

Local Air Quality Management

**Detailed Assessment
March 2010**

Wilton, Wiltshire

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Wiltshire Council – report log

Status	Author / Checked by	Date
Draft DA	Peter Nobes / Gary Tomsett	Feb 2009
Final draft	Peter Nobes / Gary Tomsett	April 2009
Corporate Branding		April 2009
Final draft issued for consultation		May 2009
Final Report issued	Peter Nobes / Gary Tomsett	March 2010

Doc reference no: WCS/DA10/1

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Executive summary

This Detailed Assessment (DA) forms part of the statutory duties surrounding the process of Local Air Quality Management (LAQM) and the on-going process of air quality assessment within the Wiltshire Council area. Part IV of the Environment Act 1995 requires local authorities to periodically review air quality within their areas. This process of LAQM is integral to delivering the UK Air Quality Objectives (AQO).

This Detailed Assessment aims to identify with reasonable certainty whether the Air Quality Objectives are likely to be exceeded at relevant locations¹ and the requirement to declare an Air Quality Management Area (AQMA) in these areas.

The report concludes that an AQMA is not required for Wilton, but that current Air Quality monitoring in the town should continue at the currently employed monitoring locations.

¹ Relevant exposure is defined in the most recent DEFRA technical guidance, LAQM TG(09), as locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective. For the annual mean objective, Box 1.4 clarifies this to be; 'All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc'.

Contents

Executive Summary

	<u>Page</u>	
Chapter 1	Introduction	5
	Figure 1.1 – Location of Wilton study area	6
1.2	The Local Air Quality Management Framework	6
	Table 1.1 – UK air quality standards	7
1.3	Previous Salisbury District Council assessments	8
Chapter 2	Review of existing air quality monitoring data	9
2.1	Passive diffusion tube monitoring	9
	Figure 2.1 – Passive diffusion tube monitoring sites	9
	Table 2.1 - Details of monitoring sites..	10
	Table 2.2 – Summary of passive diffusion tube monitoring..	11
Chapter 3	Conclusions and recommendations	12
3.1	Discussion of monitoring results	12
3.2	Dispersion modelling	12
3.3	Conclusions to the detailed assessment	12
3.4	Recommendations	12

Chapter 1 – Introduction

1.1 The scope of the Detailed Assessment

This Detailed Assessment considers the air quality in the immediate vicinity of Queen Street, Wilton. It has been prepared by Wiltshire Council to form part of the statutory duties surrounding Local Air Quality Management (LAQM) under Part IV of the Environment Act, 1995 and subsequent regulations.

The report has been produced as a consequence of the 2009 Updating and Screening Assessment for Wiltshire which indicated a possible exceedence of the Air Quality Standard for Nitrogen Dioxide at a relevant location.

Where a Detailed Assessment indicates that a UK national Air Quality Objectives (AQO's) may potentially be exceeded, the local authority has a duty to declare an Air Quality Management Area (AQMA). The declaration of an AQMA triggers the requirement to carry out a further assessment of the air quality, collecting additional air quality monitoring data over a 12 month period and if the need is confirmed to develop an air quality action plan within 18 months of the original declaration, in consultation with the public.

The air quality action plan details how the authority will work towards reducing air pollution levels so that the relevant air quality objectives are met.

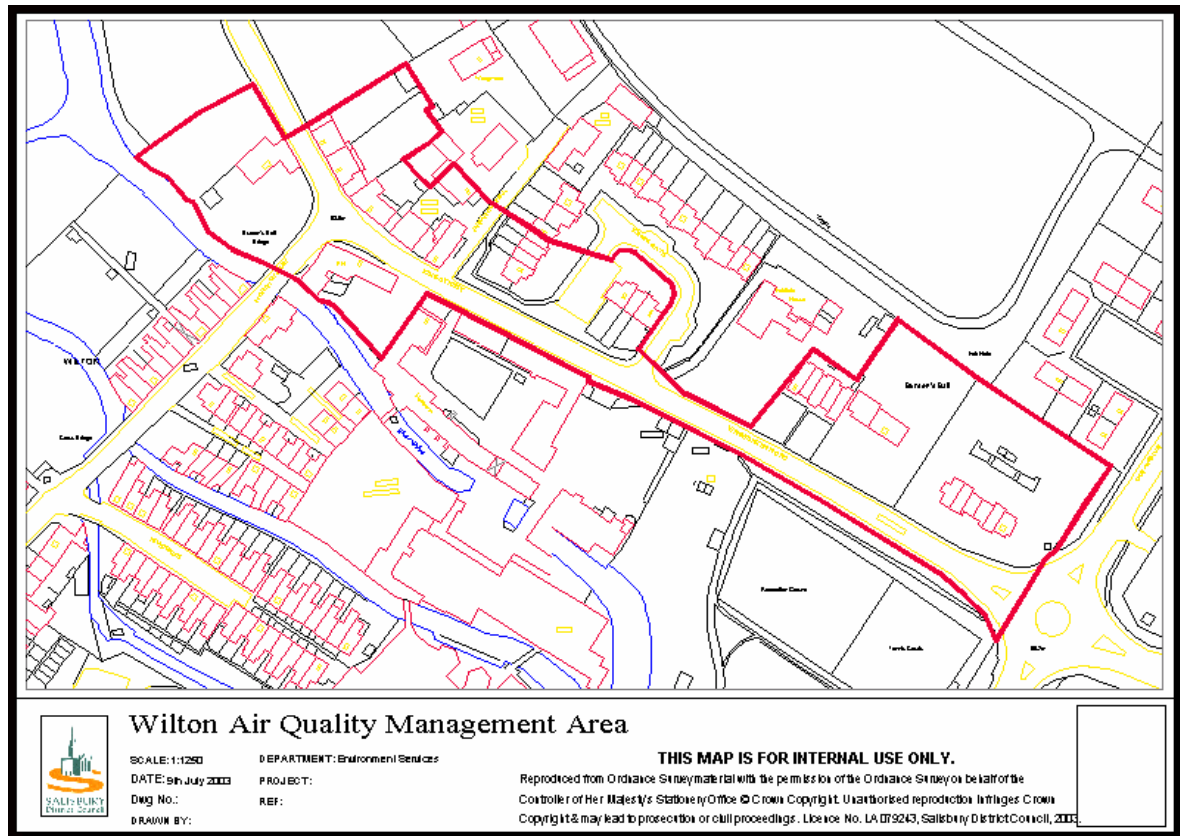
This Detailed Assessment is focussed in Wilton on an area originally declared as an AQMA by Salisbury District Council in 2003. The AQMA stretched along the A36 from just to the north of the junction of the A30, running up to the railway bridge over the A36. The road is the main A36 connecting Salisbury and Bath but also provides access to the A30 in Wilton itself and the A303 at Deptford.

The road is a single carriageway heading approximately east west with a busy roundabout providing access to the A30 and the Wilton outlet shopping facility and a well used link to the A360 and Devizes.

The area was formally declared as an AQMA in 2003 but following a further assessment the AQMA was revoked in September 2004.

Monitoring in the vicinity of the initial exceedence was expanded and the likelihood of a wider area being affected recognised following the submission of the 2008 progress report. This was reported in the 2009 Updating and Screening Assessment and the requirement to complete a detailed assessment was reported.

Figure 1.1 – Location of Wilton study area, Wilton, Wiltshire.



1.2 The Local Air Quality Management framework

Part IV of the Environment Act, 1995 requires that local authorities periodically review air quality within their areas. This process of Local Air Quality Management (LAQM) is an integral part of delivering the UK AQO's first detailed in 1997 with updates in the Air Quality (England) Regulations 2000 and again in the Air Quality Standards Regulations 2007 (hereafter referred to as the Regulations).

The Regulations seek to simplify air quality regulation and provide a new transposition of the European Union (EU) Air Quality Framework Directive, First, Second and Third Daughter Directives and also transpose the Fourth Daughter Directive, relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air. The Air Quality Limit Values are transposed into the updated Regulations as 'Air Quality Standards' (AQS) with attainment dates in line with the European directives.

The pollutants specified in the Regulations and to be assessed in the review and assessment process, with their relevant AQS/AQO concentrations, are shown in table 1.1. In addition to the regulations, the EU set limit values for NO₂ and benzene and indicative values for PM₁₀, to be achieved by 1 January 2010. This report provides an assessment against the annual mean and 1-hour mean standards for NO₂.

Table 1.1 – UK air quality standards

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

1.3 Previous Salisbury District Council assessments

1.3.1 First Round of Review and Assessment of Air Quality Assessment

The first round of Review and Assessment concluded that the annual mean nitrogen dioxide objective was unlikely to be met at four sites in Salisbury city centre (Fisherton Street, Brown Street, Milford Street and Minster Street), and near the A36 in Wilton. Five AQMA's were subsequently declared in 2003.

A further assessment for all the above AQMA's was carried out in 2004 but the Further Assessment for the Wilton AQMA concluded that monitoring data indicated that the Air Quality Objective would be met.

The Wilton AQMA was thus revoked in 2004.

1.3.2 Progress report 2007

In 2007 the Progress report for the Air Quality Monitoring carried out in Wilton concluded that no further assessment of the Air Quality was required as levels were below the national annual mean Air Quality Objective.

1.3.3 Progress report 2008

Similarly the 2008 progress report concluded that no further assessment would be required.

1.3.4 Updating and Screening Assessment 2009

The 2009 USA for Wiltshire Council concluded that measured concentrations of NO₂ in 2008 indicated an exceedence of the annual mean Air Quality Objective at one location outside of the existing Salisbury AQMA – Queen Street Wilton. It was recommended that this location should be considered further in a Detailed Assessment.

Chapter 2 –Review of existing air quality monitoring data

2.1 Passive diffusion tube monitoring

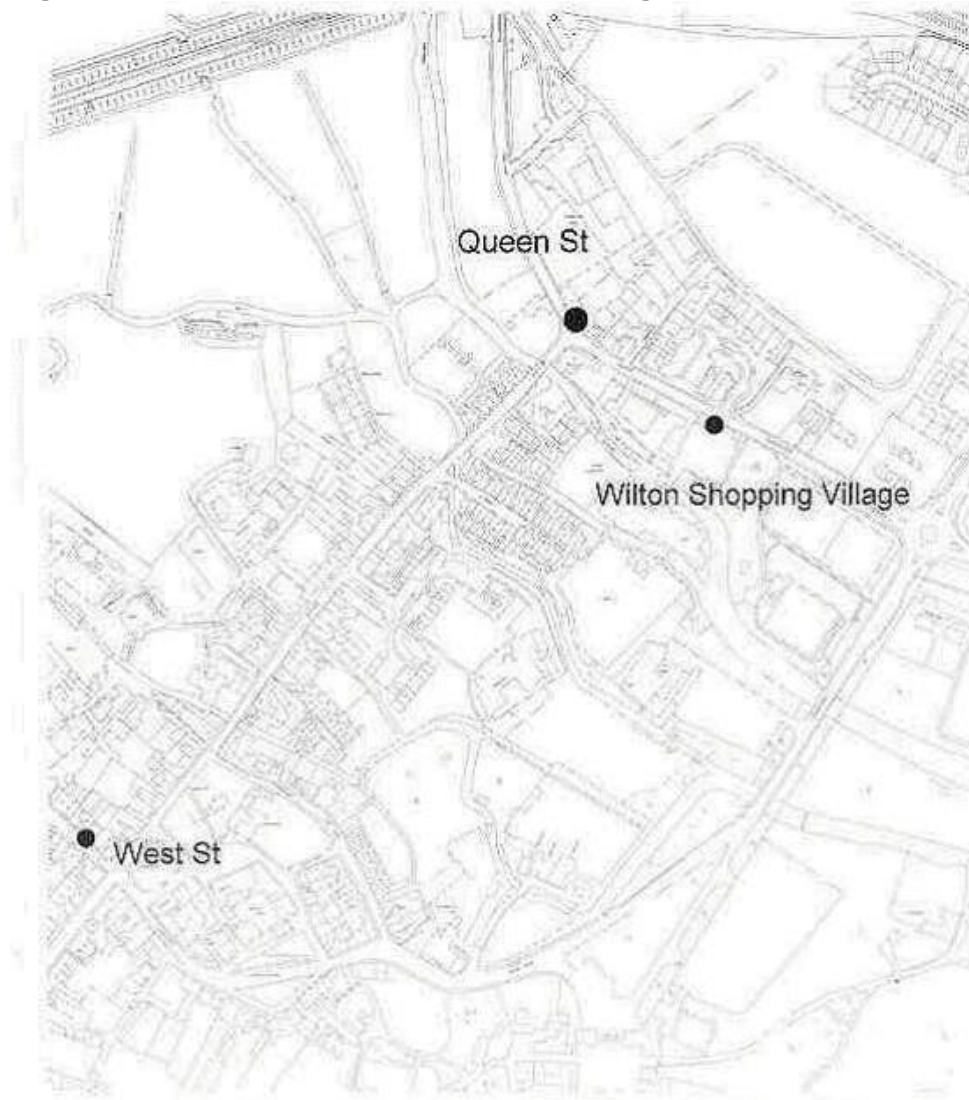
In order to undertake a robust assessment of air quality it is necessary to have suitable monitoring data. This Detailed Assessment is based solely upon the results obtained from the diffusion tube monitoring in Wilton.

There are currently 2 passive diffusion tube monitoring sites located within the Wilton Detailed Assessment area, the location of the monitoring sites is shown on Figure 2.1 below.

The purpose of these locations is to be discussed and the results are included in this Detailed Assessment.

The location of all the monitoring sites employed is shown in Figure 2.1.

Figure 2.1 – Passive diffusion tube monitoring sites in the Wilton Study Area



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The details of the monitoring locations are set out below.

Table 2.1 – Details of monitoring sites

Site Name	Site Type	OS Grid Reference		Relevant Exposure?	Dist to Kerb
12 West Street	Roadside	409600	131236	Y*	1.9
1 Queen Street	Roadside	409931	131553	Y*	1.2

* Both sites were selected as reflecting relevant exposure in worst case locations.

All data has been corrected using the relevant diffusion tube precision, accuracy and bias spreadsheet obtained from the University of the West of England (UWE) review and assessment website at:

<http://www.uwe.ac.uk/aqm/review/R&Asupport/diffusiontube310310.xls>.

This spreadsheet compares bias correction factors from a number of surveys, categorising results on the basis of the laboratory preparing and analysing the tubes and a bias adjustment factor of 0.84 was derived from the spreadsheet for the tubes employed in this survey². This was then combined with a local bias adjustment factor of 0.75 established from 2 co-location studies of diffusion tubes and real time analysers located in Salisbury City Centre to create an overall Wiltshire factor of 0.79³.

² For tubes prepared by Gradko and analysed by Bristol Scientific Services in 2009

³ The method and the calculated factor were approved by the DEFRA Review and Assessment helpdesk.

Table 2.2 – Summary of the passive diffusion tube monitoring in the Wilton study area, 2009 (NO₂ ug/m³)

Site Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Mean (bias)
12 West Street	50.5	44.4	40.8	45.4	36.3	48.7	30.3	27.4	50.9	38.3	44.3	57.4	42.89	32.60
1 Queen Street	47.8	45.8	48.5	50	40.8	49.7	33.3	34.1	58.3	45.1	38.6	49.5	45.13	34.30

Bias adjustment factor of 0.76 (derived internally from two co-location comparison studies as set out in Chapter 2.1)

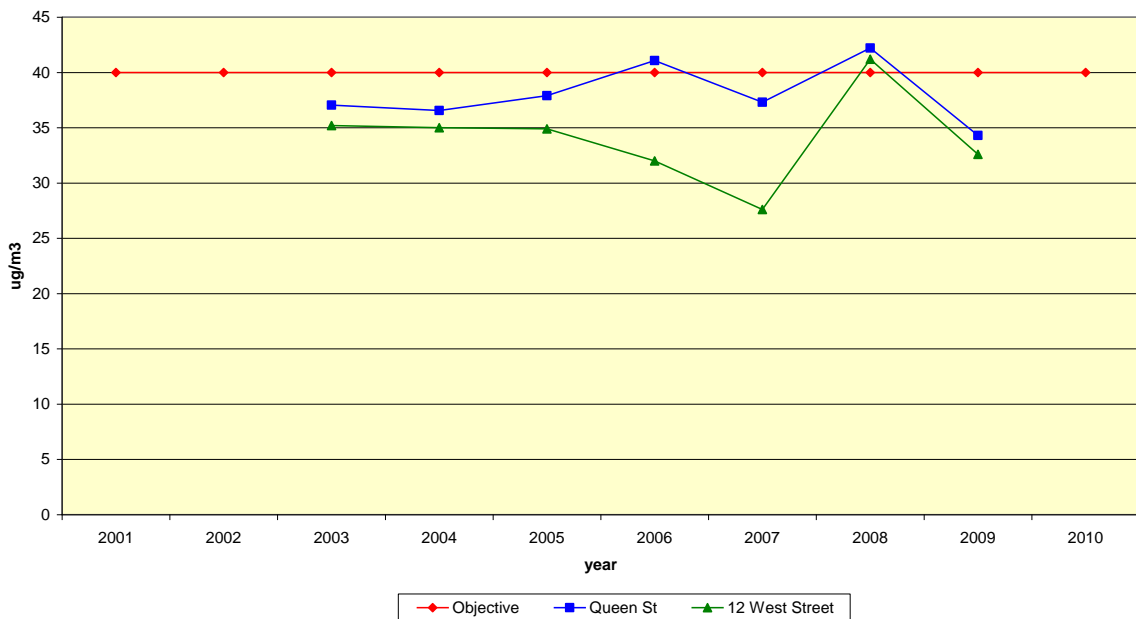
Chapter 3 – Conclusions and recommendations

3.1 Discussion of monitoring results

The diffusion tube monitoring for 2009 presented in table 2.2 confirms that the Annual Mean Air Quality objective for Nitrogen Dioxide in Wilton will not be exceeded.

In order to establish whether the 2009 results reflect an unusually good year for air quality, the historical monitoring of Nitrogen Dioxide in Wilton is set out below in Figure 3.1. While not conclusive, it is reasonable to suggest that the levels experienced in 2009 are in keeping with previous years and not necessarily representative of an exceptional year.

Figure 3.1 Diffusion Tube Monitor Results, Wilton



3.2 Dispersion modelling

No dispersion modelling has been carried out to support the Detailed Assessment.

3.3 Conclusions to the detailed assessment

The primary conclusion to the detailed assessment is that there is currently no need to progress the study area with regard to Local Air Quality Management legislation.

It is proposed to continue to monitor the air quality at both Wilton monitoring sites and to report on the air quality in the area at future reporting stages of the Local Air Quality Management Process.

3.4 Recommendations

- On the basis of the results set out in this Detailed Assessment, Wiltshire Council need not take further formal action in the Wilton study area as no exceedences of the annual mean AQO for nitrogen dioxide have been identified.
- Monitoring of the Air Quality in Wilton will continue as normal.