2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

November 2022

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Please note, this report has not been appraised by DEFRA.

Executive Summary: Air Quality in Our Area

Air Quality in Babergh and Mid Suffolk

Air pollution is associated with several 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 28,000 to 36,000 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 in nature 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 2021. Planning applications for biomass boilers, large residential developments and mixed industrial developments 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 2021.

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, July 2021

[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. 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 is 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.

During 2021, there were no exceedances of the objective in the Babergh or Mid Suffolk districts. The 2021 bias adjusted mean Nitrogen dioxide concentration at each monitoring location was very similar to the 2020 result. They were generally within 2-3µg/m^3 of each other, with the 2021 result being the higher one at most locations. Over the last five years,

there have generally been fairly stable results between 2017 and 2019, then a significant reduction in 2020, and a slight increase in 2021.

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 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, and reduced emissions from newer vehicles.

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]. Officers from Babergh and Mid Suffolk District Councils have also worked with Public Health at Suffolk County Council to consider joint initiatives for the future, for example associated with Clean Air Day. Officers across the Suffolk Councils continue to share knowledge and expertise, and started to prepare a joint bid for a Defra grant. Although the bid was not submitted due to a range of constraints, it was a useful learning exercise.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[6] sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero[7] sets out 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.

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

[6] Defra. Clean Air Strategy, 2019

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

The key action during 2021 has been making the Experimental TRO on Cross Street, Sudbury, into a permanent Order to reduce emissions in the AQMA. This was the main action in the Air Quality Action Plan (AQAP) that was predicted to reduce concentrations of Nitrogen dioxide. This work involved Officers from Babergh and Mid Suffolk District Councils and Suffolk County Council, and is an example of successful partnership working.

Babergh and Mid Suffolk District Councils continue to request Electric Vehicle charging points through the planning process for commercial and residential applications. These are being delivered in new developments, which encourages the uptake of Electric Vehicles. The Councils installed another double charger in one of their public car parks in 2021.

The Councils' refuse fleet has been switched to a biodiesel, Hydrotreated Vegetable Oil (HVO – which has significantly lower emissions of Nitrogen oxides and particulates than traditional fuel). The switch was completed in September 2021 and makes Babergh and Mid Suffolk District Councils the first rural UK Councils to switch their fleet to HVO.

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 2021. Monitoring will continue at the same locations in 2022 as they represent a relevant range of locations including within the AQMA, just outside the AQMA and background sites. Further data must be gathered before it is appropriate to consider revoking the AQMA, but it is thought that the reduced concentrations will continue. Analysing the data from the monitoring within the AQMA is a priority for next year.

Future aims are that in 2022 there will be more involvement in Clean Air Day, continued partnership working, improved links with health organisations, and consideration of submitting a bid for a Defra grant.

Local Engagement and How to get Involved

Proactive local engagement has been limited because of staff resources and the continued impact of the Covid-19 pandemic. However, 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 Planning Department 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' is being organised for early 2022 to increase levels of understanding of air quality amongst Councillors across Suffolk. This may be repeated with businesses to increase knowledge and encourage action.

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.suffolkcarshare.com 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 the Director of Public Health –

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 2021. 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) 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 pursuit of the objectives. 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 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

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.

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 National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	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	Air Quality Action Plan: Babergh District Council - Cross Street, Sudbury AQMA, October 2011	Visit the AQAP for AQMA https://www.babergh.gov.uk/assets/Environment/Air-Quality-Action-Plan.pdf

☒ **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

Last year's ASR was submitted after the deadline and has not been appraised by Defra.

Babergh and Mid Suffolk District Councils have taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Fourteen 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 2021 presented. The first measure focuses on the AQMA, and others are listed afterwards in approximate order of predicted effectiveness. 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 the AQAP for the AQMA, the Carbon Reduction Management Plan, the Sustainable Travel Action Plan, 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 emissions not exceeding the objective, other actions from the AQAP have not been addressed. Key completed measures are:

- The Experimental Traffic Regulation Order (TRO) on Cross Street, Sudbury was made permanent. This means that double yellow lines are marked on the road in place of the on street parking bays, allowing traffic to flow freely in both directions.
- The Councils' refuse fleet has switched to running on Hydrotreated Vegetable Oil (HVO), with significant reductions in emissions of Nitrogen dioxide and Particulate Matter.
- A double Electric Vehicle (EV) charging point was installed in a car park owned by Mid Suffolk District Council, adding to the number of charging points that have been installed by the Councils to expand the network.
- An Electric taxi has been licensed by the Councils, which is hoped to encourage other drivers to consider an EV.
- Planning applications that may have an adverse impact on air quality have been assessed and mitigation recommended where necessary. This includes several

consultations on 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), and UK Health Security Agency. The Group drafted a bid for a Defra grant, and although this was not submitted, it was a beneficial exercise. 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 advise on their low-cost air quality sensor project.
- The Councils ran a social media campaign for Clean Air Day 2021, informing the public of positive steps they can take to 'Protect our Children's Health'. An air pollution quiz and personal air pollution calculator was included in the internal newsletter, reaching approximately 600 staff. A podcast was released on behalf of the SAQG giving an overview of LAQM in Suffolk and the activities taking place for Clean Air Day 2021.
- Most premises that hold Environmental Permits to control emissions to atmosphere, including Particulate Matter, were rated low risk in 2021. Good practice was encouraged during the inspections to minimise emissions.

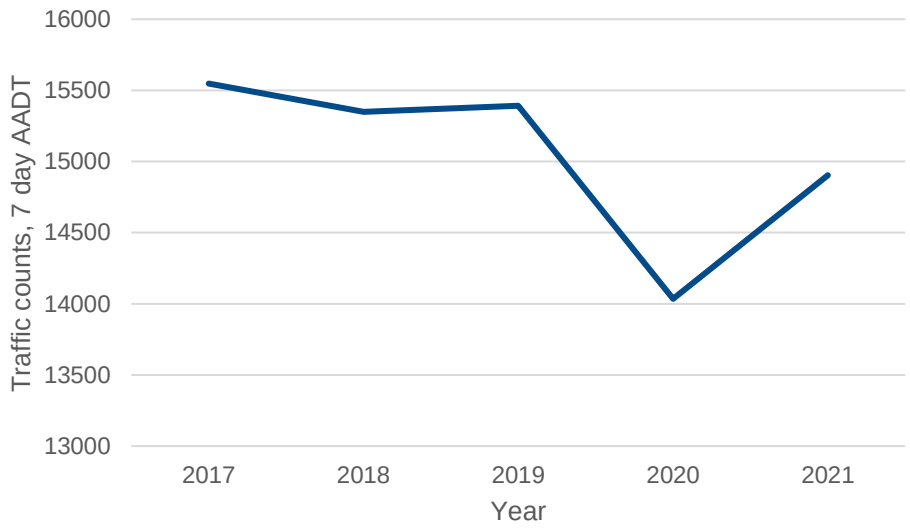
Babergh and Mid Suffolk District Councils expects the following measures to be completed over the course of the next reporting year:

- Monitoring of Nitrogen dioxide concentrations within the Cross Street AQMA using diffusion tubes. This will assess the impact of removing the on street parking bays, when traffic flows can be considered to be typical of post pandemic levels.
- A greater emphasis on Clean Air Day 2022, to include a social media campaign and work with schools or businesses.
- Working under the Environment Act 2021, engaging in consultations and workshops relating to the new targets, and implementing the changes that are required.
- Continuing to implement carbon saving measures that have air quality co-benefits.

It has been decided to postpone revising the AQAP (a proposed measure from last year's ASR) because the primary action has been implemented and the effect of this must be

monitored. Current results indicate that this action has reduced Nitrogen dioxide concentrations to below the objective. The 2021 mean result is 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, 2017 - 2021



It appears likely that the AQMA will be revoked once sufficient data has been obtained, and therefore it is not necessary to revise the AQAP at this time. It is anticipated that the measures stated above and in Table 2.2 will achieve compliance in the Cross Street, Sudbury AQMA.

Babergh and Mid Suffolk District Council's priority for the coming year is 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. Another priority is having more involvement in Clean Air Day 2022.

Babergh and Mid Suffolk District Councils worked to implement these measures in partnership with the following stakeholders during 2021:

- 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

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, funding for carbon reduction projects, and ensuring that Nitrogen dioxide results 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 local schools has been slower due to the Covid-19 pandemic, its continuing impact on priorities, and staff resources.
- Proactive work regarding Particulate Matter emissions due to staff resources and being unable to submit a bid for a Defra grant for a Particulate Matter project in Suffolk.
- Installation of EV charging points due to financial resources available.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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	
2	Councils' refuse fleet is run on HVO	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2020	2021	BMSDC	BMSDC	NO	Funded	£500k - £1 million	Completed	NOx reduced by up to 30%, PM2.5 and PM10 reduced by up to 86% (New Era Fuels, 2021)	Emissions from vehicles	Implemented	
3	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 230 planning consultations were responded to regarding air quality in 2021, including those for Nationally Significant Infrastructure Projects	An ongoing action, hence no dates
4	Suffolk Guidance for Parking requires EV charging points	Policy Guidance and Development Control	Other policy	2019		SCC	Developers	NO	Not Funded		Implementation	Reduced vehicle emissions as encourages use of EV	Number of charging points and use of EV	Not possible to quantify impact of this specific policy	Guidance was implemented before 2019, but was last revised then. Ongoing.
5	Installation of EV charging points	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2017		BMSDC	BMSDC funds, Community Infrastructure Levy	NO	Partially Funded	£10k - 50k	Implementation	Reduced vehicle emissions as encourages use of EV	Number of points installed and their use	Nine points installed to date by the Councils, including one rapid charger	LA funds and access to grants limit the number of charging points installed
6	Suffolk car share	Alternatives to private vehicle use	Car & lift sharing schemes			SCC, Suffolk Climate Change Partnership - BMSDC are members	SCC, Suffolk Climate Change Partnership - BMSDC are members	NO	Funded	< £10k	Implementation	Reduced vehicle emissions	Number of participants in scheme	Increased membership over recent years, to approx. 3,750 members in 2021	Due to contract changes, SCC cannot obtain membership figures beyond 2021
7	The Suffolk Air Quality Group shares knowledge and liaises with other bodies	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality			LA's across Suffolk, SCC, UK Health Security Agency, University of Suffolk	LA	NO	Funded	< £10k	Implementation	Reduced emissions from vehicles, burning, improved awareness of air quality	Development of policies, strategies, projects	Continued good links, knowledge sharing, improved links with different SCC directorates	An ongoing action, hence no dates

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
8	Clean Air Day campaign	Public Information	Via the Internet	2021	2021	BMSDC	BMSDC	NO	Funded	< £10k	Completed	Reduced emissions due to improved awareness	Behaviour changes	June 2021 campaign involved social media posts, releasing a podcast by SAQG, internal BMSDC newsletter	It is not possible to measure the outcome of this action
9	Council website encourages car sharing, walking, cycling	Public Information	Via the Internet			BMSDC	BMSDC	NO	Funded	< £10k	Implementation	Reduced emissions due to improved awareness		Cannot quantify	Council website is unlikely to be where people would search for such information
10	Councils' Green Travel Plan still available for those not working from home	Promoting Travel Alternatives	Workplace Travel Planning	2017		SCC, BMSDC	SCC, BMSDC	NO	Funded	£10k - 50k	Implementation	Reduced vehicle emissions	Use of alternative travel	Limited use due to majority of Officers working from home	Ongoing action. Suffolk wide scheme, not possible to quantify benefit in BMSDC
11	Regulation of premises with an Environmental Permit	Environmental Permits	Introduction/increase of environment charges through permit systems and economic instruments			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 2021, no complaints received, advice given re PM control	
12	Council pool cars are EV	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
13	Licensing an electric taxi	Promoting Low Emission Transport	Taxi Licensing conditions	2021	2021	BMSDC	BMSDC	NO	Not Funded		Completed	Reduced emissions from this taxi	Emissions from this taxi, and encouraging other EV taxi's	Licence issued to electric taxi	
14	Suffolk Air Quality Profile published	Public Information	Via the Internet	2020	2021	SCC	SCC	NO	Funded	< £10k	Completed	Reduced emissions from vehicles, burning, improved awareness of air quality	Suffolk wide air pollution concentrations	Public Health within SCC have published the Suffolk Air Quality Profile, detailing areas of concern in Suffolk, health effects, beneficial actions	

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

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

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.
- The SAQG carried out work to submit a bid for a Defra grant for a PM monitoring exercise and behaviour change campaign. This has led to an improved understanding of PM monitoring equipment, calibration, data management and interpretation. This will be useful knowledge for the future.
- The information on the Councils' websites regarding burning solid fuel has been improved. This incorporates advice about the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020, and the contact details for reporting problems to Trading Standards at Suffolk County Council. Increased awareness should reduce $PM_{2.5}$ emissions.
- The Councils' refuse fleet is now run on HVO, which has up to 86% reduced PM emissions.
- Residents are encouraged to use the green waste collection service or household waste recycling centres rather than burning garden waste.
- Throughout 2021, inspections that were conducted 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, with water sprays improved at two batching plants.

- The Environmental Protection Team recommends planning conditions regarding the control of $PM_{2.5}$, for example by compliance with a construction management plan.
- The Sustainability Officers installed a double EV charger in a Council owned car park in Stowmarket (in the Mid Suffolk district) in 2021. Providing EV charging points encourages the uptake of EV's and reduces PM emissions from traditional fuel vehicles.
- The Councils employed an Active Travel Officer in early 2021 and have a vision to encourage sustainable, active travel. During 2021, there was a consultation on the Local Cycling and Walking Infrastructure Plan. These initiatives will reduce $PM_{2.5}$ emissions from vehicles.

Within the Babergh and Mid Suffolk districts, the fraction of mortality attributable to particulate air pollution was 5.6% for both districts in 2020[8]. This is the latest dataset available. This is very similar to the average figure for the East of England Region (5.8%), and the same as the England average of 5.6%[8].

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 $PM_{2.5}$.

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

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

This section sets out the monitoring undertaken within 2021 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 2017 and 2021 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 2021: 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 compares 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 2021 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, then the mean average e.g. BDC 1 mean.

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 2021. Concentrations of NO_2 are similar to the 2020 results both within and outside the AQMA. The results are lower than those in 2017-2019. It is thought that this is because of reduced traffic flows compared to 2017-2019, 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. This is despite increased traffic flows at a nearby monitoring station between 2020 and 2021, see Figure 1. 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 has been a slight increase in NO_2 concentration between 2020 and 2021. This is thought to be due to increased traffic flows. It is not known why there has been a further decrease in NO_2 concentration at two

locations between 2020 and 2021. At all locations, the annual mean for 2021 is lower than it was in 2019.

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 has then been 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.

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 2017 and 2021. 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 in 2021, but remained at a similar, lower concentration at MSDC 2.

The monitoring locations in both districts remain appropriate and will continue in 2022.

No new monitoring locations will be added in 2022.

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) [3]	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

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) [3]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
BDC 13	31 Friars Street, Sudbury	Roadside	587257	241110	NO2	No	0.0	2.9	No	2.3
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).

(3) N/A if not applicable.

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 2021 (%) (3)	2017	2018	2019	2020	2021
BDC 1a, BDC 1b	586848	241133	Roadside	100	100.0	30.2	31.0	28.1	24.8	25.8
BDC 2a, BDC 2b	586836	241089	Roadside	100	100.0	30.7	30.3	28.7	27.1	27.9
BDC 3a, BDC 3b	586808	241015	Roadside	100	100.0	37.0	37.7	34.8	28.7	30.0
BDC 4a, BDC 4b	586790	240944	Roadside	100	100.0	28.8	30.6	29.4	22.0	23.2
BDC 5a, BDC 5b	586798	241010	Roadside	100	100.0	**41.3**	38.1	36.0	30.4	32.3
BDC 6a, BDC 6b	586818	241068	Roadside	100	100.0	34.5	34.0	31.2	23.2	24.9
BDC 7a, BDC 7b	586829	241104	Roadside	100	100.0	**52.7**	**51.4**	**47.5**	31.1	33.3
BDC 8a, BDC 8b	586835	241123	Roadside	100	100.0	**55.1**	**49.7**	**47.3**	32.8	33.2
BDC 9a, BDC 9b	586842	241148	Roadside	100	100.0	**54.5**	**46.3**	**47.0**	31.5	31.5
BDC 10	586721	240879	Roadside	100	100.0	30.6	29.4	27.6	23.7	23.1
BDC 11	586930	241058	Roadside	100	100.0	24.4	22.2	22.4	14.7	17.2
BDC 12	587253	241256	Roadside	100	100.0	31.3	29.8	28.0	22.5	20.2
BDC 13	587257	241110	Roadside	100	100.0	18.0	18.0	18.8	14.6	18.0

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 2021 (%) (3)	2017	2018	2019	2020	2021
MSDC 1a, MSDC 1b	604972	258745	Roadside	90.4	90.4	35.8	30.8	31.2	24.8	28.4
MSDC 2	606049	259307	Roadside	100	100.0	22.2	22.2	21.4	16.1	17.4

☐ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

☒ **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.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

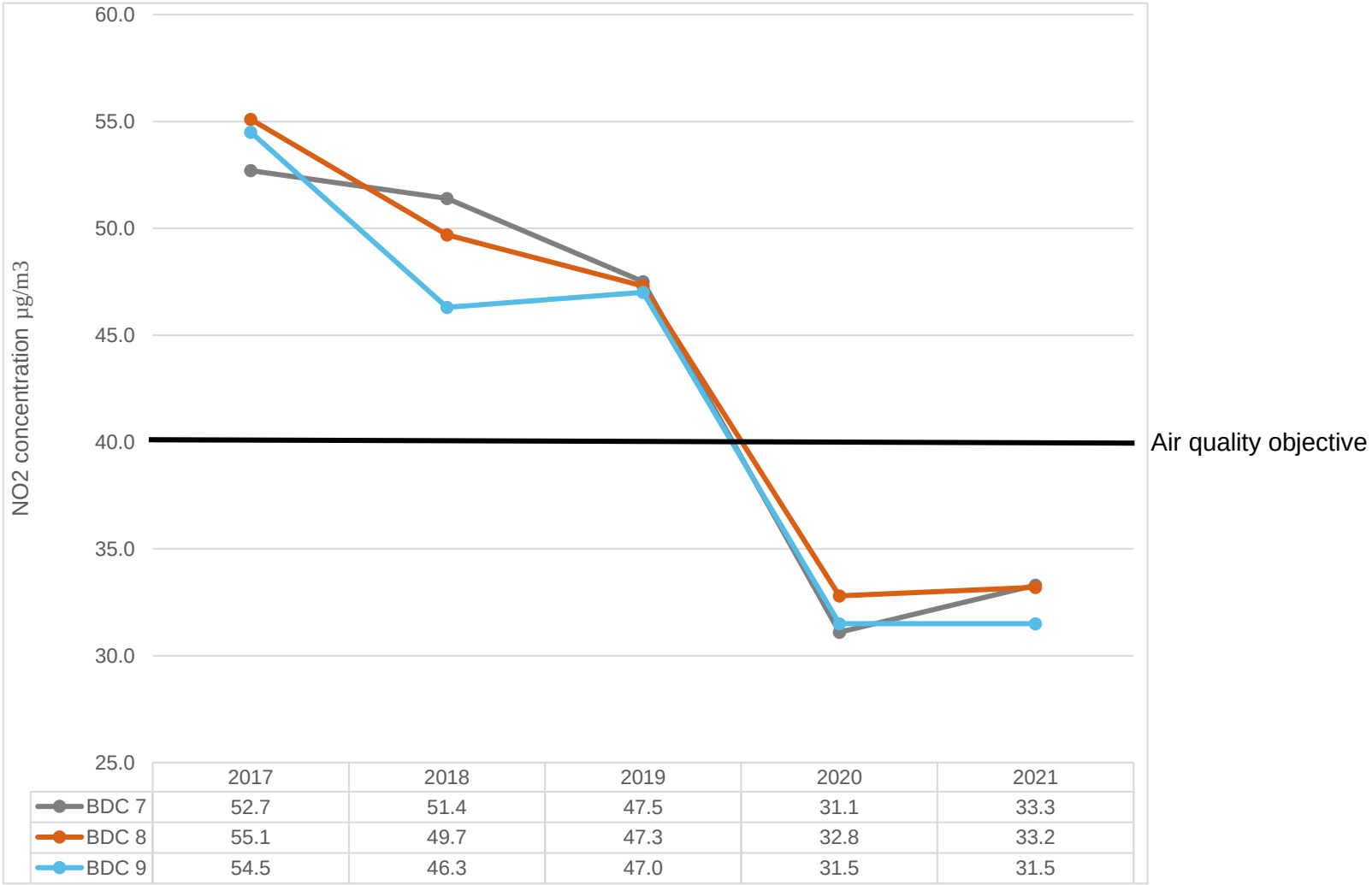
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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.

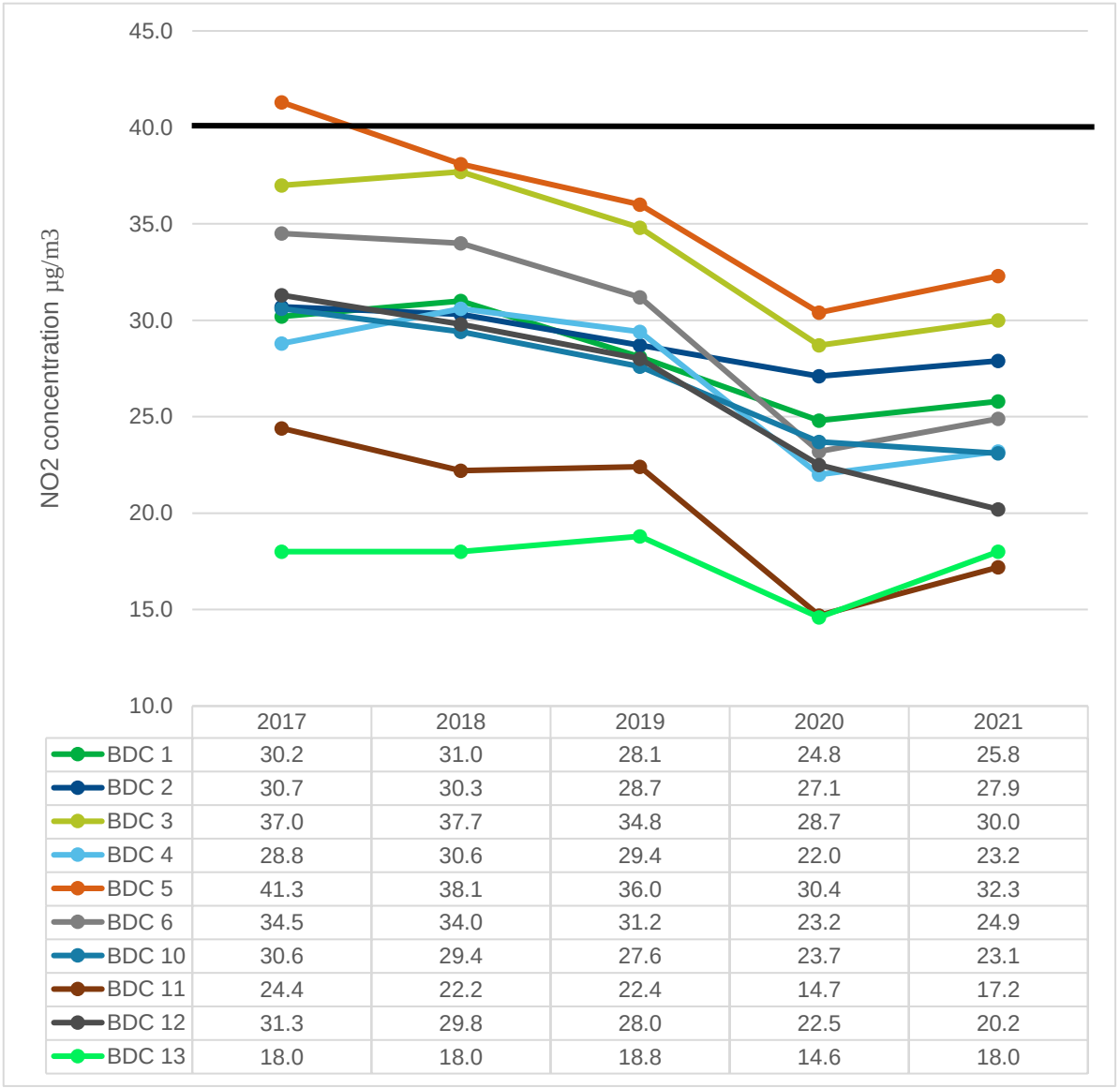
(3) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

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



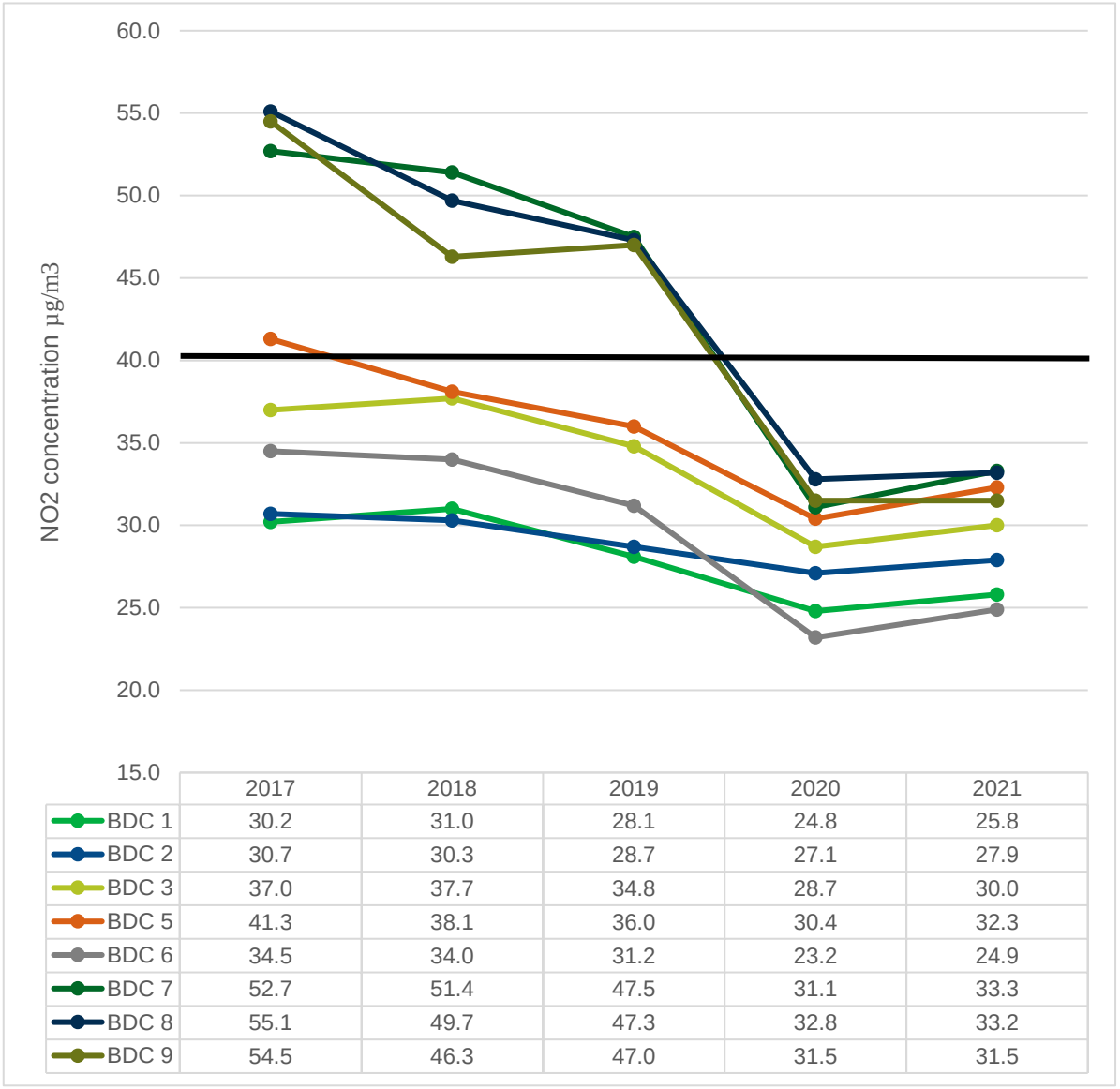
	2017	2018	2019	2020	2021
BDC 7	52.7	51.4	47.5	31.1	33.3
BDC 8	55.1	49.7	47.3	32.8	33.2
BDC 9	54.5	46.3	47.0	31.5	31.5

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



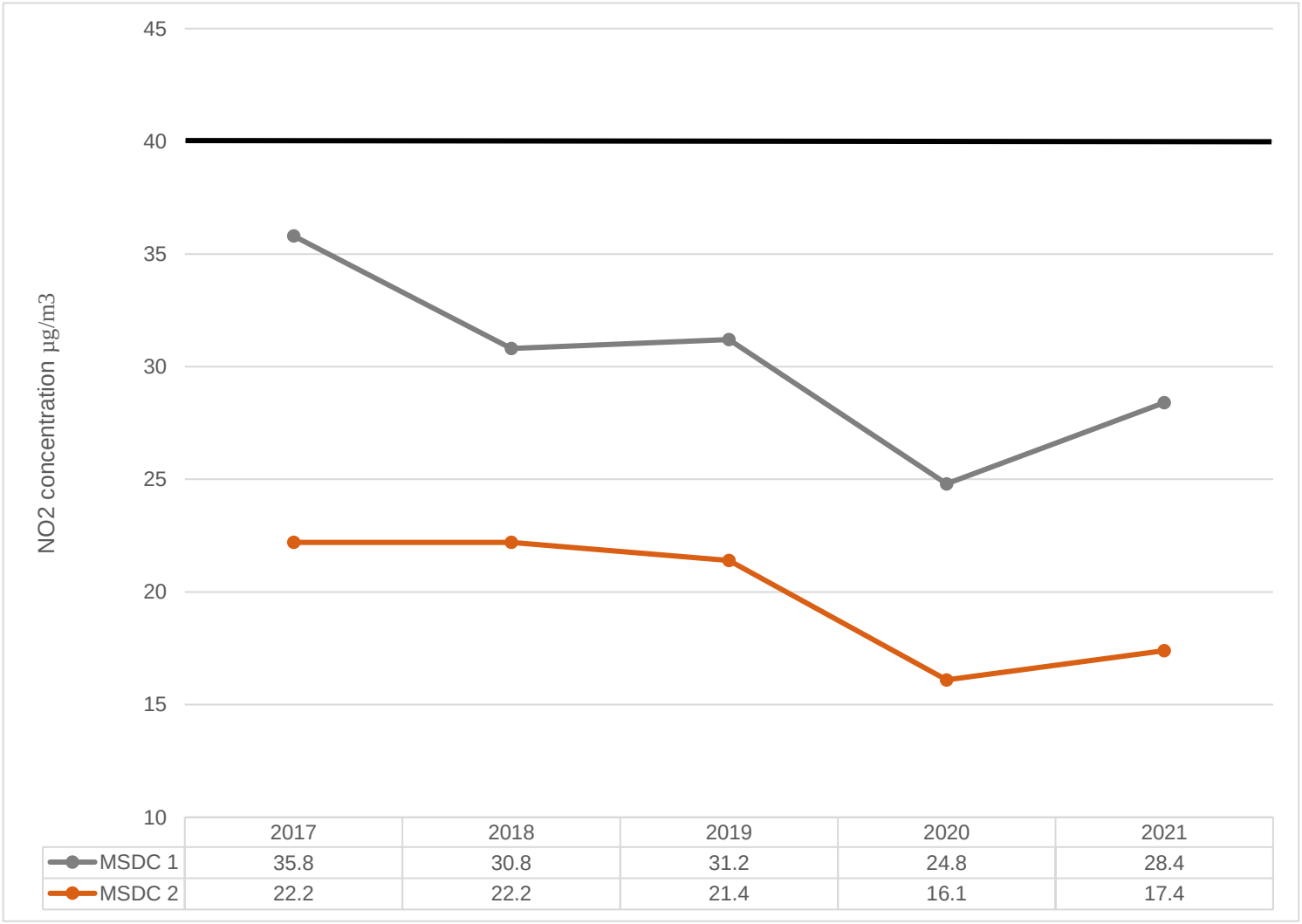
	2017	2018	2019	2020	2021
BDC 1	30.2	31.0	28.1	24.8	25.8
BDC 2	30.7	30.3	28.7	27.1	27.9
BDC 3	37.0	37.7	34.8	28.7	30.0
BDC 4	28.8	30.6	29.4	22.0	23.2
BDC 5	41.3	38.1	36.0	30.4	32.3
BDC 6	34.5	34.0	31.2	23.2	24.9
BDC 10	30.6	29.4	27.6	23.7	23.1
BDC 11	24.4	22.2	22.4	14.7	17.2
BDC 12	31.3	29.8	28.0	22.5	20.2
BDC 13	18.0	18.0	18.8	14.6	18.0

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



	2017	2018	2019	2020	2021
BDC 1	30.2	31.0	28.1	24.8	25.8
BDC 2	30.7	30.3	28.7	27.1	27.9
BDC 3	37.0	37.7	34.8	28.7	30.0
BDC 5	41.3	38.1	36.0	30.4	32.3
BDC 6	34.5	34.0	31.2	23.2	24.9
BDC 7	52.7	51.4	47.5	31.1	33.3
BDC 8	55.1	49.7	47.3	32.8	33.2
BDC 9	54.5	46.3	47.0	31.5	31.5

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



	2017	2018	2019	2020	2021
MSDC 1	35.8	30.8	31.2	24.8	28.4
MSDC 2	22.2	22.2	21.4	16.1	17.4

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 2021 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 2021

Table B.1 – NO_2 2021 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 (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
BDC 1a	586848	241133	39.1	41.4	30.3	32.0	34.5	27.1	28.4	26.0	41.2	39.6	35.8	37.0	-	-	-	Duplicate Site with BDC 1a and BDC 1b - Annual data provided for BDC 1b only
BDC 1b	586848	241133	33.4	38.7	24.9	30.4	31.9	26.5	24.5	24.6	40.5	36.5	33.6	36.2	33.1	25.8	-	Duplicate Site with BDC 1a and BDC 1b - Annual data provided for BDC 1b only
BDC 2a	586836	241089	40.8	44.7	33.3	39.1	36.0	34.8	26.1	32.0	43.3	39.2	41.3	36.5	-	-	-	Duplicate Site with BDC 2a and BDC 2b - Annual data provided for BDC 2b only
BDC 2b	586836	241089	40.3	42.3	32.0	34.7	35.8	32.8	21.8	30.3	29.4	37.6	41.2	33.3	35.8	27.9	-	Duplicate Site with BDC 2a and BDC 2b - Annual data provided for BDC 2b only
BDC 3a	586808	241015	40.7	47.5	37.3	39.0	41.7	35.3	33.2	39.2	46.2	39.2	40.8	39.0	-	-	-	Duplicate Site with BDC 3a and BDC 3b - Annual data provided for BDC 3b only
BDC 3b	586808	241015	35.0	43.6	32.2	34.1	39.0	34.1	32.3	35.2	43.8	36.9	39.4	37.3	38.4	30.0	-	Duplicate Site with BDC 3a and BDC 3b - Annual data provided for BDC 3b only
BDC 4a	586790	240944	33.0	35.2	25.8	29.3	29.4	26.6	26.9	26.0	37.5	32.5	32.7	31.9	-	-	-	Duplicate Site with BDC 4a and BDC 4b - Annual data provided for BDC 4b only
BDC 4b	586790	240944	29.7	34.3	24.6	28.8	28.8	19.0	26.7	24.8	36.4	32.1	32.2	30.0	29.8	23.2	-	Duplicate Site with BDC 4a and BDC 4b - Annual data provided for BDC 4b only
BDC 5a	586798	241010	45.6	37.8	43.9	43.0	38.4	41.3	32.3	43.4	46.5	43.9	52.9	44.9	-	-	-	Duplicate Site with BDC 5a and BDC 5b - Annual data provided for BDC 5b only
BDC 5b	586798	241010	41.4	37.1	39.2	41.1	31.9	35.1	29.2	42.9	45.4	42.4	50.3	42.9	41.4	32.3	-	Duplicate Site with BDC 5a and BDC 5b - Annual data provided for BDC 5b only
BDC 6a	586818	241068	37.5	33.9	32.6	35.9	23.6	32.5	26.8	34.7	35.5	32.3	39.2	30.5	-	-	-	Duplicate Site with BDC 6a and BDC 6b - Annual data provided for BDC 6b only
BDC 6b	586818	241068	35.2	31.2	32.0	33.7	19.2	31.0	23.2	31.6	33.0	31.5	39.0	29.7	31.9	24.9	-	Duplicate Site with BDC 6a and BDC 6b - Annual data provided for BDC 6b only
BDC 7a	586829	241104	50.6	46.5	44.4	38.7	39.5	46.8	35.9	41.0	48.2	47.3	55.8	47.1	-	-	-	Duplicate Site with BDC 7a and BDC 7b - Annual data provided for BDC 7b only
BDC 7b	586829	241104	47.7	38.9	25.2	37.0	25.4	44.5	33.3	40.3	46.1	45.9	55.4	42.9	42.7	33.3	-	Duplicate Site with BDC 7a and BDC 7b - Annual data provided for BDC 7b only
BDC 8a	586835	241123	48.6	39.5	45.7	38.4	37.8	45.0	34.4	41.5	50.2	50.5	52.9	46.8	-	-	-	Duplicate Site with BDC 8a and BDC 8b - Annual data provided for BDC 8b only
BDC 8b	586835	241123	47.2	37.3	42.2	37.6	29.1	42.1	33.9	35.2	45.4	46.1	51.7	43.6	42.6	33.2	-	Duplicate Site with BDC 8a and BDC 8b - Annual data provided for BDC 8b only
BDC 9a	586842	241148	45.6	38.1	45.5	35.2	40.0	38.9	32.8	38.8	44.2	47.1	52.1	40.9	-	-	-	Duplicate Site with BDC 9a and BDC 9b - Annual data provided for BDC 9b only
BDC 9b	586842	241148	43.0	36.6	45.3	34.6	36.4	35.0	27.7	32.8	44.1	45.7	51.8	37.7	40.4	31.5	-	Duplicate Site with BDC 9a and BDC 9b - Annual data provided for BDC 9b only

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 (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
BDC 10	586721	240879	35.6	32.9	29.3	26.7	30.7	23.3	25.4	21.1	26.7	31.2	36.0	36.5	29.6	23.1	-	
BDC 11	586930	241058	26.5	20.2	22.7	18.9	18.8	19.7	16.3	19.1	23.6	23.5	31.6	24.1	22.1	17.2	-	
MSDC 1a	604972	258745	41.2	33.0	35.7	39.2	39.7	38.1	31.2	32.2	44.3	35.6	48.5		-	-	-	Duplicate Site with MSDC 1a and MSDC 1b - Annual data provided for MSDC 1b only
MSDC 1b	604972	258745	37.7	31.5	33.5	37.0	30.6	34.1	30.3	31.9	41.3	28.8	46.0		36.4	28.4	-	Duplicate Site with MSDC 1a and MSDC 1b - Annual data provided for MSDC 1b only
MSDC 2	606049	259307	24.4	25.5	16.6	29.2	18.7	20.0	23.6	16.0	28.4	18.4	23.6	22.9	22.3	17.4	-	

☒ **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.TG16.**

☐ **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 2021 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 2021

Babergh and Mid Suffolk District Councils have not identified any significant new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by Babergh and Mid Suffolk District Councils During 2021

Although the key action from the AQAP was implemented during 2020 and made permanent during 2021, 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 22 studies and poor results for 3 studies in 2021. The diffusion tubes were changed in line with the 2021 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 2021 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.TG16 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.

Babergh and Mid Suffolk District Councils have applied a national bias adjustment factor of 0.78 to the 2021 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 2021, national spreadsheet version 06/22 has been used, which included 25 studies to derive the bias factor.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	06/22	0.78
2020	National	06/21	0.76
2019	National	09/20	0.75
2018	National	3/19	0.76
2017	National	3/18	0.77

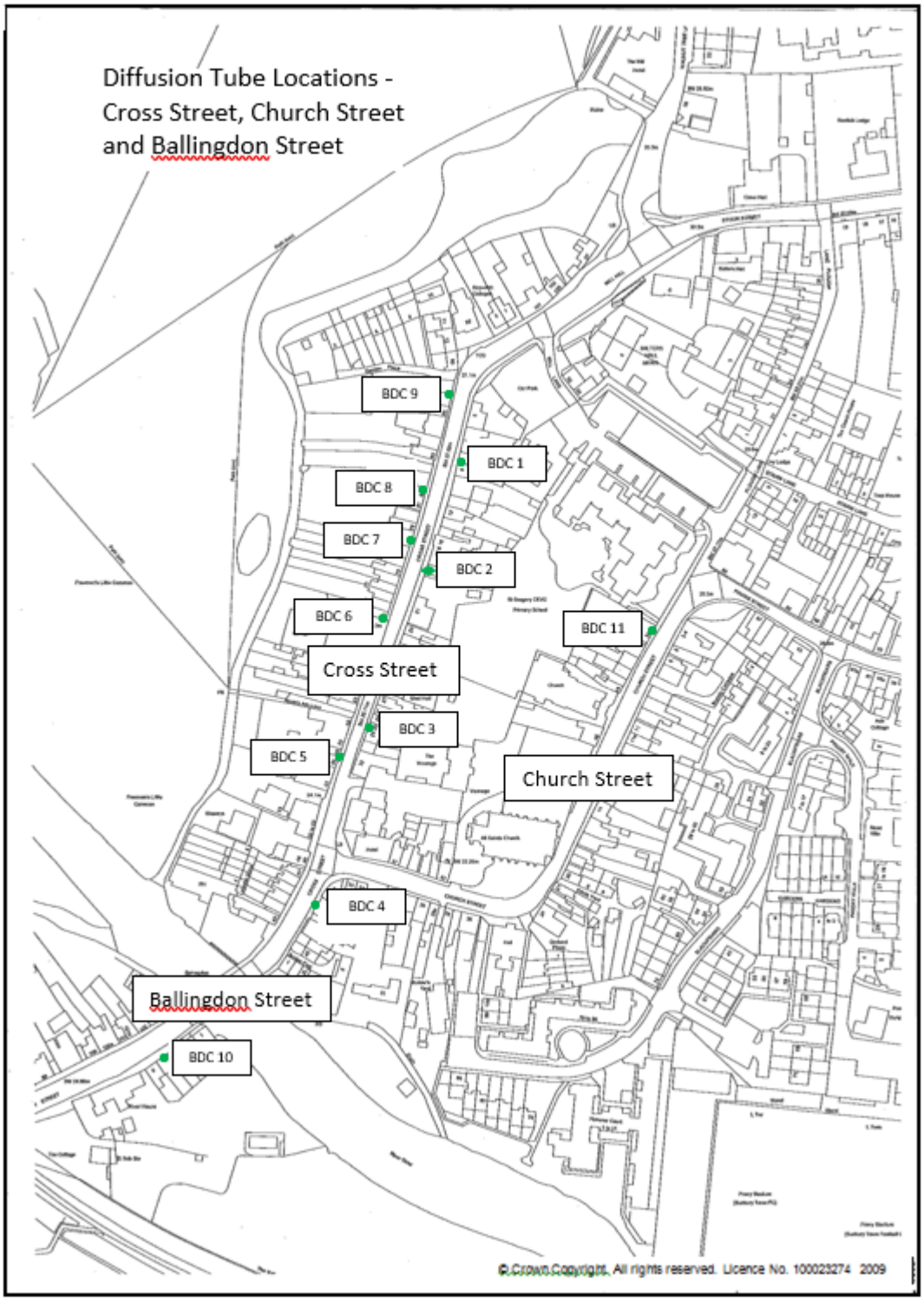
NO_2 Fall-off with Distance from the Road

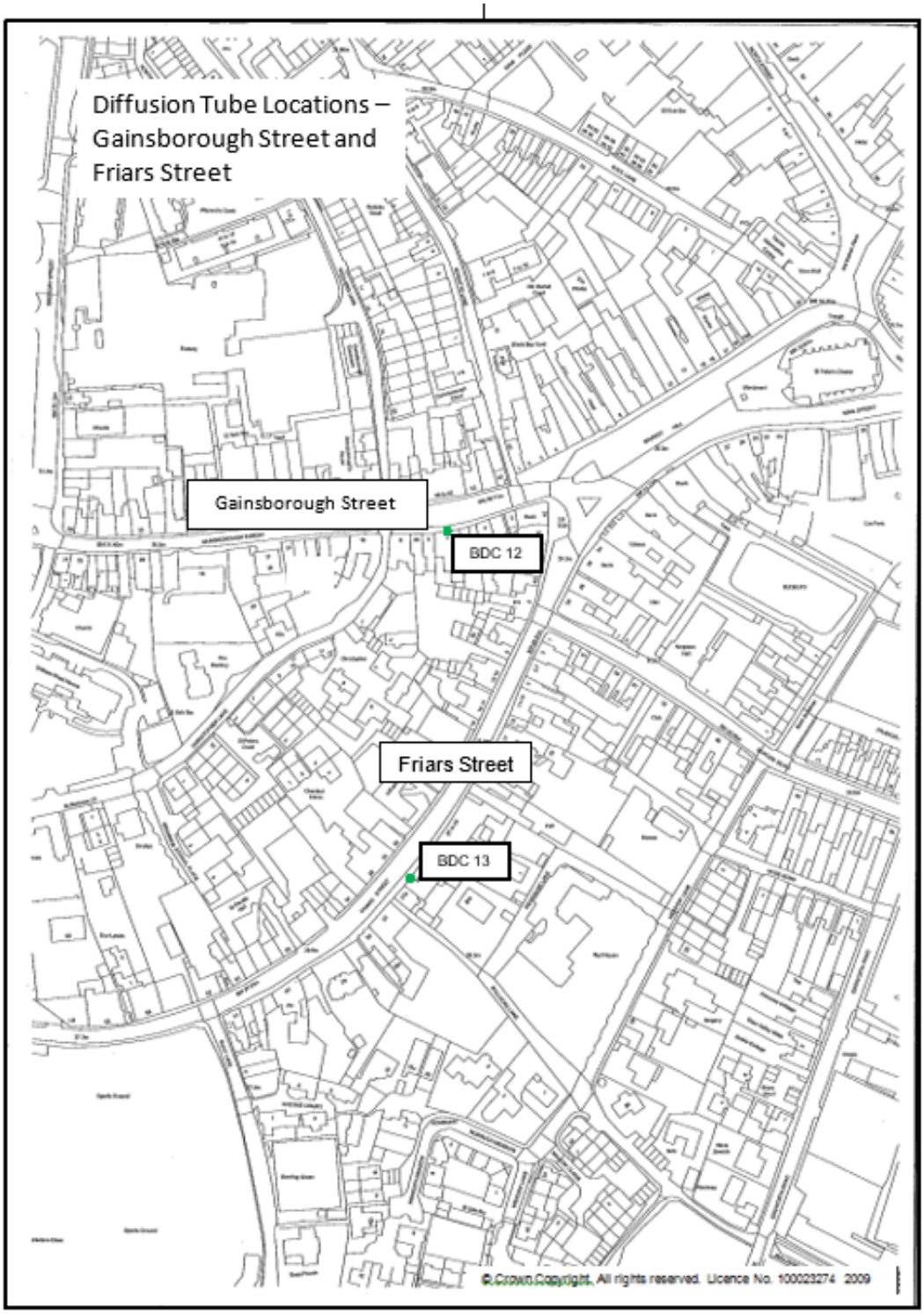
Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM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

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 17.4µg/m^3, hence no diffusion tube NO_2 monitoring locations within Babergh and Mid Suffolk District Councils required distance correction during 2021.

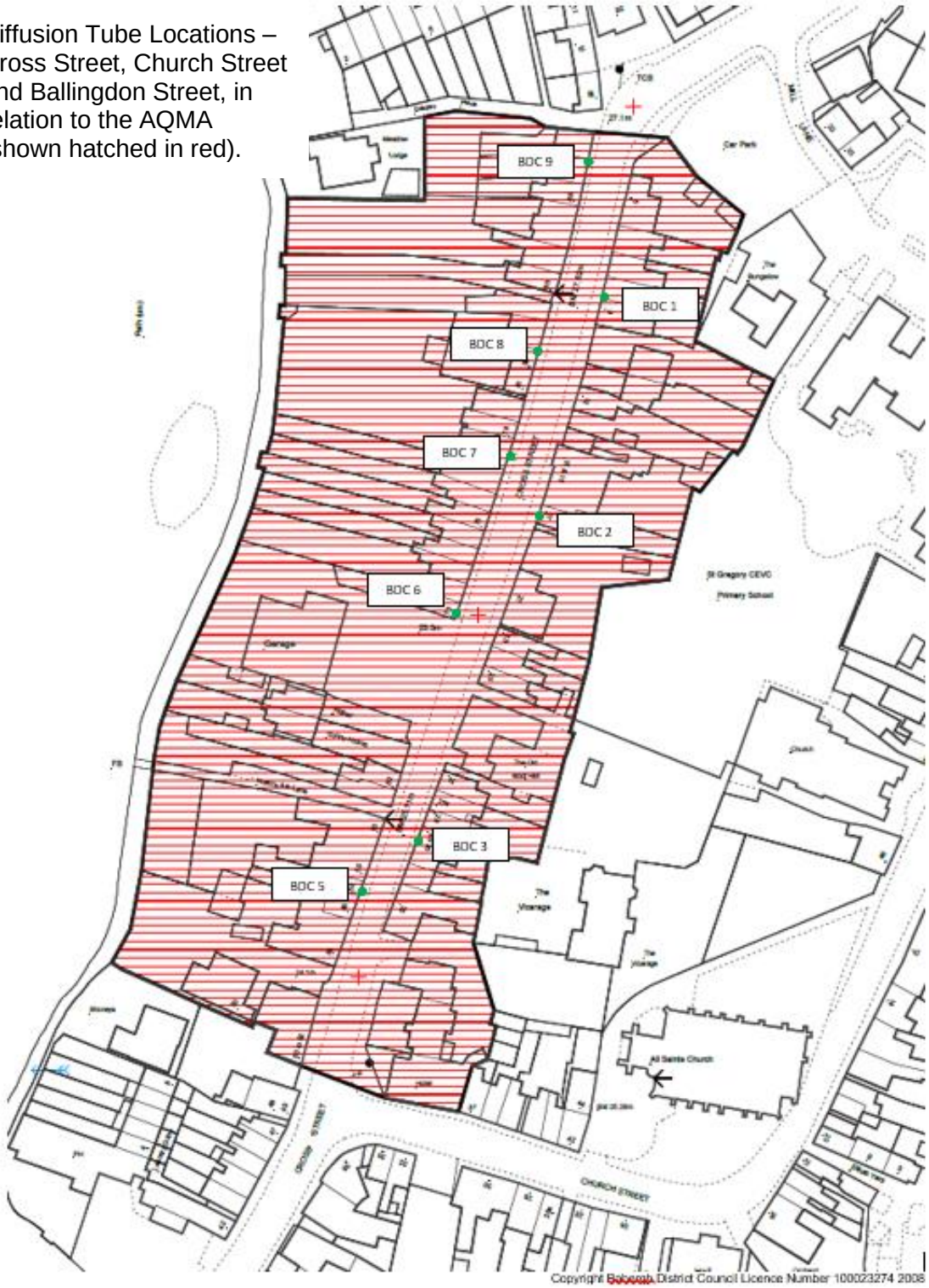
Appendix D: Maps of Monitoring Locations and AQMAs

Within the Babergh District

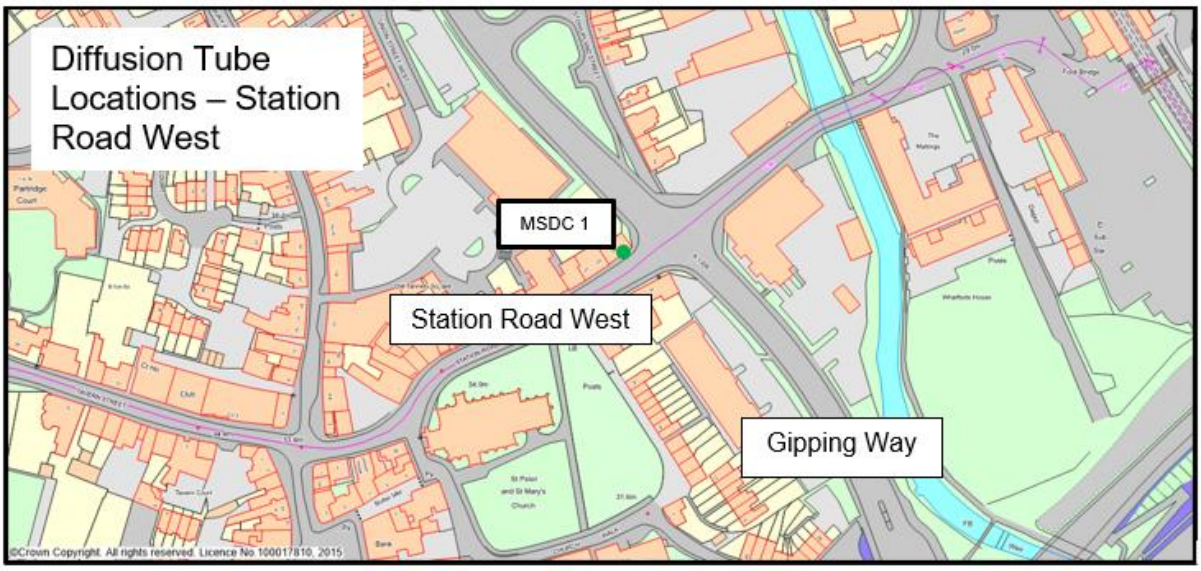



Diffusion Tube Locations – Gainsborough Street and Friars Street
Gainsborough Street
BDC 12
Friars Street
BDC 13
©Crown Copyright. All rights reserved. Licence No. 100023274 2009

Diffusion Tube Locations – Cross Street, Church Street and Ballingdon Street, in relation to the AQMA (shown hatched in red).



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
EU	European Union
HVO	Hydrotreated Vegetable Oil
LAQM	Local Air Quality Management
MSDC	Mid Suffolk District Council
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
SAQG	Suffolk Air Quality Group
SCC	Suffolk County Council
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. 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.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.