

# Air Quality Updating and Screening Assessment for Chiltern District Council

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Council

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# Executive Summary

The UK Government published its strategic policy framework for air quality management in 1995 establishing national strategies and policies on air quality which culminated in the Environment Act, 1995. The Air Quality Strategy<sup>1</sup> provides a framework for air quality control through air quality management and air quality standards. These and other air quality standards<sup>1</sup> and their objectives have been enacted through the Air Quality Regulations in 1997, 2000 and 2002<sup>2</sup>. The Environment Act 1995 requires Local Authorities to undertake air quality reviews. In areas where an air quality objective is not anticipated to be met, Local Authorities are required to establish Air Quality Management Areas and implement action plans to improve air quality.

The first and second rounds of air quality review and assessments have now been completed for Chiltern District Council. The Local Authority is required to proceed to the third round of review and assessment. This round of review and assessment is to be undertaken in two steps. The first step is an Updating and Screening Assessment, which updates the Stage 1 and 2 review and assessment previously undertaken for all pollutants identified in the Air Quality Regulations. Where a significant risk of exceedance is identified for a pollutant it will be necessary for the local authority to proceed to a Detailed Assessment, equivalent to the previous Stage 3 assessments. Where a local authority does not need to undertake a Detailed Assessment, a progress report is required instead.

The Updating and Screening Assessment should consider any new monitoring data, new sources or significant changes to existing sources (either locally or within neighbouring authorities), or any other local changes that may be significant. It should also carefully consider any relevant changes to public exposure e.g. new residential developments alongside busy roads etc, if these locations were not fully evaluated in previous Review and Assessment reports. It is not necessary to re-assess the issues that have already been adequately considered in previous rounds.

This report is equivalent to an Updating and Screening Assessment for Chiltern District as outlined in the Government's published guidance.

The general approach taken to this Updating and Screening Assessment was to:

- Identify the conclusions of the last round of review and assessment for each of the seven pollutants included in the air quality regulations;
- Identify significant sources of emissions to air for the seven pollutants included in the air quality regulations, including major roads and industrial plant;
- Identify new sources not previously considered in the first round of review and assessment;
- Identify any sources for which emissions have changed significantly since the last round of review and assessment;
- Identify and interpret the significance of air quality monitoring data made available since the last round of review and assessment;
- Assess the risk of exceedances of the air quality objectives in locations where relative public exposure may exist using screening models and nomograms; and
- Where necessary, identify locations and pollutants for which further detailed assessment of air quality will be required.

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<sup>1</sup> Refers to standards recommended by the Expert Panel on Air Quality Standards. Recommended standards are set purely with regard to scientific and medical evidence on the effects of the particular pollutants on health, at levels at which risks to public health, including vulnerable groups, are very small or regarded as negligible.

What are the conclusions of this report for Chiltern District Council?

### **Carbon monoxide**

There are no roads in Chiltern District which can be classified as 'very busy' according to the criteria in the guidance. There are no industrial processes which are significant sources of carbon monoxide. Exceedances of the air quality objective for carbon monoxide are therefore unlikely.

A detailed assessment is not required for carbon monoxide in Chiltern District.

### **Benzene**

There are no roads in Chiltern District, which can be classified as 'very busy' according to the criteria in the guidance. There are no petrol stations with a throughput greater than 2 million litres and with relevant exposure within 10m of the pumps.

A detailed assessment is not required for benzene in Chiltern District.

### **1,3-Butadiene**

Estimated background concentrations and data from national monitoring stations indicate that the objective for 1,3-butadiene has been achieved by the end of 2003. There are no industrial processes, current or proposed, in Chiltern District, which have the potential to emit 1,3-butadiene.

A detailed assessment is not required for 1,3-butadiene in Chiltern District.

### **Lead**

Emissions of lead from industrial processes in Chiltern District are likely to be very small and it is unlikely they will cause exceedances of the air quality objectives for lead in 2004 and 2008.

A detailed assessment is not required for lead in Chiltern District.

### **Nitrogen dioxide**

DMRB studies indicate that the annual mean objective is likely to be met in 2005, including near busy roads and junctions in Chiltern District. Estimated concentrations at potentially busy junctions indicate it is unlikely there will be exceedances of the air quality objectives in 2005. However diffusion tube monitoring studies indicate that the annual mean objective value of  $40 \mu\text{g m}^{-3}$  is likely to be exceeded at roadside locations in Chesham and Chalfont St Giles. In particular Berkhamstead Road in Chesham is predicted to exceed the strategy objectives in both 2005 and 2010. There are no significant industrial sources of nitrogen dioxide in Chiltern District.

A detailed assessment is recommended for nitrogen dioxide at the following locations.

- Chesham Berkhamstead Road
- Chesham Near the Jolly Sportsman pub.
- Chesham Broad Street

The following area should also be considered if there are relevant receptors close to the road:

- Chalfont St Giles The Pheasant Cross Roads

### **Sulphur dioxide**

There are no significant industrial or domestic sources of sulphur dioxide in Chiltern District.

A detailed assessment is not required for sulphur dioxide.

### **PM<sub>10</sub>**

It is unlikely there were exceedances of the annual mean objective or 24 hour mean objective for PM<sub>10</sub> to be met by 2004 including near busy roads and junctions in 2005 but that the EU Limit Values (Stage 2) for 2010 may be exceeded in that year near busy roads and junctions. There are no significant potential industrial or other sources of PM<sub>10</sub>.

A detailed assessment is not required for PM<sub>10</sub>.

**Acronyms and definitions used in this report**

AADTF	Annual Average Daily Traffic Flow
AQMA	Air Quality Management Area
AURN	Automatic Urban Network (defra funded network)
CO	Carbon monoxide
DETR	Department of the Environment Transport and the Regions (now defra)
defra	Department of the Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
EPAQS	Expert Panel on Air Quality Standards (UK panel)
EU	European Union
GIS	Geographical Information System
HA	Highways Agency
kerbside	0 to 1 m from the kerb
Limit Value	An EU definition for an air quality standard of a pollutant listed in the air quality directives
MW <sub>th</sub>	Mega Watts (thermal)
NAEI	National Atmospheric Emissions Inventory produced by netcen on behalf of defra
NO <sub>2</sub>	Nitrogen dioxide
NO <sub>x</sub>	Oxides of nitrogen
NRTF	National Road Traffic Forecast
ppb	parts per billion
receptor	In the context of this study, the relevant location where air quality is assessed or predicted (for example, houses, hospitals and schools)
roadside	1 to 5 m from the kerb
SO <sub>2</sub>	Sulphur dioxide
USA	Updating screening assessment
TEMPRO	A piece of software produced by the defra used to forecast traffic flow increases

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# 1 Introduction to the Updating and Screening Assessment

This section outlines the purpose of this Updating and Screening Assessment and the scope of the assessment.

## 1.1 PURPOSE OF THE UPDATING AND SCREENING ASSESSMENT

The first and second rounds of air quality reviews and assessments are now complete and all local authorities should have completed all necessary stages. Where the likelihood of exceedances of air quality objectives have been identified in areas of significant public exposure, an air quality management area should have been declared, followed by a further (formerly Stage 4) review and assessment, and the formulation of an action plan to eliminate exceedances. Local authorities are now required to proceed to the third round of review and assessment in which sources of emissions to air are reassessed to identify whether the situation has changed since the last round of review and assessment, and if so, what impact this may have on predicted exceedances of the air quality objectives. Such changes might include significant traffic growth on a major road, which had not been foreseen, construction of a new industrial plant with emissions to air, or significant changes in the emissions of an existing plant.

The third round of review and assessment is to be undertaken in two steps. The first step is an Updating and Screening Assessment, which updates the review and assessments previously undertaken for all pollutants identified in the Air Quality Regulations. Where a significant risk of exceedance is identified for a pollutant it will be necessary for the local authority to proceed to a Detailed Assessment, equivalent to the previous Stage 3 assessments. Where a local authority does not need to undertake a Detailed Assessment, a progress report is required instead.

## 1.2 OVERVIEW OF APPROACH TAKEN

The general approach taken to this Updating and Screening Assessment was to:

- Identify the conclusions of the last round of review and assessment for each of the seven pollutants included in the air quality regulations;
- Identify significant sources of emissions to air for the seven pollutants included in the air quality regulations, including major roads and industrial plant;
- Identify new sources not previously considered in the first round of review and assessment;
- Identify any sources for which emissions have changed significantly since the last round of review and assessment;
- Identify and interpret the significance of air quality monitoring data made available since the last round of review and assessment;
- Assess the risk of exceedances of the air quality objectives in locations where relative public exposure may exist using screening models and nomograms; and
- Where necessary, identify locations and pollutants for which further detailed assessment of air quality will be required.

## 1.3 RELEVANT DEFRA DOCUMENTATION USED

This report takes into account the guidance in LAQM.TG(03)<sup>1</sup> published February 2003 and the LAQM TG(03) update published December 2005.

## 1.4 POLLUTANTS CONSIDERED IN THIS REPORT

All pollutants included in the Air Quality Regulations<sup>2</sup> for the purposes of Review and Assessment have been considered in this report.

## 1.5 STRUCTURE OF THE REPORT

The report is structured as follows:

- **Section 2 I** identifies data used in support of this assessment and highlights significant changes in emissions to air within the District since the first round of review and assessment;
- **Sections 3-9** present the review and assessment for each of the seven pollutants included in the Air Quality Regulations;
- **Section 10** presents conclusions and recommendations for further work, where required, for each of the seven pollutants;

The Objectives of the Air Quality strategy are shown below in Table 1.1. Further details of the Air Quality Strategy are given in Section 11.

<b>Table 1.1</b> Objectives included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management			
Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene			
All authorities	16.25 µg/m <sup>3</sup>	running annual mean	31.12.2003
Authorities in England and Wales only	5.00 µg/m <sup>3</sup>	annual mean	31.12.2010
Authorities in Scotland and Northern Ireland only <sup>a</sup>	3.25 µg/m <sup>3</sup>	running annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m <sup>3</sup>	running annual mean	31.12.2003
Carbon monoxide			
Authorities in England, Wales and Northern Ireland only <sup>a</sup>	10.0 mg/m <sup>3</sup>	maximum daily running 8-hour mean	31.12.2003
Authorities in Scotland only	10.0 mg/m <sup>3</sup>	running 8-hour mean	31.12.2003
Lead			
	0.5 µg/m <sup>3</sup>	annual mean	31.12.2004
	0.25 µg/m <sup>3</sup>	annual mean	31.12.2008
Nitrogen dioxide <sup>b</sup>			
	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1 hour mean	31.12.2005
	40 µg/m <sup>3</sup>	annual mean	31.12.2005
Particles (PM <sub>10</sub> ) (gravimetric) <sup>c</sup>			
All authorities	50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year	24 hour mean	31.12.2004
	40 µg/m <sup>3</sup>	annual mean	31.12.2004
Authorities in Scotland only <sup>d</sup>	50 µg/m <sup>3</sup> not to be exceeded more than 7 times a year	24 hour mean	31.12.2010
	18 µg/m <sup>3</sup>	annual mean	31.12.2010
Sulphur dioxide			
	350 µg/m <sup>3</sup> not to be exceeded more than 24 times a year	1 hour mean	31.12.2004
	125 µg/m <sup>3</sup> not to be exceeded more than 3 times a year	24 hour mean	31.12.2004
	266 µg/m <sup>3</sup> not to be exceeded more than 35 times a year	15 minute mean	31.12.2005

<sup>a</sup> Air Quality (Northern Ireland) Regulations 2003.

<sup>b</sup> The objectives for nitrogen dioxide are provisional.

<sup>c</sup> Measured using the European gravimetric transfer sampler or equivalent.

<sup>d</sup> These 2010 Air Quality Objectives for PM<sub>10</sub> apply in Scotland only, as set out in the Air Quality (Scotland) Amendment Regulations 2002.

**Table 1.2 New particle objectives for England, Wales, Northern Ireland and Greater London not included in Regulations**

<b>Region</b>	<b>Objective</b>	<b>Measured as</b>	<b>To be achieved by</b>
Greater London	50 µg/m <sup>3</sup> not to be exceeded more than 10 times per year	24-hour Mean	31 December 2010
Greater London	23 µg/m <sup>3</sup>	Annual Mean	31 December 2010
Greater London	20 µg/m <sup>3</sup>	Annual Mean	31 December 2015
Rest of England, Wales and Northern Ireland	50 µg/m <sup>3</sup> not to be exceeded more than 7 times per year	24-hour Mean	31 December 2010
Rest of England, Wales and Northern Ireland	20 µg/m <sup>3</sup>	Annual Mean	31 December 2010

## 2 Information used to support this assessment

This section lists the key information used in this review and assessment.

### 2.1 CONCLUSIONS FROM THE PREVIOUS ROUND OF REVIEW AND ASSESSMENT OF AIR QUALITY FOR CHILTERN DISTRICT COUNCIL

Chiltern District Council has completed the following review and assessments of air quality to date:

Updating and Screening Assessment	(July 2003)
Progress Report 2004	(April 2004)
Progress Report 2005	(April 2005)

Chiltern District Council has not currently declared any air quality management areas

The 2005 progress report predicted that nitrogen dioxide levels at roadside locations in Chesham may exceed the annual mean objective for 2005 based on diffusion tube concentrations. None of the objectives listed for the other pollutants in the UK Air Quality Strategy were predicted to be exceeded.

### 2.2 PROPOSED DEVELOPMENTS WHICH MAY AFFECT AIR QUALITY

Any new developments in the local authority or in surrounding areas that may impact on local air quality need to be considered.

#### 2.2.1 Housing

A need for some 1,800 additional dwellings was identified in the 1997 Local Plan. The bulk of the development is in Chesham and Amersham. The current Local Plan is being reviewed and consideration will be given to air quality impacts.

#### 2.2.2 Roads and Transport

There are no major road developments planned for Chiltern District.

### 2.3 ROAD TRAFFIC DATA

This section summarises the information used in this report; more detailed information is given in Appendix 2. Appendix 2 lists the locations of the traffic flow and speed measurement points, flow and speed data and other relevant traffic statistics.

Data were collated from a range of sources, including:

- data provided by Buckinghamshire County Council (2005)
- data held in the National Atmospheric Emissions Inventory (NAEI, 2004) where no other data were available from either Chiltern District Council or the Highways Agency.

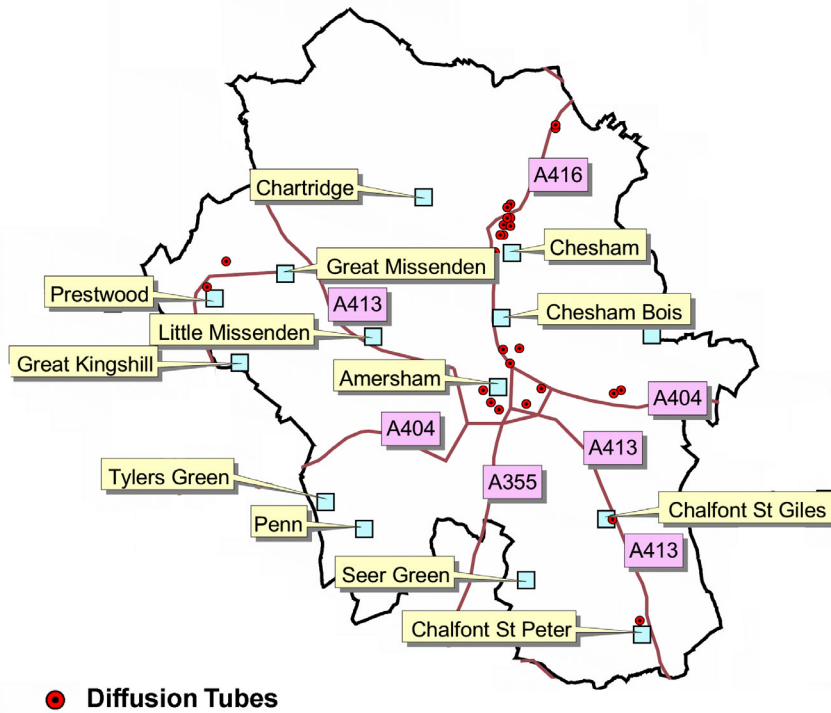
Where no average speed data were available, estimated speeds based on speed limits were used near receptors and junctions. Speeds slower than the national speed limits have been assigned to sections of roads in areas close to junctions.

## 2.4 PART A AND B PROCESSES

There are no Part A processes, 6 Part B Industrial processes and 10 petrol stations in Chiltern District. A full list is given in Appendix 3.

## 2.5 AMBIENT MONITORING

Chiltern District Council undertake monitoring of nitrogen dioxide in their area using diffusion tubes. The location of the monitoring sites is shown in Figure 2.1.



**Figure 2.1 Major Roads and Diffusion Tube Monitoring Sites in Chiltern District**

### 2.5.1 Diffusion tubes

Chiltern District Council carried out monitoring of nitrogen dioxide by diffusion tubes at 27 locations in 2005. The tubes are analysed by Gradko using the 50% TEA in acetone method. Details of the monitoring locations are given in Appendix 1.



## 3 Updating and Screening Assessment for Carbon Monoxide

### 3.1 THE NATIONAL PERSPECTIVE

The main source of carbon monoxide in the United Kingdom is road transport, which accounted for 49% of total releases in 2003. Over the period 1970-2003 emissions decreased by 78% reflecting significant reduction in emissions from road transport, agricultural field burning and the domestic sector.

### 3.2 STANDARD AND OBJECTIVE FOR CARBON MONOXIDE

The Government and the Devolved Administrations adopted an 8-hour running mean concentration of  $11.6 \text{ mgm}^{-3}$  as the air quality standard for carbon monoxide. The new objective has been set at a slightly tighter level of  $10 \text{ mgm}^{-3}$  as a maximum daily running 8-hour mean concentration to have been achieved by the end of 2003, bringing it into line with the second Air Quality Daughter Directive limit value.

### 3.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR CARBON MONOXIDE

The following conclusions were given for carbon monoxide in the earlier Updating and Screening Assessment for Chiltern District Council:

- Although there is no monitoring data for carbon monoxide within the district, it is unlikely that ambient concentrations are above the objective.
- There are no roads in the district which can be classified as 'very busy' according to the criteria in the guidance.
- Chiltern District Council is not required to carry out a Detailed Review and Assessment for carbon monoxide.

### 3.4 SCREENING ASSESSMENT

#### 3.4.1 Screening Assessment Checklist

The sources, data or locations which require assessment according to Technical Guidance LAQM TG(03) are considered in Table 3.1.

**Table 3.1 Screening Assessment of Carbon Monoxide**

<b>Checklist Item ( from Box 2.2 in LAQM.TG(03))</b>	<b>Updating and Screening Assessment</b>
Monitoring data	Carbon monoxide is not currently monitored in Chiltern District. Maximum 8-hour mean concentrations recorded at the AURN monitoring sites nearest to Chiltern in 2005 were significantly less than the objective value of $10 \text{ mgm}^{-3}$
Very busy roads or junctions in built-up areas	Traffic flow data were supplied by Buckinghamshire County Council and also taken from the NAEI. Based on these data, there are no roads or junctions in Chiltern District which can be classified as 'very busy' according to the criteria in the guidance.

### 3.4.2 Background concentrations for carbon monoxide

The average background carbon monoxide concentration in Chiltern District, estimated from the UK background maps<sup>7</sup> was  $0.3 \text{ mgm}^{-3}$  (2001 estimate) with a maximum concentration of  $0.4 \text{ mgm}^{-3}$  near the A413 at Gerrards Cross.

## 3.5 CONCLUSIONS FOR CARBON MONOXIDE CONCENTRATIONS IN CHILTERN DISTRICT

Carbon dioxide was not monitored in Chiltern District. There are no roads in Chiltern District which can be classified as 'very busy' according to the criteria in the guidance.

A detailed assessment is not required for carbon monoxide in the Chiltern District.

## 4 Updating and Screening Assessment for Benzene

### 4.1 THE NATIONAL PERSPECTIVE

The main sources of benzene emissions in the UK are petrol-engined vehicles, petrol refining, and the distribution and uncontrolled emissions from petrol station forecourts without vapour recovery systems. A number of policy measures already in place, or planned for future years, will continue to reduce emissions of benzene. Since January 2000, EU legislation has reduced the maximum benzene content of petrol to 1%, from a previous upper limit of 5%. The European Auto-Oil programme will further reduce emissions for cars and light-duty vehicles, and emissions of benzene from the storage and distribution of petrol are controlled by vapour recovery systems. Forecasts based on national mapping suggest that the policy measures currently in place will achieve the 2003 objective at all urban background and roadside/kerbside locations. Whilst the 2010 objectives are expected to be met at all urban background, and most roadside locations, there is the possibility for some remaining exceedances, which will require additional measures at a local level.

### 4.2 STANDARD AND OBJECTIVE FOR BENZENE

The Government and the Devolved Administrations adopted a running annual mean concentration of  $16.25 \mu\text{g m}^{-3}$  as the air quality standard for benzene, with an objective for the standard to have been achieved by the end of 2003. However, in light of the health advice from EPAQS and the Department of Health's Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC) to reduce concentrations of benzene in air to as low a level as possible, additional tighter objectives have also been set. The additional objective is for an annual mean of  $5 \mu\text{g m}^{-3}$  to be achieved by the end of 2010 in England and Wales. In Scotland and Northern Ireland, a running annual mean of  $3.25 \mu\text{g m}^{-3}$  has been adopted as an additional objective, to be achieved by the end of 2010.

### 4.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR BENZENE

The following conclusions were given for benzene in the earlier Updating and Screening Assessment for Chiltern District Council

- There are no roads in Chiltern District, which can be classified as 'very busy' according to the criteria in the guidance.
- There are no petrol stations with a throughput greater than 2 million litres on or near busy roads and with relevant exposure within 10m of the pumps;
- Chiltern District Council is not required to carry out a Detailed Review and Assessment for benzene.

### 4.4 SCREENING ASSESSMENT OF BENZENE

#### 4.4.1 Screening Assessment Checklist

The sources, data or locations which require assessment according to Technical Guidance LAQM TG(03) are considered in Table 4.1.

**Table 4.1 Screening Assessment of Benzene**

<b>Checklist Item ( from Box 3.2 in TG(03) update)</b>	<b>Updating and Screening Assessment</b>
Monitoring data outside an AQMA	No monitoring of benzene is currently undertaken in Chiltern District
Monitoring data within an AQMA	There are currently no AQMAs declared for Chiltern District.
Very busy roads or junctions in built up areas	Traffic flow data were supplied by Buckinghamshire County Council and also taken from the NAEI. Based on these data, there are no roads or junctions in Chiltern District which can be classified as 'very busy' according to the LAQM TG(03) updated checklist.
New industrial sources.	There are no new industrial sources established since the last Review and Assessment with the potential to emit benzene. There are no industrial sources in Chiltern District with increased emissions since the last Review and Assessment.
Industrial sources with substantially increased emissions, or new relevant exposure	
Petrol stations	There are no petrol stations meeting the criteria in the LAQM TG(03) updated checklist which have not been considered in previous rounds of Review and Assessment reports.
Major fuel storage depots (petrol only)	There are no major fuel storage depots in or close to Chiltern District.

#### 4.4.2 Background concentrations for benzene

The average background benzene concentration in Chiltern District, estimated from the UK background maps<sup>7</sup> was  $0.4 \mu\text{g m}^{-3}$  in 2003 with a maximum concentration of  $0.4 \mu\text{g m}^{-3}$ . The estimated average background benzene concentration was  $0.3 \mu\text{g m}^{-3}$  in 2010 with a maximum concentration of  $0.4 \mu\text{g m}^{-3}$ . The maximum concentration was estimated at Chalfont St Peter close to the M25 motorway.

## 4.5 CONCLUSIONS FOR BENZENE CONCENTRATIONS CHILTERN DISTRICT

Benzene is not monitored in Chiltern District. There are no roads in Chiltern District which can be classified as 'very busy' according to the criteria in the guidance.

A detailed assessment is not required for benzene in the Chiltern District.

## 5 Updating and Screening Assessment for 1,3-Butadiene

### 5.1 THE NATIONAL PERSPECTIVE

The main source of 1,3-butadiene in the United Kingdom is emissions from motor vehicle exhausts. 1,3-butadiene is also an important industrial chemical and is handled in bulk at a small number of industrial premises. Maximum running annual mean concentrations of 1,3-butadiene measured at all urban background/centre and roadside locations in the national network are already well below the 2003 objective of  $2.25 \mu\text{g m}^{-3}$ . The increasing numbers of vehicles equipped with three way catalysts will significantly reduce emissions of 1,3-butadiene in future years. Recently agreed further reductions in vehicle emissions and improvements to fuel quality, are expected to further reduce emissions of 1,3-butadiene from vehicle exhausts. These measures are expected to deliver the air quality objective by the end of 2003.

### 5.2 STANDARD AND OBJECTIVE FOR 1,3-BUTADIENE

The Government and the Devolved Administrations adopted a maximum running annual mean concentration of  $2.25 \mu\text{g m}^{-3}$  as an air quality standard for 1,3-butadiene. The objective is for the standard to have been achieved by the end of 2003.

### 5.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR 1,3-BUTADIENE

The following conclusions were given for 1,3-butadiene in the earlier Updating and Screening Assessment for Chiltern District Council:

- Estimated background concentrations and data from national monitoring stations indicate that the objective for 1,3-butadiene is likely to be achieved by the end of 2003;
- There are no industrial processes in the District, or close to its boundary, which have the potential to emit significant quantities of benzene;
- Chiltern District Council is not required to carry out a Detailed Review and Assessment for 1,3-butadiene.

### 5.4 SCREENING ASSESSMENT OF 1,3-BUTADIENE

#### 5.4.1 Screening Assessment Checklist

The sources, data or locations which require assessment according to Technical Guidance LAQM TG(03) are considered in Table 5.1.

**Table 5.1 Screening Assessment of 1,3-butadiene**

<b>Checklist Item ( from Box 4.2 in TG(03) update)</b>	<b>Updating and Screening Assessment</b>
Monitoring data	1,3-butadiene is not currently monitored in Chiltern District
New industrial sources.	There are no new industrial sources established since the last Review and Assessment with the potential to emit 1,3-butadiene. There are no industrial sources in Chiltern District with increased emissions since the last Review and Assessment.
Industrial sources with substantially increased emissions, or new relevant exposure	

#### 5.4.2 Background Concentrations for 1,3-Butadiene

The average background benzene concentration in Chiltern District, estimated from the UK background maps<sup>7</sup> was  $0.15 \mu\text{g m}^{-3}$  in 2003 with a maximum concentration of  $0.24 \mu\text{g m}^{-3}$ . The maximum concentration was estimated at Chalfont St Peter close to the M25 motorway.

### 5.5 CONCLUSIONS FOR 1,3-BUTADIENE CONCENTRATIONS IN CHILTERN DISTRICT COUNCIL AREA

Estimated background concentrations and data from national monitoring stations indicate that the objective for 1,3-butadiene is likely to have been achieved by the end of 2003.

No industrial processes in Chiltern District have the potential to emit 1,3-butadiene.

A detailed assessment is not required for 1,3-butadiene in Chiltern District.

## 6 Updating and Screening Assessment for Lead

### 6.1 THE NATIONAL PERSPECTIVE

The agreement reached between the European Parliament and the Environment Council on the Directive on the Quality of Petrol and Diesel Fuels (part of the Auto-Oil Programme) has led to the ban on sales of leaded petrol in the United Kingdom with effect from 1 January 2000. Emissions of lead are now restricted to a variety of industrial activities, such as battery manufacture, pigments in paints and glazes, alloys, radiation shielding, tank lining and piping.

Detailed assessments of the potential impact of lead emissions from industrial processes have been undertaken by the Government and the Devolved Administrations, based upon both monitoring and sector analysis studies. The former has included a 12-month monitoring survey in the vicinity of 30 key industrial sites in the UK, which has been used to supplement information already provided from the non-automatic monitoring networks. These monitoring data have generally indicated no exceedances of the 2004 or 2008 objectives, although locations in proximity to non-ferrous metal production and foundry processes were deemed to be at risk.

### 6.2 STANDARD AND OBJECTIVE FOR LEAD

The Government and the Devolved Administrations adopted an annual mean concentration of  $0.5 \mu\text{g m}^{-3}$  as the air quality standard for lead, with an objective for the standard to have been achieved by the end of 2004. In addition, a lower air quality objective of  $0.25 \mu\text{g m}^{-3}$  to be achieved by the end of 2008 has also been set.

### 6.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR LEAD

The following conclusions were given for lead in the earlier Updating and Screening Assessment for Chiltern District Council:

- Emissions of lead from industrial processes in Chiltern District or neighbouring Districts are not likely to lead to exceedance of the objectives for lead to be achieved in 2004 and 2008;
- Chiltern District Council is not required to carry out a Detailed Review and Assessment for lead.

### 6.4 SCREENING ASSESSMENT OF LEAD

The sources, data or locations which require assessment according to Technical Guidance LAQM TG(03) are considered in Table 6.1.

**Table 6.1 Screening Assessment of Lead**

<b>Checklist Item ( from Box 5.1 in TG(03) update)</b>	<b>Updating and Screening Assessment</b>
Monitoring data	Lead is not currently monitored in Chiltern District
New industrial sources.	No new industrial sources Have been established since the last Review and Assessment with the potential to emit lead. There are no existing industrial sources in Chiltern District with the potential to emit lead.
Industrial sources with substantially increased emissions, or new relevant exposure	

## 6.5 CONCLUSIONS FOR LEAD CONCENTRATIONS IN CHILTERN DISTRICT

Emissions of lead from industrial processes in Chiltern District are highly unlikely to cause exceedances of the air quality objectives for lead in 2008.

A detailed assessment is not required for lead in Chiltern District.



## 7 Updating and Screening Assessment for Nitrogen Dioxide

### 7.1 INTRODUCTION

The principal source of NO<sub>x</sub> emissions is road transport, which accounted for about 40% of total UK emissions in 2003. Major roads carrying large volumes of high-speed traffic (such as motorways and other primary routes) are a predominant source, as are conurbations and city centres with congested traffic. Within most urban areas, the contribution of road transport to local emissions will be much greater than for the national picture.

Meeting the annual mean objective for 2005, and the corresponding limit value in 2010, is considerably more demanding than achieving the 1-hour objective. By 2005, the annual mean objective was being achieved at all urban background locations outside of London, but being exceeded more widely at roadside sites throughout the UK in close proximity to busy road links. Projections for 2010 indicate that the EU limit value may still be exceeded at urban background sites in inner London, and at roadside locations in other cities.

### 7.2 STANDARDS AND OBJECTIVES FOR NITROGEN DIOXIDE

The Government and the Devolved Administrations have two Air Quality Objectives for nitrogen dioxide, as an annual mean concentration of 40 µg<sup>m</sup>-<sup>3</sup>, and a 1-hour mean concentration of 200 µg<sup>m</sup>-<sup>3</sup>, not to be exceeded more than 18 times per year. The objectives are to have been achieved by the end of 2005.

### 7.3 CONCLUSIONS OF THE SECOND ROUND OF REVIEW AND ASSESSMENT FOR NITROGEN DIOXIDE

The following conclusions were given for nitrogen dioxide in the earlier Updating and Screening Assessment for Chiltern District Council:

- There are no significant industrial sources of nitrogen dioxide in Chiltern district.
- The DMRB screening tool indicates that nitrogen dioxide levels at sites of relevant exposure alongside the district's roads are unlikely to exceed the 2005 annual mean objective.
- Diffusion tube data also indicate that the 2005 annual mean nitrogen dioxide concentrations will be below the limit value at the measurement sites.
- Chiltern District Council is not required to carry out a Detailed Review and Assessment for nitrogen dioxide.

## 7.4 SCREENING ASSESSMENT OF NITROGEN DIOXIDE

The sources, data or locations which require assessment according to Technical Guidance LAQM TG(03) are considered in Table 7.1.

**Table 7.1 Screening Assessment of NO<sub>2</sub>**

<b>Checklist Item ( from Box 6.2 in TG(03) update)</b>	<b>Updating and Screening Assessment</b>
Monitoring data outside an AQMA	Monitoring of NO <sub>2</sub> is carried out at two automatic stations and at 11 diffusion tube sites (Section 7.6)
Monitoring data within an AQMA	There are currently no AQMAs declared for Chiltern District.
Narrow congested streets with residential properties close to the kerb	No streets in this category have been identified in Chiltern District.
Junctions.	Annual average nitrogen dioxide concentrations at receptors near busy road junctions in Chiltern District were estimated in the previous Updating and Screening Assessment for 2005 and 2010. The estimated concentrations were below the objective values and there has been no significant increase in traffic flows recorded at any of the junctions.
Busy streets where people may spend 1-hour or more close to traffic	No streets meeting this classification were identified in Chiltern District.
Roads with high flow of buses and/or HGVs.	There are no roads identified in Chiltern with high (>20%) flows of buses or HGVs.
New roads constructed or proposed since the previous round of R&A	No new roads have been constructed or proposed since the last round of Review and Assessment.
Roads with significantly changed traffic flows, or new relevant exposure	There have been no significant changes in traffic flows or exposure on A roads and motorways in Chiltern district since the last Updating and Screening Assessment.
Bus Stations	The bus station within Chiltern has less than 1000 movements per day which is the threshold level requiring further investigation.
New industrial sources.	There are no new industrial sources established since the last Review and Assessment with the potential to emit NO <sub>2</sub> . None of the Part A or Part B industrial processes in Chiltern District (Appendix 3) operate processes which have the potential to emit significant amounts of oxides of nitrogen. There are no industrial sources in Chiltern District with substantially increased emissions since the last Review and Assessment.
Industrial sources with substantially increased emissions, or new relevant exposure	
Aircraft	There are no airports in Chiltern or neighbouring authorities that have a throughput of 5 million passengers per year and/or 500,000 tonnes of freight.

## 7.5 BACKGROUND CONCENTRATIONS FOR NITROGEN DIOXIDE

The estimated average background NO<sub>2</sub> concentration for Chiltern District in 2005 from UK Background maps<sup>7</sup> was 14.0 µgm<sup>-3</sup> with a maximum concentration of 23.8 µgm<sup>-3</sup>. The estimated average background NO<sub>2</sub> concentration in 2010 was 11.2 µgm<sup>-3</sup> with a maximum concentration of 20.2 µgm<sup>-3</sup>. The maximum concentrations were estimated for a location close to the A413 near Gerrards Cross.

## 7.6 SCREENING ASSESSMENT OF MONITORING DATA

### 7.6.1 Diffusion tube monitoring

Diffusion tubes at 11 sites are operated by Chiltern District Council (Appendix A Table A1.1).

### 7.6.2 Bias correction of diffusion tube data

Bias correction factors were calculated using the UWE spreadsheet of bias adjustment factors. The calculated bias adjustment factor for 2005 based on seven intercomparisons was 1.18. Table 7.2 shows bias adjusted annual mean nitrogen dioxide concentrations at sites in Chiltern District, with estimates of likely concentrations in 2010.

**Table 7.2 Bias Adjusted Annual average NO<sub>2</sub> concentrations at sites in Chiltern District (µgm<sup>-3</sup>)**

Site ID	Location	Type*	NO <sub>2</sub> µgm <sup>-3</sup>	
			2005	2010
1	St Mary's Way Chesham	R	40.9	34.3
2	Rickmansworth Road Amersham	R	32.0	26.9
3	High Street Chalfont St Peter	R	31.6	26.5
4	The Pheasant Chalfont St Giles	R	<b>45.0</b>	37.8
5	Gore Hill Old Amersham	R	<b>44.1</b>	37.0
6	Stanley Hill Amersham	R	<b>45.6</b>	38.3
7	Chesham Police Station, Broad Street	R	<b>49.5</b>	<b>41.5</b>
8	Chesham flats by opticians, Broad Street	R	<b>53.7</b>	<b>45.1</b>
9	Chesham Jolly Sportsman Pubn, End of Berkhampstead Road	R	<b>52.2</b>	<b>43.8</b>
10	Chesham opp 170 Berkhampstead Road	R	<b>50.4</b>	<b>42.3</b>
11	Chesham at 305 Berkhampstead Road	R	<b>41.8</b>	35.1
12	Chesham by 336 Berkhampstead Road	R	<b>46.5</b>	39.1
13	Chesham opposite 5 Nashleigh Hill Chesham nr Petrol	R	35.1	29.5
14	Chesham opposite St Columba Church, Berkhampstead Rd	R	38.0	31.9
15	Ashley green , by speed Camera, Chesham Road	R	27.7	23.3
16	Ashley green , by Bus stop/Church, Chesham Road	R	27.4	23.0
17	Little Chalfont, on back of sign	R	23.9	20.0
18	Nightingales Corner, on sign on roundabout, Nr Challoners Girl School	R	36.6	30.7
19	Hervines Park, on drain pipe on town building	B	19.2	16.7
20	End of Broombarn Lane, Great Missenden, on sign	R	29.4	24.7
21	Outside Chequers Pub, Prestwood	R	27.6	23.1
22	Old Amersham near speed calming measures	R	33.2	27.9
23	Amersham Hospital, Whielden Street, Next to fly over	R	33.7	28.3
24	Bottom of Stanley Hill, Amersham	R	<b>43.7</b>	36.7
25	Station Road, Amersham, opp number 76	R	<b>41.2</b>	34.6
26	Jolly Sportsman Public House 2nd Dual Tube	B	<b>48.7</b>	<b>42.4</b>
27	Opposite side of road to Jolly Sportsman	B	36.4	31.7

\*R=Roadside

B=background

From Guidance LAQM TG(03) the adjustment factor to estimate annual average concentrations in 2010 from 2005 data is 0.87 for background sites and 0.84 for roadside sites .

### 7.6.3 Diffusion tube analysis

It can be seen from Table 7.1 that current and likely future levels of NO<sub>2</sub> are predicted to be above the annual mean objective value of 40 µgm<sup>-3</sup> at roadside locations in Amersham, Chesham and Chalfont St Giles. In particular Berkhamstead Road in Chesham is predicted to exceed the strategy objectives in both 2005 and 2010. The sites in Amersham and Chalfont St Giles. are considered by the Council to be less likely to lead to exceedences of the objective than those in Chesham. Relevant kerbside sites in Amersham and Chalfont St Giles were therefore assessed using the factors the Review and Assessment help desk gives to multiply the annual averages by to give an approximate estimate of the concentration at the building facade: The adjusted concentrations are shown in Table 7.3:

**Table 7.3 Estimated NO<sub>2</sub> concentrations at building facades**

Site	NO <sub>2</sub> concentration µgm <sup>-3</sup>	Distance to building facade (m)	Adjustment factor	Adjusted NO <sub>2</sub> concentration µgm <sup>-3</sup>
Gore Hill Old Amersham	44.1	6.6	0.90	39.7
Stanley Hill; Amersham	43.7	25.0	0.75	32.8
The Pheasant Crossroads Chalfont St Giles	45.0	5.4	0.90	<b>40.5</b>

The calculations show that the exceedences of the 2005 objective are still predicted for the Pheasant Crossroads area in Chalfont St Giles.

### 7.6.4 Automatic Monitoring

There is currently no continuous automatic monitoring of NO<sub>2</sub> in Chiltern District.

## 7.7 SCREENING ASSESSMENT OF ROAD TRAFFIC SOURCES

Traffic flow data and count data supplied by Buckinghamshire County Council (Appendix 2) show that there have been no significant increase in traffic flows since the last Updating and Screening Assessment. An initial screening assessment was undertaken using DMRB for A roads and motorways in Chiltern using data taken from the NAEI. Traffic speeds and receptor distance were selected to provide "worst case" estimates. Table 7.4 shows that annual mean concentrations in excess of 40 µgm<sup>-3</sup> were not predicted at receptors close to motorways and A roads in Chiltern.

Table 74 shows a DMRB screening assessment of A roads in Chiltern District using data from the NAEI 2004.

**Table 7.4 Annual average NO<sub>2</sub> concentrations in Chiltern District (µgm<sup>-3</sup>)**

Road No	Road name	Distance from link centre to receptor (m)	AADT 2005 (combined, veh/day)	Annual average speed (km/h)	Total % HDV	NO <sub>2</sub> annual mean µgm <sup>-3</sup>	
						2005	2010
1	A355	10	12500	80	2.8	22.5	19.6
2	A416	10	32963	51	3.6	24.2	18.7
3	A413	5	20159	80	3.7	18.1	14.1
4	A413	5	18631	51	4.2	28.4	23.7
5	A4128	10	11289	80	2.7	16.0	12.7
6	A416	10	13173	80	4.8	23.6	20.5
7	A413	10	20622	80	4.3	24.9	21.2
8	A413	5	19320	80	3.3	18.5	14.4
9	A413	5	34324	80	2.2	25.4	21.6
10	A404	5	15837	51	3.6	22.1	16.3
11	A413	10	18605	51	3.3	23.4	20.0
12	A416	5	19286	51	4.0	23.0	17.1
13	A4154	10	11979	51	4.3	22.9	19.9
14	A404	5	16810	51	3.0	23.9	20.5
15	A416	5	18062	80	3.7	24.7	21.1
16	A355	5	13026	80	2.4	23.0	20.0
17	A355	5	13157	80	2.4	23.0	20.0
18	A404	5	15476	80	3.8	22.3	16.3
19	A416	5	14622	51	4.8	23.1	17.5
20	A413	5	18923	80	3.3	22.8	16.8

The DMRB study indicates that there are no A Roads in Chiltern where the annual mean objective values are likely to be exceeded.

### 7.7.1 Busy Junctions

The following roads and junctions which were identified as areas of high traffic volumes with potential for public exposure. These roads been examined using DMRB with traffic data from Buckinghamshire County Council or the NAEI (Tables 7.5 and 7.6).

**Table 7.5 Annual average NO<sub>2</sub> concentrations at road junctions in Chiltern District 2005**

Location	Junction	East	North	AADT 2005	%HDV	NO <sub>2</sub> (µgm <sup>-3</sup> )
						2005
GREAT MISSENDEN	B485 - Frith Hill	409500	201500	8966	3.4	17.0
	A413 - London side			16885	3.5	
CHALFONT ST GILES	A413 - London side	499533	194003	17610	4.3	22.5
	MC36 - Ch St Giles side			8964	3.3	
ASHLEY GREEN	A416 - Berkhamsted side	497844	204774	13258	4.8	16.5
	MC6 - Two Dells Ln side			2695	3.9	
CHESHAM -	A416 - Amersham side	496736	201448	30479	3.7	23.0
	B485 - Church Street side			7065	3.0	
CHESHAM -	UNC - Amy Lane side	495905	201173	2744	1.8	21.8
	A416 - Chesham side			21090	4.8	
AMERSHAM -	A416 - Chesham side	496440	198761	23324	4.0	24.5
	A4154 - Rickmansworth side			12386	3.5	
LITTLE CHALFONT	A404 - Watford side	500330	197717	13336	3.8	22.5
	MC34 - Church Grove side			1421	3.3	
AMERSHAM -	A404 - Lt Chalfont side	496918	198430	20362	2.9	24.4
	A4154 - Woodside Rd			14784	3.7	

AMERSHAM	A416 - Station Road side	496280	198278	18922	4.0	24.1
	A355 - London side			12541	3.0	
AMERSHAM -	A413 - London side	484841	196673	25899	3.7	25.4
	A404 - High Wycombe side			16017	4.3	
AMERSHAM -	A355 - Amersham side	497191	197546	11278	3.3	26.4
	A404 - Stanley Hill			15236	3.5	
	A413 - London side			17929	3.8	
GERRARDS CROSS	A413 - Denham side	500604	188829	17462	3.7	27.6
	UNC - South Park side			1283	2.4	
GREAT MISSENDEN	A413 - Amersham side	489500	201500	18068	2.9	16.5
	MC60 - London Rd side			3666	2.6	

**Table 7.6 Annual average NO<sub>2</sub> concentrations at road junctions in Chiltern District 2010**

Location	Junction	East	North	AADT 2010	%HDV	NO <sub>2</sub> (µgm <sup>-3</sup> ) 2010
GREAT MISSENDEN	B485 - Frith Hill	409500	201500	9881	3.4	16.1
	A413 - London side			18607	3.5	
CHALFONT ST GILES	A413 - London side	499533	194003	19406	4.3	19.3
	MC36 - Ch St Giles side			9878	3.3	
ASHLEY GREEN	A416 - Berkhamsted side	497844	204774	14610	4.8	15.2
	MC6 - Two Dells Ln side			2970	3.9	
CHESHAM -	A416 - Amersham side	496736	201448	33588	3.7	20.2
	B485 - Church Street side			7786	3.0	
CHESHAM -	UNC - Amy Lane side	495905	201173	3024	1.8	18.1
	A416 - Chesham side			23241	4.8	
AMERSHAM -	A416 - Chesham side	496440	198761	25703	4.0	21.0
	A4154 - Rickmansworth side			13649	3.5	
LITTLE CHALFONT	A404 - Watford side	500330	197717	14696	3.8	16.3
	MC34 - Church Grove side			1566	3.3	
AMERSHAM -	A404 - Lt Chalfont side	496918	198430	22439	2.9	24.1
	A4154 - Woodside Rd			16292	3.7	
AMERSHAM	A416 - Station Road side	496280	198278	20852	4.0	23.7
	A355 - London side			13820	3.0	
AMERSHAM -	A413 - London side	484841	196673	28541	3.7	17.8
	A404 - High Wycombe side			17651	4.3	
AMERSHAM -	A355 - Amersham side	497191	197546	12428	3.3	
	A404 - Stanley Hill			16790	3.5	26.6
	A413 - London side			19758	3.8	
GERRARDS CROSS -	A413 - Denham side	500604	188829	19243	3.7	25.0
	UNC - South Park side			1414	2.4	
GREAT MISSENDEN	A413 - Amersham side	489500	201500	19911	2.9	14.7
	MC60 - London Rd side			4040	2.6	

The DMRB study indicates that there are no junctions in Chiltern District where the annual mean objective values are likely to be exceeded.

## 7.8 CONCLUSIONS FOR NITROGEN DIOXIDE CONCENTRATIONS IN CHILTERN DISTRICT

DMRB studies indicate that the annual mean objective is likely to be met in 2005, including near busy roads and junctions in Chiltern District. Estimated concentrations at potentially busy junctions indicate it is unlikely there will be exceedances of the air quality objectives in 2005. However diffusion tube monitoring studies indicate that the annual mean objective value of 40 µgm<sup>-3</sup> is likely to be exceeded at roadside locations in Chesham and Chalfont St Giles. In particular Berkhamstead Road in Chesham is

predicted to exceed the strategy objectives in both 2005 and 2010. There are no significant industrial sources of nitrogen dioxide in Chiltern District.

A detailed assessment is recommended for nitrogen dioxide at the following locations.

- Chesham Berkhamstead Road
- Chesham Near the Jolly Sportsman pub.
- Chesham Broad Street

The following area should also be considered if there are relevant receptors close to the road

- Chalfont St Giles The Pheasant Cross Roads

## 8 Updating and Screening Assessment for Sulphur Dioxide

### 8.1 INTRODUCTION

The main source of sulphur dioxide in the United Kingdom is power stations, which accounted for more than 69% of emissions in 2003. There are also significant emissions from other industrial combustion sources. Domestic sources now only account for 4% of emissions, but can be locally much more significant. Road transport currently accounts for less than 1% of emissions.

Local exceedances of the objectives (principally the 15-minute mean objective) may occur in the vicinity of small combustion plant (less than 20 MW), which burn coal or oil, in areas where solid fuels are the predominant form of domestic heating, and in the vicinity of major ports.

### 8.2 STANDARD AND OBJECTIVE FOR SULPHUR DIOXIDE

The Government and the Devolved Administrations adopted a 15-minute mean of  $266 \mu\text{g m}^{-3}$  as an air quality standard for sulphur dioxide, with an objective for the standard not to be exceeded more than 35 times in a year by the end of 2005.

Additional objectives have also been set which are equivalent to the EU limit values specified in the First Air Quality Daughter Directive. These are for a 1-hour mean objective of  $350 \mu\text{g m}^{-3}$ , to be exceeded no more than 24 times per year, and a 24-hour objective of  $125 \mu\text{g m}^{-3}$ , to be exceeded no more than 3 times per year, to have been achieved by the end of 2004.

### 8.3 CONCLUSIONS OF THE FIRST AND SECOND ROUND OF REVIEW AND ASSESSMENT FOR SULPHUR DIOXIDE

The following conclusions were given for sulphur dioxide in the earlier Updating and Screening Assessment for Chiltern District Council:

- There are no significant industrial or domestic sources of sulphur dioxide in Chiltern District or close to its boundaries;
- Chiltern District Council is not required to carry out a Detailed Review and Assessment for sulphur dioxide.



## 8.4 SCREENING ASSESSMENT OF SULPHUR DIOXIDE

The sources, data or locations which require assessment according to Technical Guidance LAQM TG(03) are considered in Table 8.1.

**Table 8.1 Screening Assessment of SO<sub>2</sub>**

<b>Checklist Item ( from Box 7.2 in TG(03) update)</b>	<b>Updating and Screening Assessment</b>
Monitoring data outside an AQMA	Monitoring of sulphur dioxide is not currently undertaken in Chiltern District.
Monitoring data within an AQMA	There are currently no AQMAs declared for Chiltern District.
New industrial sources.	There are no new industrial sources in Chiltern District which have the potential to emit sulphur dioxide. Based on the information available, none of the Part B industrial processes in Chiltern (Appendix 3) operate processes which have the potential to emit significant amounts of sulphur dioxide.
Industrial sources with substantially increased emissions, or new relevant exposure	
Areas of domestic coal burning	There are no data for domestic coal burning available but solid fuel use continues to decline throughout the area. It is unlikely that there are any areas with 100 houses using these fuels in a 500 m square.
Small Boilers > 5 MW (thermal).	No small boiler processes have been identified for Chiltern District with output greater than 5MW.
Shipping	N/A
Railway Locomotives	According to information supplied by Chiltern District Council there are no areas where railway engines are run for more than 15 minutes continuously and where members of the public might be exposed.

## 8.5 BACKGROUND CONCENTRATIONS FOR SULPHUR DIOXIDE

The estimated average background sulphur dioxide concentration in Chiltern District estimated from UK background concentration maps<sup>7</sup> for 2001 was 1.8 µgm<sup>-3</sup> in with a maximum concentration of 12.2 µgm<sup>-3</sup> in 2001. The maximum concentrations were estimated for a location close to the A40 near Gerrards Cross.

## 8.6 CONCLUSIONS FOR SULPHUR DIOXIDE CONCENTRATIONS IN CHILTERN DISTRICT

There are no significant industrial or domestic sources of sulphur dioxide in Chiltern District and exceedances of the air quality objective for sulphur dioxide are unlikely.

A detailed assessment is not required for sulphur dioxide.

# 9 Updating and Screening Assessment for PM<sub>10</sub>

## 9.1 THE NATIONAL PERSPECTIVE

2003. Of this total, around 27% was derived from road transport sources. It should be noted that, in general, the emissions estimates for PM<sub>10</sub> are less accurate than those for the other pollutants with prescribed objectives, especially for sources other than road transport.

The Government established the Airborne Particles Expert Group (APEG) to advise on sources of PM<sub>10</sub> in the UK and current and future ambient concentrations. Their conclusions were published in January 1999 (APEG, 1999). APEG concluded that a significant proportion of the current annual average PM<sub>10</sub> is due to the secondary formation of particulate sulphates and nitrates, resulting from the oxidation of sulphur and nitrogen oxides. These are regional scale pollutants and the annual concentrations do not vary greatly over a scale of tens of kilometres. There are also natural or semi-natural sources such as wind-blown dust and sea salt particles. The impact of local urban sources is superimposed on this regional background. Such local sources are generally responsible for winter episodes of hourly mean concentrations of PM<sub>10</sub> above 100 µg m<sup>-3</sup> associated with poor dispersion. However, it is clear that many of the sources of PM<sub>10</sub> are outside the control of individual local authorities and the estimation of future concentrations of PM<sub>10</sub> are in part dependent on predictions of the secondary particle component.

## 9.2 STANDARD AND OBJECTIVE FOR PM<sub>10</sub>

The Government and the Devolved Administrations have adopted two Air Quality Objectives for fine particles (PM<sub>10</sub>), which are equivalent to the EU Stage 1 limit values in the first Air Quality Daughter Directive. The objectives are 40 µgm<sup>-3</sup> as the annual mean, and 50 µgm<sup>-3</sup> as the fixed 24-hour mean to be exceeded on no more than 35 days per year, to be achieved by the end of 2004. In addition there is an objective of 50 µgm<sup>-3</sup> as the fixed 24-hour mean to be exceeded on no more than 7 days per year, to be achieved by the end of 2010, which applies to Scottish Authorities only. The objectives are based upon measurements carried out using the European gravimetric transfer reference sampler or equivalent.

## 9.3 CONCLUSIONS OF THE FIRST AND SECOND ROUND OF REVIEW AND ASSESSMENT FOR PM<sub>10</sub>

The following conclusions were given for PM<sub>10</sub> in the earlier Updating and Screening Assessment for Chiltern District Council:

- The DMRB screening model and automatic monitoring indicate that the annual mean objective of 40 µgm<sup>-3</sup> for PM<sub>10</sub> will be met in 2004 but that the EU Limit Value of 20 µgm<sup>-3</sup> may be exceeded at relevant locations in 2010;
- The 24 hour mean objective value of 50 µgm<sup>-3</sup> will not be exceeded more than 35 times per year in 2004 but may be exceeded more than 7 times per year in 2010;
- Chiltern District Council is not required to carry out a Detailed Review and Assessment for PM<sub>10</sub>.

## 9.4 SCREENING ASSESSMENT OF PM<sub>10</sub>

The sources, data or locations which require assessment according to Technical Guidance LAQM TG(03) are considered in Table 9.1.

**Table 7.1 Screening Assessment of PM<sub>10</sub> :**

<b>Checklist Item ( from Box 8.4 in TG(03))</b>	<b>Updating and Screening Assessment</b>
Monitoring data outside an AQMA	Monitoring of PM <sub>10</sub> is not currently undertaken in Chiltern
Monitoring data within an AQMA	There are currently no AQMAs declared for Chiltern District.
Junctions.	Annual average PM <sub>10</sub> concentrations and exceedances of the daily mean at receptors near busy road junctions in Chiltern District were estimated in the previous Updating and Screening Assessment for 2004 and 2010. The estimated concentrations were generally below the objective values (although there were some possible exceedances of the 2010 annual mean) and there has been no significant increase in traffic flows recorded at any of the junctions.
Roads with high flow of buses and/or HGVs.	There are no roads identified in Chiltern with high (>20%) flows of buses or HGVs
New roads constructed or proposed since last round of R&A	No new roads have been constructed since the last round of Review and Assessment
Roads with significantly changed traffic flows, or new relevant exposure.	There have been no significant changes in traffic flows or exposure on A roads and motorways in Chiltern district since the last Updating and Screening Assessment.
Roads close to the objective during the second round of Review and Assessment	There were no roads estimated to have PM <sub>10</sub> concentrations close to the objective during the last Review and Assessment. The maximum concentration calculated using the DMRB model was 22.6 µgm <sup>-3</sup> for a section of the A416.
New industrial sources.	There are no new industrial sources established since the last Review and Assessment with the potential to emit PM <sub>10</sub> . None of the Part B industrial processes in Chiltern District (Appendix 3) operate processes which have the potential to emit significant amounts of PM <sub>10</sub> . There are no industrial sources in Chiltern District with substantially increased emissions since the last Review and Assessment.
Industrial sources with substantially increased emissions, or new relevant exposure	
Areas of domestic solid fuel burning	There are no data for domestic coal burning available but solid fuel use continues to decline throughout the area. It is unlikely that there are any areas with 50 houses using these fuels in a 500 m square.
Quarries / landfill sites / opencast coal / handling of dusty cargoes at ports etc.	There are no recorded quarries or landfill sites with relevant locations for public exposure within 200m.
Aircraft	There are no airports in Chiltern or neighbouring authorities that have a throughput of 5 million passengers per year and/or 500,000 tonnes of freight.

## 9.5 BACKGROUND CONCENTRATIONS FOR PM<sub>10</sub>

The estimated average background PM<sub>10</sub> concentration for Chiltern District in 2005 from UK Background maps<sup>7</sup> was 20.6 µgm<sup>-3</sup> with a maximum concentration of 23.8 µgm<sup>-3</sup>. The estimated average

background PM<sub>10</sub> concentration in 2010 was 18.8 µgm<sup>-3</sup> with a maximum concentration of 21.7 µgm<sup>-3</sup> at a location close to the A413 near Gerrards Cross.

## 9.6 SCREENING ASSESSMENT OF MONITORING DATA

There is currently no monitoring of PM<sub>10</sub> carried out in the Chiltern District.

## 9.7 SCREENING ASSESSMENT OF ROAD TRAFFIC SOURCES

An initial screening assessment was undertaken using DMRB for A roads in Chiltern District using data taken from the NAEI. Traffic speeds and receptor distance were selected to provide "worst case" estimates. Tables 9.2 shows that annual mean concentrations in excess of 40 µgm<sup>-3</sup> were not predicted at receptors close to A roads in Chiltern.

**Table 9.2 Annual Average PM<sub>10</sub> Concentrations in Chiltern District 2004**

Road No	Road name	Distance from link centre to receptor (m)	AADT 2004 (combined, veh/day)	Annual average speed (km/h)	Total % HDV	PM <sub>10</sub> 2005 µgm <sup>-3</sup>	
						Annual mean	Days > 50
1	A355	10	12286	80	2.8	24.1	10
2	A416	10	32400	51	3.6	25.5	14
3	A413	5	19814	80	3.7	22.7	8
4	A413	5	18313	51	4.2	26.3	16
5	A4128	10	11096	80	2.7	21.8	6
6	A416	10	12948	80	4.8	24.6	11
7	A413	10	20269	80	4.3	25.2	13
8	A413	5	18990	80	3.3	22.9	8
9	A413	5	33737	80	2.2	25.5	14
10	A404	5	15566	51	3.6	24.0	10
11	A413	10	18287	51	3.3	24.3	11
12	A416	5	18956	51	4.0	24.4	11
13	A4154	10	11774	51	4.3	24.3	11
14	A404	5	16523	51	3.0	25.1	13
15	A416	5	17753	80	3.7	25.1	13
16	A355	5	12803	80	2.4	24.2	11
17	A355	5	12932	80	2.4	24.3	11
18	A404	5	15211	80	3.8	23.6	9
19	A416	5	14372	51	4.8	24.6	11
20	A413	5	18600	80	3.3	23.5	9

Tables 9.3 shows that annual mean concentrations in excess of to 20 µgm<sup>-3</sup> objective were predicted at receptors close to A roads in Chiltern District.

**Table 9.3 Annual Average PM<sub>10</sub> Concentrations in Chiltern District 2010**

Road No	Road name	Distance from link centre to receptor (m)	AADT 2005 (combined, veh/day)	Annual average speed (km/h)	Total % HDV	PM <sub>10</sub> 2010	
						Annual mean	Days > 50 $\mu\text{g}\text{m}^{-3}$
1	A355	10	12286	80	2.8	21.5	6
2	A416	10	32400	51	3.6	22.1	6
3	A413	5	19814	80	3.7	19.7	3
4	A413	5	18313	51	4.2	22.7	8
5	A4128	10	11096	80	2.7	19.4	3
6	A416	10	12948	80	4.8	21.9	6
7	A413	10	20269	80	4.3	22.1	6
8	A413	5	18990	80	3.3	19.9	3
9	A413	5	33737	80	2.2	22.3	7
10	A404	5	15566	51	3.6	20.8	4
11	A413	10	18287	51	3.3	21.1	5
12	A416	5	18956	51	4.0	21.1	5
13	A4154	10	11774	51	4.3	21.5	6
14	A404	5	16523	51	3.0	22.0	6
15	A416	5	17753	80	3.7	22.0	6
16	A355	5	12803	80	2.4	21.6	6
17	A355	5	12932	80	2.4	21.6	6
18	A404	5	15211	80	3.8	20.6	4
19	A416	5	14372	51	4.8	21.4	5
20	A413	5	18600	80	3.3	20.6	4

The DMRB study indicates that the 2004 PM<sub>10</sub> objectives values were not exceeded in Chiltern District but that the 2010 objectives may be exceeded at receptors near A Roads.

### 9.7.1 Busy Roads and Junctions

Certain roads and junctions identified as having the potential for high exposure, and for which traffic data from Buckinghamshire County Council or the NAEI are available, have been examined using DMRB (Table 9.4 and 9.5).

**Table 9.4 PM<sub>10</sub> Concentrations at Junctions in Chiltern District 2004**

Location	Junction	%HDV	East	North	AAADT 2004	PM10 2004	Days >50
GREAT MISSENDEN	B485 - Frith Hill	3.4	409500	201500	8825	23.8	9.8
	A413 - London side	3.5			16619		
CHALFONT ST GILES	A413 - London side	4.3	499533	194003	17333	24.8	11.9
	MC36 - Ch St Giles side	3.3			8823		
ASHLEY GREEN	A416 - Berkhamsted side	4.8	497844	204774	13049	23.1	8.3
	MC6 - Two Dells Ln side	3.9			2653		
CHESHAM -	A416 - Amersham side	3.7	496736	201448	29999	26.7	16.7
	B485 - Church Street side	3.0			6954		
CHESHAM -	UNC - Amy Lane side	1.8	495905	201173	2701	25.7	14.0
	A416 - Chesham side	4.8			20758		
AMERSHAM -	A416 - Chesham side	4.0	496440	198761	22957	27.4	18.7
	A4154 - Rickmansworth side	3.5			12191		
LITTLE CHALFONT	A404 - Watford side	3.8	500330	197717	13126	23.5	9.1
	MC34 - Church Grove side	3.3			1399		
AMERSHAM -	A404 - Lt Chalfont side	2.9	496918	198430	20041	27.7	19.9
	A4154 - Woodside Rd	3.7			14551		
AMERSHAM	A416 - Station Road side	4.0	496280	198278	18624	27.1	17.8
	A355 - London side	3.0			12344		
AMERSHAM -	A413 - London side	3.7	484841	196673	25491	25.3	13.2
	A404 - High Wycombe side	4.3			15765		
AMERSHAM -	A355 - Amersham side	3.3	497191	197546	11100	29.4	25.5
	A404 - Stanley Hill	3.5			14996		
	A413 - London side	3.8			17647		
GERRARDS CROSS -	A413 - Denham side	3.7	500604	188829	17187	26.7	16.9
	UNC - South Park side	2.4			1263		
GREAT MISSENDEN	A413 - Amersham side	2.9	489500	201500	17783	23.4	8.8
	MC60 - London Rd side	2.6			3608		

**Table 9.5 PM<sub>10</sub> Concentrations at Junctions in Chiltern District 2010**

Location	Junction	%HDVEast	North	AADT 2004	PM10 2004	Days >50
GREAT MISSENDEN	B485 - Frith Hill	3.4	409500	201500	9881	20.6
	A413 - London side	3.5			18607	
CHALFONT ST GILES	A413 - London side	4.3	499533	194003	19406	21.5
	MC36 - Ch St Giles side	3.3			9878	
ASHLEY GREEN	A416 - Berkhamsted side	4.8	497844	204774	14610	20.2
	MC6 - Two Dells Ln side	3.9			2970	
CHESHAM -	A416 - Amersham side	3.7	496736	201448	33588	22.8
	B485 - Church Street side	3.0			7786	
CHESHAM -	UNC - Amy Lane side	1.8	495905	201173	3024	22.1
	A416 - Chesham side	4.8			23241	
AMERSHAM -	A416 - Chesham side	4.0	496440	198761	25703	22.5
	A4154 - Rickmansworth side	3.5			13649	
LITTLE CHALFONT	A404 - Watford side	3.8	500330	197717	14696	20.7
	MC34 - Church Grove side	3.3			1566	
AMERSHAM -	A404 - Lt Chalfont side	2.9	496918	198430	22439	22.4
	A4154 - Woodside Rd	3.7			16292	
AMERSHAM	A416 - Station Road side	4.0	496280	198278	20852	22.3
	A355 - London side	3.0			13820	
AMERSHAM -	A413 - London side	3.7	484841	196673	28541	21.3
	A404 - High Wycombe side	4.3			17651	
AMERSHAM -	A355 - Amersham side	3.3	497191	197546	12428	24.9
	A404 - Stanley Hill	3.5			16790	
	A413 - London side	3.8			19758	
GERRARDS CROSS -	A413 - Denham side	3.7	500604	188829	19243	23.2
	UNC - South Park side	2.4			1414	
GREAT MISSENDEN	A413 - Amersham side	2.9	489500	201500	19911	20.0
	MC60 - London Rd side	2.6			4040	

The DMRB study indicates that the 2004 PM<sub>10</sub> objectives values were not exceeded in Chiltern District but that the 2010 objectives may be exceeded at receptors near junctions in Chiltern. The modelled concentrations are mainly influenced by the high background levels in the area.

## 9.8 CONCLUSIONS FOR PM<sub>10</sub> CONCENTRATIONS IN CHILTERN DISTRICT

There has been no significant increase in traffic flows or no new relevant exposure since the last Review and assessment. DMRB studies indicate that the 2004 annual mean and daily mean objectives for PM<sub>10</sub> were not exceeded but that the EU Limit Values (Stage 2) for 2010 may be exceeded in that year near busy roads and junctions.

There are no new industrial or domestic sources of PM<sub>10</sub> since the last Review and Assessment.

A detailed assessment is not required for PM<sub>10</sub> in Chiltern District Council.

## 10 Conclusions

### 10.1 CARBON MONOXIDE

There are no roads in Chiltern District which can be classified as 'very busy' according to the criteria in the guidance. There are no industrial processes which are significant sources of carbon monoxide. Exceedances of the air quality objective for carbon monoxide are therefore unlikely.

A detailed assessment is not required for carbon monoxide in Chiltern District.

### 10.2 BENZENE

There are no roads in Chiltern District, which can be classified as 'very busy' according to the criteria in the guidance. There are no petrol stations with a throughput greater than 2 million litres and with relevant exposure within 10m of the pumps.

A detailed assessment is not required for benzene in Chiltern District.

### 10.3 1,3-BUTADIENE

Estimated background concentrations and data from national monitoring stations indicate that the objective for 1,3-butadiene is likely to be achieved by the end of 2003. There are no industrial processes, current or proposed, in Chiltern District, which have the potential to emit 1,3-butadiene.

A detailed assessment is not required for 1,3-butadiene in Chiltern District.

### 10.4 LEAD

Emissions of lead from industrial processes in Chiltern District are likely to be very small and it is unlikely they will cause exceedances of the air quality objectives for lead in 2004 and 2008.

A detailed assessment is not required for lead in Chiltern District.

### 10.5 NITROGEN DIOXIDE

DMRB studies indicate that the annual mean objective is likely to be met in 2005, including near busy roads and junctions in Chiltern District. Estimated concentrations at potentially busy junctions indicate it is unlikely there will be exceedances of the air quality objectives in 2005. However diffusion tube monitoring studies indicate that the annual mean objective value of  $40 \mu\text{g m}^{-3}$  is likely to be exceeded at roadside locations in Chesham and Chalfont St Giles. In particular Berkhamstead Road in Chesham is predicted to exceed the strategy objectives in both 2005 and 2010. There are no significant industrial sources of nitrogen dioxide in Chiltern District.

A detailed assessment is recommended for nitrogen dioxide at the following locations.

- Chesham Berkhamstead Road
- Chesham Near the Jolly Sportsman pub.
- Chesham Broad Street

The following area should also be considered if there are relevant receptors close to the road:

- Chalfont St Giles The Pheasant Cross Roads



## 10.6 SULPHUR DIOXIDE

There are no significant industrial or domestic sources of sulphur dioxide in Chiltern District.

A detailed assessment is not required for sulphur dioxide.

## 10.7 PM<sub>10</sub>

It is unlikely there were exceedances of the annual mean objective or 24 hour mean objective for PM<sub>10</sub> including near busy roads and junctions in 2004 but that the EU Limit Values (Stage 2) for 2010 may be exceeded in that year near busy roads and junctions. There are no significant potential industrial or other sources of PM<sub>10</sub>.

A detailed assessment is not required for PM<sub>10</sub>.

## 10.8 SUMMARY AND RECOMMENDATIONS

This updating and screening assessment for Chiltern District Council has concluded that all the objectives in the Air Quality Regulations for England will be met by the relevant dates for all pollutants except NO<sub>2</sub>. However, the EU annual average limit value (Stage 2) for PM<sub>10</sub> may be exceeded at some locations within the District, close to busy roads and junctions in 2010.

A detailed assessment is recommended for nitrogen dioxide at the following locations.

- Chesham Berkhamstead Road
- Chesham Near the Jolly Sportsman pub.
- Chesham Broad Street

The following area should also be considered if there are relevant receptors close to the road:

- Chalfont St Giles The Pheasant Cross Roads

# 11 The UK Air Quality Strategy

The Government prepared the Air Quality Strategy for England, Scotland, Wales and Northern Ireland for consultation in August 1999. It was published in January 2000 (DETR, 2000)<sup>3</sup>.

## 11.1.1 National Air Quality Standards

At the centre of the Air Quality Strategy is the use of national air quality standards to enable air quality to be measured and assessed. These also provide the means by which objectives and timescales for the achievement of objectives can be set. These standards and associated specific objectives to be achieved between 2003 and 2008 are shown in Table 13.1. The table shows the standards in ppb and  $\mu\text{g m}^{-3}$  with the number of exceedances that are permitted (where applicable) and the equivalent percentile.

<b>Table 13.1</b> Objectives included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management			
Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene			
All authorities	16.25 µg/m <sup>3</sup>	running annual mean	31.12.2003
Authorities in England and Wales only	5.00 µg/m <sup>3</sup>	annual mean	31.12.2010
Authorities in Scotland and Northern Ireland only <sup>a</sup>	3.25 µg/m <sup>3</sup>	running annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m <sup>3</sup>	running annual mean	31.12.2003
Carbon monoxide			
Authorities in England, Wales and Northern Ireland only <sup>a</sup>	10.0 mg/m <sup>3</sup>	maximum daily running 8-hour mean	31.12.2003
Authorities in Scotland only	10.0 mg/m <sup>3</sup>	running 8-hour mean	31.12.2003
Lead			
	0.5 µg/m <sup>3</sup>	annual mean	31.12.2004
	0.25 µg/m <sup>3</sup>	annual mean	31.12.2008
Nitrogen dioxide <sup>b</sup>			
	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1 hour mean	31.12.2005
	40 µg/m <sup>3</sup>	annual mean	31.12.2005
Particles (PM <sub>10</sub> ) (gravimetric) <sup>c</sup>			
All authorities	50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year	24 hour mean	31.12.2004
	40 µg/m <sup>3</sup>	annual mean	31.12.2004
Authorities in Scotland only <sup>d</sup>	50 µg/m <sup>3</sup> not to be exceeded more than 7 times a year	24 hour mean	31.12.2010
	18 µg/m <sup>3</sup>	annual mean	31.12.2010
Sulphur dioxide			
	350 µg/m <sup>3</sup> not to be exceeded more than 24 times a year	1 hour mean	31.12.2004
	125 µg/m <sup>3</sup> not to be exceeded more than 3 times a year	24 hour mean	31.12.2004
	266 µg/m <sup>3</sup> not to be exceeded more than 35 times a year	15 minute mean	31.12.2005

a. Air Quality (Northern Ireland) Regulations 2003.

b. The objectives for nitrogen dioxide are provisional.

c. Measured using the European gravimetric transfer sampler or equivalent.

d. These 2010 Air Quality Objectives for PM<sub>10</sub> apply in Scotland only, as set out in the Air Quality (Scotland) Amendment Regulations 2002.

11.1.2 Timescales to achieve the objectives for the pollutants in Air Quality Strategy  
 In most local authorities in the UK, objectives will be met for most of the pollutants within the timescale of the objectives shown in Table 13.1. It is important to note that the objectives for NO<sub>2</sub> remain provisional. The Government has recognised the problems associated with achieving the standard for ozone and this will not therefore be a statutory requirement. Ozone is a secondary pollutant and transboundary in nature and it is recognised that local authorities themselves can exert little influence on concentrations when they are the result of regional primary emission patterns.

## 11.2 AIR QUALITY REVIEWS – THE APPROACHES AND EXPECTED OUTCOMES

Technical Guidance has been issued in 'Review and Assessment: Technical Guidance' LAQM.TG (03)<sup>3</sup> to enable air quality to be monitored, modelled, reviewed and assessed in an appropriate and consistent fashion. This updating and screening assessment has considered the procedures set out in this technical guidance.

The primary objective of undertaking a review of air quality is to identify any areas that are unlikely to meet national air quality objectives and ensure that air quality is considered in local authority decision making processes. The complexity and detail required in a review depends on the risk of failing to achieve air quality objectives and it has been proposed therefore that reviews should be carried out in two steps. Both steps of review and assessment may be necessary and every authority is expected to undertake at least a first stage review and assessment of air quality in their authority area. The steps are briefly described in the following table, Table 13.2.

**Table 13.2** Brief details of steps in the second Round of the Air Quality Review and Assessment process

Level of Assessment	Objective	Approach
Updating and Screening	To identify those matters that have changed since the last review and assessment, which might lead to a risk of an air quality objective being exceeded	Use a checklist to identify significant changes that require further consideration. Where such changes are identified, then apply simple screening tools to decide whether there is sufficient risk of an exceedance of an objective to justify a Detailed Assessment
Detailed assessment	To provide an accurate assessment of the likelihood of an air quality objective being exceeded at locations with relevant exposure. This should be sufficiently detailed to allow the designation or amendment of any necessary AQMAs	Use quality-assured monitoring and validated modelling methods to determine current and future pollutant concentrations in areas where there is a significant risk of exceeding an air quality objective.
Annual Progress reports	Local authorities should prepare annual air quality Progress Reports between subsequent rounds of reviews and assessments. The concept is that this will ensure continuity in the LAQM process.	The precise format for the Progress Report has not yet been determined, but will essentially follow the checklist approach that is set out in subsequent chapters of this document. Further details on the Progress Reports will be provided via the Helpdesks by the middle of 2003. It is envisaged that these Progress Reports could be useful for the compilation of annual 'state of the environment' reports that many authorities already prepare.

The current deadline for completion of updating and screening assessments is April 2006, and for detailed assessments April 2007.

### 11.3 LOCATIONS THAT THE REVIEW AND ASSESSMENT MUST CONCENTRATE ON

For the purpose of review and assessment, the authority should focus their work on locations where members of the public are likely to be exposed over the averaging period of the objective. Table 11.3 summarises the locations where the objectives should and should not apply.

**Table 11.3 Typical locations where the objectives should and should not apply**

Averaging Period	Pollutants	Objectives <i>should</i> apply at ...	Objectives should <i>not</i> generally apply at ...
Annual mean	1,3 Butadiene Benzene Lead Nitrogen dioxide Particulate Matter (PM <sub>10</sub> )	All background locations where members of the public might be regularly exposed.	Building facades of offices or other places of work where members of the public do not have regular access.
		Building facades of residential properties, schools, hospitals, libraries etc.	Gardens of residential properties.
24 hour mean and 8-hour mean	Carbon monoxide Particulate Matter (PM <sub>10</sub> ) Sulphur dioxide	All locations where the annual mean objective would apply.	Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term
			Gardens of residential properties.

**Table 13.3 (contd.)** Typical locations where the objectives should and should not apply

Averaging Period	Pollutants	Objectives should apply at ...	Objectives should generally not apply at ...
1 hour mean	Nitrogen dioxide Sulphur dioxide	All locations where the annual mean and 24 and 8-hour mean objectives apply.	Kerbside sites where the public would not be expected to have regular access.
			Kerbside sites (e.g. pavements of busy shopping streets).
			Those parts of car parks and railway stations etc. which are not fully enclosed.
			Any outdoor locations to which the public might reasonably be expected to have access.
15 minute mean	Sulphur dioxide	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer.	

It is unnecessary to consider exceedances of the objectives at any location where public exposure over the relevant averaging period would be unrealistic. Locations should also represent non-occupational exposure.

## 12 References

1. Part IV of the Environment Act 1995. Local Air Quality Management. LAQM.TG(03) January 2003.
2. The Air Quality (England) Amendment Regulations 2002, ISBN 0 11 044220 2.
3. DETR (2000b) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Department of the Environment, Transport and the Regions. Cm 4548, SE 2000/3, NIA 7.
4. Chiltern District Council (1999) First Stage Air Quality Review & Assessment., Chiltern District Council, January 1999.
5. Chiltern District Council (1999) Second Stage Air Quality Review & Assessment. Chiltern District Council, July 19997.
6. Updating and Screening Assessment . Chiltern District Council, 2003
7. Air Quality Review and Assessment Progress Report Chiltern District 2005
8. Maps of Estimated Ambient Air Pollution in 2001 and Projections for Other Years.  
<http://www.airquality.co.uk/archive/laqm/tools.php>
9. Design Manual For Roads and Bridges Highways Agency 2003

# Appendices

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Appendix 1	Monitoring data
Appendix 2	Detailed traffic flow data
Appendix 3	Industrial Processes



# Appendix 1

## Monitoring Data

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Table A.1.1

Diffusion Tube Monitoring Sites

Table A1.2

Bias Adjusted monthly mean NO<sub>2</sub> diffusion tube concentrations

**Table A1.1 Diffusion Tube Monitoring Site Details in Chiltern District**

Site ID	Location	Type	East	North
2	St Mary's Way Chesham	R	495850	201510
9	Rickmansworth Road Amersham	R	496550	198720
10	High Street Chalfont St Peter	R	500050	190810
13	The Pheasant Chalfont St Giles	R	499250	193750
14	Gore Hill Old Amersham	R	495960	196940
15	Stanley Hill Amersham	R	496760	197100
16	Chesham Police Station, Broad Street	R	496100	202000
17	Chesham flats by opticians, Broad Street	R	496000	202000
18	Chesham Jolly Sportsman Pubn, End of Berkhampstead Road	R	496200	202300
19	Chesham opp 170 Berkhampstead Road	R	496100	202300
20	Chesham at 305 Berkhampstead Road	R	496300	202500
21	Chesham by 336 Berkhampstead Road	R	496200	202500
22	Chesham opposite 5 Nashleigh Hill Chesham nr Petrol	R	496300	202900
23	Chesham opposite St Columba Church, Berkhampstead Rd	R	496200	202800
24	Ashley green , by speed Camera, Chesham ROAD	R	497600	205100
25	Ashley green , by Bus stop/Church, Chesham ROAD	R	497600	205200
26	Little Chalfont, on back of sign	R		
27	Nightingales Corner, on sign on roundabout, Nr Challoners Girl School	R		
28	Hervines Park, on drain pipe on town building	B		
29	End of Broombarn Lane, Great Missenden, on sign	R		
30	Outside Chequers Pub, Prestwood	R		
31	Old Amersham near speed calming measures	R		
32	Amersham Hospital, Whielden Street, Next to fly over	R		
33	Bottom of Stanley Hill, Amersham	R		
34	Station Road, Amersham, opp number 76	R		
35	Jolly Sportsman Public House 2nd Dual Tube	B		
36	Opposite side of road to Jolly Sportsman	B		

R=Roadside

B=Background

**Table A1.2 Monthly average NO<sub>2</sub> concentrations at sites in Chiltern District area in 2005 (Not bias adjusted)**

Site ID		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
2	R	38.9	39.4	39.4	31.9	29.6	30.3	34.1	30.9	38.0	39.4	44.4	19.7	34.6
9	R	31.1	20.7	38.9	29.0	22.9	23.2	23.8	21.4	30.8	39.8	28.0	16.2	27.2
10	R	33.8	29.3	35.4		22.6	25.4	28.6	25.1	7.4		26.6	33.6	26.8
13	R	38.7		36.9	36.3	34.6	38.9	40.7	37.4	39.3	40.5	37.9	38.4	38.1
14	R	37.7	38.4	45.3	30.7	29.3	36.5	37.4	36.9	37.6	48.5	32.7	37.4	37.4
15	R		30.1	49.8	42.8	35.2	38.8	34.8	28.3	41.9	51.9	37.2	34.5	38.7
16	R	38.4	42.8	52.3	37.2	39.5	41.7	38.7	35.2	40.5	47.5	44.7	44.5	41.9
17	R	43.1	44.5	50.6	45.6	42.6	42.7	43.9	43.2	47.5	47.3	48.9	46.6	45.5
18	R	44.6	41.2	50.6	42.4	37.2	41.2	40.3	37.1	48.8	51.4	48.8	47.0	44.2
19	R	42.6	36.5	48.1	44.0	42.7	35.4	41.3	40.5	45.7	46.6	45.0	43.8	42.7
20	R	35.5	36.3	42.1	33.6	30.6	30.9	35.1	30.2	36.7	39.6	35.7	38.9	35.4
21	R	40.3	37.8	45.3	37.9	35.9	33.8	38.7	32.6	43.0	46.1	40.0	41.8	39.4
22	R	32.0	23.9	34.2	34.4	28.3	24.6	25.6	23.4	29.5		33.1	37.8	29.7
23	R	31.7	25.5	31.3	31.0		49.0	25.0	24.8	32.2	39.6	30.3	33.9	32.2
24	R	24.7	22.5	26.6	23.7	18.2	18.1	19.1	18.2	23.5	28.8	31.0	27.2	23.5
25	R	20.0	22.1	28.9	23.0	15.5	20.6	21.1	18.7	26.2	31.2	25.5	25.7	23.2
26	R	24.8	17.7	27.7	18.1	15.1	17.8	18.0	16.3	20.9	31.3	22.9	12.2	20.2
27	R		29.6	39.8	23.6	29.8	30.4	36.1	33.4	32.2	38.7	32.7	14.8	31.0
28	B	20.5	17.0	21.8	14.9	12.2	13.6	14.3	14.4	15.4	24.1	17.0	9.7	16.2
29	R	23.3	21.8	36.8	21.7		23.4	22.7	19.7	27.1	28.2	24.1		24.9
30	R	26.5	21.8	32.8	23.0	16.1	20.1	23.3	19.2	27.1	28.9	28.0	13.4	23.4
31	R	25.5	27.4	35.1	25.2	25.4	28.7	31.1	27.3	27.7	32.2	37.7	14.8	28.2
32	R	32.4	21.4	37.2	30.0	23.9	28.5	28.8	28.7	27.0	34.9	33.7	16.5	28.6
33	R	35.2	30.1	49.8	42.8	35.2	38.8	34.8	28.3	41.9	51.9	37.2	18.0	37.0
34	R	35.3	36.7	41.6	34.6	31.8	34.4	37.1	29.2	38.3	45.3	38.2	16.4	34.9
35	B	42.0	37.3	49.6	44.9	40.9	39.7	43.7	36.4	40.4	52.5	44.7	23.6	41.3
36	B	33.4	32.2	39.5	29.2	27.7	28.2	30.8	28.0	31.0	38.3	33.9	18.4	30.9



# Appendix 2

## Traffic Flow Data

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Table A2.1	Road classifications in LAQM TG(03) <sup>1</sup>
Table A2.2	Traffic Flow Data from the NAEI Data Warehouse
Table A2.3	Traffic Flow data supplied by Chiltern District Council

**Table A2.1 Road classifications in LAQM TG(03)<sup>1</sup>**

Very busy roads	Single carriageway roads with daily average traffic flows which exceed 80,000 vehicles per day.  Dual carriageway (2 or 3-lane) roads with daily average traffic flows which exceed 120,000 vehicles per day.  Motorways with daily average traffic flows which exceed 140,000 vehicles per day.
Busy Roads	Roads with more than 30,000 vehicles per day.

## Explanation of the data fields in table A2.2

Rd_no	Number of the road
x	Grid reference Easting
y	Grid reference Northing
Rd_cls	Road classification
AADFYear	Year that the count was made
All_vehicles	AADF Total
CAR	AADF Cars
BUS	AADF Buses
LGV	AADF Light Goods Vehicles
HGV	AADF HGVs
Moto	AADF Motorcycles
MB	Built-up motorway
MN	Non built-up motorway
PB	Built-up primary road
AADF	Annual Average Daily Flow

**A 2.2 AADT Traffic Flow Data from the NAEI**

<b>Rd_no</b>	<b>x</b>	<b>y</b>	<b>All</b>	<b>CAR</b>	<b>BUS</b>	<b>LGV</b>	<b>HGVr</b>	<b>HGVa</b>	<b>Moto</b>
A355	496569	197057	12286	10795	109	1079	208	23	72
A416	496007	201930	32400	27810	264	3188	798	103	237
A413	488089	204000	19814	16736	65	2096	571	89	257
A413	500450	190000	18313	15662	223	1624	463	85	256
A4128	487300	200000	11096	9727	95	1014	190	13	57
A416	497524	205000	12948	10765	62	1473	459	106	83
A413	496740	196960	20269	17083	99	2049	677	94	267
A413	490000	200892	18990	16496	58	1762	470	94	110
A413	495600	196850	33737	28997	142	3600	516	94	388
A404	500000	197700	15566	13350	84	1559	417	65	91
A413	500000	191700	18287	15792	160	1678	413	31	213
A416	495940	200000	18956	16158	182	1932	521	56	107
A4154	497000	198353	11774	9566	151	1278	312	47	420
A404	497000	197150	16523	14354	128	1565	293	81	102
A416	496330	198000	17753	15184	153	1828	459	37	92
A355	496050	197100	12803	11616	148	779	146	9	105
A355	496250	197150	12932	11734	149	786	149	9	105
A404	501000	197890	15211	12796	61	1730	446	72	106
A416	496280	202750	14372	11950	69	1635	509	117	92
A413	498680	195000	18600	16071	104	1675	463	42	245

**Table A2.3 Traffic Flow Data supplied for roads in Chiltern District supplied by Buckinghamshire County Council**

ROAD Nos	DESCRIPTION	DIRECTON - COMBINED	%HDVAADT 2005	
A413 / B485	GREAT MISSENDEN - London Rd j/w Frith Hill	B485 - Frith Hill	3.4	8966
		A413 - London side	3.5	16885
		A413 - Aylesbury side	3.4	21970
A413 / B4442 / MC36	CHALFONT ST GILES - Pheasant Xrds	A413 - Amersham side	4.3	15406
		B4442 - Vache lane	3.0	8032
		A413 - London side	4.3	17610
		MC36 - Ch St Giles side	3.3	8964
A416 / MC6 / UNC	ASHLEY GREEN - Chesham Rd j/w Hog Ln & Two Dells Rd	A416 - Chesham side	5.4	11058
		UNC - Hog Lane side	7.9	783
		A416 - Berkhamsted side	4.8	13258
		MC6 - Two Dells Ln side	3.9	2695
A416 / B485 / UNC	CHESHAM - St Mary's Way j/w Church St	A416 - Berkhamstead side	3.7	30919
		UNC - Market Square side	4.3	375
		A416 - Amersham side	3.7	30479
		B485 - Church Street side	3.0	7065
A416 / UNC	CHESHAM - Amersham Rd j/w Amy Lane and Moor Road	UNC - Amy Lane side	1.8	2744
		A416 - Chesham side	4.8	21090
		UNC - Moor Road side	2.3	5357
		A416 - Amersham side	5.3	18309
A416 / A4154	AMERSHAM - Chesham Road j/w Rickmansworth Road	A416 - Chesham side	4.0	23324
		A4154 - Rickmansworth side	3.5	12386
		A416 - Amersham side	4.3	17208
MC43 / MC44	HYDE HEATH - Weedon Hill j/w Fullers Hillj/w Copperkins Lane	MC43 - Chesham side	0.9	1947
		MC44 - Copperkins Lane side	1.5	4012
		MC43 - Hyde Heath side	1.5	4653
A4128 / UNC	PRESTWOOD - Martinsend Lane j/w Broombarn Ln & Green Lane	UNC - Broombarn Lane side	2.2	248
		A4128 - Gt.Missenden side	3.0	8697
		UNC - Green Lane side	1.2	2094
		A4128 - Prestwood side	3.4	6968



ROAD Nos	DESCRIPTION	DIRECTON - COMBINED	%HDVAADT 2005	
B4505 / UNC	CHESHAM - Lye Green j/w Lycrome road	UNC - Lycrome Road side	5.9	2389
		B4505 - Bovington side	3.3	6001
		B4505 - Chesham side	3.8	5713
A404 / MC34	LITTLE CHALFONT - Amersham Rd j/w Stony Lane & Church Grove ( Lodge Lane)	A404 - Amersham side	3.6	13833
		MC34 - Stony Lane side	2.5	2235
		A404 - Watford side	3.8	13336
		MC34 - Church Grove side	3.3	1421
A404 / A4154	AMERSHAM - Stanley Hill j/w White Lion Rd  j/w Woodside Road	A404 - Lt Chalfont side	2.9	20362
		A404 - Amersham side	3.5	16746
		A4154 - Woodside Rd	3.7	14784
A355 / A416	AMERSHAM - London Road j/w Station Road	A416 - Station Road side	4.0	18922
		A355 - London side	3.0	12541
		A355 - Aylesbury side	3.4	22021
A413 / A404	AMERSHAM - Amersham Bypass j/w Whielden Lane	A413 - London side	3.7	25899
		A404 - High Wycombe side	4.3	16017
		A413 - Aylesbury side	3.5	15460
A413 / A355 / A404	AMERSHAM - Amersham Bypass j/w London Road W& E & Stanley Hill	A355 - Amersham side	3.3	11278
		A404 - Stanley Hill	3.5	15236
		A413 - London side	3.8	17929
		A413 - Amersham side	4.2	17105
A413 / UNC	GERRARDS CROSS - Amersham Rd j/w South Park	A413 - Denham side	3.7	17462
		UNC - South Park side	2.4	1283
		A413 - Amersham side	3.6	18476
B474 / C111 / UNC Rd	TYLERS GREEN - Hazlemere Rd j/w Elm  j/w New Rd and Penn Bottom	B474 - Hazlemere side	3.3	9714
		UNC - Penn Bottom side	0.8	1972
		B474 - Penn side	2.7	8645
		C111 - New Road side	3.3	3617
A404 / MC19	PENN - Amersham Rd j/e Sheepcote Dell Rd	MC19 - Sheepcote Dell Rd side	6.9	2808
		A404 - Amersham side	4.2	15330
		A404 - High Wycombe side	3.7	13113

ROAD Nos	DESCRIPTION	DIRECTON - COMBINED	%HDVAADT 2005	
A413 /MC60	GREAT MISSENDEN - Amersham Rd j/w London Rd side	A413 Wendover side	3.1	17123
		A413 - Amersham side	2.9	18068
		MC60 - London Rd side	2.6	3666
A355	AMERSHAM Gore hill 50m sw of j/w bury farm	2 way	3.7	16485

# Appendix 3

## Emissions Data

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Table A3.1

Part B Processes



## CHILTERN DISTRICT COUNCIL

Table A3.1 Part B Authorisations

Reference	Company	Process
3	Chilterns Crematorium	Crematoria
1	Chesham Car repairs	Respraying of road vehicles
2	Draycast Foundry Iron,	steel and non-ferrous foundry
4	Dunton Brothers Brickworks –	Manufacture of clay and refractory goods
5	Matthews Brickworks	Manufacture of clay and refractory goods-
6	Clark Contracting Mobile	Mobile Crusher
70/P233	Total, Amersham Rd, Chesham	Unloading of petrol at Service Stations
77/P227	Total, Vale Rd, Chesham	Unloading of petrol at Service Stations
79/P1155	Shell, London Rd, Missenden	Unloading of petrol at Service Stations
87/P80	BP, White Lion rd, Amersham	Unloading of petrol at Service Stations
71/P150	Shell, Woodside Rd, Amersham	Unloading of petrol at Service Stations
78/P1364	Tesco, London Rd, Amersham	Unloading of petrol at Service Stations
78/P72	Knotty Green Garage, Penn Rd, Beaconsfield	Unloading of petrol at Service Stations
83/P119	Stevens, Pond Approach, Holmer Green	Unloading of petrol at Service Stations
86/P130	Tesco, Gravel Hill, Chalfont St Peter	Unloading of petrol at Service Stations
84/P252	Ogglesby's, Ashley Green Rd, Chesham	Unloading of petrol at Service Stations

