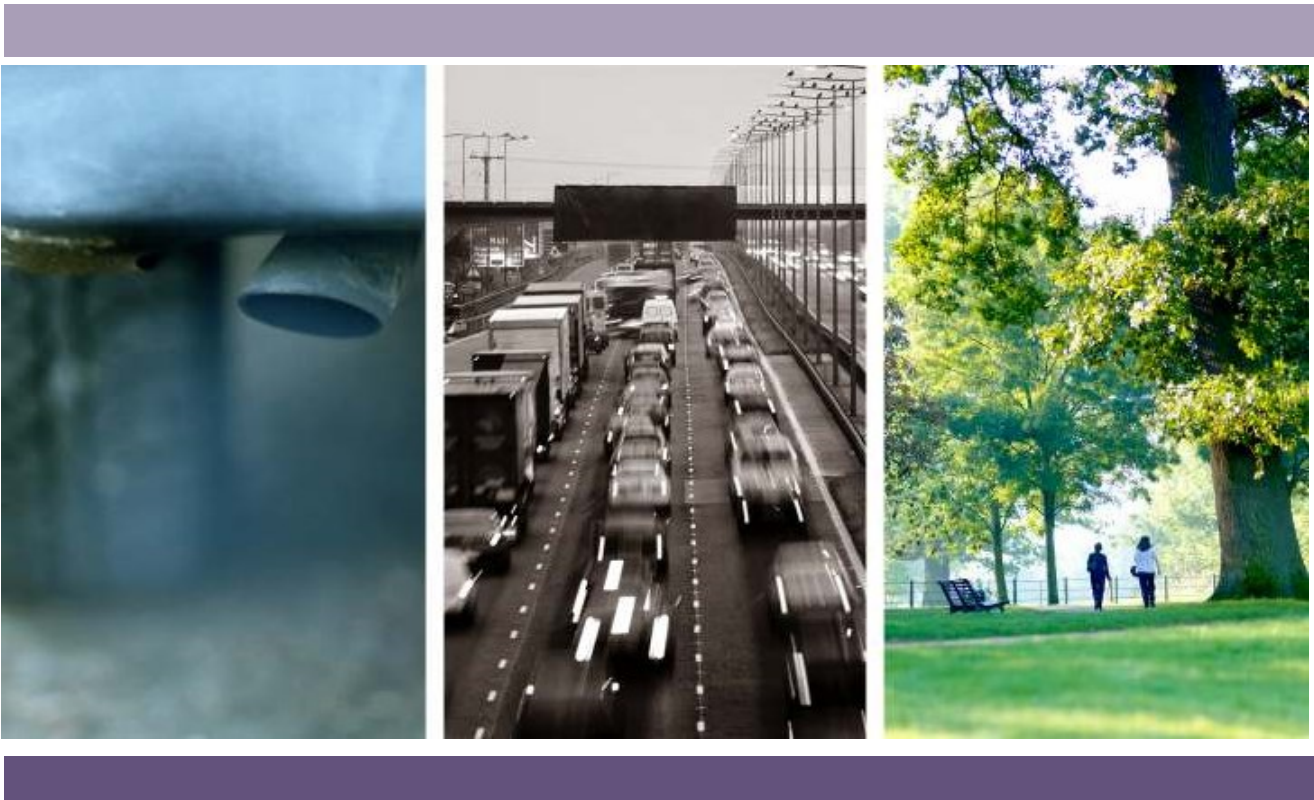


Uttlesford District Council

2012 Air Quality Updating and Screening Assessment for Uttlesford District Council

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



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| 1 | Draft Report | 26 April 2012 |
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Uttlesford District Council

2012 Air Quality Updating and Screening Assessment for Uttlesford District Council

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

AMEC Environment & Infrastructure
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June 2012



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Executive Summary

Part IV of the Environment Act 1995 places a statutory duty on local authorities to review and assess air quality in their areas, and to determine whether or not the Air Quality Objectives (AQOs) are likely to be achieved.

An Updating and Screening Assessment (USA) identifies any significant changes that may have occurred since the last round of Review and Assessment. The USA considers new monitoring data and emissions sources to determine whether there is a requirement for a Detailed Assessment for any of the pollutants applicable to Local Air Quality Management (LAQM).

The USA for Uttlesford District Council concludes that a Detailed Assessment or any additional monitoring is not required for any pollutant. Exceedences of the annual mean NO₂ AQO occurred at two non-automatic monitoring sites within the District but both of these sites are located within an existing AQMA. The monitoring undertaken within the District has shown that there were no other exceedences of the AQOs.

The next action for Uttlesford District Council will be to submit a 2013 Progress Report.

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1. Introduction

1.1 Description of Local Authority Area

Uttlesford District Council (UDC) covers an area in the western part of Essex. It is a mainly rural district, with the population mainly spread between 50 hamlets and villages. The District's largest towns are Saffron Walden and Great Dunmow. Smaller towns in the District include Stansted Mountfitchet and Thaxted. The smaller settlements of Felsted, Takeley and Canfield are also growing.

The main source of air pollutants in the District is from transport. The M11 and A120 run through the District and the District is also home to Stansted Airport. Nitrogen dioxide (NO₂) and particulate matter (PM₁₀) are therefore the pollutants of main concern.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) 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 (AQOs) 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 (USA) is to identify any matters that have changed which may lead to risk of an AQO 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 AQOs applicable to 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), 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, 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 LAQM in England

| Pollutant | AQO | | Date to be achieved by |
|---|---|---------------------|------------------------|
| | Concentration | Measured as | |
| Benzene | 16.25 $\mu\text{g m}^{-3}$ | Running annual mean | 31.12.2003 |
| | 5.00 $\mu\text{g m}^{-3}$ | Running annual mean | 31.12.2010 |
| 1,3-Butadiene | 2.25 $\mu\text{g m}^{-3}$ | Running annual mean | 31.12.2003 |
| Carbon monoxide (CO) | 10.0 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 (NO ₂) | 200 $\mu\text{g m}^{-3}$ not to be exceeded more than 18 times a year | 1-hour mean | 31.12.2005 |
| | 40 $\mu\text{g m}^{-3}$ | Annual mean | 31.12.2005 |
| Particles (PM ₁₀) (gravimetric) | 50 $\mu\text{g m}^{-3}$, not to be exceeded more than 35 times a year | 24-hour mean | 31.12.2004 |
| | 40 $\mu\text{g m}^{-3}$ | Annual mean | 31.12.2004 |
| Sulphur dioxide (SO ₂) | 350 $\mu\text{g m}^{-3}$, not to be exceeded more than 24 times a year | 1-hour mean | 31.12.2004 |
| | 125 $\mu\text{g m}^{-3}$, not to be exceeded more than 3 times a year | 24-hour mean | 31.12.2004 |
| | 266 $\mu\text{g m}^{-3}$, not to be exceeded more than 35 times a year | 15-minute mean | 31.12.2005 |

1.4 Summary of Previous Review and Assessments

Table 1.2 summarises the results of the conclusions of previous rounds of Review and Assessment.

Table 1.2 Summary of Previous Review and Assessments

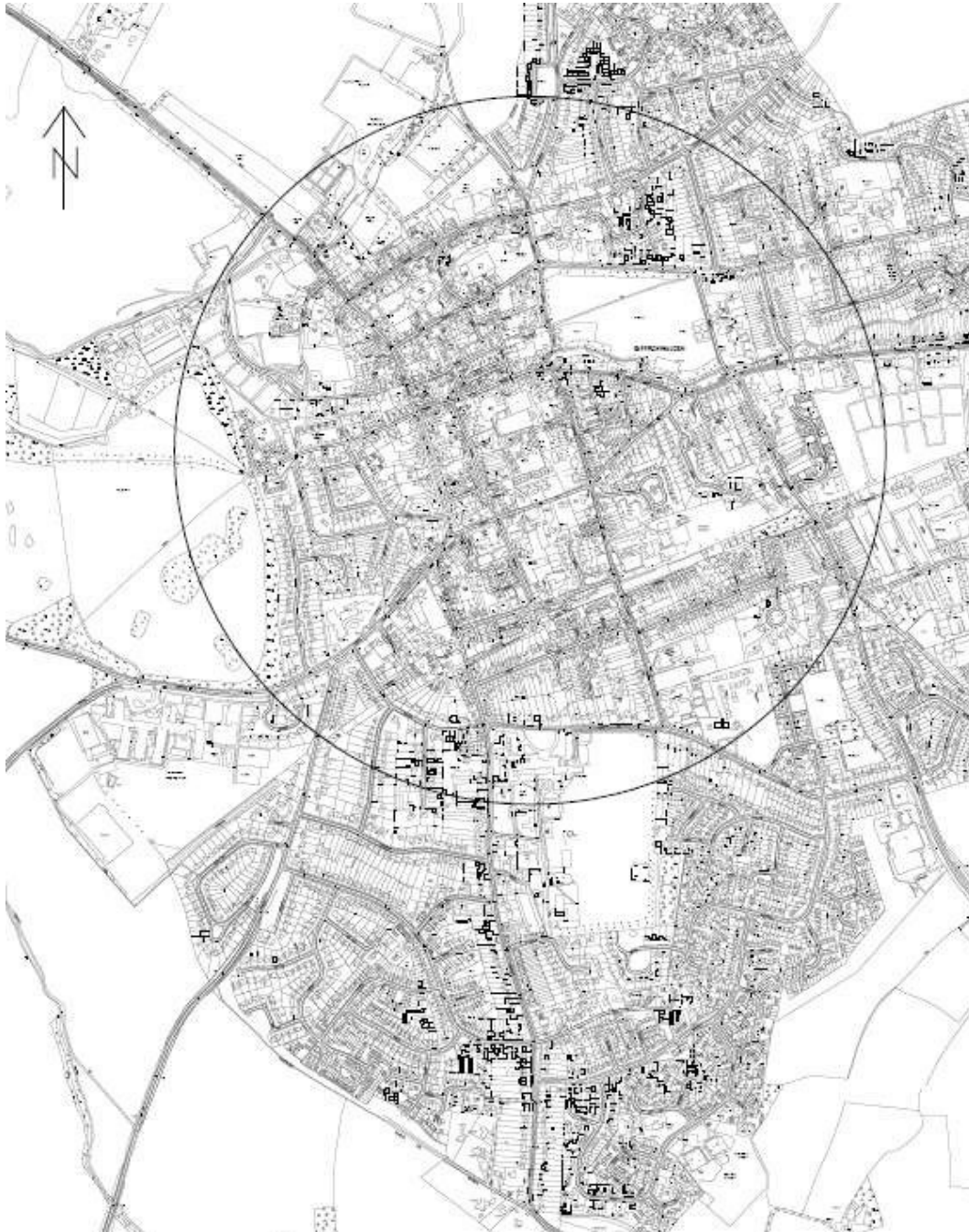
| Round | Date(s) | Summary |
|-------|-----------|---|
| 1 | 1998-2002 | Concluded that all AQOs would be met for all pollutants. No AQMAs declared. The main sources of emissions of NO ₂ and PM ₁₀ in the District were found to be vehicles on the M11 and A120. |
| 2 | 2003-2005 | The USA concluded that AQOs would be met for all pollutants. No AQMAs declared. Progress Reports in 2004 and 2005 confirmed this conclusion. |
| 3 | 2006 | The USA concluded that the annual mean NO ₂ AQO would be exceeded at three junctions in Saffron Walden and a Detailed Assessment would be required. |
| | 2007 | The Detailed Assessment confirmed the findings of the USA and three AQMAs were declared for the three junctions for annual mean NO ₂ exceedences. |
| | 2008 | The Progress Report for 2008 concluded that the AQOs for all pollutants would be met outside of the newly declared AQMAs. |
| 4 | 2009 | The USA concluded that the AQOs for all pollutants would be met outside of the newly declared AQMAs. |
| | 2010 | The Progress Report concluded that exceedences of annual mean NO ₂ AQO had occurred at five monitoring locations in 2009. Two locations (Debden Road and Burton End) were located outside of the AQMAs. Additional monitoring was undertaken to confirm the extent of the exceedences outside the AQMAs. |
| | 2011 | The Progress Report concluded that AQOs would be met for all pollutants outside of the AQMAs except at the location of the additional tubes on Debden Road and Burton End. The additional tubes had confirmed that there were exceedences of the annual mean NO ₂ AQO and a Detailed Assessment was recommended to be undertaken for London Road / Burton End. |

1.4.1 Recent Changes to AQMAs

Due to the exceedences of the NO₂ annual mean AQO recorded in 2010, an AQMA was approved at a UDC Cabinet Meeting¹ and subsequently declared in May 2012. The AQMA replaced the three existing AQMAs in the District and encompasses the areas where exceedences were recorded in 2010. A map showing the location of the AQMA is shown in Figure 1.1.

¹ <http://ggpweb.uttlesford.gov.uk/CmiswebPublic/Meeting.aspx?meetingID=9258>

Figure 1.1 Map of AQMA



Notes: Scale 1:10000

2. New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

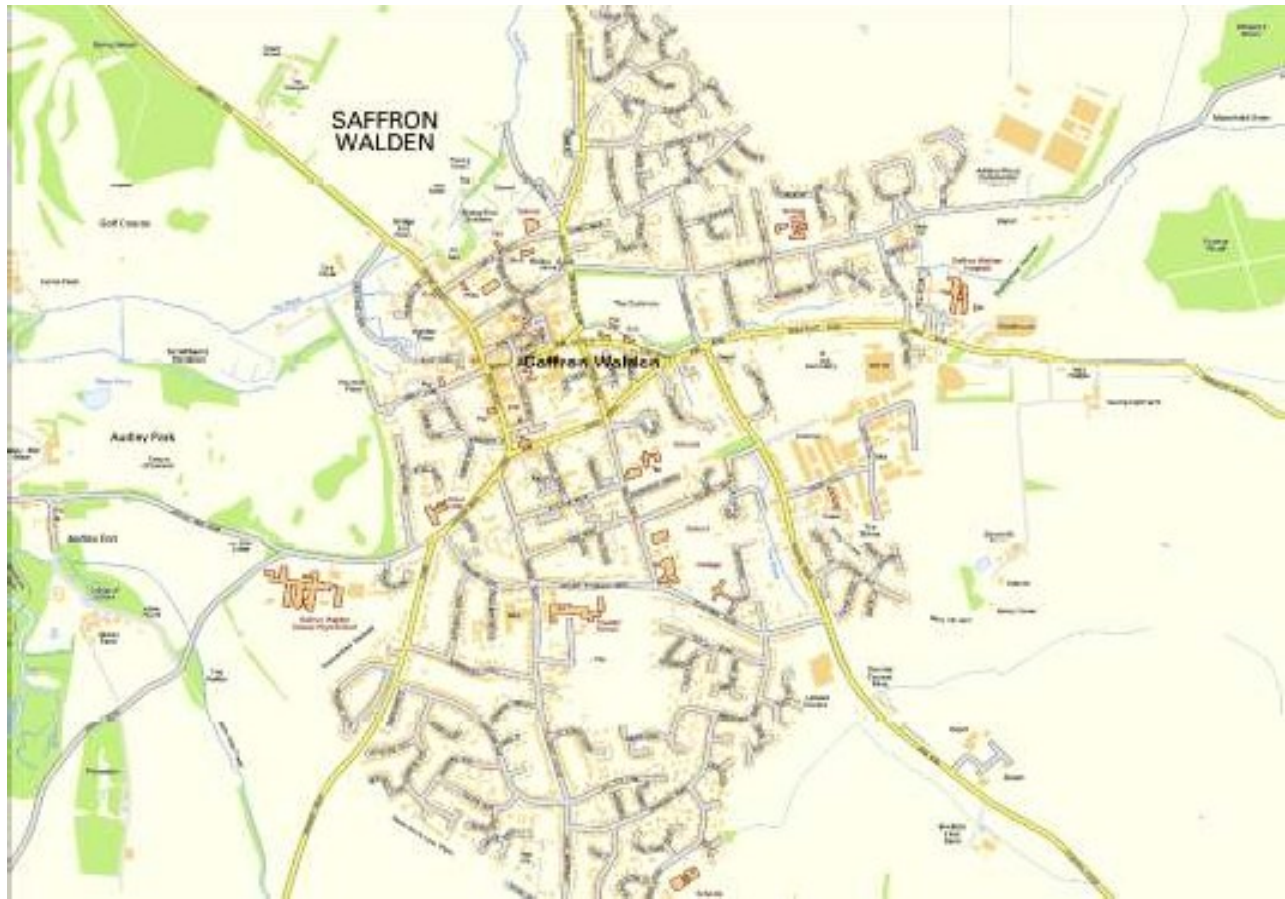
There are currently three continuous monitors operating in the District of Uttlesford. These are located at Saffron Walden, Takeley and Stansted Hall. The Stansted Hall monitor is a mobile unit. The pollutants monitored at Saffron Walden and Stansted Hall are NO₂ and PM₁₀. At Takeley, concentrations of NO₂, PM_{2.5} and ozone (O₃) are monitored.

Further details regarding the automatic monitoring sites are provided in Table 2.1 and their locations are given in Figures 2.1 and 2.2.

Table 2.1 Details of Automatic Monitoring Sites

| Site Name | Site Type | X OS Grid Ref | Y 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) | Does this location represent worst-case exposure? |
|----------------|------------------|---------------|---------------|--|----------|---|--|---|
| Saffron Walden | Urban Centre | 553823 | 238408 | NO ₂ , PM ₁₀ | Y | Y (25) | 5 | N |
| Takeley | Urban Background | 556234 | 221496 | NO ₂ , PM _{2.5} , O ₃ | N | Y (15) | 50 | N |
| Stansted Hall | Rural | 552346 | 224049 | NO ₂ , PM ₁₀ | N | N | 60 | N |

Figure 2.1 Locations of Automatic Monitoring Site (Saffron Walden)



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Figure 2.2 Locations of Automatic Monitoring Sites (Stansted Hall and Takeley)



Notes: Contains Ordnance Survey data © Crown copyright and database right [2012].

2.1.2 Non-Automatic Monitoring Sites

During 2011, UDC undertook monitoring for NO₂ at 21 diffusion tube monitoring sites within the District. The diffusion tubes are prepared by Bureau Veritas (part of Environmental Scientific Group) using the 50% triethanolamine (TEA) in acetone method.

Three of the tubes are co-located with the continuous monitor in Saffron Walden.

Further detail on each of the non-automatic monitoring sites is presented in Table 2.2 and diffusion tube locations are shown in Figures 2.3, 2.4, 2.5 and 2.6.

Table 2.2 Details of Non-Automatic Monitoring Sites

| Site ID | Site Name | X | Y | Pollutants Monitored | In AQMA? | Relevant Exposure? (distance to relevant exposure (m)) | Distance to kerb of nearest road (m) | Worst case? |
|--------------|----------------------------|--------|--------|----------------------|----------|--|--------------------------------------|-------------|
| UT001 | Walden 1 PO High Street | 553710 | 238415 | NO ₂ | Y | N | 1.5 | Y |
| UT003 | Walden 3 Gibson Gardens | 553552 | 238219 | NO ₂ | Y | Y (5.1) | 1.5 | Y |
| UT004 | Walden 4 YHA | 553594 | 238599 | NO ₂ | Y | Y (0.8) | 1.4 | Y |
| UT005 | Walden 5 Thaxted Road | 554332 | 238450 | NO ₂ | Y | Y (2.4) | 0.5 | Y |
| UT011 | Walden 11 33 High Street | 553697 | 238452 | NO ₂ | Y | Y (0) | 2.7 | Y |
| UT012 | Walden 12 Town Hall | 553878 | 238509 | NO ₂ | Y | N | 0.2 | Y |
| UT013/14/27* | Fire Station Co-located | 553823 | 238408 | NO ₂ | Y | N | 4.1 | Y |
| UT028 | Walden 16 London Road | 553751 | 238086 | NO ₂ | Y | Y (0.8) | 2 | Y |
| UT029 | Walden 17 Debden Road | 553770 | 238076 | NO ₂ | Y | Y (0.8) | 2 | Y |
| UT030 | Walden 18 Friends School | 553875 | 237763 | NO ₂ | Y | Y (15) | 3 | Y |
| UT002 | Airport 1 Thatched Cottage | 552706 | 221403 | NO ₂ | N | Y (1) | 10 | Y |
| UT007 | Airport 2 Rose Cottage | 556186 | 223724 | NO ₂ | N | Y (0) | 7.5 | Y |
| UT006 | Stansted | 551358 | 225452 | NO ₂ | N | Y (0) | 3.9 | Y |
| UT008 | Hallingbury | 551189 | 217438 | NO ₂ | N | N | 29.1 | Y |
| UT009 | Burton End | 552403 | 223965 | NO ₂ | N | N | 9.3 | Y |

| Site ID | Site Name | X | Y | Pollutants Monitored | In AQMA? | Relevant Exposure? (distance to relevant exposure (m)) | Distance to kerb of nearest road (m) | Worst case? |
|---------|-------------------------------|--------|--------|----------------------|----------|--|--------------------------------------|-------------|
| UT010 | Newport | 551255 | 233649 | NO ₂ | N | Y (34.2) | 0 | Y |
| UT024 | Takeley Hill Hatfield Forest | 554671 | 221010 | NO ₂ | N | N | 117.5 | N |
| UT025 | Elman's Green Hatfield Forest | 553271 | 221072 | NO ₂ | N | N | 183.1 | N |
| UT026 | South Gate Hatfield Forest | 553141 | 218694 | NO ₂ | N | N | 138 | N |

Notes: *Co-located Tubes

Figure 2.3 Locations of Non-Automatic Monitoring Sites (UT 001, 003, 004, 005, 011, 012, 013, 014, 027, 028, 029 and 030)



Notes: Contains Ordnance Survey data © Crown copyright and database right [2012].

Figure 2.4 Location of Non-Automatic Monitoring Site (UT 010)



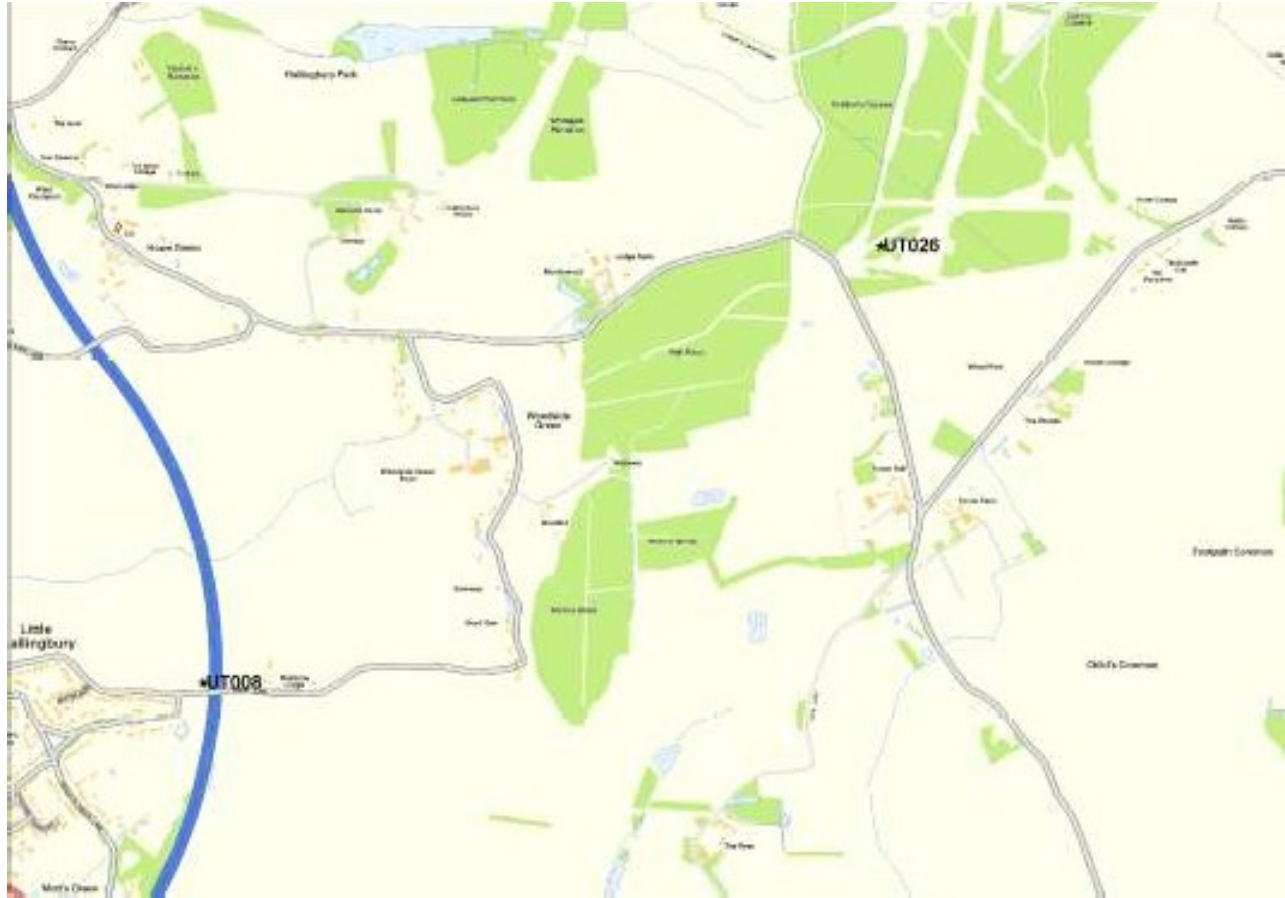
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Figure 2.5 Locations of Non-Automatic Monitoring Sites (UT 002, 006, 007, 009, 024 and 025)



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Figure 2.6 Locations of Non-Automatic Monitoring Sites (UT 008 and 026)



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2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

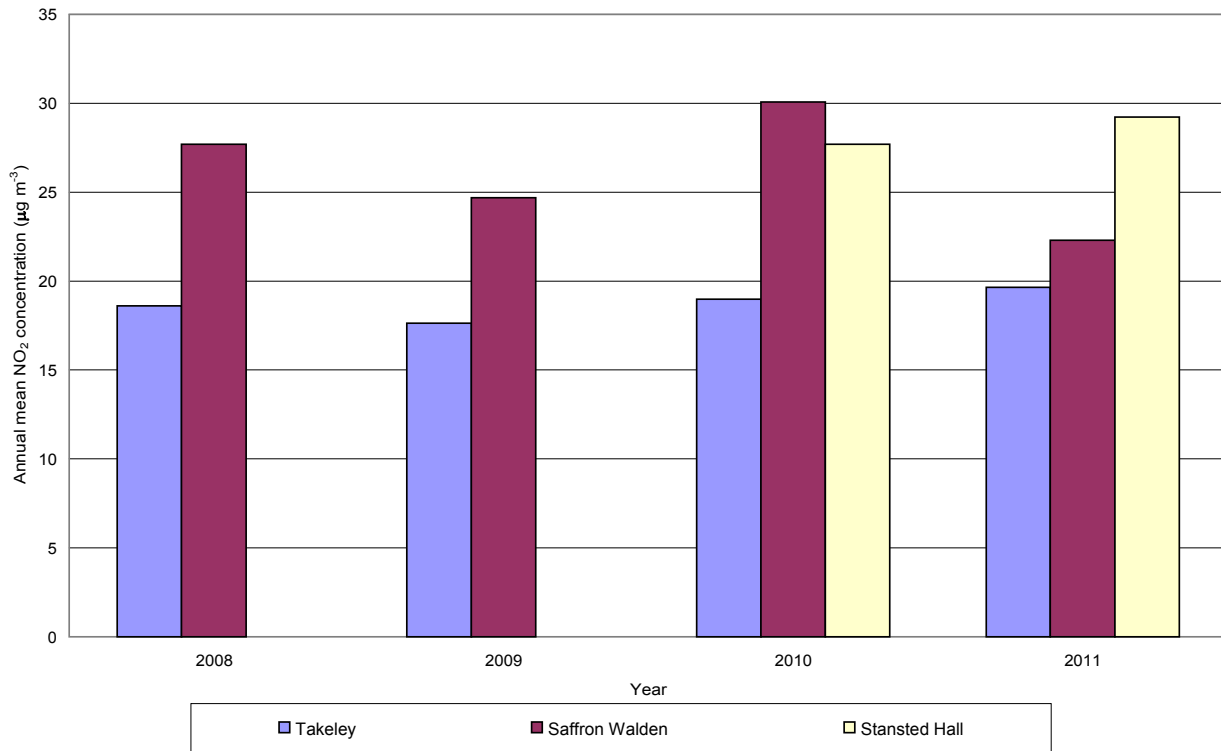
Table 2.3 presents the results of the NO₂ automatic monitoring undertaken in the District in 2011, as well as the results of monitoring in the three previous years. The results show that there have been no exceedences of the annual mean NO₂ AQO or the hourly mean NO₂ AQO during 2011.

The trend in results for the past four years is shown in Figure 2.7. The NO₂ concentrations measured at the Takeley and Stansted Hall monitors have increased slightly when compared to 2010 concentrations. However, the NO₂ annual mean at Saffron Walden has decreased by more than 25% between 2010 and 2011.

Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Air Quality Objectives

| Location | Within AQMA? | Valid Data Capture for period of monitoring % | Valid Data Capture 2011 % | Descriptor | 2008 | 2009 | 2010 | 2011 |
|----------------|--------------|---|---------------------------|---|------|-------|-------|-------|
| Saffron Walden | Y | 85 | 85 | Annual mean, $\mu\text{g m}^{-3}$ | 27.7 | 24.68 | 30.07 | 22.29 |
| | | | | Number of Exceedences of Hourly Mean ($200 \mu\text{g m}^{-3}$) | 2 | 0 | 13 | 0 |
| Takeley | N | 87 | 87 | Annual mean, $\mu\text{g m}^{-3}$ | 18.6 | 17.64 | 18.98 | 19.64 |
| | | | | Number of Exceedences of Hourly Mean ($\mu\text{g m}^{-3}$) | 0 | 0 | 0 | 0 |
| Stansted Hall | N | 93 | 93 | Annual mean, $\mu\text{g m}^{-3}$ | n/a | n/a | 27.7 | 29.22 |
| | | | | Number of Exceedences of Hourly Mean ($200 \mu\text{g m}^{-3}$) | n/a | n/a | 0 | 1 |

Figure 2.7 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Automatic Monitoring Sites



Diffusion Tube Monitoring Data

Table 2.4 details the results of the NO₂ diffusion tube monitoring for the past five years. Raw monthly mean concentrations for the 2011 calendar year are included in Appendix A.

A bias adjustment factor of 0.80 has been applied to the data shown in Table 2.4. The factor is an estimate of the difference between tube concentrations and continuous monitoring. The factor has been locally derived and calculated using a spreadsheet from the Defra website² as well as the results of the co-located tubes and the continuous monitor situated at the Fire Station in Saffron Walden. A screenshot of the spreadsheet is provided in Appendix B.

The monitoring results show that there were two exceedences of the annual mean AQO for NO₂. These exceedences occurred at Thaxted Road and London Road, which are both situated within the AQMA. No other exceedences of the annual mean NO₂ AQO are reported in the results for 2011.

² http://laqm.defra.gov.uk/documents/AEA_DifTPAB_v04.xls

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

| Site ID | Location | In AQMA? | Data capture 2011 (%) | Annual Mean Concentrations ($\mu\text{g m}^{-3}$) Adjusted for Bias | | | | |
|--------------|-------------------------------|----------|-----------------------|---|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | 2007 (Bias Factor 0.89) | 2008 (Bias Factor 1.36) | 2009 (Bias Factor 0.92) | 2010 (Bias Factor 0.95) | 2011 (Bias Factor 0.80) |
| UT001 | Walden 1 PO High Street | Y | 100 | 37.1 | 42.9 | 40 | 47.22 | 36.6 |
| UT003 | Walden 3 Gibson Gardens | Y | 92 | 16.0 | 17.9 | 18 | 20.29 | 14.1 |
| UT004 | Walden 4 YHA | Y | 83 | 36.2 | 45.2 | 44 | 48.61 | 38.4 |
| UT005 | Walden 5 Thaxted Road | Y | 100 | 42.9 | 53.4 | 50 | 57.66 | 43.1 |
| UT011 | Walden 11 33 High Street | Y | 100 | 34.6 | 37.1 | 37 | 41.53 | 30.7 |
| UT012 | Walden 12 Town Hall | Y | 100 | 27.6 | 25.0 | 22 | 25.41 | 18.2 |
| UT013/14/27* | Fire Station | Y | 100 | - | - | 25 | 29.10 | 21.2 |
| UT028 | Walden 16 London Road | Y | 100 | - | 47.7 | 43 | 50.00 | 40.7 |
| UT029 | Walden 17 Debden Road | Y | 100 | - | - | - | 32.75 | 23.0 |
| UT030 | Walden 18 Friends School | Y | 83 | - | - | - | 36.95 | 25.3 |
| UT002 | Airport 1 Thatched Cottage | N | 92 | 25.5 | 28.4 | 27 | 30.05 | 19.8 |
| UT007 | Airport 2 Rose Cottage | N | 100 | 25.8 | 31.1 | 26 | 28.10 | 21.2 |
| UT006 | Stansted | N | 100 | 16.5 | 19.3 | 18 | 19.34 | 15.3 |
| UT008 | Hallingbury | N | 100 | 28.1 | 35.7 | 31 | 36.21 | 26.9 |
| U009 | Burton End | N | 92 | 40.1 | 45.4 | 41 | 47.23 | 36.9 |
| UT010 | Newport | N | 100 | 26.9 | 31.8 | 29 | 32.07 | 25.4 |
| UT024 | Takeley Hill Hatfield Forest | N | 92 | 16.3 | 18.2 | 16 | 17.95 | 13.6 |
| UT025 | Elman's Green Hatfield Forest | N | 100 | 16.9 | 17.5 | 16 | 21.51 | 13.8 |
| UT026 | South Gate Hatfield Forest | N | 92 | 14.9 | 16.3 | 14 | 15.94 | 12.6 |

Notes:

* Co-located Tubes.

Figures in bold indicate a value above the annual mean AQO limit value of $40 \mu\text{g m}^{-3}$.

Data capture >75%, therefore data have not been annualised.

Data have not been distance corrected.

2.2.2 PM₁₀

Table 2.5 presents the results of the PM₁₀ monitoring undertaken at the Saffron Walden and Stansted Hall automatic monitors from 2008 to 2011. The results show that the annual mean AQO was not exceeded at either monitor in 2011. There were a number of exceedences of the 24-hour mean AQO at both monitors during 2011. However, the 24-hour mean AQO was not exceeded on more than 35 occasions and therefore the AQO was not breached.

Table 2.5 Results of Automatic Monitoring of PM₁₀: Comparison with Air Quality Objectives

| Location | Within AQMA? | Valid Data Capture for period of monitoring % | Valid Data Capture 2011 % | Descriptor | 2008 | 2009 | 2010 | 2011 |
|----------------|--------------|---|---------------------------|---|------|---------------------------------|---------------------------------|-------|
| Saffron Walden | Y | 98 | 98 | Annual mean, $\mu\text{g m}^{-3}$ | 18.8 | 15.59 | 19.03* | 25.31 |
| | | | | Number of Exceedences of 24-Hour Mean ($50 \mu\text{g m}^{-3}$) | 5 | 1 (28.59 $\mu\text{g m}^{-3}$) | 4 (45.87 $\mu\text{g m}^{-3}$) | 19 |
| Stansted Hall | N | 96 | 96 | Annual mean, $\mu\text{g m}^{-3}$ | N/A | N/A | 20.99 | 25.68 |
| | | | | Number of Exceedences of 24-Hour Mean ($50 \mu\text{g m}^{-3}$) | N/A | N/A | 4 (45.74 $\mu\text{g m}^{-3}$) | 20 |

Notes: *Annualised using Rainsford, Thurrock and Stanford-le-Hope automatic monitoring stations.

Where data capture is less than 90% of a full year, 90th percentile of 24-hour mean shown in brackets.

Data adjusted to gravimetric equivalent.

2.2.3 Sulphur Dioxide

UDC does not monitor SO₂ within the District.

2.2.4 Benzene

UDC does not monitor benzene within the District.

2.2.5 Other Pollutants Monitored

Ozone and PM_{2.5} are monitored at the Takeley continuous monitoring site. The results are presented below in Table 2.6 and 2.7.

Table 2.6 Results of Automatic Monitoring for Ozone

| Location | Within AQMA? | Valid Data Capture for period of monitoring % | Valid Data Capture 2011 % | Annual mean concentration ($\mu\text{g m}^{-3}$) 2011 |
|----------|--------------|---|---------------------------|---|
| Takeley | N | 92 | 92 | 59.1 |

Table 2.7 Results of Automatic Monitoring for PM_{2.5}

| Location | Within AQMA? | Valid Data Capture for period of monitoring % | Valid Data Capture 2011 % | Annual mean concentration ($\mu\text{g m}^{-3}$) 2011 |
|----------|--------------|---|---------------------------|---|
| Takeley | N | 98.65 | 56.76 | 17.17 |

2.2.6 Summary of Compliance with AQS Objectives

Uttlesford District Council has examined the results from monitoring in the District. Concentrations are above the annual mean NO₂ AQO at two locations, which are both in the AQMA. Therefore there is no need to proceed to a Detailed Assessment for any of the other monitoring locations or pollutants within Uttlesford.

3. Road Traffic Sources

UDC has not identified any roads or junctions that require assessment under the following criteria.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Uttlesford 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

Uttlesford 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

This assessment considers roads where there are unusually high proportions of buses and/or HGVs and traffic flows are less than 20,000 vehicles per day, but more than 2,500 HGVs per day. The assessment is also dependent on whether the flow of HGVs is greater than 2,500 per day and relevant exposure being within 10m of the kerbside.

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

3.4 Junctions

Concentrations are usually higher close to junctions, due to the combined effect of traffic emissions on two or more roads and stop-start driving. The assessment, which considers both PM₁₀ and NO₂, is dependent on relevant exposure being within 10m of the kerb.

Uttlesford District Council confirms that there are no new/newly identified junctions/busy roads with traffic flows greater than 10,000 vehicles per day.

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

The approach to considering new roads will depend on whether or not an assessment was carried out in advance of building the new road. If the air quality assessment predicted exceedences of NO₂ and PM₁₀ at relevant locations then it will be necessary to proceed to a Detailed Assessment.

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

3.6 Roads with Significantly Changed Traffic Flows

The assessment only considers roads which experience traffic flows more than 10,000 vehicles per day and have an increase in traffic flow more than 25%.

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

3.7 Bus and Coach Stations

The assessment considers both NO₂ and PM₁₀ emissions at bus stations that are not enclosed, with more than 2,500 movements per day and where there is relevant exposure within 10m of any part of the bus station.

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

4. Other Transport Sources

4.1 Airports

The assessment for airports considers NO₂. If there are no airports in the Local Authority area, there is no need to proceed further with this part.

Stansted Airport is located within the District and has been considered in previous rounds of the Review and Assessment process. No significant changes have occurred at the airport in 2011 which could have a significant effect on air quality.

Uttlesford District Council confirms that Stansted Airport lies within the Local Authority area and no changes to the airport which could affect air quality have occurred in 2011.
Stansted Airport has already been considered in a previous round of Review and Assessment and therefore there is no requirement to proceed to a Detailed Assessment.

4.2 Railways (Diesel and Steam Trains)

Stationary trains can give rise to high levels of SO₂ close to the point of emission. In addition, moving diesel trains can give rise to high NO₂ concentrations. If there are no railways carrying diesel or steam trains in the Local Authority, there is no need to proceed further with this part.

4.2.1 Stationary Trains

Uttlesford 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

Uttlesford 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)

The assessment for shipping considers SO₂ emissions where receptors are located within 250m of the berths and 1km of the main manoeuvring areas.

Uttlesford 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

The assessment of industrial installations considers all of the regulated pollutants. A list of the industrial processes currently operating in the Borough is shown in Appendix C.

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

There are two new permitted processes operating within the District, both taking place at SGA Technologies Ltd. The processes taking place at these premises were not considered to require an air quality assessment.

Uttlesford 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.

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

Uttlesford 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

Uttlesford 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

The assessment considers benzene with respect to the 2010 objective. Previous rounds of Review and Assessment found that there were no major fuel storage depots and the situation has not changed.

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

5.3 Petrol Stations

Similar to major fuel storage depots, the assessment for petrol stations considers benzene, with respect to the 2010 objective.

Large petrol stations, which have not been covered in previous Review and Assessment reports, are to be assessed if the annual throughput is more than 2,000m³ of petrol and if situated next to a busy road (>30,000 annual average traffic flow).

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

5.4 Poultry Farms

Poultry farms in the Local Authority that house more than 400,000 birds if mechanically ventilated, 200,000 birds if naturally ventilated, and 100,000 birds for a turkey unit, require consideration in this assessment to establish whether there is relevant exposure within 100m of the poultry units. The assessment considers PM₁₀.

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

6. Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

The assessment considers both NO₂ and PM₁₀. There is a biomass combustion plant operating at Stansted Airport. However, this plant does not currently meet the criteria for the assessment.

Uttlesford District Council confirms that there are no biomass combustion plants in the Local Authority area which meet the criteria for assessment.

6.2 Biomass Combustion – Combined Impacts

Whilst small biomass installations may be individually acceptable, there is a possibility that the combined effects of two or more installations could lead to unacceptably high PM₁₀ concentrations.

Uttlesford District Council confirms that there are no combined impacts from biomass combustion plants in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

The assessment for domestic solid-fuel burning considers SO₂ emissions from significant areas that use solid fuels to heat houses. ‘Significant areas’ are defined as areas approximately 500x500m with more than 50 houses burning solid fuel as their primary source of heating.

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

7. Fugitive or Uncontrolled Sources

The assessment of fugitive and uncontrolled sources considers the PM₁₀ objectives. This includes consideration to quarries, landfill sites, opencast coal mining, waste transfer sites and materials handling. Only locations not covered by previous rounds of Review and Assessment, or where there is new relevant exposure, require consideration. In the case of proposed new sources, they are only required to be considered if planning approval has been granted.

Uttlesford 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

The monitoring undertaken within the District has shown that there were exceedences of the NO₂ annual mean AQO at site UT005 and UT028. However, both of these locations are within the AQMA. There were no other exceedences of any of the AQOs in 2011.

There is no requirement to proceed to a Detailed Assessment for any of the other monitoring stations or pollutants.

8.2 Conclusions from Assessment of Sources

The assessment of sources has concluded that there are no new or significantly changed sources identified within the District.

8.3 Proposed Actions

The USA has not identified any need to proceed to a Detailed Assessment for any pollutant.

The USA has not identified any need for additional monitoring or changes to the current monitoring programme.

The next action for UDC will be to submit a 2013 Progress Report.

9. References

Defra (2009) *Local Air Quality Management: Technical Guidance*. London: Defra Publications. (LAQM.TG(09)).

Defra (2012) *Checking Precision and Accuracy of Triplicate Tubes* [online] Available from:
http://laqm.defra.gov.uk/documents/AEA_DifTPAB_v04.xls

Uttlesford District Council (2009) *Local Air Quality Management Updating and Screening Assessment*.

Uttlesford District Council (2010) *Local Air Quality Management Annual Progress Report*.

Uttlesford District Council (2011) *Local Air Quality Management Annual Progress Report*.

Uttlesford District Council (2012) *Cabinet Meeting Held On 10/05/12* [online] Available from:
<http://ggpweb.uttlesford.gov.uk/CmiswebPublic/Meeting.aspx?meetingID=9258>

Appendix A

Diffusion Tube Raw Data 2011

Table A1 – Raw Results Nitrogen Dioxide ($\mu\text{g m}^{-3}$)

| Site ID | Location | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Raw Mean |
|---------|----------------------------|---------|------|------|------|---------|---------|------|------|------|------|---------|---------|----------|
| UT001 | Walden 1 PO High Street | 56.7 | 52.3 | 42.6 | 52.9 | 34.4 | 34.9 | 35.1 | 37.2 | 46.2 | 51.7 | 55.4 | 50.3 | 45.8 |
| UT003 | Walden 3 Gibson Gardens | 28.7 | 26.7 | 15.0 | 16.6 | 9.6 | 9.7 | 9.2 | 12.9 | 13.8 | 19.3 | 32.1 | missing | 17.6 |
| UT004 | Walden 4 YHA | missing | 57.3 | 40.3 | 42.5 | 31.2 | missing | 44.2 | 45.7 | 47.9 | 58.0 | 62.3 | 50.1 | 48.0 |
| UT005 | Walden 5 Thaxted Road | 67.5 | 57.7 | 57.5 | 58.4 | 51.4 | 40.7 | 44.0 | 46.3 | 51.6 | 55.7 | 59.9 | 55.5 | 53.9 |
| UT011 | Walden 11 33 High Street | 49.3 | 40.5 | 39.6 | 34.0 | 23.2 | 31.6 | 32.3 | 37.9 | 37.1 | 43.2 | 46.4 | 45.6 | 38.4 |
| UT012 | Walden 12 Town Hall | 32.4 | 30.3 | 26.3 | 17.9 | 13.1 | 14.0 | 14.7 | 17.3 | 22.6 | 27.6 | 34.9 | 22.3 | 22.8 |
| UT013 | Fire Station 1 Co-located | 38.3 | 34.4 | 29.7 | 23.2 | 16.0 | 17.7 | 15.7 | 19.2 | 23.8 | 30.5 | 37.0 | 30.3 | 26.3 |
| UT014 | Fire Station 2 Co-located | 37.3 | 32.1 | 31.2 | 28.1 | 20.6 | 18.8 | 15.7 | 19.4 | 23.9 | 30.8 | 40.4 | 29.5 | 27.3 |
| UT027 | Fire Station 3 Co-located | 36.9 | 34.8 | 26.7 | 25.2 | 15.9 | 16.6 | 15.7 | 18.1 | 24.0 | 30.5 | 37.6 | 31.3 | 26.1 |
| UT028 | Walden 16 London Road | 65.2 | 56.1 | 54.2 | 50.0 | 36.9 | 49.5 | 39.0 | 45.5 | 53.2 | 48.3 | 57.4 | 55.7 | 50.9 |
| UT029 | Walden 17 Debden Road | 39.9 | 38.3 | 25.7 | 25.0 | 17.5 | 22.0 | 18.4 | 21.8 | 28.0 | 34.4 | 46.7 | 27.9 | 28.8 |
| UT030 | Walden 18 Friends School | missing | 39.9 | 44.6 | 18.7 | missing | 23.3 | 26.2 | 24.9 | 27.9 | 37.3 | 45.9 | 27.3 | 31.6 |
| UT002 | Airport 1 Thatched Cottage | 39.5 | 34.0 | 21.6 | 27.9 | 16.5 | 18.8 | 21.4 | 23.9 | 23.2 | 20.7 | missing | 24.0 | 24.7 |
| UT007 | Airport 2 Rose Cottage | 34.2 | 32.2 | 27.9 | 26.5 | 11.9 | 17.1 | 20.0 | 22.5 | 22.2 | 31.1 | 37.8 | 35.1 | 26.5 |

| Site ID | Location | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Raw Mean |
|---------|-------------------------------|---------|------|------|------|---------|------|------|------|------|------|------|---------|----------|
| UT006 | Stansted | 25.0 | 25.5 | 23.0 | 17.0 | 9.3 | 12.2 | 12.7 | 12.0 | 16.3 | 23.4 | 33.1 | 19.7 | 19.1 |
| UT008 | Hallingbury | 43.1 | 47.1 | 42.2 | 41.8 | 18.6 | 24.8 | 28.2 | 19.3 | 24.1 | 39.2 | 51.3 | 23.7 | 33.6 |
| U00 9 | Burton End | missing | 54.7 | 51.0 | 43.1 | 36.6 | 40.4 | 45.3 | 45.0 | 37.5 | 48.4 | 51.3 | 53.4 | 46.1 |
| UT010 | Newport | 35.9 | 40.7 | 25.4 | 30.8 | 26.6 | 27.5 | 26.8 | 25.0 | 26.9 | 38.4 | 41.6 | 34.9 | 31.7 |
| UT024 | Takeley Hill Hatfield Forest | 24.6 | 22.2 | 20.1 | 13.1 | missing | 9.7 | 8.7 | 12.1 | 11.4 | 19.5 | 28.0 | 17.7 | 17.0 |
| UT025 | Elman's Green Hatfield Forest | 25.2 | 21.9 | 16.5 | 16.3 | 10.6 | 12.1 | 12.0 | 14.3 | 14.7 | 17.0 | 28.4 | 18.7 | 17.3 |
| UT026 | South Gate Hatfield Forest | 22.6 | 22.6 | 15.8 | 13.0 | 6.2 | 11.1 | 9.1 | 13.2 | 14.3 | 19.0 | 26.6 | missing | 15.8 |

Note: Figures in bold indicate a value above the annual mean AQO limit value of 40 $\mu\text{g m}^{-3}$.

Appendix B QA/QC Data

Diffusion Tube Bias Adjustment Factors

Below is a screenshot of the spreadsheet used to derive the local bias adjustment factor.

Checking Precision and Accuracy of Triplicate Tubes

From the AEA group

| Diffusion Tubes Measurements | | | | | | | | | | Automatic Method | | Data Quality Check | |
|------------------------------|--------------------------|------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|-----------------------|-------------------------------------|-------------------|------------------|---------------------------|-----------------------------|------------------------------|
| Period | Start Date dd/mm/yyyy | End Date dd/mm/yyyy | Tube 1 μgm^{-3} | Tube 2 μgm^{-3} | Tube 3 μgm^{-3} | Triplicate Mean | Standard Deviation | Coefficient of Variation (CV) | 95% CI of mean | Period Mean | Data Capture (% DC) | Tubes Precision Check | Automatic Monitor Data |
| 1 | 05/01/2011 | 02/02/2011 | 38.3 | 37.3 | 36.9 | 38 | 0.7 | 2 | 1.8 | 31.3 | 99 | Good | Good |
| 2 | 02/02/2011 | 02/03/2011 | 34.4 | 32.1 | 34.8 | 34 | 1.5 | 4 | 3.6 | 23.7 | 77 | Good | Good |
| 3 | 02/03/2011 | 30/03/2011 | 29.7 | 31.2 | 26.7 | 29 | 2.3 | 8 | 5.7 | 27.3 | 99 | Good | Good |
| 4 | 30/03/2011 | 27/04/2011 | 23.2 | 28.1 | 25.2 | 26 | 2.5 | 10 | 6.1 | 23.37 | 95 | Good | Good |
| 5 | 27/04/2011 | 01/06/2011 | 16.0 | 20.6 | 15.9 | 18 | 2.7 | 15 | 6.7 | 17 | 99 | Good | Good |
| 6 | 01/06/2011 | 29/06/2011 | 17.7 | 18.8 | 16.6 | 18 | 1.1 | 6 | 2.7 | 18 | 68 | Good | or Data Capture |
| 7 | 29/06/2011 | 03/08/2011 | 15.7 | 15.7 | 15.7 | 16 | 0.0 | 0 | 0.0 | 16 | 67 | Good | or Data Capture |
| 8 | 03/08/2011 | 31/08/2011 | 19.2 | 19.4 | 18.1 | 19 | 0.7 | 4 | 1.7 | 16 | 56 | Good | or Data Capture |
| 9 | 31/08/2011 | 28/09/2011 | 23.8 | 23.9 | 24.0 | 24 | 0.1 | 0 | 0.2 | 20 | 78 | Good | Good |
| 10 | 28/09/2011 | 02/11/2011 | 30.5 | 30.8 | 30.5 | 31 | 0.2 | 1 | 0.4 | 25 | 76 | Good | Good |
| 11 | 02/11/2011 | 30/11/2011 | 37.0 | 40.4 | 37.6 | 38 | 1.8 | 5 | 4.5 | 23.47 | 100 | Good | Good |
| 12 | 30/11/2011 | 04/01/2012 | 30.3 | 29.5 | 31.3 | 30 | 0.9 | 3 | 2.2 | 21.71 | 90 | Good | Good |
| 13 | | | | | | | | | | | | | |

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Site Name/ID: Saffron Walden Fire Station

| | |
|--|----------------------------------|
| Accuracy (with 95% confidence interval) | |
| without periods with CV larger than 20% | |
| Bias calculated using 9 periods of data | |
| Bias factor A | 0.8 (0.71 - 0.91) |
| Bias B | 25% (10% - 40%) |
| Diffusion Tubes Mean: | 30 μgm^{-3} |
| Mean CV (Precision): | 5 |
| Automatic Mean: | 24 μgm^{-3} |
| Data Capture for periods used: | 90% |
| Adjusted Tubes Mean: | 24 (21 - 27) μgm^{-3} |

Precision 12 out of 12 periods have a CV smaller than 20%

| | |
|--|----------------------------------|
| Accuracy (with 95% confidence interval) | |
| WITH ALL DATA | |
| Bias calculated using 9 periods of data | |
| Bias factor A | 0.8 (0.71 - 0.91) |
| Bias B | 25% (10% - 40%) |
| Diffusion Tubes Mean: | 30 μgm^{-3} |
| Mean CV (Precision): | 5 |
| Automatic Mean: | 24 μgm^{-3} |
| Data Capture for periods used: | 90% |
| Adjusted Tubes Mean: | 24 (21 - 27) μgm^{-3} |

Overall survey --> Good precision Poor Overall DC

(Check average CV & DC from Accuracy calculations)

Jaume Targa, for AEA
Version 04 - February 2011

QA/QC of Diffusion Tube Monitoring

Environmental Scientific Group takes part in the Workplace Analysis Scheme for Proficiency (WASP). Their performance for each quarter in 2011 is summarised in the table below. The table provides a percentage of results submitted which were subsequently determined to be satisfactory based upon a z-score of $\leq \pm 2$.

| Jan- Mar 2011 | Apr-Jun 2011 | Jul- Sep 2011 | Oct- Dec 2011 |
|---------------|--------------|---------------|---------------|
| 100% | 100% | 100% | 100% |

Appendix C

List of Permitted Processes 2011

| Operator | X | Y | Process | New source |
|---------------------------|--------|--------|---------------------------------------|------------|
| Acrow Galvanizing | 555276 | 239193 | Hot Dip galvanizing | N |
| Printpack | 554852 | 238389 | Printing of flexible packaging | N |
| SGA Technologies Ltd | 554790 | 238262 | Surface cleaning using over 1 ton R40 | Y |
| SGA Technologies Ltd | 554790 | 238262 | Surface treatment of metal | Y |
| ReadyMix Concrete | 551280 | 224940 | Concrete batching | N |
| Station Coachworks | 563006 | 221415 | Vehicle respraying | N |
| E Corr x 2 | 555210 | 225480 | Concrete crushing | N |
| Airline Services Ltd | 554600 | 222400 | Dry Cleaning | N |
| Barkers of Dunmow | 562717 | 222049 | Dry Cleaning | N |
| Saffron Walden Laundry Co | 553835 | 228344 | Dry Cleaning | N |
| Suit-ability | 553748 | 238429 | Dry Cleaning | N |
| TyreMart | 563633 | 220947 | Small waste oil burner | N |
| Roding Motor Services | 560740 | 215940 | Small waste oil burner | N |
| Jet | 551242 | 225469 | Petrol Vapour Recovery | N |
| TCS Stansted | 550983 | 225125 | Petrol Vapour Recovery | N |
| Dunmow Convenience Stores | 563649 | 220749 | Petrol Vapour Recovery | N |
| Tesco Stores Ltd | 555080 | 238370 | Petrol Vapour Recovery | N |
| Tesco Stores Ltd | 561533 | 221968 | Petrol Vapour Recovery | N |
| Welcome Break | 551226 | 221246 | Petrol Vapour Recovery | N |
| Starthill Service Station | 551838 | 221498 | Petrol Vapour Recovery | N |
| Saracens Filling Station | 561320 | 230830 | Petrol Vapour Recovery | N |
| Stansted AP | 552780 | 222747 | Petrol Vapour Recovery | N |
| BP Oil UK | 554903 | 222036 | Petrol Vapour Recovery | N |
| Avis Rent a Car | 555118 | 222781 | Petrol Vapour Recovery | N |
| Hertz Rent a Car | 555162 | 222820 | Petrol Vapour Recovery | N |
| Europcar UK Ltd | 555154 | 222829 | Petrol Vapour Recovery | N |
| Central garage | 552087 | 233578 | Petrol Vapour Recovery | N |
| Shire Hill garage | 554608 | 237981 | Petrol Vapour Recovery | N |