

# **2012 Air Quality Updating and Screening Assessment for South Cambridgeshire District Council**

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

April 2012

South Cambridgeshire District Council

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## Executive Summary

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedances are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

A review of new monitoring data has identified the following:

- An NO<sub>2</sub> annual mean concentration in excess of the 40 µg.m<sup>-3</sup> objective was measured at one of the automatic monitoring sites, Bar Hill; this is at a roadside location and is within the existing AQMA for NO<sub>2</sub>. No annual mean NO<sub>2</sub> concentrations in excess of the annual mean objective were measured using diffusion tubes during 2011.
- Examination of the trend in NO<sub>2</sub> annual means measured across the network of diffusion tubes indicates that annual mean NO<sub>2</sub> concentrations have in general decreased since 2010.
- No exceedances of the NO<sub>2</sub> 1-hour mean objective were measured at any of the automatic monitoring stations during 2011.
- An annual mean PM<sub>10</sub> concentration in excess of the 40 µg.m<sup>-3</sup> objective was measured at the Impington automatic monitoring site during 2011. Concentrations at this roadside site have been in excess of the annual mean objective for the last three years. The 50 µg.m<sup>-3</sup> 24-hour mean objective was exceeded 119 times at the Impington site; the 24-hr mean objective is not however applicable at roadside locations. The Impington site is also currently within the existing AQMA for both NO<sub>2</sub> and PM<sub>10</sub>.
- Air quality objectives were achieved at all monitoring locations outside of the existing AQMA at locations of relevant exposure hence there is no need to proceed to a Detailed Assessment at any location. Continued measured annual mean NO<sub>2</sub> and PM<sub>10</sub> concentrations in excess of the objective within the current AQMAs indicate that the AQMAs are still required.

The assessment of new sources has not identified any new sources that have not been considered previously. A detailed assessment of any new sources is not therefore required.

The Updating and Screening assessment has not identified any locations where a Detailed Assessment for any source or pollutant should be conducted. South Cambridgeshire District Council will continue monitoring at all existing sites within the District and will continue to implement the measures outlined in their Air Quality Action Plan for the existing AQMA.

The next air quality review and assessment report will be the 2013 Progress Report.

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# 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 comprised 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<sub>2</sub>) and particulates (PM<sub>10</sub>) 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.

## 1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

## 1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in England are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre  $\mu\text{g.m}^{-3}$  (milligrammes per cubic metre,  $\text{mg.m}^{-3}$  for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g.m}^{-3}$	Running annual mean	31.12.2003
	3.25 $\mu\text{g.m}^{-3}$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g.m}^{-3}$	Running annual mean	31.12.2003
Carbon monoxide	10.0 $\text{mg.m}^{-3}$	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g.m}^{-3}$	Annual mean	31.12.2004
	0.25 $\mu\text{g.m}^{-3}$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g.m}^{-3}$ not to be exceeded more than 18 times a year 40 $\mu\text{g.m}^{-3}$	1-hour mean	31.12.2005
		Annual mean	31.12.2005
Particles (PM <sub>10</sub> ) (gravimetric)	50 $\mu\text{g.m}^{-3}$ , not to be exceeded more than 35 times a year 40 $\mu\text{g.m}^{-3}$	24-hour mean	31.12.2004
		Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g.m}^{-3}$ , not to be exceeded more than 24 times a year 125 $\mu\text{g.m}^{-3}$ , not to be exceeded more than 3 times a year 266 $\mu\text{g.m}^{-3}$ , not to be exceeded more than 35 times a year	1-hour mean	31.12.2004
		24-hour mean	31.12.2004
		15-minute mean	31.12.2005



## 1.4 Summary of Previous Review and Assessments

**Table 1.2: Summary of previous review and assessment work**

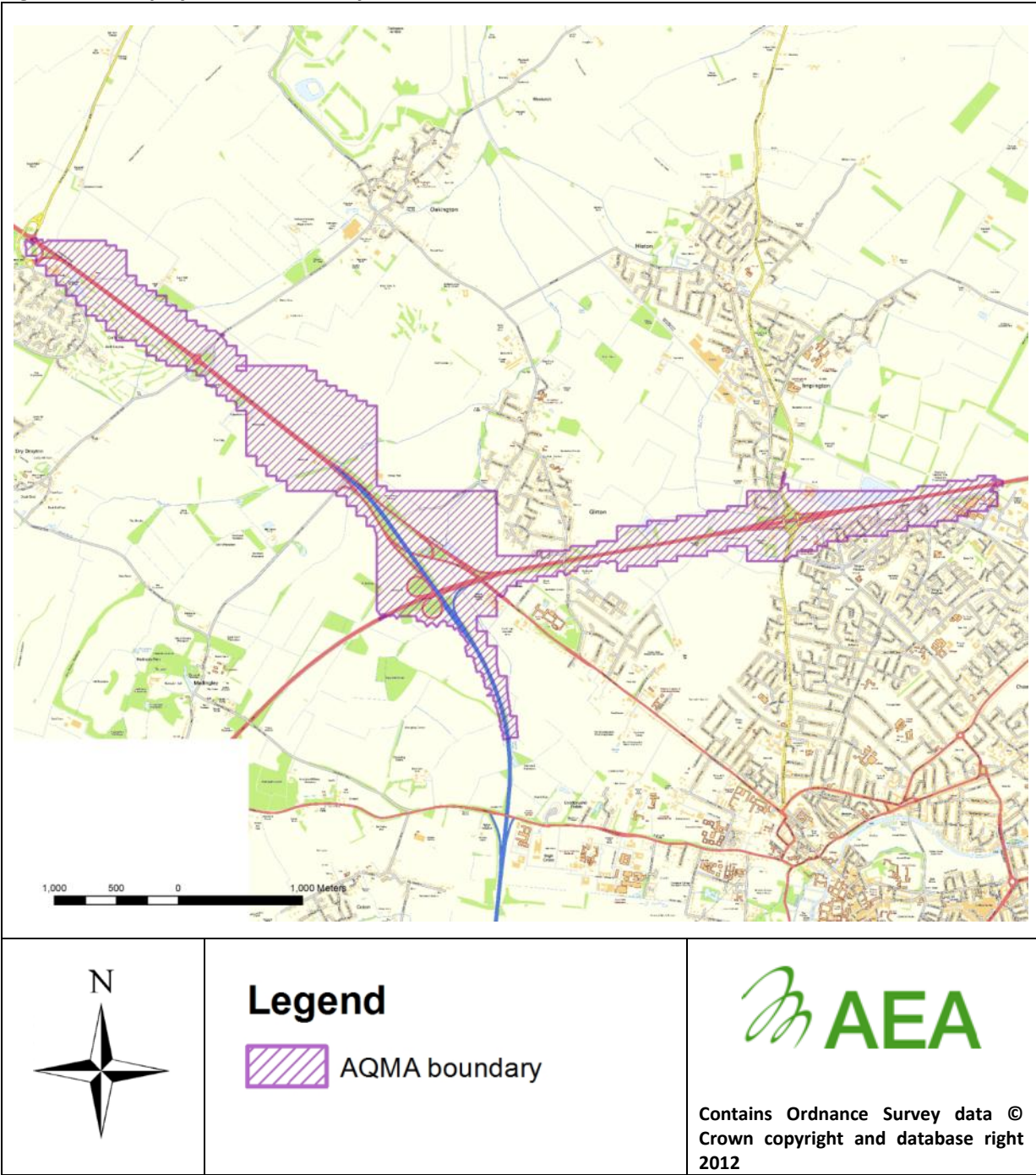
Report	Year	Conclusion
Review and Assessment	1998	The report progressed benzene, 1-3 butadiene, lead, carbon monoxide, PM <sub>10</sub> and nitrogen dioxide to a Stage 2 assessment. The overall conclusion was that all objectives were likely to be met.
Review and Assessment	2000	All objectives likely 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 <sub>10</sub> 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 <sub>2</sub> . 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 <sub>10</sub> along a stretch of the A14, therefore a Detailed Assessment was required for PM <sub>10</sub> . Monitoring of NO <sub>2</sub> 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 <sub>10</sub> Along the A14 Corridor	2008	The daily mean objective for PM <sub>10</sub> 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 <sub>2</sub> and PM <sub>10</sub> was required. Objectives for all other pollutants were predicted as likely to be met.
Further Assessment of nitrogen dioxide and PM <sub>10</sub> Along the A14 Corridor	2008	The AQMA for NO <sub>2</sub> and PM <sub>10</sub> 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 <sub>2</sub> and PM <sub>10</sub> 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.
Progress Report	2011	During 2010, the objectives for nitrogen dioxide were met at all monitoring locations. However, the daily mean PM <sub>10</sub> objective was exceeded at the Bar Hill and Impington continuous monitoring stations and the annual mean PM <sub>10</sub> objective was exceeded at Impington.
Modelling Assessment (not submitted as review and assessment report)	2011	As a result of recent monitoring results and a review of the Air Quality Management Area, an air quality assessment was conducted using ADMS-Urban to model the air quality along the A14. In summary: <ul style="list-style-type: none"> <li>The modelling study concluded that there continues to be exceedences of air quality objectives for NO<sub>2</sub> (annual mean) and PM<sub>10</sub> (daily mean) on both the north and south sides of the A14.</li> </ul>

South Cambridgeshire District Council

Report	Year	Conclusion
		<ul style="list-style-type: none"> <li>• The modelling study shows that, despite current exceedences, all locations will achieve national air quality objectives by 2016.</li> <li>• Depending on future monitoring results, it is possible that the AQMA may have to be expanded on the north side of the A14 to incorporate Hill Farm Cottages at Swavesey</li> <li>• If monitoring at all locations on the south side of the A14 continue to indicate that national objectives are being achieved at those locations, the AQMA may be modified so that it only incorporates the north side of the A14 (no exceedences, no need for an AQMA).</li> </ul>

The Air Quality Management Area (Presented in Figure 1.1) 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<sub>10</sub> were identified at the Bar Hill and Impington continuous monitoring stations. As a result of this, a Detailed Assessment of PM<sub>10</sub> was carried out which led to the revocation of the original AQMA and the designation of a 2nd AQMA to include PM<sub>10</sub> in July 2008. After discussions with Defra, it was decided that the boundary for the PM<sub>10</sub> (which was originally slightly smaller than that of the NO<sub>2</sub> AQMA) would be the same as the original boundary for nitrogen dioxide.

**Figure 1.1: Map of AQMA boundary**



## **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 presented in Table 2.1 and the site locations show on Figures 2.1a and 2.1b. Full details of the QA/QC conducted for the automatic monitoring sites are presented in Appendix A.

A new automatic monitoring station commenced operation at the corner of Girton and Huntingdon Road, near Girton College in December 2011. PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>2</sub> are measured at the site. Measured annual mean pollutant concentrations from this site will be reported in next year's 2013 Progress Report.

Figure 2.1a: Automatic Monitoring sites – Bar Hill

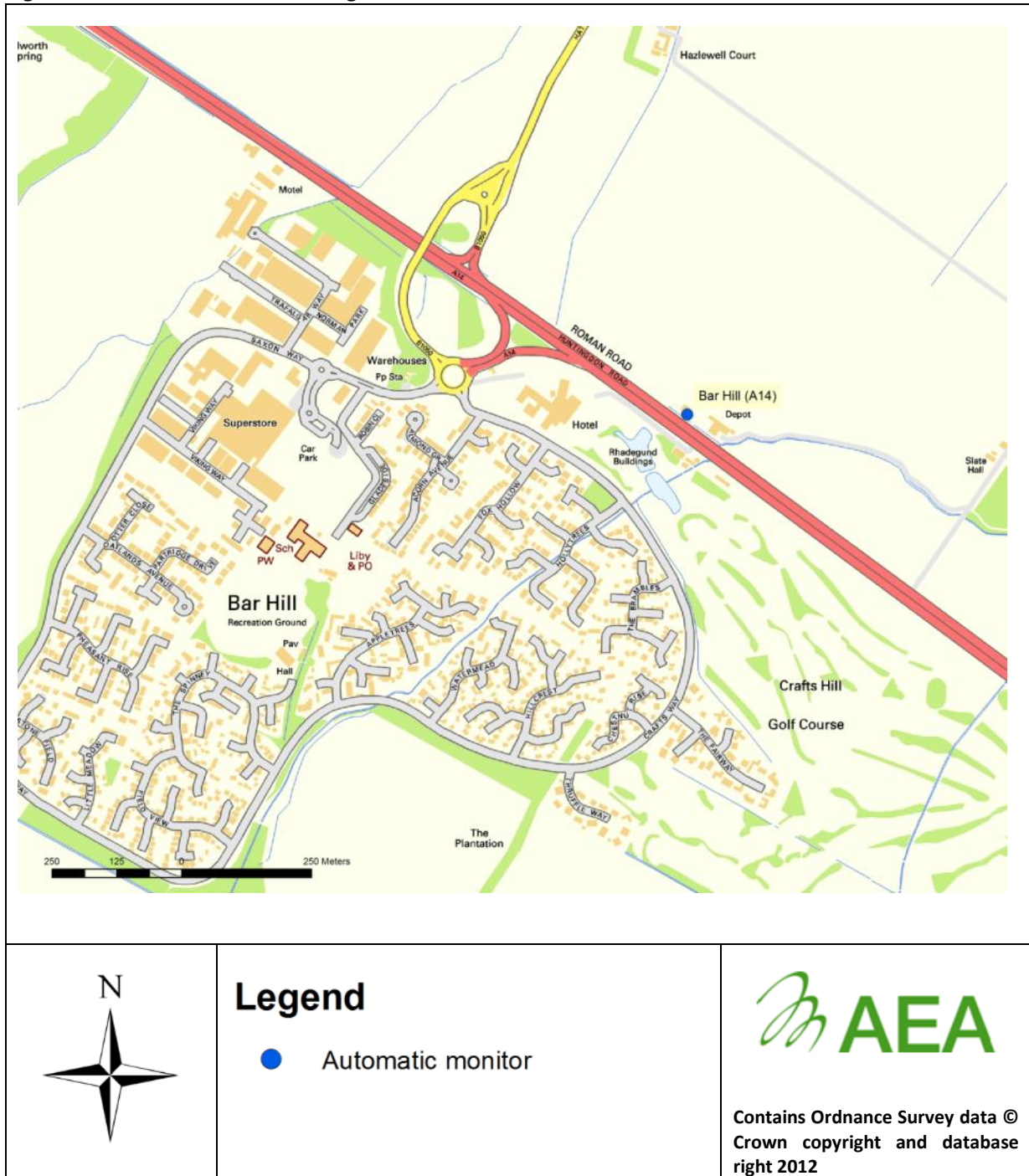
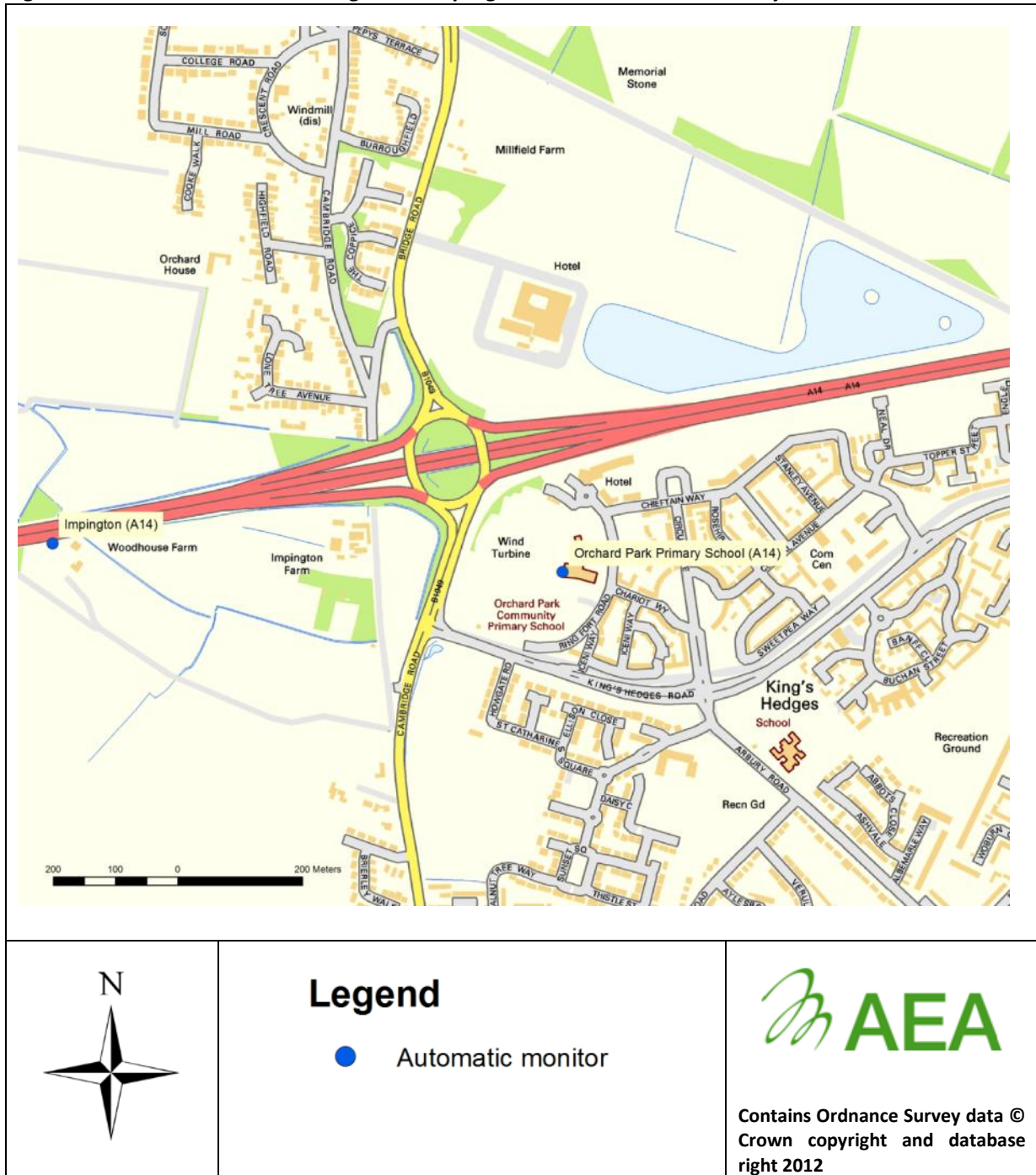


Figure 2.1b: Automatic Monitoring sites- Impington & Orchard Park Primary School



**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)	Does this location represent worst-case exposure?
Bar Hill (A14)	Roadside	538685	263760	NO <sub>x</sub> , NO <sub>2</sub> , PM <sub>10</sub> PM <sub>2.5</sub>	Thermo 42C Eberline BAM (FH62) Eberline BAM (FH62)	Y	Y (8m)	n/a	Y
Impington (A14)	Roadside	543739	261625	NO <sub>x</sub> , NO <sub>2</sub> , PM <sub>10</sub>	Thermo 42C Eberline BAM (FH62)	Y	Y (12m)	n/a	Y
Orchard Park Primary School (A14)	Urban Background	544558	261579	NO <sub>x</sub> , NO <sub>2</sub> , PM <sub>10</sub>	ET 200E ET BAM1020	Y	Y (1m)	n/a	Y

### **2.1.2 Non-Automatic Monitoring**

Diffusion tube monitoring of NO<sub>2</sub> is carried out at a number of locations in the South Cambridgeshire District Council Area. During 2011 NO<sub>2</sub> monitoring was undertaken at 30 sites within the district using passive diffusion tubes.

Diffusion tube measurements commenced at the following locations in September 2011:

- Hill Farm Cottages, Lolworth
- Rhadegund farm Cottages, Lolworth
- Hackers Fruit farm, Lolworth

Diffusion tube measurements were discontinued at the following location in September 2011:

- Narrow Lane, Histon
- Paddock Way, Sawston
- New Road, Sawston

Details of the diffusion tube monitoring locations at which measurement were conducted in 2011 are presented in Table 2.1. The locations include kerbside, intermediate and urban background sites.

Maps showing the locations of the diffusion tube monitoring sites are presented in Figures 2.2a to 2.2i.

A laboratory bias adjustment factor of 0.84 (from the 2011 national database of diffusion tube adjustment factors) has been applied to the 2011 diffusion tube results. Full details of the diffusion tube QA/QC are presented 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?	Distance to kerb of nearest road	Worst-case Location?
1 The Coppice, Histon	Urban background	544230	262048	NO <sub>2</sub>	N	Y (7m)	0.5m	Y
Narrow Lane, Histon	Roadside	544026	264165	NO <sub>2</sub>	N	Y (10m)	0.5m	N
The Gables, High Street, Histon	Roadside	543770	263678	NO <sub>2</sub>	N	Y (5m)	1m	Y
White Lion, 96 High Street, Sawston	Urban background	548600	249136	NO <sub>2</sub>	N	Y (5m)	1m	Y
15 Paddock Way, Sawston	Roadside	548777	249373	NO <sub>2</sub>	N	Y (5m)	0.5m	N
22 Water Lane, Histon	Roadside	544050	263306	NO <sub>2</sub>	N	Y (2m)	0.5m	Y
1 Brook Close, Histon	Urban background	543955	263588	NO <sub>2</sub>	N	Y (2m)	1m	Y
72 Cambridge Road, Impington	Urban background	544243	261819	NO <sub>2</sub>	Y	Y (7m)	0.5m	Y
19 Lonetree Avenue, Impington	Roadside	544119	261862	NO <sub>2</sub>	Y	Y (7m)	0.5m	Y
1A New Road, Sawston	Roadside	548400	249753	NO <sub>2</sub>	N	Y (10m)	1m	N
5 Mill Lane, Sawston	Roadside	548545	249366	NO <sub>2</sub>	N	Y (15m)	1m	N
Heath House, A505, Thriplow	Urban background	544034	244585	NO <sub>2</sub>	N	Y (10m)	1m	Y
64 High Street, Linton	Roadside	556179	246815	NO <sub>2</sub>	N	Y (7m)	0.5m	Y
47 High Street, Harston	Urban background	542554	251002	NO <sub>2</sub>	N	Y (5m)	1m	Y
20 High Street, Tadlow	Roadside	528131	247399	NO <sub>2</sub>	N	Y (10m)	2m	N
1A Weavers Field, Girton	Urban background	542537	261467	NO <sub>2</sub>	Y	Y (15m)	1m	Y
3 Garner Close, Milton	Urban background	547452	263175	NO <sub>2</sub>	N	Y (5m)	1m	N
1 Catchall Farm Cottages	Roadside	540509	262290	NO <sub>2</sub>	Y	Y (1m)	10m	Y
Crafts Way, Bar Hill	Roadside	538472	263675	NO <sub>2</sub>	N	Y (15m)	1m	N
Orchard Park School	Urban background	544557	261571	NO <sub>2</sub>	Y	Y (1m)	50m	Y
Orchard Park School	Urban background	544557	261571	NO <sub>2</sub>	Y	Y (1m)	50m	Y
Orchard Park School	Urban background	544557	261571	NO <sub>2</sub>	Y	Y (1m)	50m	Y
Chieftain Way, Arbury Park	Roadside	544828	261738	NO <sub>2</sub>	Y	Y (1m)	0.5m	Y
Topper Street, Arbury Park	Roadside	545056	261784	NO <sub>2</sub>	Y	Y (1m)	0.5m	Y
Grange Farm Lettings	Roadside	541056	261910	NO <sub>2</sub>	Y	Y (5m)	4.5m	Y
Flack End, Arbury Park	Roadside	545435	261906	NO <sub>2</sub>	Y	Y (2m)	35m (from A14 WB)	Y
22 Topper Street, Arbury Park	Roadside	545169	261764	NO <sub>2</sub>	Y	Y (4.2m)	0.2m	Y
Co-Op, High Street, Histon	Roadside	543768	263708	NO <sub>2</sub>	Y	Y (1.5m)	2.6m	Y
Church Lane, Little Abington	Urban background	552961	249251	NO <sub>2</sub>	Y	Y (14m)	2.0m	N
Hackers Fruit farm, Lolworth	Roadside	539846	262826	NO <sub>2</sub>	Y	Y	12 m	N
Hill Farm Cottages, Lolworth	Roadside	536926	264956	NO <sub>2</sub>	Y	N	4 m	Y
Rhadegund farm Cottages, Lolworth	Roadside	538744	263640	NO <sub>2</sub>	Y	Y	33 m	N

Figure 2.2a: Diffusion tube locations – Lolworth Bar Hill, Arbury Park and Girton

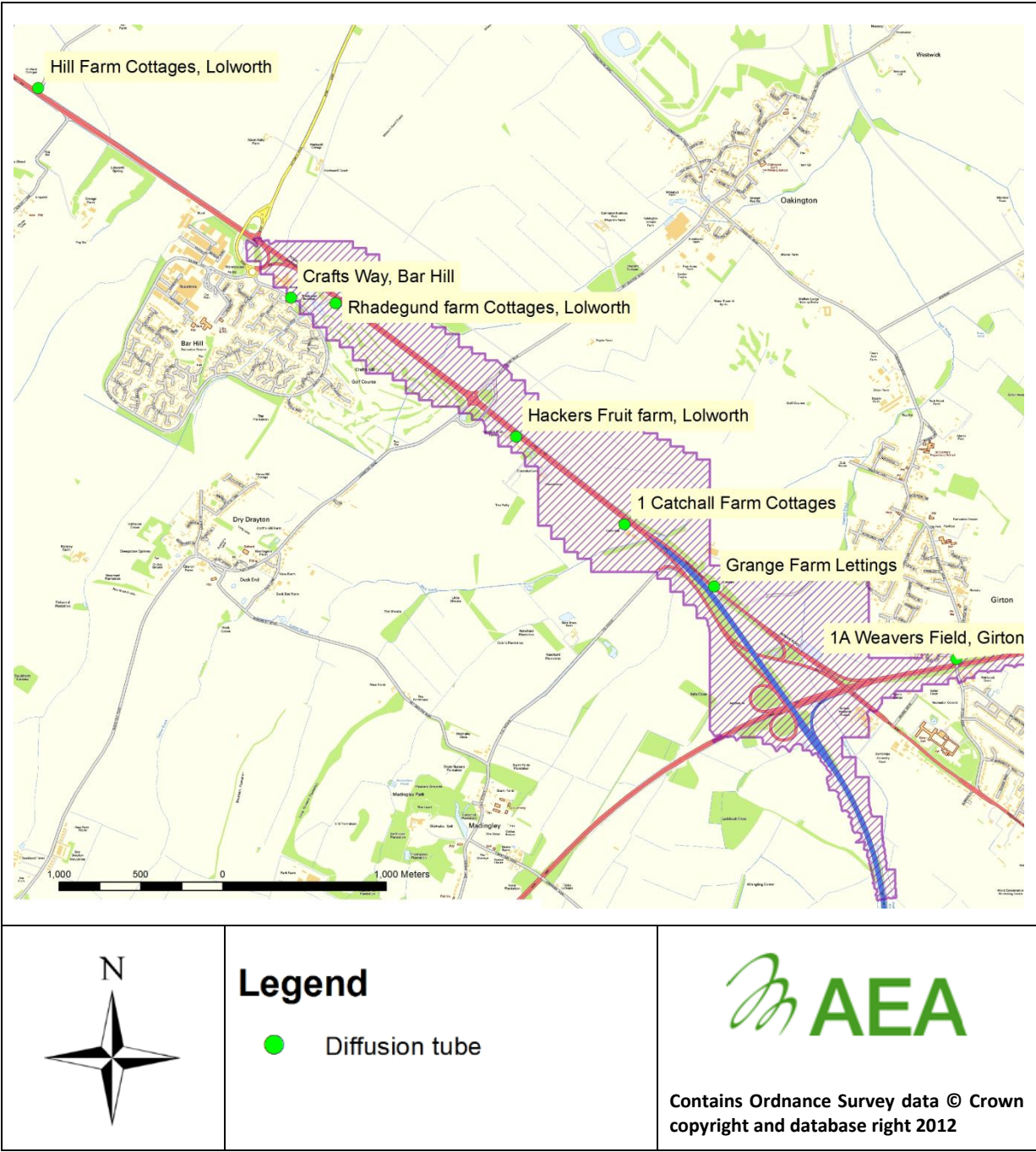


Figure 2.2b: Diffusion tube locations – Arbury Park



**Figure 2.2c: Diffusion tube locations- Histon**



Figure 2.2d: Diffusion tube locations – Milton



Figure 2.2e: Diffusion tube locations – Sawston



**Legend**

- Diffusion tube

**AEA**

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Figure 2.2f: Diffusion tube locations- Little Abington



Figure 2.2g: Diffusion tube locations – Thriplow

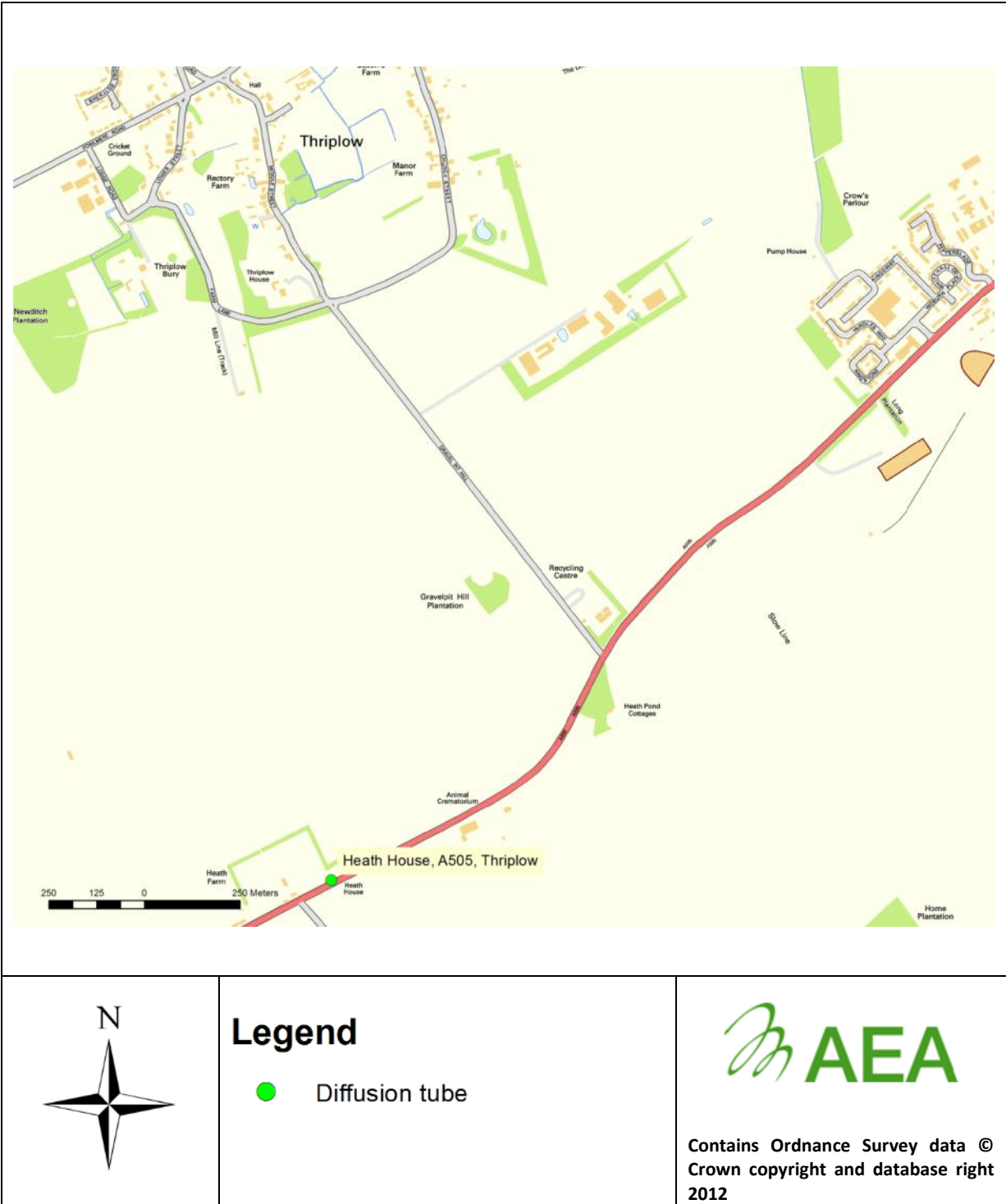
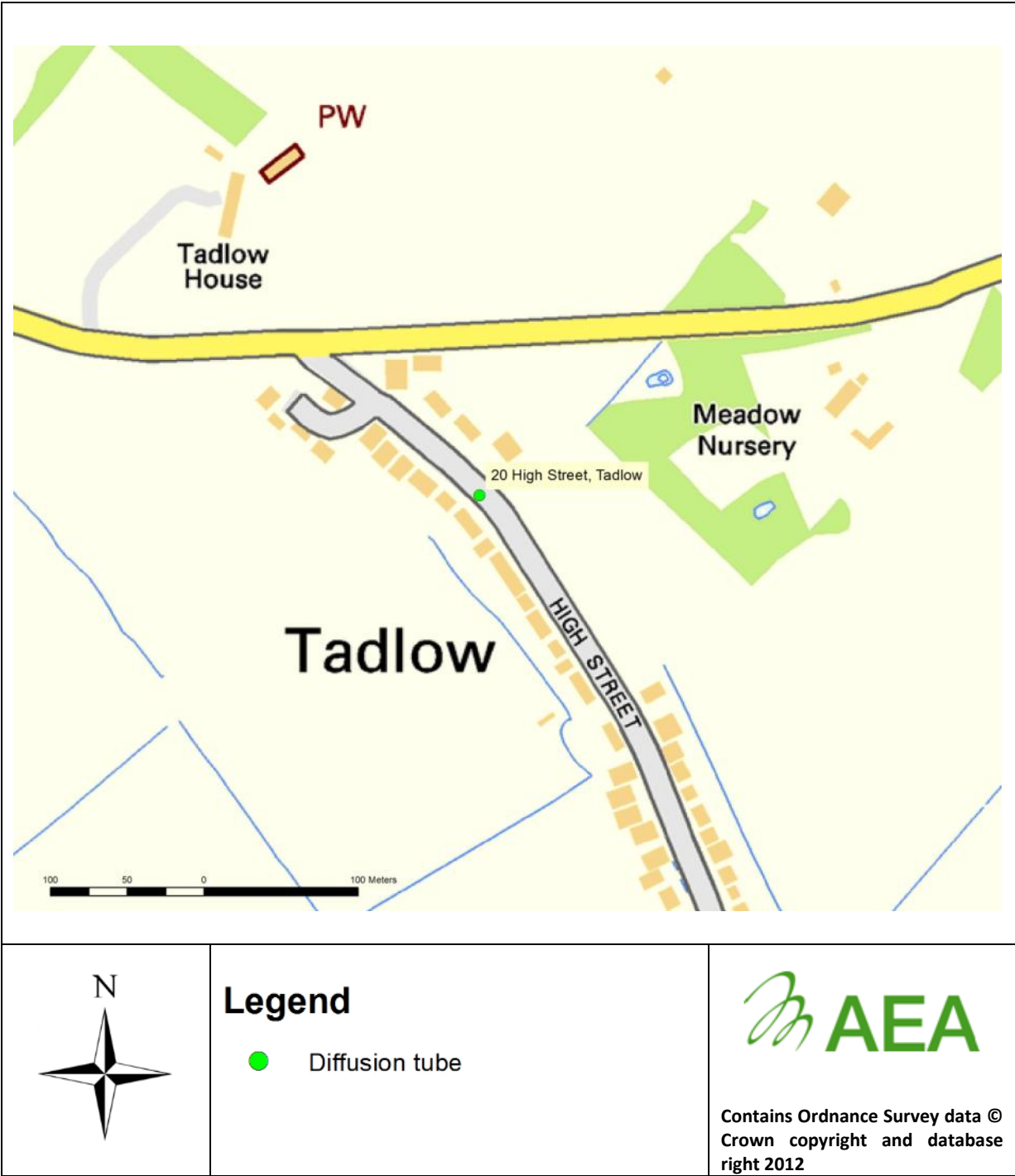




Figure 2.2h: Diffusion tube locations - Harston



Figure 2.2i: Diffusion tube location – Tadlow



## 2.2 Comparison of Monitoring Results with AQ Objectives

### 2.2.1 Nitrogen Dioxide

#### Automatic Monitoring Data

The annual mean NO<sub>2</sub> concentrations measured at the automatic monitoring locations in South Cambridgeshire from 2007 to 2011 are presented in Table 2.3. Concentrations in excess of the 40 µg.m<sup>-3</sup> objective are highlighted in bold. An NO<sub>2</sub> annual mean in excess of the 40 µg.m<sup>-3</sup> objective was measured at the Bar Hill site during 2011.

**Table 2.3 NO<sub>2</sub> Automatic monitoring results: Comparison with annual mean objective**

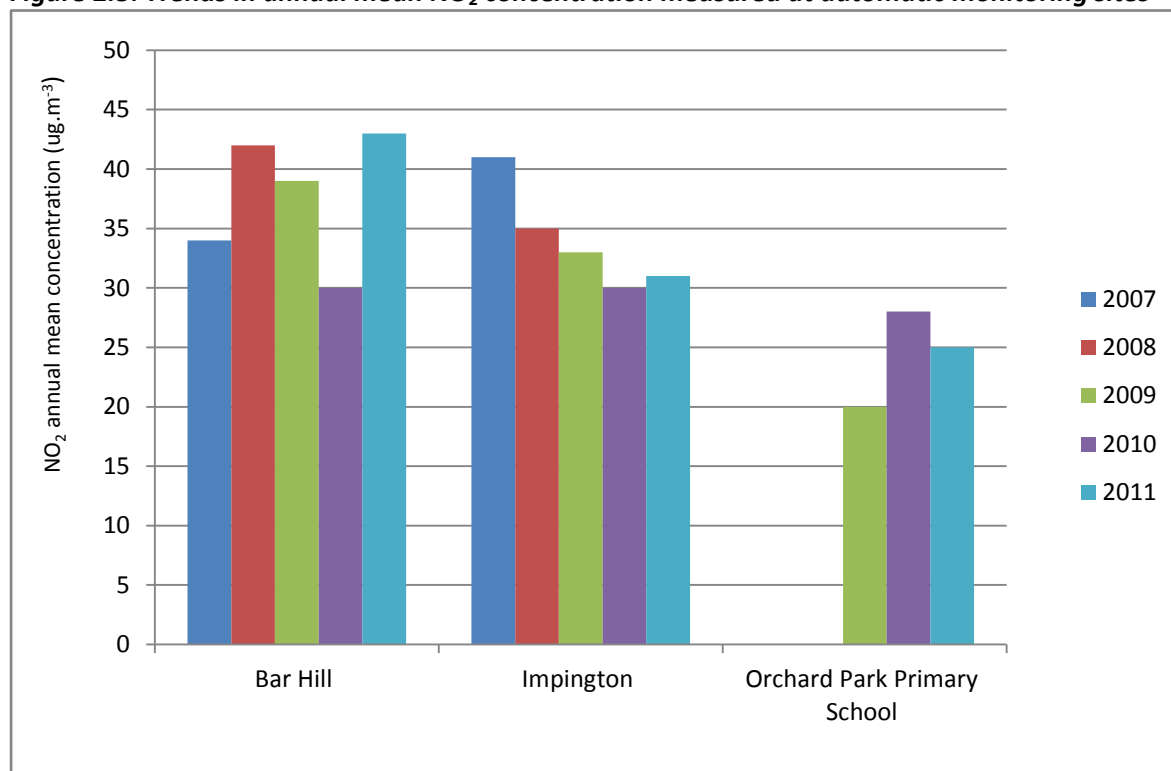
Site name	Within AQMA ?	Data Capture 2011 (%)	Annual mean concentrations (µg.m <sup>-3</sup> )				
			2007	2008	2009	2010	2011
Bar Hill (A14)	Y	89.4 %	34	42	39	30*	<b>43</b>
Impington (A14)	Y	97.2 %	41	35	33	30*	31
Orchard Park Primary School (A14)	Y	92.1 %	-	-	20	28	25

\* Annualised mean in 2010 due to data capture < 75%

A bar chart showing the trends in annual mean NO<sub>2</sub> concentrations over the last five years is presented in Figure 2.3. The chart shows that measured annual mean NO<sub>2</sub> concentrations have in general:

- Remained in excess of, or close to the objective at Bar Hill, apart from during 2010 where low data capture may have skewed the reported annual mean.
- Decreased and remained well below the 40 µg.m<sup>-3</sup> objective at Impington over the last five years,
- Remained consistently below the objective at Orchard Park primary School.

**Figure 2.3: Trends in annual mean NO<sub>2</sub> concentration measured at automatic monitoring sites**



The number of measured 1-hour mean concentrations in excess of the 200  $\mu\text{g.m}^{-3}$  short-term objective at each of the automatic monitoring sites are presented in Table 2.4. No exceedances of the short-term objective were measured during 2011.

**Table 2.4 NO<sub>2</sub> automatic monitoring results: Comparison with 1-hour mean objective**

Site name	Within AQMA?	Data Capture 2011 (%)	Number of exceedances of hourly mean objective (200 $\mu\text{g.m}^{-3}$ ) For data capture < 90%, the 99.79th %ile of 1-hr means is shown in brackets ( $\mu\text{g.m}^{-3}$ )				
			2007	2008	2009	2010	2011
Bar Hill (A14)	Y	89.4 %	0	0	0	0 (120)	0
Impington (A14)	Y	97.2 %	0	0	0	0 (115)	0
Orchard Park Primary School (A14)	Y	92.1 %	0	0	0	0 (103)	0

### Diffusion Tube Monitoring Data

Details of the annual mean NO<sub>2</sub> concentrations measured using diffusion tube sites during 2011 are presented in Table 2.5; and the series of results measured from 2007 to 2011 are presented in Table 2.6. Bar charts showing the recent trends in NO<sub>2</sub> annual mean concentrations measured with diffusion tubes are presented in Figures 2.4.

No annual mean NO<sub>2</sub> concentrations in excess of the 40  $\mu\text{g.m}^{-3}$  objective were measured with diffusion tubes during 2011. The measured annual mean of 39.1  $\mu\text{g.m}^{-3}$  measured at new diffusion tube site at Hill Farm Cottages, Lolworth was close to the objective. This location is just outside the existing AQMA.

Examination of the trend in NO<sub>2</sub> annual means measured across the network of diffusion tubes indicates that NO<sub>2</sub> concentrations have in general decreased since 2010.

**Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes**

Location	Site Type	Within AQMA?	Triplicate or Collocated Tube (Y/N)	Data Capture 2011 (%)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration 2011 ( $\mu\text{g.m}^{-3}$ ) (Bias Adj. factor = 0.84)
Church Lane, Little Abington	UB	Y	N	100%	-	N	13.5
13 Engledow Drive, Arbury Park	R	Y	N	100%	-	N	25
22 Topper Street, Arbury Park	R	Y	N	100%	-	N	23.6
Chieftain Way, Arbury Park	R	Y	N	100%	-	N	22.9
Flack End, Arbury Park	R	Y	N	92%	-	N	26.3
Orchard Park School, Arbury Park	UB	Y	Y	100%	-	N	21
Topper Street, Arbury Park	R	Y	N	100%	-	N	22.5
Crafts Way, Bar Hill	R	N	N	100%	-	N	21.4
1A Weavers Field, Girton	UB	Y	N	100%	-	N	32.6
47 High Street, Harston	UB	N	N	100%	-	N	23.7
1 Brook Close, Histon	UB	N	N	92%	-	N	21.1
1 The Coppice, Histon	UB	N	N	100%	-	N	20.6
22 Water Lane, Histon	R	N	N	83%	-	N	31.2
Co-Op, High Street, Histon	R	Y	N	100%	-	N	22.9
Narrow Lane, Histon	R	N	N	67%	Y	N	17.4
The Gables, High Street, Histon	R	N	N	100%	-	N	36.3
19 Lonetree Avenue, Impington	R	Y	N	100%	-	N	23.7
72 Cambridge Road, Impington	UB	Y	N	92%	-	N	25.3
64 High Street, Linton	R	N	N	100%	-	N	30.7
Hackers Fruit farm, Lolworth	R	Y	N	33%	Y	N	28.5
Hill Farm Cottages, Lolworth	R	Y	N	33%	Y	N	39.1
Rhadegund farm Cottages, Lolworth	R	Y	N	33%	Y	N	15.7
3 Garner Close, Milton	UB	N	N	100%	-	N	20.8
15 Paddock Way, Sawston	R	N	N	58%	Y	N	17.4
1A New Road, Sawston	R	N	N	67%	Y	N	18.0
5 Mill Lane, Sawston	R	N	N	100%	-	N	17.2
White Lion, 96 High Street, Sawston	UB	N	N	100%	-	N	27.8
20 High Street, Tadlow	R	N	N	100%	-	N	13
Heath House, A505, Thriplow	UB	N	N	100%	-	N	29.1
1 Catchall Farm Cottages	R	Y	N	100%	-	N	25.6

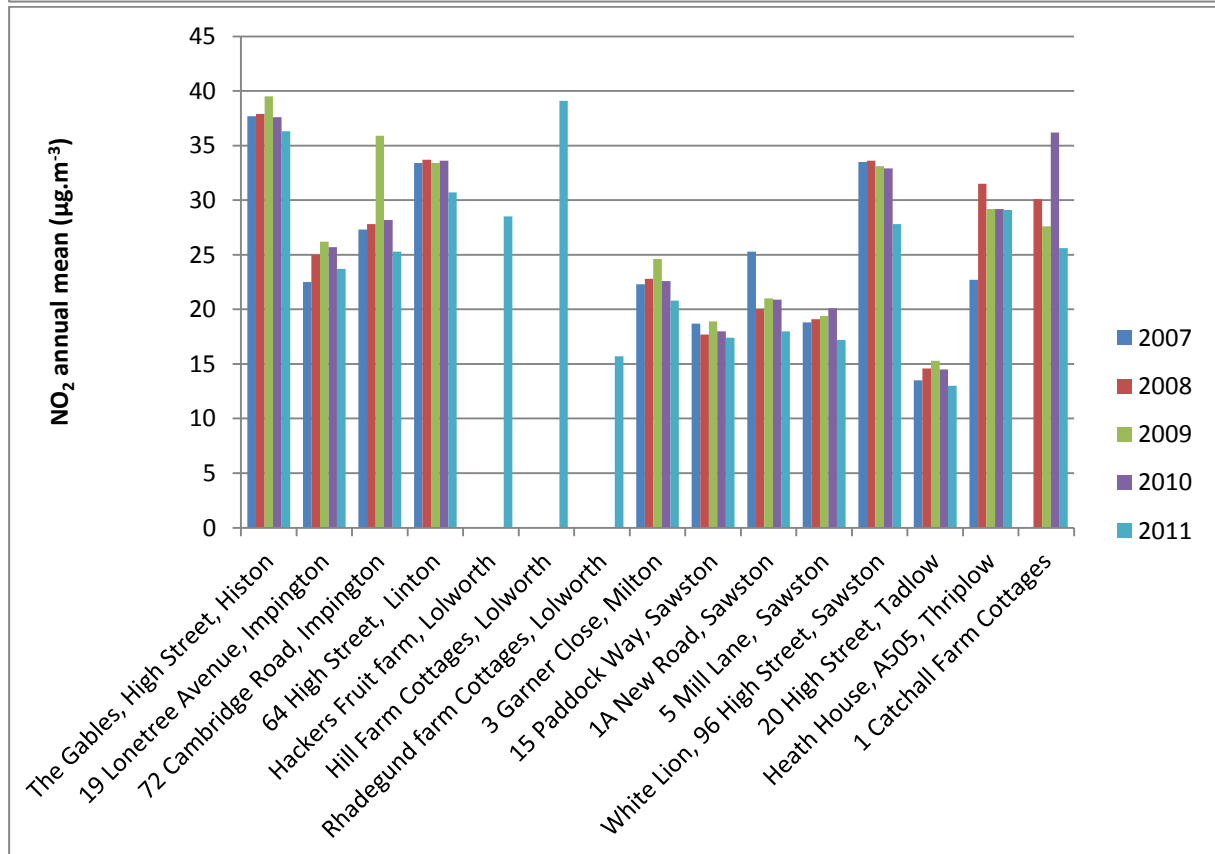
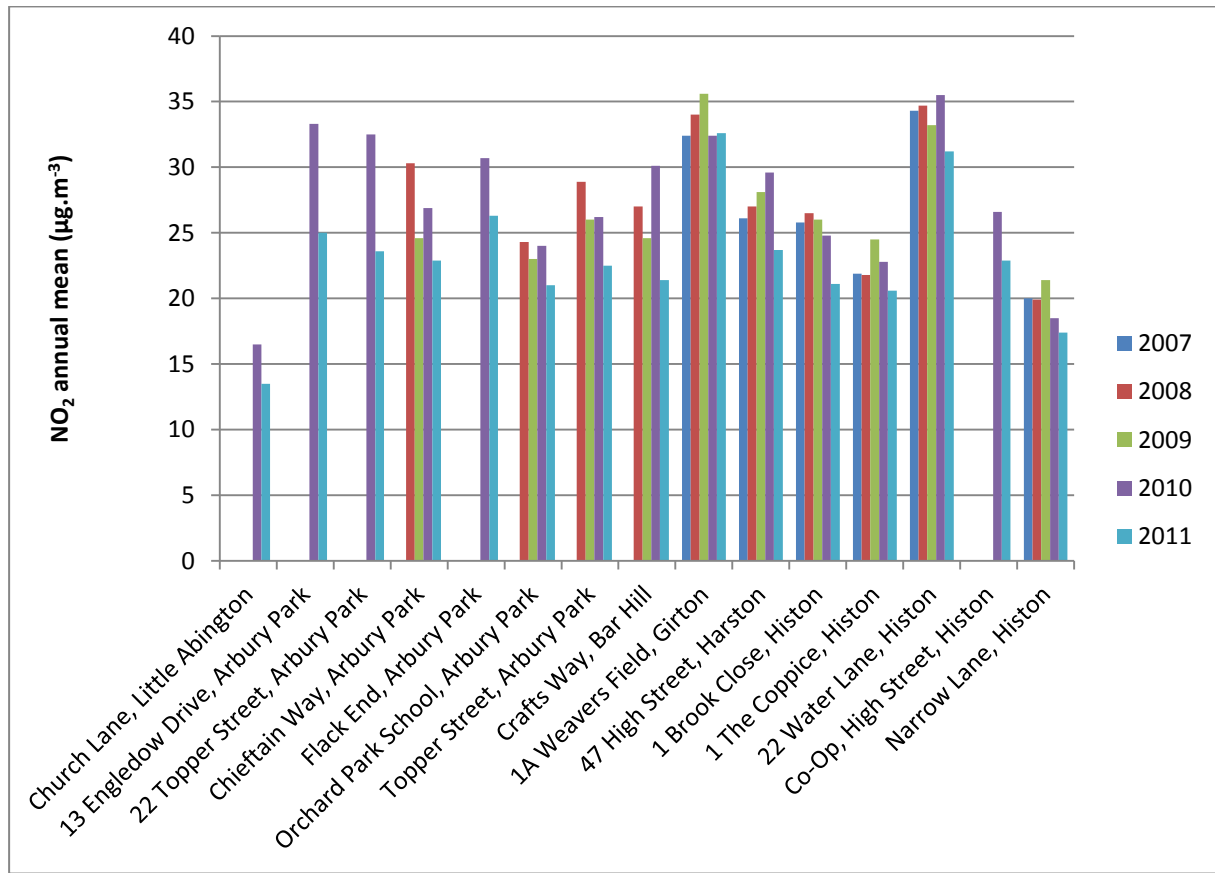
\* Triplicate average at colocation study site.

**Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2007 to 2011)**

Location	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/m <sup>3</sup>					
			2007 (Bias Factor = 0.8)	Adj.	2008 (Bias Factor = 0.8)	2009 (Bias Factor = 0.8)	2010 (Bias Factor = 0.85)	2011 (Bias Factor = 0.84)
Church Lane, Little Abington	UB	Y	-		-	-	16.5	13.5
13 Engledow Drive, Arbury Park	R	N	-		-	-	33.3	25
22 Topper Street, Arbury Park	R	Y	-		-	-	32.5	23.6
Chieftain Way, Arbury Park	R	Y	-		30.3	24.6	26.9	22.9
Flack End, Arbury Park	R	Y	-		-	-	30.7	26.3
Orchard Park School, Arbury Park	UB	Y	-		24.3	23	24.0	21
Topper Street, Arbury Park	R	Y	-		28.9	26	26.2	22.5
Crafts Way, Bar Hill	R	N	-		27	24.6	30.1	21.4
1A Weavers Field, Girton	UB	Y	32.4		34	35.6	32.4	32.6
47 High Street, Harston	UB	N	26.1		27	28.1	29.6	23.7
1 Brook Close, Histon	UB	N	25.8		26.5	26	24.8	21.1
1 The Coppice, Histon	UB	N	21.9		21.8	24.5	22.8	20.6
22 Water Lane, Histon	R	N	34.3		34.7	33.2	35.5	31.2
Co-Op, High Street, Histon	R	Y	-		-	-	26.6	22.9
Narrow Lane, Histon	R	N	20		19.9	21.4	18.5	17.4
The Gables, High Street, Histon	R	N	37.7		37.9	39.5	37.6	36.3
19 Lonetree Avenue, Impington	R	Y	22.5		25	26.2	25.7	23.7
72 Cambridge Road, Impington	UB	Y	27.3		27.8	35.9	28.2	25.3
64 High Street, Linton	R	N	33.4		33.7	33.4	33.6	30.7
Hackers Fruit farm, Lolworth	R	Y	-		-	-	-	28.5
Hill Farm Cottages, Lolworth	R	Y	-		-	-	-	39.1
Rhadegund farm Cottages, Lolworth	R	Y	-		-	-	-	15.7
3 Garner Close, Milton	UB	N	22.3		22.8	24.6	22.6	20.8
15 Paddock Way, Sawston	R	N	18.7		17.7	18.9	18	17.4
1A New Road, Sawston	R	N	25.3		20	21	20.9	18.0
5 Mill Lane, Sawston	R	N	18.8		19.1	19.4	20.1	17.2
White Lion, 96 High Street, Sawston	UB	N	33.5		33.6	33.1	32.9	27.8
20 High Street, Tadlow	R	N	13.5		14.6	15.3	14.5	13
Heath House, A505, Thriplow	UB	N	22.7		31.5	29.2	29.2	29.1
1 Catchall Farm Cottages	R	Y	N/A		30.1	27.6	36.2	25.6

\* Triplicate average at colocation study site.

Figure 2.4: Trends in NO<sub>2</sub> annual mean measured with diffusion tubes 2007 – 2011



2.2.2 PM<sub>10</sub>

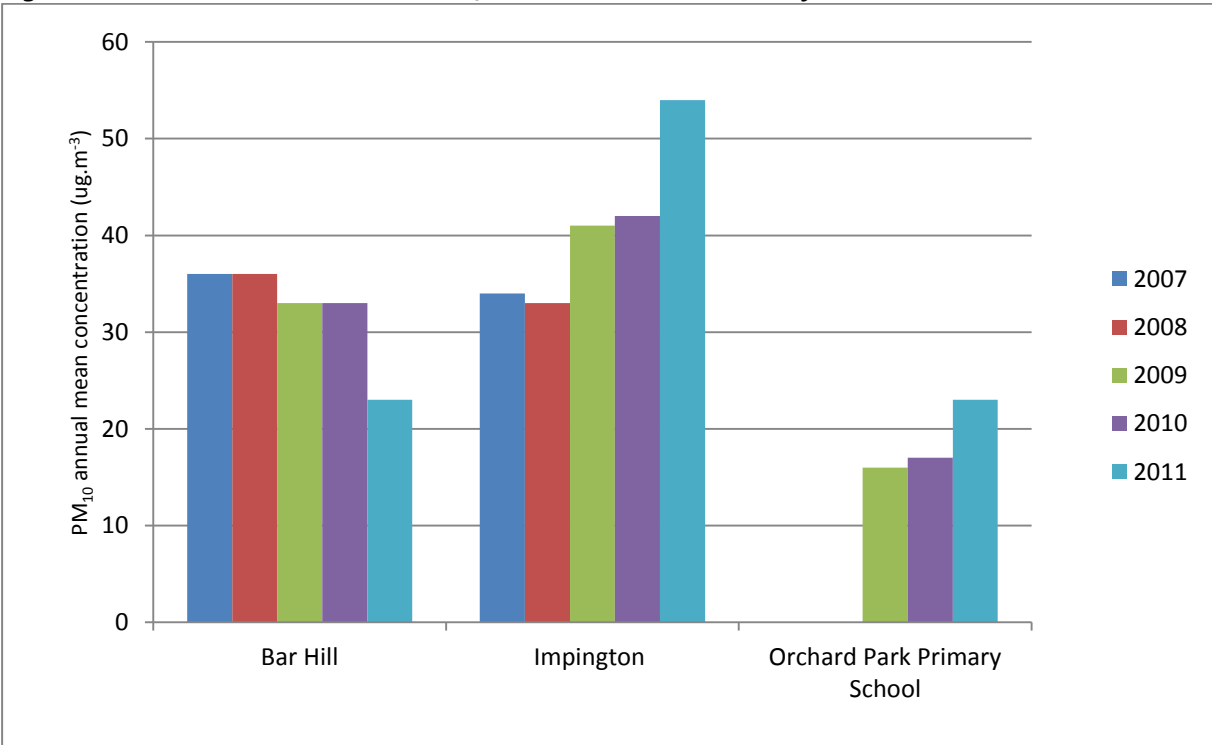
The annual mean PM<sub>10</sub> concentrations measured from 2007 to 2011 are presented in Table 2.7 and Figure 2.5.

An annual mean PM<sub>10</sub> concentration in excess of the 40 µg.m<sup>-3</sup> objective was measured at the Impington automatic monitoring site during 2011. Concentrations at this roadside site have been in excess of the annual mean objective for the last three years, this monitoring site is however at a roadside location and is not therefore representative of relevant human exposure; it is also currently within the existing AQMA for both NO<sub>2</sub> and PM<sub>10</sub>.

The number of 24-hour mean PM<sub>10</sub> concentrations in excess of the 50 µg.m<sup>-3</sup> short-term objective; measured from 2007 to 2011 are presented in Table 2.8. The short-term objective was exceeded 119 times at the Impington site which is in excess of the 35 times specified in the objective. The 24-hr mean objective is not however applicable at roadside locations. Some of the exceedances of the short-term PM<sub>10</sub> objective may be attributable to a PM<sub>10</sub> episode that occurred between the 25th and 30th of March, when the AURN experienced a widespread PM<sub>10</sub> episode of moderate air pollution levels. This event was due to a mixture of local emissions and transboundary pollution from continental Europe.

Both of the other PM<sub>10</sub> monitoring sites had less than 35 exceedances of the 50 µg.m<sup>-3</sup> short-term objective.

Figure 2.5: Trends in annual mean PM<sub>10</sub> concentrations measured from 2007 – 2011





**Table 2.7: Results of PM<sub>10</sub> Automatic Monitoring: Comparison with Annual Mean Objective**

Site name	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %	Valid Data Capture 2011 %	Confirm Gravimetric Equivalent	Annual Mean Concentration (µg.m <sup>-3</sup> )				
						2007	2008	2009	2010	2011
Bar Hill (A14)	Roadside	Y	71.4 %	71.4 %	Y	36	36	33	33	23
Impington (A14)	Roadside	Y	73.1 %	73.1 %	Y	34	33	<b>41</b>	<b>42</b>	<b>54</b>
Orchard Park Primary School (A14)	Urban Background	Y	92 %	92 %	Y	-	-	16	17	23

**Table 2.8: Results of PM<sub>10</sub> Automatic Monitoring: Comparison with 24-hour Mean Objective**

Site name	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %	Valid Data Capture 2011 %	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 µg.m <sup>-3</sup> ) Where data capture < 90%, the 90th %ile of daily means has been provided in brackets.				
						2007	2008	2009	2010	2011
Bar Hill (A14)	Roadside	Y	71.4 %	71.4 %	Y	79	52	48	37 (53)	26 (52)
Impington (A14)	Roadside	Y	73.1 %	73.1 %	Y	34	43	55	<b>36 (70)</b>	<b>119 (70.6)</b>
Orchard Park Primary School (A14)	Urban Background	Y	92 %	92 %	Y	-	-	0	0 (26)	10

### **2.2.3 Sulphur Dioxide**

South Cambridgeshire Council do not currently measure sulphur dioxide concentrations.

### **2.2.4 Benzene**

South Cambridgeshire Council do not currently measure benzene concentrations.

### **2.2.5 Summary of Compliance with AQS Objectives**

South Cambridgeshire Council has examined the results from monitoring in the district. Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

### **3 Road Traffic Sources**

#### **3.1 Narrow Congested Streets with Residential Properties Close to the Kerb**

South Cambridgeshire District Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

#### **3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic**

South Cambridgeshire District Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

#### **3.3 Roads with a High Flow of Buses and/or HGVs.**

South Cambridgeshire District Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

#### **3.4 Junctions**

South Cambridgeshire District Council confirms that there are no new/newly identified busy junctions/busy roads.

#### **3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment**

South Cambridgeshire District Council confirms that there are no new/proposed roads.

### **3.6 Roads with Significantly Changed Traffic Flows**

South Cambridgeshire District Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

### **3.7 Bus and Coach Stations**

South Cambridgeshire District Council confirms that there are no relevant bus stations in the Local Authority area.

## 4 Other Transport Sources

### 4.1 Airports

Cambridge Airport is the largest airfield within the District. The predicted annual throughput of passengers and tonnes of freight equivalent is expected to be less than 5 million passengers per annum in 2012, based on a predicted throughput of less than 5mppa (passengers and freight combined). It is not therefore necessary to proceed to a detailed assessment.

South Cambridgeshire District Council confirms that there are no airports in the Local Authority area that require a detailed assessment.

### 4.2 Railways (Diesel and Steam Trains)

There have been no significant changes to the rail network within South Cambridgeshire since the last round of review and assessment.

#### 4.2.1 Stationary Trains

South Cambridgeshire District Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

#### 4.2.2 Moving Trains

South Cambridgeshire District Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

### 4.3 Ports (Shipping)

South Cambridgeshire District Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

## 5 Industrial Sources

### 5.1 Industrial Installations

#### 5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

In February 2011 permission was granted for a new 296 bed hotel at Milton Science Park Cambridge. The application was also for a combined heat and power plant with catalytic convertor. The air quality assessment concluded that the proposed CHP plant with the catalytic converters will not add NO<sub>x</sub> of any significance to the existing background levels.

South Cambridgeshire District Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

#### 5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

South Cambridgeshire District Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

#### 5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

South Cambridgeshire District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

### 5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

### 5.3 Petrol Stations

South Cambridgeshire District Council confirms that there are no petrol stations meeting the specified criteria.

## 5.4 Poultry Farms

South Cambridgeshire District Council confirms that there are no poultry farms meeting the specified criteria.

## **6 Commercial and Domestic Sources**

### **6.1 Biomass Combustion – Individual Installations**

South Cambridgeshire District Council confirms that there are no biomass combustion plant in the Local Authority area.

### **6.2 Biomass Combustion – Combined Impacts**

South Cambridgeshire District Council confirms that there are no biomass combustion plant in the Local Authority area.

### **6.3 Domestic Solid-Fuel Burning**

South Cambridgeshire District Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.



## **7 Fugitive or Uncontrolled Sources**

Since the last round of review and assessment, no new locations where fugitive dust emissions will have a significant impact have been identified within the District.

South Cambridgeshire District Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

## 8 Conclusions and Proposed Actions

### 8.1 Conclusions from New Monitoring Data

An NO<sub>2</sub> annual mean concentration in excess of the 40 µg.m<sup>-3</sup> objective was measured at one of the automatic monitoring sites, Bar Hill; this is at a roadside location and is within the existing AQMA for NO<sub>2</sub>. No annual mean NO<sub>2</sub> concentrations in excess of the annual mean objective were measured using diffusion tubes during 2011.

Examination of the trend in NO<sub>2</sub> annual means measured across the network of diffusion tubes indicates that annual mean NO<sub>2</sub> concentrations have in general decreased since 2010.

No exceedances of the NO<sub>2</sub> 1-hour mean objective were measured at any of the automatic monitoring stations during 2011.

An annual mean PM<sub>10</sub> concentration in excess of the 40 µg.m<sup>-3</sup> objective was measured at the Impington automatic monitoring site during 2011. Concentrations at this roadside site have been in excess of the annual mean objective for the last three years. This monitoring site is however at a roadside location and is not therefore representative of relevant human exposure with respect to the annual mean objective; it is also currently within the existing AQMA for both NO<sub>2</sub> and PM<sub>10</sub>. The 50 µg.m<sup>-3</sup> 24-hour mean objective was exceeded 119 times at the Impington site; the 24-hr mean objective is not however applicable at roadside locations. The Impington site is also currently within the existing AQMA for both NO<sub>2</sub> and PM<sub>10</sub>.

Air quality objectives were achieved at all monitoring locations outside of the existing AQMA at locations of relevant exposure hence there is no need to proceed to a Detailed Assessment at any location. Continued measured annual mean NO<sub>2</sub> and PM<sub>10</sub> concentrations in excess of the objective within the current AQMAs indicate that the AQMAs are still required.

### 8.2 Conclusions from Assessment of Sources

The assessment of new sources has not identified any new sources that have not been considered previously. A detailed assessment is not therefore required for any new sources.

### 8.3 Proposed Actions

The Updating and Screening assessment has not identified any locations where a Detailed Assessment for any source or pollutant should be conducted. South Cambridgeshire District Council will continue monitoring at all existing sites within the District and will continue to implement the measures outlined in their Air Quality Action Plan for the existing AQMA.

Progress on the priority actions identified in the Air Quality Action Plan can be summarised as:-

The Highways Agency A14 Ellington to Fen Ditton scheme, was withdrawn as a consequence of the government's spending review in October 2010. However, the government's Autumn Statement (HM Treasury, November 2011) now gives a commitment to increasing capacity and improving performance on the A14. For the short term, the government has made an immediate investment of £20 million to reduce congestion on the A14, including measures to improve junctions and increase resilience. Proposals for a multi-modal scheme involving improvements in public transport, freight and highways schemes are on track to be agreed by the end of July 2012.

The Cambridgeshire Guided Busway was opened on 7th August 2011, since then journeys have been around 210,000 passengers per month facilitating a modal shift from the A14. Initial estimates are that this may have led to as much as a 2% reduction in car journeys along the route. Cycling and pedestrian routes have been provided alongside the busway route and numbers using this are also encouraging.

The 2011 detailed assessment (summarised in Table 1.2 (Section 1.2) above) concluded that depending on future monitoring results, it is possible that the AQMA may have to be expanded on the north side of the A14 to incorporate Hill Farm Cottages at Swavesey. It also concluded that if monitoring at all locations on the south side of the A14 continue to indicate that national objectives are being achieved at those locations; the AQMA may be modified so that it only incorporates the north side of the A14. Both of these recommendations are conditional on the future monitoring results and will be reviewed again when the 2013 progress report is prepared.

The next air quality review and assessment report will be the 2013 Progress Report.

## **9 Acknowledgements**

AEA gratefully acknowledge the support received from Susan Walford of South Cambridgeshire District Council when completing this assessment.

## 10 References

Department for Environment, Food and Rural Affairs, (2009) Local Air Quality Management Technical Guidance LAQM.TG (09).

Department for Environment, Food and Rural Affairs, Air Quality Strategy for England, Scotland Wales and Northern Ireland, 2007.

Spreadsheet of Diffusion Tube Bias Adjustment Factors accessed at <http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>

# Appendices

## Appendix A: QA/QC Data

## Appendix A: QA:QC Data

### PM Monitoring Adjustment

All particulate matter analysers are BAMs. The BAM data is corrected for slope to a gravimetric equivalent in line with the TG(09) guidance.

### Short-term to Long-term Data adjustment

A short to long term data adjustment was applied to six annual mean NO<sub>2</sub> diffusion tube measurements where the data capture was less than 75%. Two separate adjustment ratios were calculated; one for the diffusion tubes that were deployed in September 2011, namely:

- Hill Farm Cottages, Lolworth
- Rhadegund farm Cottages, Lolworth
- Hackers Fruit farm, Lolworth

The details of the AURN sites used and the ratio calculations are presented in Table A.1

**Table A.1 Short to long term data adjustment derivation (September to December 2011)**

Site	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
Norwich Lakenfields	Urban Background	13.1	13.0	1.009
Northampton	Urban Background	17.9	19.0	0.938
Wicken Fen	Rural Background	11.5	14.0	0.823
			<b>Average ratio (Am/Pm)</b>	<b>0.92</b>

Another ratio was calculated for the tubes that were discontinued in September 2011 .

- Narrow Lane, Histon
- Paddock Way, Sawston
- New Road, Sawston

The details of the AURN sites used and the ratio calculations are presented in Table A.2

**Table A.2 Short to long term data adjustment derivation (January to August 2011)**

Site	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
Norwich Lakenfields	Urban Background	13.1	13.2	0.995
Northampton	Urban Background	17.9	17.3	1.035
Wicken Fen	Rural Background	11.5	10.3	1.120
			<b>Average ratio (Am/Pm)</b>	<b>1.05</b>

## **QA/QC of automatic monitoring**

QA/QC procedures for the automatic monitoring sites within South Cambridgeshire are as follows:

- Ratification and QA/QC of automatic monitoring data is carried out by AEA Technology.
- 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.

## **QA/QC of diffusion tube monitoring**

Diffusion 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 which effectively is a four or five week duration.

ESG Ltd confirms that the methods and procedures they follow meet the guidelines set out in Defra's "Diffusion Tubes For Ambient Monitoring: Practical Guidance".

QA/QC procedures are as detailed in the UK NO<sub>2</sub> Diffusion Tube Network Instruction Manual.

## **Diffusion tube bias adjustment factors**

### **National bias adjustment factor**

The diffusion tube bias adjustment is taken from national bias adjustment spread-sheet. For 2011, the factor is 0.84; compared to 0.85 in 2010; 0.81 in 2009; and 0.8 in 2008.

### **Factor from Local Co-location Studies (if available)**

One triplicate co-location study was conducted within the district during 2011 at Orchard Farm. A co-location factor of 0.95 was calculated from this study. This is significantly greater than the bias adjustment factor reported in the national database of co-location factors for ESG during 2011.

### **Discussion of Choice of Factor to Use**

The adjustment factor from the national database of co-location studies has been used to bias adjust the 2011 diffusion tube results. This is consistent with the approach used to adjust South Cambridgeshire District Council's diffusion tube results in previous years; the 2011 factor of 0.84 is also consistent with the factor applied in recent years (0.85 in 2010; 0.81 in 2009; and 0.8 in 2008).



**Table A.2: NO<sub>2</sub> monthly mean concentrations measured at diffusion tubes sites 2011**

Site name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean (µg.m <sup>-3</sup> )	Data capture	Requires annualised?	Bias adjusted annual mean (µg.m <sup>-3</sup> ) (0.84 adj factor )
The Coppice	30.3	35.5	28.1	21.6	16.5	19.9	15.6	17.7	19.9	27.4	38.4	23.6	24.5	100%	N	20.6
The Gables	50.9	54.9	45.4	45.1	31.8	41	34.8	36.8	42	44.6	50.1	41.5	43.2	100%	N	36.3
Narrow Lane	31.9	32.3	24.8	17.7	11.8	15.3	10.8	13.6	N/A	N/A	N/A	N/A	19.8	67%	Y	17.4
High St Sawston	55	25	44	34.8	20.2	26.6	27.1	29.4	25.8	34.5	42.4	31.8	33.1	100%	N	27.8
Paddock Way	31.1	29.4	22.6	18.1	10.6	14.1	-	12.1	N/A	N/A	N/A	N/A	19.7	58%	Y	17.4
Linton	42.4	41.8	42.5	39.3	28.4	34.9	32.6	31.1	30.4	38.3	37.3	39.7	36.6	100%	N	30.7
Tadlow	25.1	24.6	16.5	10.8	8.4	12.3	8.1	8.5	10.4	16.7	25.9	17.9	15.4	100%	N	13.0
Harston	44.2	45.0	4.6	28.3	19.1	23.6	21.7	22.9	23.6	30.6	51.5	22.8	28.2	100%	N	23.7
Milton	39.4	36.6	29.5	20.0	14.5	16.2	13.2	16.5	18.3	26.3	37.5	28.5	24.7	100%	N	20.8
Girton	46.1	55.3	42.9	34.1	29.8	31.4	19.6	29.7	32.6	45.6	55.6	43.7	38.9	100%	N	32.6
Thriplow	47.3	50.5	40.7	32.3	24.3	30.4	20.2	24.7	29.4	36.0	52.4	27.1	34.6	100%	N	29.1
Lone Tree Av	37.4	40.5	31.5	21.1	18	22.3	14.8	20	19.7	36.3	47.1	29.7	28.2	100%	N	23.7
Brook Close Histon	41.7	36.6	-	22.7	15.1	18.3	15.9	18	18.8	25.5	39.8	23.6	25.1	92%	N	21.1
Water Lane	54.5	-	39.1	31.2	24.9	-	31.7	28.1	29.7	37.5	54	40.3	37.1	83%	N	31.2
Cambridge Rd	35.3	46.9	36.7	27.1	18.2	-	16.1	21.7	23.8	35.0	38	33	30.2	92%	N	25.3
New Rd Sawston	34.3	32.8	27.6	17.8	11.8	16.4	10.9	12	N/A	N/A	N/A	N/A	20.5	67%	Y	18.0
Mill Lane	33.6	24.3	20.8	19.4	12.1	17.7	12.3	14.6	14.6	20.4	34.8	21.4	20.5	100%	N	17.2
1 Catchall Farm Cottis	40.9	32.9	43.9	35.4	27.6	25	39.9	23.1	17.2	24.1	41.2	15.2	30.5	100%	N	25.6
Crafts Way, Bar Hill	41.9	37.5	34.2	25.9	17.3	19.6	19.4	17.8	17	23.8	28.5	23.5	25.5	100%	N	21.4
Chieftain Way	45.2	35.7	36.1	25.4	18.2	17.7	20.7	21.1	16.9	28.2	33.7	27.6	27.2	100%	N	22.9
Topper Street	47.0	30.3	34.9	25.3	19.4	17	17.4	19.4	15.9	27.9	45.2	21.8	26.8	100%	N	22.5
Flack End	53.7	42.4	38.3	26.3	22.5	23.7	25.6	-	19.5	25.8	41.8	25.4	31.4	92%	N	26.3
Orchard Pk School	40.2	29.7	28.2	23.5	17.9	19.7	17.2	17.6	17.6	24.7	34.7	25.8	24.7	100%	N	20.8
Orchard Pk School	42.7	32.0	28.3	22.4	18.2	19.6	15.8	19.1	17.9	25.6	34.1	23	24.9	100%	N	20.9
Orchard Pk School	45.6	25.3	31.0	23.9	17.9	19.5	15.4	20.7	18.2	26.6	33.2	26.8	25.3	100%	N	21.3

South Cambridgeshire District Council

Site name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean ( $\mu\text{g.m}^{-3}$ )	Data capture	Requires annualised?	Bias adjusted annual mean ( $\mu\text{g.m}^{-3}$ ) (0.84 adj factor)
High Street Histon	39.7	37.3	34.7	24.4	17.2	21.1	17	19.7	19.2	32.8	42.6	21.9	27.3	100%	N	22.9
Topper Street o/s 13	52.7	37.8	40.7	25.8	21.8	20.8	24.2	22.6	16.4	27	38.6	28.2	29.7	100%	N	25.0
Topper Street o/s 22	50.3	38.5	-	23.7	-	19.9	9.7	-	21	30.8	39.2	20	28.1	75%	N	23.6
Abingdon	27.0	21.7	19.7	14.5	9.7	12.7	5.3	11.4	11.1	16.2	27.4	16.8	16.1	100%	N	13.5
Hill Farm Cottages, Lolworth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	39.7	52.4	52.6	57.2	50.5	33%	Y	39.1
Rhadegund farm Cottages, Lolworth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.1	17.2	34.1	16.5	20.2	33%	Y	15.7
Hackers Fruit farm, Lolworth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.2	34.5	67.9	21.2	36.7	33%	Y	28.5

