



2016 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the
Environment Act 1995
Local Air Quality Management

September, 2016

Babergh and Mid Suffolk District Councils

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Report Reference number	ASR/2016
Date	September 2016

Executive Summary: Air Quality in Our Area

Why Air Quality Matters

The quality of the air in the United Kingdom has improved considerably over the last few decades. Overall, the air we breathe today is cleaner than at any time since before the industrial revolution. This has been achieved through regulation of emissions from industrial processes, progressive tightening of emissions and fuel standards for road vehicles, and controlling smoke from domestic premises.

Despite these improvements, air pollution still harms health and the environment. 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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas^{1,2}.

One air pollutant, fine Particulate Matter, has been estimated to reduce life expectancy on average in the European Union by more than 8 months³. Furthermore, in the United Kingdom in 2008, its impact was estimated to be equivalent to nearly 29,000 deaths at typical ages⁴. The annual health cost to society of the impacts of Particulate Matter alone in the United Kingdom is estimated to be around £16 billion⁵.

Within the Babergh and Mid Suffolk districts, the percentage of mortality in those aged over 30 years, due to fine Particulate Matter is 5.6 for both districts⁴. This is the same as the average figure for the East of England Region, and slightly higher than the England average of 5.3%⁴. Improving air quality will benefit public health, the environment and economy.

Air Quality in the Babergh and Mid Suffolk Districts

The Babergh and Mid Suffolk districts are predominantly rural, with a number of small market towns. The majority 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 2015, and no planning applications for potential new significant sources of industrial emissions were

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received. One existing large domestic biomass boiler was assessed by Officers of Babergh District Council during 2015 and was not found to be a risk to air quality.

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 2015.

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 transport. Monitoring is conducted across the districts to measure concentrations of Nitrogen dioxide. This monitoring has shown that within specific areas of Cross Street, Sudbury (within the Babergh district), concentrations of Nitrogen dioxide were, and continue to be, higher than the health based annual mean Air Quality Objective. An Air Quality Management Area (AQMA) was designated in 2008 for a section of Cross Street, Sudbury, as a result of the exceedances of the annual mean Objective for Nitrogen dioxide. Further information about the AQMA can be found at https://uk-air.defra.gov.uk/aqma/details?aqma_id=175 and in Appendix G. This is the only AQMA within the Babergh district.

The exceedances of the Objective at locations on Cross Street are as a result of emissions from road transport, local highways design and local topography. During 2015, a number of monitoring locations on Cross Street exceeded the Objective, with Nitrogen dioxide concentrations broadly consistent with the past 5 years. There are monitoring locations within the AQMA at which there were not exceedances of the Objective during 2015. These locations are affected to a lesser extent by road transport, owing to highway design allowing free flow of traffic and greater dispersal of exhaust emissions. At these locations, Nitrogen dioxide concentrations have also been reasonably constant over the past 5 years. Overall, the monitoring in 2015 supports the designation of the AQMA. The boundaries of the AQMA will remain unchanged as the designated section of Cross Street must be addressed as a whole to improve the air quality.

At monitoring locations outside of the AQMA within the Babergh district, results over the last 5 years have been fairly constant or shown a gradual reduction. No exceedances of the Objective were recorded outside the AQMA in 2015. No

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monitoring locations in the Babergh district have shown an increase in Nitrogen dioxide concentration over the last 5 years.

Monitoring in the Mid Suffolk district has not historically shown continuing exceedances of the Objective at relevant exposure, (for example residential properties, schools, hospitals, care homes), and there are no designated AQMAs. This remains true for 2015. The majority of the locations monitored in 2015 within the Mid Suffolk district have shown a gradual reduction in Nitrogen dioxide concentration over the past 5 years. One monitoring location that is close to the A14 has shown relatively constant results over the past 5 years.

Actions to Improve Air Quality

Due to the AQMA in Cross Street, Sudbury, an Air Quality Action Plan (AQAP) is in place. The key action from the AQAP that will reduce the concentration of Nitrogen dioxide is to remove the on street parking bays on Cross Street to improve traffic flows and allow the highway to operate more effectively.

There are currently two sets of parking bays on the southbound lane of Cross Street, allowing a total of seven vehicles to park. When either of these bays is occupied by at least one vehicle, traffic has to slow down, and often queue, to pass the bays, as shown in Photograph 1.

Photograph 1 Southbound traffic has had to queue behind the bays until northbound traffic has passed



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Traffic then passes the bays by entering the northbound lane. Concentrations of Nitrogen dioxide exceed the Objective at relevant exposure on the west of Cross Street in the area of the parking bays. This is thought to be primarily because both lanes of traffic pass the parking bays in the northbound lane, closest to these properties, as shown in Photograph 2.

Photograph 2 Traffic passes the parking bays by entering the northbound lane



Queuing and accelerating traffic also leads to higher concentrations of Nitrogen dioxide than free flowing traffic. Appendix E shows the annual Nitrogen dioxide results for 2015 from the monitoring locations on Cross Street compared to the location of the parking bays.

Officers from Babergh District Council and Suffolk County Council are working together to temporarily remove the on street parking bays, assess the impact this has on air quality, with a view to informing a longer term solution.

Babergh and Mid Suffolk District Councils are also working with Suffolk County Council to implement a range of policies and strategies that have either a direct or indirect impact on air quality. This includes actions within Suffolk County Council's Transport Strategy relating to sustainable planning developments⁶, and a grant funded project to be run by the Suffolk Climate Change Partnership to install 'first-time' central heating in certain properties, reducing reliance on solid fuel, and thereby also reducing emissions of Particulate Matter⁷.

Local Priorities and Challenges

The priority for 2016 is to implement the experimental removal of the on street parking bays on Cross Street, Sudbury, and monitor the effect of this in terms of reducing concentrations of Nitrogen dioxide. There are logistical and legal challenges relating to this task, but Officers from Babergh District Council are committed to working with Suffolk County Council to achieve a positive outcome. Once the effect of removing the parking bays has been determined, other actions in the AQAP will be reviewed as appropriate.

The Councils also aim to work with other Suffolk local authorities and Public Health England in 2016 to investigate and implement measures to reduce the emissions of Particulate Matter.

The Councils are endeavouring to be proactive in terms of sustainability and acting as an investor in renewables and energy efficiency. There are clear overlaps between this area of work and Local Air Quality Management, which will be explored in coming years to ensure that benefits to both areas of work are maximised.

How to Get Involved

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.

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- Car share, to reduce emissions and save money. Further details can be found on the websites below.
- 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

<http://baberghmidsuffolk.gov.uk/environment/environmental-protection/air-quality/>

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1 Local Air Quality Management

This report provides an overview of air quality in the Babergh and Mid Suffolk districts during 2015. 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 designate 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 health based Air Quality Objectives applicable to LAQM in England can be found in Table F.1 in Appendix F.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

AQMAs are designated when there is an exceedance or likely exceedance of an Air Quality Objective. After designation, the authority should prepare an AQAP within 12 to 18 months setting out measures it intends to put in place in pursuit of the Objectives.

One AQMA has been designated by Babergh District Council owing to exceedances of the Annual Mean Objective for Nitrogen dioxide (NO₂), and none by Mid Suffolk District Council where monitoring has demonstrated compliance. A summary of the AQMA can be found in Table 2.1 and the Air Quality Management Order can be found in Appendix G. Further information related to designated or revoked AQMAs within the Babergh district, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=9

Table 2.1 – Designated Air Quality Management Areas

AQMA Name	Pollutants and Air Quality Objectives	City / Town	Brief Description	Action Plan
Cross Street	NO ₂ Annual Mean	Sudbury	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	Air Quality Action Plan: Babergh District Council – Cross Street, Sudbury AQMA http://baberghmidsuffolk.gov.uk/assets/Environment/Air-Quality-Action-Plan.pdf

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

The AQAP for Cross Street, Sudbury, includes a large number of proposed measures to reduce the concentration of NO₂. The aim is to reduce this to below the Annual Mean Objective of 40 µg/m³, and ultimately revoke the AQMA.

Four measures from the AQAP that are thought to result in the greatest reduction in NO₂ have been studied in more detail. Modelling has been conducted which predicts the concentration of NO₂ at a range of locations on Cross Street and surrounding

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roads if a certain measure was implemented. The result of this modelling is included in Appendix A of the AQAP.

One of these modelled measures is to 'remove build-out and car parking spaces'. In this sense a 'build out' is a piece of artificial highway infrastructure designed to narrow the road for the purposes of road safety. One of these was constructed on the northbound lane of Cross Street in a deliberate attempt to prevent the passing of two Heavy Goods Vehicles on a highway which was too narrow for this purpose. However, this led to increased concentrations of NO₂ close to the 'build-out', as traffic became single file, and used the southbound lane to travel in both directions. This adversely impacted the air quality of those properties directly opposite the 'build out'. The 'build-out' was removed in 2010, and NO₂ concentrations at the monitoring location adjacent to the southbound lane have fallen significantly.

The additional step of removing car parking spaces relates to two sets of on street parking bays in the southbound lane of Cross Street which provide on street parking for 7 vehicles. The on street bays force traffic to behave in a similar manner to the removed 'build out' by artificially narrowing the highway. When either bay is occupied by at least one vehicle, traffic has to slow down, and often queue, to pass the bay. It then passes by entering the northbound lane. Concentrations of NO₂ exceed the Objective at relevant exposure on the west of Cross Street in the area of the parking bays. This is thought to be primarily because both lanes of traffic pass the parking bays in the northbound lane, closest to these properties. Additionally, queuing and accelerating traffic also leads to higher emissions of NO₂ than free flowing traffic. Appendix E shows the annual mean NO₂ results for 2015 from the monitoring locations on Cross Street in relation to the location of the parking bays.

Removing the 'build-out' and parking bays was predicted to result in concentrations of NO₂ below the Objective at all modelled receptor locations with the exception of 30 Cross Street. Following the removal of the 'build-out', the priority within the AQAP has changed to exploring the removal of the on street parking bays. This has been assessed as having a high impact on air quality, low cost and medium feasibility. It is unlikely that any other measure in the AQAP would be as beneficial, taking all factors into account, hence they have not been progressed to date.

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Officers from Babergh District Council and Suffolk County Council have been working together to implement the experimental removal of the on street parking bays under Sections 9 and 10 of the Road Traffic Regulation Act 1984. Removing the bays would initially be through an Experimental Traffic Regulation Order, along with the provision of designated residents' parking to replace the on street parking bays. The proposal is for residents' parking to be in a car park within 100m of the existing bays which is operated by the Council. This will require amendments to the Babergh District Council (Off Street Parking Places) Order 2008. The provision of residents' parking, if granted, will need to be co-ordinated with the actions of Suffolk County Council with regard to the implementation of the Experimental Traffic Regulation Order. Removing the on street parking bays will be the priority for addressing air quality in the coming year owing to the significant predicted reduction in the NO₂ concentration that would result.

Moving forwards, the impact on NO₂ concentrations of temporarily removing the on street parking bays will be assessed to inform a long term decision about the parking bays and the provision of residents' parking in the Council owned car park.

In addition to the AQAP, a number of other documents apply to the two districts and aspects of them address air quality. These include the Suffolk Local Transport Plan, 2011 – 2031⁶, Supplementary Guidance – Air Quality Management and New Development, 2011⁸, Suffolk Guidance for Parking, November 2015⁹, and Suffolk Climate Action Plan 2, 2012¹⁰.

Examples of measures taken by Babergh District Council or Mid Suffolk District Council, or measures taken within the districts by Suffolk County Council or other organisations are –

- The Suffolk Local Transport Plan, 2011 - 2031 (LTP) sets out Suffolk County Council's long term transport strategy, as the Highway Authority. One of the aims of the LTP is to reduce the impact of harmful emissions, which clearly links to improving air quality. Other aims and objectives have incidental benefits to air quality, such as reducing congestion, the use of more effective traffic management, facilitating an increase in walking and cycling, and improving information about travel options and sustainable travel patterns. The LTP has impacts on planning applications that are determined by Babergh and

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Mid Suffolk District Councils - new planning developments are required to provide facilities that promote walking, cycling and local public transport. Specific projects are highlighted in the LTP in both districts, some of which will have a beneficial impact on air quality. Within the Babergh district these include new mixed use development sites to support new ways of working, particularly home working, and that the management of town centre traffic in Sudbury will take into account the AQMA. Within the Mid Suffolk district, the capacity of trains will be investigated with a view to increasing their use, along with an improved bus service in Stowmarket.

- The Suffolk Air Quality Group has published the document Supplementary Guidance – Air Quality Management and New Development, 2011. This guidance is in operation throughout Suffolk, and aims to maintain and improve air quality. It also ensures a consistent approach to determining when an air quality assessment is required with a planning application, provides guidance on the requirements of the assessment and on mitigating and offsetting the impacts. It has been referred to in both districts throughout 2015 to assist in assessing air quality. It is only through ensuring assessments are conducted as necessary that mitigation will then be implemented to maintain or improve air quality.
- In November 2015, the Suffolk Guidance for Parking was updated. One of the amendments to this document which will improve air quality relates to electric vehicle (EV) charging points. Developers are now required to provide and maintain an electricity supply for charging points. A minimum of 1 space for every 20 non-residential spaces should have charging points installed for EVs. Ducts must also be provided to a further 5% in all workplace spaces and town centre car parks to allow for future expansion when the technology reaches maturity. Furthermore, access to charging points should be made available in every residential dwelling for example in garages, car ports or through shared charging points. For development falling into all Planning Use Classes, EV recharging points are to be provided to support the use of low emission vehicles. The provisions relating to electric vehicles have been amended recently due to the higher than expected uptake of these vehicles, with an associated positive effect on air quality.

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- Both Councils are members of the Suffolk Climate Change Partnership. This Partnership has published and is implementing the Suffolk Climate Action Plan 2, 2012 and has drafted a revised Suffolk Climate Action Plan which will be adopted in autumn 2016 to cover actions through to 2021. The current document includes improving the energy efficiency of domestic buildings through grant funding. This will reduce Particulate Matter emissions associated with providing heating, such as burning solid fuel. Alternatives to solid fuel are also being encouraged, and a grant was awarded to the Partnership in July 2015 to implement a project to install central heating for the first time to vulnerable residents. This will particularly reduce emissions of Particulate Matter compared to burning solid fuel. The Partnership helps businesses to operate in a more energy efficient manner, which will reduce a range of air pollutants and have an impact on climate change. A business within the Mid Suffolk district is quoted in the Action Plan as an example of reducing emissions.

As there is not an AQMA in the Mid Suffolk district, the main measures to protect the existing good air quality have been via policies and strategies such as those above, and continuing to monitor NO₂ concentrations. Changes to the NO₂ monitoring programme are explained in Section 3.2.1.

Babergh and Mid Suffolk District Councils have taken forward a number of measures during the current reporting year of 2015 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	London Road Park and Ride, reducing vehicles driving into central Ipswich	Alternatives to private vehicle use	Bus based park and ride	SCC	Scheme operational pre 2015	Ongoing	Number of users of scheme	N/A	Unknown	Ongoing	More beneficial to Ipswich Borough Council
2	Suffolk car share ¹¹	Alternatives to private vehicle use	Car and lift sharing schemes	BDC MSDC SCC	Scheme operational pre 2015	Ongoing	Number of participants in scheme	N/A	Almost 2,500 members, 163 new members in 2015	Ongoing	
3	Documents referred to in planning consultations such as Building for Life 12 ¹² and Code for Sustainable Homes ¹³ require cycle storage, cycle routes	Alternatives to private vehicle use	Other	BDC MSDC	Documents in force pre 2015	Building for Life 12 – Ongoing Code for Sustainable Homes – revoked March 2015	Provision of facilities at new developments	N/A	Un-quantifiable	Ongoing	Building for Life 12 referred to in BDC, Code for Sustainable Homes referred to in MSDC
4	Council websites encourage car sharing, walking, cycling	Alternatives to private vehicle use	Other	BDC MSDC	Website giving this advice pre 2015	Ongoing	Number of participants in Suffolk car share	N/A	Almost 2,500 members, 163 new members in 2015	Ongoing	
5	Majority of permitted premises are low risk, reflecting low emissions. No pollution incidents in 2015	Environmental permits	Introduction/ increase of environmental charges through permit systems and economic instruments	BDC MSDC	Fee based risk rating scheme operational each year	Fee based risk rating scheme operational each year	Variation in risk rating each year	N/A	42 out of 43 permitted premises are low risk	Fee based risk rating scheme operational each year	

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
6	An Energy from Waste incinerator within the Mid Suffolk district has significantly lower emissions than required by the IPPC permit ¹⁴	Environmental permits	Measures to reduce pollution through IPPC permits going beyond BAT	EA	Facility began operating December 2014	Facility began operating December 2014	Emissions of Oxides of nitrogen, Sulphur dioxide and particles compared to the permit limit	N/A	Emissions of Oxides of nitrogen, Sulphur dioxide and particles are well below the permit limit	Ongoing	
7	Small Waste Oil Burners (SWOBs) burning an alternative fuel	Environmental permits	Other	DEFRA	Throughout 2015	By April 2016	Number of SWOB permits issued under new regime	N/A	All SWOB permits surrendered or revoked, lower emission fuel being burned	N/A	Change of permitting regime meaning SWOBs require Part A2 permits
8	Encourage good practice regarding control of Particulate Matter	Environmental permits	Other	BDC MSDC	Ongoing	Ongoing	Number of complaints received regarding Particulate Matter from permitted premises	N/A	No complaints received regarding Particulate Matter from permitted premises	Ongoing, in line with inspection programme	Particularly regarding concrete crushers, use of water suppression
9	Quiet and out of hours delivery scheme at large supermarket in Sudbury	Freight and delivery management	Quiet and out of hours delivery	BDC MSDC	2013 – discharge of planning conditions	2013 – operation of store	No KPI relating to air quality	N/A	Scheme in force, only one noise complaint received since store operational	Ongoing	Allowing out of hours delivery reduces traffic movements during the day
10	Local Transport Plan ⁶ states that creating a by-pass around Sudbury is a long term strategic objective	Freight and delivery management	Route management plans /strategic routing strategy for HGVs	SCC	Objective pre 2015	Long term aim of 2011 – 2031 LTP	Construction of by-pass	Estimated to be significant	Long term aim	Long term aim	The HGV regional network currently includes Cross Street, Sudbury

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
11	Supplementary Guidance – Air Quality Management and New Development ⁸ written by Suffolk Air Quality Management Group	Policy guidance and development control	Air quality planning and policy guidance	BDC MSDC	2010-2011	Guidance in place since 2011	Use of guidance in planning consultations	N/A	Guidance in use	Ongoing	Guidance document to assist in planning consultations regarding air quality and encourage consistency across Suffolk
12	Suffolk Guidance for Parking ⁹ requires electric vehicle charging points	Policy guidance and development control	Other policy	SCC	Throughout 2015	Document adopted November 2015	Future numbers of charging points and use of electric vehicles	N/A	Guidance recently come into use	Ongoing	Provision of electric vehicle charging points encourages these vehicles to be purchased
13	Suffolk Air Quality Group has developed planning guidance, liaison with Public Health England	Policy guidance and development control	Regional groups co-ordinating programmes to develop area wide strategies to reduce emissions and improve air quality	BDC MSDC	Group operational for a number of years	Ongoing meetings, group tasks to research and improve air quality	Influence on the planning process, actions to address Particulate Matter	Overlap	Planning guidance in use, meeting with PHE arranged regarding Particulate Matter	Ongoing	
14	The Councils will be writing an Environmental Policy which will include sustainable procurement	Policy guidance and development control	Sustainable procurement guidance	BDC MSDC	2016	2016	Implementation of Environmental Policy and effect on procurement	N/A	Future action	2016	

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
15	Installing first time central heating in residential premises ⁷	Promoting low emission plant	Other policy	Suffolk Climate Change Partnership	Grant awarded July 2015	2016	Number of properties with first time central heating	N/A	Grant awarded, project to commence	When grant expires	This will reduce reliance on solid fuel, hence reducing Particulate Matter emissions
16	Refuse collection fleet replacement	Promoting low emission transport	Company vehicle procurement – prioritising uptake of low emission vehicles	BDC MSDC	October 2015	March 2016	Emissions from transport	N/A	Completed – 21 new vehicles purchased	Completed	New vehicles have Euro 6 engines, previous vehicles had Euro 5 engines
17	EV charging points	Promoting low emission transport	Procuring alternative refuelling infrastructure to promote LEVs, EV recharging, gas fuel recharging	BDC MSDC	2016	2016 onwards	Provision of infrastructure and use of low emission transport	N/A	Future action	Currently unknown	
18	Officers at both Councils are increasingly working from home	Promoting travel alternatives	Encourage/ facilitate home working	BDC MSDC	Throughout 2015	Ongoing	Reduction in journeys to and from work	N/A	Increasing numbers of people are using the option of home working	Ongoing	
19	The partnership 'Creating the Greenest County' provides information about journey planning ¹⁵	Promoting travel alternatives	Personalised travel planning	Creating the Greenest County	Information available pre 2015	Ongoing	Use of travel alternatives	N/A	Unknown	Ongoing	

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
20	The Local Transport Plan ⁶ aims to implement measures to promote rail use and improve the rail network	Promoting travel alternatives	Promote use of rail and inland waterways	SCC	Promoted pre 2015	Ongoing	Use of rail travel, improvements to rail network	N/A	Unknown	Ongoing	
21	The use of railways for transporting containers from the Port of Felixstowe is increasing ¹⁶	Promoting travel alternatives	Promote use of rail and inland waterways	Port of Felixstowe	Pre 2015	Ongoing	Use of railways compared to road transport	N/A	At the end of 2015, there were approx. 30 daily rail services from the Port of Felixstowe	Ongoing	The main road route from the Port (A14) runs through MSDC
22	The Local Transport Plan ⁶ aims to implement measures to promote cycling and improve signage on the cycle network	Promoting travel alternatives	Promotion of cycling	SCC	Promoted pre 2015	Ongoing	Use of cycling	N/A	Unknown	Ongoing	
23	The Local Transport Plan ⁶ aims to implement measures to promote walking	Promoting travel alternatives	Promotion of walking	SCC	Promoted pre 2015	Ongoing	Use of walking	N/A	Unknown	Ongoing	
24	The Local Transport Plan ⁶ aims to encourage schools to have a travel plan	Promoting travel alternatives	School travel plans	SCC	Promoted pre 2015	Ongoing	Number of travel plans in operation	N/A	Unknown	Ongoing	
25	The Local Transport Plan ⁶ aims to encourage businesses to have a travel plan, and include this in new developments	Promoting travel alternatives	Workplace travel planning	SCC	Promoted pre 2015	Ongoing	Number of travel plans in operation	N/A	Unknown	Ongoing	

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
26	The Councils are likely to change their office accommodation. A green travel plan is to be implemented as part of this project	Promoting travel alternatives	Workplace travel planning	BDC MSDC	2016	2017 onwards	Changes in sole occupancy car use	N/A	Future action	Currently unknown	
27	The Local Transport Plan ⁶ aims to implement measures to promote the use of buses	Promoting travel alternatives	Other	SCC	Promoted pre 2015	Ongoing	Use of buses	N/A	Unknown	Ongoing	
28	The partnership 'Creating the Greenest County' provides information about options for sustainable travel	Public information	Via the internet	Creating the Greenest County	Information available pre 2015	Ongoing	Use of travel alternatives	N/A	Unknown	Ongoing	
29	Electronic signs on A14 and roads on the outskirts of Ipswich provide information about congestion	Public information	Other	SCC Highways Agency	Pre 2015	Signs became operational in 2015	Changes to travel patterns and congestion	N/A	New scheme	Ongoing	Advance warnings of congestion will allow alternative routes to be chosen, reducing further congestion
30	The Local Transport Plan ⁶ aims to use more effective traffic management in Sudbury (BDC) and Stowmarket (MSDC)	Traffic management	Urban Traffic Control, congestion management, traffic reduction	SCC	Plan relates to 2011 - 2031	Plan relates to 2011 - 2031	Changes to traffic flow, congestion	N/A	Unknown	Plan relates to 2011 - 2031	
31	The Local Transport Plan ⁶ aims to improve the bus network	Transport planning and infrastructure	Bus route improvements	SCC	Plan relates to 2011 - 2031	Plan relates to 2011 - 2031	Changes to bus network and bus use	N/A	Unknown	Plan relates to 2011 - 2031	

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
32	An options appraisal was carried out in 2015 for a new bus station in Sudbury (BDC)	Transport planning and infrastructure	Public transport improvements – interchanges, stations and services	SCC	Options appraisal 2015	2016 onwards	Use of buses	N/A	Preferred option being studied further	2017 onwards	This aims to encourage bus use in and around Sudbury

2.3 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.

Officers from Babergh and Mid Suffolk District Councils, and other Suffolk local authorities will be meeting with local Officers from Public Health England in September 2016 to discuss options for addressing PM_{2.5}. The outcome of this meeting and actions taken will be reported in future ASRs.

The Suffolk Air Quality Group also aims to consider the use of planning conditions to require measures to control emissions of PM_{2.5} during demolition and construction. Actions will be reported in future ASRs.

Throughout 2015, inspections that were conducted under the Environmental Permitting (England and Wales) Regulations 2010, as amended, 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. Through taking these matters into account in the risk rating and subsequent annual subsistence charge, good practice is encouraged to continue.

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}.

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

3.1 Summary of Monitoring Undertaken

This section sets out what monitoring has taken place and how it compares with the Objectives.

3.1.1 Automatic Monitoring Locations

Automatic (continuous) monitoring is not currently necessary within the Babergh or Mid Suffolk districts, and was not carried out during 2015.

3.1.2 Non-Automatic Monitoring Locations

Babergh and Mid Suffolk District Councils undertook non-automatic (passive) monitoring of NO₂ using diffusion tubes at 15 and 5 locations respectively during 2015. Table A.1 in Appendix A shows the details of the monitoring locations.

Maps showing the monitoring locations are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for annualisation (adjusting a short term result in order to give an equivalent annual result) and bias (adjusting an annual result to improve its accuracy). Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the Air Quality Objective of 40µg/m³.

The full 2015 dataset of monthly mean values from the diffusion tubes is provided in Appendix B.

With regard to the **Babergh** district, the annual mean figures from 2015 show that 4 monitoring locations exceeded the Objective; these are at 58, 78, 82 and 87 Cross Street, Sudbury. They are all within the designated AQMA and at locations of

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relevant exposure. The exceedances of the Objective are as a result of emissions from road transport, local highways design and local topography. These monitoring locations all exceeded the Objective or were borderline cases for the last 5 years. At these locations, the concentration of NO₂ has remained fairly constant over the last 5 years and no overall trend can be stated.

In 2015, the annual mean from the monitoring location at 30 Cross Street was marginally below the Objective. In previous years the annual mean has exceeded the Objective. This location is within the designated AQMA and at relevant exposure.

Figure 3.1 shows the annual results for these 5 locations over the last 5 years. These results continue to support the designation of the AQMA.

Figure 3.1 Annual mean Nitrogen dioxide concentrations at locations that exceeded the Objective of 40 µg/m³ in 2015



Figure 3.2 shows the annual mean NO₂ concentrations at locations within the AQMA that did not exceed the Objective in 2015. As 30 Cross Street is a borderline case, it has not been included in this Figure. The annual results over the last 5 years have been reasonably constant at these monitoring locations at 9, 17 and 70 Cross Street. These locations are all relevant exposure. It is thought that these 3 locations do not exceed the Objective because they are less affected by emissions from road transport either passing the on street parking bays or queuing to pass them.

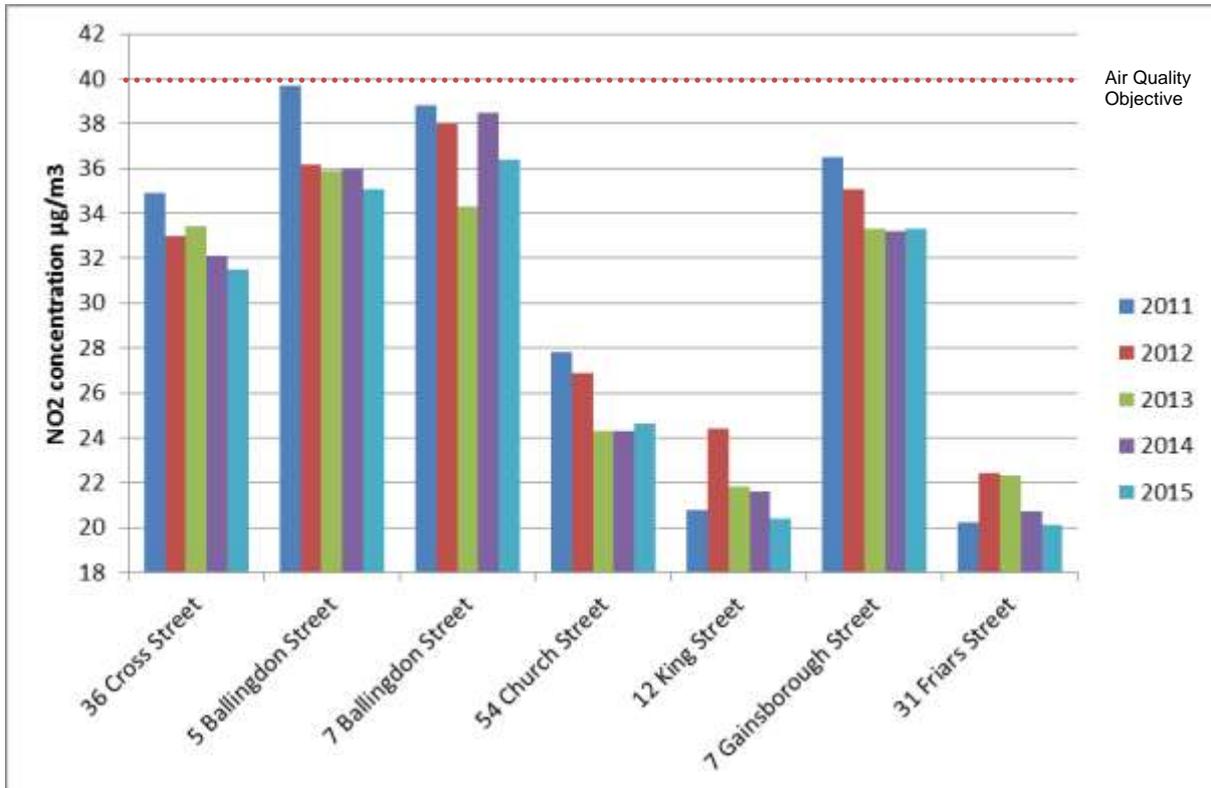
Figure 3.2 Annual mean Nitrogen dioxide concentrations at locations within the AQMA that did not exceed the Objective of 40 µg/m³ in 2015



Although there are a number of monitoring locations within the AQMA that have not exceeded the Objective in 2015 or in previous years, it is relevant to retain the current boundaries as the section of Cross Street that is covered by the AQMA is a fairly short distance with similar characteristics and will be addressed more effectively as a whole. Therefore no changes have been made or are proposed to the AQMA boundaries.

At monitoring locations within the Babergh district, but outside the AQMA, results over the last 5 years have been fairly constant or have shown a gradual reduction in concentrations of NO₂. This is demonstrated in Figure 3.3. No exceedances of the Objective were recorded outside the AQMA in 2015. With regard to monitoring locations where there has been a reduction in NO₂ concentrations, there are no known changes to traffic flow in the locality, and a specific reason for the reductions has not been identified.

Figure 3.3 Annual mean Nitrogen dioxide concentrations at locations outside the AQMA



No monitoring locations in the Babergh district have shown an overall increase in NO₂ concentration over the last 5 years.

If the annual mean of NO₂ is greater than 60 µg/m³ this indicates that an exceedance of the 1-Hour Mean Objective is also likely at that location. There are no instances of the annual mean exceeding 60 µg/m³ in 2015 in the Babergh district.

In 2015, all monitoring locations on Cross Street became duplicate sites. They will continue to be monitored with two diffusion tubes throughout 2016. A review of the monitoring locations was conducted in November 2015 to determine whether any additional locations were required to better assess the impact of the on street parking bays. It was concluded that the monitoring regime from 2015 was suitable and no locations on Cross Street have changed for 2016. One monitoring location in Sudbury, that is further from the AQMA and the traffic flow here does not impact on the AQMA, has been removed from the monitoring for 2016.

Monitoring of NO₂ in the **Mid Suffolk** district has not historically shown consistent exceedances of the Objective at relevant exposure and there are no designated

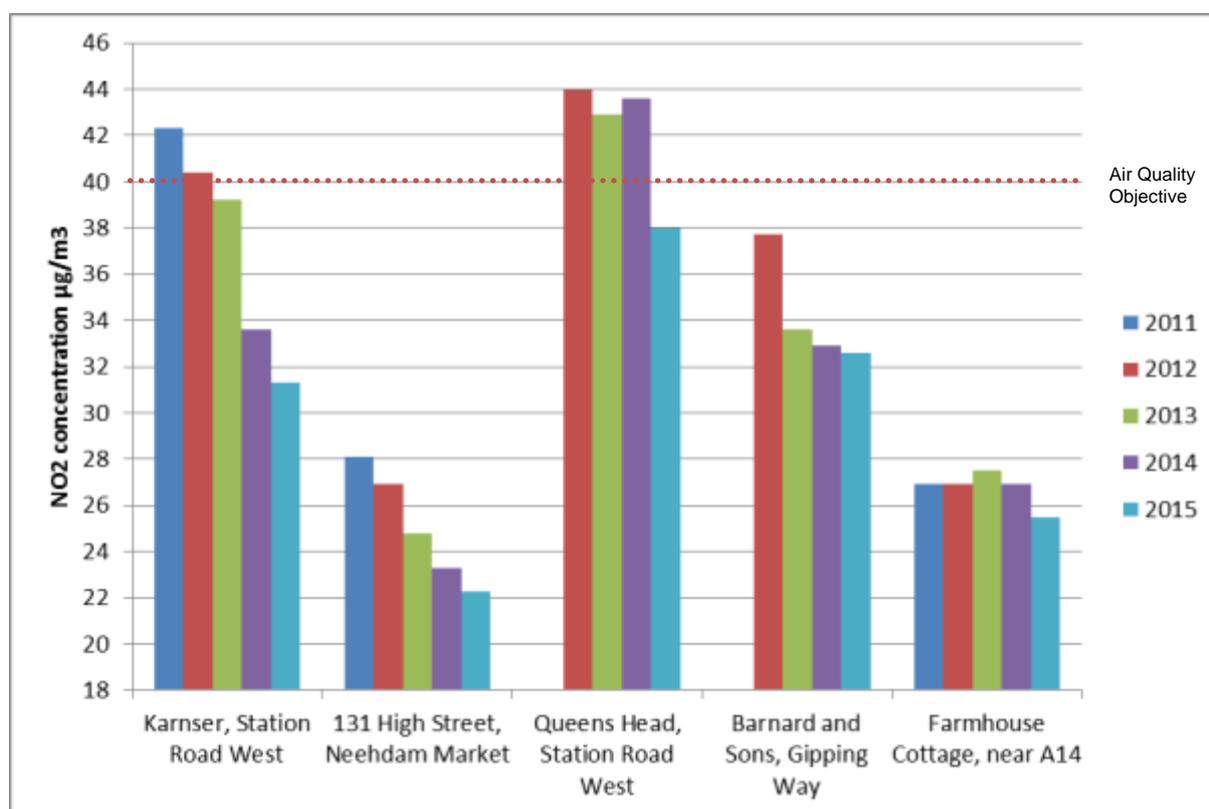
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AQMAs. During 2015 no exceedances of the Objective were recorded, so it is not necessary to consider an AQMA.

The majority of the locations monitored in 2015 have shown a gradual reduction in NO₂ concentration over the past 5 years. No specific reason can be given for this reduction, and it may be a combination of improved emission standards from vehicles and changes to traffic flow as Stowmarket has developed. One monitoring location that is close to the A14 (Farmhouse Cottage) has shown relatively constant results over the past 5 years. These trends are shown in Figure 3.4.

It can be seen on Figure 3.4 that exceedances of the Objective have occurred in the past. However, this was not maintained at Karnser, Station Road West, and concentrations have now fallen. The location called Queens Head does not represent relevant exposure, and previous calculations have shown that the Objective is not exceeded at the nearest relevant exposure.

Figure 3.4 Annual mean Nitrogen dioxide concentrations at monitoring locations in the Mid Suffolk district



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As mentioned in Section 2.2, the location of diffusion tubes within the Mid Suffolk district was reviewed for 2016. Historically monitoring has focused on Stowmarket, with one location in Needham Market. It is relevant to continue to focus on Stowmarket as this is the largest town within the Mid Suffolk district and is regarded as a growth hub for both residential properties and industrial/commercial expansion. Additionally, monitoring has been conducted around the principal intersection in the town centre, which remains the most relevant area. However, as identified in the Updating and Screening Assessment 2015, some of the monitoring locations did not represent relevant exposure. These locations have been removed. The location in Needham Market shows low concentrations of NO₂ and is not at relevant exposure, so it is not necessary to continue to monitor here.

This review of monitoring in the Mid Suffolk district was conducted in October 2015, but as the contract with the laboratory runs for a calendar year, the changes were implemented in January 2016. As of January 2016, there are just 2 monitoring locations in the Mid Suffolk district and these will be discussed in subsequent reports.

There are no instances of the annual mean exceeding 60 µg/m³ in 2015 in the Mid Suffolk district and therefore the risk of exceeding the Hourly Mean Objective is regarded as very low.

3.2.2 Particulate Matter (PM₁₀)

PM₁₀ is not monitored within the Babergh or Mid Suffolk districts.

3.2.3 Particulate Matter (PM_{2.5})

PM_{2.5} is not monitored or evaluated locally by other means within the Babergh or Mid Suffolk districts.

3.2.4 Sulphur Dioxide (SO₂)

SO₂ is not monitored within the Babergh or Mid Suffolk districts.

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites

Local Authority	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
Babergh DC	9 Cross Street, Sudbury	Roadside	586848	241133	NO ₂	Y	0	2.0	N	2.25
Babergh DC	17 Cross Street, Sudbury	Roadside	586836	241089	NO ₂	Y	0	2.56	N	2.25
Babergh DC	30 Cross Street, Sudbury	Roadside	586808	241015	NO ₂	Y	0	2.5	N	2.25
Babergh DC	36 Cross Street, Sudbury	Roadside	586790	240944	NO ₂	N	0	2.61	N	2.30
Babergh DC	58 Cross Street, Sudbury	Roadside	586798	241010	NO ₂	Y	0	2.57	N	2.25

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Local Authority	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
Babergh DC	70 Cross Street, Sudbury	Roadside	586818	241068	NO ₂	Y	0	2.45	N	2.30
Babergh DC	78 Cross Street, Sudbury	Roadside	586829	241104	NO ₂	Y	0	2.62	N	2.25
Babergh DC	82 Cross Street, Sudbury	Roadside	586835	241123	NO ₂	Y	0	2.19	N	2.20
Babergh DC	87 Cross Street, Sudbury	Roadside	586842	241148	NO ₂	Y	0	2.71	N	2.25
Babergh DC	5 Ballingdon Street, Sudbury	Roadside	586721	240879	NO ₂	N	0	2.24	N	2.25
Babergh DC	7 Ballingdon Street, Sudbury	Roadside	586723	240941	NO ₂	N	0	2.25	N	2.25

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Local Authority	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
Babergh DC	54 Church Street, Sudbury	Roadside	586930	241058	NO ₂	N	0	2.63	N	2.55
Babergh DC	12 King Street, Sudbury	Roadside	587510	241319	NO ₂	N	0	2.77	N	2.20
Babergh DC	7 Gainsborough Street, Sudbury	Roadside	587253	241256	NO ₂	N	0	2.79	N	2.45
Babergh DC	31 Friars Street, Sudbury	Roadside	587257	241110	NO ₂	N	0	2.61	N	2.25
Mid Suffolk DC	Karnser, Station Road West, Stowmarket	Roadside	604972	258745	NO ₂	N	0	2.24	N	2.30
Mid Suffolk DC	131 High Street, Needham Market	Roadside	608715	255229	NO ₂	N	19	4.57	N	2.40

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Local Authority	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
Mid Suffolk DC	Queens Head, Station Road West, Stowmarket	Roadside	604867	258666	NO ₂	N	22	1.69	N	2.25
Mid Suffolk DC	Barnard and Sons, Gipping Way, Stowmarket	Roadside	605026	258741	NO ₂	N	29	2.32	N	2.20
Mid Suffolk DC	Farmhouse Cottage, Stowupland Road, Stowmarket	Roadside	606049	259307	NO ₂	N	0	15.7	N	1.90

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

(2) N/A if not applicable.

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Table A.2 – Annual Mean NO₂ Monitoring Results (all from Diffusion Tubes)

Local Authority	Site Name	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2015 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2011	2012	2013	2014	2015
Babergh DC	9 Cross Street, Sudbury	Roadside	100	100	34.3	32.2	33.7	34.7	32.8
Babergh DC	17 Cross Street, Sudbury	Roadside	100	100	34.6	33.5	35.5	34.2	33.1
Babergh DC	30 Cross Street, Sudbury	Roadside	100	100	42.1	39.5	41.9	41.2	38.7
Babergh DC	36 Cross Street, Sudbury	Roadside	92	92	34.9	33.0	33.4	32.1	31.5
Babergh DC	58 Cross Street, Sudbury	Roadside	100	100	41.6	42.6	43.1	39.8	42.0
Babergh DC	70 Cross Street, Sudbury	Roadside	100	100	34.6	36.0	37.3	34.7	34.7
Babergh DC	78 Cross Street, Sudbury	Roadside	100	100	55.0	53.5	53.0	50.0	53.2
Babergh DC	82 Cross Street, Sudbury	Roadside	92	92	54.7	54.6	54.1	52.8	53.8
Babergh DC	87 Cross Street, Sudbury	Roadside	100	100	54.2	56.1	51.4	52.7	52.7
Babergh DC	5 Ballingdon Street, Sudbury	Roadside	100	100	39.7	36.2	35.9	36.0	35.1
Babergh DC	7 Ballingdon Street, Sudbury	Roadside	92	92	38.8	38.0	34.3	38.5	36.4
Babergh DC	54 Church Street, Sudbury	Roadside	100	100	27.8	26.9	24.3	24.3	24.6
Babergh DC	12 King Street, Sudbury	Roadside	92	92	20.8	24.4	21.8	21.6	20.4
Babergh DC	7 Gainsborough Street, Sudbury	Roadside	83	83	36.5	35.1	33.3	33.2	33.3
Babergh DC	31 Friars Street, Sudbury	Roadside	100	100	20.2	22.4	22.3	20.7	20.1

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Local Authority	Site Name	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2015 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2011	2012	2013	2014	2015
Mid Suffolk DC	Karnser, Station Road West, Stowmarket	Roadside	100	100	42.3	40.4	39.2	33.6	31.3
Mid Suffolk DC	131 High Street, Needham Market	Roadside	100	100	28.1	26.9	24.8	23.3	22.3
Mid Suffolk DC	Queens Head, Station Road West, Stowmarket	Roadside	100	100	N/A	44.0	42.9	43.6	38.0
Mid Suffolk DC	Barnard and Sons, Gipping Way, Stowmarket	Roadside	100	100	N/A	37.7	33.6	32.9	32.6
Mid Suffolk DC	Farmhouse Cottage, Stowupland Road, Stowmarket	Roadside	100	100	26.9	26.9	27.5	26.9	25.5

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

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-Hour Mean Objective are shown in **bold and underlined**.

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

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

(3) Means for diffusion tubes have been corrected for bias. All means have been 'annualised' as per Technical Guidance LAQM.TG16 if valid data capture for the full calendar year is less than 75%.

Appendix B: Full Monthly Diffusion Tube Results for 2015

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2015

Local Authority	Site Name	NO ₂ Mean Concentrations (µg/m ³)														Annual Mean	
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted ⁽¹⁾		
		Babergh DC	9 Cross Street, Sudbury	35.1	46.8	40.0	48.3	41.2	27.9	34.9	41.7	40.8	43.7			51.8	46.3
Babergh DC	17 Cross Street, Sudbury	44.2	40.8	38.1	49.3	33.3	35.8	36.2	42.8	45.2	49.0	40.8	47.1	41.9	33.1		
Babergh DC	30 Cross Street, Sudbury	39.7	52.1	49.0	60.6	46.9	38.4	46.3	48.4	55.2	53.8	47.8	49.6	49.0	38.7		
Babergh DC	36 Cross Street, Sudbury	40.2	43.8	37.5	42.2	34.4	30.4	36.4	44.1	-	45.2	38.9	45.2	39.8	31.5		
Babergh DC	58 Cross Street, Sudbury	60.9	64.3	53.8	52.3	49.4	45.4	44.7	48.3	50.2	66.0	53.8	48.7	53.1	42.0		
Babergh DC	70 Cross Street, Sudbury	47.6	48.3	45.8	45.0	39.0	36.6	37.4	39.1	53.0	62.8	39.5	33.9	44.0	34.7		
Babergh DC	78 Cross Street, Sudbury	77.3	72.7	64.6	65.6	65.1	59.0	66.3	52.2	80.0	82.0	67.7	56.2	67.4	53.2		
Babergh DC	82 Cross Street, Sudbury	72.8	69.8	61.7	66.9	72.9	59.7	59.9	-	78.7	80.5	71.3	54.8	68.1	53.8		
Babergh DC	87 Cross Street, Sudbury	76.2	79.4	63.9	65.5	65.0	48.0	59.6	64.0	69.3	76.8	73.0	59.6	66.7	52.7		
Babergh DC	5 Ballingdon Street, Sudbury	51.3	53.9	38.9	46.7	44.1	34.9	41.3	40.4	36.9	42.3	52.1	50.1	44.4	35.1		

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Local Authority	Site Name	NO ₂ Mean Concentrations (µg/m ³)													
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
														Raw Data	Bias Adjusted ⁽¹⁾
Babergh DC	7 Ballingdon Street, Sudbury	43.3	54.0	40.7	47.5	42.9	-	41.9	46.7	49.2	49.2	44.6	46.1	46.0	36.4
Babergh DC	54 Church Street, Sudbury	42.0	36.4	31.9	31.6	30.7	24.5	28.4	27.3	28.9	32.8	31.9	27.3	31.1	24.6
Babergh DC	12 King Street, Sudbury	34.6	31.2	26.2	25.4	16.5	16.7	21.1	22.0	26.7	-	31.3	31.9	25.8	20.4
Babergh DC	7 Gainsborough Street, Sudbury	43.5	49.8	-	-	43.2	36.7	38.6	34.7	36.2	43.7	48.7	46.3	42.1	33.3
Babergh DC	31 Friars Street, Sudbury	28.0	28.6	25.8	29.3	23.4	19.0	19.0	25.3	23.4	27.9	27.3	27.7	25.4	20.1
Mid Suffolk DC	Karnser, Station Road West, Stowmarket	16.4	50.9	47.0	42.6	40.4	38.0	36.7	40.2	45.5	46.9	37.9	33.0	50.9	31.3
Mid Suffolk DC	131 High Street, Needham Market	38.2	36.5	31.4	20.5	24.8	24.1	24.6	22.8	26.3	32.2	31.4	26.1	38.2	22.3
Mid Suffolk DC	Queens Head, Station Road West, Stowmarket	39.9	56.6	53.5	43.4	45.5	37.6	40.7	46.1	59.1	61.4	46.7	46.7	61.4	38.0
Mid Suffolk DC	Barnard and Sons, Gipping Way, Stowmarket	50.2	47.9	39.2	37.4	39.4	25.6	34.1	41.9	44.2	48.2	43.5	44.0	50.2	32.6
Mid Suffolk DC	Farmhouse Cottage, Stowupland Road, Stowmarket	32.3	30.8	44.3	43.8	28.0	29.2	25.4	28.7	34.7	45.7	23.1	21.1	45.7	25.5

(1) See Appendix C for details on bias adjustment

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

Supporting Technical Information

No significant changes to relevant sources have occurred during 2015 in either district. Complaints were received about an existing large residential biomass boiler and this led to a screening assessment for air quality purposes, in-line with LAQM.TG(09). This concluded that the source did not exceed the threshold in the relevant nomogram for Nitrogen dioxide or Particulate Matter. Therefore, a Detailed Assessment is not required. A summary of the screening assessment is in Appendix H.

Diffusion Tube Bias Adjustment Factors

Diffusion tubes are supplied and analysed by Environmental Services Group (ESG) Didcot. The preparation method is 50% TEA in acetone. The bias adjustment factor used for 2015 is 0.79 from spreadsheet version number 6/16. The bias adjustment factors that have been used for 2012, 2013 and 2014 are 0.79, 0.81 and 0.81 respectively, from spreadsheet version number 03/15. The bias adjustment factor used for 2011 is 0.84 from spreadsheet version number 04/12.

Discussion of Choice of Factor to Use

As there are no collocated studies, the national bias adjustment factors have been used.

Short-term to Long-term Data Adjustment

Data was collected from all monitoring locations for at least ten months. Therefore, no short-term to long-term data adjustment is necessary.

QA/QC of Diffusion Tube Monitoring

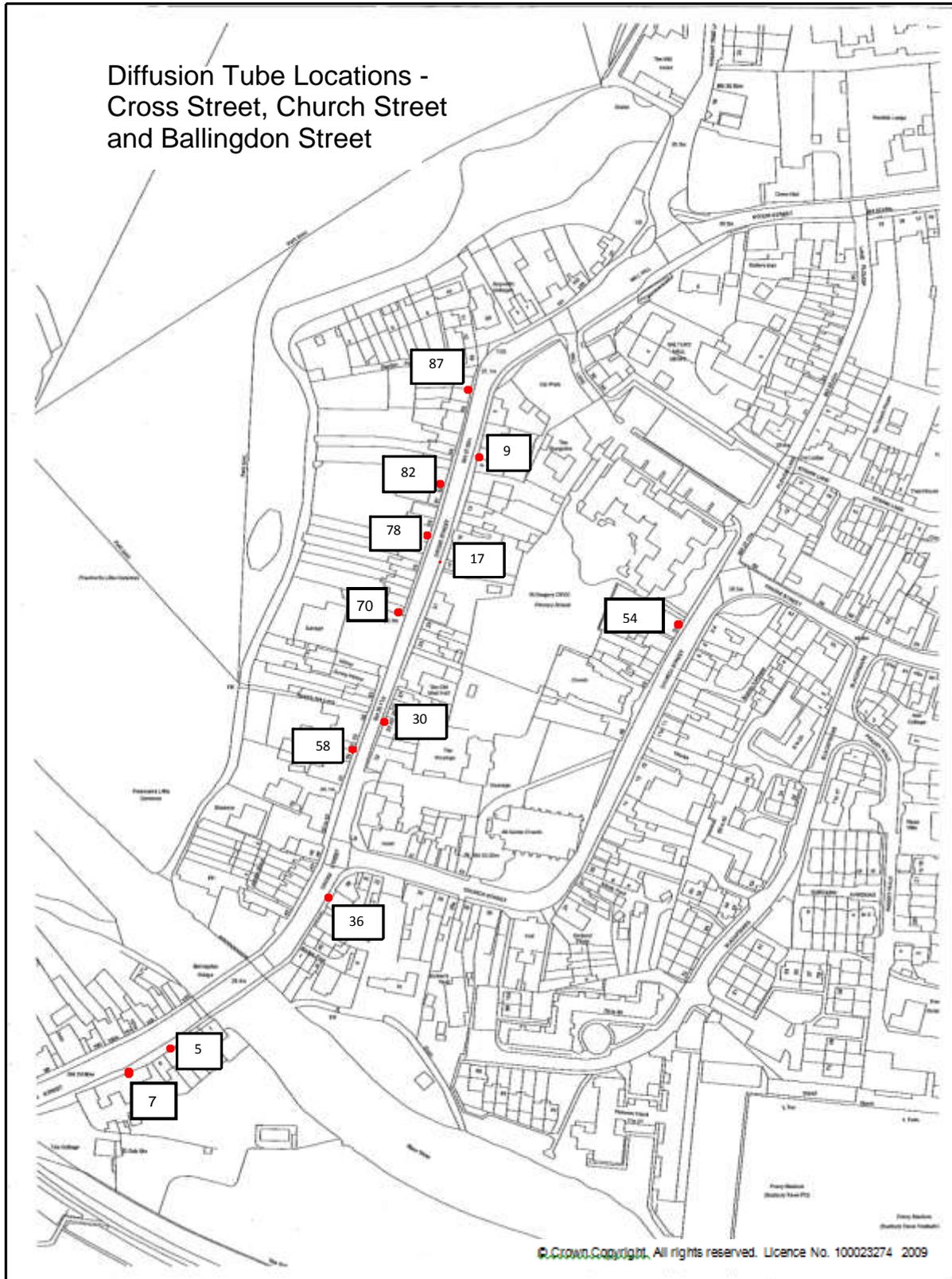
The analysis of diffusion tube samples to determine the amount of Nitrogen dioxide present on the tube is within the scope of ESG Didcot's UKAS schedule. The samples are analysed in accordance with ESG's standard operating procedure, which meets the guidelines set out in DEFRA's 'Diffusion Tubes for Ambient NO₂ Monitoring: Practical Guidance'. In the WASP inter-comparison scheme for

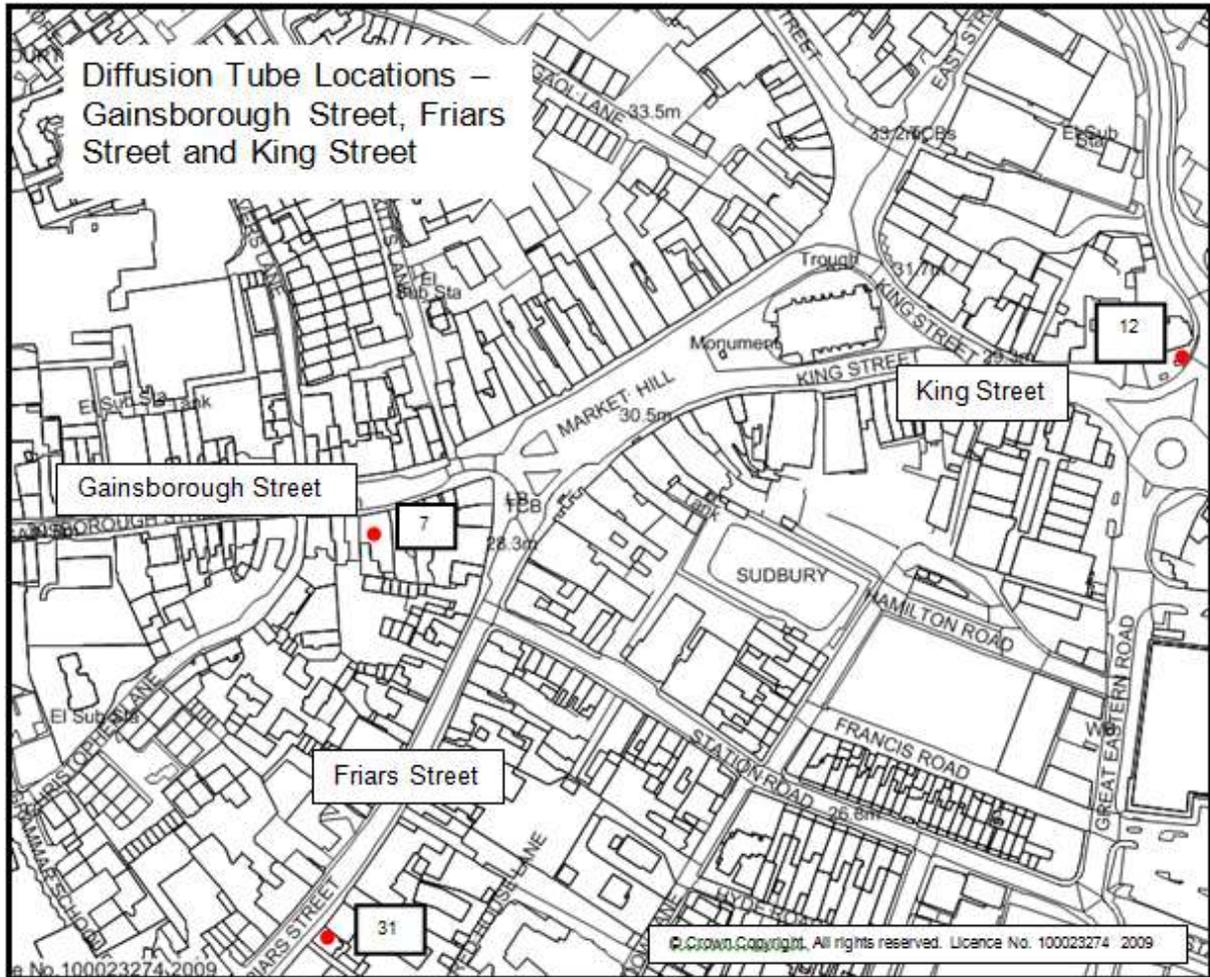
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comparing spiked Nitrogen dioxide diffusion tubes, ESG is ranked as a 'satisfactory' laboratory. With regard to precision results, ESG Didcot, 50% TEA in acetone obtained 20 good results and 6 poor results in 2015.

Appendix D: Maps of Monitoring Locations

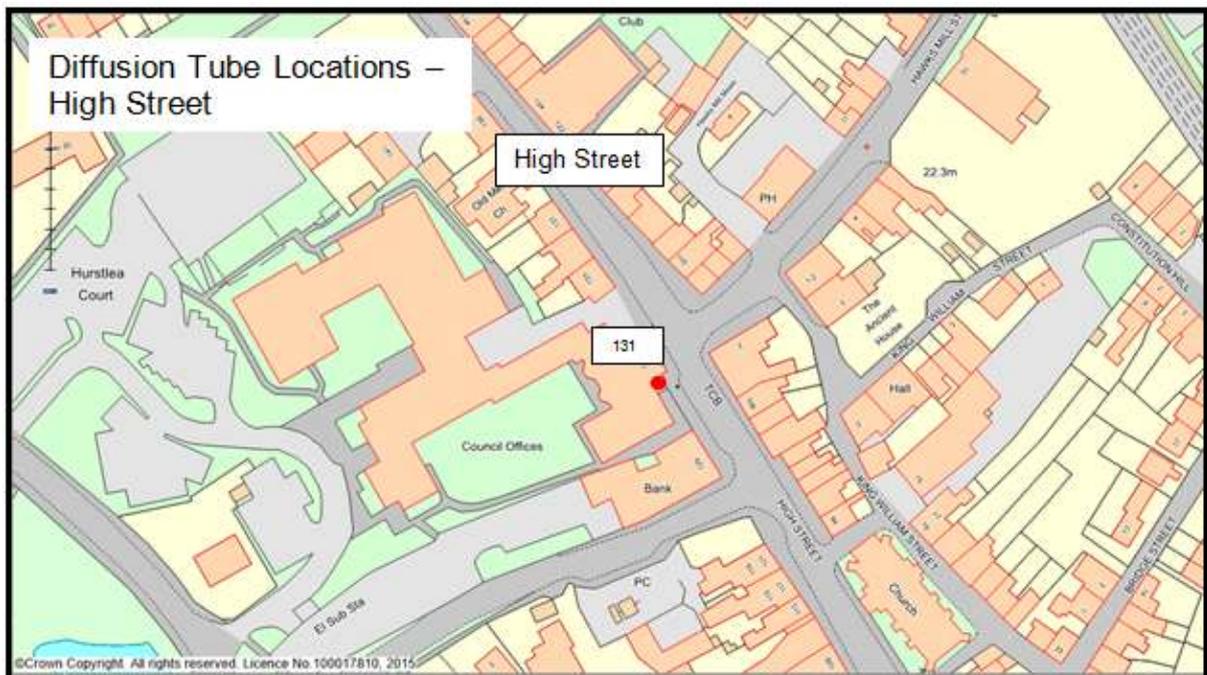
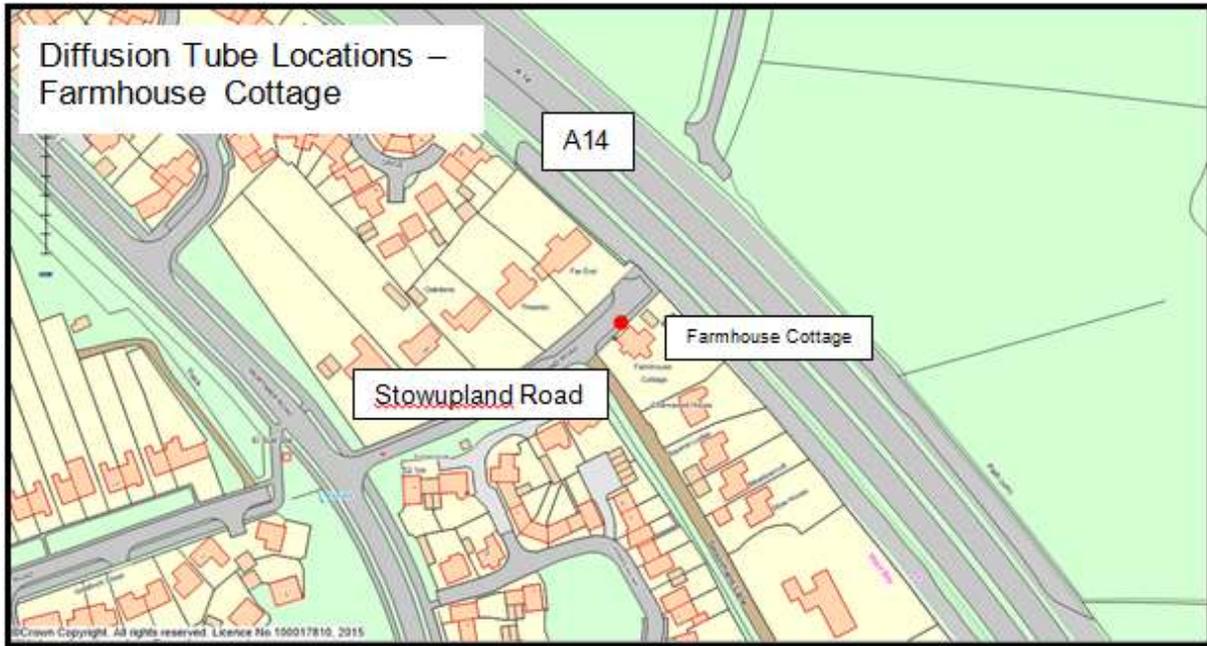
Within the Babergh district



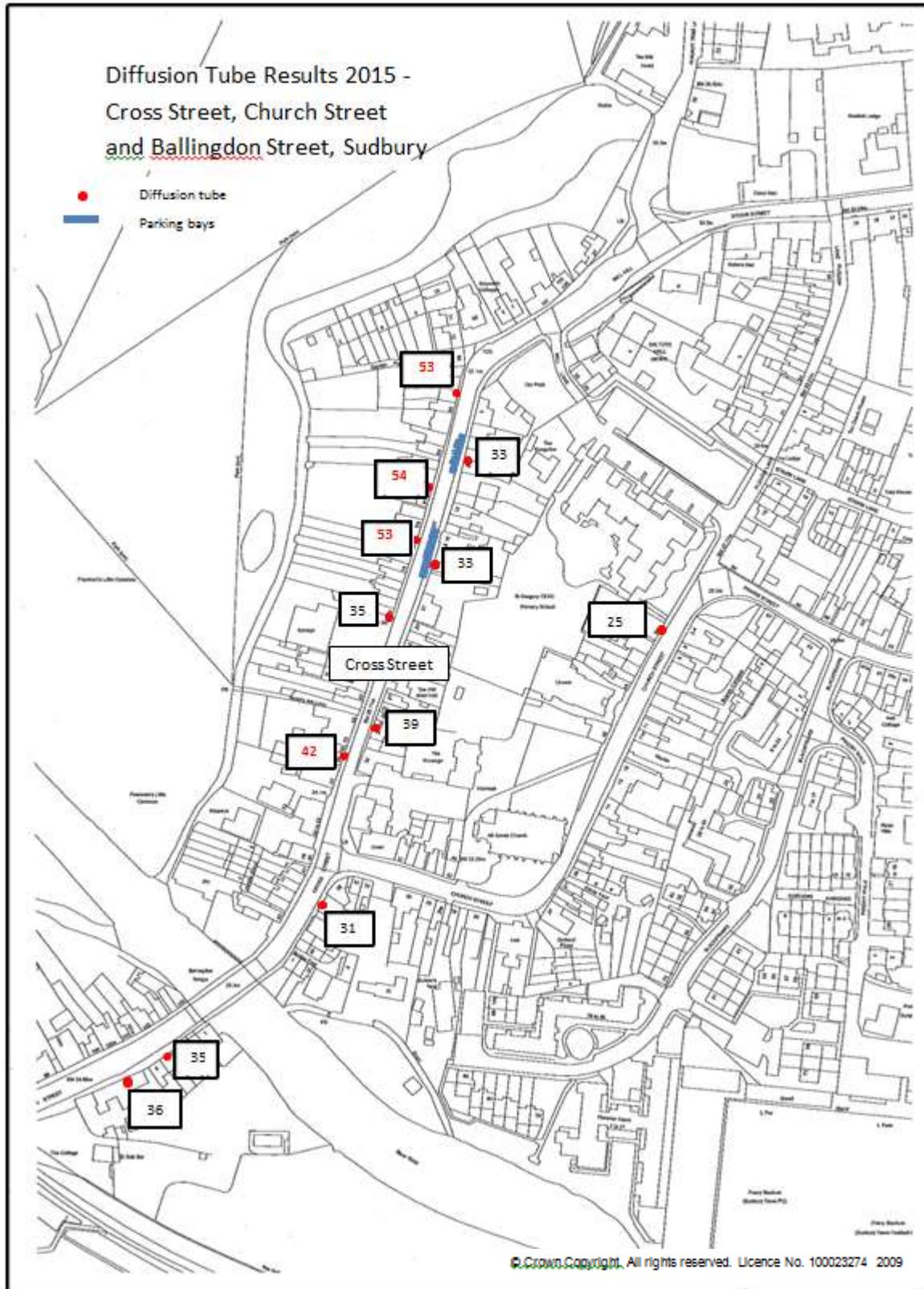


Within the Mid Suffolk district





Appendix E: Map of Annual Results from Monitoring Locations and Parking Bays on Cross Street, Sudbury



Appendix F: Summary of Air Quality Objectives in England

Table F.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ¹	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ , not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

¹ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Appendix G: Babergh District Council Air Quality Management Order 2008 for Cross Street, Sudbury

BABERGH DISTRICT COUNCIL
AIR QUALITY MANAGEMENT ORDER 2008



Babergh District Council ("the Council") of Corks Lane, Hadleigh, Ipswich, Suffolk IP7 6SJ, has made the following Order, in exercise of its powers under Section 83 of the Environment Act 1995:

1. This Order may be cited as the "Babergh District Council Air Quality Management Order 2008". It will come into operation on 21 November 2008.
2. The Council declares that it has designated an area situated on either side of a section of Cross Street, Sudbury, Suffolk, as an Air Quality Management Area ("the Designated Area"). The Designated Area comprises the land hatched red on the attached map, which is indexed in Schedule 1. The Order and map have been prepared and sealed with the Common Seal of the Council and deposited at the offices of the Council at Corks Lane, Hadleigh, Ipswich, Suffolk IP7 6SJ. An explanatory note is included in Schedule 2.
3. The Order may be varied or revoked by a subsequent Order.
4. The Council may revise the Designated Area from time to time.

Schedule 1 – Designated Area

Air Quality Management Area: Map reference No. AQMA1/08

Schedule 2 – Explanatory Note

The Air Quality Management Order 2008 designates an area situated on either side of a section of Cross Street, Sudbury, Suffolk, shown hatched red on Map reference No. AQMA1/08, as an Air Quality Management Area. This is an area in which the Government's annual mean air quality objective for nitrogen dioxide is unlikely to be achieved. The area will be subject to an Action Plan in order to pursue the achievement of the annual mean objective for nitrogen dioxide in the Designated Area.

Dated 20 November 2008

THE COMMON SEAL OF BABERGH
DISTRICT COUNCIL was hereunto
affixed in the presence of:

Solicitor to the Council

[Handwritten Signature]
.....



Date Printed : 06/11/2008

Appendix H: Screening Assessment for Biomass Boiler

Under Technical Guidance LAQM.TG(09), assessment dated 04.02.16, regarding investigations in 2015.

Screening assessment for biomass boiler at [REDACTED], Little Waldingfield, SUDBURY, Suffolk, [REDACTED].

Box 5.8: Updating and Screening Checklist (D) Commercial and domestic sources D.1a Biomass combustion – Individual installations		
Relevant pollutants	Steps that must be taken to complete the assessment	Notes relevant to each step
NO ₂ and PM ₁₀	<p>Overview Biomass burning can lead to an increase in PM₁₀ emissions, due to the process of combustion – aerosol formation from volatile materials distilled from the wood is also an issue. Compared to conventional gas-burning, biomass burning can also result in an increase in the overall NO_x emissions due to the fuel-derived portion that is not present in gas combustion. This item is new since the last round of Review and Assessment and should be considered by all authorities.</p>	
	<p>Approach Identify plant burning biomass in 50kW to 20MW units. 195kW Wood chip, straw (biomass)</p>	Under the Clean Air Act local authorities should have this information. Start with larger units. Previous Review and Assessment work on boilers >5MW for SO ₂ objective should help. Also look at recent planning permissions that have included biomass boilers.
	<p>Obtain information on:</p> <ul style="list-style-type: none"> • Height of the stack 9.0m • Diameter of stack 25cm • Dimensions of buildings within 5 times the stack height (above the ground): within 9 x 5 = 45m • Description of the combustion appliance, Dragon double pass D20 • Maximum emission rates (g/sec) of NO_x and PM₁₀ $PM_{10} = 240 \times 195 \times 10^{-6}$ $= 0.0468\text{g/sec}$ $NO_x = 150 \times 195 \times 10^{-6}$ $= 0.02925\text{g/sec}$ <p>(Note: see table below taken from AEA guidance for derivation of values of 240 for PM₁₀ and 150 for NO_x.)</p>	If the maximum emission rates are not known, the authority can use the maximum thermal capacity (e.g. kW th or MW th) of the appliance and then estimate emission rates from the EMEP/CORINAIR Guidebook (see Important Notes below). NB: the emission factors are given in g/GJ. As an example, if the PM ₁₀ emission factor was 76 g/GJ for a 500 kW th appliance, then the emission rate would be: 76 x 500 x 10 ⁻⁶ = 0.038 g/s.
	<p>Calculate the “background-adjusted” emission rates using the procedures set out in Para 5.78 (PM₁₀) and 5.81 and 5.84 (NO₂). Location of boiler is in grid ref 5929 2458, row 226 of both spreadsheets, 2016. $PM_{10} E_A = 0.0468 / (32 - 18)$ $= 0.0468 / 14$ $= 0.00334$ $NO_2 E_A = 0.02925 / (40-10)$ $= 0.02925 / 30$ $= 0.000975$</p>	Background concentrations can be derived from the national 1x1 km maps, as described in Chapter 2. http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2011

Babergh and Mid Suffolk District Councils

	If necessary, calculate the “effective stack height”. Not required – free standing appliance/stack in farm yard	Use the procedure described in Box 5.6.
	Use the nomograms in Figure 5.19 (PM10) and Figure 5.20 (NO2) to determine whether the source requires further assessment.	
	Question	
	Does the source exceed the threshold in the relevant nomogram?	Using a 9m stack: PM10 = 0.0038. Source is 0.00334 which does not exceed 0.0038; therefore answer is ‘No’. NO2 = 0.012. Source is 0.000975 which does not exceed 0.012; therefore answer is ‘No’.
	Action	
	If the answer is YES to the above, it will be necessary to proceed to a Detailed Assessment for the relevant objective at these locations.	Not required
	Important Notes	
	Limited information is available on the impact of biomass on local air quality. The AEA report “Technical Guidance: screening assessment for biomass boilers” contains a more detailed description of the above approach. There is also guidance for authorities in Scotland in the report “Measurement and modelling of fine particulate emissions (PM10 & PM2.5) from wood-burning biomass boilers”.	

AEA Energy & Environment

Technical Guidance: Screening assessment for biomass boilers

ED48673005/R2655, July 2008

Excerpt from Appendix 1 - Emission factors for solid fuel combustion:

Description	Corinair Category	Fuel	Emission factor, g/GJ net		
			PM10	PM2.5	NOx
Conventional natural draught boilers > 50 kWth and <1 MW th	Boiler > 50 kW th and < 1MW th	Wood	240	240	150

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 designated for specific pollutants and objectives
ASR	Annual Status Report – the annual report written by a local authority regarding air quality
EV	Electric Vehicles
LAQM	Local Air Quality Management – the system implemented by local authorities to investigate and improve air quality
LTP	Local Transport Plan
MWp	Mega Watt peak – the maximum potential output of a system, measured in Mega Watts
NO ₂	Nitrogen Dioxide
PM ₁₀	Airborne Particulate Matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne Particulate Matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

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