



2009 Air Quality Updating and Screening Assessment

Stratford-on-Avon District Council

Document Control

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3				

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Executive Summary

This report presents the findings of Stratford-on-Avon District Council's third Updating and Screening Assessment (USA) of air quality within the District. The USA evaluates new and changed sources to identify those that may give rise to a risk of an exceedence of an air quality objective. Results from monitoring within the Borough are also presented and evaluated in relation to the objectives. Where a risk of an exceedence is identified at a relevant location the Council will proceed to a Detailed Assessment.

Previous air quality assessments have concluded that concentrations of carbon monoxide, benzene, 1,3-butadiene, lead, sulphur dioxide and PM₁₀ are compliant with UK objectives. An Air Quality Management Area (AQMA) was declared in Studley in 2006 for exceedences of the nitrogen dioxide annual mean objective. In 2008 a Detailed Assessment for Stratford-upon-Avon and Henley-in-Arden was carried out, as concentrations of nitrogen dioxide exceeded the objectives, and it was concluded that further AQMAs were required. These AQMAs are to be formerly declared in 2009.

Monitoring data for 2008 show that there are no additional exceedences of the objectives at the existing monitoring points, therefore there is no requirement to proceed to a Detailed Assessment. The USA has not identified any significant changes in emissions sources within the Stratford-on-Avon District. There have been no new relevant industrial installations and no new or substantially altered roads within the Stratford-on-Avon District. There are also no new significant commercial, domestic or fugitive sources of emissions.

Table of Contents

1	Introduction	4
1.1	Description of Local Authority Area	4
1.2	Purpose of Report	4
1.3	Air Quality Objectives	4
1.4	Summary of Previous Review and Assessments	6
2	New Monitoring Data	9
2.1	Summary of Monitoring Undertaken	9
2.2	Comparison of Monitoring Results with AQ Objectives	11
3	Road Traffic Sources	14
3.1	Narrow Congested Streets with Residential Properties Close to the Kerb	14
3.2	Busy Streets Where People May Spend 1-hour or More Close to Traffic	14
3.3	Roads with a High Flow of Buses and/or HGVs.	14
3.4	Junctions	15
3.5	New Roads Constructed or Proposed Since the Last Round of Review and Assessment	15
3.6	Roads with Significantly Changed Traffic Flows	15
3.7	Bus and Coach Stations	15
4	Other Transport Sources	16
4.1	Airports	16
4.2	Railways (Diesel and Steam Trains)	16
4.3	Ports (Shipping)	16
5	Industrial Sources	17
5.1	Industrial Installations	17
5.2	Major Fuel (Petrol) Storage Depots	17
5.3	Petrol Stations	17
5.4	Poultry Farms	18
6	Commercial and Domestic Sources	19
6.1	Biomass Combustion – Individual Installations	19
6.2	Biomass Combustion – Combined Impacts	19
6.3	Domestic Solid-Fuel Burning	19
7	Fugitive or Uncontrolled Sources	20
8	Conclusions and Proposed Actions	21
8.1	Conclusions from New Monitoring Data	21
8.2	Conclusions from Assessment of Sources	21
8.3	Proposed Actions	21
9	References	22

Appendices

Appendix A: QA/QC Data

Appendix B: 2008 Diffusion Tube Data

Appendix C: Monitoring Locations

1 Introduction

1.1 Description of Local Authority Area

Stratford-on-Avon is a mostly rural district and covers most of the southern half of Warwickshire. As well as Stratford, the district also includes the towns of Alcester, Southam, and Shipston-on-Stour, and the large villages of Studley and Wellesbourne.

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 Local Air Quality Management (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.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in England are set out in the Air Quality (England) Regulations 2000 and the Air Quality (Amendment) (England) Regulations 2002, and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (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 Local Air Quality Management in England.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Stratford-on-Avon District Council undertook a Stage 1 and Stage 2 assessment as part of their round 1 air quality assessment work. The Council concluded that there was no requirement to declare an Air Quality Management Area in the District for any pollutant.

The second round of Review and Assessment consisted initially of an Updating and Screening Assessment (July 2003), which concluded that one location, in the vicinity of Alcester Road, Studley was as an area where the nitrogen dioxide objective may not be met. The Detailed Assessment produced in November 2004 concluded, however, that the UK objectives for annual average and hourly mean nitrogen dioxide would not be exceeded in 2005 at any location within central Studley. It was therefore recommended that Stratford-on-Avon District Council should not declare an Air Quality Management Area for Alcester Road, Studley. The results of the Detailed Assessment were accepted by Defra, providing further monitoring was carried out in Studley to clarify the situation.

An Addendum to the Detailed Assessment was therefore submitted to Defra in November 2005 which presented monitoring data for a six month period between May and October 2005. Five monitoring sites were established on the eastern side of Alcester Road, and a collocation study was commenced at the automatic monitoring site. The fully adjusted monitoring data confirmed that exceedences of the annual mean nitrogen dioxide objective were likely, and that an AQMA would therefore be required in Studley.

The Studley AQMA was declared in February 2006 for exceedences of the nitrogen dioxide annual mean objective. The AQMA includes properties numbered 1 and 9 to 31 Alcester Road, and associated land.

In the third round, the Council's Updating and Screening Assessment (April 2006) concluded that the Council was not required to carry out a Detailed Assessment for any pollutant. With the exception of the Alcester Road, Studley AQMA, all monitoring locations met the 2005 annual mean objective for nitrogen dioxide. However, the diffusion tube located in Wood Street, Stratford-upon-Avon, measured high concentrations of nitrogen dioxide, and hence the USA recommended a 12-month collocation study at this new location.

As part of round 3, the Council was required to submit a Progress Report in 2007. Due to unforeseen circumstances, this was not undertaken. However, a review of monitoring data, which took place in 2007, highlighted the need for the Council to undertake a Detailed Assessment for nitrogen dioxide. This was submitted in 2008.

The 2008 Progress Report constituted the Progress Report for 2007 and 2008, reporting monitoring data available since the Updating and Screening Assessment 2006. The report concluded that there were exceedences of the annual mean nitrogen dioxide objective at relevant locations outside of the Studley AQMA. These locations were identified as Henley-in-Arden and Wood Street, Grove Road, Greenhill Street and Tiddington Road in Stratford-upon-Avon. The Council were therefore required to undertake a Detailed Assessment for nitrogen dioxide at these locations.

The 2008 Detailed Assessment concluded that AQMAs should be declared for exceedences of the nitrogen dioxide annual mean objective encompassing properties representing relevant exposure, within Henley-in-Arden and Stratford-upon-Avon, that lie within the predicted $36 \mu\text{g}/\text{m}^3$ contour, shown in Figures 1, 2 and 3. For Tiddington Road, where modelling has not been possible, an AQMA was recommended based on monitoring data alone.

A new monitoring campaign began in January 2008, and data from this study are presented in this report and will be used to inform the Further Assessment, which will be required to be submitted within 12 months of the declaration of the AQMAs.

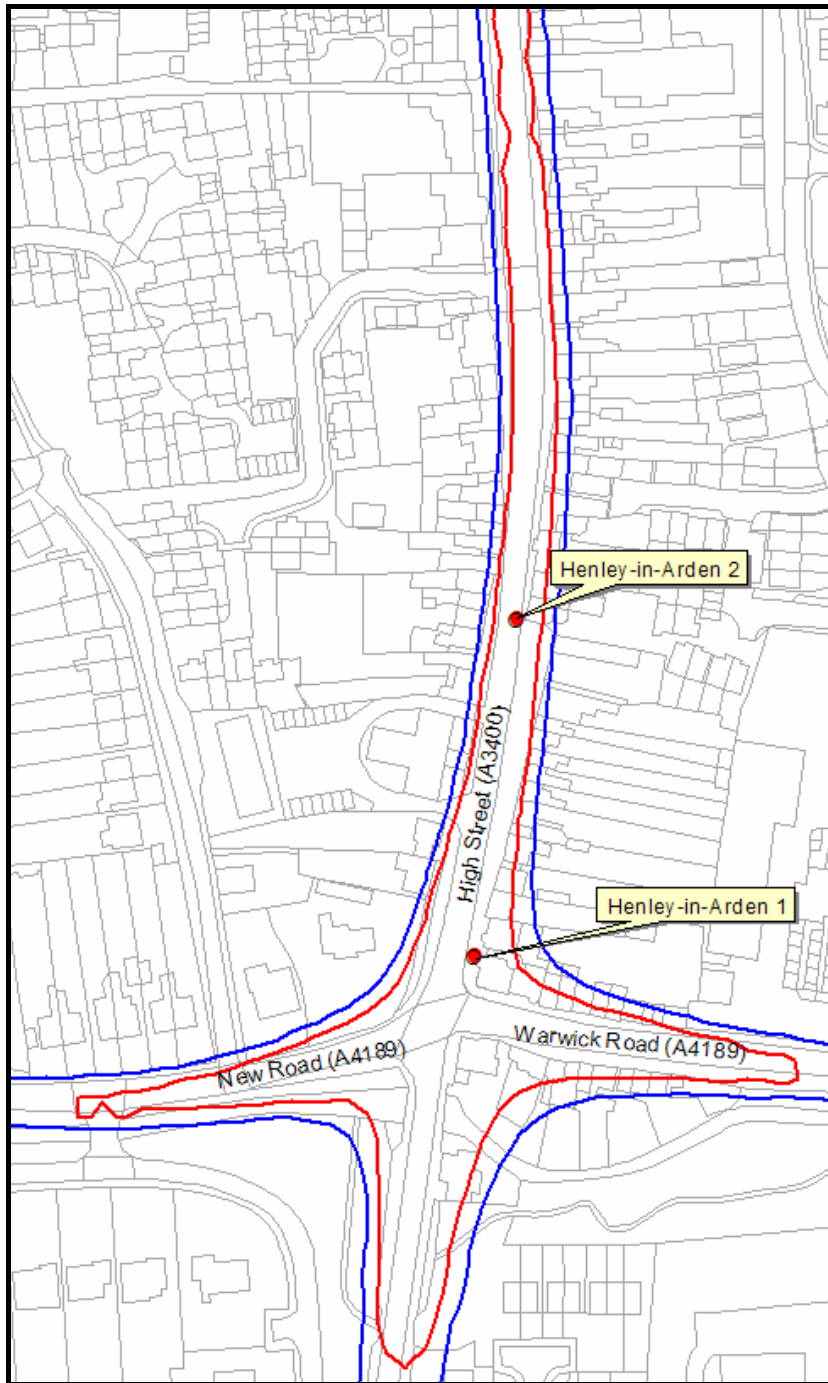


Figure 1: Modelled annual mean nitrogen dioxide concentrations in 2007 ($\mu\text{g}/\text{m}^3$) within the Henley-in-Arden study area. The red line represents the $40 \mu\text{g}/\text{m}^3$ contour, whilst the blue line represents the $36 \mu\text{g}/\text{m}^3$ contour. © Crown copyright. All rights reserved. Stratford-on-Avon District Council 100024287 2009.

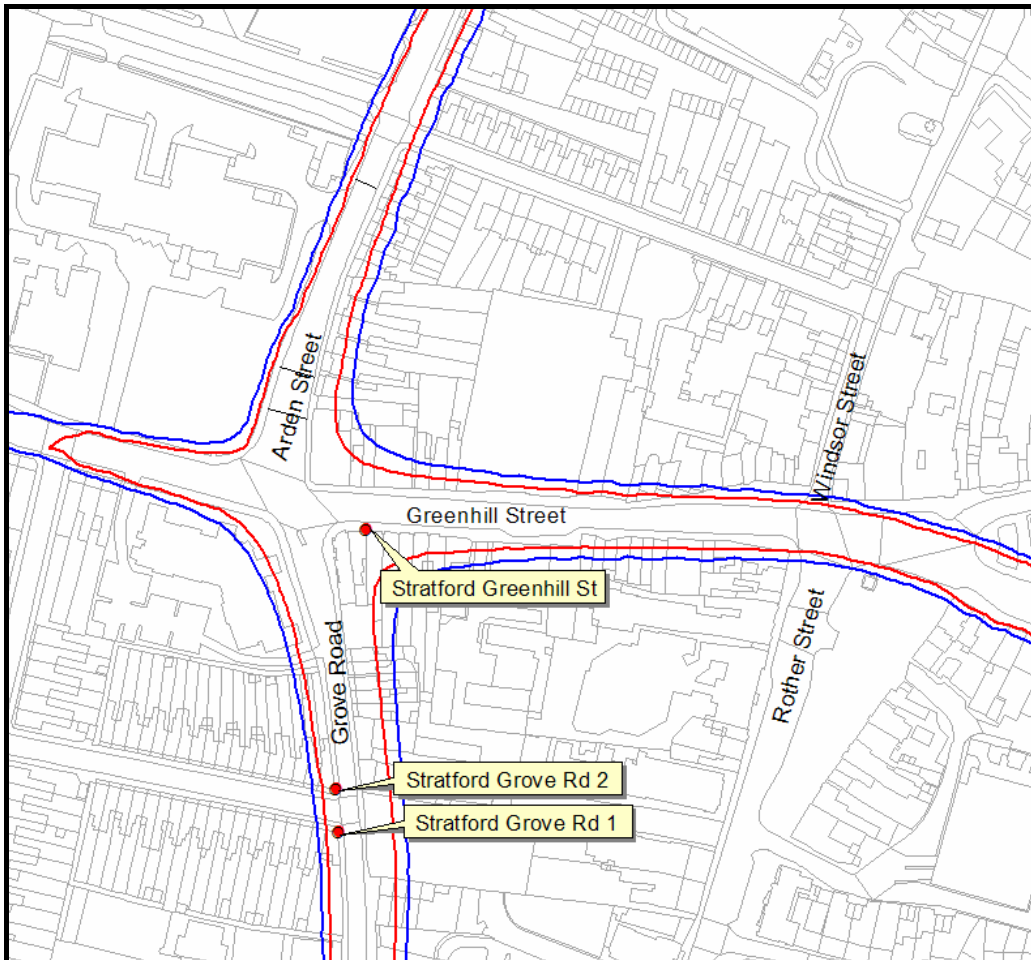


Figure 2: Modelled annual mean nitrogen dioxide concentrations in 2007 ($\mu\text{g}/\text{m}^3$) around the Grove Road/ Arden Street junction, within the Stratford-upon-Avon study area. The red line represents the $40 \mu\text{g}/\text{m}^3$ contour, whilst the blue line represents the $36 \mu\text{g}/\text{m}^3$ contour. © Crown copyright. All rights reserved. Stratford-on-Avon District Council 100024287 2009.

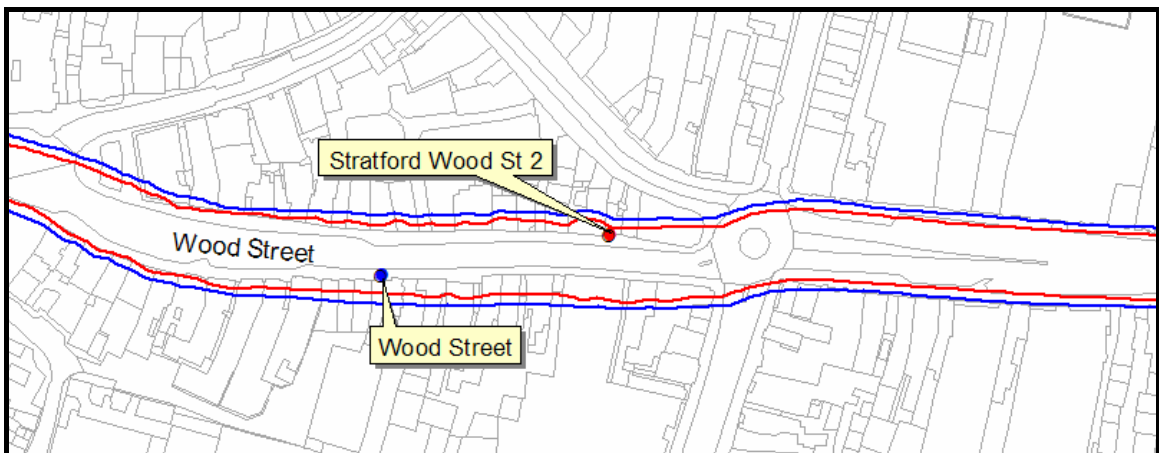


Figure 3: Modelled annual mean nitrogen dioxide concentrations in 2007 ($\mu\text{g}/\text{m}^3$) around Wood Street, within the Stratford-upon-Avon study area. The red line represents the $40 \mu\text{g}/\text{m}^3$ contour, whilst the blue line represents the $36 \mu\text{g}/\text{m}^3$ contour. © Crown copyright. All rights reserved. Stratford-on-Avon District Council 100024287 2009.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Stratford-on-Avon District Council previously operated an automatic chemiluminescence monitor for nitrogen dioxide. This did not have a fixed location, and had been located in Stratford-upon-Avon (at 13 Wood Street, the location can be found in Appendix C) between August 2006 and July 2007. There was a break in all monitoring from July 2007 until January 2008. Thereafter only diffusion tubes have been used in the district, with no co-located automatic monitors. More details of the previous automatic monitoring can be found in the Progress Report 2008.

2.1.2 Non-Automatic Monitoring

Stratford-on-Avon District Council currently have 25 diffusion tubes in the district, figures showing the location of all monitoring sites are presented in Appendix C.

Table 2.1 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In Current AQMA?	In Future AQMA?	Relevant Exposure?	Distance to Kerb of Nearest Road	Worst-case Location?
Henley High Street	Roadside	415078, 265542	NO ₂	N	Y	Y	2.5	Y
Bidford Grange Golf Club	Background	411719, 251629	NO ₂	N	N	N	n/a	n/a
Alcester High Street	Roadside	408957, 257364	NO ₂	N	N	Y	1.5	N
S/A, Elizabeth House Garden	Urban Background	419 931, 254693	NO ₂	N	N	N	59.7	n/a
Shipston on Stour	Roadside	425 896, 240530	NO ₂	N	N	Y	1.5	Y
Wellesbourne	Roadside	427988, 255437	NO ₂	N	N	Y	8.1	N
S/A, Shipston Road	Roadside	420683, 254421	NO ₂	N	N	Y	6.0	N
Bidford on Avon	Rural	409915, 251807	NO ₂	N	N	Y	n/a	n/a
S/A, Brewery Street	Urban Background	419948, 255342	NO ₂	N	N	Y	43.5	n/a
Studley, Alcester Road	Roadside	407300, 263873	NO ₂	Y	Y	Y	2.7	Y
S/A, Guild Street	Roadside	420066, 255172	NO ₂	N	N	Y	1.6	Y
Southam	Roadside	441839, 261770	NO ₂	N	N	Y	9.5	N
Henley High Street	Kerbside	415089, 265631	NO ₂	N	Y	Y	0	N
Studley office	Roadside	407309, 263991	NO ₂	N	N	Y	14.4	N
S/A, Tiddington Road	Kerbside	420710, 254818	NO ₂	N	N	Y	1	Y
Bridgefoot multistorey car park	Other (car park)	420435, 255054	NO ₂	N	N	N	58.3	n/a
S/A, Wood Street	Roadside	420059, 254978	NO ₂	N	N	Y	2.3	N
S/A, Ely Street	Roadside	419972, 254869	NO ₂	N	N	Y	1.8	N
S/A, Grove Road	Roadside	419759, 254917	NO ₂	N	Y	Y	1.4	Y
S/A, Greenhill Street	Roadside	419768, 255016	NO ₂	N	Y	Y	2.7	Y
S/A, Grove Road	Roadside	419758, 254931	NO ₂	N	Y	Y	1.4	Y
S/A, Wood Street	Roadside	420127, 254990	NO ₂	N	Y	Y	3.1	Y

^a Average concentration of two collocated diffusion tubes

^b Average concentration of three collocated diffusion tubes

Stratford-on-Avon District Council uses diffusion tubes analysed by Kent Scientific Services, prepared using the 20% TEA in water method. Kent Scientific Services laboratory precision was good. The lab does not participate in the WASP¹ scheme but does participate in the AEA intercomparison study. Kent Scientific Services follow procedures set out in the Harmonisation Practical Guidance. In 2008 a bias

¹ The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical performance testing scheme, operated by the Health and Safety Laboratory (HSL)

adjustment factor of 0.91 has been applied to the diffusion tube data (R&A website, spreadsheet version 03/09).

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

During the twelve month period August 2006 to July 2007, automatic monitoring was carried out in Stratford-upon-Avon. Data from this period can be found in the 2008 progress report. The automatic monitor has not been in operation since July 2007.

Diffusion Tube Monitoring Data

The nitrogen dioxide concentrations measured by diffusion tubes show that the annual mean objective has been met at all locations outside of the current and future AQMAs (Table 2.2a and 2.2b).

Table 2.2a Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within Current AQMA?	In Future AQMA?	Data Capture 2008 %	Annual mean concentrations
					2008 (mg/m ³) Adjusted for Bias
1	Henley High Street	N	Y	100	40.0
2	Bidford Grange Golf Club	N	N	100	12.7
3	Alcester High Street	N	N	100	27.8
4	S/A, Elizabeth House Garden	N	N	83	15.6
5	Shipston on Stour	N	N	100	27.2
6	Wellesbourne	N	N	83	18.9
7	S/A, Shipston Road	N	N	100	25.5
8	Bidford on Avon	N	N	92	29.8
9	S/A, Brewery Street	N	N	100	22.4
10	Studley, Alcester Road	Y	Y	100	48.6
11	S/A, Guild Street	N	N	83	34.4
12	Southam	N	N	83	25.0
13	Henley High Street	N	Y	100	45.5
14/15	Studley office	N	N	100	25.0 ^a
16	S/A, Tiddington Road	N	Y	100	49.6
22	Bridgefoot multistorey car park	N	N	100	25.4
23/24/25	S/A, Wood Street	N	Y	100	45.2 ^b
26	S/A, Ely Street	N	N	67	25.6
27	S/A, Grove Road	N	Y	92	47.0
28	S/A, Greenhill Street	N	Y	75	40.9
29	S/A, Grove Road	N	Y	92	44.6
30	S/A, Wood Street	N	Y	92	44.6
Objective					40

^a Average concentration of two collocated diffusion tubes

^b Average concentration of three collocated diffusion tubes

In 2008 a bias adjustment factor of 0.91 has been applied (R&A website, spreadsheet version 03/09). Prior to January 2008, there was a break in monitoring from July 2007. A twelve month monitoring campaign was carried out using diffusion tubes during the period August 2006 to July 2007. As the data do not represent a calendar year, a 2007 annual mean equivalent concentration was determined for each site. A local bias adjustment factor was calculated from a collocation study carried out at the Wood Street automatic monitoring site during the entire 12 month period. A bias adjustment factor of 1.012 was determined and has been applied to the 2007 annual mean equivalent concentrations. The results are presented in Table 2.2b. The 2007 and 2008 results present a similar picture. The exceedences are all within existing or future AQMAs.

Table 2.2b Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within Current AQMA?	Within Future AQMA?	Annual mean concentrations (mg/m ³) Adjusted for Bias	
				2007 ^a	2008 ^b
1	Henley High Street	N	Y	43.7	40.0
2	Bidford Grange Golf Club	N	N	14.4	12.7
3	Alcester High Street	N	N	29.5	27.8
4	S/A, Elizabeth House Garden	N	N	14.7	15.6
5	Shipston on Stour	N	N	28.1	27.2
6	Wellesbourne	N	N	20.4	18.9
7	S/A, Shipston Road	N	N	26.7	25.5
8	Bidford on Avon	N	N	36.8	29.8
9	S/A, Brewery Street	N	N	23.9	22.4
10	Studley, Alcester Road	Y	Y	51.8	48.6
11	S/A, Guild Street	N	N	38.2	34.4
12	Southam	N	N	25.9	25.0
13	Henley High Street	N	Y	50.0	45.5
14/15	Studley office	N	N	27.9 ^a	25.0 ^a
16	S/A, Tiddington Road	N	Y	50.2	49.6
22	Bridgefoot multistorey car park	N	N	26.4	25.4
23/24/25	S/A, Wood Street	N	Y	44.6^b	45.2^b
26	S/A, Ely Street	N	N	24.1	25.6
27	S/A, Grove Road	N	Y	47.8	47.0
28	S/A, Greenhill Street	N	Y	47.2	40.9
29	S/A, Grove Road	N	Y	42.8	44.6
30	S/A, Wood Street	N	Y	45.1	44.6
Objective				40	40

^a Bias adjustment factor of 1.012 for 2007 (local bias adjustment factor)

^b Bias adjustment factor of 0.91 for 2008 (R&A website, spreadsheet version 03/09)

2.2.2 Other pollutants monitored

Stratford-on-Avon District Council does not carry out monitoring for any other pollutants.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

The criteria for assessing narrow congested streets are set out in Box 5.3, section A1 of TG(09). The traffic flow required to trigger a Detailed Assessment has reduced since the last Updating and Screening Assessment from 10,000 vpd to 5,000 vpd. A narrow congested street has been identified in Henley but the area has been assessed and an AQMA is due to be declared. There are no other locations, even at the lower threshold, which have not been considered previously.

Stratford-on-Avon 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

The criteria for assessing busy streets relevant for the hourly nitrogen dioxide objective are set out in Box 5.3, section A2 of TG(09) and are unchanged from previous rounds of Review and Assessment. Two locations have been identified in Stratford town but the area has been assessed in the recent Detailed Assessment and no annual mean concentrations of over $60 \mu\text{g}/\text{m}^3$ have been found. Therefore it is unlikely that the hourly nitrogen dioxide objective will be exceeded. An AQMA is due to be declared for the annual mean objective covering these locations.

Stratford-on-Avon District Council has assessed new/newly identified busy streets where people may spend 1 hour or more close to traffic, that were not assessed in previous rounds of Review and Assessment, and concluded that it will not be necessary to proceed to a Detailed Assessment.

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

The criteria for assessing roads with high flows of buses and/ or HGVs are set out in Box 5.3, section A3 of TG(09) and are unchanged from previous rounds of Review and Assessment. Roads with high flows of buses and/ or HGVs were considered in previous Updating and Screening Assessments and no such locations identified.

Stratford-on-Avon District Council confirms that there are no new/newly identified roads with high flows of buses/HGVs.

3.4 Junctions

The criteria for assessing junctions are set out in Box 5.3, section A4 of TG(09) and are unchanged from previous rounds of Review and Assessment. Junctions were considered in detail in previous Updating and Screening Assessments and where relevant have been included in Detailed Assessments and subsequent AQMA declarations.

Stratford-on-Avon 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

The criteria for assessing new roads are set out in Box 5.3, section A5 of TG(09) and are unchanged from previous rounds of Review and Assessment.

Stratford-on-Avon District Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

The criteria for assessing roads with significantly changed traffic flows are set out in Box 5.3, section A6 of TG(09) and are unchanged from previous rounds of Review and Assessment.

Stratford-on-Avon District Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

The criteria for assessing bus and coach stations are set out in Box 5.3, section A7 of TG(09) and are unchanged from previous rounds of Review and Assessment. Bus and coach stations were considered in previous Updating and Screening Assessments and no such locations identified.

Stratford-on-Avon District Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

The criteria for assessing airports are set out in Box 5.4, section B1 of TG(09) and are less stringent than previous rounds of Review and Assessment. Airports were considered in previous Updating and Screening Assessments and no such locations identified.

Stratford-on-Avon District Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

The criteria for assessing stationary locomotives are set out in Box 5.4, section B2 of TG(09) (Approach 1) and are unchanged from previous rounds of Review and Assessment. Locations where diesel locomotives may regularly remain stationary for 15 minutes or more were considered in previous Updating and Screening Assessments and no such locations identified.

Stratford-on-Avon 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

The criteria for assessing moving locomotives are set out in Box 5.4, section B2 of TG(09) (Approach 2) and are a new section for the 2009 Updating and Screening Assessment. None of the rail lines listed in Table 5.1 of the Technical Guidance LAQM.TG(09) travel through the district. Therefore there are no locations with a 'large number' of movements of diesel locomotives.

Stratford-on-Avon 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 criteria for assessing ports are set out in Box 5.4, section B3 of TG(09) and are unchanged from previous rounds of Review and Assessment. Stratford-on-Avon District Council has no coastline and therefore no significant shipping to consider.

Stratford-on-Avon District Council is landlocked and therefore 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

The criteria for assessing industrial installations are set out in Box 5.5, section C1 of TG(09) and are unchanged from previous rounds of Review and Assessment.

Stratford-on-Avon 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

None of the industrial installations identified in previous Updating and Screening Assessments have substantially increased emissions and no new exposure has been introduced nearby.

Stratford-on-Avon 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.

5.2 Major Fuel (Petrol) Storage Depots

The criteria for assessing major fuel (petrol) storage depots are set out in Box 5.5, section C2 of TG(09) and are unchanged from previous rounds of Review and Assessment. Major petrol storage depots were considered in the previous Updating and Screening Assessments and no such locations identified.

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

5.3 Petrol Stations

The criteria for assessing petrol stations are set out in Box 5.5, section C3 of TG(09) and are unchanged from previous rounds of Review and Assessment. All petrol filling stations were considered in the previous Updating and Screening Assessments and were found not to be relevant.

Stratford-on-Avon District Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

The criteria for assessing poultry farms are set out in Box 5.5, section C4 of TG(09) and are a new section for the 2009 Updating and Screening Assessment. No farms exceeding the relevant criteria (turkey units with greater than 100,000 birds, naturally ventilated units with greater than 200,000 birds or mechanically ventilated units with greater than 400,000 birds) have been identified.

Stratford-on-Avon 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 criteria for assessing biomass combustion (individual installations) are set out in Box 5.8, section D1 of TG(09) and is a new section for the 2009 Updating and Screening Assessment. Stratford-on-Avon District Council has not identified any biomass boilers between 50kW and 20MW.

Stratford-on-Avon District Council confirms that there are no significant biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

The criteria for assessing biomass combustion (combined impacts) are set out in Box 5.8, section D2 of TG(09) and is a new section for the 2009 Updating and Screening Assessment. Stratford-on-Avon District Council has an estimated worst case PM₁₀ background concentration of 19 µg/m³ in 2009. Using the nomograms and worst case emissions factors (wood burning) provided in TG(09) there would need to be a *minimum* of over 200 households within a 500m by 500m grid square all using wood as their primary fuel. Using this fact, and local knowledge of the district, it is considered highly unlikely that there are any areas of biomass combustion exceeding these criteria.

Stratford-on-Avon confirms that it is highly unlikely that there are significant impacts of biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

The criteria for assessing domestic solid-fuel burning are set out in Box 5.8, section D2 of TG(09) and are unchanged from previous Review and Assessments. The likelihood of areas of domestic solid-fuel burning exceeding the criteria is considered highly unlikely.

Stratford-on-Avon confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

The criteria for assessing fugitive or uncontrolled sources are set out in Box 5.10, section E1 of TG(09) and are unchanged from previous Review and Assessments. There is a waste recycling site in Napton-on-the-Hill, where one dwelling may be exposed to unacceptable levels of dust (which may pose a risk to the PM₁₀ objectives). However, there are planning controls in place which, if implemented, should make emissions acceptable. This location will be reviewed in future Review and Assessments if planning controls aren't implemented, or there are dust complaints from the property.

Stratford-on-Avon has considered the waste recycling site in Napton-on-the-Hill. Currently, due to planning controls in place, it is considered that it is unlikely it will compromise the PM₁₀ objectives. Stratford-on-Avon District Council confirms that there are no other potential sources of fugitive particulate matter emissions in the Local Authority area. Napton-on-the-Hill waste recycling site will be considered in future Review and Assessments if planning controls are not implemented.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

This Updating and Screening Assessment confirms that air quality within Stratford-on-Avon district continues to meet the relevant air quality objectives outside of the declared AQMA and the locations about to be declared as AQMAs. The concentrations within the AQMA and proposed AQMAs continue to be above the annual mean nitrogen dioxide objective. There is therefore no requirement to proceed to a Detailed Assessment for any pollutant.

8.2 Conclusions from Assessment of Sources

The USA has not identified any significant changes in emissions sources within the Stratford-on-Avon district. There have been no new relevant industrial installations and no new or substantially altered roads within Stratford-on-Avon District area. There are also no new significant commercial, domestic or fugitive sources of emissions.

8.3 Proposed Actions

This Updating and Screening Assessment confirms that there is no requirement to proceed to a Detailed Assessment for any pollutant.

A Progress Report will be submitted in 2010. In addition, an action plan for Studley is currently being adopted by Stratford-on-Avon District Council and will be implemented and reported on in future Progress Reports. Once the AQMAs are declared in Stratford-upon-Avon and Henley-in-Arden a Further Assessment will be due within 12 months.

9 References

Department for Environment, Food and Rural Affairs (2009), *Part IV of the Environment Act 1995: Local Air Quality Management, Progress Report Guidance LAQM.PRG(09)*. DEFRA, London.

Stratford-on-Avon District Council (2006) Air Quality Updating and Screening Assessment for Stratford-on-Avon District Council. April 2006.

Stratford-on-Avon District Council (2008) Detailed Assessment of Air Quality in Stratford-on-Avon District Council. May 2008.

Stratford-on-Avon District Council (2008) Air Quality Progress Report 2008. May 2008.

Appendices

Appendix A: QA/QC Data

Appendix B: 2008 Diffusion Tube Data

Appendix C: Monitoring Locations

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Stratford-on-Avon District Council uses diffusion tubes analysed by Kent Scientific Services, prepared using the 20% TEA in water method. In 2008 a bias adjustment factor of 0.91 has been applied to the diffusion tube data (R&A website, spreadsheet version 03/09). This factor was based on only one study (AEA intercomparison). This factor has been used as Stratford-on-Avon District Council did not carry out a co-location study in 2008.

QA/QC of automatic monitoring

The chemiluminescence monitor, when it was operational, was serviced at 6-monthly intervals by Enviro Technology. Fortnightly calibrations were carried out by Stratford-on-Avon District Council using certified calibration gases supplied by BOC. The hourly NO_x and NO data were then scaled based on the fortnightly calibration data.

QA/QC of diffusion tube monitoring

The lab does not participate in the WASP scheme but does participate in the AEA Intercomparison study. In the intercomparison study, Kent Scientific Services laboratory achieved good precision.

Appendix B: 2008 Diffusion Tube Data

Site no.	07 Jan	04 Feb	04 Mar	04 Apr	01 May	30 May	02 Jul	30 Jul	04 Sep	01 Oct	30 Oct	03 Dec	Average	Adjusted Average
	04 Feb	04 Mar	04 Apr	01 May	30 May	02 Jul	30 Jul	04 Sep	01 Oct	30 Oct	03 Dec	08 Jan		
1	36.03	52.43	35.94	41.14	71.15	38.79	29.94	33.29	54.73	41.71	43.33	48.82	43.94	39.99
2	19.07	28.18	10.57	10.53	10.28	7.09	7.80	4.97	11.16	14.31	22.76	21.20	13.99	12.73
3	30.27	36.43	27.71	26.46	26.29	22.14	21.83	20.11	34.41	34.86	44.51	42.05	30.59	27.84
4	15.27			10.03	17.59	9.13	7.98	8.43	18.08	16.18	23.87	44.39	17.10	15.56
5	24.08	34.27	22.40	27.89	40.24	22.65	18.34	22.19	35.53	27.28	41.72	42.01	29.88	27.19
6	17.39	35.81	26.21	17.09	25.62	13.79	13.64	13.10	23.43	21.79			20.79	18.92
7	28.68	35.74	24.64	17.86	21.87	23.56	20.60	20.61	31.11	32.84	40.22	38.65	28.03	25.51
8	17.81	45.87	25.93	26.92	47.64		24.81	22.98	39.48	23.02	39.47	46.52	32.77	29.82
9	24.58	35.27	21.39	12.45	18.01	16.74	17.20	20.16	26.49	30.39	35.37	37.80	24.65	22.44
10	44.04	66.10	42.04	53.38	83.86	41.29	47.85	34.97	61.71	47.30	60.98	57.85	53.45	48.64
11	31.59	48.50	34.21	32.87	52.87	28.66	27.23	30.01	46.17		46.17		37.83	34.42
12	25.42	38.30	28.76	21.08			13.28	17.94	26.75	28.65	38.61	35.94	27.47	25.00
13	42.71	60.31	44.40	44.10	57.70	40.58	30.66	37.90	56.14	53.07	67.06	65.50	50.01	45.51
14	23.88		19.87	22.21	18.42	24.93	19.75	20.83	26.22	28.33	39.63	39.07	25.74	23.42
15	24.85	36.25	26.98	20.69	18.00	24.38	19.51	20.40	30.33	30.53	46.82	41.04	28.32	25.77
14/15	24.37	36.25	23.43	21.45	18.21	24.66	19.63	20.62	28.28	29.43	43.23	40.06	27.47	24.99
16	40.23	61.77	44.54	51.07	56.39	47.85	49.87	54.33	62.09	53.74	62.64	69.53	54.50	49.60
22	23.87	34.40	26.65	23.78	28.45	21.28	20.99	21.72	32.50	28.17	37.56	35.56	27.91	25.40
23	48.24	61.68	48.70	46.06	52.96	41.75	40.14	45.67	56.40	47.45	60.27	53.99	50.28	45.75
24	47.44	47.14	45.29	45.11	51.46	42.27	41.79	37.72	59.66	53.25	57.18	59.50	48.98	44.58
25	43.06	61.12	45.35	55.43	49.69	38.74	40.87	45.07	58.62	48.39	57.05	54.72	49.84	45.36
23/24/25	46.25	56.65	46.45	48.87	51.37	40.92	40.93	42.82	58.23	49.70	58.17	56.07	49.70	45.23
26	18.26	39.03			32.68	14.17	14.20		30.51		35.98	40.25	28.14	25.60
27	52.01		50.06	44.55	50.75	35.35	37.59	48.37	50.43	58.55	68.59	72.29	51.69	47.03
28	46.45		43.42	35.36		36.54	36.96	42.09	57.10	48.96		57.89	44.97	40.93
29	49.13		45.59	44.30	45.22	41.50	48.91	40.89	53.53	52.29	55.63	61.95	48.99	44.59
30		61.06	48.00	40.60	64.78	36.99	38.32	32.34	58.35	37.92	59.19	61.95	49.05	44.63

^a Bias adjustment factor of 0.91

Appendix C: Monitoring Locations

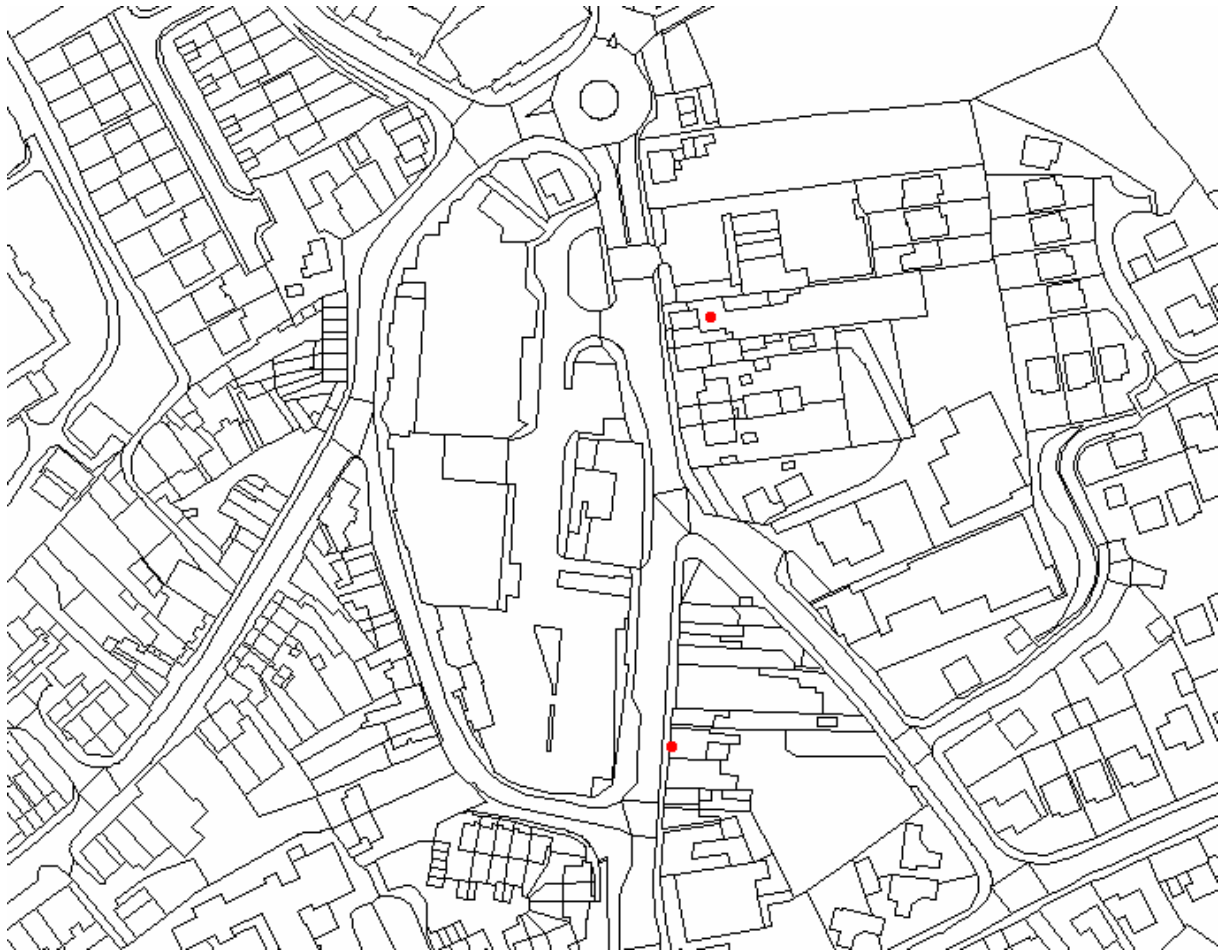


Figure AC.1: Studley – Alcester Road diffusion tube monitoring locations.

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Figure AC.2: Alcester High Street diffusion tube monitoring location. © Crown copyright. All rights reserved. Stratford-on-Avon District Council 100024287 2009.

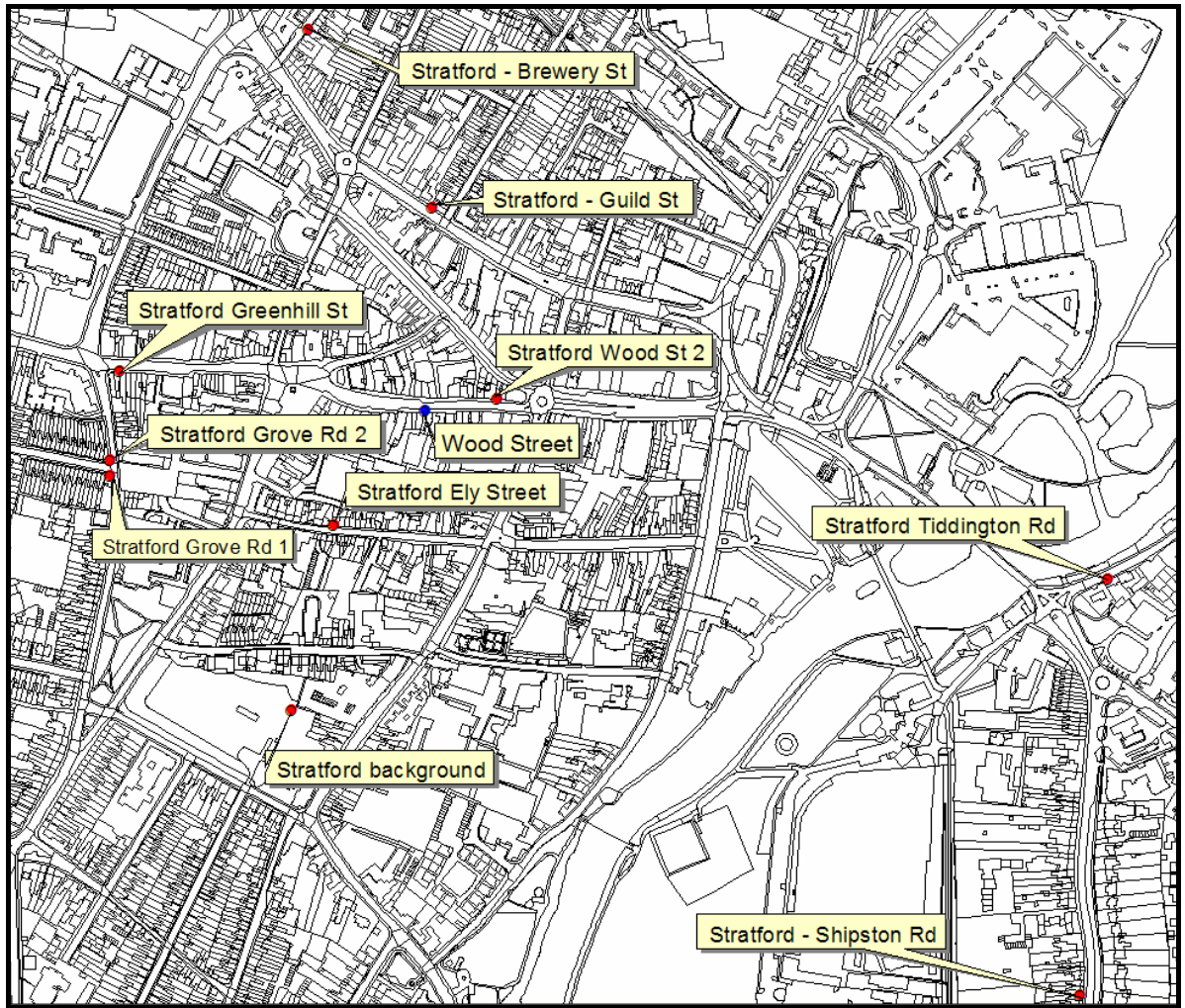


Figure AC.3: Stratford-upon-Avon monitoring locations. Red dots indicate diffusion tube locations; blue dots indicate automatic monitoring locations. © Crown copyright. All rights reserved. Stratford-on-Avon District Council 100024287 2009.

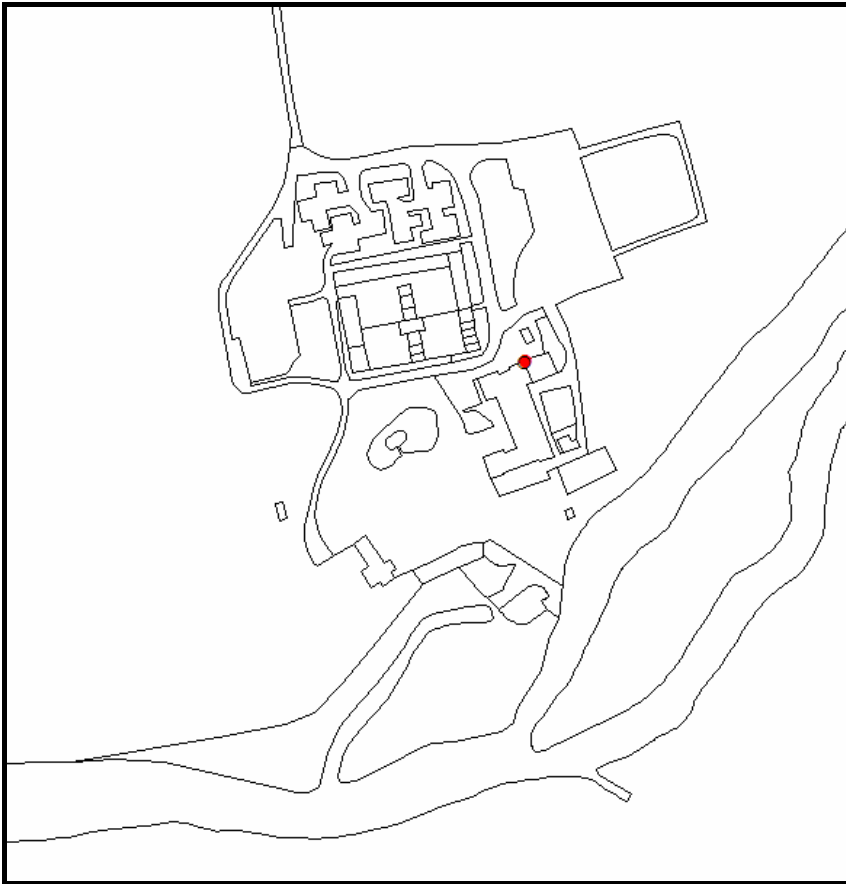


Figure AC.4: Bidford Grange Golf Club diffusion tube monitoring location. © Crown copyright. All rights reserved. Stratford-on-Avon District Council 100024287 2009.



Figure AC.5: Wellesbourne diffusion tube monitoring location. © Crown copyright. All rights reserved. Stratford-on-Avon District Council 100024287 2009.

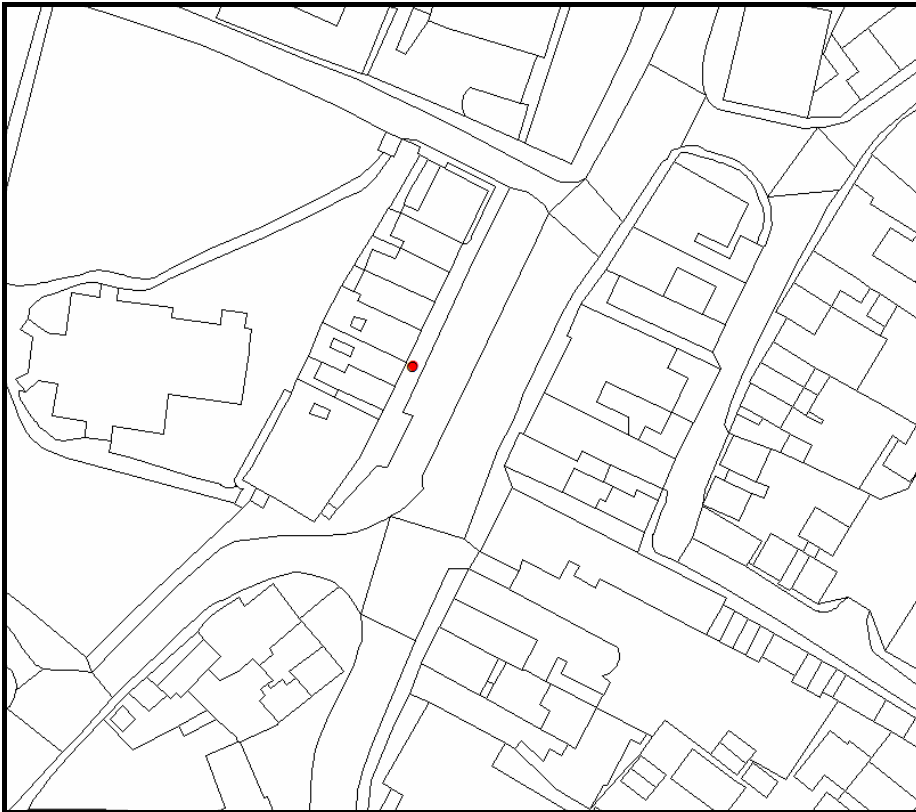


Figure AC.6: Southam diffusion tube monitoring location. © Crown copyright. All rights reserved. Stratford-on-Avon District Council 100024287 2009.



Figure AC.7: Shipston-on-Stour diffusion tube monitoring location. © Crown copyright. All rights reserved. Stratford-on-Avon District Council 100024287 2009.

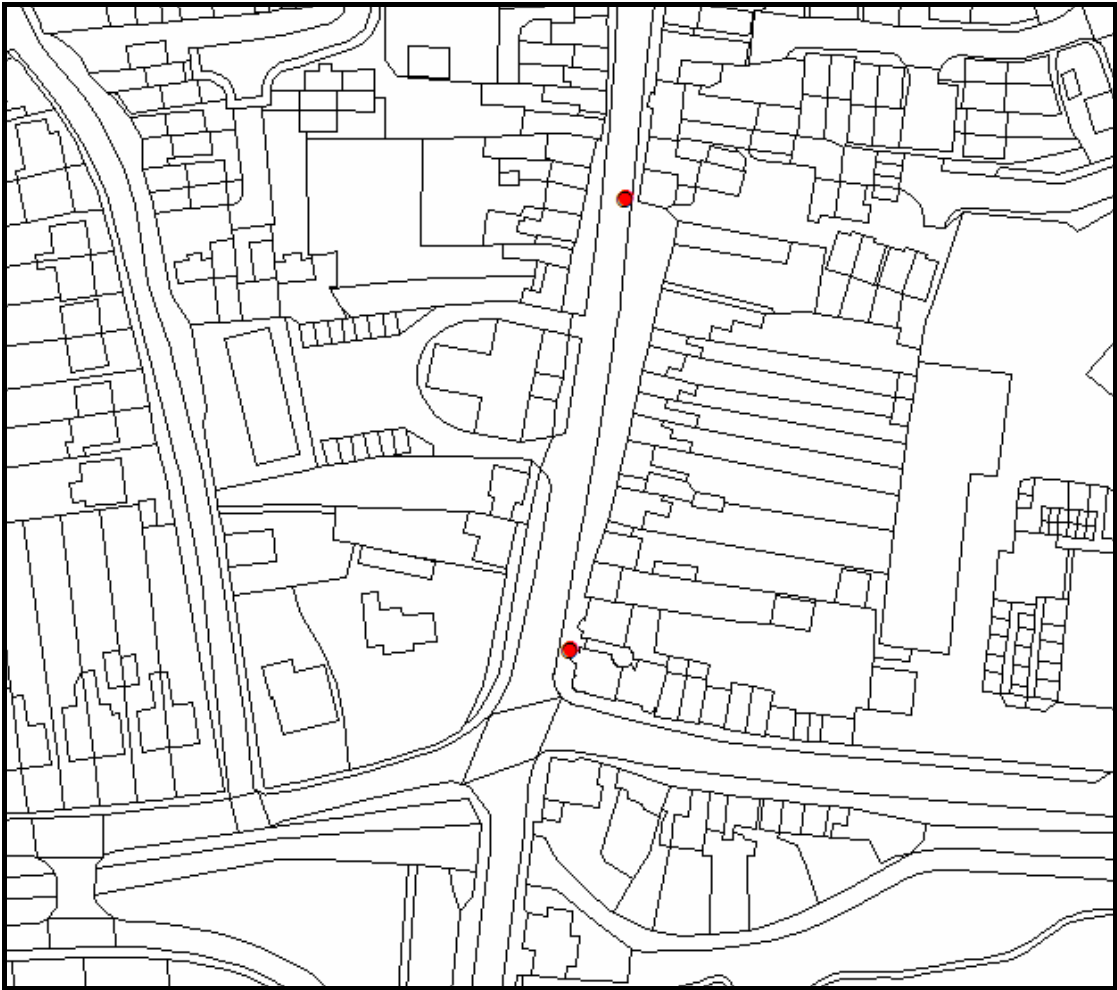


Figure AC.8: Henley-in-Arden diffusion tube monitoring locations. © Crown copyright. All rights reserved. Stratford-on-Avon District Council 100024287 2009.