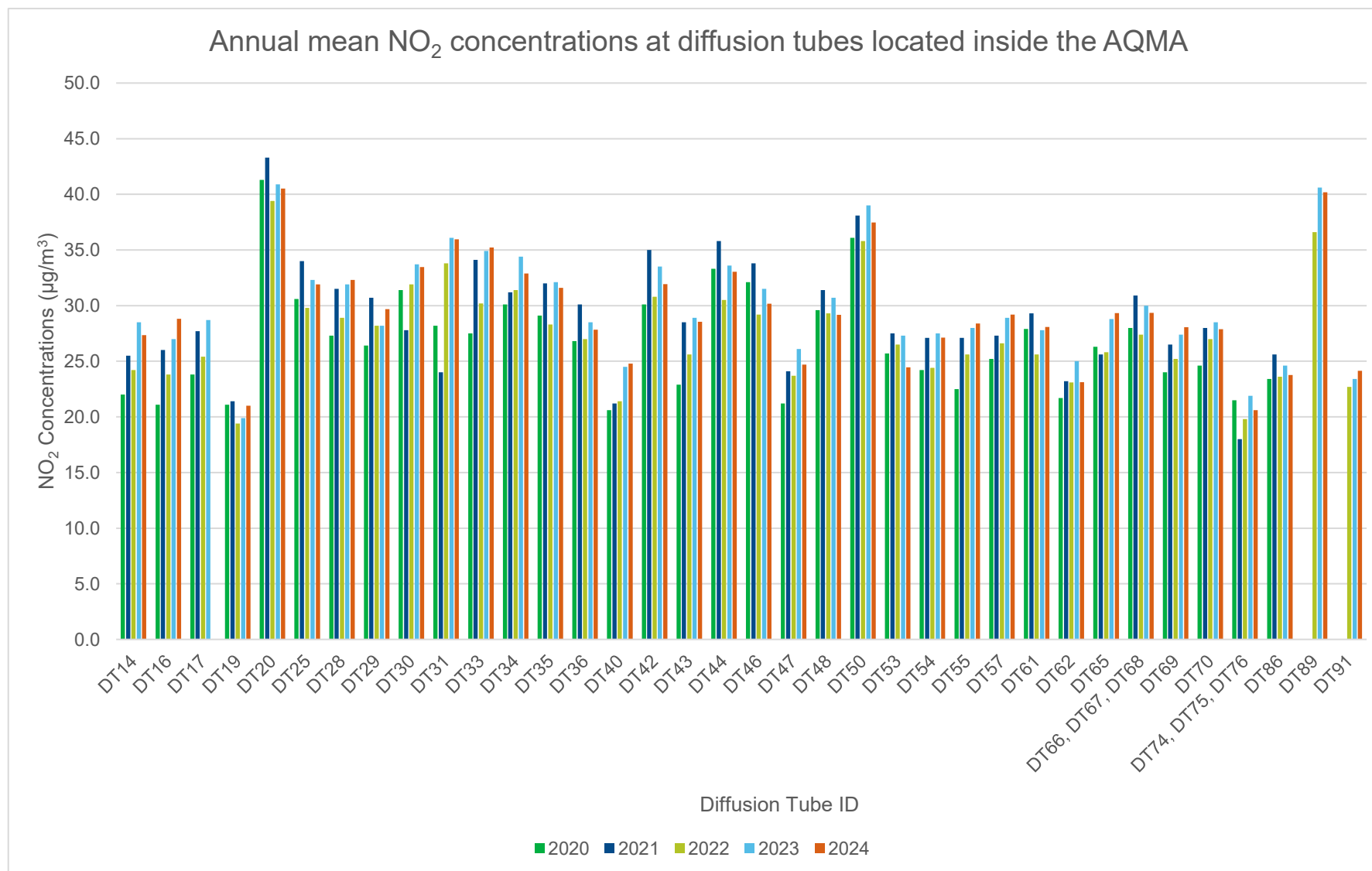
Annual mean NO₂ concentrations at diffusion tubes located inside the AQMA

Figure A.2(b)– Trends in Annual Mean NO$_2$ Concentrations at diffusion tube locations

Annual mean NO$_2$ concentrations at diffusion tubes outside the AQMA
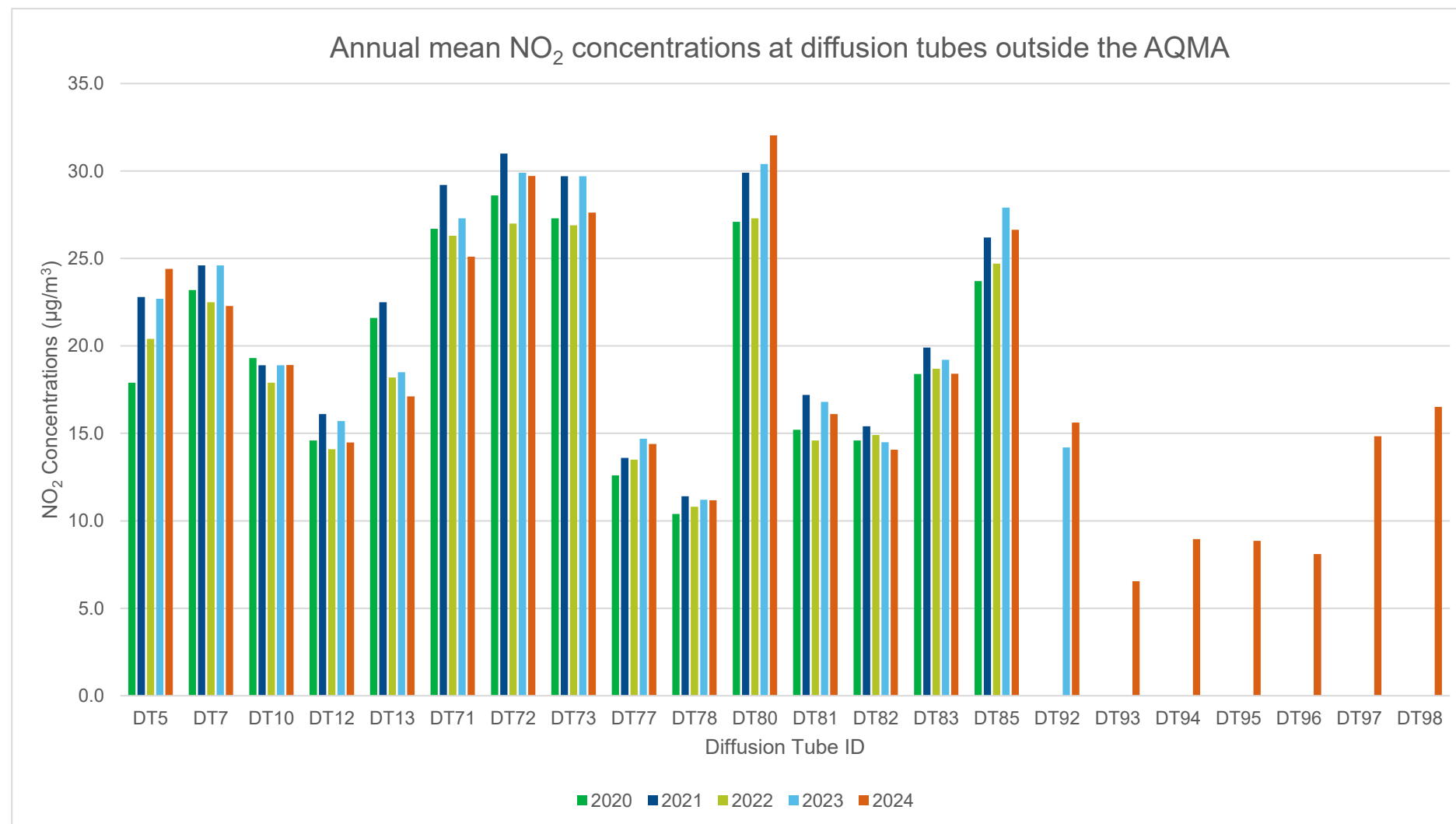
Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2024 (%) [2]	2020	2021	2022	2023	2024
CM1	504496	249625	Roadside	99.8	99.8	0	0	**0**	**0**	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO₂ 2024 Diffusion Tube Results (µg/m³)

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 (1.04)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT5	503830	250070	26.0	24.0	22.4		28.6	29.5	16.1	16.9	20.4	28.2	27.4	18.4	23.4	24.4		
DT7	503160	247690		26.4	16.6	20.1	21.8	19.2	19.3	18.5	23.0	24.2	25.0		21.4	22.3		
DT10	505968	248300	22.5	23.2	19.7			12.5	14.7	14.9	14.5	19.5	22.1	17.9	18.2	18.9		
DT12	516320	256640	17.1	14.7	14.0	10.2	11.0	10.6	11.0	12.9	13.4	16.5	20.6	14.8	13.9	14.5		
DT13	504790	248790	23.3	20.8	16.0	13.9	12.4	15.6	14.8		12.8	16.3	17.8	17.0	16.4	17.1		
DT14	505606	248632	28.3	44.1	29.0	20.6	23.7	21.8	23.4	21.8	24.6	33.1	31.1	13.5	26.3	27.4		
DT16	505590	250620	26.7	33.1		26.9	23.7	26.0		25.1	25.9	28.4	32.4	28.5	27.7	28.8		
DT17	504570	249510														-		Tube at location missing every time, tube has been raised to discourage in future.
DT19	505795	248855	26.5	26.0	18.9	16.2	15.5	16.4	14.6	16.4	17.5	25.4	26.4	22.2	20.2	21.0		
DT20	505395	248613	43.0	35.8	39.7	40.4	34.6	38.5	40.5	36.2	39.2	41.8	47.0	30.1	38.9	**40.5**	**40.2**	
DT25	505567	248723	34.6	41.1		19.9	28.7	30.6	31.8	19.5	24.6	34.9	37.6	33.6	30.6	31.9		
DT28	503776	249930	31.6	32.8	32.4	30.4	34.1	26.8	28.0	23.9	35.3	36.4	32.9	27.6	31.0	32.3		
DT29	506630	250281	33.7	30.1	31.3	25.3	27.5	25.3	26.4	22.7	28.9	33.8	30.4	26.7	28.5	29.7		
DT30	505643	248748	34.5	37.1	32.9	30.6	27.2	34.1	31.9	28.8	28.3	30.7	35.9	33.5	32.1	33.5		
DT31	505490	248792	40.1	37.0	38.2	32.8	34.6	30.4	30.9	28.8	34.5	37.0	37.2	32.8	34.5	36.0		
DT33	505380	248435	42.2		35.8	38.1		31.4	33.6	20.9	29.2	37.2	37.7	32.0	33.8	35.2		
DT34	505537	248445	33.5	33.7	32.4	30.4	34.7	26.5	29.6	26.2	36.6	35.3		28.5	31.6	32.9		

Site ID	Easting	Northing															Annual	Notes
DT35	503794	249853	33.3	32.9	29.6	27.3	26.2	30.4	27.7	26.8	30.2	31.7	37.2	30.8	30.3	31.6		
DT36	505362	248485	29.7	28.2	30.2	24.2	26.1	22.2	24.7	23.3	32.9	15.8	33.6	29.7	26.7	27.8		
DT40	505679	248776	36.9	25.2	20.4	19.4	30.9	27.9	16.9	16.1	19.2	25.9	26.2	20.7	23.8	24.8		
DT42	505569	248329	32.4	31.0	26.9	29.7	35.2	19.4	29.9	26.9	36.9	36.3	36.5	26.8	30.7	31.9		
DT43	505547	248743	27.6	30.3	28.2	28.1	26.2	23.8	24.4	22.0	29.3	29.3	32.4	27.4	27.4	28.5		
DT44	505437	248644	34.6	34.8	27.6	29.9	32.7		26.1	29.2	39.9	32.7	33.3	28.2	31.7	33.0		
DT46	505651	248729	31.7	33.8	31.6	27.2	28.4	25.6	29.8	23.9	27.5	27.5	32.7	27.9	29.0	30.2		
DT47	505514	248739	26.1	29.1	26.2	22.3	27.6	19.4	18.3	20.3	20.4	25.4	26.8	22.4	23.7	24.7		
DT48	505541	248898	26.3	34.1	30.6	31.1	17.4	15.8	29.1	26.6	28.8	34.1	33.7	28.4	28.0	29.2		
DT50	505771	248758	32.8	41.1	40.2	34.9	34.4	35.6	34.0	35.3	35.6	37.1	39.2	31.5	36.0	37.5	**36.6**	
DT53	505539	248768	24.1	25.7	22.8	19.1	19.3	16.6	23.1	16.8	26.0	30.9	33.5	24.0	23.5	24.5		
DT54	505376	248896	29.3	28.3	22.9	23.0	25.3	22.1	24.2	23.2	28.2	30.8	32.1	22.9	26.0	27.1		
DT55	505344	248670	27.8	30.1	26.5	25.8	23.5	21.8	23.2	24.1	30.8	33.5	32.6	27.3	27.3	28.4		
DT57	506664	250199	38.2	31.1	27.0	24.5	23.4	24.6	22.8	23.4	26.8	32.6	34.4	27.7	28.0	29.2		
DT61	506542	250296	31.2	35.6	30.8	22.6	24.3	20.4	25.2	23.4	17.5	34.5	31.7	26.4	27.0	28.1		
DT62	506655	250302	27.4	26.6	21.2	17.3	17.8	17.7	17.0	17.8	23.8	26.2	29.3	24.2	22.2	23.1		
DT65	505634	248634		26.3	35.9	31.8		23.3	20.2	30.0	30.0	28.6	29.5	25.9	28.2	29.3		
DT66	504496	249623	32.2	31.8	28.8	27.2	29.3	25.6	26.0	23.2	26.7	30.5	30.1	26.5	-	-		Triplicate Site with DT66, DT67 and DT68 - Annual data provided for DT68 only
DT67	504496	249623	30.2	30.2	28.7	27.3	26.8	25.3	27.8	25.2	28.3	32.3	31.8	25.2	-	-		Triplicate Site with DT66, DT67 and DT68 - Annual data provided for DT68 only
DT68	504496	249623	28.2	32.3	28.9	25.8	27.7	25.1	27.9	25.2	29.3	30.7	31.3	25.5	28.2	29.4		Triplicate Site with DT66, DT67 and DT68 - Annual data provided for DT68 only
DT69	504646	249602	28.6	31.8	24.4	23.3	23.6	24.8	25.1	23.3	30.1	31.7	31.3	25.3	26.9	28.1		
DT70	504636	249570	26.9		29.1	25.1	24.4	24.3	24.0		26.1	30.0	31.0		26.8	27.9		
DT71	504625	248169	33.6	26.9	29.5	17.1	21.0	19.5	19.3	20.0	25.6		30.0	22.4	24.1	25.1		

Site	X	Y																Notes
DT72	504648	248257	32.2	30.5	32.3	23.3	21.7	24.6	26.3	27.7	27.8	29.2	35.4	31.5	28.5	29.7		
DT73	504684	248388	30.0	30.4	33.9		23.7	23.3	17.7	22.1			32.5	25.0	26.5	27.6		
DT74	505044	249980	24.0	23.8	20.7	17.5	16.6	17.7	16.5	16.7	19.1	23.4	24.2	20.8	-	-		Triplicate Site with DT74, DT75 and DT76 - Annual data provided for DT76 only
DT75	505044	249980	23.3	25.3	20.3	17.4	16.5	17.6	16.6	16.7	17.3	20.7	24.2	20.1	-	-		Triplicate Site with DT74, DT75 and DT76 - Annual data provided for DT76 only
DT76	505044	249980	37.6	24.4	21.5	17.1	17.1	16.1	17.4	16.6	18.4	2.6	26.8	19.9	19.8	20.6		Triplicate Site with DT74, DT75 and DT76 - Annual data provided for DT76 only
DT77	501574	242181	18.9	15.7	12.2	8.5	11.7	11.8	10.6		10.7	15.6	20.2	16.2	13.8	14.4		
DT78	501878	242176	16.1	11.7	9.9	11.9	8.2	6.7	7.2	8.3	9.5	11.7	15.6	12.0	10.7	11.2		
DT80	503946	250765	36.4	31.1	29.3	26.8	30.1	25.7		28.7	32.1	35.5	35.3	27.5	30.8	32.0		
DT81	505273	245175	21.2	19.2	13.6	12.5	12.8	11.9	11.3	11.5	15.5	17.2	22.3	16.7	15.5	16.1		
DT82	500968	244911	18.9	16.8	13.0	10.1	10.6	8.6	10.0	9.5	12.8	16.9	20.8	14.2	13.5	14.1		
DT83	501595	247537	22.1	20.7	14.1	15.2	16.7	15.0	15.5	14.4	17.8	21.8	23.6	15.3	17.7	18.4		
DT85	505493	249254	28.0	30.0	28.0	17.7	24.9	31.0	22.4	21.0	24.7	27.3	30.7	21.2	25.6	26.6		
DT86	505464	250142		31.0	23.9	20.0	18.5	17.6	20.8	14.7	22.2	28.8	28.1	25.4	22.8	23.8		
DT89	505046	250040	37.5	44.3	45.2	34.0	38.0	35.7	38.2	33.1	38.6	39.2	43.7	35.4	38.6	**40.2**	**35.3**	
DT91	505034	249844	27.5	26.9	24.3	20.1			15.5	16.2		25.1	29.5	23.5	23.2	24.1		
DT92	503762	250386	21.6		16.1	12.7	11.8	10.9	10.8		13.8	20.2	17.3	14.7	15.0	15.6		
DT93	512728	255827	12.0	9.1	7.9	4.9	4.5	4.1	4.4	5.4	6.9	8.8		1.2	6.3	6.5		
DT94	509935	256019	13.1	11.0	8.9	5.7	6.5	5.1	6.2	6.6	7.8	11.4	12.2	8.7	8.6	9.0		
DT95	510196	255468		10.4	9.9		7.0	5.2	6.4	6.8	8.3	10.9			8.1	8.9		
DT96	509098	255515	12.2	10.1	8.5	5.5	5.3	4.9	5.5	5.2	7.2	9.7	10.9	8.3	7.8	8.1		
DT97	504122	249639		20.4	18.5		12.4	9.3	9.9	11.7	13.5	15.5	16.9		14.2	14.8		
DT98	504352	248823	21.8	20.6	21.5	13.0	12.3	11.0	12.2	12.3	12.7	19.0	19.0	14.8	15.9	16.5		

☒ **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.**

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

Notes:

Exceedances of the NO$_2$ annual mean objective of 40µg/m^3 are shown in **bold**.

NO$_2$ annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO$_2$ 1-hour mean objective are shown in **<u>bold and underlined</u>**.

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 Bedford Borough During 2024

In late 2023, the possibility of a significant development incorporating a theme park and resort complex to the south of the Borough was announced. At the time of writing, the developer is undertaking a range of assessments and engaging with a range of local partners, progress will continue to be considered as project progress and announcements are made with the oversight and assessment of the of the development and application for permission being untaken by MHCLG.

The service continues to monitor progress with the East West Rail; details of the project can be found on the following webpages: East West Rail | Home.

Additional Air Quality Works Undertaken by Bedford Borough During 2024

Bedford Borough has not completed any additional works within the reporting year of 2024.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes used by Bedford Borough Council were analysed by Gradko International ltd using a preparation method of 20% TEA in water. The laboratory is UKAS accredited, ensuring conformance with the requirements of ISO/IEC 17025.

The monitoring was undertaken in adherence to the 2023 diffusion tube monitoring calendar.

Diffusion Tube Annualisation

Annualisation was required for one diffusion tubes, this was DT95. Annualisation was carried out as detailed in TG22 using continuous monitoring data from the three sources. The Annual Mean/Period Mean ratios are calculated (Am/Pm) and averaged to provide an annualisation factor for each site requiring annualisation. These and the final annualised average NO_2 concentration for the diffusion tube site is presented in table C2 below.

Annualisation figures were obtained using data from Prebend Street, as well as Northampton Spring Park and Wicken Fen, which are national monitors, measuring background data within 50 miles.

Table C.1 – Annualisation Summary (concentrations presented in µg/m³)

Site ID	Annualisation Factor Northampton Spring Park	Annualisation Factor Wicken Fen	Annualisation Factor Prebend Street	Annualisation Factor <Site 4 Name>	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
DT95	1.0774	1.0202	1.0398		1.0458	8.1	8.5

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2024 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.

Bedford Borough have applied a local bias adjustment factor of 1.04 to the 2024 monitoring data. A summary of bias adjustment factors used by Bedford Borough the past five years is presented in Table C.2.

The data was obtained from the co-location studies at Prebend Street in Bedford and following the guidance in TG22. The data has good overall precision and good data capture.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	Local	-	1.04
2023	Local	-	0.98
2022	National	03/23	0.83
2021	Local	-	0.91
2020	Local	-	0.86

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	12				
Bias Factor A	1.04 (0.94 - 1.15)				
Bias Factor B	-4% (-13% - 6%)				
Diffusion Tube Mean (µg/m³)	28.2				
Mean CV (Precision)	3.4%				
Automatic Mean (µg/m³)	29.2				
Data Capture	98%				
Adjusted Tube Mean (µg/m³)	29 (26-32)				

Notes:

A single local bias adjustment factor has been used to bias adjust the 2024 diffusion tube results.

NO$_2$ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO$_2$ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO$_2$ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO$_2$ concentrations corrected for distance are presented in Table B.1. Three sites were calculated for distance correction DT20, DT50 and DT89.

Table C.4 – Non-Automatic NO$_2$ Fall off With Distance Calculations (concentrations presented in µg/m³)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
DT20	2.0	2.1	40.5	11.2	**40.2**	*Predicted concentration at Receptor above AQS objective.*
DT50	1.9	2.2	37.5	10.8	*36.6*	*Predicted concentration at Receptor within 10% the AQS objective.*
DT89	1.9	3.9	40.2	10.8	35.3	

QA/QC of Automatic Monitoring

In 2024 Bedford Borough Council have a service and maintenance contract for the monitoring station with ESU1, which includes 2 scheduled on-site services per annum. There is also have a 48hour call out for any problems that may occur.

Monthly calibrations are carried out by the local authority and results sent to Ricardo Air quality measurements from automatic instruments were validated and ratified to the standards described in the Local Air Quality Management – Technical Guidance LAQM TG (16) by Ricardo. Current readings and historic data are available at: [Hertfordshire and Bedfordshire - Air Quality monitoring service](#)

Automatic Monitoring Annualisation

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

NO$_2$ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO$_2$ concentration at the nearest location relevant for exposure has been estimated using the NO$_2$ fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO$_2$ concentrations corrected for distance are presented in Table A.3.

No automatic NO$_2$ monitoring locations within Bedford Borough required distance correction during 2024.

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

Figure D.1 – Map of Non-Automatic Monitoring Site Showing Bedford Borough boundary and diffusion tube locations indicated
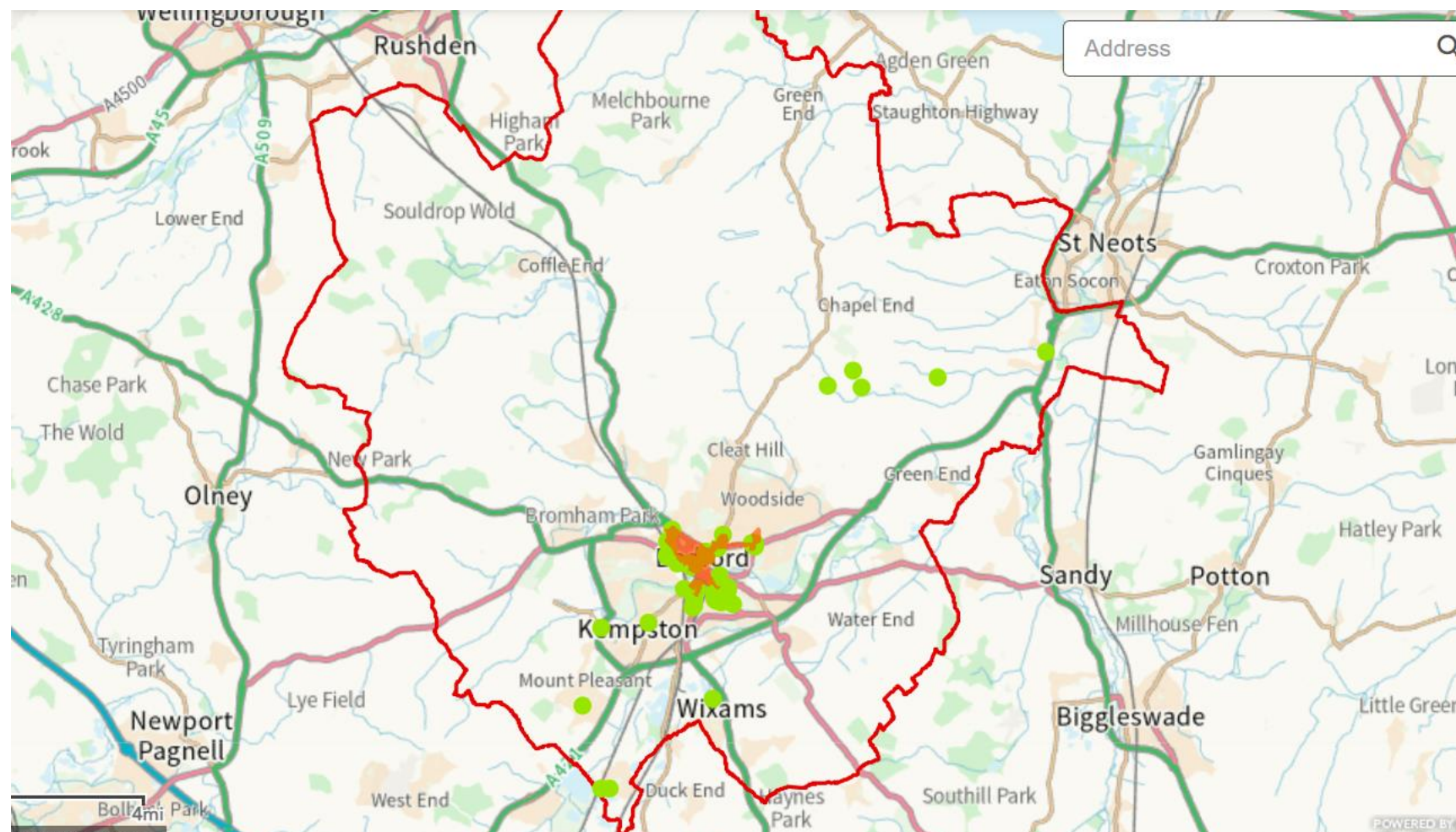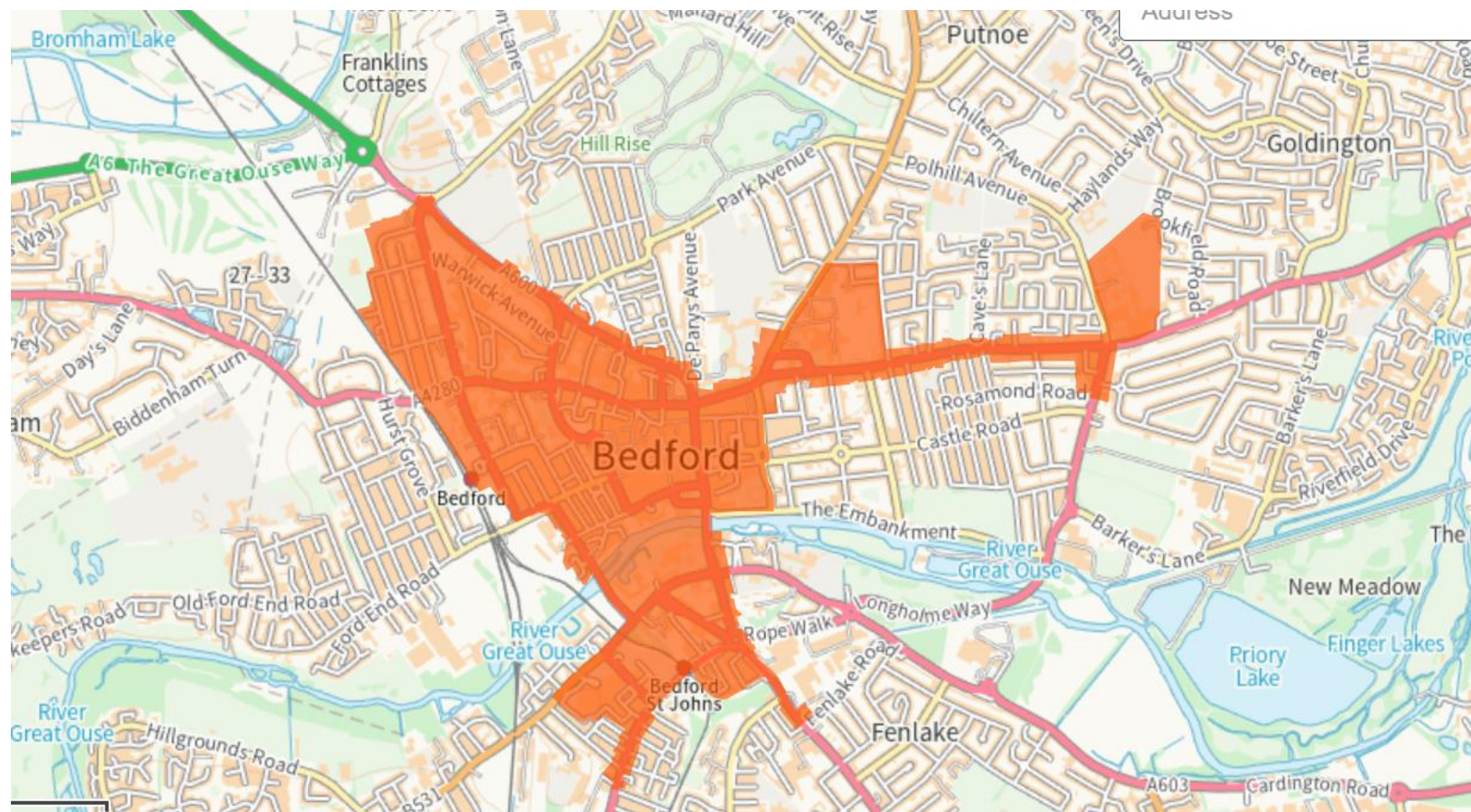
Figure D.2(a) – Map Showing Outline of the AQMA

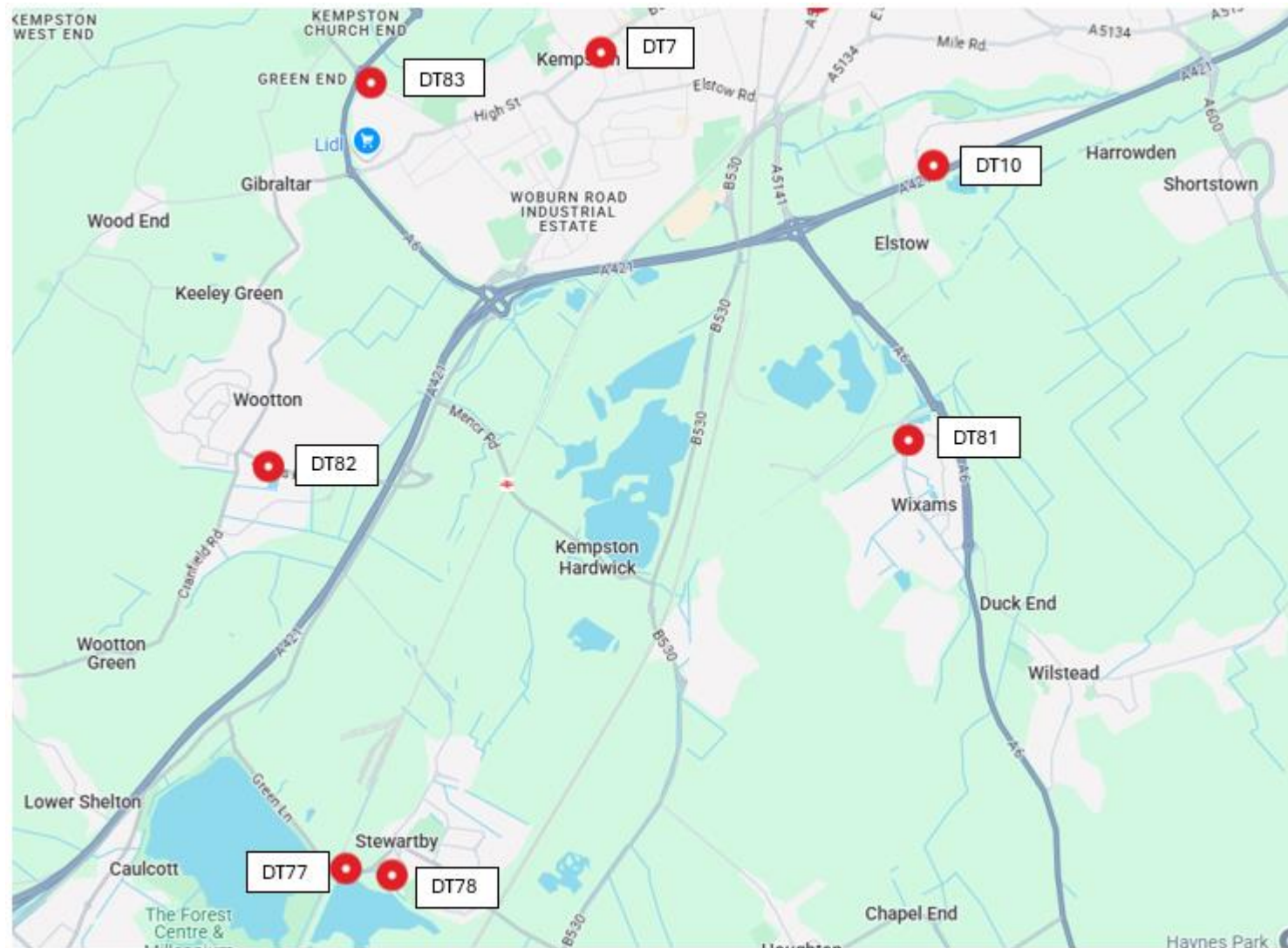**Figure D.2 – Map indicating diffusion tubes south of Bedford Town Centre**

Figure D.2(a) – Additional map indicating diffusion tubes south of Bedford Town Centre

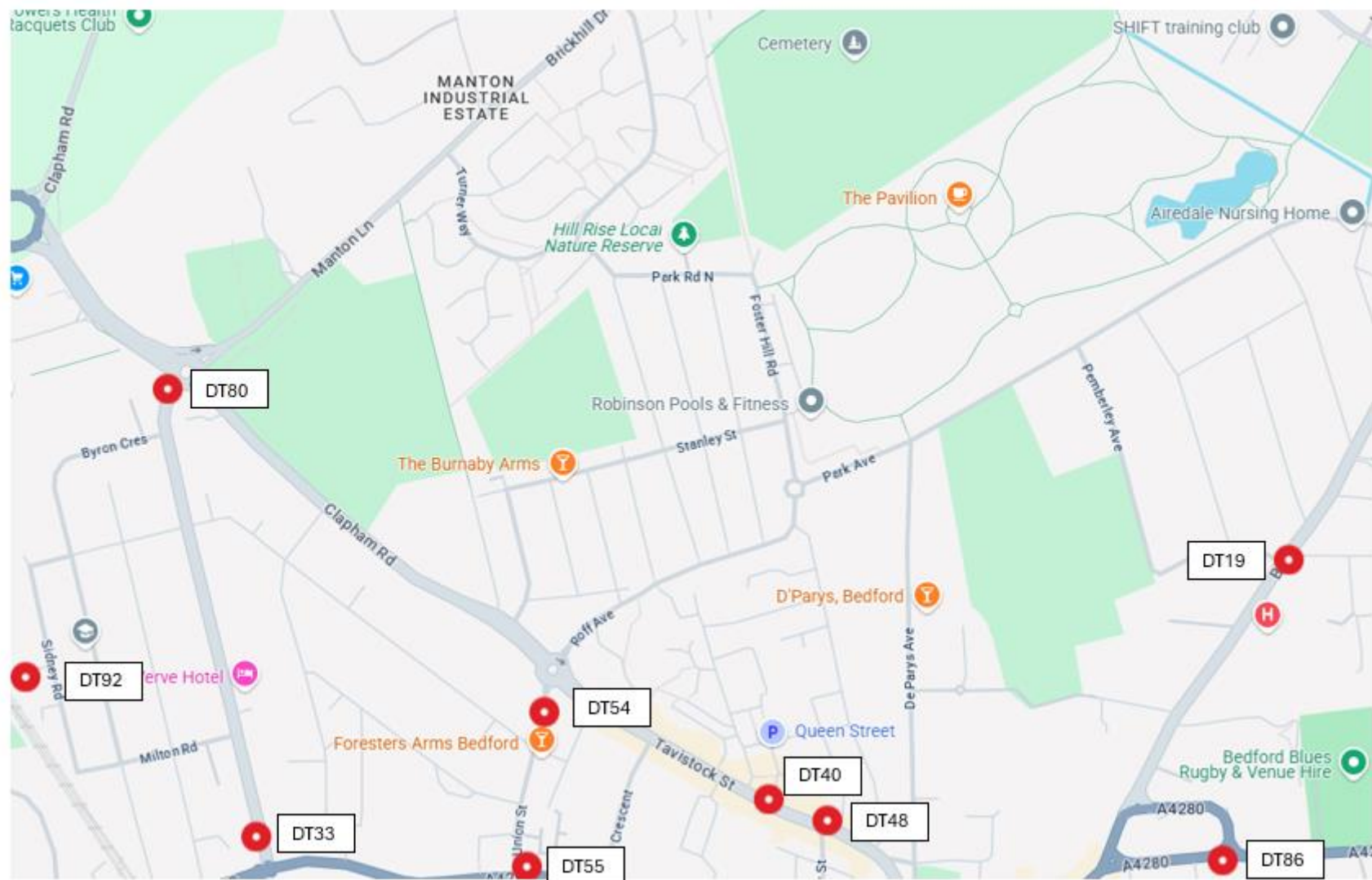**Figure D.3 – Map of diffusion tube locations Bedford Town Centre**

Figure D.4 – Map of diffusion tube locations North of Bedford Town Centre

Figure D.5 – Map of diffusion tube locations East of Bedford Town Centre
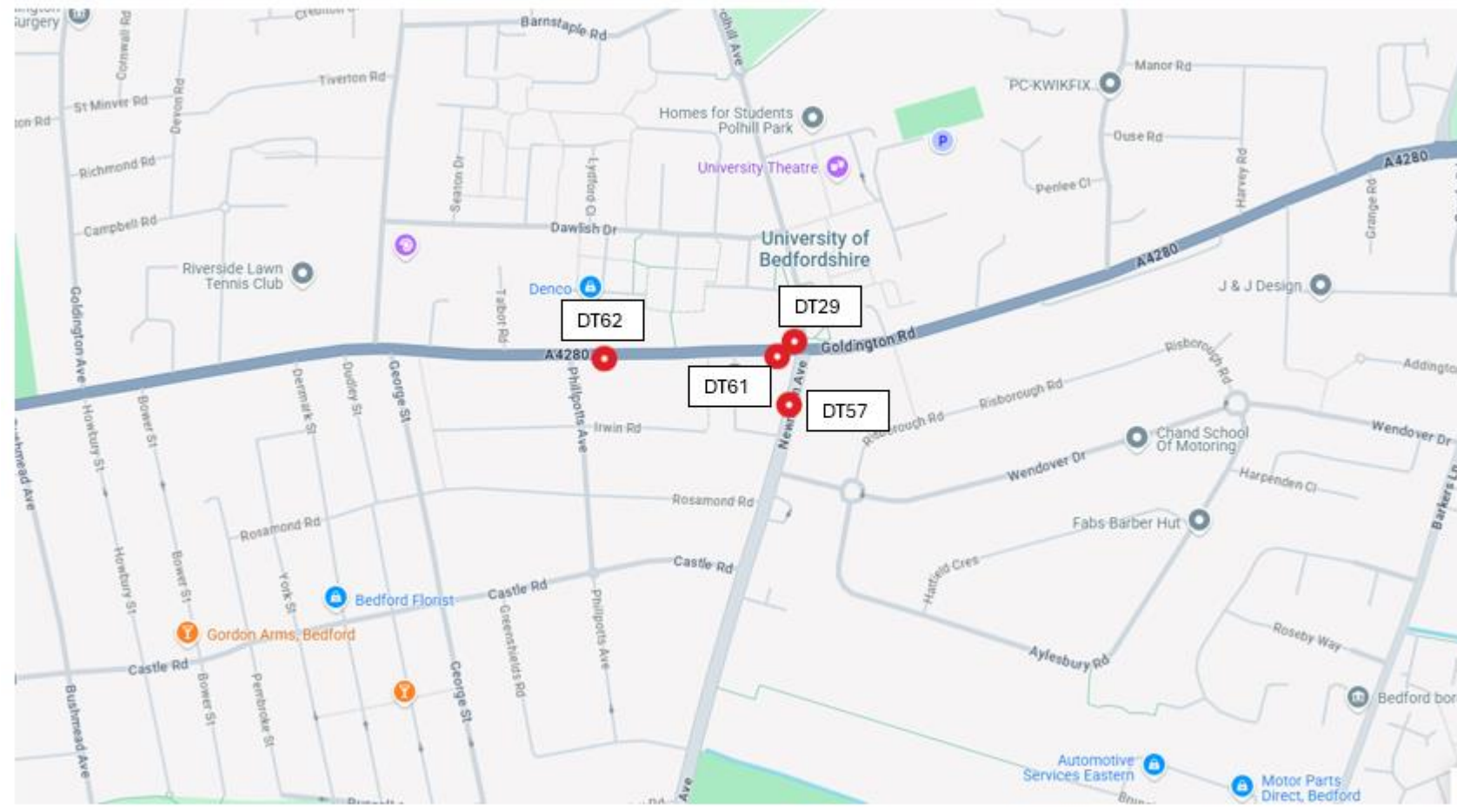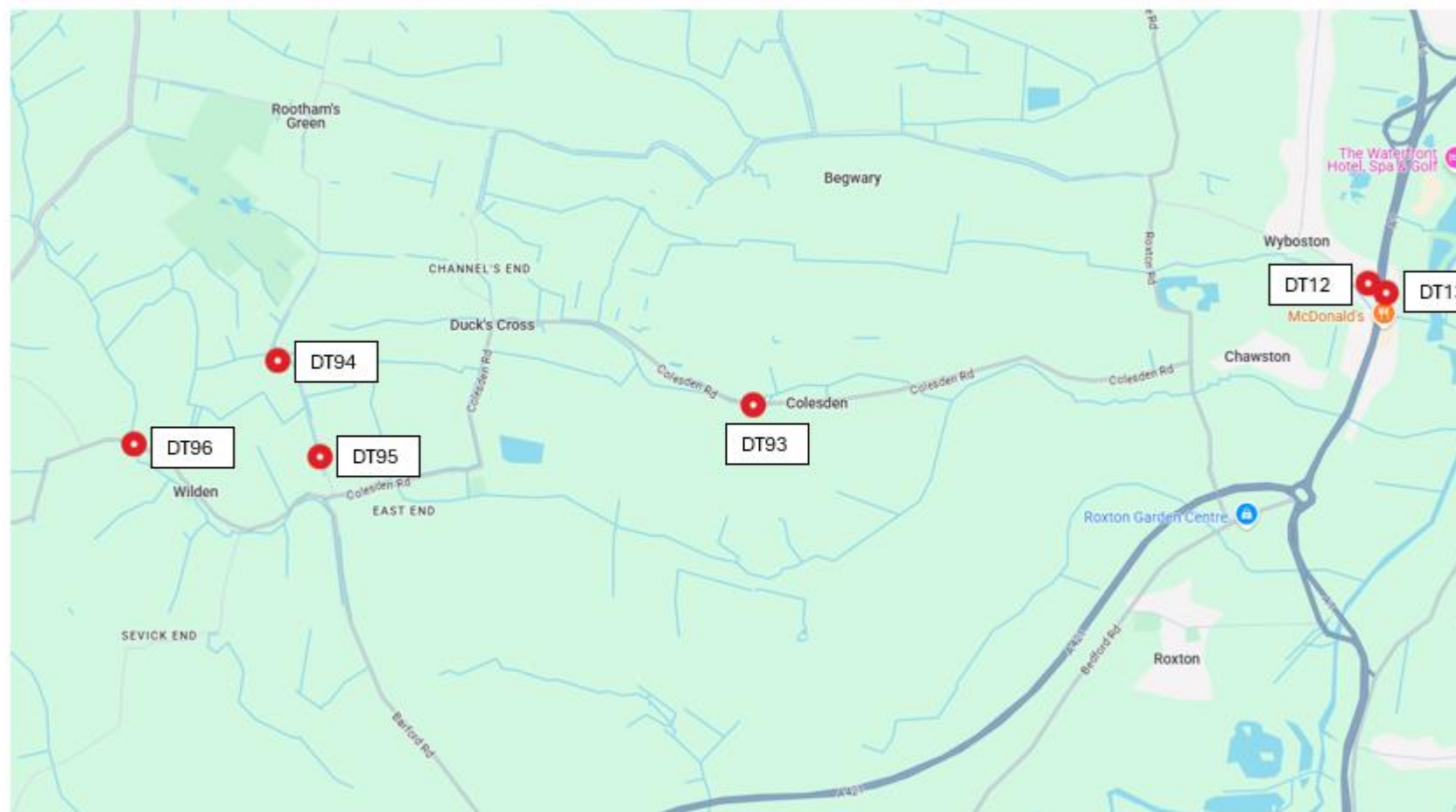
Figure D.6 – Map of diffusion tube locations Northeast of Bedford Town Centre, rural locations and around A1

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[2]

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	200µg/m³ not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40µg/m³	Annual mean
Particulate Matter (PM_{10})	50µg/m³, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	40µg/m³	Annual mean
Sulphur Dioxide (SO_2)	350µg/m³, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125µg/m³, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m³, not to be exceeded more than 35 times a year	15-minute mean

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[2] The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

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

References

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