2023 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

July 2023

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Executive Summary: Air Quality in Our Area

Air Quality in Babergh and Mid Suffolk

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

The Babergh and Mid Suffolk districts are predominantly rural, with a few small market towns. Most of the non-residential area is used for agricultural activity.

Industrial activity in the districts is light with very few large industrial processes. As such, industry has relatively little impact on air quality. No new sources of significant industrial emissions began operation in 2022. Planning applications for biomass boilers, large residential developments, mixed industrial uses, and logistics sites were assessed, but no significant emissions were predicted.

The main transport routes within the districts are the railway between London and Norwich, and the A12, A14 and A140 roads; none of which have previously been found to be of significance to air quality. No significant changes have been made to transport routes within either district during 2022.

Within the Babergh and Mid Suffolk districts, the main air pollutant of concern is Nitrogen dioxide. The primary source of Nitrogen dioxide within the districts is emissions from road

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[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

[3] Defra. Air quality appraisal: damage cost guidance, January 2023

[4] Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

transport. Monitoring is conducted to measure concentrations of Nitrogen dioxide. In the past, this monitoring has shown that within specific areas of Cross Street, Sudbury (within the Babergh district), concentrations of Nitrogen dioxide have been higher than the health based annual mean air quality objective. As a result of the exceedances of the annual mean objective for Nitrogen dioxide, an Air Quality Management Area (AQMA) was designated in 2008 for a section of Cross Street, Sudbury. Further information about the AQMA can be found at

https://uk-air.defra.gov.uk/aqma/details?aqma_ref=635. This is the only AQMA within the Babergh district, and there are no AQMAs within the Mid Suffolk district.

The exceedances of the objective at locations on Cross Street were because of emissions from road transport, local highways design and local topography. In January 2020, two sets of on-street parking bays were removed from Cross Street, under an Experimental Traffic Regulation Order (TRO), which was the principal action of the Air Quality Action Plan (AQAP). This meant that traffic could flow freely in both lanes, rather than being forced into one lane to overtake the vehicles parked in the bays. The photographs below show the difference.

Photograph 1: Traffic passes the parking bays by entering the northbound lane

Photograph 2: Without the bays, traffic no longer needs to enter the northbound lane

Traffic travelling southbound no longer has to enter the northbound lane. Furthermore, vehicles do not have to queue to pass parked vehicles, with the associated braking, idling, and accelerating. These were all matters that were thought to be leading to elevated Nitrogen dioxide concentrations at properties on the west of Cross Street.

The intention was for the Experimental TRO to be in place for 18 months, during which the results for the 2020 calendar year would be analysed, and this would influence whether the TRO was made permanent. However, due to the Covid-19 pandemic, traffic flows were lower than usual during 2020. Although Nitrogen dioxide concentrations fell on Cross Street during 2020, it was not possible to quantify the impact of the lower traffic volumes compared to the removal of the on-street parking bays. However, towards the end of the 18-month period, a decision had to be taken by Suffolk County Council, Highways Department as to whether the TRO should be made permanent, or the parking bays reintroduced. It was decided to make the TRO permanent due to the benefits to air quality, and it remains in place to date.

During 2022, there were no exceedances of the objective in the Babergh or Mid Suffolk districts. The 2022 bias adjusted mean Nitrogen dioxide concentration at each monitoring location was very similar to the 2021 result. Over the last five years, the general trend

across the districts has been that results for 2018 and 2019 were similar to each other, then there was a significant reduction in 2020, and a slight increase to 2021 and 2022.

The AQMA must remain in force until further data is gathered to show the impact of removing the on-street parking bays along with the longer-term traffic flows, as a 'new normal' is being established. The AQMA will not be amended in any way now.

It appears that the results in Babergh and Mid Suffolk are in line with national trends, caused by traffic flows settling down after the Covid-19 pandemic, reduced emissions from newer vehicles and increasing numbers of Electric Vehicles (EVs).

In addition to the above monitoring, Babergh and Mid Suffolk District Councils are working with Suffolk County Council to implement a range of policies and strategies that have a positive impact on air quality. This includes actions within Suffolk County Council's Transport Strategy relating to sustainable planning developments[5] and assisting in the development of the Suffolk County Council Air Quality Strategy (in a draft phase). Officers have worked with Public Health at Suffolk County Council to conduct initiatives linked to Clean Air Day, to be involved in an 'Air Quality Summit' – an information sharing event attended by Councillors and Officers from across the Suffolk Councils – and to improve networking opportunities which will be beneficial for future projects. Air Quality Officers across the Suffolk Councils continue to share knowledge and work on joint projects. There has been work with the University of Suffolk to share expertise and create networking links. Officers have liaised with the Environment Agency as necessary, mainly in relation to the control of industrial emissions by the Environmental Permitting regime.

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[6] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term $PM_{2.5}$ targets. The National Air Quality Strategy, due to be published in 2023, will provide more

[5] Suffolk Local Transport Plan 2011 – 2031, Suffolk County Council

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

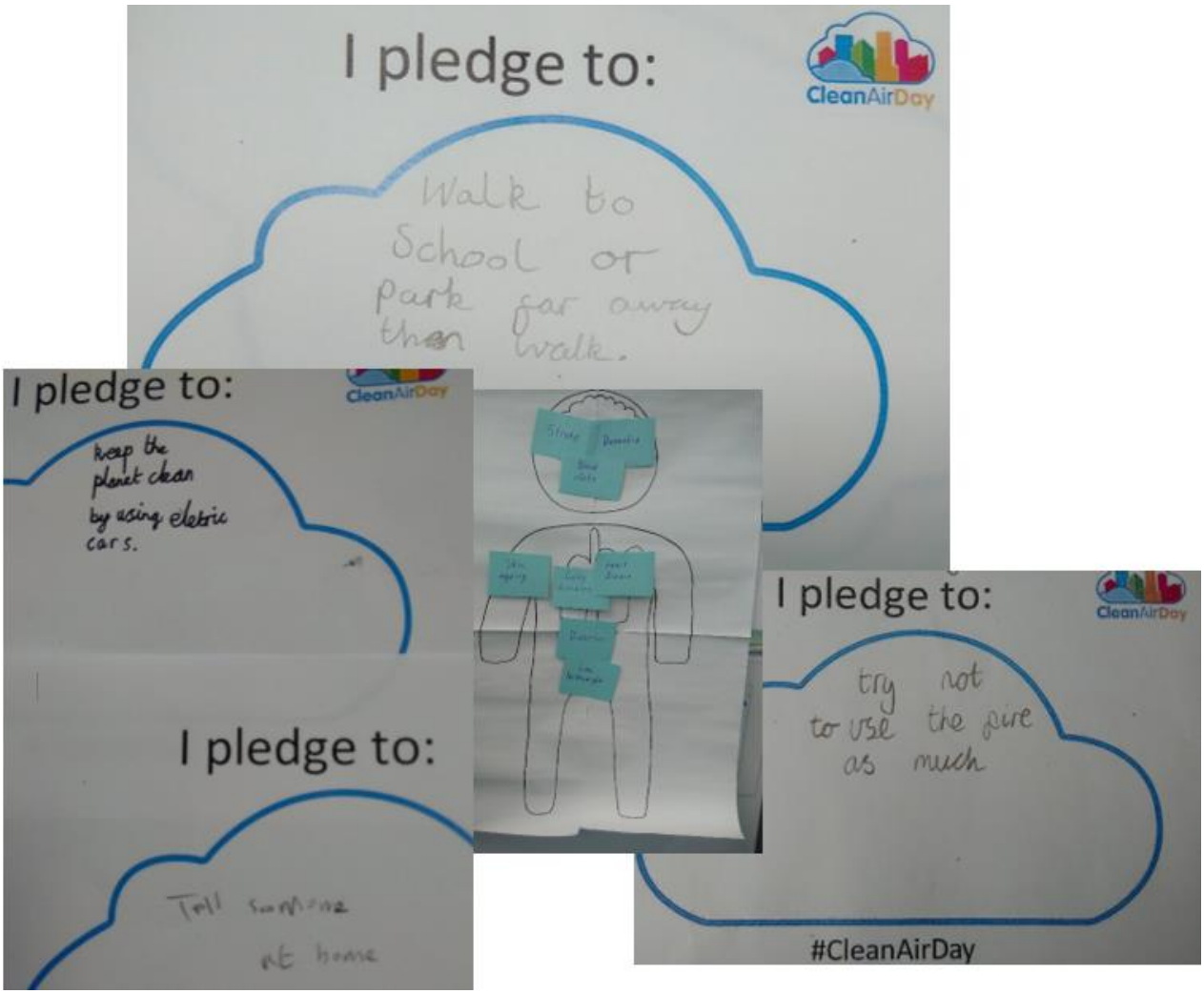
information on local authorities' responsibilities to work towards these new targets and reduce $PM_{2.5}$ in their areas. The Road to Zero[7] details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of AQMAs are designated due to elevated concentrations heavily influenced by transport emissions.

The key action during 2022 has been monitoring the effect of the permanent TRO in Cross Street, Sudbury. Removing the on-street parking bays was the main action in the AQAP that was predicted to reduce concentrations of Nitrogen dioxide. However, it has been important to determine whether the predicted reduction in emissions was realised in practice or whether additional actions are required.

Various actions were taken for Clean Air Day in June 2022. Officers from the Environmental Protection Team delivered presentations to primary schools relating to improving local air quality. These were well received, with encouraging input from the children. The photograph below shows examples of the activities completed, and demonstrates the link to health, personal actions and informing others. A video was produced in association with the other Suffolk local authorities and the NHS, featuring Suffolk County Council's Director of Public Health and a Respiratory Nurse, explaining the risks of air pollution and positive steps that can be taken to reduce exposure and improve health. Technical difficulties had to be overcome in producing the video, but this knowledge will be useful if the video is expanded upon in future. There was also a social media campaign using the national resources, with the theme of 'Air pollution dirties every organ in your body. Take steps to improve your health this Clean Air Day'. The Clean Air Day work is an example of successful individual and partnership working to target a range of audiences.

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

Photograph 3: Examples of activities at primary schools for Clean Air Day 2022



Babergh and Mid Suffolk District Councils have previously requested EV charging points through the planning process for commercial and residential developments. This is now replaced in part by new requirements under the Building Regulations. However, the previously requested charging points are being delivered in new developments, which encourages the uptake of EVs. The Councils installed fourteen EV charging points in 2022; all associated with solar car ports and battery storage in two of their public leisure centre car parks. This is an example of forward-thinking investment with environmental and financial benefits.

Photograph 4: Electric Vehicle charging points installed by Babergh and Mid Suffolk District Councils in one of their leisure centre car parks. The solar car port is identified to the rear of the photograph, providing electricity to the leisure centre.

The Councils' refuse fleet was switched to a biodiesel, Hydrotreated Vegetable Oil (HVO – which has significantly lower emissions of Nitrogen oxides and particulates than traditional fuel) in September 2021. The fleet continued to run successfully on HVO throughout 2022. In autumn 2022, there was a competition for the public to name the 22 new refuse lorries, which are to commence operation in 2023 and will also run on HVO.

Towards the end of 2022, work started on a primary school theatrical performances project related to air quality and active travel. This project is being organised by Suffolk County Council's Growth, Highways and Infrastructure department, in association with the Suffolk district councils, with the shows to be performed in 2023. The project is proving to be a good example of sharing resources to achieve a greater outcome.

The Councils are continuing work associated with the 'climate emergency'; aiming to make the Councils carbon neutral by 2030. Many of the measures have the co-benefit of bringing about improvements in air quality.

Conclusions and Priorities

Air quality monitoring in both districts has shown that Nitrogen dioxide concentrations have not exceeded the objective in 2022 at any monitoring location. Generally, concentrations were similar to the 2021 annual mean. Monitoring will continue at the same locations in 2023 as they represent a relevant range of locations including within the AQMA, just outside the AQMA, areas of potential concern, and background sites. Further data must be gathered before it is appropriate to consider revoking the AQMA, but it is expected that the reduced concentrations will continue.

Analysing the data from the monitoring within the AQMA is a priority for next year. This will determine whether the AQAP should be updated or whether the AQMA will be revoked soon. Another priority for 2023 is involvement in Clean Air Day, preferably with partners. However, allocating staff resource to this proactive work is likely to be a challenge. The Councils aim to continue to be aware of the increasing emphasis on Particulate Matter and take steps to reduce this, especially in partnership with the other Suffolk local authorities and Public Health.

Local Engagement and How to get Involved

Officers from the Environmental Protection Team have continued to respond to planning consultations with regard to air quality and sustainability (i.e. engagement with the Development Management Team and developers), investigate air quality concerns raised by the public, and Modeshift STARS - a national sustainable and active travel scheme, run here by Suffolk County Council - has positive interest at many schools. An ‘Air Quality Summit’ was run in early 2022 to increase levels of understanding of air quality amongst Councillors across Suffolk. There was consideration of repeating this with businesses. However, local research showed a lack of engagement by businesses in air quality in its own right, but air quality measures may be more successfully incorporated into accreditation schemes and other existing work. There was also engagement with schools for Clean Air Day, and arrangements are starting for a school theatre event in 2023.

As an individual there are many actions that you can take to improve the air quality and reduce air pollution. This will improve the quality of life for everyone, including you and your family. Below are a few suggestions of how to get involved:

- Use your car less. Try to walk, cycle, and use the bus or train. Cars are particularly polluting over short journeys, so aim to cut these out first.

- Reduce emissions from your car by ensuring it is regularly serviced and well maintained, you only carry the weight you need, and you drive in a gentle, steady manner.
- Consider purchasing an electric vehicle; the costs are always reducing, and the technology and infrastructure are now supporting this significant change in vehicle technology.
- When buying a traditional fuel vehicle consider the most fuel-efficient petrol vehicle and use cleaner alternative fuels where possible.
- Encourage your employer, school, or college to set up a Green Travel Plan.
- Car share, to reduce emissions and save money. Please see www.liftshare.com/uk/community/Suffolk for details of a Suffolk wide scheme.
- Avoid having bonfires. If you do choose to have a fire, only burn dry garden waste, and avoid burning on days that already have high pollution levels.
- Avoid burning solid fuel. If you do choose to burn solid fuel, always ensure the appliance is well maintained and fuel is clean and dry.

For further information about how you can get involved, please see:

www.babergh.gov.uk/environment/air-quality/

www.midsuffolk.gov.uk/environment/air-quality/

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Protection Team of Babergh and Mid Suffolk District Councils with the support of the following departments:

- Economic Growth and Climate Change, BMSDC
- Communications, BMSDC
- Waste Services, BMSDC
- Public Health and Communities, SCC
- Growth, Highways and Infrastructure, SCC

This ASR has been signed off by Stuart Keeble, Director of Public Health, Suffolk County Council.

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

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1 Local Air Quality Management

This report provides an overview of air quality in Babergh and Mid Suffolk during 2022. Babergh District Council and Mid Suffolk District Council are two constitutionally separate local authorities with a shared officer structure. As such, this report is the combined Annual Status Report (ASR) for both districts. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place to achieve and maintain the objectives and the dates by which each measure will be carried out. This ASR is an annual requirement showing the strategies employed by Babergh and Mid Suffolk District Councils 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

Air Quality Management Areas

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

A summary of the AQMA declared by Babergh District Council can be found in Table 2.1. Appendix D: Maps of Monitoring Locations and AQMAs provides maps of the AQMA and of the air quality monitoring locations in relation to the AQMA. The air quality objective pertinent to the current AQMA designation is the Nitrogen dioxide (NO_2) annual mean.

Mid Suffolk District Council does not have any declared AQMAs. A local Air Quality Strategy is under development to prevent actions that are detrimental to air quality, reduce polluting activities and encourage improvements.

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
Cross Street, Sudbury	Declared November 2008	NO2 Annual Mean	An area encompassing properties on Cross Street, with 5 and 90 at the northern boundary and 50 Cross Street and the junction with Church Street at the southern boundary.	NO	64.0 µg/m3	No exceedance. Highest concentration 33.3 µg/m3	3 years (2020 – 2022)	Air Quality Action Plan: Babergh District Council - Cross Street, Sudbury AQMA, October 2011	Visit the AQAP for the AQMA

☒ **Babergh District Council confirm the information on UK-Air regarding their AQMA is up to date.**

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

Progress and Impact of Measures to address Air Quality in Babergh and Mid Suffolk

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

- *It is suggested that the AQMA is depicted by an outline only rather than a hatched red fill. This would make identification of the monitoring locations easier.* This has been addressed in Appendix D.
- *Ideally, screenshots of the national bias factor spreadsheet used should be provided in the report to ensure consistency with the downloadable files.* This has been addressed in Appendix C.
- *The Council's latest AQAP was published in 2011, therefore it is greater than five years old. It is therefore recommended that the AQAP is updated to reflect the current air quality in the area.* The AQAP has not been updated as it is likely that the AQMA will be revoked soon, and this AQAP would no longer be required.
- Several positive points were noted, including that there was a detailed summary of priorities, sufficient evidence for QA/QC procedures and a good discussion of trends accompanied by useful graphs.

Babergh and Mid Suffolk District Councils have taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Twenty-four measures are included within Table 2.2, with the type of measure and the progress Babergh and Mid Suffolk District Councils have made during the reporting year of 2022 presented. The measures are listed broadly in order of the estimated benefit to air quality, with some grouping by themes too. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2. Where measures are ongoing, or information is unknown, the table has intentionally been left blank.

More detail on these measures can be found in the AQAP for the AQMA, the Carbon Reduction Management Plan, the Suffolk Climate Emergency Plan, the Vision for Sustainable Travel, the Suffolk Local Transport Plan, and the Suffolk Air Quality Profile. Measure 1 is an action from the AQAP. As this has been implemented and appears to be

sufficient to result in concentrations not exceeding the objective, not all actions from the AQAP have been addressed.

Key completed measures are:

- The impact of removing the on-street parking bays in the AQMA has been monitored by the diffusion tube network throughout the year. Traffic flows have also been monitored to ensure that reduced Nitrogen dioxide concentrations are not purely because of temporarily lower traffic volumes due to the Covid-19 pandemic.
- An increased involvement in Clean Air Day 2022, which was listed as a priority in the previous ASR. Sessions were run at primary schools to inform children of the whole-body health impacts of poor air quality (in line with the national theme of 'Air pollution dirties every organ in your body'), and the steps they can take to reduce their exposure and their personal contribution to pollution. A social media campaign involved posts of the national material and local actions on both Councils' commonly used social media pages, with reposting by the NHS and county-wide environmental organisations. An article was included in the Councils' internal newsletter, posters displayed in the Council offices, the nationally produced video for assemblies was circulated to all primary schools within the County, schools were invited to take part in an air quality comic strip competition organised by the Suffolk County Council Active Travel Officers, and information was circulated in local NHS newsletters to increase the knowledge of health staff. The Suffolk County Council website was updated to reflect details of the 2022 Clean Air Day.
- A video was produced as a multi-agency project, featuring Suffolk County Council's Director of Public Health and a Respiratory Nurse. The video informs of the health effects of poor air quality and the actions that can be taken to reduce exposure and improve health. This was released on Clean Air Day, is being used as a training tool around the County and is on the Councils' websites. It is hoped that this video can be expanded on in the future.
- The Councils installed fourteen EV charging points in 2022; all associated with solar car ports and battery storage in two of their public leisure centre car parks. They were also awarded just over £300,000 of On-Street Residential Chargepoint Scheme funding from The Office for Zero Emission Vehicles to implement more charging points across the districts. It is expected that the majority of these will be sited in public car parks.

- Planning applications that may have an adverse impact on air quality have been assessed and mitigation recommended where necessary. During 2022, the Environmental Protection Team and Development Management Team worked together to amend the criteria for air quality related consultations. This means that resources can be focused on the applications where problems are most likely. Planning consultations have included several Nationally Significant Infrastructure Projects, where the impact of the construction and operational phases has been assessed.
- The Suffolk Air Quality Group (SAQG, which the Councils are a member of) continued to meet to share knowledge and liaise with other bodies such as Public Health and Communities, Trading Standards, and Growth, Highways and Infrastructure (all within Suffolk County Council), UK Health Security Agency and the University of Suffolk. Anti-idling material produced by the Group is still circulated to primary school Junior Road Safety Officers, who may choose to educate their peers on this topic, and it is available on the Council website for schools to use as they wish. The Group met with researchers from the University of Suffolk to consider research needs and opportunities for information sharing, with the future aim of producing locally researched air quality material for campaigns. A workshop run by the University of Suffolk in late 2022 identified a desire for a Suffolk Air Quality Network, and Officers from Babergh and Mid Suffolk District Councils will participate. The SAQG updated its Terms of Reference and revised the meeting arrangements to remain relevant to the members and partners requirements.
- Most premises that hold Environmental Permits to control emissions to atmosphere, including particulate matter, were rated low risk in 2022. Good practice was encouraged during the inspections to minimise emissions.

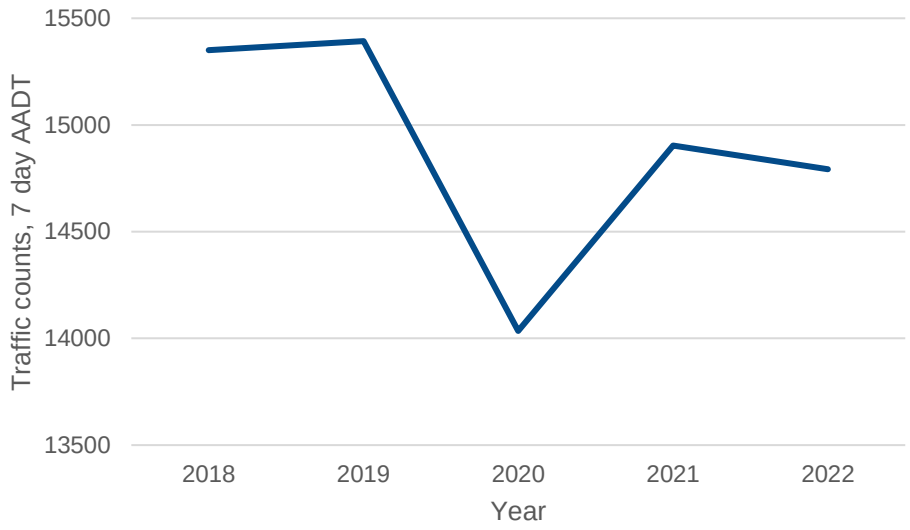
Babergh and Mid Suffolk District Councils priorities for the coming year are –

- Analysing the data from the diffusion tube monitoring within the AQMA to determine whether the objective is being met. This is the priority as it affects whether further actions are necessary to address the previous exceedances of the objective.
- More involvement in Clean Air Day 2023, especially with partners. This is a key opportunity for informing the public about the health effects of poor air quality and the actions they can take.
- Continuing to implement carbon saving measures that have air quality co-benefits. Achieving a carbon neutral status by 2030 is a priority for the Councils.

- Continuing to work with partners, especially Public Health, in implementing measures to reduce particulate matter and engaging with the public.

It has been decided to postpone revising the AQAP because the primary action has been implemented and the effect of this must continue to be monitored. Current results indicate that this action has reduced Nitrogen dioxide concentrations to below the objective in the long term. The 2021 and 2022 mean results are not significantly affected by reduced traffic flows, as the 2020 mean was. Traffic flows from a local site within Suffolk County Council's traffic monitoring programme are shown below. All figures are measured 7 day Annual Average Daily Traffic at Ballingdon Street, Sudbury.

Figure 1: Traffic data from Ballingdon Street, Sudbury, 2018 – 2022



It appears likely that the AQMA will be revoked once sufficient data has been obtained, (excluding the 2020 data), and therefore it is not necessary to revise the AQAP at this time.

Babergh and Mid Suffolk District Councils worked to implement these measures in partnership with the following stakeholders during 2022:

- Suffolk County Council – Growth, Highways and Infrastructure
- Suffolk County Council – Public Health and Communities
- Suffolk County Council – Trading Standards
- East Suffolk Council, Ipswich Borough Council and West Suffolk Council – Environmental Protection Teams
- UK Health Security Agency
- University of Suffolk

The principal challenges and barriers to implementation that Babergh and Mid Suffolk District Councils anticipate facing are limited availability of staff resources for involvement in proactive work such as Clean Air Day and undertaking multi-agency projects, funding for carbon reduction projects, and ensuring that Nitrogen dioxide concentrations in the AQMA are assessed considering predicted future traffic flows, to ensure any decisions about the AQMA are correct in the long term.

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

- Engagement with schools or communities, for example in anti-idling events, due to staff resources.
- Burning campaigns have been affected by the availability of reliable material regarding emissions and health risks.
- Involvement in an awareness raising stall at Ipswich hospital, linked to Clean Air Day, was not possible due to continued Covid-19 restrictions.

It is anticipated that the measures stated above and in Table 2.2 will achieve compliance in the Cross Street, Sudbury AQMA.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	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	Permanent removal of on-street parking bays within AQMA	Traffic management	Other	2020	2021	SCC, BMSDC	SCC, BMSDC	No	Funded	< £10k	Completed	Maximum predicted reduction 9.7µg/m3 NO2	Measured concentration of NO2 within AQMA	Permanent Traffic Regulation Order has been made to remove the on-street parking bays. Diffusion tube monitoring is continuing	
2	Councils' refuse fleet is still run on HVO, with new HVO fuelled refuse lorries proposed	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2020	2023	BMSDC	BMSDC	No	Funded	£1 million - £10 million	Implementation	NOx reduced by up to 30%, PM2.5 and PM10 reduced by up to 86% (New Era Fuels, 2021)	Emissions from vehicles	Current fleet is fuelled by HVO, purchase of 22 new vehicles is in an implementation phase	
3	Installation of EV charging points throughout Suffolk	Promoting low emission transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2022	2023	SCC	Local EV Infrastructure funding, commercial funding, SCC	No	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions as encourages use of EV	Number of points installed and their use	Funding awarded late 2022, aim to install 200 – 250 EV charging points throughout Suffolk, including potential community EV hubs in BMSDC. Also installing solar and battery storage	
4	Installation of EV charging points through the On-Street Residential Chargepoint Scheme	Promoting low emission transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2022		BMSDC	Office for Zero Emission Vehicles	No	Funded	£100k - £500k	Planning	Reduced vehicle emissions as encourages use of EV	Number of points installed and their use	Funding granted late 2022, plans to site chargepoints in public car parks	
5	Installation of 14 EV charging points in Council leisure centre car parks	Promoting low emission transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2021	2022	BMSDC	BMSDC, Government match funding	No	Funded	£1 million - £10 million	Completed	Reduced vehicle emissions as encourages use of EV	Number of points installed and their use	Installed and operational	Cost of £2.8 million is for wider project; not just EV charging points
6	Implementation of Local Transport Plan 3, and	Transport planning and infrastructure	Other	2015		SCC	SCC	No	Funded	£10k - 50k	Implementation	Reduced vehicle emissions as	Modes of transport used, travel	LTP3 has been in use since 2011, LTP4 is being developed	Cost is mainly officer time in terms of writing the document.

Measure No.	Measure	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
	development of Local Transport Plan 4											alternatives are encouraged	options available	including plans for a dedicated air quality section	Awaiting guidance from Department for Transport
7	Responding to planning consultations regarding air quality impacts	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance			BMSDC	BMSDC	NO	Funded	£10k - 50k	Implementation	Potentially prevent unacceptable emissions or health effects	Number of consultations responded to within timeframe	Approximately 130 planning consultations were responded to regarding air quality in 2022, including Nationally Significant Infrastructure Projects	
8	SCC Air Quality Strategy	Policy guidance and development control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2022	2023	SCC, all Suffolk LA's	SCC	No	Funded	< £10k	Planning	Reduced emissions from range of sources due to behaviour change	Actions and awareness of the public	The Suffolk Air Quality Profile was published in 2021, leading to air quality becoming a priority for the Suffolk Health and Wellbeing Board (and therefore SCC Public Health). An Air Quality Strategy was developed, all Suffolk LA's commented on the draft, for release in 2023	Cost is mainly officer time in terms of writing the document
9	Publication of 'A vision for sustainable travel'	Policy guidance and development control	Other policy	2022	2022	BMSDC	BMSDC	No	Funded	< £10k	Completed	Reduced vehicle emissions as alternatives are encouraged	Use of sustainable travel	Document published	Cost is mainly officer time in terms of writing the document
10	Publication of the 'Local Cycling and Walking Infrastructure Plan'	Policy guidance and development control	Other policy	2021	2022	BMSDC	BMSDC	No	Funded	< £10k	Completed	Reduced vehicle emissions as alternatives are encouraged	Use of walking and cycling, availability of infrastructure	Consultation mid-2021, plan published 2022	Cost is mainly officer time in terms of writing the document
11	Suffolk Climate Emergency Plan	Policy guidance and development control	Other policy	2019		SCC, all Suffolk LA's	SCC, all Suffolk LA's	No	Funded	£50k - £100k	Implementation	Reduced emissions from a range of sources, carbon reduction has an air quality co-benefit	Use of EV charging points, use of sustainable travel by the public, use of sustainable travel by businesses eg last mile delivery	Consolidation of actions over 2022, numerous carbon reduction actions have air quality co-benefits, there are plans to publicise this link in the future	

Measure No.	Measure	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
12	SCC Air Quality Engagement Plan	Policy guidance and development control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2022	2023	SCC, all Suffolk LA's	SCC	No	Funded	< £10k	Planning	Reduced emissions from range of sources due to behaviour change	Actions and awareness of the public	The Suffolk Air Quality profile was published in 2021, leading to air quality becoming a priority for the Suffolk Health and Wellbeing Board (and therefore SCC Public Health). An objective is to increase public awareness of the health impacts of air quality and actions they can take	
13	Involvement in Clean Air Day 2022	Public information	Via website	2022	2022	All Suffolk LA's, SCC, NHS	All Suffolk LA's, SCC, NHS	No	Funded	£10k - £50k	Completed	Reduced vehicle emissions due to increased awareness	Actions and awareness of the public	Campaign included social media, newsletters, school presentations, circulation of materials to schools, health based video	Limited by officer time, and technical issues relating to the video
14	Air Quality summit – an online session of presentations informing Councillors across the county about air quality	Public information	Via other mechanisms	2021	2022	SCC, all other Suffolk LA's	Officer time in organising and attending	No	Funded		Completed	Reduced emissions from range of sources due to behaviour change	Use of this knowledge, awareness of the attendees	Event completed, positive feedback received	
15	Started to research the local Air Quality Strategy	Policy guidance and development control	Other policy	2022		BMSDC	BMSDC	No	Funded	< £10k	Planning	Reduced emissions from range of sources due to preventative actions and behaviour change	Overall air quality	Research started into the Strategy	
16	Promotion of sources of information for sustainable travel on the Councils' websites	Public information	Via the internet			BMSDC	BMSDC	NO	Funded	< £10k	Implementation	Reduced emissions due to improved awareness	Use of sustainable travel	Information updated regularly	Council website is unlikely to be where people would search for such information
17	Improved information on the Councils'	Public information	Via the internet	2022	2022	BMSDC	BMSDC	NO	Funded	< £10k	Implementation	Reduced emissions, particularly PM,	Actions of the public,	Information updated and improved	Council website is unlikely to be where people

Measure No.	Measure	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
	websites regarding burning											due to improved awareness	complaints about burning		would search for such information
18	Home working is strongly encouraged, technology improving to allow it to occur more effectively	Promoting travel alternatives	Encourage / Facilitate home-working	2015		BMSDC	N/A	No	Funded		Implementation	Reduced emissions from commutes to office and meeting locations	Mileage claims to meetings etc	Significant improvements in technology in recent years to allow home working, most officers work from home on occasions	
19	Pool cars are still EV, upgraded with another EV as necessary	Promoting low emission transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2017	2019	BMSDC	BMSDC	No	Funded		Completed	Ongoing reduced vehicle emissions	Miles driven in EV	All pool cars are EV	Ongoing costs associated with maintenance, servicing of EV but purchase cost has been reported previously
20	Regulation of premises with an Environmental Permit	Environmental permits	Other			BMSDC	BMSDC	No	Funded	£10k - 50k	Implementation	Reduced emissions, especially PM	Emissions measured from premises and risk rating score	Majority of premises were low risk in 2022, no complaints received, advice given re PM control	
21	Provision of two electric buses to serve the rural communities	Promoting low emission transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2022		MSDC	MSDC	No	Funded	£500k – £1 million	Planning	Reduced vehicle emissions	Provision of buses and their use	Budget allocated, discussions held with partners, early planning stages	Large rural area
22	Modeshift STARS	Promoting travel alternatives	Other			SCC	SCC	No	Funded	< £10k	Implementation	Reduced vehicle emissions in locality of schools	Provision and use of sustainable and active travel	During 2022, four schools achieved accreditation, and four others started the accreditation process in BMSDC	Competing demands on school time
23	School theatre performances about air quality and active travel	Public information	Via other mechanisms	2022	2023	SCC, all other Suffolk LA's	SCC, all other Suffolk LA's	No	Funded	< £10k	Planning	Reduced vehicle emissions in locality of schools	Future travel to school, evaluation of the performances	Planning the events, contacting schools. Approx 2/3 of funding is from SCC, 1/3 from the relevant LA	High demand on school time, so targeted schools may be unable to accommodate performances
24	Cycle training through the 'Bikeability' scheme	Promoting travel alternatives	Promotion of cycling			SCC	SCC	No	Funded		Implementation	Encourages cycle use	Number of participants in scheme	More than 250,000 young cyclists trained to date	County wide scheme – difficult to obtain costs and participant figures per LA

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Babergh and Mid Suffolk District Councils are taking the following measures to address reducing $PM_{2.5}$:

- The SAQG has continued to engage with Suffolk County Council Public Health regarding $PM_{2.5}$. An Air Quality Profile for Suffolk was produced in 2021, which involved shared knowledge between organisations, including relating to $PM_{2.5}$. With a better understanding of the presence of $PM_{2.5}$, more suitable actions can be implemented across Suffolk, for example there has been consideration of working with the agricultural sector in relation to ammonia and secondary particulates. Suffolk County Council Public Health are also writing an Air Quality Strategy and an Engagement Plan, following on from the Air Quality Profile. These documents both address $PM_{2.5}$. *(Measures 8, 12)*
- The Councils' refuse fleet has been run on HVO since 2021. This fuel has up to 86% reduced PM emissions. There are plans to upgrade 22 refuse lorries to new vehicles, also run on HVO, with a competition in autumn 2022 for the public to name the vehicles. *(Measure 2)*
- The information on the Councils' websites regarding burning solid fuel has been improved, especially in light of higher energy prices. The Defra 'Good practice guide for open fires and wood burning stoves' has been added to the website, social media posts through autumn 2022 linked to this and general burning advice, an informative email was sent to Council Housing tenants. One of the presentations at the Air Quality Summit was about burning. Increased awareness should reduce $PM_{2.5}$ emissions. *(Measures 14, 17)*
- Residents are encouraged to use the green waste collection service or household waste recycling centres rather than burning garden waste. *(Measure 17)*

- The Sustainability Officers installed fourteen EV chargers in public car parks in Sudbury (in the Babergh district) and Stowmarket (in the Mid Suffolk district) in 2022. Providing EV charging points encourages the uptake of EV's and reduces particulate matter emissions from traditional fuel vehicles. Suffolk County Council has also been actively involved in installing EV charging points throughout 2022, including a successful bid under the Local EV Infrastructure pilot, which should deliver 200-250 EV charging points across the county over 2022 and 2023. *(Measure 3, 5)*
- Throughout 2022, inspections of premises that hold an Environmental Permit found that installations that are likely to emit $PM_{2.5}$, for example concrete crushers and cement batching plants, were operating in line with best practice. Control measures such as water spraying, sideboards on conveyors and low drop heights were implemented. New continuous monitors were installed at one premises to better monitor particulate matter, and another improved the enclosure around their briquetting machine to reduce emissions. *(Measure 20)*
- The Environmental Protection Team recommends planning conditions regarding the control of $PM_{2.5}$, for example by compliance with a construction management plan. *(Measure 7)*
- Officers from the Environmental Protection Team have attended Defra workshops and training sessions regarding the $PM_{2.5}$ targets and changes to legislation. This was listed as a priority in last year's ASR.

The fraction of mortality attributable to particulate air pollution was 5.1% within the Babergh district and 4.9% within the Mid Suffolk district, compared to 5.5% as the average figure for the East of England Region and also the England average. All figures are for 2021, which is the latest dataset available[8]. It is understood from local contacts at the UK Health Security Agency, that this mortality figure varies based on the weather as well as based on emissions. Therefore, although the figures for Babergh and Mid Suffolk District Councils are lower for 2021 than for previous years, and lower than the regional and national figure, caution should be given in drawing any firm conclusions.

[8] Public Health Outcomes Framework, Health Protection, https://fingertips.phe.org.uk/profile/public-health-outcomes-framework

All measures taken that reduce $PM_{2.5}$ have links to the Public Health Outcomes Framework, as they reduce the percentage of all-cause adult mortality attributable to anthropogenic particulate air pollution, which is measured as $PM_{2.5}$.

There are not any smoke control areas in the Babergh or Mid Suffolk districts and monitoring does not occur for PM_{10} or $PM_{2.5}$. This is because the districts are largely rural with small market towns, and do not have densely populated urban areas where significant solid fuel burning is prevalent.

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

This section sets out the monitoring undertaken within 2022 by Babergh and Mid Suffolk District Councils and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2018 and 2022 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Babergh and Mid Suffolk District Councils do not operate any automatic monitoring sites in the districts.

3.1.2 Non-Automatic Monitoring Sites

Babergh and Mid Suffolk District Councils undertook non-automatic (passive) monitoring of NO_2 at 15 sites during 2022: 13 within the Babergh district and 2 within the Mid Suffolk district. 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 are included in Appendix C.

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.

3.1.3 Nitrogen Dioxide (NO_2)

Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the

monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2022 dataset of monthly mean values is provided in Appendix B. It has not been necessary to distance correct any results, as only one location is not at relevant exposure, and the bias adjusted mean was below 36µg/m^3. At many monitoring locations, including all sites in the AQMA, two diffusion tubes are positioned close to each other to improve the accuracy of the results. The monthly results are presented with the highest result first for each monitoring location e.g. BDC 1a, and then the lower result e.g. BDC 1b.

The annual mean has not exceeded 60µg/m^3 at any monitoring location. Therefore, it is not considered likely that there will be an exceedance of the 1 hour mean objective at any location.

There were no exceedances of the air quality objective in 2022. Concentrations of NO_2 are similar to the 2020 and 2021 results both within and outside the AQMA. The results are lower than those in 2018 and 2019. It is thought that this is because of reduced traffic flows compared to 2018 and 2019, improved engine technology causing reduced emissions, an increase in EV's, and the removal of the on-street parking bays within the AQMA.

Figure A.1 shows the annual mean NO_2 concentration over the last five years at monitoring locations that exceeded the objective in 2019 (the last year that the objective was exceeded). It was thought that the exceedances were due to the effect of the on-street parking bays, which were removed in early 2020. Significant reductions of 16.4µg/m^3, 14.5µg/m^3 and 15.5µg/m^3 were measured between 2019 and 2020 at these locations. Although the annual mean increased slightly at two of the locations between 2020 and 2021, it remained the same at the other location between 2020 and 2021. The annual mean decreased slightly at all three locations between 2021 and 2022. This ties in with a slight reduction in traffic flows at a nearby monitoring site between 2021 and 2022, see figure 1. Now that traffic flows can be considered to have reached a 'new normal', these results suggest that removing the on-street parking bays caused a significant reduction in NO_2 at these locations.

Figure A.2 shows the annual mean NO_2 concentration over the last five years at monitoring locations within the Babergh district that did not exceed the objective in 2019. There was a maximum reduction of 8µg/m^3 (at BDC 6) between 2019 and 2020 within these locations. At all but two locations, there was a slight increase in NO_2 concentration

between 2020 and 2021. This was thought to be due to increased traffic flows. It is not known why there was a further decrease in NO_2 concentration at two locations between 2020 and 2021, but the concentrations at both locations increased between 2021 and 2022. At all locations apart from one, the annual mean for 2022 is lower than it was in 2019, by between 2.6µg/m^3 and 6.6µg/m^3.

Figure A.3 shows the annual mean NO_2 concentration over the last five years at all monitoring locations within the AQMA. All these locations are covered by figures A.1 or A.2, but figure A.3 draws together all data within the AQMA. The more significant reductions between 2019 and 2020 were at the locations that the Experimental TRO was expected to have a positive impact on. There was then a slight increase at all locations (except one which has the same mean) between 2020 and 2021. This is thought to be because of increased traffic flows. However, the similar increase across all monitoring locations supports the view that the on-street parking bays were the reason for the exceedance of the objective. The annual mean results for 2022 are similar to 2021.

It is appropriate to maintain the current boundary of the AQMA, whilst gathering more data to support revoking it in the future.

Figure A.4 shows the annual mean NO_2 concentration over the last five years at monitoring locations within the Mid Suffolk district. One of the locations (MSDC 1) is at a busy crossroad in a town and the other (MSDC 2) is close to the A14 for reference purposes. Both show a reduction between 2018 and 2022. However, it is more significant between 2019 and 2020 than between any other years, at 6.4µg/m^3 and 5.3µg/m^3. The concentration at MSDC 1 increased between 2020 and 2021 and remained similar in 2022. At MSDC 2, the Nitrogen dioxide concentration in 2021 remained similar to 2020, and this has continued to be the case in 2022.

The monitoring locations in both districts remain appropriate and will continue in 2023.

No new monitoring locations will be added in 2023. Traffic flows and other factors that determine monitoring locations will be kept under review.

3.1.4 Particulate Matter (PM_{10})

Babergh and Mid Suffolk District Councils do not monitor for this pollutant.

3.1.5 Particulate Matter ($PM_{2.5}$)

Babergh and Mid Suffolk District Councils do not monitor for this pollutant.

3.1.6 Sulphur Dioxide (SO_2)

Babergh and Mid Suffolk District Councils do not monitor for this pollutant.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Babergh and Mid Suffolk District Councils do not undertake any automatic monitoring.

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

Diffusion Tube ID[1]	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) [2]	Distance to kerb of nearest road (m)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
BDC 1a, BDC 1b	9 Cross Street, Sudbury	Roadside	586848	241133	NO2	Yes - Cross Street	0.0	1.7	No	2.3
BDC 2a, BDC 2b	17 Cross Street, Sudbury	Roadside	586836	241089	NO2	Yes - Cross Street	0.0	2.1	No	2.3
BDC 3a, BDC 3b	30 Cross Street, Sudbury	Roadside	586808	241015	NO2	Yes - Cross Street	0.0	1.4	No	2.3
BDC 4a, BDC 4b	36 Cross Street, Sudbury	Roadside	586790	240944	NO2	No	0.0	1.5	No	2.3
BDC 5a, BDC 5b	58 Cross Street, Sudbury	Roadside	586798	241010	NO2	Yes - Cross Street	0.0	1.9	No	2.3
BDC 6a, BDC 6b	70 Cross Street, Sudbury	Roadside	586818	241068	NO2	Yes - Cross Street	0.0	1.5	No	2.3
BDC 7a, BDC 7b	78 Cross Street, Sudbury	Roadside	586829	241104	NO2	Yes - Cross Street	0.0	1.3	No	2.3
BDC 8a, BDC 8b	82 Cross Street, Sudbury	Roadside	586835	241123	NO2	Yes - Cross Street	0.0	1.6	No	2.2
BDC 9a, BDC 9b	87 Cross Street, Sudbury	Roadside	586842	241148	NO2	Yes - Cross Street	0.0	1.1	No	2.3
BDC 10	5 Ballingdon Street, Sudbury	Roadside	586721	240879	NO2	No	0.0	3.6	No	2.3
BDC 11	54 Church Street, Sudbury	Roadside	586930	241058	NO2	No	0.0	1.7	No	2.6
BDC 12	7 Gainsborough Street, Sudbury	Roadside	587253	241256	NO2	No	0.0	2.8	No	2.5
BDC 13	31 Friars Street, Sudbury	Roadside	587257	241110	NO2	No	0.0	2.9	No	2.3

Diffusion Tube ID[1]	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) [2]	Distance to kerb of nearest road (m)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
MSDC 1a, MSDC 1b	Station Road West, Stowmarket	Roadside	604972	258745	NO2	No	0.0	2.2	No	2.3
MSDC 2	Cottage Farmhouse, Stowmarket	Roadside	606049	259307	NO2	No	4.0	15.7	No	1.9

Notes:

(1) BDC = Babergh District Council, MSDC = Mid Suffolk District Council

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

Table A.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Babergh and Mid Suffolk District Councils do not undertake any automatic monitoring.

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID[1]	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [2]	Valid Data Capture 2022 (%) [3]	2018	2019	2020	2021	2022
BDC 1a, BDC 1b	586848	241133	Roadside	100	100.0	31.0	28.1	24.8	25.8	25.5
BDC 2a, BDC 2b	586836	241089	Roadside	100	100.0	30.3	28.7	27.1	27.9	29.4
BDC 3a, BDC 3b	586808	241015	Roadside	100	100.0	37.7	34.8	28.7	30.0	31.7
BDC 4a, BDC 4b	586790	240944	Roadside	100	100.0	30.6	29.4	22.0	23.2	25.2
BDC 5a, BDC 5b	586798	241010	Roadside	100	100.0	38.1	36.0	30.4	32.3	31.9
BDC 6a, BDC 6b	586818	241068	Roadside	100	100.0	34.0	31.2	23.2	24.9	24.6
BDC 7a, BDC 7b	586829	241104	Roadside	100	100.0	**51.4**	**47.5**	31.1	33.3	31.8
BDC 8a, BDC 8b	586835	241123	Roadside	100	100.0	**49.7**	**47.3**	32.8	33.2	32.8
BDC 9a, BDC 9b	586842	241148	Roadside	100	100.0	**46.3**	**47.0**	31.5	31.5	30.6
BDC 10	586721	240879	Roadside	100	100.0	29.4	27.6	23.7	23.1	24.5
BDC 11	586930	241058	Roadside	100	100.0	22.2	22.4	14.7	17.2	17.9
BDC 12	587253	241256	Roadside	100	100.0	29.8	28.0	22.5	20.2	24.1
BDC 13	587257	241110	Roadside	92.3	92.3	18.0	18.8	14.6	18.0	14.9

Diffusion Tube ID[1]	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [2]	Valid Data Capture 2022 (%) [3]	2018	2019	2020	2021	2022
MSDC 1a, MSDC 1b	604972	258745	Roadside	100	100.0	30.8	31.2	24.8	28.4	28.0
MSDC 2	606049	259307	Roadside	92.3	92.3	22.2	21.4	16.1	17.4	17.8

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

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

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

Notes:

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

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

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

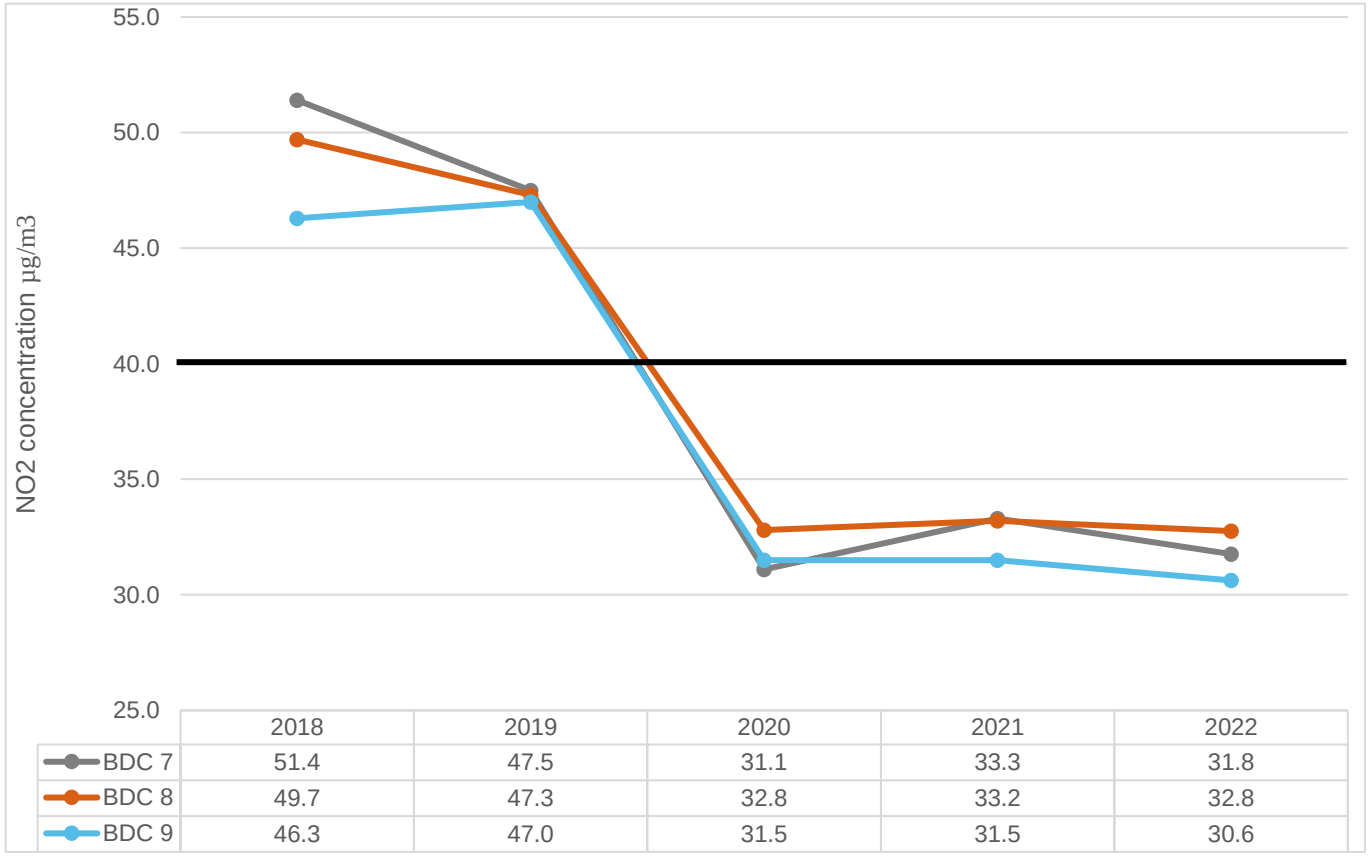
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) BDC = Babergh District Council, MSDC = Mid Suffolk District Council

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

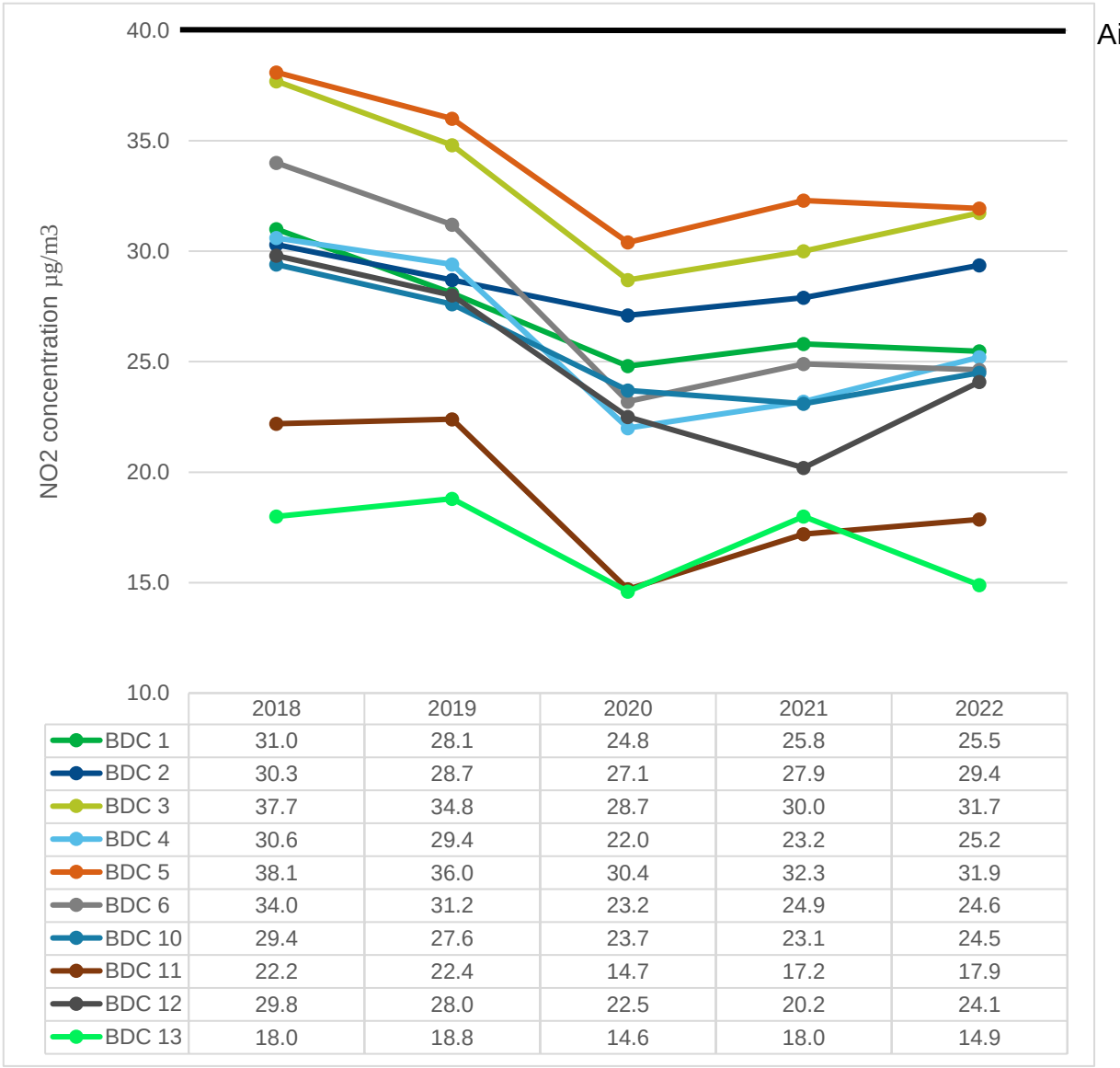
(3) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations for Monitoring Locations in the Babergh district that Exceeded the Objective in 2019



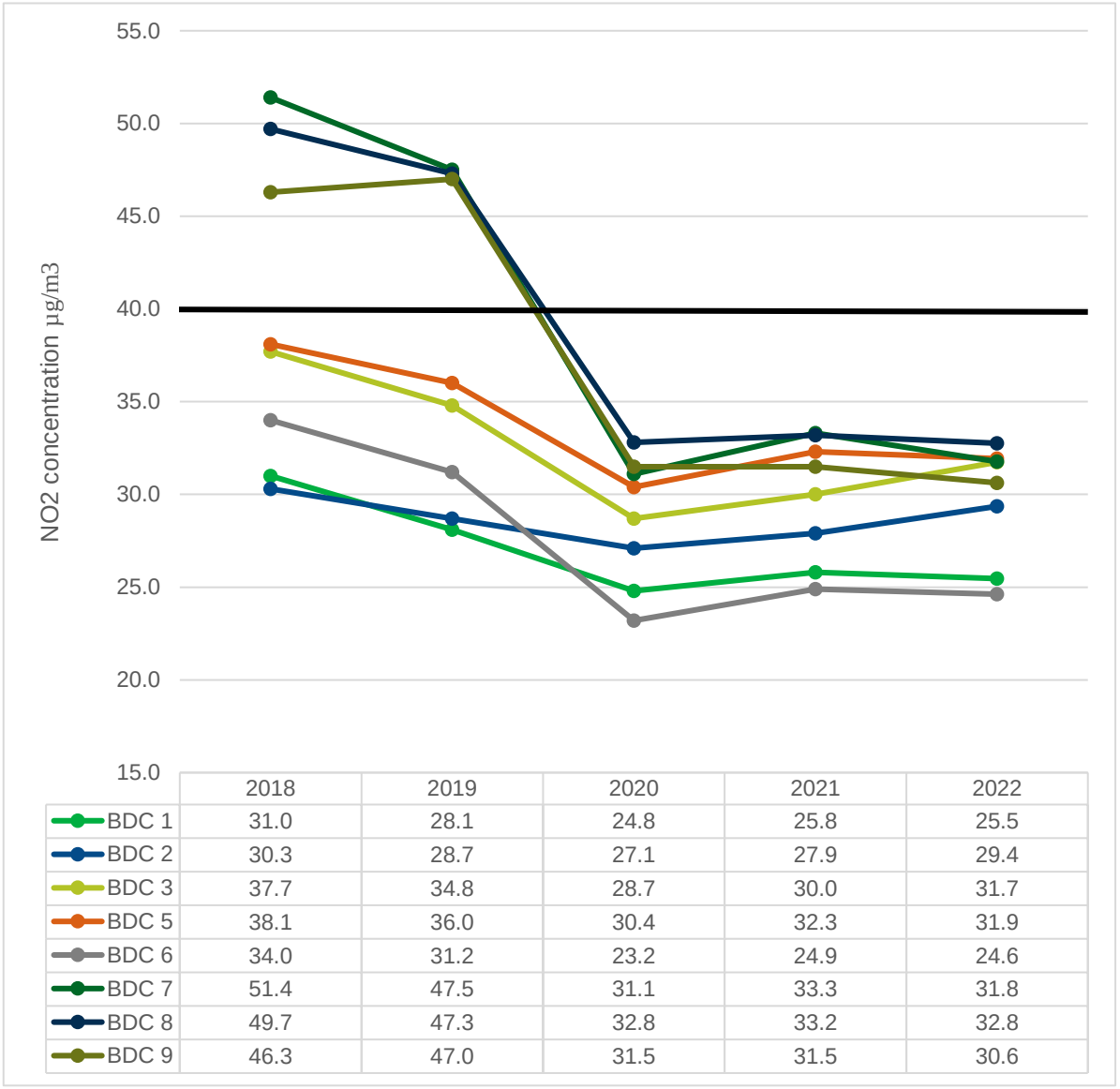
	2018	2019	2020	2021	2022
BDC 7	51.4	47.5	31.1	33.3	31.8
BDC 8	49.7	47.3	32.8	33.2	32.8
BDC 9	46.3	47.0	31.5	31.5	30.6

Figure A.2 – Trends in Annual Mean NO_2 Concentrations for Monitoring Locations in the Babergh district that did not Exceed the Objective in 2019



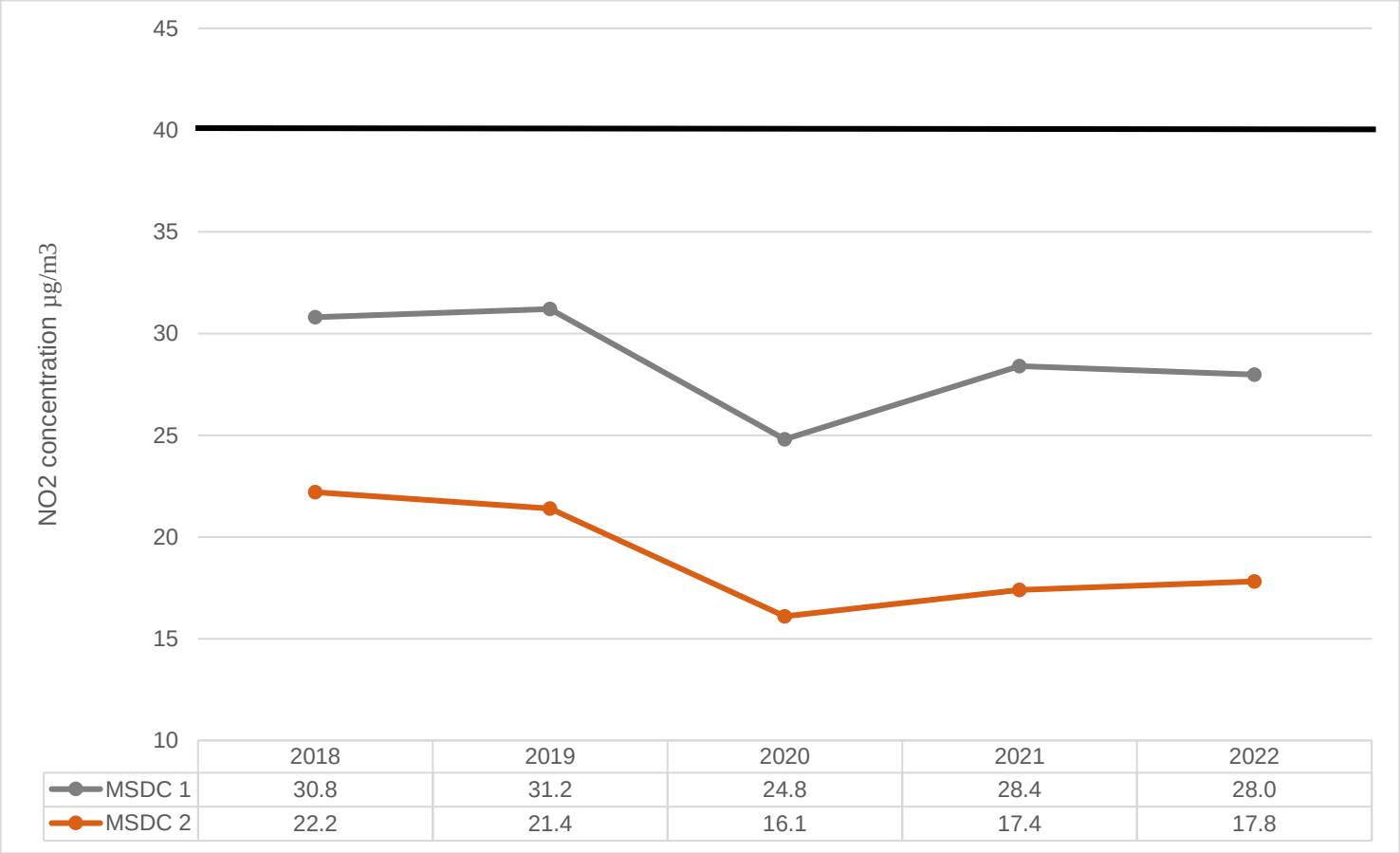
	2018	2019	2020	2021	2022
BDC 1	31.0	28.1	24.8	25.8	25.5
BDC 2	30.3	28.7	27.1	27.9	29.4
BDC 3	37.7	34.8	28.7	30.0	31.7
BDC 4	30.6	29.4	22.0	23.2	25.2
BDC 5	38.1	36.0	30.4	32.3	31.9
BDC 6	34.0	31.2	23.2	24.9	24.6
BDC 10	29.4	27.6	23.7	23.1	24.5
BDC 11	22.2	22.4	14.7	17.2	17.9
BDC 12	29.8	28.0	22.5	20.2	24.1
BDC 13	18.0	18.8	14.6	18.0	14.9

Figure A.3 – Trends in Annual Mean NO_2 Concentrations for Monitoring Locations within the AQMA



	2018	2019	2020	2021	2022
BDC 1	31.0	28.1	24.8	25.8	25.5
BDC 2	30.3	28.7	27.1	27.9	29.4
BDC 3	37.7	34.8	28.7	30.0	31.7
BDC 5	38.1	36.0	30.4	32.3	31.9
BDC 6	34.0	31.2	23.2	24.9	24.6
BDC 7	51.4	47.5	31.1	33.3	31.8
BDC 8	49.7	47.3	32.8	33.2	32.8
BDC 9	46.3	47.0	31.5	31.5	30.6

Figure A.4 – Trends in Annual Mean NO_2 Concentrations for Monitoring Locations in the Mid Suffolk district



	2018	2019	2020	2021	2022
MSDC 1	30.8	31.2	24.8	28.4	28.0
MSDC 2	22.2	21.4	16.1	17.4	17.8

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

Babergh and Mid Suffolk District Councils do not undertake any automatic monitoring.

Table A.6 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Babergh and Mid Suffolk District Councils do not undertake any automatic monitoring.

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

Babergh and Mid Suffolk District Councils do not undertake any automatic monitoring.

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

Babergh and Mid Suffolk District Councils do not undertake any automatic monitoring.

Table A.9 – SO_2 2022 Monitoring Results, Number of Relevant Instances

Babergh and Mid Suffolk District Councils do not undertake any automatic monitoring.

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 Diffusion Tube Results (µg/m^3)

Diffusion Tube ID[(1)]	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 (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
BDC 1a	586848	241133	42.1	27.4	50.2	33.8	28.3	31.4	32.1	38.0	34.4	39.3	34.3	33.6	-	-	-	Duplicate Site with BDC 1a and BDC 1b - Annual data provided for BDC 1b only
BDC 1b	586848	241133	38.8	18.8	47.4	30.2	27.7	29.3	31.1	37.9	32.6	37.1	24.7	23.8	33.5	25.5	-	Duplicate Site with BDC 1a and BDC 1b - Annual data provided for BDC 1b only
BDC 2a	586836	241089	49.3	30.3	54.7	39.6	39.6	35.2	33.3	46.0	42.2	38.7	37.8	29.2	-	-	-	Duplicate Site with BDC 2a and BDC 2b - Annual data provided for BDC 2b only
BDC 2b	586836	241089	47.3	29.0	50.7	38.5	34.5	32.6	33.3	42.6	40.4	38.6	37.3	26.7	38.6	29.4	-	Duplicate Site with BDC 2a and BDC 2b - Annual data provided for BDC 2b only
BDC 3a	586808	241015	49.8	35.8	57.6	40.8	35.5	39.0	39.9	47.7	38.6	42.0	47.2	39.6	-	-	-	Duplicate Site with BDC 3a and BDC 3b - Annual data provided for BDC 3b only
BDC 3b	586808	241015	46.3	32.9	55.4	38.6	34.7	36.8	38.1	44.1	38.1	39.5	42.9	41.3	41.8	31.7	-	Duplicate Site with BDC 3a and BDC 3b - Annual data provided for BDC 3b only
BDC 4a	586790	240944	38.2	26.2	45.2	31.6	27.5	30.4	30.6	49.2	32.5	34.9	32.0	33.4	-	-	-	Duplicate Site with BDC 4a and BDC 4b - Annual data provided for BDC 4b only
BDC 4b	586790	240944	36.8	25.2	42.0	31.0	26.5	28.2	28.6	46.2	32.1	34.5	24.1	29.1	33.2	25.2	-	Duplicate Site with BDC 4a and BDC 4b - Annual data provided for BDC 4b only
BDC 5a	586798	241010	52.9	44.1	43.6	45.8	40.3	38.9	39.4	36.9	44.0	42.1	46.0	43.2	-	-	-	Duplicate Site with BDC 5a and BDC 5b - Annual data provided for BDC 5b only
BDC 5b	586798	241010	52.2	42.7	41.4	41.5	37.7	35.9	39.0	35.8	43.0	41.7	45.7	34.7	42.0	31.9	-	Duplicate Site with BDC 5a and BDC 5b - Annual data provided for BDC 5b only
BDC 6a	586818	241068	40.6	24.5	39.4	34.6	29.3	28.1	31.7	37.9	34.3	31.9	36.0	33.2	-	-	-	Duplicate Site with BDC 6a and BDC 6b - Annual data provided for BDC 6b only
BDC 6b	586818	241068	39.6	24.1	36.1	32.0	27.1	27.7	31.2	36.4	33.9	30.8	33.1	24.2	32.4	24.6	-	Duplicate Site with BDC 6a and BDC 6b - Annual data provided for BDC 6b only
BDC 7a	586829	241104	62.9	38.4	44.2	43.7	37.9	38.1	41.9	44.3	50.0	40.6	52.5	43.8	-	-	-	Duplicate Site with BDC 7a and BDC 7b - Annual data provided for BDC 7b only
BDC 7b	586829	241104	61.4	35.7	42.4	39.6	36.2	23.2	40.8	42.5	43.8	34.0	25.3	39.8	41.8	31.8	-	Duplicate Site with BDC 7a and BDC 7b - Annual data provided for BDC 7b only
BDC 8a	586835	241123	60.8	45.9	42.5	45.4	39.4	42.3	41.7	47.0	40.0	51.2	41.7	38.1	-	-	-	Duplicate Site with BDC 8a and BDC 8b - Annual data provided for BDC 8b only
BDC 8b	586835	241123	59.3	43.1		39.7	35.2	41.4	38.8	44.6	37.4	43.2	35.2		43.1	32.8	-	Duplicate Site with BDC 8a and BDC 8b - Annual data provided for BDC 8b only
BDC 9a	586842	241148	57.7	49.7	41.6	38.0	39.5	42.4	34.9	39.6	36.3	47.4	43.4	37.4	-	-	-	Duplicate Site with BDC 9a and BDC 9b - Annual data provided for BDC 9b only
BDC 9b	586842	241148	54.8	44.5	38.2	36.1	35.4	26.4	34.4	37.8	36.0	41.7	43.3	30.6	40.3	30.6	-	Duplicate Site with BDC 9a and BDC 9b - Annual data provided for BDC 9b only
BDC 10	586721	240879	43.0	33.5	40.8	27.5	26.4	28.8	26.7	29.8	27.6	33.4	36.3	33.0	32.2	24.5	-	
BDC 11	586930	241058	34.7	24.6	27.7	21.6	19.7	18.1	18.4	18.3	21.1	24.4	26.9	26.6	23.5	17.9	-	
BDC 12	587253	241256	43.7	37.7	40.7	27.0	28.3	29.4	29.6	29.4	25.8	32.3	23.0	33.5	31.7	24.1	-	
BDC 13	587257	241110	28.6	18.6	30.9	17.7	13.7	13.7	13.9		15.4	18.5	22.4	22.2	19.6	14.9	-	

Diffusion Tube ID[(1)]	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 (0.76)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
MSDC 1a	604972	258745	50.1	36.2	41.3	35.8	33.0	35.4	35.8	38.5	37.3	36.0	42.2	35.7	-	-	-	Duplicate Site with MSDC 1a and MSDC 1b - Annual data provided for MSDC 1b only
MSDC 1b	604972	258745	46.0	34.5	38.3	35.1	32.0	32.7	33.0	35.8	37.2	35.8	34.2	31.5	36.8	28.0	-	Duplicate Site with MSDC 1a and MSDC 1b - Annual data provided for MSDC 1b only
MSDC 2	606049	259307	26.1	14.6	38.3	27.5	16.6		19.0	26.5	22.1	22.1	22.6	22.5	23.4	17.8	-	

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

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

☐ **Local bias adjustment factor used.**

☒ **National bias adjustment factor used.**

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

☒ **Babergh and Mid Suffolk District Councils confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

(1) BDC = Babergh District Council, MSDC = Mid Suffolk District Council

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

New or Changed Sources Identified Within Babergh and Mid Suffolk District Councils During 2022

Babergh and Mid Suffolk District Councils have not identified any significant new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Babergh and Mid Suffolk District Councils During 2022

Although the key action from the AQAP has been implemented in recent years, it is not necessary to conduct any additional works associated with this. The impact will continue to be monitored through the routine diffusion tube monitoring programme, rather than through detailed assessments or modelling.

QA/QC of Diffusion Tube Monitoring

Diffusion tubes are supplied and analysed by Socotec Didcot. The preparation method is 50% TEA in acetone. The analysis of diffusion tube samples to determine the amount of Nitrogen dioxide present on the tube is within the scope of Socotec's UKAS schedule. The samples are analysed in accordance with Socotec's standard operating procedure, which meets the guidelines set out in DEFRA's 'Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance'. In the AIR-PT inter-comparison scheme for comparing spiked Nitrogen dioxide diffusion tubes, Socotec is ranked as a 'satisfactory' laboratory. Regarding precision results, Socotec, 50% TEA in acetone obtained good results for 26 studies and poor results for 0 studies in 2022. The diffusion tubes were changed in line with the 2022 monitoring calendar.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Babergh and Mid Suffolk District Councils recorded data capture of at least 75%. Therefore, it was not necessary to annualise any monitoring data.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance regarding the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Babergh and Mid Suffolk District Councils have applied a national bias adjustment factor of 0.76 to the 2022 monitoring data. A summary of bias adjustment factors used by Babergh and Mid Suffolk District Councils over the past five years is presented in Table C.1.

The Councils do not conduct automatic monitoring so there are no collocation studies, and the national factor has been used rather than a local factor. For 2022, national spreadsheet version 03/23 has been used, which included 26 studies to derive the bias factor, as shown below.

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/23

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 spreadhseet 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 2023
LAQM Helpdesk Website

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

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

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List
If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List
If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List
If a year is not shown, we have no data[2]

Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.
If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	50% TEA in acetone	2022	R	Leeds City Council	12	43	34	26.0%	G	0.79
SOCOTEC Didcot	50% TEA in acetone	2022	R	Leeds City Council	11	41	30	34.2%	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2022	R	Leeds City Council	12	30	22	36.9%	G	0.73
SOCOTEC Didcot	50% TEA in acetone	2022	UC	Leeds City Council	12	30	22	34.1%	G	0.75
SOCOTEC Didcot	50% TEA in acetone	2022	R	Thanet District Council	12	23	17	29.1%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2022		Overall Factor[3] (26 studies)				Use		0.76

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.76
2021	National	06/22	0.78
2020	National	06/21	0.76
2019	National	09/20	0.75
2018	National	3/19	0.76

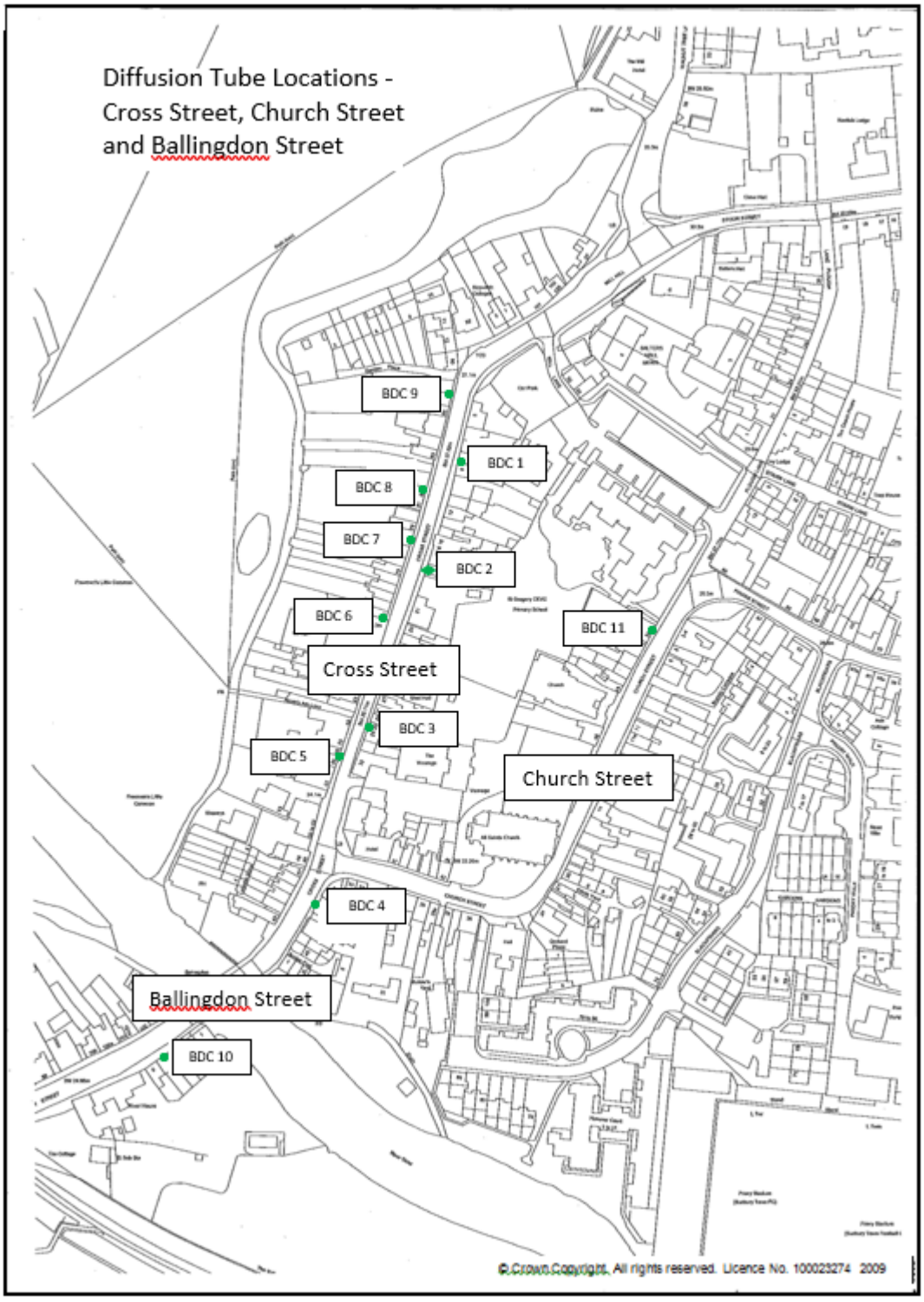
NO_2 Fall-off with Distance from the Road

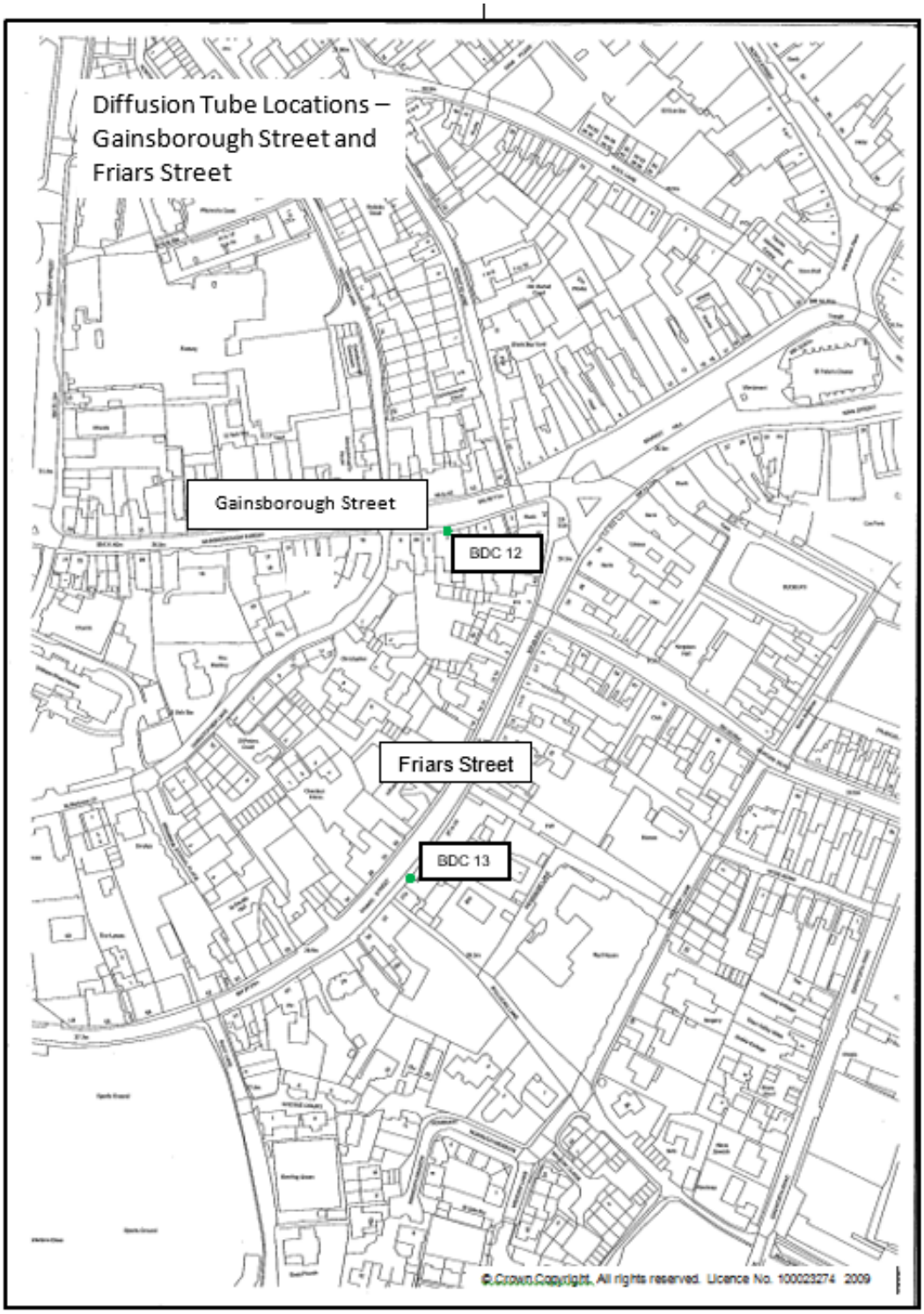
Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure can be estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website.

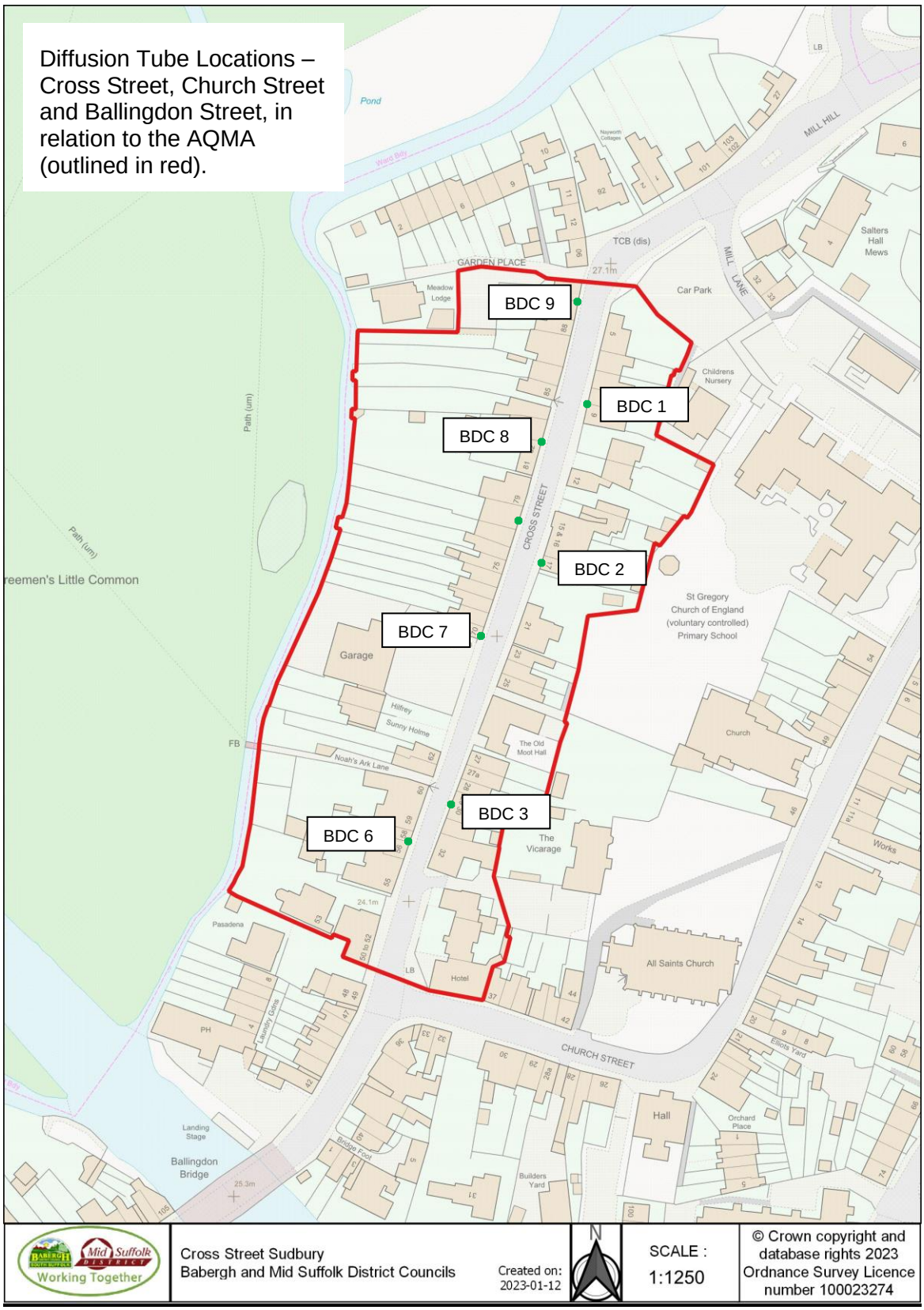
There is only one monitoring location that is not at relevant exposure. However, distance correction should only be considered where the annual mean concentration is greater than 36µg/m^3 and the monitoring is not located at a point of relevant exposure. The annual mean at this location was 17.8µg/m^3, hence no diffusion tube NO_2 monitoring locations within Babergh and Mid Suffolk District Councils required distance correction during 2022.

Appendix D: Maps of Monitoring Locations and AQMAs

Within the Babergh District




Diffusion Tube Locations – Gainsborough Street and Friars Street
Gainsborough Street
BDC 12
Friars Street
BDC 13
©Crown Copyright. All rights reserved. Licence No. 100023274 2009


Diffusion Tube Locations – Cross Street, Church Street and Ballingdon Street, in relation to the AQMA (outlined in red).
BDC 9
BDC 1
BDC 8
BDC 2
BDC 7
BDC 3
BDC 6
CROSS STREET
CHURCH STREET
MILL HILL
MILL LANE
GARDEN PLACE
Car Park
Childrens Nursery
St Gregory Church of England (voluntary controlled) Primary School
Church
All Saints Church
The Vicarage
The Old Moot Hall
Garage
Hall
Ballingdon Bridge
Cross Street Sudbury
Babergh and Mid Suffolk District Councils
Created on: 2023-01-12
SCALE : 1:1250
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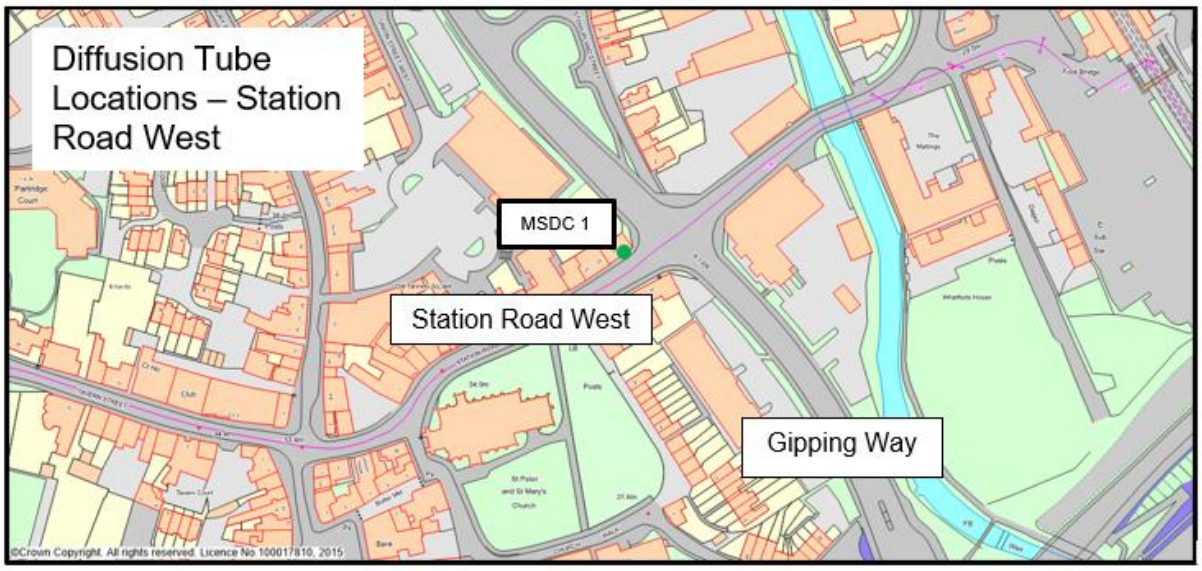
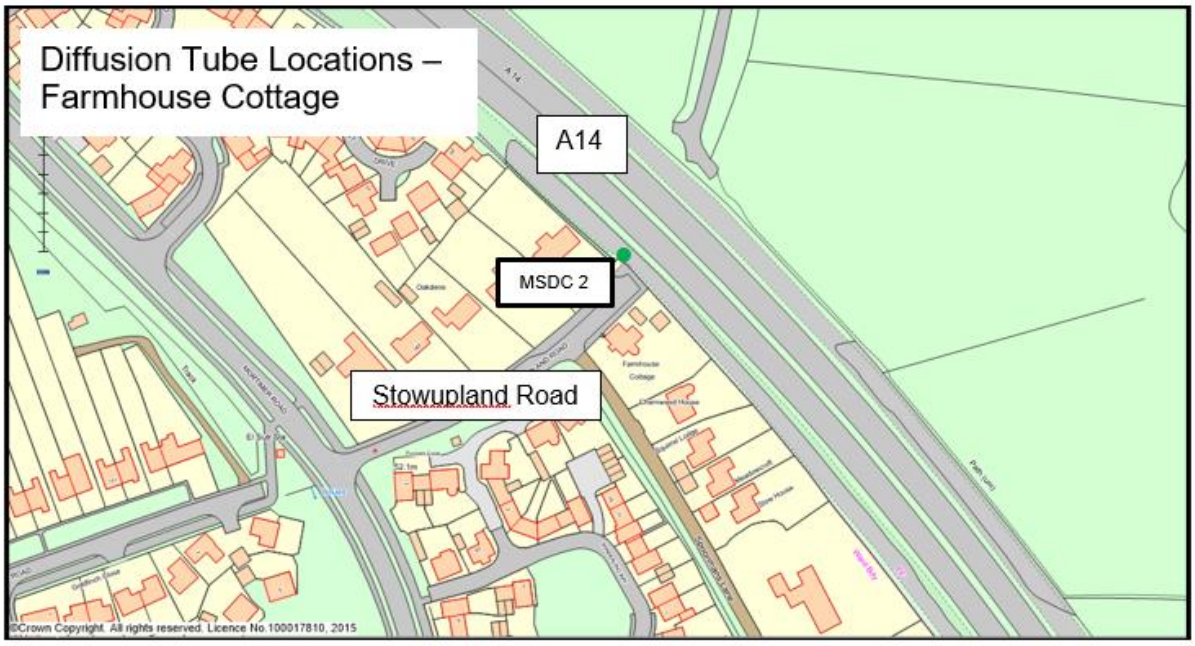
Within the Mid Suffolk District





Appendix E: Summary of Air Quality Objectives in England

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

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

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

Glossary of Terms

Abbreviation	Description
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
BDC	Babergh District Council
BMSDC	Babergh and Mid Suffolk District Councils
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
HVO	Hydrotreated Vegetable Oil
LA	Local Authority
LAQM	Local Air Quality Management
MSDC	Mid Suffolk District Council
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM	Particulate Matter
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
SAQG	Suffolk Air Quality Group
SCC	Suffolk County Council
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.