



2009 Air Quality Updating and Screening Assessment for Cherwell District Council

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

Cherwell District Council
November 2009

Updating and Screening Assessment




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Executive Summary

This report has been prepared in conjunction with Sean Gregory, Cherwell District Council. It 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.

Cherwell District Council has recently undertaken the following rounds of Review and Assessment.

The **Updating and Screening Assessment (2004)** and the **Progress Report (2005)** concluded that there were no likely exceedences of the AQS objectives for any of the AQS pollutants at any point of relevant public exposure. Therefore Cherwell District Council did not need to progress to a Detailed Assessment and no AQMAs were declared in the District Council area.

The **Updating and Screening Assessment (2006/2007)** modelled nitrogen dioxide (NO₂) and particulate matter (PM₁₀) concentrations at seven junctions in the District Council area, which were identified as being particularly busy. The model indicated that there were no likely exceedences of the AQS objectives for NO₂ or PM₁₀ at any point of relevant public exposure close to roads and junctions during 2006. The report also concluded that there were no likely exceedences of the AQS objectives for any of the other AQS pollutants at points of relevant public exposure within the District Council area.

The **Progress Report (2007)** identified an exceedence of the annual mean objective for NO₂ at the Horsefair diffusion tube site and annual mean NO₂ concentrations close to the objective at the Oxford Road diffusion tube site. However, these diffusion tubes were not located at points of relevant public exposure, hence the report concluded that there was no need for Cherwell District Council to proceed to a Detailed Assessment for NO₂. The report recommended that the Horsefair and Oxford Road diffusion tube sites be re-located to the nearest point of relevant public exposure to ensure that representative data is collected. The report also recommended that a continuous air quality monitoring station be established in the District Council area for the purpose of gathering inter-comparison data.

The **Progress Report (2008)** indicated that locations of diffusion tube sites within the District area had been reassessed and repositioned where required to suitable points of relevant public exposure. Also, a co-location study was in preparation, which was estimated to be operational by the end of 2008. The report concluded that there were no exceedences of the NO₂ annual mean objective within the District Council area during 2007.

The Updated Screening Assessment for 2009 concludes that Cherwell District Council is required to carry out a Detailed Assessment for NO₂ at the following locations exceedence of the annual mean objective for NO₂ in 2008:

- Horsefair, Banbury;
- Hennef Way, Banbury; and
- Queens Avenue, Bicester.

Cherwell District Council is not required to carry out a Detailed Review and Assessment for carbon monoxide, benzene, 1,3-butadiene, lead, PM₁₀ or SO₂.

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1 Introduction

1.1 Description of Local Authority Area

Cherwell District is the Northern Oxfordshire District and includes three main centres of population, Banbury, Bicester and Kidlington. The latest estimate of Cherwell's population is 137,600 people (mid 2007) with over half the population living in Banbury and Bicester and around 65% living in the main three towns. No other settlement has more than 3500 residents and most villages are relatively small with populations under 500. Cherwell's population has grown rapidly with an increase of almost 12% between 1991 and 2001 and an estimated further increase of 4.5% since. Growth predictions of a further 8% by 2016 and a cumulative 15.5% by 2026 are significantly higher than projected regional and national rates. Most of the recent growth has been in Banbury (+1.6%) and Bicester (+4.4%) and this will continue with these towns projected to grow by 2.5% and 13.8% respectively between 2001 and 2016. Given the rural nature of Cherwell, there is limited public transport and hence a greater dependence on the car as the main mode of travel.

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 $\mu\text{g.m}^{-3}$ (milligrams per cubic metre, mg.m^{-3} for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g.m}^{-3}$	Running annual mean	31.12.2003
	5.00 $\mu\text{g.m}^{-3}$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g.m}^{-3}$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg.m^{-3}	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g.m}^{-3}$	Annual mean	31.12.2004
	0.25 $\mu\text{g.m}^{-3}$	Annual mean	31.12.2008
NO ₂	200 $\mu\text{g.m}^{-3}$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g.m}^{-3}$	Annual mean	31.12.2005
Particles (PM ₁₀) (gravimetric)	50 $\mu\text{g.m}^{-3}$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g.m}^{-3}$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g.m}^{-3}$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g.m}^{-3}$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g.m}^{-3}$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

1.4.1 First Round of Review and Assessment

Cherwell District Council completed the first round of Review and Assessments and concluded that no exceedences of the objectives for any pollutants were likely at relevant receptor locations. No AQMAs were declared in the Cherwell District Council area.

1.4.2 Second Round of Review and Assessment

The ***Updating and Screening Assessment (2004)*** and the ***Progress Report (2005)*** concluded that there were no likely exceedences of the AQS objectives for any of the AQS pollutants at any point of relevant public exposure. Therefore Cherwell District Council did not need to progress to a Detailed Assessment and no AQMAs were declared in the District Council area.

1.4.3 Third Round of Review and Assessment

The ***Updating and Screening Assessment (2006/2007)*** modelled NO₂ and PM₁₀ concentrations (using the DMRB screening model) at seven junctions in the District Council area, which were identified as being particularly busy. The model indicated that there were no likely exceedences of the AQS objectives for NO₂ or PM₁₀ at any point of relevant public exposure close to roads and junctions during 2006. The report also concluded that there were no likely exceedences of the AQS objectives for any of the other AQS pollutants at points of relevant public exposure within the District Council area.

The ***Progress Report (2007)*** identified an exceedence of the annual mean objective for NO₂ at the Horsefair diffusion tube site and annual mean NO₂ concentrations close to the objective at the Oxford Road diffusion tube site. However, these diffusion tubes were not located at points of relevant public exposure, hence the report concluded that there was no need for Cherwell District Council to proceed to a Detailed Assessment for NO₂. The report recommended that the Horsefair and Oxford Road diffusion tube sites be re-located to the nearest point of relevant public exposure to ensure that representative data is collected. The report also recommended that a continuous air quality monitoring station be established in the District Council area for the purpose of gathering inter-comparison data to inform future diffusion tube bias adjustment.

The ***Progress Report (2008)*** indicated that locations of diffusion tube sites within the District area had been reassessed and repositioned where required to suitable points of relevant public exposure. Also, a co-location study was in preparation, which was estimated to be operational by the end of 2008. The report concluded that there were no exceedences of the NO₂ annual mean objective within the District Council area during 2007.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

Cherwell District Council currently undertake ambient monitoring of the following pollutants covered by the AQS:

- Nitrogen dioxide (NO₂)

2.1.1 Automatic Monitoring

A single NO₂ automatic monitoring station has been located at Hennef Way diffusion tube sampling location since May 2009. This will provide co-location data and enable Cherwell District Council to collate further data on NO₂ concentrations at this location. The data from this site is not used within this report, though will be assessed in the 2010 Progress Report.

2.1.2 Non-Automatic Monitoring

Throughout Cherwell District there is a network of 16 NO₂ diffusion tubes placed at various locations throughout Banbury, Bicester, Kidlington and Adderbury. Three sites within Banbury form part of the national network; these are highlighted in bold in Table 2.1 below.

Details of the diffusion tube monitoring locations are provided in Table 2.1. The locations include kerbside and urban background sites.

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?
Oxford Road (Banbury)	K	X 445617 Y 239308	NO ₂	N/A	Y (11 m)	1 m	Y
Middleton Road	K	X 446250 Y 240716	NO ₂	N/A	Y (5 m)	1 m	Y
Bridge Street	I	X 445951 Y 240576	NO ₂	N/A	N (23 m)	1 m	Y
Bankside	K	X 446376 Y 239618	NO ₂	N/A	Y (8m)	1 m	N/A
Horsefair	R	X 445364 Y 240695	NO ₂	N/A	Y (2 m)	3 m	Y
Sinclair Avenue	UB	X 444273 Y 241290	NO ₂	N/A	Y (9 m)	1 m	N
Cranleigh Close	UB	X 444366 Y 239654	NO ₂	N/A	Y (8 m)	1 m	N
Stroud Close	R	X 446335 Y 241687	NO ₂	N/A	Y (13 m)	2 m	N
Hennef Way	R	X 446570 Y 241725	NO ₂	N/A	Y (2 m)	3 m	Y
Queens Avenue	R	X 457968 Y 222353	NO ₂	N/A	Y (1 m)	1.5 m	Y
Market Square	K	X 458528 Y 222392	NO ₂	N/A	N	1 m	N
Tamarisk Gardens	UB	X 458332 Y 224432	NO ₂	N/A	Y (5 m)	0.5 m	N
Bicester Road	R	X 450268 Y 213512	NO ₂	N/A	Y (1 m)	1.5 m	Y
Oxford Road (Kidlington)	R	X 449088 Y 213989	NO ₂	N/A	Y (8 m)	3 m	Y
Benmead Road	UB	X 449172 Y 214325	NO ₂	N/A	Y (7 m)	1.5 m	N
The Green	K	X 447403 Y 235727	NO ₂	N/A	Y (1 m)	1 m	Y

Key to monitoring site types:

K	Kerbside	1 m from the kerb of a busy road - residential
R	Roadside	Roadside locations are typically within 1 to 5 m of the kerbside, but may extend up to 15 m depending upon the road configuration and traffic flow.
I	Intermediate	Between 20-30m from a busy road - residential
UB	Urban Background	More than 50m from a busy road – residential

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 NO₂

Diffusion Tube Monitoring Data

Table 2.2a displays the diffusion tube monitoring results for 2008, corrected and uncorrected for bias using a national bias adjustment factor of 0.87. Table 2.2b displays the bias adjusted (using appropriate national bias adjustment factors for each of the years) diffusion tube monitoring results for across the time series 2006-2008. The output of the bias adjustment spreadsheet (Sep 2009) is shown in Appendix A.

Table 2.2a Results of NO₂ Diffusion Tubes

Site name	Within AQMA?	Data Capture 2008 %	Annual mean concentrations		
			Unadjusted 2008 (µg.m ⁻³)	Adjusted for bias 2008 (µg.m ⁻³)	NO ₂ at distance from roads (µg.m ⁻³)
Oxford Road (Banbury)	N/A	100%	49.7	43.2	27.8
Middleton Road	N/A	100%	45.2	39.4	29.6
Bridge Street	N/A	100%	43.2	37.5	21.4
Bankside	N/A	100%	25.5	22.2	17.9
Horsefair	N/A	100%	58.4	50.8	45.8
Sinclair Avenue	N/A	100%	22.9	19.9	N/A
Cranleigh Close	N/A	100%	17.8	15.4	N/A
Stroud Close	N/A	25%	34.0	29.6	21.5
Hennef Way	N/A	75%	114.5	99.6	88.1
Queens Avenue	N/A	100%	50.1	43.6	40.1
Market Square	N/A	100%	40.7	35.4	N/A
Tamarisk Gardens	N/A	92%	25.7	22.3	N/A
Bicester Road	N/A	92%	48.5	42.2	38.8
Oxford Road (Kidlington)	N/A	92%	42.8	37.3	28.9
Benmead Road	N/A	100%	24.6	21.4	N/A
The Green	N/A	75%	39.4	34.3	31.2

Bold Measured concentration exceeds the AQS objective

* National Bias Correction Factor of 0.87 applied to unadjusted data.

Table 2.2b Results of NO₂ Diffusion Tubes

Location	Within AQMA?	Annual mean concentrations ($\mu\text{g.m}^{-3}$) adjusted for bias		
		2006	2007	2008*
Oxford Road (Banbury)	N/A	31.3	35.0	27.8
Middleton Road	N/A	38.1	37.3	29.6
Bridge Street	N/A	38.8	37.3	21.4
Bankside	N/A	23.5	26.0	17.9
Horsefair	N/A	46.9*	36.2	45.8
Sinclair Avenue	N/A	20.8	21.0	19.9
Cranleigh Close	N/A	15.8	16.6	15.4
Stroud Close	N/A	31.2	25.4	21.5
Hennef Way	N/A	N/A	N/A	88.1
Queens Avenue	N/A	36.0	27.2	40.1
Market Square	N/A	34.6	34.9	35.4
Tamarisk Gardens	N/A	22.2	21.6	22.3
Bicester Road	N/A	30.2	29.0	38.8
Oxford Road (Kidlington)	N/A	37.5	32.6	28.9
Benmead Road	N/A	20.9	20.1	21.4
The Green	N/A	28.3	27.8	31.2

Bold Measured concentration exceeds the AQS objective.

* Distance from road calculation applied to 2008 data based BOX 2.3 from LAQM TG (09).

* Monitoring location at that time was not representative of public exposure.

When assessing the 2008 annual mean NO₂ concentrations (bias adjusted using national factor of 0.87 for 2008 then corrected using LAQM TG(09) Box 2.3) against the AQS Objective of 40 $\mu\text{g.m}^{-3}$, exceedences are evident at three of the diffusion tube monitoring locations.

Three diffusion tubes, at locations Horsefair (45.8 $\mu\text{g.m}^{-3}$), Hennef Way (88.1 $\mu\text{g.m}^{-3}$) and Queens Avenue (40.1 $\mu\text{g.m}^{-3}$) have recorded levels of NO₂ that exceed the annual mean objective of 40 $\mu\text{g.m}^{-3}$ for NO₂. Cherwell District Council is aware of these exceedences and are in the early stages of preparing to carry out a Detailed Assessment of NO₂ focusing on these areas. Cherwell District Council has a continuous NO₂ analyser at Hennef Way alongside triplicate diffusion tubes. Cherwell District Council are also preparing monitoring plans to support detailed assessments at Horsefair and Queens Avenue using diffusion tube data. This data will be used to inform a Detailed Assessment for each site. The Detailed Assessment will take account of the exceedences and advise on whether the declarations of AQMAs are necessary.

Diffusion tube measurements for the location at Bicester Road have indicated NO₂ concentration in the area to be 38.8 $\mu\text{g.m}^{-3}$. As this is close to the annual mean objective of 40 $\mu\text{g.m}^{-3}$ for NO₂ Cherwell District Council should continue to closely monitor NO₂ at this location.

2.2.2 Other pollutants monitored

No monitoring is currently undertaken in the Cherwell District Council area for PM₁₀, 1,3-butadiene, benzene, carbon monoxide, lead and sulphur dioxide. Based upon the findings of the previous assessments, the concentrations of these other pollutants are unlikely to be in excess of the air quality objectives at any location.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Cherwell District Council confirms that there are no newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb (within 2m), that have not adequately been considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Cherwell District Council confirms that there are no newly identified busy streets where people spend 1 hour or more close to traffic.

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

Cherwell District Council confirms that there are no new or newly identified roads with high flows of buses or Heavy Duty Vehicles (HDVs).

3.4 Junctions

Cherwell District Council confirms that there are no new/newly identified busy junctions or busy roads that have not been considered previously.

3.5 Roads Constructed or Proposed Since the Last Round of Review and Assessment

Cherwell District Council confirms that there are no new or proposed roads since the 2008 Detailed Assessment.

3.6 Roads with Significantly Changed Traffic Flows

Cherwell District Council confirms that there are no new or newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

The existing main bus station in Cherwell District Council has less than 2500 movements per day.

Cherwell District Council confirms that within the main bus station, the number of movements (a bus coming into the bus station then going out again should be counted as two movements) will not exceed 2,500 per day.

4 Other Transport Sources

4.1 Airports

Cherwell District Council confirms that there are no airports within the district that have a passenger throughput greater than 10 million passengers per annum.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Cherwell District Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

New evidence has come to light that NO₂ concentrations can be elevated alongside railway lines with a large number of diesel locomotive movements. LAQM TG (09) outlines a new requirement that applies to a number of local authorities to assess railway lines with a high usage of diesel locomotives to establish whether there is relevant public exposure nearby. These lines need to be considered where the background annual mean nitrogen dioxide concentration is above 25 µg.m⁻³. Cherwell District Council is not identified as one of the local authorities at risk.

Cherwell District Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

Cherwell District 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

A proposed Energy from Waste Plant at Ardley is currently undergoing public consultation. An air quality impact assessment has been submitted, which assesses the potential impacts of the proposed facility and the associated amendments to the existing landfill and HWRC on air quality.

The assessment focuses on fugitive dust from traffic movements and combustion pollutants from traffic during the construction phase, along with combustion pollutants from traffic, combustion pollutants (Waste Incineration Directive pollutants) from the stack, fugitive dust and litter from waste handling operations, and fugitive odours and bioaerosols from waste handling operations during the site operational phase.

The air quality impact assessment concludes that the changes to the layout of the landfill site are not predicted to lead to any additional risk of odour, dust or bioaerosol impact and that the risk of significant generation of emissions during operational phase of the EfW is low. The assessment predicts that the greatest risk of dust impacts from the EfW will occur at the nearby properties during the construction phase. Effective mitigation would prevent unacceptable impacts occurring.

The findings of the screening assessment of traffic emissions relating to both the construction and operational traffic have found that impacts on air quality may be classified as negligible. The findings of the assessment of emissions from the proposed Ardley EfW stack has found that for a majority of substances the predicted long-term and short term impacts would be negligible.

Therefore, the air quality impact assessment concludes that the impact of emissions from the Ardley EfW would not give rise to significant adverse air quality effects for both human and ecological receptors in either the short term or the long-term.

Although the impacts on air quality from this development were considered to be negligible, a NO₂ diffusion tube concentration on the B430 close to junction 10 of the M40 motorway highlighted air quality at this location was approaching the annual mean air quality objective. There is no relevant exposure at this monitoring location; however a diffusion tube monitoring location was set up at the worst case scenario with relevant exposure on this approach road in the village of Ardley, adjacent to number 1 Crossways on Station Road. This monitoring commenced in March 2009.

Further assessment of health impacts has been undertaken as part of the Human Health Assessment.

Cherwell District Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been introduced

Cherwell District Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Cherwell District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority, with no previous air quality assessment.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Cherwell District area.

5.3 Petrol Stations

Cherwell District Council confirms that there are no new petrol stations with an annual throughput of more than 2000 m³ of petrol that have busy roads nearby, with relevant exposure within 10 m of the pumps. There are also no new stations where throughput has increased, to exceed the threshold, since the 2008 Detailed Assessment.

5.4 Poultry Farms

Cherwell District Council confirms that there are no poultry farms housing in excess of 400,000 birds if mechanically ventilated / 200,000 birds if naturally ventilated / 100,000 birds in a turkey unit with relevant public exposure within 100m of the poultry units.

6 Commercial and Domestic sources

6.1 Biomass Combustion – Individual Installations

There are no biomass combustion plants in the Cherwell District area burning 50kW to 20Mw units, which require assessment.

6.2 Biomass Combustion – Combined Impacts

Cherwell District Council confirms that there are no biomass combustion plants in the District area that require a combined impact assessment.

6.3 Domestic Solid-Fuel Burning

Cherwell District Council confirms that there are no areas of significant domestic fuel use in the District area.

6.4 Small Boilers

Cherwell District Council confirms that there are no new or newly identified boiler plants rated at $>5\text{MW}_{(\text{thermal})}$ that burn coal or fuel oil since the previous Review and Assessment report.

7 Fugitive or Uncontrolled Sources

Cherwell District Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 New Developments

The Council is required to plan for significant development over the next few years. Forward planning and planning decisions will have significant implications for air quality. The following paragraphs explain this in relation to new housing, transport and industrial development and provide an update of new significant development proposals in the District.

8.1 Summary of Developments

Under the new planning system, Structure Plans and Local Plans will be replaced by the Regional Spatial Strategy – called the South East Plan – and the Local Development Framework (LDF) for Cherwell District which will cover the period to 2026. However, many of the policies contained within the local plan (adopted 1996), including Policy ENV1 which seeks to ensure that the environment and residents are not unduly effected by development proposals which may cause pollution, have been saved and will continue to be used until replaced by the new LDF. The Non-Statutory Cherwell Local Plan 2011 also contains policies which seek to achieve the same objectives.

The LDF comprises different types of document:

- Development Plan Documents (DPDs);
- Supplementary Planning Documents (SPDs);
- A Statement of Community Involvement (SCI); and
- Annual Monitoring Reports (AMR).

The above documents are informed by national government policy, guidance and the South East Plan.

The Local Development Scheme sets out the documents the Council is currently producing as part of the LDF. These include:

- Core Strategy DPD;
- Delivery DPD;
- Planning Obligations SPD; and
- Building in Harmony with the Environment SPD.

Each of the DPDs and SPDs the Council prepares is subject to sustainability appraisal (SA). SA appraises the social, environmental and economic effects of the proposals in these documents, to ensure that they accord with the objectives of sustainable development.

The LDF aims to address local air quality issues through the promotion of sustainable development. It will contribute to the protection of the natural environment by seeking to minimise or mitigate against air pollutants. The LDF will ensure development is located in sustainable locations in order to reduce the need to travel, especially by private car, and subsequently help to reduce air pollution. The LDF will also encourage industrial development that is un-polluting.

8.2 Transport

In Cherwell walking, cycling and the use of public transport will be encouraged by the LDF. The LDF will ensure development is located near to services and facilities and employment opportunities in order to reduce the need for residents to travel (including commuting), especially by private car.

The Council's Integrated Transport and Land Use Strategies for Banbury and Bicester are currently under review and a study for the rural areas, 'Cherwell Rural Areas Integrated Transport and Land use Study' is being prepared. This work will consider the transport implications and requirements of new development options and assist the Council in deciding where to locate new development.

The LDF will locate development in order to help to maintain current averaging period objectives as stipulated in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management.

8.3 Housing and Redevelopment

Until the LDF is adopted, the local plan and the non-statutory Cherwell local plan set out Council policy for determining planning applications. The adopted plan and non-statutory Cherwell local plan allocate land for new development. The Council has recently received applications for large scale housing developments in Banbury for about 1,000 dwellings and in Bicester for about 1500 dwellings.

Large new development sites are likely to be subject to an Environmental Impact Assessment (EIA) that should consider the impact on the proposed development on air quality.

The redevelopment of the former RAF Upper Heyford site is currently subject of a planning appeal and application, with the planned development of 1075 housing units and associated public open space, a new mixed-use neighbourhood centre, a primary school, community, recreational, amenity and employment opportunities and associated physical infrastructure. An EIA has been produced and the results show that there will be a negligible deterioration in air quality from road traffic upon completion of the development.

8.4 Industry

There continues to be no significant industrial sources of NO₂ within the Cherwell District Council area.

In Banbury the Council is exploring the potential for a large mixed use development at Banbury Canalside, to the east of the town centre which will replace an existing industrial area. Prior to commencement of this development an EIA will be required detailing the impact on air quality for the area.

At Bicester a major commercial redevelopment of the town centre for mixed use is proposed as well as a large B1 classification business area. The Council has resolved to permit both schemes subject to the completion of legal agreements. Should these developments proceed after all legal matters are resolved development of the town centre scheme will proceed in 2009 for completion in 2011, whilst the business park is likely to be developed over a longer period. As previously reported, the developments have been subject to an EIA, which included consideration of the impact on air quality.

9 Air Quality Plans and Policies

9.1 AQMA Action Plan

There are currently no Air Quality Management Areas or existing Air Quality Action Plan in place within Cherwell District Council.

9.2 Local Transport Plan

Cherwell District Council's transport policy is addressed within Oxfordshire County Council's full Local Transport Plan (LTP), covering the period 2006 to 2011. In April 2006 Oxfordshire County Council adopted their second Local Transport Plan (LTP). This local transport plan covers a 5-year period from April 2006 to March 2011 and it set out a vision for transport in Oxfordshire. It focuses on five priority areas:

- Tackling congestion
- Delivering accessibility
- Safer roads
- Better air quality
- Improving the street environment

The LTP included a programme for improvements across the county to meet the priorities. The delivery of this programme was dependent upon the availability of funding over the course of the five-year plan period.

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

Cherwell District Council undertakes diffusion tube monitoring of NO₂ throughout the local area. No automatic monitoring was carried out for the 2008 calendar year by Cherwell District Council.

Cherwell District Council carried out diffusion tube monitoring for NO₂ at 16 locations throughout the District. The 2008 bias adjusted results indicated that concentrations of NO₂ exceeded the NO₂ annual mean objective at three locations. These locations were:

- Horsefair, Banbury;
- Hennef Way, Banbury; and
- Queens Avenue, Bicester.

Of the areas where the exceedences were found, each area is considered to be representative of relevant exposure to the general public.

Cherwell District Council have already begun the process of planning to carry out Detailed Assessments for NO₂ at each of the above locations. The Council installed a temporary automatic analyser at Hennef Way in May , 2009, in order to provided relevant data which will be used for a Detailed Assessment. Cherwell District Council are also preparing monitoring plans for undertaking Detailed Assessments at Horsefair and Queens Avenue through diffusion tube data. This data will be used to inform a Detailed Assessment for each site.

Due to the limitations of diffusion tubes, Local Authorities are advised not to rely upon diffusion tube data alone as a basis of a Detailed Assessment or declaration of an AQMA for NO₂. It is recognized that automatic monitoring is not always possible and therefore if diffusion tube monitoring is the practicable monitoring method it should be ensured that:

- Monitoring is carried out for a full year as concentrations of some pollutants exhibit seasonal patterns (as a minimum six consecutive months should be monitored (3 in summer and 3 in winter) for example January to June or July to December to ensure they are representative of the full year);
- Tubes are deployed at several sites in the vicinity (for example several points around the roundabout and roads leading to the roundabout at locations of public exposure, as well as a range of urban background sites (3 to 4 sites typically)) to obtain a representative background concentration for the area and roadside or kerbside sites for model verification;
- Diffusion tubes have good precision (triplicate tubes could be positioned at a selected sub-set of the sites in order to gather information on diffusion tube precision); and
- Diffusion tubes are appropriately bias corrected.

No monitoring is currently undertaken in the Cherwell District Council area for PM₁₀, 1,3-butadiene, benzene, carbon monoxide, lead, particulate matter and sulphur dioxide. Based upon the findings of the previous assessments, the concentrations of these other pollutants are unlikely to be in excess of the air quality objectives at any location.

10.2 Conclusions from Assessment of Sources

10.2.1 Road Traffic Sources

There is no requirement to proceed to a Detailed Assessment for the following sources:

- Congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb that have not previously been assessed;
- Busy Streets Where People May Spend 1-hour or More Close to Traffic;

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- Roads with a High Flow of Buses and/or HGVs;
- Junctions;
- New Roads Constructed or Proposed Since the Last Round of Review and Assessment;
- Roads with Significantly Changed Traffic Flows and; and
- Bus and Coach Stations.

10.2.2 Other Transport Sources

There is no requirement to proceed to a Detailed Assessment for the following sources:

- Airports;
- Railways (Diesel and Steam Trains); and
- Ports (Shipping).

10.2.3 Industrial Sources

There is no requirement to proceed to a Detailed Assessment for the following sources:

- Industrial Installations;
- Major Fuel (Petrol) Storage Depots;
- Petrol Stations; and
- Poultry Farms.

10.2.4 Commercial and Domestic Sources

There is no requirement to proceed to a Detailed Assessment for the following sources:

- Biomass Combustion – Individual Installations;
- Biomass Combustion – Combined Impacts; and
- Domestic Solid-Fuel Burning.

10.2.5 Fugitive or Uncontrolled Sources

There is no new or newly identified source or potential sources of fugitive particulate matter therefore there is requirement to proceed to a Detailed Assessment for the this source.

10.3 Proposed Actions

This USA concludes that Cherwell District Council is required to carry out a Detailed Review and Assessment for NO₂ at the following locations:

- **Horsefair, Banbury;**
- **Hennef Way, Banbury; and**
- **Queens Avenue, Bicester.**

Cherwell District Council is **not** required to carry out a Detailed Review and Assessment for carbon monoxide, benzene, 1,3-butadiene, lead, PM₁₀ or SO₂.

11 References

Department for Environment, Food and Rural Affairs, (2009) Local Air Quality Management Technical Guidance LAQM.TG (09).

Department for Environment, Food and Rural Affairs, Air Quality Strategy for England, Scotland Wales and Northern Ireland, 2007.

Spreadsheet of Bias Adjustment Factors accessed at www.uwe.ac.uk/aqm/review.

UK National Air Quality Information Archive, accessed at www.airquality.co.uk,

Cherwell District Council, Air Quality Review and Assessment Progress Report, 2008

Cherwell District Council, Air Quality Review and Assessment Progress Report, 2007

Cherwell District Council, Air Quality Update and Screening Assessment, 2006/2007

Appendices

Appendix A: QA/QC Data

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Diffusion tubes may systematically under or over-read NO₂ concentrations when compared to the reference chemiluminescence analyser. This is described as bias and can be corrected for to improve the accuracy of the diffusion tube results, using a suitable bias adjustment factor.

Cherwell District Council's diffusion tubes are prepared and analysed by Bristol City Council Scientific Services 7 Redcross Street Old Market Bristol BS2 0BA. The tubes are prepared by applying 30µl of a solution of 20% thiethanolamine in water to the metal grid within the tube end cap. The tubes are then assembled. Tubes are prepared monthly prior to dispatch.

As no automatic monitoring was undertaken in the Cherwell District during 2007 or 2008 the bias adjustment factor used within this Updating and Screening Assessment was derived from the national database of co-location studies (<http://www.uwe.ac.uk/aqm/review/R&Asupport/diffusiontube270209.xls>) as shown in Figure A1. The results from this spreadsheet provided a national bias adjustment factor of 0.87.

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Figure A1: Diffusion Tube Bias Adjustment Calculations

Follow the steps below in the correct order to show the results of relevant co-location studies							This spreadsheet will be updated in late September 2009 on the R&A website			
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods										
Whenever presenting adjusted data, you should state the adjustment factor used										
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.										
Published by Air Quality Consultants Ltd on behalf of Defra, the Welsh Assembly Government, the Scottish Government and the Department of the Environment Northern Ireland										
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	<p>Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor³ shown in blue at the foot of the final column.</p> <p>If you have your own co-location study then see footnote⁴. If uncertain what to do then contact the Review and Assessment Helpdesk 0117 328 3668 aqm-review@uwe.ac.uk.</p>							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data ² .								
Analysed By¹	Method To undo your selection, choose (All) from the pop-up list	Year⁵ To undo your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m3)	Automatic Monitor Mean Conc. (Cm) (µg/m3)	Bias (B)	Tube Precision⁶	Bias Adjustment Factor (A) (Cm/Dm)
Bristol Scientific Services	20% TEA in Water	2008	UB	LB Waltham Forest	12	41	36	14.2%	S	0.88
Bristol Scientific Services	20% TEA in Water	2008	R	Lewes DC	11	40	38	6.0%	S	0.94
Bristol Scientific Services	20% TEA in Water	2008	K	AEA Tech Intercomparison	12	122	116	5.4%	G	0.95
Bristol Scientific Services	20% TEA in Water	2008	R	Brighton and Hove CC	12	43	31	38.7%	G	0.72
Bristol Scientific Services	20% TEA in water	2008	Overall Factor³ (4 studies)						Use	0.87

QA/QC of diffusion tube monitoring

The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical performance-testing scheme, operated by the Health and Safety Laboratory (HSL). WASP formed a key part of the former UK NO₂ Network's QA/QC, and remains an important QA/QC exercise for laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). The laboratory participants analyse four spiked tubes, and report the results to HSL. HSL assign a performance score to each laboratory's result, based on their deviation from the known mass of nitrite in the analyte.

The performance criteria are based upon the Rolling Performance Index (RPI) statistic.

Bristol Scientific Services participate in the Workplace Analysis Scheme for Proficiency (WASP) for nitrogen dioxide. According to the Annual Performance Criteria for NO₂ Diffusion Tubes used in the Local Air Quality Management (LAQM), Bristol Scientific Services achieved a performance classification of 'Good' for rounds 100 to 104.