

Mid Suffolk District Council

Environmental Control Section

**Progress Report on Air Quality in Mid
Suffolk May 2005**

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1. Executive Summary

1.1 This annual progress report has been prepared for submission to the Department of Environment, Food and Rural Affairs (DEFRA), as required by the Environment Act 1995 and Air Quality Regulations made thereunder (Ref 1).

1.2 It is a requirement that the Annual Progress Report should consider matters, within the district, that could have an impact upon the air quality objectives. Subsequently, further action may be required by way of monitoring and/or preparing air quality action plans.

1.3 Guidance issued by DEFRA advises as to those matters which should be considered as part of the progress report.

1.4 All relevant matters have been considered and there are no indications that any new developments will have a significant impact upon air quality objectives.

1.5 The Air Quality Regulations set target levels (objectives) for seven key pollutants. These target levels should not be exceeded. Of these seven pollutants, the only two likely to be present at levels in excess of the air quality objectives are nitrogen dioxide and particulate matter.

1.6 Monitoring data for nitrogen dioxide levels indicates that there are currently no areas where it is considered likely that the air quality objective will be exceeded.

1.7 As highlighted in last year's Progress Report, it was considered necessary to undertake further monitoring of particulate matter (PM₁₀) levels adjacent to the A14 carriageway. The exercise was delayed, but satisfactorily completed, during December 2004 - March 2005.

1.8 The monitoring results indicate that there is no exceedance of the air quality objective for particulate matter.

1.9 It has been concluded therefore that air quality objectives are being met in Mid Suffolk.

1.10 The monitoring of nitrogen dioxide levels at five locations in the district will continue, but it is not considered necessary to make a commitment to increased monitoring.

1.11 The emerging Local Development Framework will offer a high profile to the subject of Air Quality with the aim of improving Air Quality through the planning process.

2 Introduction

2.1 Previous assessments of air quality have been based on undertaking four-yearly reviews. More recently, in an attempt to keep the topic at the forefront of Local Authority agendas, DEFRA now require a form of assessment on an annual basis. If there are no outstanding air quality issues then the assessment may be undertaken as a progress report.

2.2 The previous progress report (Ref.2) concluded that all air quality objectives were being met. It was however recommended that a further monitoring exercise and evaluation in respect of particulate matter be undertaken. These conclusions were accepted by DEFRA, with the proviso that the 2005 progress report should include details of particulate matter monitoring.

2.3 Guidance, issued by DEFRA, (Ref.3) advises as to the appropriate issues to consider in undertaking a progress report. Local Authorities are required to have regard to this guidance when undertaking the review.

2.4 The only pollutant monitoring regularly undertaken by Mid Suffolk Council is for nitrogen dioxide. This is undertaken by way of passive diffusion tubes, and the most recent results will be considered in this report.

2.5 A specific monitoring exercise, to assess particulate matter levels along the A14 carriageway, was undertaken from December 2004 to March 2005. The results are considered herein. Previous reports had indicated that of the seven substances for which air quality objectives have been established (see section 3), the main pollutant of concern is particulate matter (PM₁₀).

2.6 Other matters considered in this progress report are the impact, upon air quality, of any new roads, industrial processes or other development.

3. Air Quality Objectives

<u>Pollutant</u>	<u>Air Quality Objective</u>	<u>Measured As</u>	<u>Compliance Date</u>
<u>Benzene</u>	16.25 µg/m ³	<u>Running Annual Mean</u>	<u>31.12.2003</u>
	5.0 µg/m ³	Annual Mean	31.12.2010
<u>1,3-butadiene</u>	2.25 µg/m ³	<u>Running Annual Mean</u>	<u>31.12.2003</u>
<u>Carbon Monoxide</u>	<u>10 mg/m³</u>	<u>Maximum Daily Running 8-hour mean</u>	<u>31.12.2003</u>
<u>Lead</u>	0.5 µg/m ³	<u>Annual Mean</u>	<u>31.12.2004</u>
	0.25 µg/m ³	Annual Mean	31.12.2008
<u>Nitrogen Dioxide</u>	200 µg/m ³ not to be exceeded more than 18 times per year	<u>1-hour mean</u>	<u>31.12.2005</u>
	40 µg/m ³	Annual Mean	31.12.2005
<u>Particulates (PM₁₀)</u>	50µg/m ³ not to be exceeded more than 35 times a year	<u>24-hour mean</u>	<u>31.12.2004</u>
	40µg/m ³	Annual mean	31.12.2004
<u>Sulphur Dioxide</u>	350µg/m ³ not to be exceeded more than 24 times per year	<u>1-hour mean</u>	31.12.2004
		24-hour mean	31.12.2004
	125µg/m ³ not to be exceeded more than 3 times a year	15-minute mean	31.12.2005
	266µg/m ³ not to be exceeded more than 35 times a year		

4. Monitoring Results

Nitrogen Dioxide Monitoring

4.1 The only pollutant currently monitored on a regular basis in Mid Suffolk is nitrogen dioxide.

4.2 Nitrogen dioxide (NO₂) levels are monitored using passive diffusion tubes supplied and analysed by Casella CRE AIR. The tube preparation method is 10% TEA (tri-ethanolamine) in water.

4.3 Tubes are exposed in the field for one-month periods, and the average monthly NO₂ level is then determined.

4.4 Casella CRE AIR is a NAMAS accredited laboratory and, as part of their QA procedures, carry out a monthly inter-comparison with diffusion tubes supplied by other laboratories.

4.5 Due to a degree of uncertainty in the use of passive diffusion tubes, the results from their analysis are compared to those of a continuous monitor – a chemiluminescence analyser. Guidance issued by DEFRA (Ref 4) advises as to how this must be carried out, and how a “bias adjustment factor ” must be determined.

4.6 This work has been undertaken on behalf of Casella CRE AIR by NETCEN, and the results indicate that the measured values must be adjusted by a bias factor of 0.92.

4.7 Results over a period of 10 years, since April 1995 have shown that the air quality objectives for nitrogen dioxide have not been exceeded at the chosen monitoring locations in Mid Suffolk.

4.8 As the primary cause of nitrogen dioxide emissions is vehicle exhausts, high NO₂ levels will most likely occur adjacent to major traffic routes and at busy junctions.

4.9 Therefore, since January 2004 the five selected monitoring locations are those considered to be the most sensitive. Locations had previously been selected as “roadside”, “intermediate” and “background”. However, the current locations are those where vehicle emissions are most likely to impinge upon residential development.

4.10 The diffusion tubes are located at the following locations –

High Street, Needham Market (4m from kerbside)

Station Road, Claydon (4m from kerbside)

Lower Crescent, Barham (21m from A14 kerbside)

Foresters Walk, Barham (40m from A14 kerbside)

Old Stowupland Road, Stowmarket (13m from A14 kerbside)

These locations are shown on maps in Appendix. 1

With the exception of the tube in Needham Market, all are in sensitive locations in respect of traffic emissions from the A14 carriageway.

4.11 The following (Table 1) shows the annual mean NO₂ levels (bias adjusted, factor 0.92) at these chosen locations.

Comments are included as to how many months were monitored, and whether there were any obvious outliers (unrepresentative results) –

Location	Annual Mean NO₂ Level, ug/ m³
Lower Crescent, Barham	28.2 (One outlier, June 2004, thus mean value of 11 months data)
High St, Needham Market	20.4 (Monitored for 10 months, Jan – Oct. 2004)
Station Road, Claydon	30.4 (Twelve months, no outliers)
Foresters Walk, Barham	30.4 (Twelve months, no outliers)
Old Stowupland Road, Stowmarket	25.1 (Twelve months, no outliers)

Table 1 – 2004 Annual Mean Concentration of Nitrogen Dioxide In Mid Suffolk (note, the Air Quality Objective is an annual mean value of less than 40 µg/m³)

4.12 As a further indication of compliance with the air quality objective for nitrogen dioxide (the annual mean value), diffusion tube results from the previous six years (bias corrected with factor A of 0.94) are shown in Table 2 below.

Year	The Street, Thornham Magna	Red Gables, Stowmarket (Intermediate	High Street, Needham	Station Road, Claydon	Old Stowupland Road,
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	(Background Site)	Site)	Market (Roadside Site)	(Roadside Site)	Stowmarket (Roadside Site)
1998	18.7	21.3	35.3	33.3	
1999	13.7	23.3	39.6	34.3	
2000	11.4	18.6	30.2	31.7	
2001	10.8	18.9	29.4	25.2	21.6
2002	12.0	19.0	22.6	28.6	26.2
2003	13.3	17.6	21.8	23.5	24.6

Table 2 – Annual Mean Concentration of Nitrogen Dioxide Levels in Mid Suffolk (expressed as $\mu\text{g}/\text{m}^3$, nitrogen dioxide/air)

(Note – the Air Quality Objective for the Annual Mean Concentration is $40\mu\text{g}/\text{m}^3$)

4.13 Thus it can be concluded that nitrogen dioxide levels have been below the air quality objective over 2004, and also during the preceding six years.

Particulate Matter Monitoring

4.14 Monitoring of particulate matter was undertaken by Enstec Services Ltd. between December 2004 and March 2005. The monitoring location was in Cooper’s Way, Barham – a location where vehicle emissions from the A14 carriageway are likely to result in the highest PM_{10} levels across the district.

4.15 Extracts from the Enstec report can be seen in Appendix 2.

4.16 The equipment used was a Rupprecht and Patashnick TEOM (Tapered Element Oscillating Microbalance) with a PM_{10} size selective head. A meteorological mast was fitted above the instrument enclosure to record wind speed and direction

4.17 Comparison was made between the measured data and the ADMS-Roads modelling programme. To this end, traffic data was obtained from Suffolk County Council and meteorological data was supplied by RAF Wattisham. From this analysis, it was determined that the annual mean value for PM_{10} was $21.4\mu\text{g}/\text{m}^3$, well below the air quality objective of 40.

4.18 The other objective for PM_{10} is that the number of days on which the 24hour average exceeds $50 \mu\text{g}/\text{m}^3$ should be no more than 35.

The modelled data suggests that there will be no more than 5 exceedences of this value.

4.19 Therefore, it can be concluded that the air quality objective for PM₁₀ will be met across the district.

5. New Local Developments

5.1 Since the previous progress report no new A1 or A2 industrial processes have developed within Mid Suffolk. Two new applications have been received for Part B processes - a concrete batching plant in the village of Great Finborough (Grid Ref. 0068E 5560N) and a concrete crushing plant in Great Blakenham (Grid Ref. 1169E 5145N). Neither are locations where the air quality objectives are likely to be compromised by the developments.

5.2 No new major roads have been constructed since the previous assessment. The impact of the proposed B1115 relief road in Stowmarket (the most significant highways development in the district) was considered in the 2003 Upgrading and Screening Assessment. In respect of air quality in Stowmarket (the largest town in the district) this is likely to have a net beneficial effect on air quality.

5.3 No planning applications have been determined, within the last year, which would have a major impact on air quality objectives.

5.4 No known landfill sites or quarries have been developed since the previous review.

5.5 In conclusion there are no known developments with the potential to have a significant impact on air quality.

6. Proposed Developments

6.1 The 2004 progress report referred to two items which could both impact upon air quality. The reason being that both could generate significant amounts of traffic along the A14 corridor.

(a) A proposed railfreight depot in Stowmarket/Creting St Peter

(b) A proposed sports and entertainment complex in Great Blakenham

6.2 The proposed railfreight depot did not progress beyond an outline planning application, and the authority has been advised that the application has been withdrawn.

6.3 An outline application has been received for the winter sports complex in Great Blakenham (Snoasis). The application has not yet been determined. Air Quality has been highlighted as a possible concern, due to a significant increase in vehicle movements. An assessment of the impact upon air quality has been submitted. This assessment suggests that the air quality objectives will not be compromised by the development. The results of the PM₁₀ monitoring undertaken earlier this year support this assessment. The predicted levels of PM₁₀ are well below the air quality objective, and, as detailed in the Enstec report, this is largely due to background concentrations. Therefore it is not anticipated that the increase in traffic will endanger a breach of the air quality objectives. It should be noted that in an attempt to mitigate against increased road traffic, an application has also been made for a new railway station at Great Blakenham. This is a positive aspect to the application, seeking to promote an alternative to road travel. A “Green Travel Plan” will also be required by condition or S106 agreement to ensure that trips to and from the site are minimised.

6.4 Developments outside of the Authority’s district could also have an impact upon air quality. The expansion of the port of Felixstowe is such an issue. The Suffolk Air Quality Management Group (a group which contains representatives of all Local Authorities in Suffolk) has been advised that there should be no impact upon air quality.

6.5 In conclusion, there have been no major developments within the last twelve months, which were not previously identified. In respect of future developments, the “Snoasis” application is under consideration. Air quality has been considered as a potential concern, but a comprehensive assessment has been provided and this indicates that there is no danger of air quality objectives being breached.

6.6 Future developments with the potential to impact upon air quality will continue to be identified at the planning stage.

7. Local Air Quality Strategies

7.1 The air quality objective levels are being met within Mid Suffolk, and there is no indication that they are likely to be breached. Therefore, the Council currently has no local air quality strategies.

7.2 Further monitoring of PM₁₀ concentrations along the A14 corridor has been undertaken during the winter of 2005 and has indicated that the air quality objective is being met.

7.3 Results of nitrogen dioxide monitoring indicate that this air quality objective is also being met.

7.4 In these circumstances it is not considered necessary to develop local air quality strategies. Air quality in Mid Suffolk is considered to be good. The current levels of the two pollutants of most concern are well below the objective levels.

8. Air Quality Planning Policy

8.1 Currently, and largely because there were no existing problems at the time of plan preparation, there are no policies relating to air quality in the Mid Suffolk local plan. However, the plan is currently being reviewed and a new Local Development Framework (LDF) is under preparation.

8.2 In the LDF, the vision for the District will be set out in the Core Strategy and this will deal with the general disposition of development throughout the District. The LDF will seek –

(i) to reduce out commuting to places of employment

(ii) the provision of homes near to centres of employment opportunity, and

(iii) the submission of planning applications accompanied by “Green” travel plans.

These will be key elements in the drive to reduce emissions of carbon dioxide and other pollutants.

8.3 The Core strategy will also encourage the submission of designs and layouts that integrate transport and planning matters, fuel and thermal efficient building methods and the use of alternative energies.

8.4 This approach to sustainable development will be augmented by the land use planning policies contained in the “Generic Policies” which will be used for the control of development throughout the district.

9. Implementation of Local Transport Plans/Strategies

9.1 Mid Suffolk District Council is consulted on and contributes to, the Suffolk Local Transport Plan (SLTP) which is prepared by the County Council.

9.2 The SLTP is currently under review. The Suffolk Air Quality Management Group (comprising representatives from the County Council and the seven District Councils) contributes to the plan by way of incorporating “*Better Air Quality for Suffolk*” into the plan, making recommendations for areas where air quality objectives are exceeded, or at risk of exceedence. There are no locations within Mid Suffolk which warrant such attention.

9.3 Mid Suffolk Council works closely with the County Council, Town and Parish Councils and community groups in developing Local Transport Action Plans (LTAPs). A plan is in place for Stowmarket, and LTAP’s are being developed for Needham Market, Eye, Debenham, Thurston and Elmswell.

9.4 Stowmarket is the largest town in the district (population approx. 14,000) and the only town within which air quality objectives are likely to be compromised. A major factor in terms of congestion is the railway crossings on the B1115 Stowupland Road, and on Crown Street. This matter is to be addressed by way of the B1115 relief road, crossing over the railway line from Gipping Road. This will be a significant development in terms of reducing congestion in Stowmarket, and will be of net benefit in terms of improving air quality. The scheme may be commenced during 2006.

9.5 The 2004 Annual Progress Report on the SLTP (Ref 5) highlights the following matters relating to transport plans in Mid Suffolk :-

(i)The proposed B1115 relief road in Stowmarket will include cycle routes, pedestrian paths and improved public transport.

(ii)The Highways Agency is preparing proposals for junction and safety improvements on the A14 between Stowmarket and Haughley.

(iii) The County Council has set up the “Club 88” rural bus service with Rural Bus Challenge funding. This has successfully connected a number of villages in Mid Suffolk with Needham Market, the railway station, and the bus service between Ipswich and Stowmarket. This is the type of rural feeder service that is probably most suited to meeting future public transport needs in rural areas.

(iv) Mid Suffolk Council continues to contribute to work by Sustrans (the sustainable transport charity) on the National Cycle Route through Mid Suffolk, and on a scheme to provide a safer pedestrian and cycle route between the villages of Woolpit and Elmswell.

(v) Mid Suffolk Council has undertaken a survey of accessibility to services in rural areas. As a result of this a Public Service Agreement Project is developing public/community transport improvements in the Eye/Stradbroke area.

10. Conclusions

10.1 There has been a change in focus regarding NO₂ monitoring, such that it is more closely linked to sensitive locations. The monitoring data available for NO₂ shows that there has been no exceedence of the air quality objective.

10.2 Recent monitoring for PM₁₀ concentration along the A14 corridor, at a location considered to be a sensitive receptor has shown that the air quality objective is also being met for this pollutant.

10.3 Air Quality is considered to be good in Mid Suffolk. It is not considered necessary to undertake increased monitoring unless there are fundamental changes to the road network, or development that could significantly affect air quality.

10.4 Since the April 2004 Progress Report, there have been no developments, new roads or new industrial processes in Mid Suffolk, which could have a significant impact on any of the air quality objectives.

10.5 There is one current planning application which may have the potential to impact upon air quality. An air quality assessment has been provided to assist in the determination of this issue.

10.6 There is currently no need to declare any Air Quality Management Areas within Mid Suffolk, or to develop further air quality strategies.

10.7 Future developments, which could impact on air quality, will be identified through the planning process, and appropriate information and monitoring of air quality will be requested of developers.

11. References

- 1) UK, Department of Environment, Food and Rural Affairs (2000) :
“Air Quality Regulations 2000 and (Amendment) Regulations 2002”
- 2) Mid Suffolk District Council (April 2004) : *“Progress Report on Air Quality in Mid Suffolk”*
- 3) UK, Department of Environment Food and Rural Affairs (2003) :
“Progress Report Guidance LAQM.PRG(03)”
- 4) UK, Department of Environment, Food and Rural Affairs (2003) :
“Local Air Quality Management, Technical Guidance LAQM TG(03)”
- 5) Suffolk County Council (2004) : *“Suffolk Local Transport Plan, Annual Progress Report 2004”*