2011 Air Quality Progress Report for South Cambridgeshire District Council

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

April 2011

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Executive Summary

This Report constitutes the 2011 Air Quality Review and Assessment Progress Report for South Cambridgeshire District Council. The Report includes air quality monitoring data from 2010. It also covers other issues and developments that have occurred in the last twelve months, since the Progress Report of 2010 that may have a bearing on local air quality.

During 2010, the objectives for nitrogen dioxide were met at all monitoring locations. However, the daily mean PM_{10} objective was exceeded at the Bar Hill and Impington continuous monitoring stations and the annual mean PM_{10} objective was exceeded at Impington.

In 2010, South Cambridgeshire District Council completed an Air Quality Action Plan (AQAP) in response to the 2008 designation of an Air Quality Management Area for annual mean nitrogen dioxide and daily mean PM_{10} along the A14 corridor. The AQAP was completed jointly with Cambridge City Council and Huntingdonshire District Council and each Authority has identifies 5 priority actions that are thought will have the greatest benefit to local air quality. In addition to the 5 priority actions, a series of other actions have been identified and studied for feasibility and cost effectiveness. Two of the priority actions involved the planned upgrades to the A14, however this has been delayed due to the Government Spending Review of 2010 with no indication as to when or if the project may go ahead. As a result of this and in order to prevent a stagnation of the priority actions process, the AQAP will be reviewed over the coming months in order to identify further feasible priority actions.

In addition to the AQAP, South Cambridgeshire Council has also developed Supplementary Planning Guidance on Low Emissions Strategies, which will target primarily the larger scale developments that are proposed for the area.

South Cambridgeshire expected to experience almost 40% increase in housing development between 1999 and 2016. In the past much of the housing development in the Cambridge area has been directed to the villages and towns beyond the city. Most of the new development in the district will take place on the edge of Cambridge and in a new town near to Longstanton and Oakington, named Northstowe. The economic downturn means that the construction of some developments may be delayed and take longer than planned, though house-building is likely to go ahead on other sites. Housing completions are expected to pick up again in a few years' time.

The major growth sites include:

- Cambridge East
- Cambridge Southern Fringe (Trumpington Meadows)
- Cambourne
- Northstowe
- Orchard Park (formerly Arbury Park)
- North West Cambridge

The most significant of these developments is Northstowe. The existing Local Development Framework, Core Strategy and Area Action Plan all put Northstowe at the centre of the development strategy for the area, and all confirm that the new development will have enhanced environmental standards.

Within the Administrative area of Cambridgeshire County there are proposed large-scale traffic schemes, which are likely to have an affect on air quality in the future. Although still at formative stages the schemes are discussed further.

With the exception of the delay to the A14 upgrade and improvements, there have been no other major infrastructure changes or developments that have significantly changed the conclusions of the previous progress report or indeed the status of the Air Quality Management Area.

Table of contents

Appendices

List of Tables (page no.)

List of Figures (page no.)

1 Introduction

1.1 Description of Local Authority Area

South Cambridgeshire is a rural district in East Anglia, which entirely surrounds but does not include the city of Cambridge. It is the southernmost district of the county of Cambridgeshire and borders Bedfordshire to the west, Hertfordshire to the south, Essex to the southeast and Suffolk to the east. The district is comprises of 102 parishes with all settlements classified as villages. The landscape and villages are equally varied.

The area has good road and rail links with London and the South-East. The M11/A11 and A14 corridors pass through the District to the west/south and north of Cambridge respectively. To date, air quality issues within the District of South Cambridgeshire have been linked directly to the volume of traffic that runs through the District, specifically along the A14. The A14 is congested on a regular basis between Bar Hill (to the West of Cambridge) and Milton (to the North North-East of Cambridge). This has resulted in the declaration of an Air Quality Management Area for nitrogen dioxide (NO_2) and PM_{10} along the stretch of the A14 between Bar Hill and Milton. Traffic levels have continued to grow along the A14 through the District so that the road is now almost at its maximum capacity.

The government has identified South Cambridgeshire as one of four growth areas. Substantial development is proposed over the next 10-12 years with plans to increase the population of the District to 162,000 by 2016. Future traffic and development proposals have the potential to cause the air quality management areas to increase in size.

South Cambridgeshire District Council is within the eastern region growth area and is therefore subject to a significant amount of new mixed-use development. All applications received are screened to ensure that any impacts on air quality are identified and mitigated as far as possible. Whilst applications are awaited for most of the growth area schemes, work is continuing in supplying information for the production of environmental statements and assessments.

In 2010, an application was submitted by the Highways Agency, which, if agreed, would result in the widening and improvements of the A14 through Cambridgeshire. The proposals have been delayed in the Government Spending review of October 2010. There is no indication as to when the proposals may go ahead or indeed, if they will go ahead as planned in the future.

The most significant proposed development within the District is that of the new town of Northstowe, which is described as an “exemplar for sustainability” and is still under consideration for ecotown status. The proposal is ultimately for a new town comprising a maximum of 9,500 new homes (and a wide range of facilities), which will become a community of up to 24,000 people although the size of the development may be dependant upon the future status of the improvements and widening of the A14.

The proposed Northstowe site covers 427 hectares, and is located near Longstanton and Oakington, on the route of the Cambridgeshire Guided Busway and approximately 3km North of the AQMA at Bar Hill. This development has been identified within the Local Development Framework, which has lead to the development of a Northstowe Area Action Plan (AAP). The AAP sets out the vision for Northstowe covering all aspects of development and design (from visual impact to sustainability).

An outline planning application was submitted in 2007 for the development of Upper Cambourne. This is to include up to 950 dwellings, a community centre, open space and play

areas. Owing to the recent improvements on the local network A428, it is thought that traffic movements will not cause a significant impact to air quality.

1.2 Purpose of Progress Report

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Objectives

The air quality objectives applicable to Local Air Quality Management (LAQM) **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre μg/m^3 (for carbon monoxide the units used are milligrammes per cubic metre, mg/m^3). Table 1.1. includes the number of permitted exceedences in any given year (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

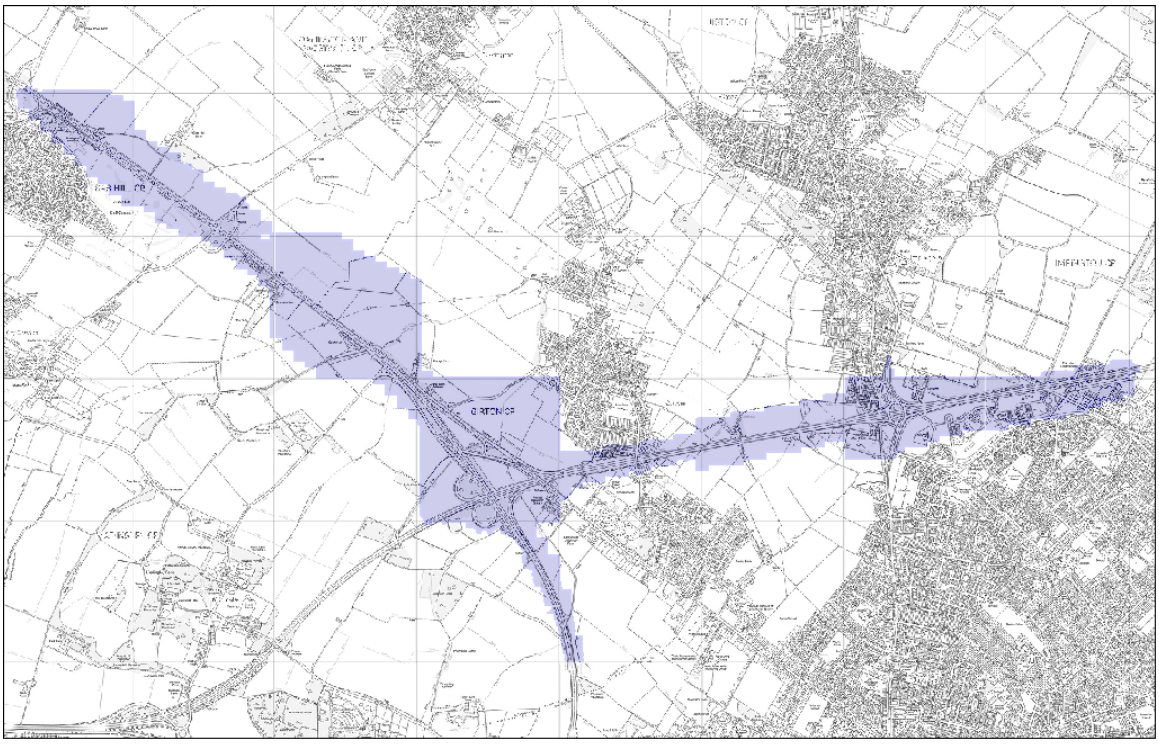
Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 μg/m^3	Running annual mean	31.12.2003
	5.00 μg/m^3	Running annual mean	31.12.2010
1,3-Butadiene	2.25 μg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 μg/m^3	Annual mean	31.12.2004
	0.25 μg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 μg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 μg/m^3	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 μg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 μg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 μg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 μg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 μg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Timeline of Significant Reports Prepared and Submitted by South Cambridgeshire District Council

Report	Year	Conclusion
Review and Assessment	1998	The report progressed benzene, 1-3 butadiene, lead, carbon monoxide, PM_{10} and nitrogen dioxide to a Stage 2 assessment. The overall conclusion was that all objectives were likely to be met.
Review and Assessment	2000	All objectives likely to be met, however, given the increasing traffic on the A14 and the introduction of new industrial sources, it was concluded that detailed monitoring would be required for nitrogen dioxide, PM_{10} and sulphur dioxide.
Updating and Screening Assessment	2003	Based on monitoring results, it was concluded that all objectives were likely to be met.
Progress Report	2004	Monitoring results were showing exceedences of the annual mean for nitrogen dioxide along a stretch of the A14, therefore a Detailed Assessment was required for NO_2. All other objectives were predicted as likely to be met.
Detailed Assessment of Nitrogen Dioxide Along the A14 Corridor	2006	The annual mean objective for nitrogen dioxide was not likely to be met along the A14 between Bar Hill and Milton, therefore, it was necessary to declare an Air Quality Management Area.
Progress Report	2007	Monitoring results were showing exceedences of the daily mean for PM_{10} along a stretch of the A14, therefore a Detailed Assessment was required for PM_{10}. Monitoring of NO_2 along the A14 continued to show exceedences of the annual mean objective. All other objectives were predicted as likely to be met.
Detailed Assessment of PM_{10} Along the A14 Corridor	2008	The daily mean objective for PM_{10} was not likely to be met along the A14 between Bar Hill and Milton, therefore, it was necessary to declare an Air Quality Management Area.
Progress Report	2008	A Further Assessment of NO_2 and PM_{10} was required. Objectives for all other pollutants were predicted as likely to be met.
Further Assessment of nitrogen dioxide and PM_{10} Along the A14 Corridor	2008	The AQMA for NO_2 and PM_{10} was declared. An Air Quality Action Plan (AQAP) is required and consultation is underway in its' development.
Updating and Screening Assessment	2009	Based on the monitoring results from the previous year, it was concluded that levels of NO_2 and PM_{10} along the A14 between Bar Hill and Milton would remain above the national objective. No other significant developments or increases in traffic or industrial emissions were identified.
Air Quality Action Plan	2010	Acceptance of Air Quality Action Plan by Defra. Detailed priority actions to be worked on over the coming years.
Progress Report	2010	Progress made towards improving air quality with improvements to local policy and strategy. No significant local / infrastructure changes.

Figure 1.1 Map of AQMA Boundary (for NO_2 and PM_{10})



The Air Quality Management Area (as pictured in Figure 1.1, above) was initially declared in July 2007 following measured and modelled exceedences of the annual mean objective for nitrogen dioxide. The following year, exceedences of the daily mean objective for PM_{10} were identified at the Bar Hill and Impington continuous monitoring stations. As a result of this, a Detailed Assessment of PM_{10} was carried out which led to the revocation of the original AQMA and the designation of a 2nd AQMA to include PM_{10} in July 2008. After discussions with Defra, it was decided that the boundary for the PM_{10} (which was originally slightly smaller than that of the NO_2 AQMA) would be the same as the original boundary for nitrogen dioxide.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

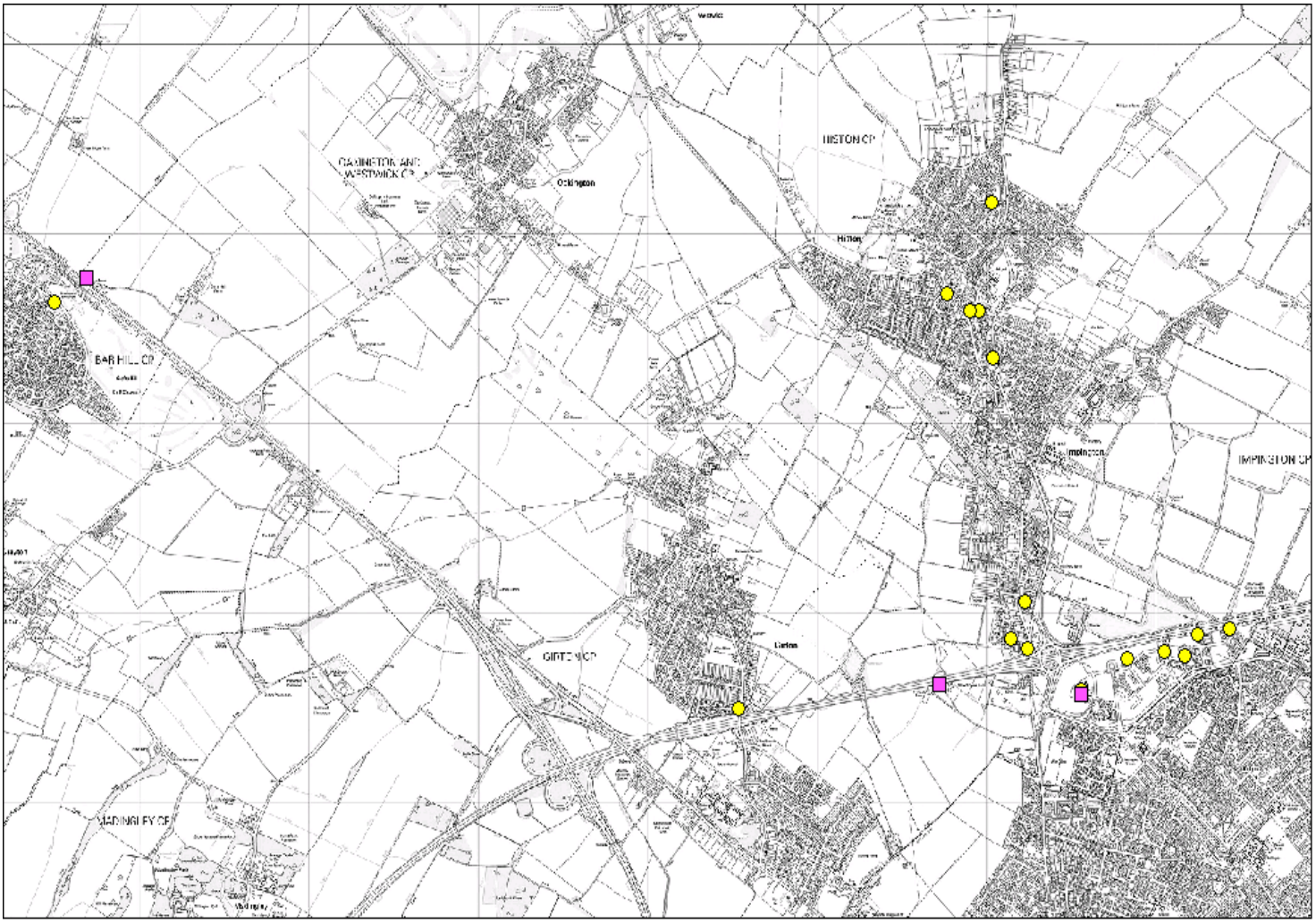
2.1.1 Automatic Monitoring Sites

South Cambridgeshire District Council currently operates automatic monitoring stations at 3 sites within the District. Details of these sites are provided in Table 2.1.

- Ratification and QA/QC of automatic monitoring data is carried out by AEA Technology (http://www.aeat.co.uk).
- Bi-annual audits of the monitoring stations are carried out by AEA Technology.
- Services are carried out bi-annually by the equipment suppliers For Bar Hill and Impington, this is AirMonitors Ltd and the site at Orchard Park School is serviced by Enviro-Technology.
- The sites are manually calibrated on a bi-monthly basis by the Local Site Operative. The output from the calibrations is forwarded to AEAT for QA/QC and ratification purposes.
- South Cambridgeshire District Council is a member of the Calibration Club, operated by AEAT.
- All NOx analysers are chemiluminescence analysers.
- All particulate matter analysers are BAMs. In line with current guidance, BAM data is multiplied by 1.3 to give the gravimetric equivalent.
- A 4th automatic monitoring station is currently in storage awaiting a final agreement on location. It is hoped that a location will be found close to the site of the proposed development in North West Cambridge, (adjacent to the junction of the A14 with the M11). It will monitor PM_{10}, $PM_{2.5}$ and NO_2.

Figure 2.1 Map of Automatic and Non-automatic Monitoring Sites

Map of monitoring locations along the A14



= Diffusion tube location

= Automatic monitoring station

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	Analyser Model	In AQMA ?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
Bar Hill (A14)	Roadside	X 538685 Y 263760	NO_x (NO_2) PM_{10} $PM_{2.5}$	Thermo 42C Eberline BAM (FH62) Eberline BAM (FH62)	Y	Y (8m)	N/A	Y
Impington (A14)	Roadside	X 543739 Y 261625	NO_x (NO_2) PM_{10}	Thermo 42C Eberline BAM (FH62)	Y	Y (12m)	N/A	Y
Orchard Park Primary School (A14)	Urban background	X 544558 Y 261579	NO_x (NO_2) PM_{10}	ET 200E ET BAM1020	Y	Y (1m)	N/A	Y

N.B:
The monitoring station at Orchard Park Primary School was commissioned on 22nd April 2009

2.1.2 Non-Automatic Monitoring

The monitoring of nitrogen dioxide by diffusion tube has been an ongoing project since 1995. There are currently 29 sites within the District as detailed in Figure 2.1. In 2010, five locations were added to the monitoring network whilst one at Grange Farm Cottages has been removed and replaced. These are:

- Flack End, Arbury Park which replaces the diffusion tube location at Grange Farm Cottages reported in 2009, Flack End is located within the AQMA. Grange Farm Cottages was removed due to the pending improvements to the A14 which would see the demolition of the 4 existing cottages. The Highways Agency has since taken on an NO_2 monitoring survey at this location .
- Engledow Drive, Arbury Park located on a new housing development within the AQMA,
- Topper Street (22), Arbury Park located on a recently established housing development on the southern-most edge of the AQMA,
- Co-Op Store, High Street, Histon located to verify the extent of the higher levels of NO_2 along High Street, Histon (when compared to the existing diffusion tube on the High Street)
- Little Abington, located in the south of the District and approximately 13km south of the AQMA to act as a background location for part of the District not well covered by monitoring locations.

The tubes are supplied and analysed by Environmental Scientifics Group (ESG - formerly Harwell Scientifics), a UKAS accredited laboratory (0322). The tube preparation method is 50% TEA in Acetone and analysis is by desorption with distilled water, and the extract analysed using a segmented flow auto analyser with ultraviolet detection. The exposure periods for the diffusion tubes are those of the UK Nitrogen Dioxide Diffusion Tube Network run by NETCEN which effectively is a four or five week duration. QA/QC procedures are as detailed in the UK NO_2 Diffusion Tube Network Instruction Manual, this document can be found at www.airquality.co.uk/archive/reports/cat06/no2instr.pdf

The diffusion tube bias adjustment is taken from national bias adjustment spreadsheet . For 2010, this figure has been given as 0.85, compared to 0.8 in 2008 and 0.81 in 2009.

Summary of tube details:

- Analysing lab: Environmental Scientifics Group (ESG) Ltd
  (formerly Harwell Scientifics Ltd)
  12 Moorbrook
  Southmead Industrial Park
  Didcot
  Oxon
  OX11 7HP
- Diffusion tube preparation method used: 50:50 (acetone:triethanolamine)
- ESG Ltd confirm that the methods and procedures they follow meet the guidelines set out in Defras' "Diffusion Tubes For Ambient Monitoring: Practical Guidance". A copy of the confirmation is provided in Appendix A.

- South Cambridgeshire District Council previously relied on the bias adjustment factors provided on the Air Quality Archive web database, however, a co-location study began at Orchard Park Primary School (grid reference 544557, 261571) in April 2009. Using this local study, a bias adjustment factor of 0.97 was calculated for 2010. This figure is greater than in previous years.

- ESG takes part in the WASP Proficiency Scheme. The laboratory performance is rated at the highest level of “good”. Full details of the ESG diffusion tube performance and WASP scores are provided in Appendix A.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
1 The Coppice, Histon	Urban background	544230 262048	NO_2	N	Y (7m)	0.5m	Y
Narrow Lane, Histon	Roadside	544026 264165	NO_2	N	Y (10m)	0.5m	N
The Gables, High Street, Histon	Roadside	543976 263675	NO_2	N	Y (5m)	1m	Y
White Lion, 96 High Street, Sawston	Urban background	548600 249136	NO_2	N	Y (5m)	1m	Y
15 Paddock Way, Sawston	Roadside	548777 249373	NO_2	N	Y (5m)	0.5m	N
22 Water Lane, Histon	Roadside	544050 263306	NO_2	N	Y (2m)	0.5m	Y
1 Brook Close, Histon	Urban background	543955 263588	NO_2	N	Y (2m)	1m	Y
72 Cambridge Road, Impington	Urban background	544243 261819	NO_2	Y	Y (7m)	0.5m	Y
19 Lonetree Avenue, Impington	Roadside	544119 261862	NO_2	Y	Y (7m)	0.5m	Y
1A New Road, Sawston	Roadside	548400 249753	NO_2	N	Y (10m)	1m	N
5 Mill Lane, Sawston	Roadside	548545 249366	NO_2	N	Y (15m)	1m	N
Heath House, A505, Thriplow	Urban background	544034 244585	NO_2	N	Y (10m)	1m	Y
64 High Street, Linton	Roadside	556179 246815	NO_2	N	Y (7m)	0.5m	Y
47 High Street, Harston	Urban background	542554 251002	NO_2	N	Y (5m)	1m	Y
20 High Street, Tadlow	Roadside	528131 247399	NO_2	N	Y (10m)	2m	N
1A Weavers Field, Girton	Urban background	542537 261467	NO_2	Y	Y (15m)	1m	Y
3 Garner Close, Milton	Urban background	547452 263175	NO_2	N	Y (5m)	1m	N
1 Catchall Farm Cottages	Roadside	540509 262290	NO_2	Y	Y (1m)	10m	Y
Crafts Way, Bar Hill	Roadside	538472 263675	NO_2	N	Y (15m)	1m	N
Orchard Park School	Urban background	544557 261571	NO_2	Y	Y (1m)	50m	Y
Orchard Park School	Urban background	544557 261571	NO_2	Y	Y (1m)	50m	Y
Orchard Park School	Urban background	544557 261571	NO_2	Y	Y (1m)	50m	Y
Chieftain Way, Arbury Park	Roadside	544828 261738	NO_2	Y	Y (1m)	0.5m	Y
Topper Street, Arbury Park	Roadside	545056 261784	NO_2	Y	Y (1m)	0.5m	Y
Flack End, Arbury Park	Roadside	541056 261910	NO_2	Y	Y (5m)	4.5m	Y
13 Engledow Drive, Arbury Park	Roadside	545259 261868	NO_2	Y	Y (2m)	35m (from A14 WB)	Y
22 Topper Street, Arbury Park	Roadside	545169 261764	NO_2	Y	Y (4.2m)	0.2m	Y
Co-Op, High Street, Histon	Roadside	543903 263591	NO_2	Y	Y (1.5m)	2.6m	Y
Church Lane, Little Abington	Urban background	552961 249251	NO_2	Y	Y (14m)	2.0m	N

2.2 Comparison of Monitoring Results with Air Quality Objectives

The monitoring stations at Bar Hill and Impington are considered to be sites representative of nearby receptors situated alongside the A14, whilst the Orchard Park monitor is located within the grounds of a school. All three are located within the existing Air Quality Management Area for nitrogen dioxide and PM_{10}.

The data capture during 2010 has been below the required 90% at each of the monitoring stations within the District. At Orchard Park, the lost time was due to a change of communications technology which resulted in AEA Technology being unable to collect data for longs periods of time.

At Impington and Bar Hill, the lost time is down to ageing equipment (the analysers are 10 years old or approaching) and also with difficulty caused by the switchover of contracts when Thermo ceased operations in the UK.

Where data is below 90& but above 75% with one large noticeable period of breakdown, Box 3.2 of LAQM TG(09) has been used to calculate the annual mean.

The PM_{10} analyser at Impington experienced several long periods of breakdown, resulting in a data capture of only 42.1%. This data has been reported in the relevant tables but is not commented on in terms of the objectives and has not been included on representative graphs and charts.

After bias adjustment, all the nitrogen dioxide diffusion tubes showed compliance with the annual mean objective for nitrogen dioxide although the concentrations are very similar to preceding years indicating that there have been no overall improvements in concentrations.

Automatic Monitoring Data

- At Bar Hill, the daily mean objective for PM_{10} was exceeded (37 days where concentrations were calculated to be >50$\mu g/m^3$). Although this figure is being treated with caution given the low data capture (78.4%) for the year. All other objectives were met.

- At Impington, the data capture for PM_{10} was as low as 42.1%. Whilst this snapshot of the year provides an annual mean of 42$\mu g/m^3$ with 36 exceedences of the daily mean objective, the data is not adequate enough and is not being used for a comparison against the objectives within this report.

- All objectives for NO_2 have been achieved at Impington in 2010, although caution is being applied due to poor data capture.

- At Orchard Park School, all objectives were met.

- Results are given in Tables 2.3a and 2.3b, below.

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

The monitoring stations at Bar Hill and Impington are considered to be sites representative of nearby receptors situated alongside the A14, whilst the Orchard Park monitor is located within the grounds of a school. All 3 are located within the existing Air Quality Management Area for nitrogen dioxide and PM_{10}. A brief summary of performance at each monitoring station is given below:

- At Bar Hill, all objectives were met for nitrogen dioxide. The data capture for NO_2 at Bar Hill was low in 2010 (only 72.2%). This was due to a long period of breakdown between January and April. Whilst it is noted that a data capture of <75% should be disregarded, it was decided that Box 3.2 of LAQM TG(09) would be used to correct the annual mean to a full calendar year as an indication of progress from 2009.

- At Impington, all objectives were met for nitrogen dioxide.

- At the Orchard Park monitoring station, all objectives for NO_2 were met. Results were very close to the concentrations for 2009. As with Bar Hill, Orchard park did not achieve 90% data capture although it was felt that at 89%, there was enough valid data to proceed without the need for a correction factor.

- Results are given in Tables 2.3a and 2.3b, below with an adjusted figure for Orchard Park provided in Table 2.3c (adjusted to annual mean from shorter term monitoring).

Table 2.3a Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective

Location	Within AQMA?	Data Capture 2010 %	Annual mean concentrations (μg/m^3)			
			2007	2008	2009	2010
Bar Hill	Y	72.2	34	**42**	39	30*
Impington	Y	77.9	**41**	35	33	30*
Orchard Park School	Y	89.0	N/A	N/A	20	28

** Box 3.2 of TG(09) was used to adjust annual mean levels of NO_2 to a full year at Bar Hill and at Impington from shorter term monitoring data. Due to the differing periods during which data was lost, there are differing correction factors for the 2 sites. These have been calculated as 0.85 for Bar Hill and 0.79 for. The calculations for obtaining the correction factors are presented in Tables 2.3b and 2.3c.*

Table 2.3b Estimation of Annual Mean NO_2 from Short Term Monitoring Data at Bar Hill (Using Box 3.2 of LAQM TG(09)).

Location	Annual Mean (μg/m^3)	Period Mean (μg/m^3) 22/04/10 – 31/12/10	Ratio (AM/PM)
Cambridge Roadside	39.5	45.2	0.87
Wicken Fen	11.1	13.6	0.82
Thurrock	29.2	36.4	0.80
Sandy Roadside	37.7	41.3	0.91
Average of Ratios			**0.85**

Bar Hill annual mean (uncorrected) = 35.0μg/m^3
Correction of annual mean at Bar Hill: **35.0 x 0.85 = 29.8μg/m^3**

Table 2.3c Estimation of Annual Mean NO_2 from Short Term Monitoring Data at Impington (Using Box 3.2 of LAQM TG(09)).

Location	Annual Mean (μg/m^3)	Period Mean (μg/m^3) 03/01/10 – 11/03/10	Ratio (AM/PM)
Cambridge Roadside	39.5	48.4	0.82
Wicken Fen	11.1	15.1	0.74
Thurrock	29.2	40.7	0.72
Sandy Roadside	37.7	42.8	0.88
Average of Ratios			**0.79**

Bar Hill annual mean (uncorrected) = 39.1μg/m^3
Correction of annual mean at Bar Hill: **39.1 x 0.79 = 30.1μg/m^3**

Table 2.3d Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Location	Within AQMA?	Data Capture 2010 %	Number of Exceedences of hourly mean (200 µg/m^3) *Where valid data is less than 90% of a full year, the 99.8th %ile of hourly means is provided in brackets*			
			2007	2008	2009	2010
Bar Hill	Y	72.2	0	0	0	0 (120)
Impington	Y	77.9	0	0	0	0 (115)
Orchard Park School	Y	89.0	N/A	N/A	0	0 (103)

Figures 2.3a and 2.3b, show the trends in annual mean concentrations as measured by the automatic monitoring stations at Bar Hill and Impington.

Figure 2.3a Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Bar Hill

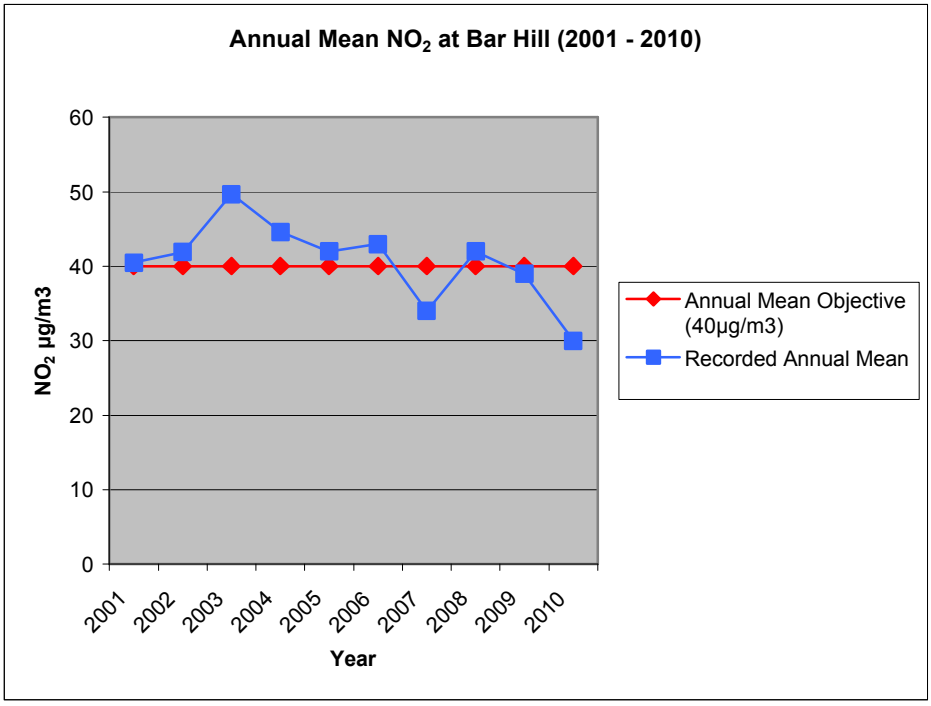
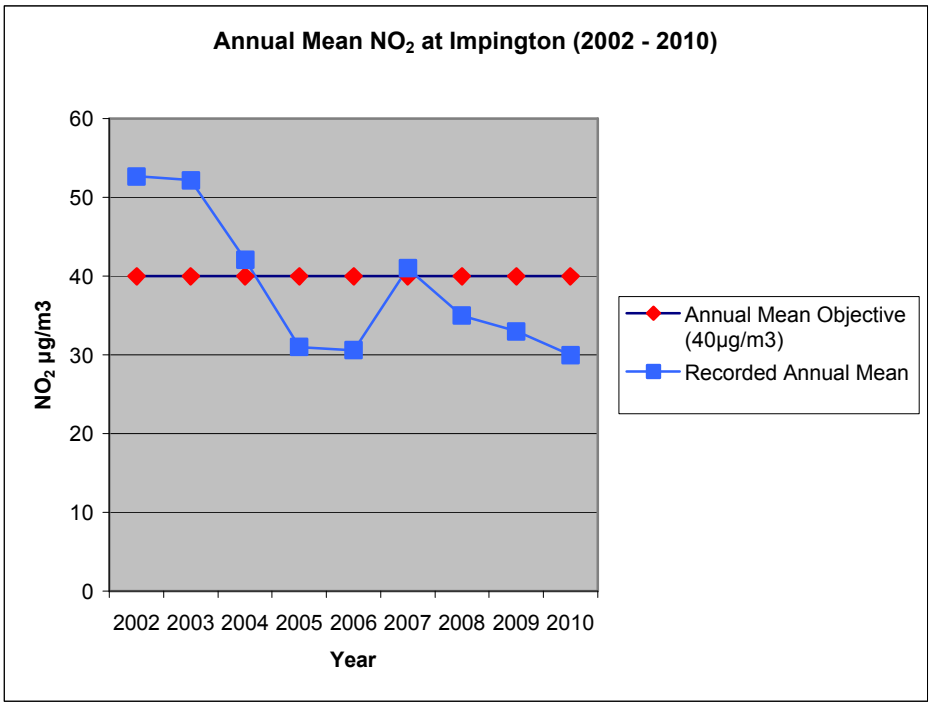


Figure 2.3b Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Impington



Diffusion Tube Monitoring Data

After bias correction, all diffusion tube results show compliance with the national annual mean objective for nitrogen dioxide. In 2010, after bias adjustment (using the National Bias Adjustment Factor obtained from the national database of bias adjustment factors (http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html), all diffusion tubes have achieved the National Annual Mean Objective of 40µg/m^3.

Diffusion tube results (bias corrected) are presented in Table 2.4a whilst table 2.4b compares annual mean tube data since 2007.

Table 2.4a Results of Nitrogen Dioxide Diffusion Tube Survey 2010

Location	Within AQMA?	Data Capture 2010 %	Annual mean concentrations 2010 (μg/m^3) Adjusted for bias
1 The Coppice, Histon	N	100	22.8
Narrow Lane, Histon	N	100	18.5
The Gables, High Street, Histon	N	100	37.6
White Lion, 96 High Street, Sawston	N	92	32.9
15 Paddock Way, Sawston	N	100	18.0
22 Water Lane, Histon	N	100	35.5
1 Brook Close, Histon	N	100	24.8
72 Cambridge Road, Impington	Y	100	28.2
19 Lonetree Avenue, Impington	Y	83	25.7
1A New Road, Sawston	N	100	20.9
5 Mill Lane, Sawston	N	100	20.1
Heath House, A505, Thriplow	N	100	29.2
64 High Street, Linton	N	100	33.6
47 High Street, Harston	N	100	29.6
20 High Street, Tadlow	N	100	14.5
1A Weavers Field, Girton	N	100	32.4
3 Garner Close, Milton	N	100	22.6
1 Catchall Farm Cottages	Y	100	36.2
Crafts Way, Bar Hill	Y	100	30.1
Orchard Park School, Arbury Park	Y	100	23.6
Orchard Park School, Arbury Park	Y	100	23.7
Orchard Park School, Arbury Park	Y	100	24.8
Chieftain Way, Arbury Park	Y	100	26.9
Topper Street, Arbury Park	Y	100	26.2
Flack End, Arbury Park	Y	83	30.7
13 Engledow Drive, Arbury Park	Y	42*	33.3
22 Topper Street, Arbury Park	Y	42*	32.5
Co-Op, High Street, Histon	N	42*	26.6
Church Lane, Little Abington	N	42*	16.5

**** Tubes added to the network in August 2010***

Table 2.4b Trends in Nitrogen Dioxide Diffusion Tube Survey (2007 – 2010)

Location	Within AQMA?	Data Capture 2010 %	Annual mean concentrations (μg/m^3)			
			2007	2008	2009	2010
1 The Coppice, Histon	N	100	21.9	21.8	24.5	22.8
Narrow Lane, Histon	N	100	20.0	19.9	21.4	18.5
The Gables, High Street, Histon	N	100	37.7	37.9	39.5	37.6
High Street, Sawston	N	92	33.5	33.6	33.1	32.9
15 Paddock Way, Sawston	N	100	18.7	17.7	18.9	18.0
22 Water Lane, Histon	N	100	34.3	34.7	33.2	35.5
1 Brook Close, Histon	N	100	25.8	26.5	26.0	24.8
72 Cambridge Road, Impington	Y	100	27.3	27.8	35.9	28.2
19 Lonetree Avenue Impington	Y	83	22.5	25.0	26.2	25.7
1A New Road, Sawston	N	100	25.3	20.0	21.0	20.9
5 Mill Lane, Sawston	N	100	18.8	19.1	19.4	20.1
Heath House, A505, Thriplow	N	100	22.7	31.5	29.2	29.2
64 High Street, Linton	N	100	33.4	33.7	33.4	33.6
47 High Street, Harston	N	100	26.1	27.0	28.1	29.6
20 High Street, Tadlow	N	100	13.5	14.6	15.3	14.5
3 Garner Close, Milton	N	100	22.3	22.8	24.6	22.6
1A Weavers Field, Girton	N	100	32.4	34.0	35.6	32.4
1 Catchall Farm Cottages	Y	100	N/A	30.1	27.6	36.2
Crafts Way, Bar Hill	Y	100	N/A	27.0	24.6	30.1
Orchard Park School	Y	100	N/A	23.4	22.9	23.6
Orchard Park School	Y	100	N/A	24.5	22.5	23.7
Orchard Park School	Y	100	N/A	25.0	23.6	24.8
Chieftain Way, Arbury Park	Y	100	N/A	30.3	24.6	26.9
Topper Street, Arbury Park	Y	100	N/A	28.9	26.0	26.2
Flack End, Arbury Park	Y	83	N/A	N/A	N/A	30.7
13 Engledow Drive, Arbury Park	Y	42*	N/A	N/A	N/A	33.3
22 Topper Street, Arbury Park	Y	42*	N/A	N/A	N/A	32.5
Co-Op, High Street, Histon	N	42*	N/A	N/A	N/A	26.6
Church Lane, Little Abington	N	42*	N/A	N/A	N/A	16.5

- **Bias adjustment factors for 2007,2008 and 2009 were all 0.8 (as taken from the Bias Adjustment Spreadsheet on the AQRA Helpdesk Website). The factor for 2010 is 0.85, again taken from the Bias Adjustment Spreadsheet at: http://laqm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors_v04_11_v6.xls*
- *N/A represents sites that had not yet been commissioned in the subject year*

Historically readings have been high at three tube locations High Street Histon, Cambridge Road Girton and High Street Sawston. Trend data for these sites are reported in Table 2.4c, below with readings corrected for bias and results represented graphically over the measurement period. The table also provides data for sites in Sawston and Linton (villages in the south of the District and furthest away from the AQMA) and for Tadlow, a rural background site within the District.

Table 2.4c – NO_2 trend data for specific locations in South Cambridgeshire

**All data is bias adjusted*

Location	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
High Street, Histon.	35.1	38	43.7	39.2	36.4	37.7	37.7	37.9	39.5	37.6
Water Lane, Histon.	N/a	N/a	N/a	N/a	43.1	38.2	34.3	34.7	33.2	35.5
Lone Tree Avenue, Impington	26.4	31.2	31.8	26.8	29.4	24.2	22.5	25.0	26.2	25.7
Weaversfield, Girton.	36.4	40.3	44.8	36.2	41.7	32.7	27.4	34.0	35.6	32.4
High Street, Sawston.	35.3	38.6	42.6	35.9	36.5	30.1	33.4	33.6	33.1	32.9
High Street Linton	30.4	32.4	33.6	33.3	30.0	31.2	33.4	33.7	33.4	33.6
High Street, Tadlow.	16.1	17.4	24.1	17.4	16.2	14.0	13.5	14.6	19.1	14.5

From Table 2.4c, above, over the last 2 years, there have only been slight increases in NO2 concentrations at Water Lane in Histon and High Street, Linton although concentrations remain below the objectives. All other locations reported in Table 2.4c have shown improvements on 2009 figures although remain roughly within 5% of the previous year. The general trend between 2001 and 2010 is that levels have remained stable – there has been no significant improvement at any of the locations tabulated..

The following text and figures (Figure 2.4a to 2.4g), show the trends in annual mean nitrogen dioxide concentrations measured at the Diffusion Tube Monitoring Sites tabulated above:

High Street, Histon is a narrow village road which although is not subject to excessive traffic flows can become congested at peak times due to the use of the road as a local route into and out of Cambridge (on the other side of the A14) and also to vehicles parking on the road causing obstructions to the flow of traffic.

The diffusion tube at High Street, Histon is located at the façade of a property and approximately 1 metre from the road. It is also opposite the car park for a Tesco Express store, which may contribute to the higher levels of NO_2 as cars enter, exit and queue for the car park.

The High Street is the busiest road in Histon. At peak hours, it is used by traffic entering and leaving Cambridge (approximately 2km to the south). At other times of day, traffic moves slowly through the village as a result of speed reduction measures and obstructions caused by on-street parking and shop / office deliveries.

Additional monitoring locations were commissioned in 2005 when a new road traffic scheme was implemented in the village. The scheme was abandoned after 8 months and any direct effect on air quality was difficult to establish. Concentrations remain below but close to the objective. A graph of the annual results for this diffusion tube location is provided in Figure 2.4a, below:

In August 2010, a second diffusion tube was added to Histon High Street, on a wider stretch of the road. Results to date for 2010 are shown in Tables 2.4a and 2.4b but when compared to the monthly levels for the original High street tube, concentrations are much lower at the new location suggesting that the higher concentrations further down the High Street at the Tesco store is a hotspot relevant to that location only.

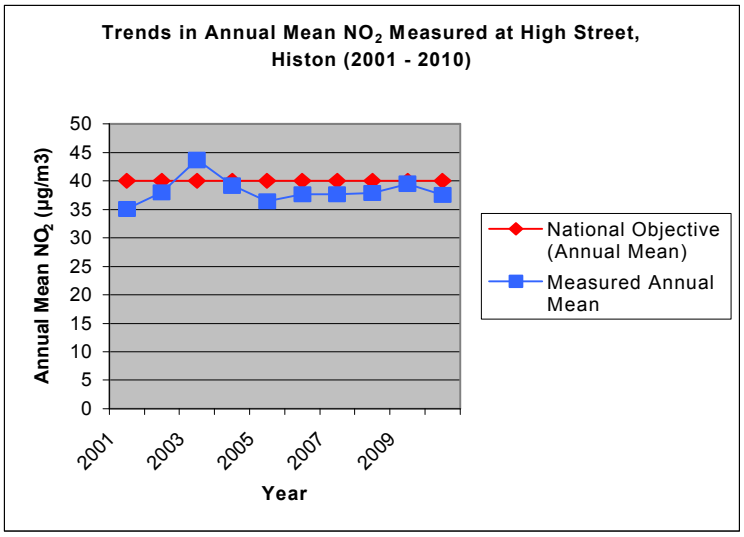


Figure 2.4a

The diffusion tube at **Water Lane in Histon** was commissioned in 2005. Since being established, it has consistently shown moderately high levels of NO_2. With the exception of 2005, levels measured have been close to, but not in exceedence of the annual mean objective. Water Lane is a section of the busy B1049, which acts as a distributor road between surrounding villages and the A14 and Cambridge. The tube location is approximately 1.5km North of the junction of the B1049 with the A14.

The highest levels of traffic along the B1049 are experienced during the morning and afternoon rush hours. Figure 2.4b on the following page, shows the concentrations of NO_2 measured at Water Lane. Concentrations show a downward trend since it was established in 2005 but remain within the annual mean objective. Monitoring will continue at this location for the foreseeable future.

The tube is located in a roadside location, approximately 1.6m from a relevant receptor and 1.6m from the road. Concentrations of nitrogen dioxide at this location have remained consistently high although still within the objective level.

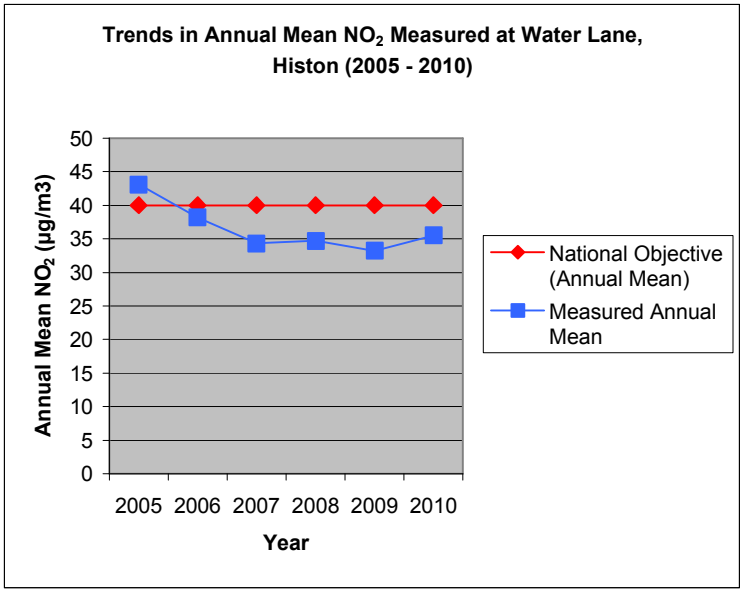


Figure 2.4b

The diffusion tube at **Lone Tree Avenue, Impington** is located approximately 70m from the A14 Eastbound carriageway. It lies on the edge of the Air Quality Management Area. The Avenue itself is a quiet, residential road. Figure 2.4c below, shows the annual trends in concentrations at this location:

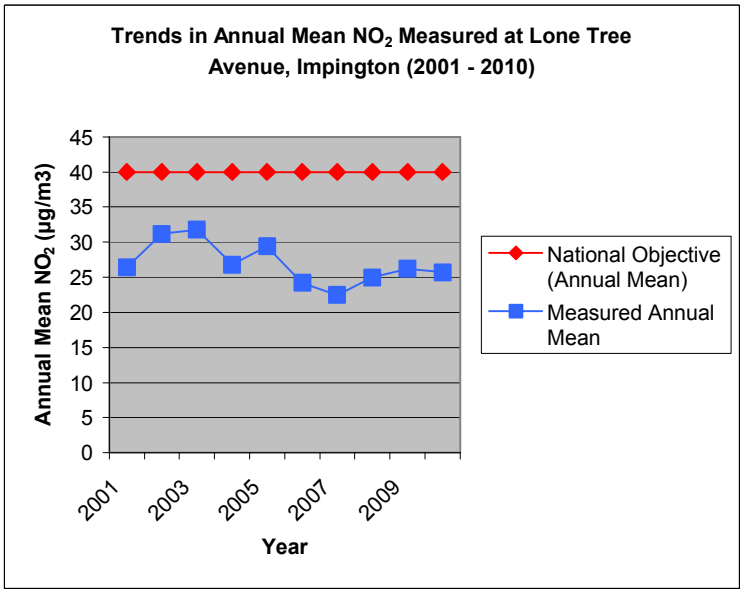


Figure 2.4c

The monitoring location at **Weaversfield, Girton** is at the entrance to a small housing development and opposite a local shop. The tube is situated on a lamppost in a roadside location, on a bridge over the A14 dual carriageway. The site is an equivalent distance from the A14 as local residential gardens and is a relevant location within the Air Quality Management Area for NO_2. As can be seen from Figure 2.4d, below, the concentration of NO_2 has risen steadily between 2007 and 2009. However, concentrations remain below the national objective. This location is important within the monitoring network due to the fact that it lies within the AQMA.

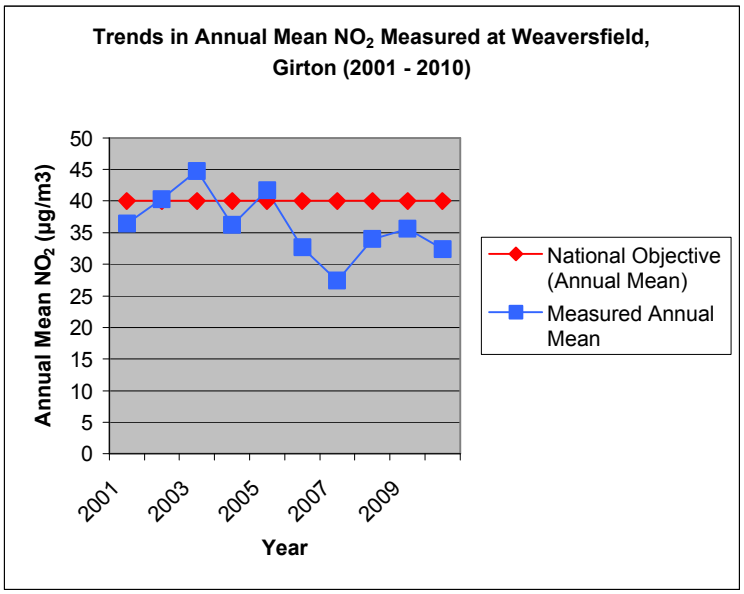


Figure 2.4d

The fourth location that previously exceeded the annual mean objective is located at **High Street, Sawston**, currently the largest village within the District with a population of 8,000. It lies approximately 10km South of the AQMA and 4km east of the M11. The monitoring site is adjacent to the façade of a local public house and the same distance from the roadside as the façade of residential properties and is therefore in a relevant location. The road running past the tube is the main road through Sawston with a speed limit of 30mph. It is used primarily by local residents and employees and visitors to the local shops and business parks. Given that Sawston lies between 2 major routes into Cambridge, the High Street does not experience the same kind of Cambridge commuter traffic as High Street, Histon.

As can be seen from Figure 2.4e, these results have been below the annual mean objective since 2004. No further action is considered necessary at this stage, however, monitoring will continue at this location in future years.

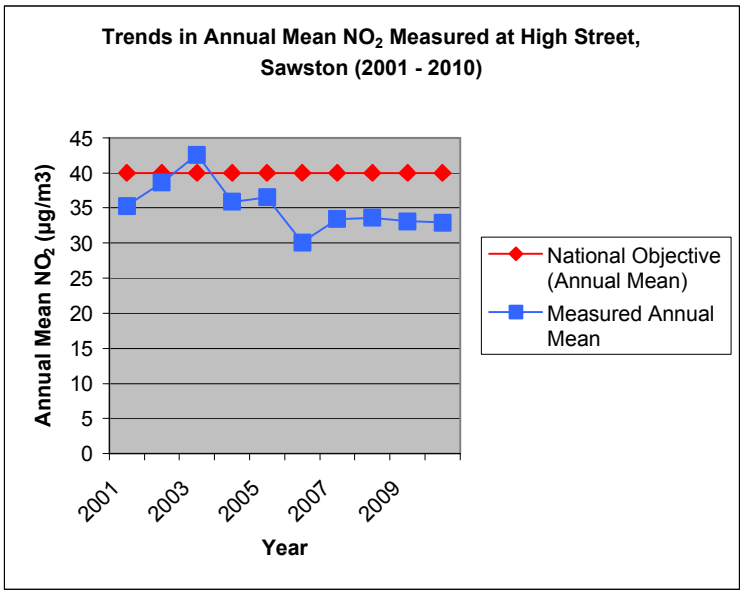


Figure 2.4e

The diffusion tube at **High Street, Linton** is located on the façade of a property at a point where the road is narrow. It is approximately 1m from the roadside. Linton is a moderately sized village with access via the busy A1307 to Cambridge. It is not used as an alternative route for commuters to and from Cambridge and therefore used primarily by residents and visitors. Alterations in the road layout, whereby a one way system was introduced in 2007, may have had an impact on air quality, however this will continue to be monitored closely to ensure that air quality does not deteriorate significantly. Trends in concentrations are shown in Figure 2.4f, below:

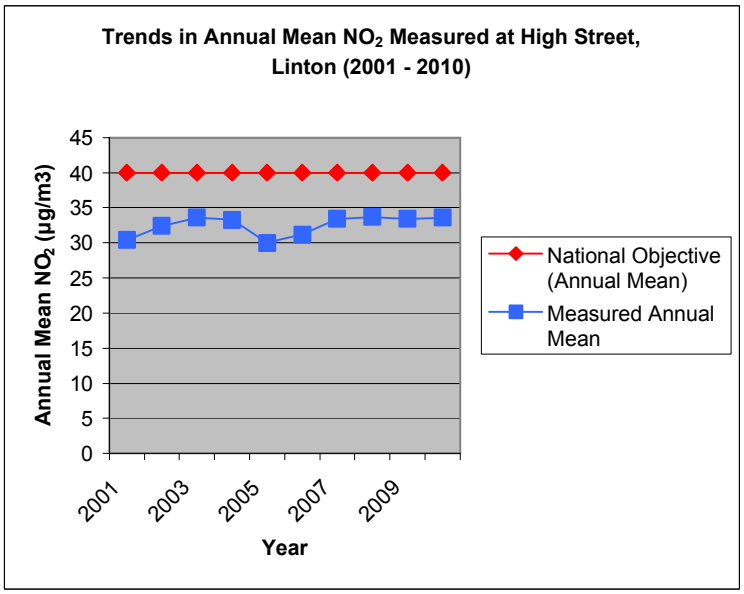


Figure 2.4f

Tadlow is thought to be representative of concentrations close to rural background. Tadlow is a small village, comprising approximately 40 houses. Access is via a small service road with houses lining each side up to the junction with the B1042, which has a mean daily traffic flow of approximately 6700 vehicles, around 5% of which is made up of heavy duty vehicles. The diffusion tube is located approximately 100m South of the B1042 at one of the residential premises. When compared to the concentrations obtained from the diffusion tubes at the busiest locations (along the A14), an indication as to how much traffic emissions are responsible for poor air quality within South Cambridgeshire can be obtained. Figure 2.4g, below shows the year-on-year trends in nitrogen dioxide concentrations at this location:

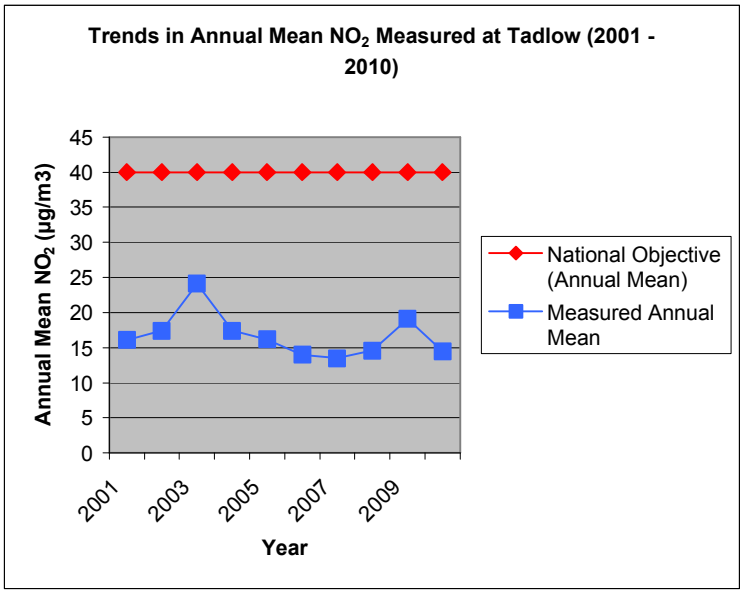


Figure 2.4g

2.2.2 PM_{10}

During 2010, fine particles were monitored at three locations in South Cambridgeshire, on the A14(E) (538685, 263760) at Bar Hill and on the A14(W) (543739, 261625) at Impington and at Orchard Park School (554558, 261579). Measurements at Impington and Bar Hill sites are made using an Eberline FH 62-IR Beta-attenuation Monitor. This instrument has a heated inlet manifold, which is held at 40ºC, the temperature is sufficient to drive off the volatile content of the sample and therefore the guidance given in LAQM.TG(09) is to correct for this by multiplying all measurements by a factor of 1.3 prior to comparison with the air quality objective. Results are quoted as µg/m^3 gravimetric equivalent.

- **At Bar Hill, the daily mean objective for PM_{10} was exceeded (37 days over the limit of 50µg/m^3), the annual mean is calculated as being the same as in 2009.**

The PM_{10} results measured at Bar Hill are quality assured and reported by “netcen”. The site was commissioned in March 2001 there is a fully scaled and ratified dataset available pursuant to this period.

- **At Impington, the data capture for PM_{10} was 42.1% for 2010. Concentrations are reported in the text and tables but are not being used for comparison against the PM_{10} objectives. The 2009 conclusions for this site remain relevant – annual mean and daily mean objectives for PM_{10} are a concern.**

Monitoring at the A14(W) in Impington has been operating since 19 February 2002. The analyser is identical to the one at Bar Hill. Due to various long–term faults with the analyser, only 42.1% data capture was achieved in 2010. The ratification and auditing services at this site until 2004, since then netcen have provided a full data audit and ratification process for this dataset.

- **At Orchard Park both the daily and annual mean objectives for PM_{10} were achieved with an annual mean almost identical to 2009.**

Monitoring at Orchard Park School, close to the A14 junction with the B1049, has been operating since 22nd April 2009. As with the other 2 sites, data is ratified by netcen, for which there is a full set from the time of commissioning.

Results of the PM_{10} monitoring are supplied in Tables 2.5a and 2.5b below:

Table 2.5a Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Location	Within AQMA?	Data Capture 2010 %	Annual mean concentrations ($\mu g/m^3$)			
			2007	2008	2009	2010
Bar Hill	Y	78.4	36	36	33	33*
Impington	Y	42.1	34	33	**41**	**42**
Orchard Park School	Y	81.1	N/A	N/A	16	17*

** Box 3.2 of TG(09) was used to adjust annual mean PM_{10} to a full year from a shorter-term dataset at Bar Hill and at Orchard Park School. Due to the differing periods during which data was lost, there are differing correction factors for the 2 sites. These have been calculated as 0.98 for Bar Hill and 0.92 for Orchard Park. 0.91. The calculations for obtaining the correction factors are presented in Tables 2.5c and 2.5d. Only two sites have been selected to aid with this process as these are the only two sites within 50 miles identified as being on the national network.*

Table 2.5b Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Location	Within AQMA?	Data Capture 2010 %	Number of Exceedences of hourly mean (50 $\mu g/m^3$) *Where data capture < 90%, the 90th %ile of hourly means has been provided in brackets.*			
			2007	2008	2009	2010
Bar Hill	Y	78.4	**49**	**52**	**48**	**37** (53 $\mu g/m^3$)
Impington	Y	42.1	34	**43**	**55**	**36** (70 $\mu g/m^3$)
Orchard Park School	Y	81.1	N/A	N/A	0	0 (26 $\mu g/m^3$)

Table 2.5c Estimation of Annual Mean PM_{10} from Short Term Monitoring Data at Bar Hill (Using Box 3.2 of LAQM TG(09)).

Location	Annual Mean ($\mu g/m^3$)	Period Mean ($\mu g/m^3$) 20/05/10 – 15/07/10	Ratio (AM/PM)
Thurrock	24.3	25.1	0.97
Sandy Roadside	21.5	21.8	0.99
Average of Ratios			**0.98**

Bar Hill annual mean (uncorrected) = 34$\mu g/m^3$
Correction of annual mean at Bar Hill: 34 x 0.98 = **33.3$\mu g/m^3$**

Table 2.5d Estimation of Annual Mean PM_{10} from Short Term Monitoring Data at Orchard Park (Using Box 3.2 of LAQM TG(09)).

Location	Annual Mean ($\mu g/m^3$)	Period Mean ($\mu g/m^3$) 30/03/10 – 04/05/10	Ratio (AM/PM)
Thurrock	24.3	25.1	0.97
Sandy Roadside	21.5	24.7	0.87
Average of Ratios			**0.92**

Orchard Park annual mean (uncorrected) = 18$\mu g/m^3$
Correction annual mean at Orchard park: 18 x 0.92 = **16.6$\mu g/m^3$**

Following adjustment of the PM_{10} annual means to a corrected annual mean shows that annual mean PM_{10} concentrations at Bar Hill and orchard park are almost identical to 2009. In addition, Bar Hill has shown an improvement in the number of days of exceedence of the daily mean objective.

Figures 2.5a and 2.5b, on the following page, show the annual trend data of measured annual mean concentrations against the annual mean objective level of 40$\mu g/m^3$. There are no particular patterns that arise. The concentrations generally fall and rise year on year. The figures in bold represent exceedences of the objective.

Figure 2.5a Annual Trends in PM_{10} Concentrations at Bar Hill

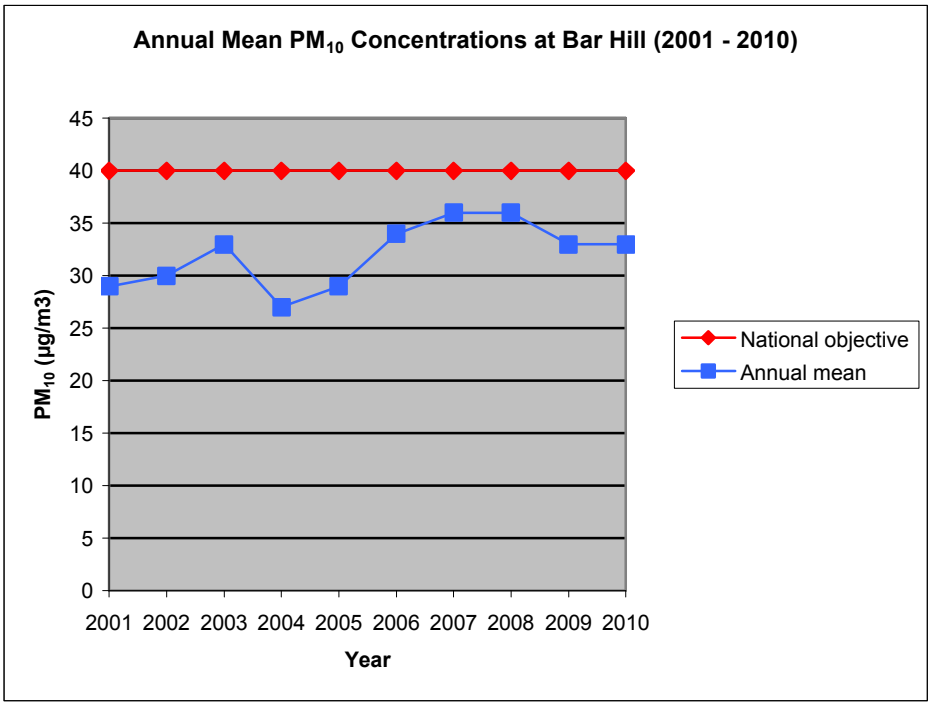
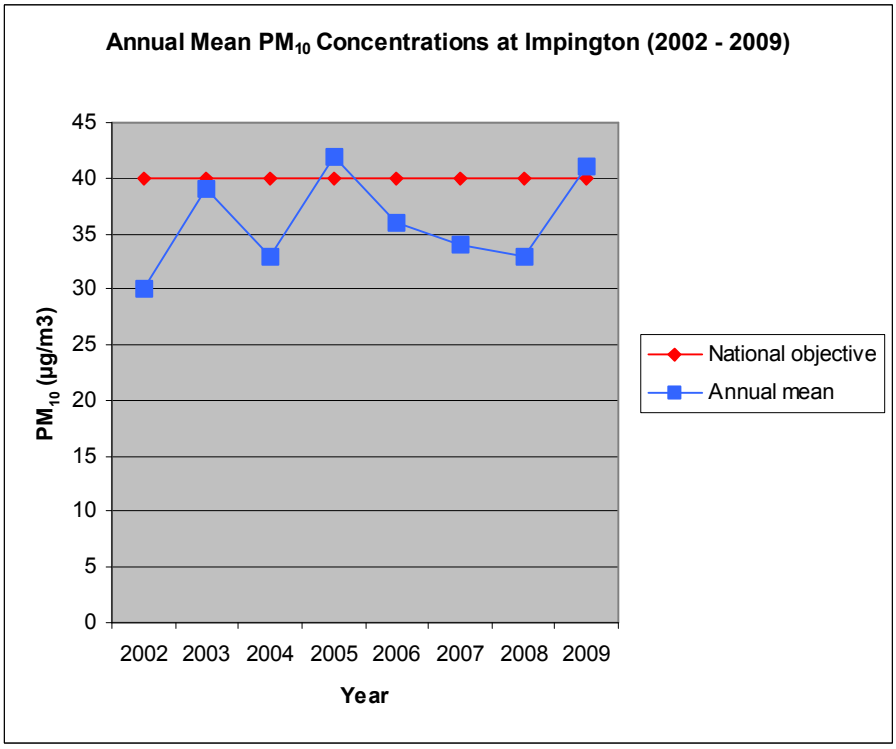


Figure 2.5b Annual Trends in PM_{10} Concentrations at Impington

Given the poor data capture for 2010 at Impington, it has been deemed inappropriate to use 2010 data. Therefore, conclusions for 2010 PM_{10} concentrations have not changed from the conclusions made in 2009.



Figures 2.5c and 2.5d, below, show the annual trend data of number of days of exceedence of the daily mean objective for PM_{10} against the daily mean objective level of 50µg/m^3, not to be exceeded more than 35 times per year. The general trend at Bar Hill is a rise in the number of days of exceedence until 2010 where there have been significantly fewer although this is being treated with caution due to the breakdown of the PM_{10} analyser.

Figure 2.5c Annual Trends in PM_{10} in Comparison with the Daily Mean Objective at Bar Hill

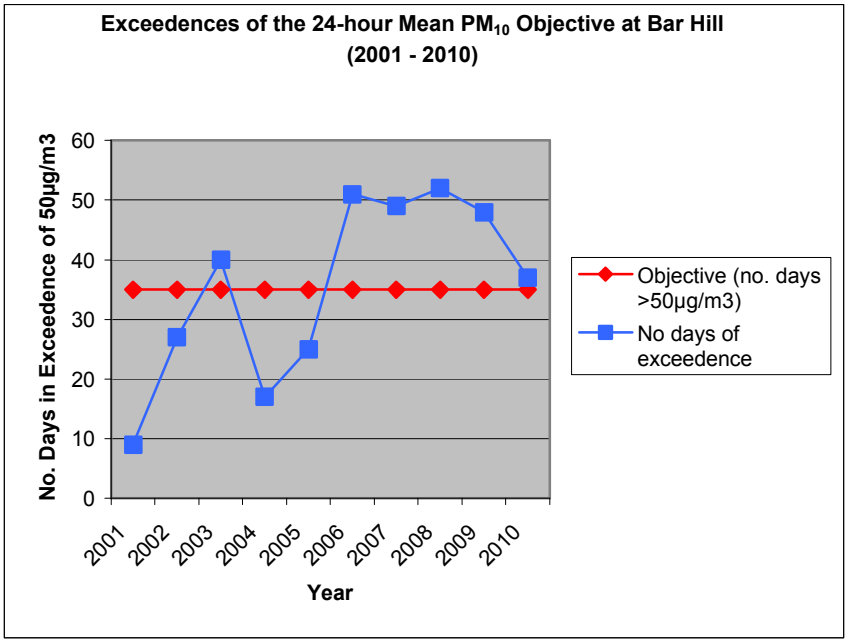
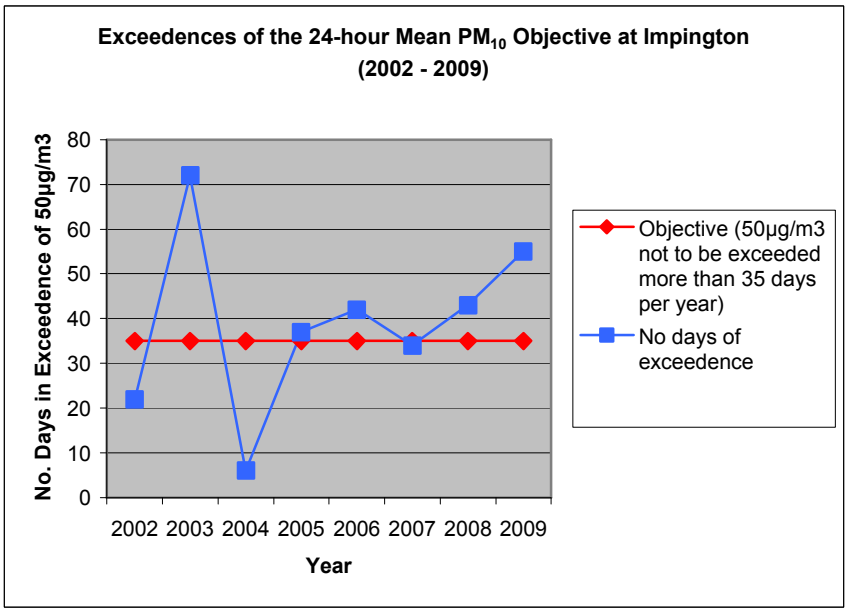


Figure 2.5d Annual Trends in PM_{10} in Comparison with the Daily Mean Objecitve at Impington

Given the poor data capture for 2010 at Impington, it has been deemed inappropriate to use 2010 data. Therefore, conclusions for 2010 PM_{10} concentrations have not changed from the conclusions made in 2009.



2.2.3 Sulphur Dioxide

South Cambridgeshire District Council monitored Sulphur Dioxide at the Cemex Cement Works, Barrington until October 2008 when operations at the site were mothballed.

2.2.4 Benzene

Benzene is not monitored within the District

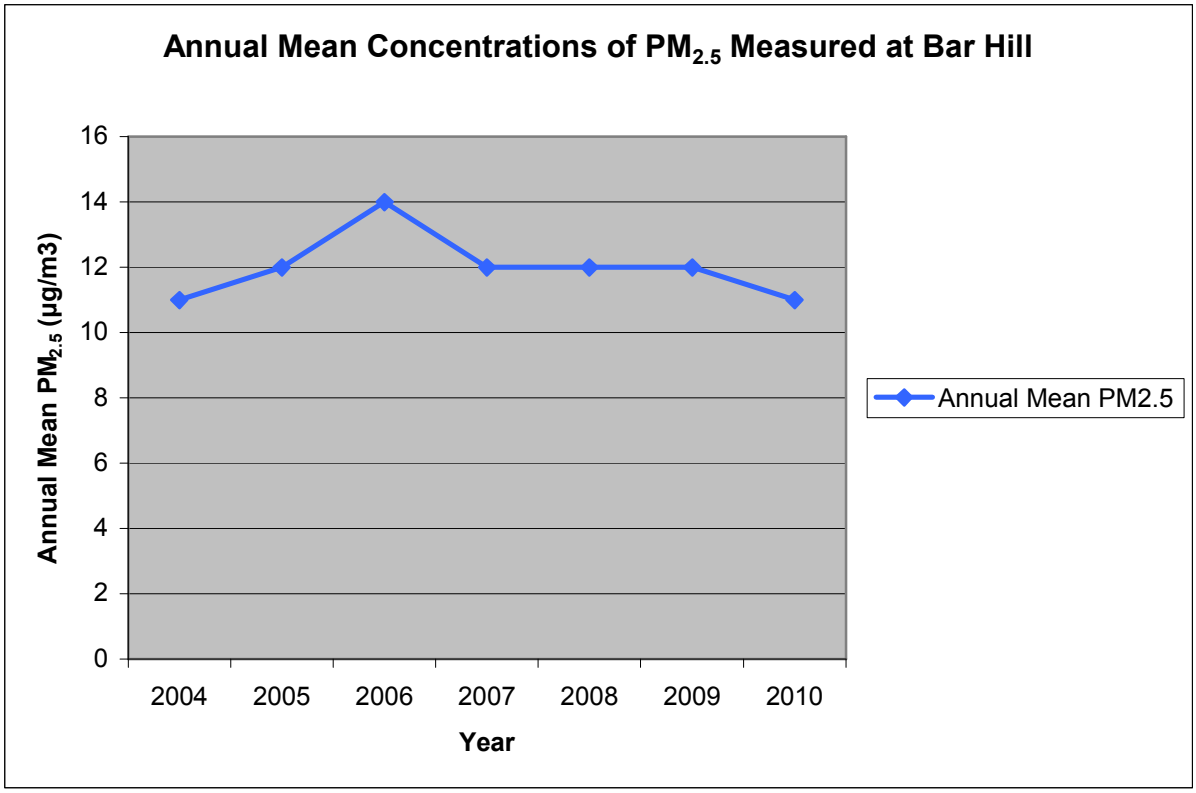
2.2.5 Other pollutants monitored: $PM_{2.5}$

South Cambridgeshire District Council monitors $PM_{2.5}$ at the continuous monitoring station in Bar Hill. It has been in place since 2001 and concentrations have remained fairly stable throughout the monitoring period. The highest level recorded was 14μg/m^3 measured in 2006. Since then, the annual mean concentrations have stabilised at 11 - 12μg/m^3. Table 2.6 shows the latest datasets whilst Figure 2.6 shows the annual trends in concentrations.

Table 2.6 Results of Automatic Monitoring of $PM_{2.5}$

Location	Within AQMA?	Proportion of year with valid data 2009 %	Annual mean concentrations (μg/m^3)			
			2007	2008	2009	2010
Bar Hill	Y	95.9	12	12	12	11

Figure 2.6: Trends in Annual Mean $PM_{2.5}$ Measured at Bar Hill



2.2.6 Summary of Compliance with AQS Objectives

South Cambridgeshire District Council has measured concentrations of PM_{10} above the 24-hour mean objectives at relevant locations within the AQMA. The pattern is similar to previous years. The data capture in 2010 has been very poor and so the data is being treated with a cautionary approach.

Nitrogen dioxide within the AQMA was measured below the annual mean and hourly mean objectives level at all monitoring locations during 2009.

In general and considering a poor data capture at the monitoring stations, there has been a slight improvement on 2009, especially with regards to levels of PM_{10}.

3 New Local Developments

3.1 Road Traffic Sources

Numbers of bus journeys and cycle trips in the County have increased over the last few years with an ongoing drive by the County Council and District Councils to improve public transport systems and cycle ways. However, overall motor vehicle trips have also increased, but not at the same rate. Traffic flows in South Cambridgeshire generally increased about 1% per annum between 2001 and 2010 with no distinct pattern on the A14. The 16-hour annual average weekday flow (aawf) between Bar Hill and Girton has remained consistent over the last 3 years at a figure of around 90'000 (combined flow) whilst between Girton and Histon, it has average d at around 68'000 with no overall distinct pattern to annual changes. The general growth in traffic across the District reflects the increasing population but also increases in distances being travelled, trends that are both likely to continue.

The guided busway that will link St Ives to Cambridge is almost complete but due to delays in construction is not yet handed over to the operators. Once opened it is hoped that this will provide improved access into Cambridge and help to reduce rush hour congestion on the A14.

There are four major projects that will require new road infrastructures, including local and access roads and upgrades to existing infrastructure. These are:

1) Orchard Park

2) North-West Cambridge

3) Trumpington Meadows

4) Northstowe

South Cambridgeshire District Council is currently in pre-application discussions for all the proposed developments. This pre-application work involves the study of air quality impacts on existing conditions and also the impact of poor air quality on future occupants of the sites.

Each of the above developments will contain new road structures and have the potential to significantly increase road traffic and domestic emissions. Each development is being considered on individual and cumulative impacts.

In addition, a major schedule of upgrades are proposed for the A14 within South Cambridgeshire as part of extensive upgrades that will also include Huntingdonshire. The proposed upgrades should help to ease congestion through the Districts' AQMA. The proposals include:

- Widening of the A14 carriageway between Fen Drayton and Histon – increasing the number of lanes from 2 to 3 on both Eastbound and Westbound carriageways should help to alleviate congestion and speed traffic through-flow.

- Widening of the A14 carriageway between Histon and Fen Ditton

A detailed air quality assessment was submitted in draft by the Highways Agency in 2010 for which detailed comments were returned by the Council. However, continued work on the

proposals have been delayed due to the results of the Government Spending Review of October 2010.

The improvements to the A14 form part of the Councils' Priority Actions within the AQAP, and are deemed to be essential works to help improve air quality along the A14, leading to a reduction in pollutant concentrations in and around the existing AQMA. However, given the change in circumstances, the Plan will be reviewed over the coming months and a set of additional priority measures identified to act as priority measures. The Coalition Government has indicated that plans for easing the pressures on the A14 will be revisited but there is no indication as to what the focus will be on or of timescales for proposed projects.

South Cambridgeshire District Council confirms that there are no new or newly identified sources of pollution from road traffic sources although there are major developments proposed for the District which have the potential to increase vehicle emissions. Each proposal is undergoing extensive and detailed air quality impact assessments. The proposals for the upgrade to the A14 were cancelled as a result of the Governments' 2010 Spending Review.

3.2 Other Transport Sources

South Cambridgeshire District Council confirms that there are no new or newly identified sources of pollution from other transport emissions which may have an impact on air quality within the Local Authority area.

3.3 Industrial Sources

South Cambridgeshire District Council confirms that there are no new or newly identified sources of pollution from industry which may have an impact on air quality within the Local Authority area.

3.4 Commercial and Domestic Sources

South Cambridgeshire District Council confirms that there are no new or newly identified sources of pollution from commercial and domestic premises which may have an impact on air quality within the Local Authority area.

3.5 New Developments with Fugitive or Uncontrolled Sources

South Cambridgeshire District Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

4 Local / Regional Air Quality Strategy

South Cambridgeshire District Council adopted a Local Air Quality Strategy in September 2008. The Local Air Quality Strategy has been produced in order to give a platform upon which the local air quality within the District can be improved, bringing together all those with an interest or responsibility for air quality.

The Local Air Quality Strategy aims:

- To achieve National Air Quality Standards
- To improve local air quality
- To carry out the above using cost effective and sustainable methods
- Raise awareness of and promote air quality issues and sustainable environments
- To emphasize the role South Cambridgeshire District Council has in improving air quality within the District
- To work together to achieve our goals
- To encourage partnerships between local industry, businesses and residents
- To raise the profile of air quality amongst the wider community
- Where possible, to suggest objectives for continued good working practices and to link the varying appropriate Council Policies, Plans and Strategies to the Air Quality Strategy

As part of the overall quality management of the Strategy work, it is important to consider the need to review it from time to time. Given the speed of change of Planning Policy relating to emissions, the current strategy (which was relevant for 5 years - 2009 to 2014) is currently under review to incorporate recent updates and changes. A full review of all aspects of the Strategy will take place in 2014 although updates will take place regularly where there are:

- Changes to existing legislation, Regulations or the National Air Quality Strategy,
- Introduction of new legislation or Regulations,
- Changes in local circumstances (for example, revocation of an AQMA),
- Introduction of new sources of industrial emissions
- Updates or changes to existing Council policy and/or guidance (including Cambridgeshire County Council)
- Introduction of new, relevant Council policies and/or guidance (including Cambridgeshire County Council)

The Strategy is available to view online at:
http://www.scambs.gov.uk/documents/retrieve.htm?pk_document=908845

5 Planning Applications

Since the Progress Report of 2010, no major planning applications have been received by South Cambridgeshire District Council that will have an impact on local air quality. However, there are a series of major development proposals and developments for which planning applications are expected or were received during earlier rounds of the Review and Assessment process. These are shown in Figure 5.1, below and described in further detail:

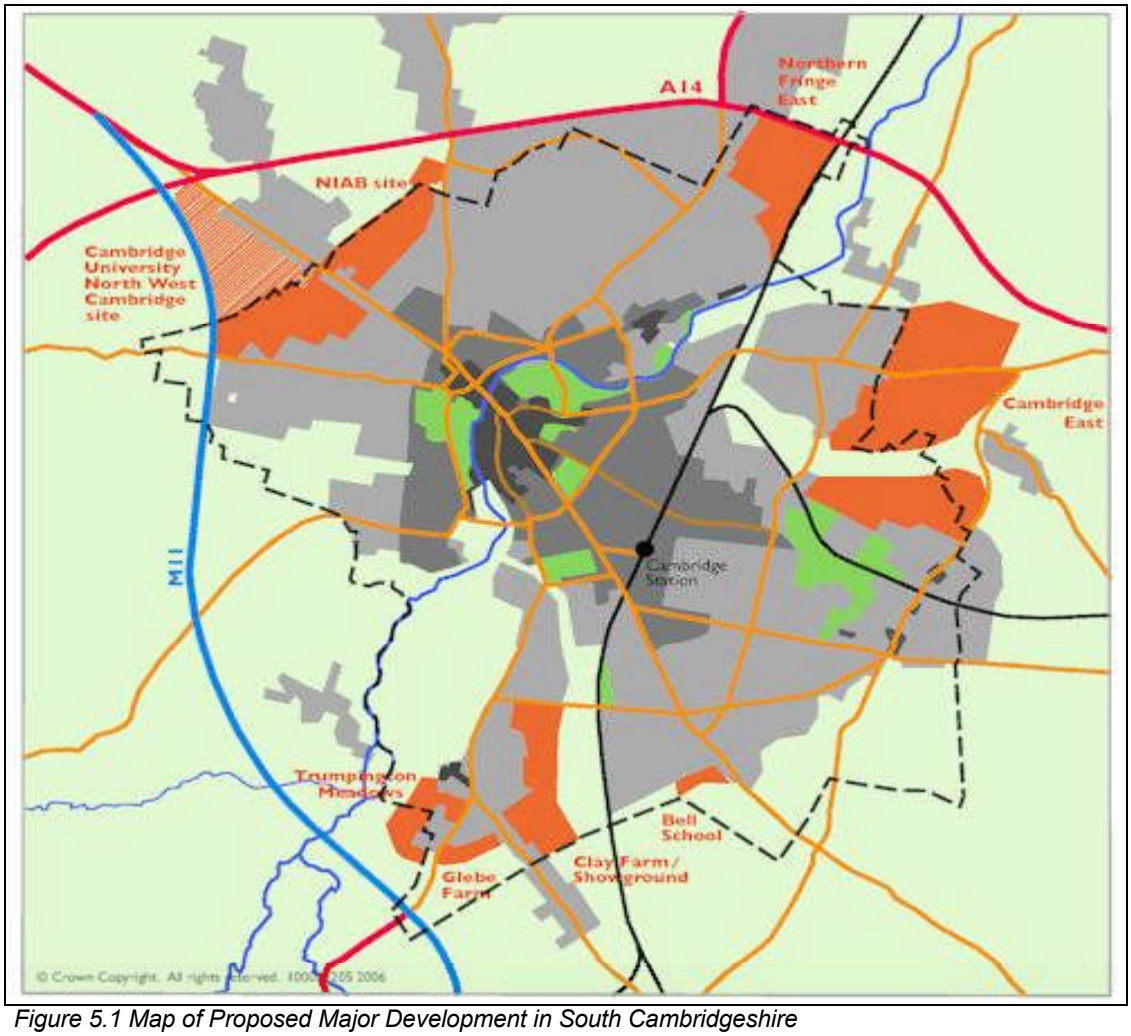


Figure 5.1 Map of Proposed Major Development in South Cambridgeshire
Courtesy of Cambridgeshire Horizons, 2010

Northstowe

Northstowe, in its current form, is a proposed new town comprising 9,500 new homes (and a wide range of facilities), which will become a community of up to 24,000 people. The site covers 427 hectares, and is located near Longstanton and Oakington, on the route of the ***Cambridgeshire Guided Busway** (see Page 40). It lies approximately 3km North of the A14 and the existing Air Quality Management Area. At present, the full development is still proposed although it will be impacted by the lack of important infrastructure improvements that it is reliant upon, specifically upgrades to the A14, which were dropped following the Spending Review of 2010.

The development will cover an area of approximately 605 Hectares with 22,800m^2 floorspace set aside for hotels and indoor leisure facilities, 49,500m^2 floorspace for A1, A2, A3, A4 and

A5 retail use and 156,000 m^2 floorspace set aside for B1, B2, B8 and *sui generis* industrial and commercial uses.

Northstowe has been granted Government approval as an eco-town, therefore, all measures to mitigate impacts on air quality must be considered. It is envisaged that the town will obtain a substantial amount of renewable energy from a community-wide biomass Combined Cooling, Heat and Power (CCHP) plant although a range of renewable sources will be considered.

The existing Local Development Framework, Core Strategy and Area Action Plan all put Northstowe at the centre of the development strategy for the area, and all confirm that the new development will have enhanced environmental standards. The Area Action Plan in particular contains Policy NS/23 – "An Exemplar in Sustainability" which states that:

"Northstowe will include within the development exemplar projects in sustainable development, including energy efficient measures. This could be achieved by:

a. *Providing an increased level of sustainability across the development as a whole above current requirements to a material extent;*
b. *Building a proportion of the development to advanced practice which fully addresses sustainability issues and minimises any environmental impact by pushing at the boundaries of the proven technology available at the time of the development."*

This Policy, along with the Councils' SPD for Low Emissions Strategies will ensure that the development will take place with the highest regard to environmental issues, including air quality and emissions. A recently successful grant application has provided for a study to consider a Low Emission Strategy, exploring best practice for the public realm and street design.

The policy framework that the future applications will be assessed against is contained within the Northstowe Area Action Plan, Development Control Policies adopted July 2007 and the Core Strategy adopted January 2007. The Northstowe planning applications will be assessed against these policies and other Government circulars and guidance.

Orchard Park

Orchard Park, formerly known as Arbury Park, is a new development of 900 homes and associated facilities located to the north of Cambridge, within South Cambridgeshire District Council's administrative boundaries. Approximately 60% of the new homes are already occupied (a 10% increase since the Progress Report of 2010). The community is served by a primary school, which opened in September 2007, formal and informal play areas, a hotel with restaurant and bar facilities, green open spaces and a dedicated community development worker who offers support and advice to all new residents as well as linking up with existing communities in North Cambridge, Histon and Impington.

The large plot of land was split into smaller parcels, which have been the subject of various smaller development proposals and applications. Discussions on developments and applications for parcels closest to the A14 continue as these are within the AQMA. The Council is mindful of the impacts of cumulative development on the AQMA and mitigation measures continue to be discussed with the Planning department and developers. It is envisaged that the opening of the Cambridgeshire Guided Busway will help to alleviate the impact of private vehicle journeys to and from the Orchard Park site. Proposals for each parcel of land require the submission of a detailed Air Quality Impact Assessment for the Councils' consideration.

Cambridge North West

Cambridge North West is a development area that straddles the edge of Cambridge City and South Cambridgeshire. The site consists of two developments, the NIAB site and the University site, which together will form a new community on the northwestern fringe of the city. The University site is between Madingley Road and Huntingdon Road, and will become a new education quarter for the City, including accommodation for University of Cambridge employees and students, as well as market housing. Both new developments will include a high proportion of affordable housing to help meet pressing local demands.

A detailed Air Quality Assessment has recently been submitted by the developer with pre-application discussions ongoing.

The NIAB development stretches between Huntingdon Road and Histon Road and will provide up to 3,000 new homes whilst the University site lies between Madingley Road and Huntingdon Road, adjoining the A14 to the North (the northern-most part of the site lies within the AQMA) and the M11 to the West. It comprises approximately 83 hectares upon which it is also proposed to construct around 3000 new homes along with a research facility, open spaces and recreational land. The NIAB development is currently under construction and is likely to be partially operational within the next 12 months.

Given the relative closeness of the two sites, and that both contain entrance and exit points along Huntingdon Road, impacts to local air quality may be significant due to a rise in traffic flows, particularly at peak times. South Cambridgeshire District Council is currently seeking a location close to the North West development in order to monitor any significant changes as development and unit uptake progresses.

Cambridge Southern Fringe

Southern Fringe comprises two main residential areas, which have been granted planning consent during previous rounds of Review and Assessment:

Trumpington Meadows - stretches from Trumpington towards the M11and the Trumpington Park and Ride site. This will provide approximately 1200 new homes.

Clay Farm – Located between the railway line and Trumpington village, it will provide approximately 2,300 new homes.

Both sites will consist of residential development with open spaces, parkland and cycle paths with improved public transport links. The sites are approximately 8km South of the Councils' AQMA.

AQMA, however, the traffic generation from the Southern Fringe development (when added to the traffic generation from all major developments) may have a cumulative impact on the local road network.

***Cambridgeshire Guided Busway (CGB)**

The CGB is a public transport scheme that is to link Cambridge, Huntingdon and St. Ives as an alternative to private vehicle journeys along the A14. The northern section runs parallel with the A14 using the old, disused Cambridge to Huntingdon railway link and once through Cambridge City Centre, the CGB heads South to Addenbrookes hospital. The CGB will have stops at the new town of Northstowe and Orchard Park as well as at existing village locations along the route.

It is hoped that the CGB will persuade private vehicle commuters to use public transport and so easing congestion on the A14 and improving air quality in the locality. Construction of the route (North and South) is almost complete but a date for opening of the service has not yet been announced.

6 Air Quality Planning Policies

South Cambridgeshire District Council has been working on a Supplementary Planning Document (SPD), forming part of the Local Development Framework (LDF). One Section of this relates specifically to air quality and low emissions, specifically, the requirement for new developers to consider and produce a Low Emissions Strategy (LES) for their project. It is intended to bring together the Council, the County Council, the Highways Agency and, through the improved use of s106 agreements, developers in working towards improving the local air quality and reducing emissions. In addition, it will help towards achieving the target within the new National Indicator NI194.

The South Cambridgeshire Local Development Framework contains Policy NE/16, relating to emissions and air quality. The policy reads:

"1. Development proposals will need to have regard to any emissions arising from the proposed use and seek to minimise those emissions to control any risks arising and prevent any detriment to the local amenity by locating such development appropriately.

2. Where significant increases in emissions covered by nationally prescribed air quality objectives are proposed, the applicant will need to assess the impact on local air quality by undertaking an appropriate modelling exercise to show that the national objectives will still be achieved. Development will not be permitted where it would adversely affect air quality in an Air Quality Management Area."

Emissions will be considered where:

- The Council will identify any developments that have the potential to contribute significant emissions to the local area
- Any developments within or adjacent to an AQMA boundary
- Proposals are that will result in increased congestion, a change in traffic volumes – an AADT or peak traffic flow, which increases by more than 5% for roads with more than 10,000 AADT.
- Proposals which change the traffic composition (i.e. increase the proportion of HGV's)
- Proposals that include car parking or the increase in provision for more than 300 spaces
- Developments that could give rise to significant dust emissions in areas where people and/or commercial activities could be exposed.
- Pre-application discussions with the developer to exchange ideas and determine the extent of the LES and possible contributions towards air quality improvements using S.106 agreements
- Low Emissions Strategy to be submitted with Planning Applications.

7 Local Transport Plans and Strategies

Where road traffic is the primary source of pollution leading to declaration of an AQMA, Defra and Department for Transport (DfT) recommend that Action Plans are integrated into Local Transport Plans (LTP) so that as much synergy as possible is achieved between transport planning and air quality management at a local level, such that air quality is dealt with in a more corporate and multi-disciplinary way.

Cambridgeshire County Council adopted Transport Plan (LTP3) in March 2011 after a long consultative process, which involved South Cambridgeshire District Council and the District Authorities of Huntingdonshire, Cambridge City, East Cambridgeshire and Fenland. The new Plan, covering the period 2011 – 2026 replaces LTP2, which covered the period 2006 – 2011. The It is one of a number of planning and transport plans and strategies for Cambridgeshire and the East of England aimed at ensuring that large-scale development can take place in the county in a sustainable way.

The LTP seeks to encourage all areas where air quality improvements can be made such as Travel for Work Partnerships, increase in passenger numbers on public transport services and improve to public transport infrastructure and will identify areas where particular benefits might be gained in Cambridgeshire, and where these will or could fall under the remit of our Full LTP programme to deliver or facilitate although many of the engineering and enforcement options available for the A14 full under the jurisdiction of the Highways Agency.

The main aims of the LTP3 is to "*create communities where people want to live and work, now and in the future*" in innovative ways whilst understanding and tackling the challenges of the current economic climate.

The Plan contains a number of challenges and objectives. Air quality becomes the focus of Objective / Challenge 7: "*Protecting and enhancing the natural environment by minimising the environmental impact of transport*". This provides a strategy to protect and enhance the environment but focuses primarily on working with local District Councils to improve air quality and take actions that will help to achieve the national air quality objectives. This is to be achieved by:

- Managing and reducing vehicle emissions and encouraging the uptake of sustainable modes of transport,
- Investigation into the use and uptake of new vehicle technologies as and when they become available,
- Managing demand (including private and public vehicle journeys),
- Carbon reduction programmes, including:
    - Implementation, review and upgrades to policies and strategies,
    - Improving and expanding smarter choices with regards to transport,
    - Improvements to sustainable travel options and
    - Management of private vehicle use.

South Cambridgeshire District Council recognizes the importance of the LTP document as a tool to help improve air quality and quality of life for local communities. The Council will continue to work closely with Cambridgeshire County Council in order that the visions, objectives and challenges set out within LTP3 can be achieved in partnership

8 Climate Change Strategies

8.1 Climate Change Action Plan

In 2002 the Council signed the Nottingham Declaration and in 2005 published a Climate Plan. Much has changed since then, especially in terms of the required extent and urgency of response to reducing greenhouse gas emissions and preparing for the effects of climate change. We have seen very significant national policy shifts and developments since the Climate Change Act 2008 was placed in the statute books with its legally binding UK target of an 80% reduction in CO_2 emissions by 2050.

The new local government performance framework (first reported through for 2008/09) introduced three very specific climate change national indicators: NI 186 - per capita CO_2 emissions for the local authority area; NI 188 - extent of preparedness to respond to the impacts of climate change, and; NI185 - direct CO_2 emissions from local authority operations. The former are LAA indicators and have very specific targets attached to them for delivery by the end of 2010/11.

The Councils' Climate Change Action Plan (CCAP) was adopted in the Autumn of 2010, replacing the 2005 Climate Plan. Its primary objectives are to:

- Reduce per capita greenhouse gas emissions by 34% by 2020 and by 80% by 2050 (from a 1990 baseline), as legislated within the delivery of the Climate Change Act 2008 and;

- Build the required preparedness and resilience to the levels of climate change that the Council are already committed to from excess atmospheric carbon emissions to date.

The Plan incorporates an approach and a set of actions that aim to reduce carbon emissions and improve resilience to climate change across South Cambridgeshire in an increasingly climate-stressed world. The approach provides the practical framework for decision-making as the pressures to manage a successful transition to low-carbon living in a low-carbon economy continue to escalate. The actions provide an outline work schedule of what will be delivered over the three year period of the plan. The areas targeted are detailed in sections 8.1.1 to 8.1.5, below:

8.1.1 Waste Management and Recycling

South Cambridgeshire District Council holds Beacon Status for its waste management practises and the County has been awarded a prestigious 'green flag' following its recent Comprehensive Area Assessment Review. In 2008/09 the district was the twelfth highest performing authority in England for percentage of household waste used/recycled/composted at 53.64%. The Council will continue to look to improve the service and has recently rolled out kerbside plastic recycling for which new wheely-bins have been provided, following a strong community engagement and consultation.

8.1.2 Fuel Poverty

Fuel poverty can lead to increased risks of ill health and a poorer quality of life. It is essential that any property is kept free from the cold and damp. Low income households spending more than 10% of its income on domestic heating systems are considered to be in a situation of fuel poverty. Under the Housing Health and Safety Rating System (HHSRS), category 1

hazards (including cold and damp housing) are identified and remedied with the availability of a capital grant fund.

In addition, the Council has been taking steps to tackle fuel poverty within its housing stock as a result of the Home Energy Conservation Act (HECA) 1995. Where possible, grant support is offered and work continues with the Energy Saving Trust to promote and achieve carbon reduction targets. New national indicators for carbon reduction (NI 186) and reduction in fuel poverty (NI 187) are likely to replace HECA in the future as a method of reporting.

8.1.3 Energy Efficiency in the Council's housing stock

Works have been carried out on Council stock in order to improve the SAP ratings and generate CO_2 savings. These works have included (where possible):

- double glazing to all properties,
- replacement of boilers over 5 years old,
- cavity wall and loft insulation

There is also an ongoing promotion of renewable energy heating technologies with a growing uptake such as solar hot water heating systems and air-to-water air source heating systems.

Continued expansion of the above measures is likely to be constrained by the current budgetary climate although a new scheme introduced by the Government (Clean Energy Cashback) may provide some extra incentive for switching to cleaner fuel technologies.

8.1.4 Land-use planning

South Cambridgeshire District Council adopted a District Design Guide SPD in March 2010. It includes a section on reducing carbon dioxide emissions, setting out the relevant strategy and policy that will be used to combat climate change from new developments. Applicants should demonstrate how their proposals will maximise the incorporation of energy conservation and efficiency measures – aiming for a minimum 10% reduction in CO_2/m^2/year compared to the current 2006 Building Regulations target. Applicants are also encouraged to show as high a level of the Code for Sustainable Buildings as possible.

All applicants will be expected to carry out calculations of energy consumption using SAP or SBAM methodologies and incorporate designs to make use of energy efficiency measures and heat conservation.

In addition, the SPD covers renewable energy sources and makes reference to LDF Policy NE/3 within which all proposals with an area greater than $1000m^2$ or to include >10 dwellings are required to ensure that a minimum of 10% of the energy requirements are met through renewable technologies. Applicants are also encouraged to consider site-wide renewable energy technologies. The SPD also promotes the installation of CHP and CCHP power plants in a drive towards zero carbon developments.

8.1.5 South Cambridgeshire Sustainable Parish Energy Partnership (SPEP)

Established in February 2009, the SPEP is a three year programme that actively involves and engages the local communities, tackling the issues of climate change, sustainability and reducing fuel bills. It is split into 2 phases, both with an allocated fund. Phase 1 (years 1–3) focuses on encouraging parish councils to take up the support framework for local energy

efficiency and conservation whilst phase 2 (years 2-3) will lead two or more of the phase 1 parishes into developing local renewable energy projects.

The partnership is currently ongoing and is funded by an LPSA capital reward grant.

9 Implementation of Action Plans

Air quality within AQMAs is likely to be influenced by factors beyond local authority boundaries. Air Quality Action Plans may often need to complement those of adjoining authorities. Defra recommend that local authorities consider drawing up regional air quality action plans, where appropriate, and have endorsed preparation of a Joint Air Quality Action Plan for the AQMAs within Cambridge City, Huntingdonshire District Council and South Cambridgeshire District Council.

The Districts have completed a table comprising of approximately 80 actions that will have a positive impact upon air quality. These are currently in place or planned for the near future by the County and all District Councils. Some actions are specifically designed to improve air quality, but many of the actions have been initiated to tackle other areas, for example climate change or reducing congestion. They have been arranged into the following themes:

- Managing the network
- Lowering emissions
- Strategic Planning
- Development Control
- Smarter Travel Choices
- Raising Awareness

Each District has produced a list of five or more individual actions, or packages of measures that will in their opinion have the most beneficial impact on air quality within their area. This list is not exhaustive as there are many other options put forward within the AQAP that may be implemented. For South Cambridgeshire District Council, the 5 priority actions identified include:

- Completion and opening of the Cambridgeshire Guided Busway.

- Widening of the A14 carriageway between Fen Drayton and Histon – increasing the number of lanes from 2 to 3 on both Eastbound and Westbound carriageways should help to alleviate congestion and speed traffic through-flow.

- Re-alignment of the A14 and the construction of a local road, between the M11 and Bar Hill junctions as part of the A14 Improvement Scheme.

- Establish a Freight Quality Partnership – the South Cambridgeshire District Council's Further Assessment of air quality along the A14 has identified HGVs as having the greatest impact on air quality in the District. If improvements in air quality are to be achieved on the A14 between Bar Hill and Milton, it is vital that the Council seeks to give an understanding of local air quality issues to freight operators who may in turn be able to offer invaluable input into reducing emissions from their fleet.

- Embedding the LDF Air Quality Policy in Local Development Documents – this will ensure that air quality is considered at the planning stage and therefore not adversely impacted by new development.

In October 2010, the Coalition Government announced the results of the Spending Review, which resulted in the cancellation of the planned improvements to the A14. Whilst this has not ruled out the improvements indefinitely, it is not envisaged that there will be funding for the project in either the short or medium term. South Cambridgeshire District Council will continue to work with the Highways Agency, who have overall control of the A14, in order to identify feasible actions to help improve air quality within the AQMA. In the meantime, the Council will review the Air Quality Action Plan and identify other actions that can be brought forward as priority actions.

With regards to the other priority actions, the Cambridgeshire Guided Busway is close to completion, with “trial journeys” already taking place along some parts of the track although Cambridgeshire County Council cannot yet confirm an opening date for the service.

The Anglian Regions’ Freight Quality Partnership (FQP) meet every 2 months and South Cambridgeshire District Council are now dedicated to attending the meetings. Prior to the Councils’ involvement, air quality had not been given much of a voice at the FQP and so it is hoped that involvement will increase awareness, interest and commitment to reducing emissions and aiding in the reduction of pollution along the A14.

The Councils’ Air Quality Policy is now solidly embedded within the Local Development Framework with an additional Supplementary Planning Document targeting Low Emissions Strategies also adopted. These Policies will be regularly reviewed and strengthened where necessary.

Table 9.1 shows progress (where applicable) on the 5 main priorities.

Table 9.1 Action Plan Progress

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
1	Completion and opening of the Cambridgeshire Guided Busway.	Reduce unit emissions in the AQMA by reducing private vehicle mileage on the A14	Cambridgeshire County Council	2009 - 2010	2011	N/A	No target emissions set	Construction of bus stops and route ongoing	Construction of bus stops and route ongoing	2011	
2*	Widening of the A14 carriageway between Fen Drayton and Histon – increasing the number of lanes from 2 to 3 on both Eastbound and Westbound carriageways should help to alleviate congestion and speed traffic through-flow.	Reduce unit emissions in the AQMA by alleviating congestion on the A14 around Cambridge	Cambridgeshire County Council	N/A	N/A	Approval of planning application	No target emissions set	Plans delayed under the Spending Review of 2010	Plans delayed under the Spending Review of 2010	N/A	The draft Environmental Statement submitted in 2010 showed that, as a result of the scheme, air quality will improve in much of the AQMA but may worsen slightly in other areas. However, modelling shows that all Objectives will be met by 2015 at relevant locations within the AQMA
3*	Re-alignment of the A14 and the construction of a local road, between the M11 and Bar Hill junctions as part of the A14 Improvement Scheme.	Reduce unit emissions in the AQMA by alleviating congestion on the A14 around Cambridge	Cambridgeshire County Council	N/A	N/A	Approval of planning application	No target emissions set	Plans delayed under the Spending Review of 2010	Plans delayed under the Spending Review of 2010	N/A	The draft Environmental Statement submitted in 2010 showed that, as a result of the scheme, air quality will improve in much of the AQMA but may worsen slightly in other areas. However,

No.	Measure	Focus	Lead authority	Planning phase	Implemen-tation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
											modelling shows that all Objectives will be met by 2015 at relevant locations within the AQMA
4	Establish a Freight Quality Partnership	Reduce unit emissions by working with freight operators, Highways Agency and County Council	South Cambridgeshire District Council	2009 - 2010	2010	Member commitment by 2009, partnership Establihsed by 2012	No target emissions set	Identification of existing FQP and regular attendance at meetings	Regular attendance at meetings	Ongoing	Improvement in vehicle technology and driver behaviour within the AQMA
5	Embedding the LDF Air Quality Policy in Local Development Documents	Reduce unit emissions by improving emissions from local developments	South Cambridgeshire District Council	2009 - 2010	2010	LDF Policy NE/16, use of Low Emission Strategy SPD	No target emissions set	SPD for Low Emissions Strategy developed and adopted.	SPD for Low Emissions Strategy developed and adopted.	Ongoing – SCDC will continually review use of the SPD and LDF Policy NE/16	Major development is proposed for the District. Use of the SPD and LDF Policy NE/16 will minimise the impact of the developments on local emissions

(*) Priority Actions on hold due to the Government Spending Review of 2010

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

Recent monitoring data has shown that exceedences of the daily mean objective for PM_{10} occurred in 2010 at the Bar Hill and Impington monitoring stations (within the Air Quality Management Area). Given that new monitoring data does not show a significant improvement on previous years, monitoring work will continue within the AQMA and the monitoring network will be expanded at every opportunity.

Monitoring and assessment of areas within the District and outside the AQMA has shown that there are currently no other areas of concern and no reason to carry out further or detailed assessment. The results are summarised below:

- At Bar Hill, the daily mean objective for PM_{10} was exceeded (37 days where concentrations were calculated to be >50$\mu g/m^3$). Although this figure is being treated with caution given the low data capture (78.4%) for the year. All other objectives were met.

- At Impington, the data capture for PM_{10} was as low as 42.1%. Whilst this snapshot of the year provides an annual mean of 42$\mu g/m^3$ with 36 exceedences of the daily mean objective, the data is not adequate enough and is not being used for a comparison against the objectives within this report.

- All objectives for NO_2 have been achieved at Impington in 2010, although caution is being applied due to poor data capture.

At Orchard Park School, all objectives were met.

Data capture for 2010 has been poor and disappointing. No analyser achieved the 90% data capture required for strict assessment of concentrations against the National Air Quality Objectives.

10.2 Conclusions relating to New Local Developments

Since the Progress Report of 2010, there have been no new local developments that have had a significant impact on local air quality. However, major growth is proposed for the area and there are various planning applications for major projects in the pipeline. These proposals are currently the subject of full and detailed air quality assessments.

The Supplementary Planning Document (SPD) "High Quality and Sustainable Development in South Cambridgeshire" was adopted in March 2010 and contains a chapter dedicated to air quality. All new major developments will be required to satisfy the expectations of the SPD, which includes local planning policy and the requirements for the developers to take part in and submit a Low Emissions Strategy for their developments. This will ensure that sustainable development within the District is approached in a consistent manner with maximum value placed on mitigation measures and innovative steps to reduce emissions from new developments.

10.3 Other Conclusions

This review and assessment process has not identified any new sources of pollution that need further assessment. The air quality in and around the A14 between Bar Hill and Milton still requires improvement to achieve the national air quality objectives. The designation of the Air Quality Management Area along this stretch of the A14 has led to the development of an Air Quality Action Plan (AQAP).

Progress towards achieving targets set within the AQAP has been slower than expected due to the cancellation of the proposed improvements to the A14 and impacts of the Spending Review. In addition, 2 of the 5 priority actions have been achieved with an ongoing commitment to them. With this in mind, over the next 12 months, the improvement measures detailed within the AQAP will be reviewed and a new set of priority targets identified and implemented.

10.4 Proposed Actions

The existing Air Quality Management Area (AQMA) is for NO_2 and PM_{10}. This report has not identified any need for the AQMA to be updated, modified or revoked. The exceedence of the annual mean PM_{10} at Impington is currently being considered, however, advice will be sought from Defra as to whether or not it will be necessary to declare an AQMA based on a solitary, marginal exceedence when previous years have achieved the objective (including the worst case year in 2003) and modelling work to date has shown that the objectives are likely to be met in the future.

One priority action for 2011 is to improve the data capture at each analyser. This will be carried out in liaison with the overseeing equipment service contractors. Equipment will continue to be serviced, maintained, inspected and cleaned as per the manufacturers instructions. However, where equipment is in need of repair and may be out long-term, replacement analysers will be required. In addition, equipment that passes its lifetime will be decommissioned and funding for new equipment will be sought.

Monitoring within the AQMA will continue with possible extensions to the monitoring network. Additional monitoring has already been proposed for and around the proposed new town of Northstowe and will be settled through a S.106 Agreement when the proposals are decided and agreed. This will include an NO_2 diffusion tube network within Northstowe, 3 continuous “traffic-box” monitors to be located in existing settlements within 1km of the Northstowe development and the provision and setting up of a community web-based air quality information service for future residents of Northstowe and residents of the outlying settlements. In addition, a new monitoring station (for NOx, PM_{10} and $PM_{2.5}$) has been purchased and will be installed either on a site on the boundary of the proposed North-West Cambridge development or on Orchard Park, within the existing AQMA.

For all development proposals, South Cambridgeshire District Council will continue to improve, strengthen and utilise existing policy on emissions. For major developments, the requirement for individual air quality impact assessments will continue with the requirement that the developer recognises the potential for infrastructure changes beyond their boundaries and the potential for cumulative impacts on a local area.

In November 2010, South Cambridgeshire District Council signed up to the Highways Agency NO_2 diffusion tube survey. This has seen the introduction of 2 new diffusion tube locations within the AQMA – one at Grange Farm Cottages (A14 Girton Interchange) and one on the Girton Bridge over the A14 (opposite end of the bridge to the existing Girton

diffusion tube). Participation in this study will continue. Partnership working with the Highways Agency is vital for progress towards achieving the targets set within the AQAP.

The AQAP is to be reviewed and updated during 2011 in order that further priority actions can be identified and work towards their implementation can be progressed. This will prevent the progress of the Action Plan from stagnating due to the reconsideration of the planned improvements to the A14.

This Progress Report has not identified any changes in circumstances that require further work that is not currently in progress.

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Appendices

Appendix 1: QA/QC Data

Appendix 2: Map of AQMA

Appendix 3: AQAP Measures Considered

Appendix 1: QA:QC Data

Diffusion Tube Monitoring

- Suppliers and Analysing lab: Environmental Scientifics Group (ESG)
  Unit 12, Moorbrook
  Southmead Industrial Estate
  Didcot
  Oxfordshire
  OX11 7HP

- Diffusion tube preparation method used: 50:50 (acetone:triethanolamine)

- Scientifics Ltd confirm that the methods and procedures they follow meet the guidelines set out in Defras' "Diffusion Tubes For Ambient Monitoring: Practical Guidance". A copy of the confirmation is provided in Appendix A.

- South Cambridgeshire District Council use the bias adjustment factor provided on the Air Quality Archive web database. The factor used for 2010 is 0.85, which is quoted as the national average for the year.

- From the "Summary of Laboratory Performance in WASP R98-102" (prepared by AEA on behalf of Defra, 2008), the performance of Scientifics Ltd against both the old and new criteria was rated as "good".

PM Monitoring Adjustment

The BAMs in use in South Cambridgeshire are non-gravimetric with heated inlets. In order that PM_{10} data is supplied as gravimetric equivalent, all PM_{10} data has been multiplied by a factor of 1.3.

QA/QC of automatic monitoring

- QA/QC of automatic monitoring data is carried out by AEA Technology (http://www.aeat.co.uk).

- An annual audit of the monitoring stations is carried out by AEA Technology.

- The equipment suppliers carry services out bi-annually. In the case of Bar Hill and Impington, this is AirMonitors Ltd and the site at Orchard Park School is serviced by Enviro-Technology.

- The sites are manually calibrated on a bi-monthly basis by the Local Site Operative. The output from the calibrations is forwarded to AEAT.

- South Cambridgeshire District Council is a member of the Calibration Club, operated by AEAT.

- All NOx analysers are chemiluminescence analysers

- All particulate matter analysers are BAMs. In line with current guidance, BAM data is multiplied by 1.3 to give the gravimetric equivalent.

Appendix 2: List of AQAP Measures Considered (attached as a separate *.pdf)

Appendix 3: Map of AQMA