2009 Air Quality Updating and Screening Assessment for *Dacorum Borough Council*

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

(July 2009)

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Report Reference number	FINAL DRAFT
Date	July 2009

Executive Summary

An Updating and Screening Assessment (USA) has been completed following relevant guidance outlined in LAQM.TG(09). This is the latest Local Air Quality Management (LAQM) report to be submitted to DEFRA since the publication of Dacorum Borough Council's 2006 USA and the subsequent Detailed (modelling) Assessment completed by Air Quality Consultants Ltd on behalf of Dacorum Borough Council in 2007. Where possible/available, monitoring data covering the period 2006 to 2008 are presented in this study[1].

Annual average NO_2 concentrations continue to exceed the relevant air quality objective in the three previously identified AQMAs (Lawn Lane, Apsley, London Road, Hemel Hempstead and High Street Northchurch). Annual average NO_2 concentrations greater than the relevant air quality objective were also observed at Watford Road, Kings Langley and Berkhamsted High Street. However, it has been determined that there is no relevant exposure at these two locations and therefore no requirement to proceed to a detailed assessment(s) for annual average NO_2.

Diffusion tube measurement data also indicate that the short-term (1-hour average) air quality objective for NO_2 was potentially exceeded at Lawn Lane, Apsley and London Road, Hemel Hempstead in 2006 and 2007. However, due to the marginal nature of the measured exceedences and typical diffusion tube measurement uncertainty, it has not been considered necessary to proceed to a detailed assessment for short-term NO_2 at these two locations. Furthermore, no exceedance of the short-term 'indicator concentration' of 60 µg/m^3 for annual average NO_2 was measured at any of the monitoring locations in 2008.

There have been no major infrastructural, industrial, commercial, residential or other developments within the borough that could result in a new significant source of emissions to air. Existing sources of emissions have not significantly changed since the last Updating and Screening Assessment was produced in 2006.

The Updating and Screening Assessment has not identified the need to proceed to a detailed assessment for any of the assessed pollutants. However, it is recognised that the proposed AQMAs in relation to the annual average air quality objective for NO_2 at Lawn Lane, Apsley, London Road, Hemel Hempstead and High Street Northchurch must be declared without delay. Furthermore, it is proposed that, in 2009, a continuous NO_X/NO_2 analyser is deployed within one of the three AQMAs to determine with more accuracy likely short-term (1-hour average) ambient NO_2 concentrations.

It is also anticipated that diffusion tube monitoring of ambient benzene concentrations near to the Buncefield depot will be undertaken once/if the proposed Hertfordshire Oil Storage Ltd site is granted planning permission.

In 2009 Dacorum Borough Council commissioned the RSK Group to undertake a detailed dispersion modelling assessment of PM_{10} emissions in the three previously identified AQMA areas. Although not repeated in this report, the results of the study indicate that both long- and short-term concentrations of PM_{10} at the three locations are anticipated to meet relevant air quality objectives in the study areas assessed.

[1] The required 2008 LAQM Progress Report was not submitted to DEFRA by Dacorum Borough Council. This report therefore provides an update on air quality monitoring undertaken in the borough since the 2006 USA was produced.

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1 Introduction

1.1 Description of Local Authority Area

Dacorum Borough comprises a mix of urban and rural land uses situated on the western edge of Hertfordshire. Located approximately 30 miles northwest of central London, the borough has a population of approximately 140,000, which is predominantly centred on the towns of Berkhamsted, Hemel Hempstead and Tring.

Major roads within the area include the M1, which crosses the eastern side of the borough, the M25, which is located near the southern boundary of the borough, and the A41, which closely bypasses Berkhamsted, Hemel Hempstead and Tring, linking Aylesbury to the west with Watford to the east. The area is well connected to London and the midlands via a major rail link that traverses the borough and terminates at London Euston.

A number of Part A and B processes operate in the borough, and these are listed in Appendices A to D.

1.2 Purpose of Report

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

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (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 Local Air Quality Management in England.

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

1.4 Summary of Previous Review and Assessments

Dacorum Borough has undertaken and completed the following rounds of LAQM review and assessment:

1. Air Quality Progress Report (issued in April 2005 covering the period 2003 to 2004),
2. Updating and Screening Assessment (issued in April 2006 covering the 2005 period); and,
3. Detailed Assessment of Local Air Quality (issued in October 2007 covering the 2006 period).

The required April 2008 Progress Report (covering the 2007 period) was not produced by the council. It is the intention of this report to provide an update on air quality monitoring and highlight any significant changes in the borough that may have impacted on local air quality since the Updating and Screening Assessment was produced in 2006. The data presented in this report therefore cover (where available) the period 2006 to 2008.

The 2006 Updating and Screening Assessment indicated that detailed assessments for NO_2, PM_{10} and other important pollutants were, at the time, not required. However, diffusion tube monitoring data did indicate that the 2005 annual mean air quality objective for NO_2 (Table 1.1) would potentially be breached at three locations within the borough (London Road, Apsley, Lawn Lane, Hemel Hempstead and Northchurch High Street).

Consequently, in 2007, a detailed assessment of the three areas was completed on behalf of Dacorum Borough Council by Air Quality Consultants Ltd. This study indicated that Air Quality Management Areas (AQMAs) should be declared for the NO_2 annual mean air quality objective at all three locations. However, at the time of writing, Dacorum Borough Council has yet to declare the AQMAs.

In 2009 Dacorum Borough Council commissioned the RSK Group to undertake a detailed dispersion modelling assessment of PM_{10} emissions in the three previously identified AQMA areas. Although not repeated in this report, the results of the study indicate that both long- and short-term concentrations of PM_{10} at the three locations are anticipated to meet relevant air quality objectives in the study areas assessed.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

The following section provides information on ambient air quality monitoring undertaken in the borough since the last Updating and Screening Assessment was produced in 2006.

2.1.1 Automatic Monitoring Sites

Although currently there are no automatic monitoring stations within the borough, Dacorum Borough Council is considering augmenting their existing non-automatic (diffusion tube) monitoring network with a continuous NO_X/NO_2 analyser. Monitoring data from this automatic monitoring station will, if installed/deployed in 2009, be reported in future LAQM reports.

As PM_{10} concentrations are not measured within the borough, data obtained from monitoring stations operated by other members of the Hertfordshire and Bedfordshire Air Quality Network (www.hertsbedsair.org.uk), of which Dacorum Borough Council is a partner, is presented in Section 2.2.2. To provide continuity with the 2006 Updating and Screening Assessment, PM_{10} data from automatic monitoring stations operated by South Bedfordshire District Council, St Albans District Council, Watford Borough Council and Luton Borough Council are presented. All four local authorities border the borough of Dacorum.

Monitoring data captured by the Hertfordshire and Bedfordshire Air Quality Network are subject to detailed validation and ratification. A comprehensive report summarising the performance of the network and associated monitoring results is produced on an annual basis by the Environmental Research Group (ERG), King's College, London.

In the absence of local sulphur dioxide, carbon monoxide, benzene and 1,3-butadiene measurements, monitoring data have been obtained from the Hertfordshire and Bedfordshire Air Quality Network and the UK Air Quality Archive (www.airquality.co.uk). No monitoring data for lead are presented in this report, as this parameter is no longer routinely monitored in England.

2.1.2 Non-Automatic Monitoring

Dacorum Borough Council measures NO_2 (using passive diffusion tubes) at a number of kerbside, roadside and background locations. In total, NO_2 is measured at 22 different sites across the borough. These are listed below in Table 2.1. No other air pollutants are monitored using either automatic or non-automatic techniques within the local authority area.

Table 2.1 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 ?
Sawyers Way, Hemel Hempstead	Background	X 506780 Y 207180	NO_2	N	Y (5 m)	2 m	N
Wood Lane End HH	Background	X 508177 Y 207934	NO_2	N	Y (12 m)	1 m	N
Roman Way, Markyate	Background	X 506197 Y 216506	NO_2	N	N (10 m)	58 m	N
High Street Bovingdon	Kerbside	X 501541 Y 203659	NO_2	N	Y (13 m)	N/A	N
High Street Berkhamsted	Kerbside	X 499365 Y 207724	NO_2	N	N (20 m)	N/A	N
Prince Edward Street, Berkhamsted	Background	X 499207 Y 207754	NO_2	N	N (12 m)	35 m	N
High Street, Northchurch	Kerbside	X 497346 Y 208835	NO_2	N*	Y (1 m)	N/A	Y
Brook Street, Tring	Kerbside	X 492552 Y 211824	NO_2	N	Y (8 m)	N/A	N
High Street, Tring	Kerbside	X 492335 Y 211386	NO_2	N	N (30 m)	N/A	N
Charles Street, Tring	Background	X 492195 Y 211159	NO_2	N	N (2 m)	50 m	N
Watford Road, Kings Langley	Kerbside	X 507606 Y 201624	NO_2	N	N (34 m)	N/A	N
High Street, Kings Langley	Kerbside	X 507184 Y 202690	NO_2	N	N (15 m)	N/A	N
Lawn Lane 1, Hemel Hempstead	Kerbside	X 505923 Y 205761	NO_2	N*	Y (2 m)	N/A	N
Gammons Lane, Hemel Hempstead	Background	X 507058 Y 206727	NO_2	N	N (6 m)	22 m	N
Wadley Close, Hemel Hempstead	Background	X 506981 Y 206829	NO_2	N	N (10 m)	11 m	N
Field Road, Hemel Hempstead	Background	X 507483 Y 206898	NO_2	N	Y (1 m)	17 m	N
St Agnells lane, Hemel Hempstead	Roadside	X 507121 Y 209252	NO_2	N	Y (10 m)	1 m	N
New Road, Northchurch	Kerbside	X 497335 Y 208860	NO_2	N	Y (1 m)	N/A	Y
Darrs Lane, Northchurch	Roadside	X 497264 Y 208927	NO_2	N	Y (5 m)	1 m	N
Lawn Lane 2, Hemel Hempstead	Roadside	X 505969 Y 205726	NO_2	N*	Y (8 m)	1 m	N
Lawn Lane 3, Hemel Hempstead	Roadside	X 505930 Y 205740	NO_2	N*	Y (1 m)	1 m	Y
London Road, Apsley	Roadside	X 505674 Y 205514	NO_2	N*	Y (1 m)	1 m	Y

*Note: *Within three AQMAs to be declared for annual average NO_2*

The NO_2 diffusion tubes are supplied and analysed by Harwell Scientifics, Oxon, and are prepared using the 50:50 (acetone:triethanolamine) method. Harwell Scientifics follow the procedures set out in the Harmonisation Practical Guidance. WASP results for the period 2007 to present are outlined in Appendix E. A Stewhart chart system is employed by Harwell Scientifics for analytical quality control.

No local authority co-location studies have been undertaken within Dacorum borough since the 2006 updating and screening assessment was produced, and therefore no locally derived bias adjustment factors have been generated for the interim years of 2006, 2007 and 2008. Annual average nitrogen

dioxide concentrations (from diffusion tube data) presented in this report have been bias adjusted using the following factors, all of which were obtained from the LAQM Review and Assessment website (www.uwe.ac.uk/aqm/review):

- 2006: 0.79 (derived from 13 co-location studies)
- 2007: 0.82 (derived from 18 co-location studies)
- 2008: 0.79 (derived from 12 co-location studies)

2.2 Comparison of Monitoring Results with AQ Objectives

The following section compares air quality monitoring results with relevant air quality objectives. NO_2 diffusion tube data are presented along with automatic monitoring data for PM_{10} obtained from the neighbouring authorities referenced in Section 2.1.1. Monitoring data for other parameters are also presented.

2.2.1 Nitrogen Dioxide

Diffusion Tube Monitoring Data

Table 2.4a below indicates that the 2005 annual mean air quality objective for NO_2 was exceeded at five of the 22 monitoring locations within the borough in 2008. Four of these five locations (at Lawn Lane, Hemel Hempstead, London Road, Apsley and Northchurch High Street) are within areas previously identified in the 2007 Detailed Assessment as requiring the declaration of air quality management areas (AQMAs) for the NO_2 annual mean objective.

The annual mean NO_2 objective was also exceeded at Watford Road, Kings Langley in 2008. However this monitoring site is not representative of public exposure. Following the guidance/calculation methodology outlined in Box 2.3 of LAQM.TG(09), the annual average NO_2 concentration at the nearest receptor is estimated to be approximately 32 µg/m^3.

Table 2.4b below presents annual average NO_2 concentrations for each diffusion tube site between 2006 and 2007. Exceedences of the annual average objective are again observed at Lawn Lane, Hemel Hempstead, London Road, Apsley and Watford Road, Kings Langley. Exceedences are also apparent at New Road, Northchurch and High Street, Northchurch, both of which are located within the potential AQMA identified in the 2007 Detailed Assessment.

A marginal exceedance of the annual mean objective for NO_2 was also observed at Berkhamsted High Street in 2007, but this site is not representative of public exposure. Following the guidance/calculation methodology outlined in Box 2.3 of LAQM.TG(09), the annual average NO_2 concentration at the nearest receptor is estimated to be approximately 27 µg/m^3.

Section 2.34 of LAQM.TG(09) indicates that if annual mean NO_2 concentrations are greater than 60 µg/m^3, then it is likely that exceedences of the 1 hour air quality objective for NO_2 (Table 1.1) will occur. Although annual mean NO_2 concentrations exceeded 60 µg/m^3 at Lawn Lane, Apsley and London Road, Hemel Hempstead in 2006 and 2007, these were relatively minor exceedences and therefore well within the typical diffusion tube measurement uncertainty of 25% referenced in Section A1.40 of LAQM.TG(09). Annual mean NO_2 concentrations at all diffusion tube measurement locations were below 60 µg/m^3 in 2008.

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes 2008

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations 2008 (µg/m^3) Adjusted for bias
DC40	Sawyers Way, Hemel Hempstead	N	58	18.7 (21.9)
DC42	Wood Lane End HH	N	100	26.1
DC43	Roman Way, Markyate	N	58	20.7 (19.1)
DC46	High Street Bovingdon	N	92	23.7
DC47	High Street Berkhamsted	N	100	38.9
DC48	Prince Edward Street, Berkhamsted	N	75	18.9 (18.8)
DC50	High Street, Northchurch	N	67	39.7 **(41.6)**
DC51	Brook Street, Tring	N	92	28.7
DC52	High Street, Tring	N	50	33.8 (34.2)
DC53	Charles Street, Tring	N	92	16.1
DC54	Watford Road, Kings Langley	N	92	**48.5**
DC55	High Street, Kings Langley	N	83	30.9 (31.7)
DC57	Lawn Lane 1, Hemel Hempstead	N	92	**56.4**
DC58	Gammons Lane, Hemel Hempstead	N	100	30.4
DC59	Wadley Close, Hemel Hempstead	N	92	30.3
DC60	Field Road, Hemel Hempstead	N	100	25.3
DC61	St Agnells lane, Hemel Hempstead	N	92	31.6
DC62	New Road, Northchurch	N	92	38.3
DC63	Darrs Lane, Northchurch	N	100	28.6
DC64	Lawn Lane 2, Hemel Hempstead	N	100	37.5
DC65	Lawn Lane 3, Hemel Hempstead	N	100	**54.4**
DC66	London Road, Apsley	N	100	**56.3**

Note: Bias adjustment factor for 2008 = 0.79; values in parenthesis are concentrations adjusted (due to data capture being below 90%) following guidance provided in Box 3.2 of LAQM.TG(09). Adjustment based on annual mean/period mean ratio of background diffusion monitoring results for Dacorum BC in 2008

Table 2.4b Results of Nitrogen Dioxide Diffusion Tubes 2006 and 2007

Site ID	Location	Within AQMA?	Annual mean concentrations (µg/m^3) Adjusted for bias	
			2006	2007
DC40	Sawyers Way, Hemel Hempstead	N	24.2	25.0
DC42	Wood Lane End HH	N	24.3	26.5
DC43	Roman Way, Markyate	N	19.9	22.1* (21.2)
DC46	High Street Bovingdon	N	21.7* (23.5)	32.8* (24.5)
DC47	High Street Berkhamsted	N	37.7* (37.3)	**40.2**
DC48	Prince Edward Street, Berkhamsted	N	22.0* (22.6)	22.6
DC50	High Street, Northchurch	N	**43.8* (43.8)**	**45.9**
DC51	Brook Street, Tring	N	30.3* (25.2)	31.7* (30.7)
DC52	High Street, Tring	N	32.6* (31.9)	36.4* (33.6)
DC53	Charles Street, Tring	N	18.7	21.3* (20.3)
DC54	Watford Road, Kings Langley	N	**47.5**	**49.3**
DC55	High Street, Kings Langley	N	33.2	34.6
DC57	Lawn Lane 1, Hemel Hempstead	N	**51.4**	**58.2**
DC58	Gammons Lane, Hemel Hempstead	N	27.3* (27.5)	30.1
DC59	Wadley Close, Hemel Hempstead	N	33.3* (33.6)	33.3
DC60	Field Road, Hemel Hempstead	N	22.6* (22.8)	28.1
DC61	St Agnells lane, Hemel Hempstead	N	32.1* (32.4)	31.6
DC62	New Road, Northchurch	N	35.2* (37.7)	**40.7**
DC63	Darrs Lane, Northchurch	N	27.3* (29.3)	30.3
DC64	Lawn Lane 2, Hemel Hempstead	N	36.2* (36.5)	**40.1**
DC65	Lawn Lane 3, Hemel Hempstead	N	**54.4* (54.8)**	**61.3**
DC66	London Road, Apsley	N	**61.5* (62.0)**	**60.3**

*Note: * = <90% data capture; bias adjustment factor for 2006 = 0.79; bias adjustment factor for 2007 = 0.82; values in parenthesis are concentrations adjusted (due to data capture being below 90%) following guidance provided in Box 3.2 of LAQM.TG(09). Adjustment based on annual mean/period mean ratio of background diffusion monitoring results for Dacorum BC in 2006 and 2007*

2.2.2 PM_{10}

As discussed above in Section 2.1.1, due to the absence of local PM_{10} measurement data, monitoring data have been obtained from stations operated by other members of the Hertfordshire and Bedfordshire Air Quality Network. To provide continuity with the 2006 Updating and Screening Assessment, PM_{10} data from four different automatic monitoring stations operated by South Bedfordshire District Council, St Albans District Council, Watford Borough Council and Luton Borough Council are presented below in Tables 2.5a and 2.5b.

No exceedance of long- or short-term air quality objectives for PM_{10} was observed between 2005 and 2007. Fully ratified PM_{10} monitoring data for 2008 were not available at the time of reporting. All presented data have been corrected to gravimetric equivalent values by applying appropriate correction factors (x 1.3 for TEOM data and x 0.83 for BAM data).

Table 2.5a Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture (%)			Annual mean concentration (µg/m^3)		
			2005	2006	2007	2005	2006	2007
South Beds (background)	Near Dunstable High Street (501908, 221827)	No	>90	>90	**<90**	22	25	21 (34)
St Albans (background)	Royal Road, St Albans (516550, 207360)	No	>90	>90	>90	22	23	21
Watford (roadside)	Town Hall, Watford (510540, 196780)	No	>90	>90	>90	26	27	26
Luton (background)	Stoneygate Road, Luton (505550, 222850)	No	>90	>90	>90	24	24	23

Source: Hertfordshire and Bedfordshire Air Quality Network; where data capture is below 90%, value in parenthesis = 90th percentile of hourly average concentrations

Table 2.5b Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Number of Exceedences of hourly mean (50 µg/m^3)		
		2005	2006	2007
South Beds (background)	Near Dunstable High Street (501908, 221827)	0	10	1 (32)
St Albans (background)	Royal Road, St Albans (516550, 207360)	3	8	7
Watford (roadside)	Town Hall, Watford (510540, 196780)	4	12	20
Luton (background)	Stoneygate Road, Luton (505550, 222850)	2	10	12

Source: Hertfordshire and Bedfordshire Air Quality Network; where data capture is below 90%, value in parenthesis = 90th percentile of 24-hour average concentrations

2.2.3 Sulphur Dioxide

Sulphur dioxide is not currently monitored within the borough. Data obtained from the Hertfordshire and Bedfordshire Air Quality Network for the Luton (background) automated monitoring station (referenced above in Tables 2.5a and 2.5b) indicates that the maximum 15 minute average concentration measured at this location between 2006 and 2008 was less than 120 µg/m^3. This is below than the relevant 2005 air quality objective presented in Table 1.1.

The maximum hourly average sulphur dioxide concentration as measured at the Luton (background) automated station between 2006 and 2008 was less than 70 µg/m^3. This is significantly below the relevant 2004 air quality objective (Table 1.1). The maximum daily average sulphur dioxide concentration as measured at the Luton (background) site between 2006 and 2008 was less than 30 µg/m^3. Again, this is significantly below the relevant 2004 air quality objective presented in Table 1.1.

2.2.4 Benzene

Benzene is not currently monitored by Dacorum Borough Council or any other members of the Hertfordshire and Bedfordshire Air Quality Network. Pumped diffusion tube data obtained from the UK Air Quality Archive (www.airquality.co.uk) indicate that maximum annual average benzene concentrations as measured at a variety of sites across England between 2006 and 2008 were below the relevant 2003 air quality objective presented in Table 1.1.

Maximum annual average benzene concentrations as measured at pumped diffusion tube monitoring sites across England in 2006, 2007 and 2008 were 5.33 µg/m^3 (Birmingham roadside), 11.25 µg/m^3 (Plymouth centre) and 3.74 µg/m^3 (Birmingham roadside) respectively.

2.2.5 Other pollutants monitored

Carbon monoxide is not currently monitored within the borough. Data obtained from the Hertfordshire and Bedfordshire Air Quality Network for the Luton (background) automated monitoring station (referenced above in Tables 2.5a and 2.5b) indicates that the maximum running 8-hour average concentration measured at this location between 2006 and 2008 was less than 3.5 mg/m^3. This is less than the relevant 2003 air quality objective presented in Table 1.1.

1,3-butadiene is not currently monitored by Dacorum Borough Council or any other members of the Hertfordshire and Bedfordshire Air Quality Network. Diffusion tube data obtained from the UK Air Quality Archive (www.airquality.co.uk) indicate that maximum annual average 1,3-butadiene concentrations as measured at a variety of sites across England between 2006 and 2007 were below the relevant 2003 air quality objective presented in Table 1.1. Monitoring data for 2008 were not available at the time of reporting.

Maximum annual average 1-3-butadiene concentrations as measured at diffusion tube monitoring sites across England in 2006 and 2007 were 1.42 $\mu g/m^3$ (Leeds roadside) and 0.45 $\mu g/m^3$ (Middlesbrough) respectively.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

There are no new/newly identified narrow and congested streets that meet the relevant assessment criteria identified in LAQM.TG(09). There is therefore no need to proceed to a detailed assessment for NO_2.

Dacorum Borough 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

There are no busy streets within the borough that are new or were not considered in earlier rounds of review and assessment. There is therefore no need to proceed to a detailed assessment for NO_2.

Dacorum Borough 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.

There are no roads within the borough with an unusually high proportion of HDVs that are new or were not considered in earlier rounds of review and assessment. There is therefore no need to proceed to a detailed assessment for PM_{10} or NO_2.

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

3.4 Junctions

There are no busy junctions within the borough that are new or were not considered in earlier rounds of review and assessment. There is therefore no need to proceed to a detailed assessment for PM_{10} or NO_2.

Dacorum Borough 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

There are no new or proposed roads within the borough. There is therefore no need to proceed to a detailed assessment for PM_{10} or NO_2.

Dacorum Borough Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

There are no new/newly identified roads within the borough with significantly changed traffic flows. There is therefore no need to proceed to a detailed assessment for PM_{10} or NO_2.

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

3.7 Bus and Coach Stations

There are no relevant bus stations that were not considered in previous rounds of review and assessment. There is therefore no need to proceed to a detailed assessment for PM_{10} or NO_2.

Dacorum Borough Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

There are no airports within the local authority area. The nearest airport is located in Luton, approximately 10 km from the northern boundary of the borough. There is therefore no need to proceed to a detailed assessment for NO_2.

Dacorum Borough Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

As highlighted in Section 1.1, a major railway runs through the borough, linking London Euston to the south with the midlands to the north. Although diesel locomotives occasionally utilise the railway, the vast majority of trains operating on the network are electrically powered. The few diesel trains that do travel through the borough do not stop for more than 15 minutes at any location. None of the trains operating on the network are powered by steam.

There are, therefore, no diesel or coal-fired stationary locomotives within the local authority area that could contribute towards an exceedance of relevant air quality objectives for sulphur dioxide. Similarly, there aren't large numbers of moving diesel locomotives within the local authority area that could contribute towards an exceedance of relevant air quality objectives for NO_2. There is therefore no need to proceed to a detailed assessment for SO_2 or NO_2.

4.2.1 Stationary Trains

Dacorum Borough 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

Dacorum Borough 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)

There are no ports or local sources of shipping within the local authority area. There is therefore no need to proceed to a detailed assessment for SO_2.

Dacorum Borough Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

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

Appendices A to D list all Part A and B processes currently in operation within the borough. No new or proposed industrial installations have been granted planning approval within the borough since the 2006 Updating and Screening Assessment. Dacorum Borough Council is unaware of any new or proposed industrial installations in neighbouring authorities near to the borough boundary for which planning approval has been granted. There is therefore no need to proceed to a detailed assessment for relevant pollutants.

Dacorum Borough 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

There are no existing industrial installations within the borough of Dacorum or nearby in a neighbouring authority where emissions have increased substantaially or where new relevant exposure has been introduced. There is therefore no need to proceed to a detailed assessment for relevant pollutants.

Dacorum Borough 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

There are no new or significantly changed industrial installations within the borough of Dacorum or nearby in a neighbouring authority. There is therefore no need to proceed to a detailed assessment for relevant pollutants.

Dacorum Borough 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

As a result of the widely publicised Buncefield oil depot explosion in December 2005, there is currently just one large petrol storage operator within the borough (the BP Oil (UK) Ltd site at Buncefield). A second (proposed) storage site at Buncefield, operated by Hertfordshire Oil Storage Ltd, is currently going through the council planning process. It is anticipated that, if this site is granted planning permission, Dacorum Borough Council will undertake diffusion tube monitoring of ambient benzene concentrations in the vicinity of Buncefield depot.

Employing the nomogram outlined in Figure 5.16 of the technical guidance, taking into account the location of the nearest residential receptor to the petrol storage site and annual benzene emissions

data provided by the National Atmospheric Emissions Inventory for 2005 (the most recent data set available for the petrol storage site in question), it is determined that it is not necessary to proceed to a detailed assessment for Benzene for this source.

Dacorum Borough Council has assessed a major petrol storage depot, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.3 Petrol Stations

No new petrol stations have opened in Dacorum borough since the 2006 Updating and Screening Assessment. All petrol stations assessed in 2006 met the relevant significance criteria outlined in LAQM.TG(03) and continue to meet the significance criteria outlined in LAQM.TG(09). There is therefore no need to proceed to a detailed assessment for benzene.

All authorised petrol stations with an annual throughput greater than 1000 m^3 per annum are listed in Appendix A.

Dacorum Borough Council confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

A review of the Environment Agency's IPPC public register (as directed in the technical guidance) indicates that there are currently no poultry farms regulated by the Environment Agency within the local authority area. This was also confirmed by the local (Thames North East) Environment Agency office. It is assumed, therefore, that there are no poultry farms within Dacorum borough that meet the significance criteria outlined in the technical guidance.

In light of this it is considered that there is no need to proceed to a detailed assessment of PM_{10} emissions from poultry farms.

Dacorum Borough Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

There are no 50 kW to 20 MW biomass combustion units within the borough that are regulated under the Clean Air Act. The 2006 Updating and Screening Assessment for sulphur dioxide indicated that was no significant domestic burning of coal or oil in boilers >5 MW within the borough. This continues to be the case, indicating that there are no significant individual combustion sources resulting in emissions of PM_{10} and nitrogen oxides. There is therefore no need to proceed to a detailed assessment for PM_{10} or NO_2.

Dacorum Borough Council confirms that there are no biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

There are no areas within the borough where there is a high density of housing and service sector biomass combustion appliances which, when combined, could lead to unacceptably high PM_{10} concentrations. There is therefore no need to proceed to a detailed assessment for NO_2.

Dacorum Borough Council confirms that there are no biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

The 2006 Updating and Screening Assessment indicated that there were no areas of significant domestic coal burning within the borough. This continues to be the case, and there are currently no significant areas of domestic coal burning within the borough that could result in emissions of sulphur dioxide. There is therefore no need to proceed to a detailed assessment for SO_2

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

7 Fugitive or Uncontrolled Sources

There are no significant sources of fugitive dust emissions within Dacorum borough that could potentially give rise to elevated PM_{10} concentrations. Although currently there is a relatively large construction project at the site of the former Kodak building, where there is relevant exposure fairly close to the site, the actual construction of the building fabric is now complete. Furthermore, there have been no recent dust complaints from local residents and no evidence of significant quantities of dust being tracked out of the project site on to the public highway.

Following the steps outlined in BOX 5.10 of the technical guidance, it is not considered necessary to proceed to a detailed assessment for PM_{10} at this location.

Dacorum Borough 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

Monitoring data captured between 2006 and 2008 (where available) indicate that, excluding NO_2, relevant air quality objectives are currently being achieved within the borough.

Annual average NO_2 concentrations continue to exceed the relevant air quality objective in the three previously identified AQMAs (Lawn Lane, Apsley, London Road, Hemel Hempstead and High Street Northchurch). Annual average NO_2 concentrations greater than the relevant air quality objective were also observed at Watford Road, Kings Langley and Berkhamsted High Street. However, it has been determined that there is no relevant exposure at these two locations and therefore no requirement to proceed to a detailed assessment(s) for annual average NO_2.

Diffusion tube measurement data also indicate that the short-term (1-hour average) air quality objective for NO_2 was potentially exceeded at Lawn Lane, Apsley and London Road, Hemel Hempstead in 2006 and 2007. However, due to the marginal nature of the measured exceedences and typical diffusion tube measurement uncertainty, it has not been considered necessary to proceed to a detailed assessment for short-term NO_2 at these two locations. Furthermore, no exceedance of the short-term 'indicator concentration' of 60 $\mu g/m^3$ was measured at any of the monitoring locations in 2008.

8.2 Conclusions from Assessment of Sources

There have been no major infrastructural, industrial, commercial, residential or other developments within the borough that could result in a new significant source of emissions to air. Existing sources of emissions have not significantly changed since the last Updating and Screening Assessment was produced in 2006.

8.3 Proposed Actions

The Updating and Screening Assessment has not identified the need to proceed to a detailed assessment for any of the assessed pollutants. However, it is recognised that the proposed AQMAs in relation to the annual average air quality objective for NO_2 at Lawn Lane, Apsley, London Road, Hemel Hempstead and High Street Northchurch must be declared without delay. Furthermore, it is proposed that, in 2009, a continuous NO_X/NO_2 analyser is deployed within one of the three AQMAs to determine with more accuracy likely short-term (1-hour average) ambient NO_2 concentrations.

It is also anticipated that diffusion tube monitoring of ambient benzene concentrations near to the Buncefield depot will be undertaken once/if the proposed Hertfordshire Oil Storage Ltd site is granted planning permission.

9 References

- Air Quality Consultants Ltd (2007): Detailed Assessment of Air Quality in Dacorum
- Dacorum Borough Council (2005): Air Quality Progress Report 2003 and 2004
- Dacorum Borough Council (2006): Local Air Quality Management Updating and Screening Assessment 2006
- Dacorum Borough Council website: www.dacorum.gov.uk
- DEFRA (2009): Part IV of the Environment Act 1995 Environment (Northern Ireland) Order 2002 Part III Local Air Quality Management Technical Guidance LAQM.TG(09)
- Hertfordshire and Bedfordshire Air Quality network: www.hertsbedsair.org.uk
- Local Air Quality Management Review and Assessment website: www.uwe.ac.uk/aqm/review
- RSK (2009): Detailed Air Dispersion Modelling Assessment of PM_{10} Road Traffic Emissions in Dacorum Borough
- UK Air Quality Archive: www.airquality.co.uk

Appendices

Appendix A: Part B Petrol Stations within Dacorum BC (2009)

Appendix B: Part B Dry Cleaners within Dacorum BC (2009)

Appendix C: Part B Processes within Dacorum BC (2009)

Appendix D: Part A Processes within Dacorum BC (2009)

Appendix E: Harwell Scientifics WASP Summary (2007 to Present)

Appendix A: Part B Petrol Stations within Dacorum BC (2009)

Reference Number	Site Name/Operator	Site Location	Grid Reference
MAU 6018	Shell	Everest Way, Hemel Hempstead, Herts, HP2 4HZ	TL 070 075 GB
SR 132027	Forest Services	Bourne End Filling Station, London Road, Bourne End, Herts, HP1 2RQ	TL 026 062 GB
MAU 6016	Shell	Breakspear Way, Hemel Hempstead, Herts, HP2 4TZ	TL 085 075 GB
MAU 6017	BP	Breakspear Way, Hemel Hempstead, Herts, HP2 4TZ	TL 085 075 GB
MAU 6033	Total Uk Limited	Total Convenience Store, Bourne End, A41 Service Area, Herts, HP1 2SB	TL 015 058 GB
MAU 6020	Total UK Limited	Cross Oaks Service Station, 345 High Street, Berkhamsted, Herts, HP4 1AL	SP 986 080 GB
MAU 6034	Total UK Limited	Tring Service Station, Brook Street, Tring, Herts, HP23 5EE	SP 926 116 GB
MAU 6021	Tesco Stores Limited	Tesco Stores Limited, Jarman Way, Hemel Hempstead, Herts, HP2 4JS	TL 067 065 GB
MAU 5989	Esso	Hall Park Service Station, London Road, Berkhamsted, Herts, HP4 2NB	TL 000 075 GB
MAU 6015	Sainsburys Supermarkets ltd	London Road, Apsley Mills, Hemel Hempstead, Herts, HP3 9SP	TL 059 053 GB
MAU 6029	Shell	14 London Road, Hemel Hempstead, Herts, HP3 9SP	TL 058 054 GB
MAU 6024	Pace Petroleum	London Road, Northchurch, Herts, HP23 5SR	SP 957 102 GB
MAU 6028	Flamstead Filling Station	London Road, Flamstead, Herts, AL3 8HS	TL 084 150 GB
MAU 6030	Forest Services	489 London Road, Hemel Hempstead, Herts HP3 9BE	TL 045 059 GB
MAU 6037	Total Uk Limited	Warners End Road, Northridge Way, Hemel Hempstead, Herts HP1 3QF	TL 042 074 GB
MAU 6031	Marco Polo Enterprises	Jet, Queensway Service Station, 101 Queensway, Hemel Hempstead, Herts, HP2 5HD	TL 057 077 GB
MAU 6032	Somerfield	Cupid Green Service Station, Redbourn Road, Hemel Hempstead, Herts, HP2 7BA	TL 073 093 GB

SR 207758	Park Garage Group	Kings Langley Service Station, 124 Hempstead Road, Kings Langley, Herts, WD4 8AL	TL 069 041 GB

Appendix B: Part B Dry Cleaners within Dacorum BC (2009)

Reference Number	Site Name/Operator	Site Location	Grid Reference
SR 159290	B Smart Dry Cleaners	221 High Street, Berkhamsted, Herts, HP4 1AD	SP 990 078 GB
SR 156845	Bovingdon Dry Cleaners	33 High Street, Bovingdon, Hemel Hempstead, Herts, HP3 0HG	TL 013 038 GB
SR 173716	Fletchers Dry Cleaners	5 Henry Wells Square, Hemel Hempstead, Herts, HP2 6BJ	TL 065 094 GB
SR 173664	FM Express Dry Cleaners	321 High Street, Berkhamsted, Herts, HP4 1AL	SP 986 080 GB
SR 159715	Johnson Cleaners	C/o Sainsburys Store, Apsley Mills, Hemel Hempstead, Herts, HP3 9QZ	TL 060 540 5287
SR 173113	Johnson Cleaners	Front Shop, 384 High Street, Berkhamsted, Herts, HP4 1HU	SP 850 81
SR 174555	Mr Smart Dry Cleaners	136 The Marlowes, Hemel Hempstead, Herts, HP1 1EZ	TQ 505 518
SR 168508	Rainbow Dry Cleaners	26 Queens Square, Adeyfield, Hemel Hempstead, Herts, HP2 4ES	TL 069 075
SR 159422	Swan Cleaners	8 Rossgate, Gadebridge, Hemel Hempstead, Herts, HP1 3LG	TL 043 084
SR 207970	Pristine Dry Cleaners	22 Mark Road, Hemel Hempstead, Herts, HP2 7BN	TL 077 080

Appendix C: Part B Processes within Dacorum BC (2009)

Reference Number	Process Type	Site Name/Operator	Site Location	Grid Reference
MAU 8630	Vehicle Respraying	Abbey Motors	24 Mark Road, Hemel Hempstead, Herts, HP2 7DN	SP 994 030 GB
MAU 8072	Storage, Unloading and Loading Petrol at Terminals	BP Oil UK Ltd	Buncefield Terminal, Green Lane, Hemel Hempstead, Herts, HP2 7JA	TL 029 018 GB
MAU 6647	Waste Oil Burner	Chipperfield Garden Machinery	Langley Road, Chipperfield, Herts, WD4 9EG	TL 062 075 GB
SR 141767	Mobile Crushing Plant	Davis and Samson	Billet Lane, Berkhamsted, Herts, HP4 0DP	SP 981 084 GB
SR 228117	Mobile Crushing Plant	Davis and Samson	Billet Lane, Berkhamsted, Herts, HP4 0DP	SP 981 084 GB
MAU 7961	Mobile Crushing Plant	G J Gaywood	1 Alexandra Road, Kings Langley, Herts, WD48DU	TL 080 093 GB
SR 135041	Mobile Crushing Plant	G J Gaywood	1 Alexandra Road, Kings Langley, Herts, WD48DU	TL 080 093 GB
MAU 8073	Storage, Unloading and Loading Petrol at Terminals	Hertfordshire Oil Storage Ltd	Buncefield Terminal, Green Lane, Hemel Hempstead, Herts, HP2 7HZ	TL 080 093GB
MAU 10488	Cement Works	Hanson Premix	Riversend Road, Hemel Hempstead, Herts, HP3 9QS	TL 054 055 GB
MAU 8699	Vehicle Respraying	Hangreen Ltd (T/A Sky Ford)	Redbourn Road, Hemel Hempstead, Herts, HP2 7AZ	TL 071 089 GB
MAU 8700	Vehicle Respraying	Pillings Bodyshop	Rucklers Lane, Kings Langley, Herts, WD4 8AU	TL 067 042 GB
MAU 9862	Mobile Crushing Plant	S J B Plant Hire	Unit 8 Pudds Cross Industrial Park, Leyhill Road, Bovingdon, Herts, HP3 0NW	TL 004 030 GB
SR 132058	Application and Curing of Powder Coating to Metal Parts	C G Versatile Fittings	City House, Swallowdale Lane, Hemel Hempstead, Herts, HP2 7EA	TL 076 088GB
SR 178398	Mobile Crushing Plant	W F Button & Son Ltd (T/A Button-Linguard)	Button House, Pix Farm Lane, Hemel Hempstead, Herts, HP1 2RY	TL 023 065 GB
SR 215103	Waste Oil Burner	Car Care Works (T/A Chiltern Aston Centre)	Leyhill Road, Bovingdon, Herts, HP3 0NW	TL 004 029

Appendix D: Part A Processes within Dacorum BC (2009)

Part A Processes

Name of Operator	Location of Operator
Henkel Locite Adhesives Ltd	Wood Lane End, Hemel Hempstead

Reference Number	Process Type	Site Name/Operator	Site Location	Grid Reference
SR50602	Brickworks	Bovingdon Brickworks	Leyhill Road, Bovingdon, Herts, HP3 0NW	SP 987 010 GB

Appendix E: Harwell Scientifics WASP Summary (2007 to Present)

Year	WASP Round	Period	HSL Calculations (Pre-Sendout)		Harwell Analysis					
			Sample A		Tubes A					
			Calculated Spiked Value	Measured Value	Result Tube 1	Result Tube 2	Average	Standard Deviation	RSD	Z-Score
2010	108									
2009	107									
	106									
	105									
	104	Jan-Feb	2.02	2.01	2.017	2.047	2.032	0.022	1.1%	0.0
2008	103	Sept-Dec	1.22	1.22	1.242	1.234	1.238	0.006	0.5%	0.1
	102	Jun-Aug	1.37	1.38	1.47	1.472	1.471	0.043	2.9%	0.5
	101	Apr-Jun	0.92	0.94	0.974	0.991	0.983	0.013	1.3%	0.5
	100	Jan-Mar	1.36	1.37	1.395	1.384	1.39	0.008	0.6%	0.2
2007	99	Oct-Nov	2.15	2.16	2.242	2.235	2.239	0.005	0.2%	0.3
	98	Jul-Sept	1.83	1.85	1.877	1.854	1.866	0.013	0.7%	0.2
	97	Apr-Jun	0.89	0.87	0.92	0.918	0.919	0.002	0.2%	0.2

All results in µg

Year	WASP Round	Period	HSL Calculations (Pre-Sendout)		Harwell Analysis					
			Sample B		Tubes B					
			Calculated Spiked Value	Measured Value	Result Tube 1	Result Tube 2	Average	Standard Deviation	RSD	Z-Score
2010	108									
2009	107									
	106									
	105									
	104	Jan-Feb	1.22	1.19	1.269	1.23	1.252	0.024	1.9%	0.2
2008	103	Sept-Dec	0.94	0.95	0.957	0.951	0.954	0.005	0.5%	0.1
	102	Jun-Aug	2.28	2.3	2.435	2.386	2.411	0.035	1.5%	0.4
	101	Apr-Jun	1.86	1.93	1.947	1.958	1.953	0.008	0.4%	0.4
	100	Jan-Mar	1.47	1.45	1.511	1.516	1.514	0.004	0.3%	0.2
2007	99	Oct-Nov	0.84	0.84	0.906	0.901	0.904	0.004	0.4%	0.6
	98	Jul-Sept	1.19	1.2	1.229	1.223	1.226	0.005	0.4%	0.2
	97	Apr-Jun	1.58	1.59	1.619	1.64	1.63	0.015	0.9%	0.2

All results in µg