



2011 Air Quality Progress Report for Watford Borough Council

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

June 2011

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Executive Summary

This is the third Progress Report prepared by Watford Borough Council. It sets out updated air quality monitoring data and assesses whether any new or proposed developments are likely to have a significant effect on air quality concentrations, and in particular whether there is sufficient concern to move immediately to an Updating and Screening Assessment.

Air Quality Monitoring Data

This continues to be provided by real-time analysers monitoring oxides of nitrogen and PM₁₀ particles close to the Town Hall, As well as a network of diffusion tubes monitoring long term nitrogen dioxide concentrations. This network has been reduced from 17 to 15 sites as two locations have consistently recorded concentrations below the nitrogen dioxide objective value.

At the rest of the sites concentrations have remained fairly constant over recent years. At some, concentrations are above the objective value for nitrogen dioxide but these are located within existing Air Quality Management Areas (AQMAs) and there is no need to progress to an Updating and Screening Assessment for any additional locations with the Borough.

New Developments

There have been no new developments within in the Borough that are likely to have a significant effect on air quality.

Revisions to existing Air Quality Management Areas

Since the last Progress report the Council has been finalising its plans to revise the boundaries of the six Air Quality Management Areas that it declared in 2006. This is being done because the Further Assessment of air quality within the AQMAs identified that changes were needed. The following changes are proposed and will be consulted on in 2011:

- Extending the boundary of AQMA 2 (Vicarage Road)
- Amalgamate AQMA 3 (Aldenham Road) and AQMA 4 (Chalk Hill) into a single larger AQMA (AQMA 3A, Aldenham Road and Chalk Hill)
- Reducing the boundary of AQMA 5 (Horseshoe Lane)
- Revoking AQMA 6 (M1 / Meriden).

Air Quality Action Plan

The Council has recently completed the second draft of its Air Quality Action Plan that sets out how it aims to improve air quality within the Air Quality Management Areas. Again this will be consulted on in 2011.

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1 Introduction

1.1 Description of Local Authority Area

Watford is a concentrated urban area situated to the North West of London, with a population of around 81,000. It is a well established regional shopping centre with major rail and road communication links. It has both mainline and underground train stations. The M1 lies along the northern boundary of the borough and the M25 is situated to the west. The borough is also served by several major trunk roads, including the A41, A411, A412 and A405.

1.2 Purpose of Progress Report

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

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

1.3 Air Quality Objectives

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

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

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	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	Maximum daily 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

1.4.1 First Round of Review & Assessment (December 2000)

The combined effect of the Stage 1 and 2 reports of the first round Review and Assessment suggested that a Stage 3 Review and Assessment was only needed for two pollutants: nitrogen dioxide (NO₂) and particulate matter (PM₁₀). Exceedences of the Air Quality Regulation objectives were predicted close to some major roads.

A public exposure assessment was carried out, which concluded that there were no domestic properties within the areas of exceedence. Accordingly no Air Quality Management Areas (AQMA) were declared.

1.4.2 Updating and Screening Assessment (June 2003)

The assessment concluded that there was no need to progress to a Detailed Assessment for carbon monoxide, lead, benzene, 1,3-butadiene, or sulphur dioxide. It was, however, considered necessary to proceed to a Detailed Assessment for NO₂ and PM₁₀ as 23 locations required additional assessment before a decision could be made as to whether to declare one or more AQMAs.

1.4.3 Detailed Assessment (April 2004)

The study concluded that for NO₂, there were likely to be six areas where the annual mean objective for nitrogen dioxide was unlikely to be met:

- Parts of St.Albans Road between Beechen Grove and North Western Avenue;
- Parts of Rickmansworth Road between the High Street and Cassio Road;
- Parts of Farraline Road close to its junction with Vicarage Road;
- Parts of Pinner Road close to its junction with Chalk Hill;
- Close to the junction of Horseshoe Lane, the A405 and St.Albans Road; and
- Parts of the Gossamers, Ravenscroft, Eastlea Avenue and Westlea Avenue.

In February 2006, six AQMAs were declared, encompassing the residential properties identified in Table 1.2. Maps showing the extents of the AQMAs are shown in Appendix A.

Table 1.2 Summary of Watford AQMAs designated in February 2006

Watford AQMA no 1 St Albans Road	1B & 1C Wellington Road 155 – 157 St. Albans Road 211-215 St. Albans Road 164 – 454 St. Albans Road
Watford AQMA no 2 Vicarage Road	28A – 30A Vicarage Road (Flats above shops) 85A-87A Vicarage Road (Flats above shops)
Watford AQMA no 3 Aldenham Road	Residential Accommodation above The Railway Arms, Aldenham Road
Watford AQMA no 4 Chalk Hill	12 Chalk Hill
Watford AQMA no 5 A405 / Horseshoe Lane	3A – 5A Horseshoe Lane 887 St Albans Road 1026 St Albans Road
Watford AQMA no 6 M1 / Meriden	16, 17 & 18 Ravenscroft 1 – 5 The Gossamers 31 The Gossamers 63 – 65 The Gossamers 95 – 97 The Gossamers 62, 64, 69 Eastlea Avenue

1.4.4 Updating and Screening Assessment (July 2007)

The USA concluded that there was no need to progress to a Detailed Assessment for carbon monoxide, lead, benzene, 1,3-butadiene, sulphur dioxide or PM₁₀. Monitoring data indicated the continuing need for the existing AQMAs, designated for NO₂.

1.4.5 Progress Report (December 2008)

The 2008 Progress Report concluded that there was not a requirement to continue to a Detailed Assessment for any pollutant.

1.4.6 Further Assessment of AQMAs 1-6 (April 2009)

The Further Assessment of the six AQMAs recommended that AQMA 1 (St Albans Road) should remain unchanged and AQMA 5 (A405/Horseshoe Lane) should be decreased. It also recommended that that AQMA 2 (Vicarage Road), AQMA 3 (Aldenham Road) and AQMA 4 (Chalk Hill) should be extended, and AQMA 6 (M1 / Meriden) should be revoked.

The recommendations of the Further Assessment were accepted by Defra in April 2009. We now intend to:

- Leave AQMA 1 (St.Albans Road) unchanged.
- Extend the boundary of AQMA 2 (Vicarage Road)
- Amalgamate AQMA 3 (Aldenham Road) and AQMA 4 (Chalk Hill) into a single AQMA (AQMA 3A, Aldenham Road and Chalk Hill) due to their proximity and similarity in air quality issues affecting them.
- Reduce the boundary of AQMA 5 (Horseshoe Lane)
- Revoke AQMA 6 (M1 / Meriden).

Maps showing the revised AQMAs are shown in Appendix A

It is our intention to consult on these proposals at the same time that we consult on the Updated Air Quality Action Plan (see section 1.4.8)

1.4.7 Combining Updating and Screening Assessment and Progress Report (June 2010)

This report showed that there were some annual mean NO₂ concentrations recorded during 2009 using passive diffusion tubes where the annual mean objective of 40 µg/m³ and that 3 of these locations were outside the Air Quality Management Areas. These locations are not representative of relevant public exposure, and hence a Detailed Assessment is not required:

- WF03 Hospital, Vicarage Road;
- WF37 St Albans Road 2; and
- WF42 Queens Road.

Once more detailed distance from roads calculations were submitted, the report was accepted by DEFRA and progression to a Detailed Assessment was not required.

Monitoring of PM₁₀ showed no exceedences of the Air Quality Strategy objective, and further assessment is subsequently not required. The assessment does not identify any other pollutant source of concern.

1.4.8 Updated Air Quality Action Plan (April 2011)

This report confirmed that the most likely source of nitrogen dioxide as transport, in particular congestion. It sets out 16 measures aimed at improving air quality, and consultation on the report will be started in 2011.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Since January 2008, the following analysers have been in operation at Watford Town Hall:

1. API M200E chemiluminescent NO_x analyser from Envirotechnology; and
2. Rupprecht & Patashnick TEOM analyser, gathering PM₁₀ data.

The monitoring station is classified as a Roadside monitoring site, and is situated approximately 10 metres from the kerb of Rickmansworth Road. Figure 2.1 shows the location of the monitoring station.

Data is collected via modem by the King's College London Environmental Research Group (ERG), where the data is also validated and reported. Real time data, as well as weekly month and annual reports are available from Herts & Beds Air Pollution Monitoring Network website; www.hertsbedsair.org.uk.

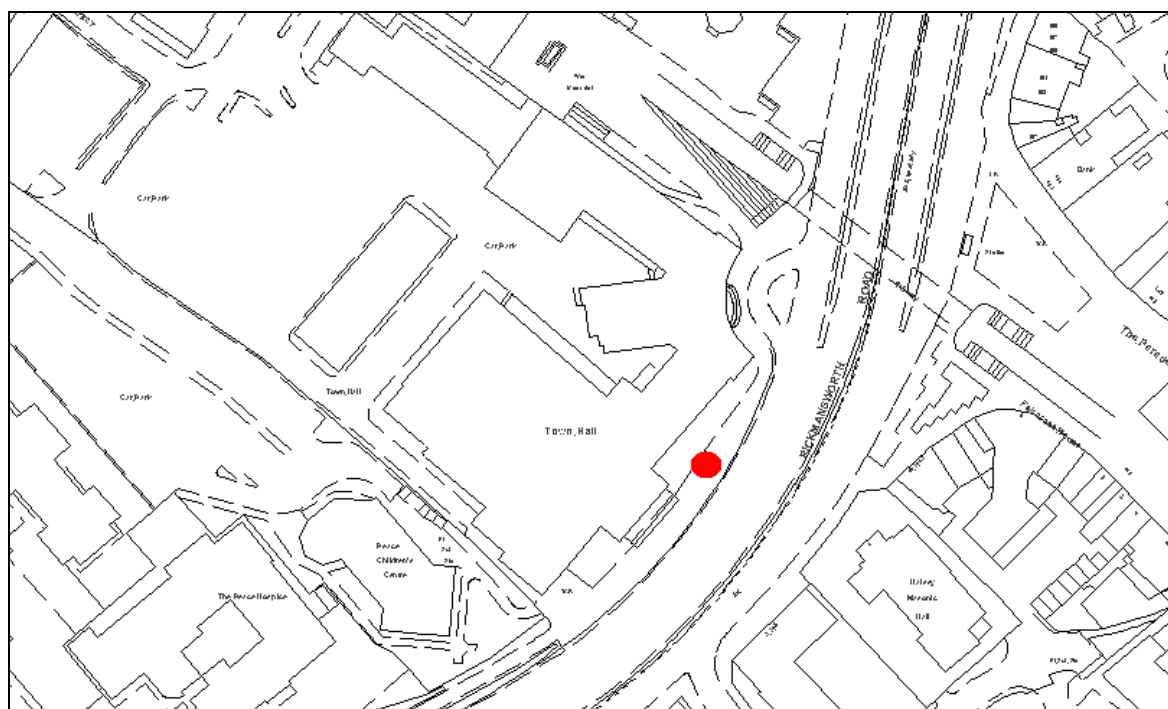
All servicing and maintenance (including periodic calibration of equipment) is managed by ERG as part of their overall management of the Herts & Beds Air Pollution Monitoring Network. The equipment is audited annually by the National Physical Laboratory as part of the QA for the Network.

PM₁₀ data collected using the TEOM instrument is converted by ERG to reference equivalence using the volatile correction method (VCM).

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure ?	Distance to kerb of nearest road	Worst-case Locn.
Watford Town Hall	R	X 510540, Y 196780	NO ₂ , PM ₁₀	N	N	10m	Y

Note: R = roadside.

Figure 2.1 Location of Watford Town Hall automatic monitoring station

This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. 100018689 (2010).

2.1.2 Non-Automatic Monitoring

Passive monitoring of NO₂ is undertaken using diffusion tubes around at 15 locations within the Borough. Details of the site locations are given in Table 2.2, and their approximate location is shown in Figure 2.2. Two of the previous 17 sites, WF31 and WF34, were closed in April 2011. Justification for closing these sites is given in section 2.2.1.

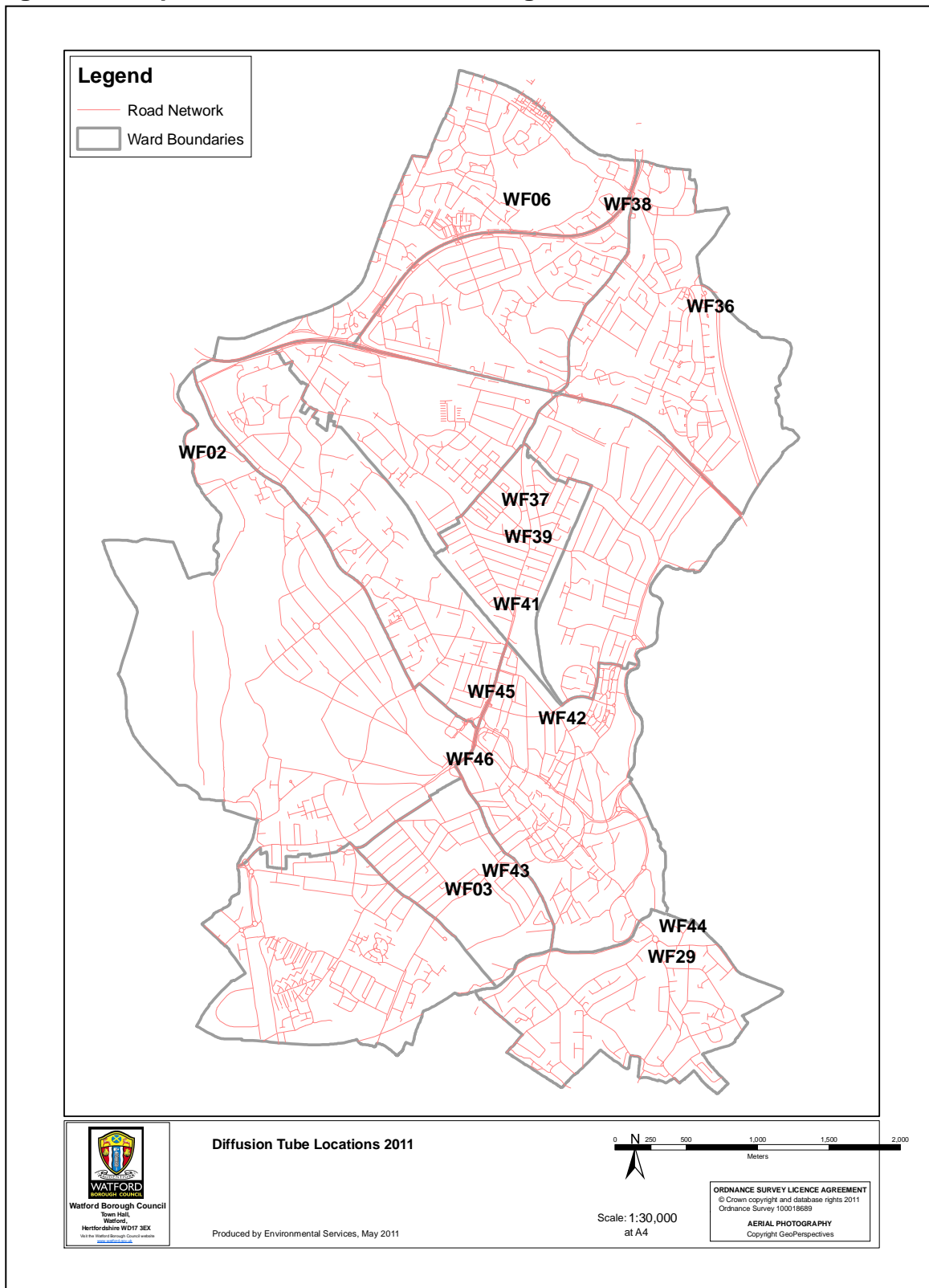
Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
WF02	B	X 508700, Y 198950	NO ₂	N	N	n/a	N
WF03	K	X 510570, Y 195800		N	N	4m	Y
WF06	B	X 510985, Y 200710		N	N	n/a	N
WF29	K	X 511940, Y 195320		Y	Y- 6m	2m	Y
WF36	I	X 512240, Y 199910		N	Y – 8m	n/a	Y
WF37	K	X 510970, Y 198535		N	Y – 5m	1m	Y
WF38	K	X 511680, Y 200700		Y	Y -2m	4m	Y
WF39	K	X 511000, Y 198270		Y	N	1m	Y
WF40	K	X 510930, Y 198000		Y	N	2m	Y
WF41	K	X 510850, Y 197780		Y	N	1m	Y
WF42	K	X 511160, Y 197000		N	Y - 4m	1m	Y
WF43	K	X 510800, Y 196020		Y	Y- 4m	2m	Y
WF44	K	X 511920, Y 195450		Y	Y – 6m	2m	Y
WF45	K	X 510750, Y 197230		Y	Y- 10m	4m	Y
WF46	R	X 510565, Y 196800		N	N	6m	N

Note: B = background; K = kerbside; I = intermediate; R = roadside.

Unadjusted monthly diffusion tube data can be downloaded from:

www.hertsbedsair.org.uk

Figure 2.2 Map of Non-Automatic Monitoring Sites

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

The annual mean NO₂ concentrations recorded by the continuous analyser at Watford Town Hall for the period 2008-10 are presented in Table 2.3a. The annual mean objective of 40 µg/m³ has not been exceeded during this time period, though it is not well below the objective.

Table 2.3b shows that there have been no exceedences of the NO₂ hourly mean objective of 200 µg/m³ at Watford Town Hall. Where data capture was <90% (2008), the 99.8th percentile was still well below the 200 µg/m³ target.

Table 2.3a Results of Automatic Monitoring for NO₂: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2010 %	Annual mean concentration (µg/m ³)		
				2008 ^a	2009 ^b	2010
Watford Town Hall	Rickmansworth Road	N	98	32	39	39

Note: Data downloaded from <http://www.hertsbedsair.org.uk/hertsbeds/asp/AdvStats.asp>

^a 84% data capture; ^b 98% data capture

Table 2.3b Results of Automatic Monitoring for NO₂: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2010 %	Number of Exceedences of hourly mean (200 µg/m ³) <i>If the period of valid data is less than 90% of a full year, include the 99.8th %ile of hourly means in brackets.</i>		
				2008 ^a	2009 ^b	2010
Watford Town Hall	Rickmansworth Road	N	98	0 (108 µg/m ³)	0 (116 µg/m ³)	1

Note: Data downloaded from <http://www.hertsbedsair.org.uk/hertsbeds/asp/AdvStats.asp>

^a 84% data capture; ^b 98% data capture

Diffusion Tube Monitoring Data

Table 2.4 presents the annual mean bias adjusted NO₂ concentrations recorded at the 17 diffusion tube sites for the period 2008-10. The results are shown graphically in Figure 2.3

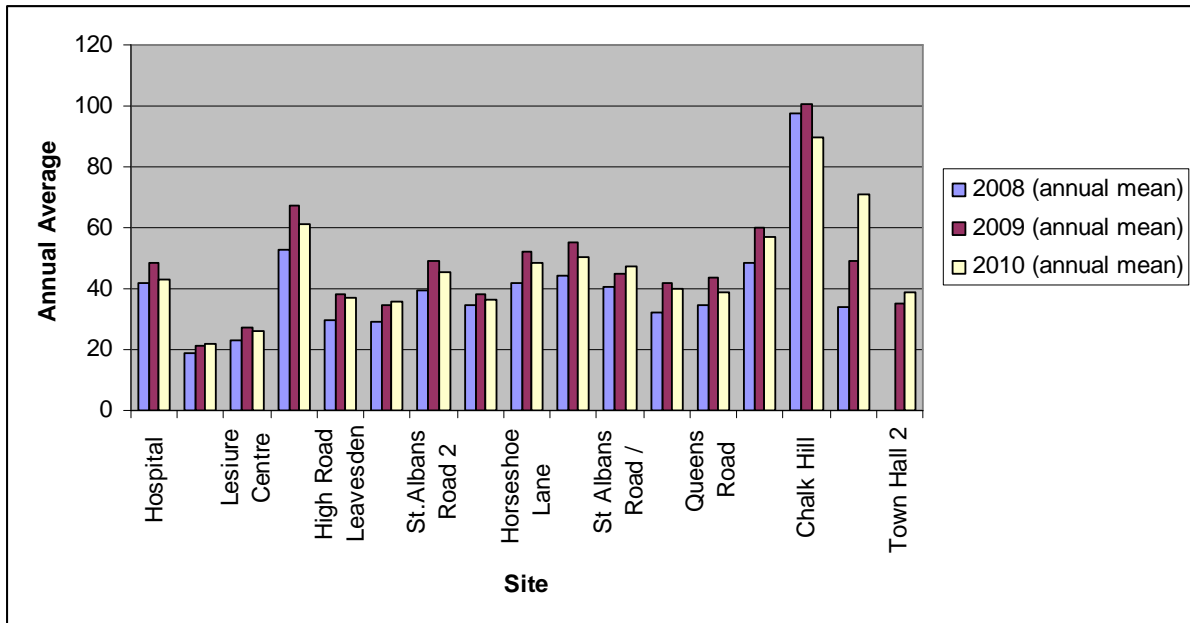


Figure 2.3 Annual Average nitrogen dioxide diffusion tube concentrations (bias corrected, microgrammes per cubic metre)

Local adjustment factors, calculated from the collocation of diffusion tubes at the Watford Town Hall continuous monitoring site, have been applied to diffusion tube data collected during 2008 (0.74) and 2009 (0.91). In 2010 DEFRA's national bias adjustment spreadsheet was used to obtain a value of 0.85 as no co-location study was carried out in that year.

It should be noted that some rounding errors have been identified so some figures in table 2.4 differ slightly from previous reports.

Data indicates that exceedences of the annual mean objective of $40 \mu\text{g}/\text{m}^3$ have been recorded at 10 of the 17 sites. Of these 11 sites, 2 are not currently within designated AQMAs; however they are not representative of relevant exposure.

- WF03 Hospital, Vicarage Road;
- WF37 St Albans Road 2;

These sites were considered in detail as part of the 2010 Combined Updating and Screening Assessment and Progress report and following submission of detailed distance from roads calculations it was accepted that there was no need to these locations

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA ?	Data Capture 2009 %	Annual mean concentration ($\mu\text{g}/\text{m}^3$) Adjusted for bias		
				2008 ^a	2009 ^b	2010 ^c
WF02	Grove Pumping Station, Hempstead Road	N	100%	19	21	22
WF03	Hospital, Vicarage Road	N	100%	42	48	43
WF06	Leisure Centre, Horseshoe Lane	N	100%	23	27	26
WF29	Pinner Road	Y	100%	53	67	61
WF31	High Road Leavesden	N	100%	30	38	37
WF34	Westland Road	N	100%	35	38	36
WF36	Ravenscroft	N	100%	29	35	36
WF37	St Albans Road 2	N	100%	39	49	46
WF38	A405 Horseshoe Lane	Y	100%	40	49	48
WF39	Balmoral Road	Y	75%	32	42	40
WF40	Salisbury Road	Y	100%	40	45	47
WF41	Leavesden Road	Y	92%	33	42	40
WF42	Queens Road	N	100%	35	43	39
WF43	Farraline Road	Y	100%	49	60	57
WF44	Chalk Hill	Y	100%	97	101	90
WF45	Wellington Road	Y	100%	34	49	71
WF46	Town Hall collocation	N	100%	33	39	39

Note: Unadjusted data from

<http://www.hertsbedsair.org.uk/hertsbeds/asp/DiffusionTubes.asp?dt=>

Bias adjusted annual means in excess of the $40 \mu\text{g}/\text{m}^3$ NO_2 objective are shaded grey.

(<http://www.uwe.ac.uk/aqm/review/index.html>)

^a Local bias adjustment factor of 0.74 calculated from collocation study at Watford Town Hall.

^b Local bias adjustment factor of 0.91 calculated from collocation study at Watford Town Hall.

^c National bias adjustment factor of 0.85 obtained via DEFRA national bias adjustment factors

In April 2011 it was decided to close WF31 High Road, Leavesden) and WF34 Westland Road as neither lies within an Air Quality Management Area and bias corrected concentrations are consistently below the $40 \mu\text{g}/\text{m}^3$ NO_2 objective.

2.2.2 PM_{10}

The annual mean PM_{10} concentrations recorded by the TEOM instrument at Watford Town Hall for the period 2008-10 are presented in Table 2.5a, and the number of exceedences of the 24-hour mean objective are shown in Table 2.5b, as downloaded from the Herts & Beds Air Pollution Monitoring Network website;

www.hertsbedsair.org.uk.

Data have been converted to reference equivalence using the volatile correction method (VCM).

The annual mean PM_{10} concentration recorded at Watford Town Hall has been well below the objective of $40 \mu\text{g}/\text{m}^3$ for the period 2008-10. The number of exceedences

of the 24-hour mean objective of $50 \mu\text{g}/\text{m}^3$ is well within the permitted 35 exceedences per year for the period 2008-10.

Table 2.5a Results of Automatic Monitoring for PM₁₀: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2010 %	Annual mean concentration ($\mu\text{g}/\text{m}^3$) *		
				2008	2009	2010
Watford Town Hall	Rickmansworth Road	N	%	21	22	24

Note: Data downloaded from <http://www.hertsbedsair.org.uk/hertsbeds/asp/AdvStats.asp>

* Data was collected using a TEOM PM₁₀ instrument. Results have been converted to reference equivalence using the volatile correction method (VCM).

Table 2.5b Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2010 %	Number of Exceedences of 24-hour mean ($50 \mu\text{g}/\text{m}^3$) *		
				If data capture < 90%, include the 90 th %ile of 24-hour means in brackets.		
				2008	2009	2010
Watford Town Hall	Rickmansworth Road	N	98%	9	0	7

Note: Data downloaded from <http://www.hertsbedsair.org.uk/hertsbeds/asp/AdvStats.asp>

* Data was collected using a TEOM PM₁₀ instrument. Results have been converted to reference equivalence using the volatile correction method (VCM).

2.2.3 Summary of Compliance with AQS Objectives

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

3 New Local Developments

3.1 Commercial and Domestic Sources

A biomass boiler was installed at West Herts College on Hempstead Road in 2010. As part of the planning application process full details of the plant, including the boiler rating, stack height, flue diameter and maximum emission rates were submitted to the Environmental Health Section so an assessment of the impact of the plant on local air quality could be carried out.

The assessment was done using DEFRA's Technical Guidance LAQM.TG(09) and concluded that the PM₁₀ and nitrogen dioxide objective values would be met.

3.2 New Developments with Fugitive or Uncontrolled Sources

No new potential sources of fugitive or uncontrolled particulate matter have been identified.

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

Watford Borough Council confirms that all the following have been considered –

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Local / Regional Air Quality Strategy

Currently the Council is not proposing to develop an Air Quality Strategy. Instead we are developing the measures outlining the Air Quality Action plan that was produced following the declaration of the six Air Quality Management Areas in 2006. This will involve developing other policies across the organisation and with Hertfordshire County Council.

5 Planning Applications

Discussions with the Council's Development Control Section have not revealed any new developments which could impact upon air quality.

6 Air Quality Planning Policies

In Watford the Local Development Plan remains the principal planning policy document relating to air quality. It was adopted in December 2003. The plan has two policies that relate to air quality as follows:

- SE20 Air Quality
- SE21 Air Quality Management Areas

The full text of the policies is contained in Appendix C

The plan was first drafted in 2000 (with subsequent revisions up to 2003), and therefore some of the references to the Council's Air Quality Management processes and the areas of concern are out of date. The Local Development Plan is gradually being superseded by the Local Development Framework. This will give us an opportunity to revise the policy to reflect the new Air Quality Management Areas.

In addition, one of the measures contained in the April 2011 updated Air Quality Action Plan is the writing of an amended air quality policy for use within the planning framework.

7 Local Transport Plans and Strategies

As part of the development on the updated Air Quality Action plan, Watford Borough Council has been working closely with Hertfordshire County Council to make sure that the measures included with the plan tie in with the development of their LTP3.

8 Climate Change Strategies

The Council has adopted a Climate Change Policy which formalises the commitments that the Council has made to tackle climate change.

In addition the Council has adopted a Carbon Management Strategy and associated Action Plan that sets out how reductions in community and Council carbon emissions will be delivered.

The Climate Change Strategy is currently being finalised and it is hoped will be issued for public consultation in 2011

9 Implementation of Action Plans

The Council produced its first action plan in 2009. This detailed 21 measures aimed at improving air quality. In April 2011 an updated version was completed and this recommends 16 measures for implementation.

It is intended to issue the updated report for consultation in the summer of 2011, along with the proposed amendments to the existing AQMAs that were identified by the April 2009 Progress Report and subsequently ratified by DEFRA.

In the meantime table 9.1 below outlines the 16 measures. Please note that there are no columns relating to progress with the implementation as the updated report has only just been finalised.

Table 9.1 Action Plan Recommended Measures

No.	Measure	Focus	Lead authority	Policy linkages	Timescale	Indicator	Target	Air Quality impact
1	Intelligent Transport Systems	To manage traffic movement more efficiently throughout the County	HCC	<ul style="list-style-type: none"> LTP3 	2011 onwards	NI167 congestion	2.87 mins/mile in 2008/09 to 2.80 mins/mile in 2015/15	Likely to be high in the AQMA congested junctions
2	Road Infrastructure Improvements	Ease congestion in St Albans Road AQMA. Further improvements are recommended in the Congestion study	HCC/WBC	<ul style="list-style-type: none"> LTP3 	2011 onwards	Schemes completed	2 link roads completed	Likely to be high
3	Enforcement of parking policy	Minimise emissions due to reduced traffic flow caused by obstructions	WBC	Council Enforcement Officers	2011 onwards	Number of warnings, fines and prosecutions for such offences	n/a	low
4	Installation of EV charging points	Encourage the uptake of electric vehicles	HCC	LTP3, Relies on success of bid to Plugged In Places government grant	2011 – medium term	Number of charging points installed	N/A depends on success of grant	low
5	Implement bus strategy	Encourage the increase of bus patronage	HCC/WBC	LTP3, Bus Strategy	2011 onwards	Bus patronage	Not set as yet	medium
6	Implement the intralink project	Increase the integration of public and sustainable transport movements	HCC/WBC	LTP3	2011 onwards	Bus and rail patronage, number of cyclists and pedestrians	Not set as yet	medium
7	Watford Junction interchange improvement	Increase the accessibility of the rail station	HCC/WBC	LTP3	2011	Completed scheme	Completed scheme	High in the vicinity of the junction
8	Promotion of	Increase car sharing to	WBC	LTP3, WBC green	2011 onwards	Registered members on	2011 level is	low

	car sharing scheme	ease congestion		travel plan		liftshare Number of private schemes	480,000 8 schemes in 2011	
9	Promotion of Travel Plans	Increase in sustainable transport	WBC	LTP3, WBC green travel plan	2011 onwards	Number of travel plans in schools and businesses	Increase from 2011	low
10	Promotion of TravelSmart	Personalised travel planning to reduce car use	WBC	LTP3, WBC green travel plan	2011 onwards	Progress on the Croxley programme	N/A	low
11	Promotion of cycling and walking	Increase sustainable transport	WBC/HCC	LTP3, WBC green travel plan	2011 onwards	Number of cyclists and pedestrians	N/A	low
12	Develop Supplementary Planning Document for Air Quality	Develop SPD on AQ for inclusion in the 2011 Development Plan Document	WBC	LDF	2011	<ul style="list-style-type: none"> • Publication of SPD; • Number of planning applications made using the guidance; 	n/a	low
13	Annual Council vehicle fleet review	Maintain clean Council vehicle fleet	WBC	Green Travel Plan	2011	Age and Euro standard of Council vehicle fleet	n/a	low
14	Promote air quality within the Borough	Increase awareness of AQ as a health issue and the	WBC	Air Quality SPD; Green Travel Plans	2011 onwards	"Hits" on Herts&Beds Air Quality website	Increase on 2011	low
15	Continue to monitor air quality	Maintenance of air quality monitors and data management	WBC	LTP3, Green travel plan, Community strategy	2011	Number of operational monitors	Same as in 2010	low
16	Undertake feasibility studies	To investigate the air quality impact of any potential future schemes	WBC	LDF, LTP3	2011	N/A	N/A	N/A

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

There is no new monitoring data to suggest that there are any potential breaches of Air Quality objectives outside the existing AQMAs.

10.2 Conclusions relating to New Local Developments

The Council has identified no new local developments that that will require more detailed consideration in the next Updating and Screening Assessment.

10.3 Proposed Actions

In the summer of 2011 the Council will start formal consultation on its updated Air Quality Action Plan.

It will also consult on the amendment to the 6 Air Quality Management Areas that were declared in February 2006.

Following consultation, it will start working with partners and stakeholders to progress the measures identified in the action plan.

11 References

Watford Borough Council Detailed Assessment, April 2004

Watford Borough Council Further Assessment, April 2009

Watford Borough Council Updated Air Quality Action Plan, April 2011

Appendices

Appendix A: Original Air Quality Management Areas

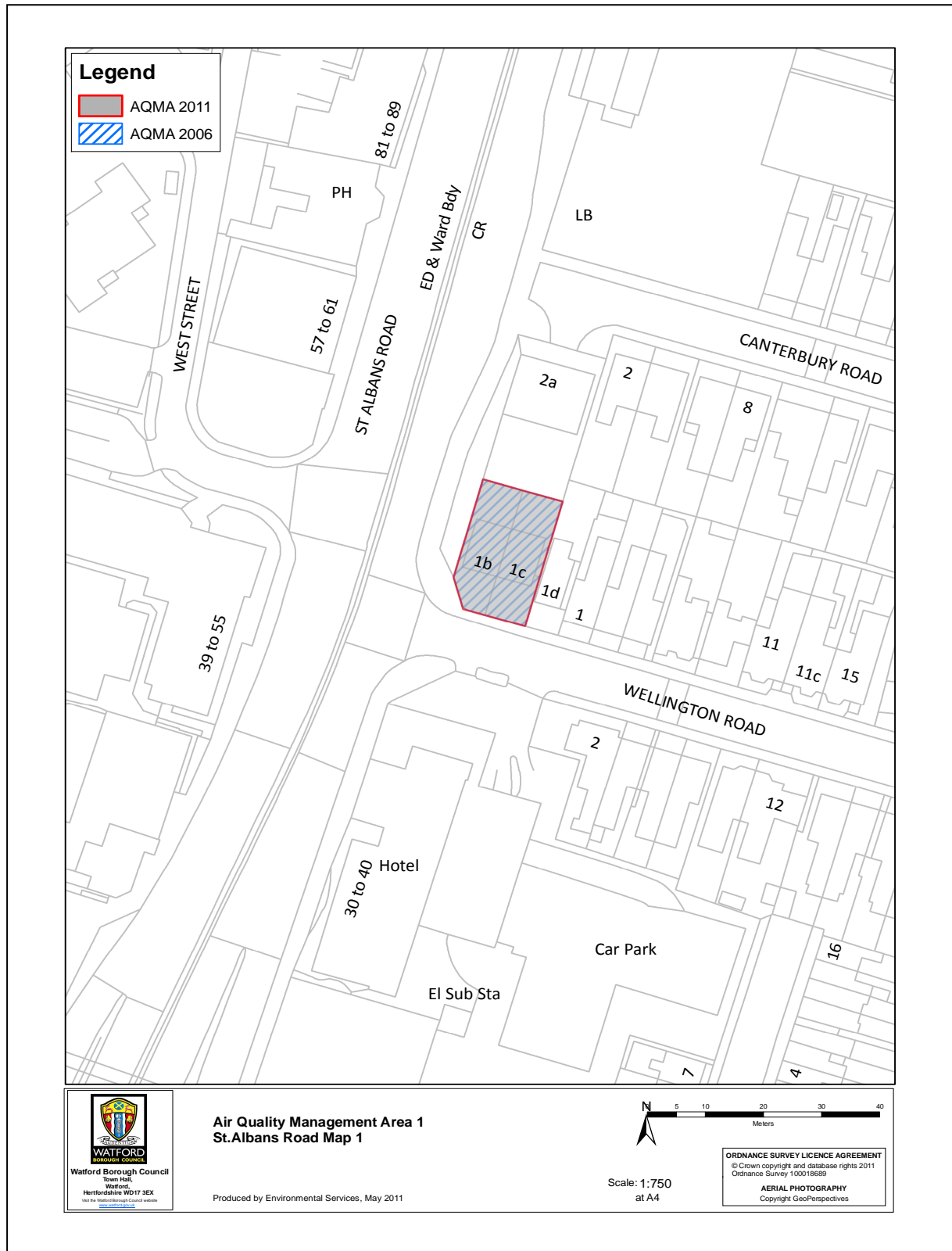


Figure A1.1 Air Quality Management Area 1 St. Albans Road Map 1

Figure A1.1 Air Quality Management Area 1 St.Albans Road Map 1



Figure A1.2 Air Quality Management Area 1 St.Albans Road Map 2



Figure A1.3 Air Quality Management Area 1 St. Albans Road Map 3

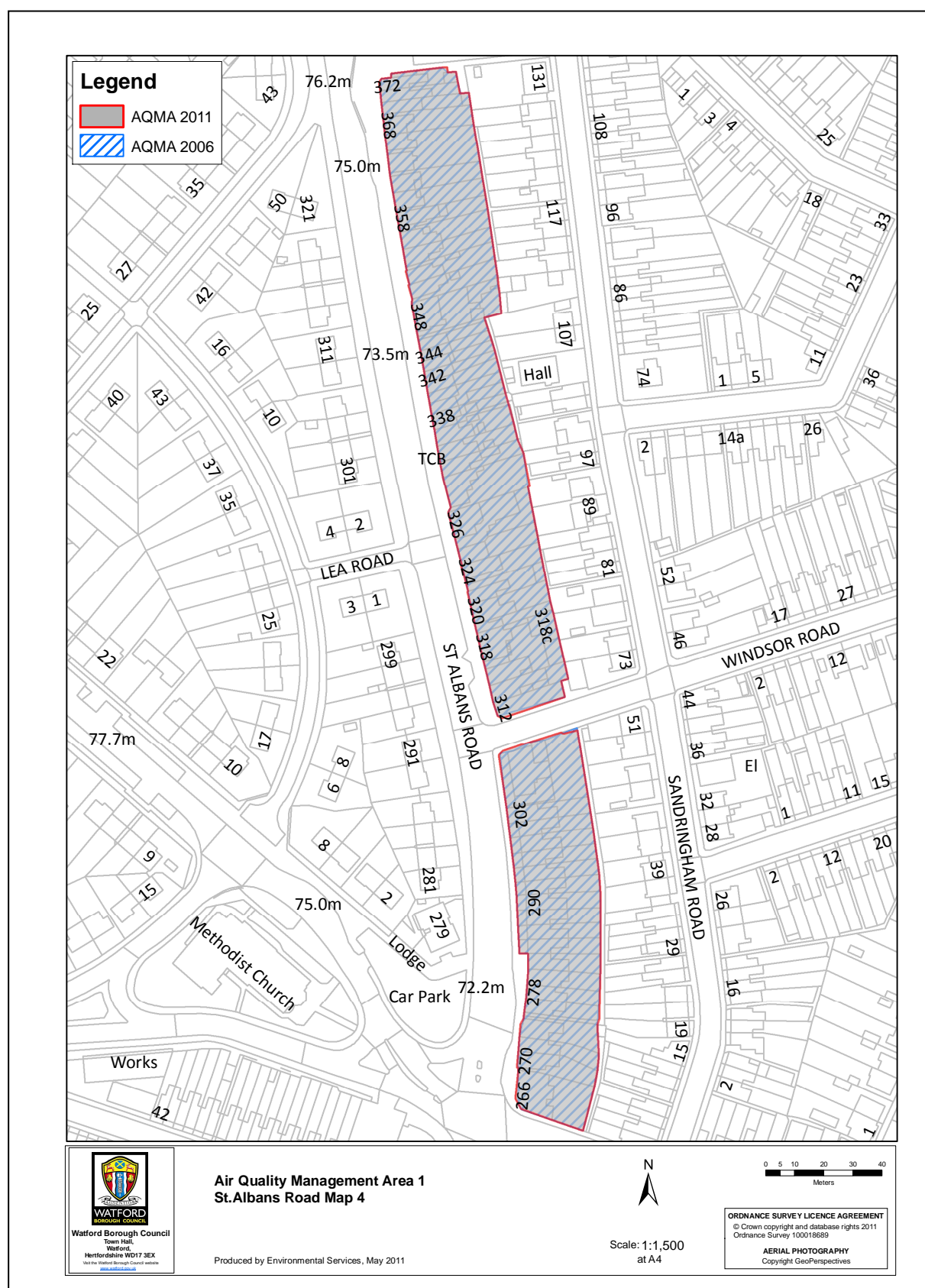


Figure A1.4 Air Quality Management Area 1 St. Albans Road Map 4

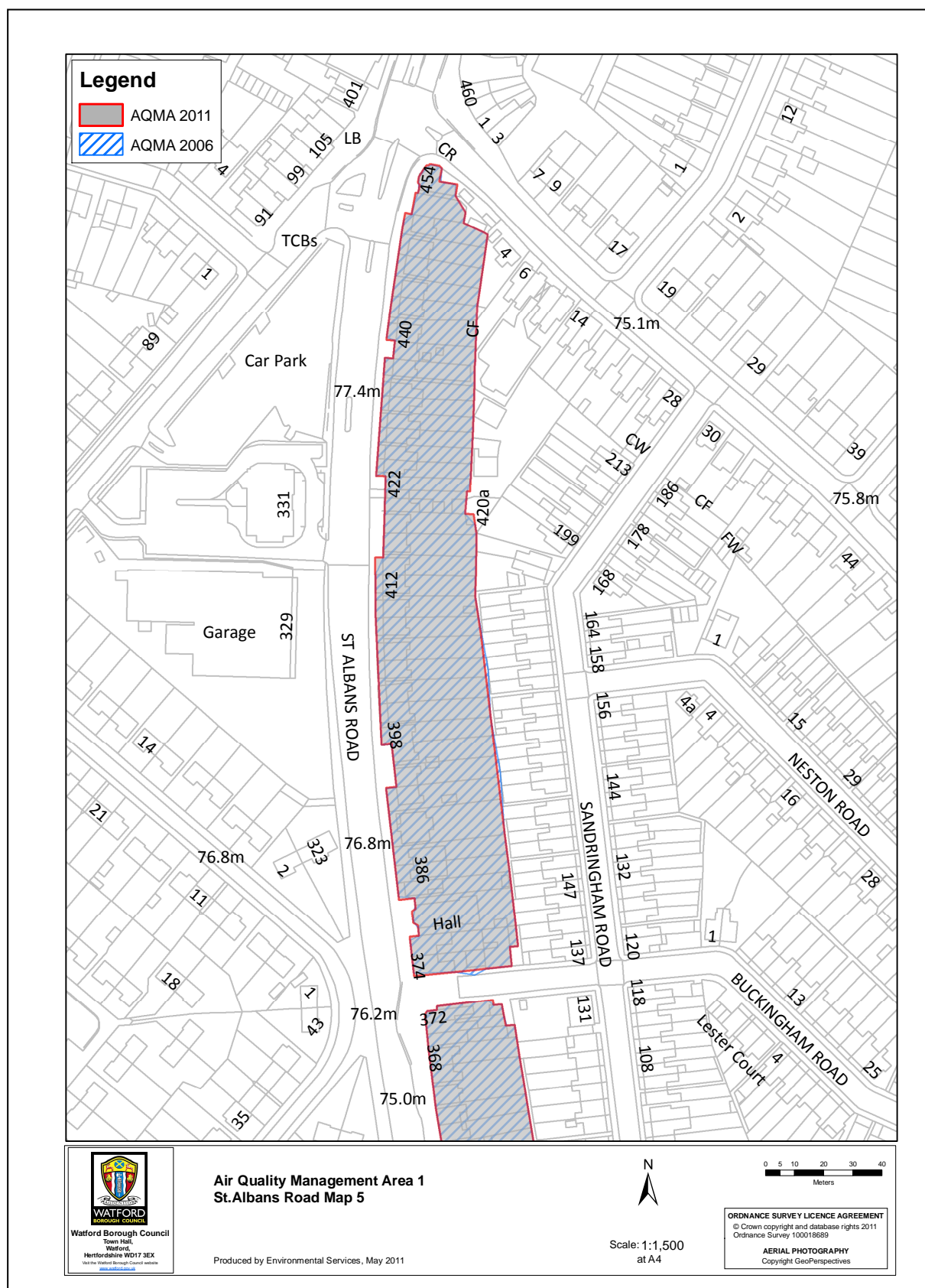


Figure A1.5 Air Quality Management Area 1 St.Albans Road Map 5

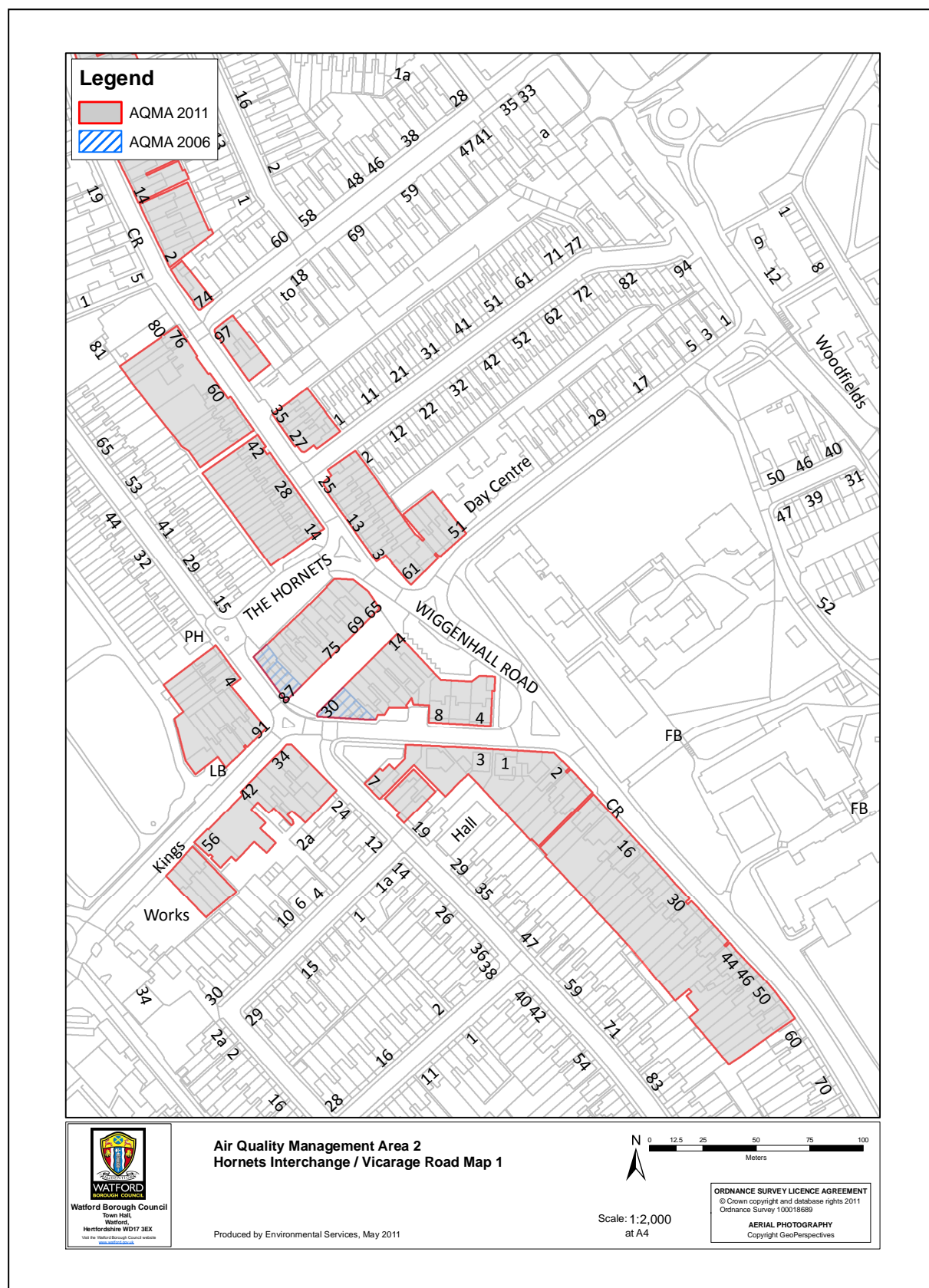
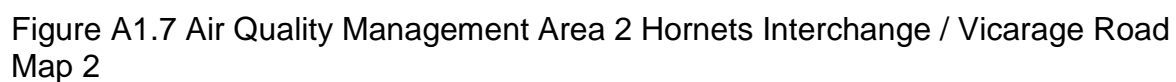


Figure A1.6 Air Quality Management Area 2 Hornets Interchange / Vicarage Road Map 1



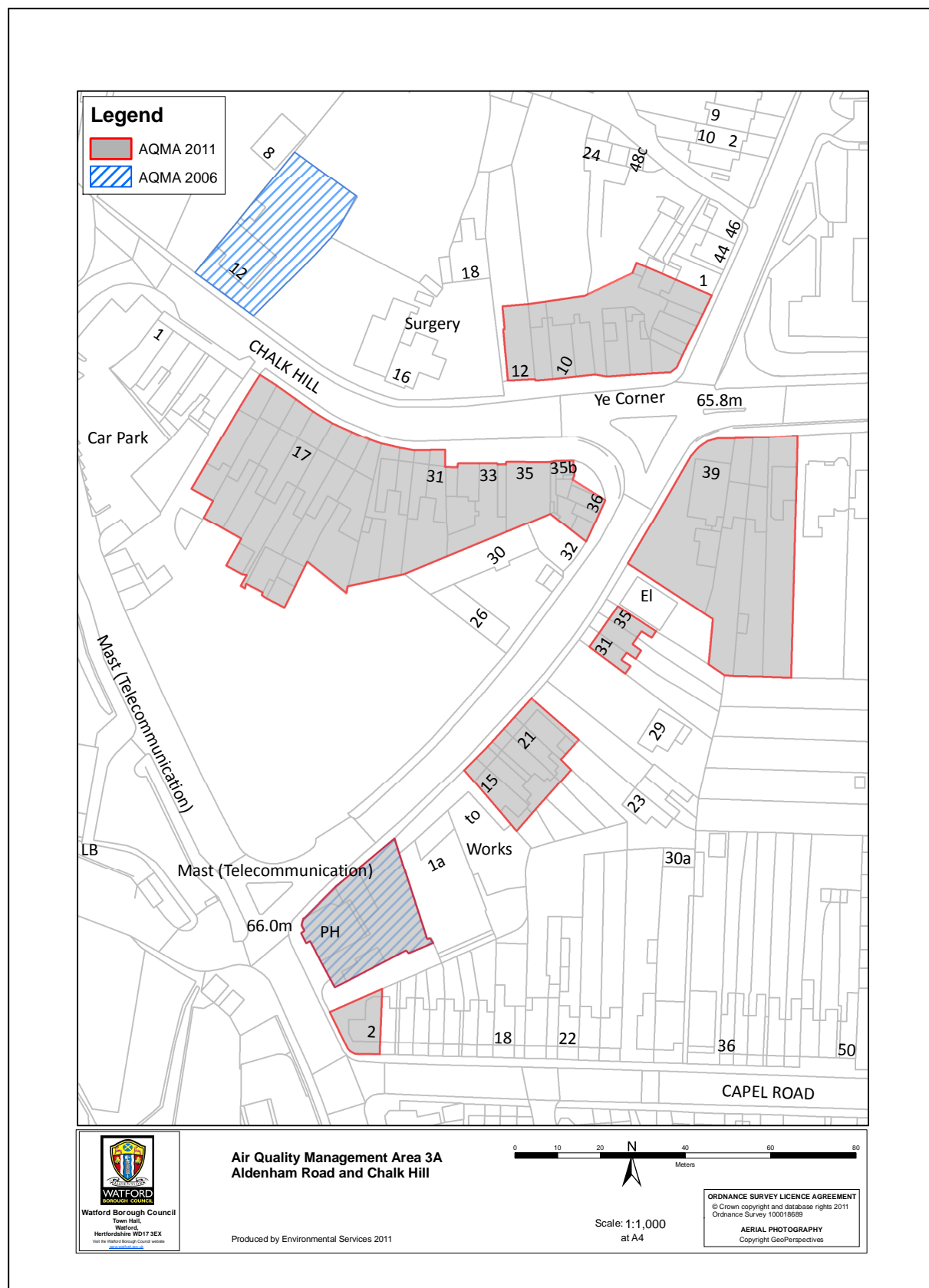


Figure A1.8 Air Quality Management Area 3A Aldenham Road / Chalk Hill

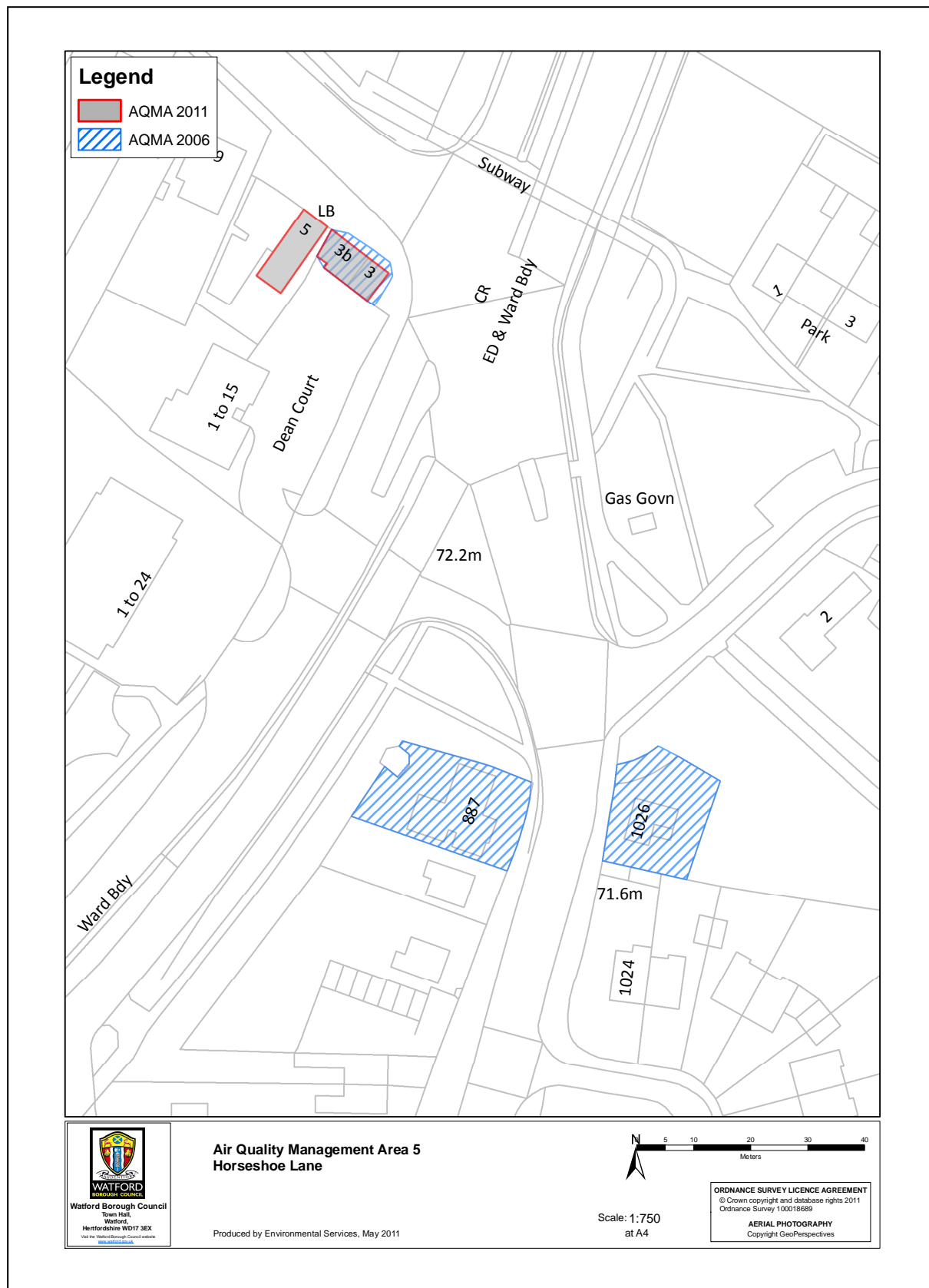


Figure A1.9 Air Quality Management Area 5 Horseshoe Lane



Figure A1.10 Air Quality Management Area 6 M1 / Meriden Map 1



Figure A1.11 Air Quality Management Area 6 M1 / Meriden Map 2

Appendix B: QA:QC Data

Diffusion Tube Bias Adjustment Factors

The bias adjustment factors used as given in section 2.2.1

PM Monitoring Adjustment

As part of the contract that the Council has with Kings ERG to collect and ratify data from the automatic monitoring station, PM₁₀ data collected using the TEOM instrument is converted by them to reference equivalence using the volatile correction method (VCM).

QA/QC of automatic monitoring

The QA/QC procedures for the Herts and Beds Air Quality Monitoring Network are equivalent to that of the AURN with the following exceptions:

- No chart recorders are used.
- NO₂ span gas is used at routine site visits.

QA/QC procedures are detailed in the UK Automatic Network Site Operator's Manual available on www.airquality.co.uk.

Broadly speaking, the QA/QC procedures for the AURN are:

Data measured by the analysers are retained by the data loggers as 15 minute, raw averages. These values are collected remotely every 12 hours by telemetry automatically by the central computer, where calibration factors are applied to calculate scaled 15 minute average pollutant concentrations. At each polling, algorithms are used to apply automatic validity checks and flag any suspect measurements for possible future editing, rescaling or rejection. In addition to the automatic systems, trained staff inspect the results each morning (365 days per year) and investigate any suspicious data. The resulting provisional data sets are then released as data or statistics to the network internet pages and distributed to interested parties via daily or weekly emails.

In addition to this initial screening process, data are further scrutinised in monthly blocks, then again at the end of each calendar year, in order to provide a final ratified dataset. These definitive results are suitable for publication and use by local authorities for LAQM analysis. This data ratification process requires the detailed examination of a variety of site and analyser outputs. These include site records, calibration records, network intercalibration results, site servicing and equipment records supplied by the site operators and equipment engineers.

QA/QC of diffusion tube monitoring

Tubes are supplied and analysed by Harwell Scientific Services, a UKAS accredited laboratory. The tubes are prepared using 50% TEA (triethanolamine) in acetone.

The Harwell Scientific laboratory participates in the field intercomparison scheme and the Workplace Analysis Scheme for Proficiency (WASP) programme, operated by the Health and Safety Laboratory (HSL). For the period presented, Harwell Scientific demonstrated 'good' performance in the WASP scheme for analysis of NO₂ diffusion tubes (<http://www.lagmsupport.org.uk/no2gaqc.php>).

Appendix C: Watford Borough Council Air Quality Planning Policies

3.58 SE20 Air Quality

In determining planning applications it will be important to consider the impact of a development in terms of the effects on air quality caused by both the operational characteristics of the development (industrial, commercial and domestic) and the traffic generated by it. The Council will have regard to the potential effects of a development on local air quality when determining planning applications.

- 3.59** In considering the impact of a proposed development on air quality, the Council will liaise with the pollution control authorities (the local Environmental Health and Licensing Service or Environment Agency). The Council may require the submission of information and modelling to indicate the potential impact of atmospheric emissions, or the effect on background pollution concentrations. This should particularly be the case where a development is proposed in, or close to, an Air Quality Management Area (AQMA). Where local air quality is identified as being a risk to health, and the potential problem is incapable of being overcome by a condition or planning obligation, then this may cause for refusal of planning permission.

3.60 SE21 Air Quality Management Areas

Any development within areas designated as air quality management areas in Watford must have regard to guidelines for ensuring air quality is maintained at acceptable concentrations as set out in the national air quality strategy. In addition, where developments are close to AQMAs, and a significant increase in road traffic is predicted, similar regard to air quality concentrations must be had.

- 3.61** Major developments can have an effect on air quality. Road related development as well as some types of industry can both increase emissions. The Environment Act 1995 places a duty on local authorities to review and assess air quality in their districts. Those areas that are expected to exceed national guidelines in the year 2005 will be deemed Air Quality Management Areas (AQMAs) and a strategy will need to be devised by the Council to reduce pollution concentrations accordingly.
- 3.62** The Council completed its initial assessment of air quality across the Borough in 2001. This identified six areas where the objectives laid down in the Air Quality Regulations 2000 could, on occasion, be exceeded, as follows:

- Close to the M1
- Close to the A41
- Close to the A4008 (Pinner Road)
- Close to the A4178 (Cassio Road/Wiggenhall Road)
- Close to the A411 (Hempstead Road)
- Close to the A412 (Rickmansworth Road)

In each case, the pollutants of concern were nitrogen dioxide and 'PM₁₀' particles (small particles of dust). Both are traffic-related pollutants. As no significant public exposure was identified in any of these areas, no Air Quality Management Areas were declared. However, the areas remain of concern.

- 3.63 The Council is currently repeating the Review and Assessment process. Early indications are that nitrogen dioxide and 'PM₁₀' particles may again be problems in areas close to some of the Borough's busiest roads.
- 3.64 Air Quality is an issue of sustainability, identified as a key element in the reduction of health risks from environmental pollution and hazards, also impacting on the built and natural environment. Its improvement is a major factor in the quality of life received by Watford's population. Air Quality is being monitored at a number of sites across the Borough including at the Town Hall.