

Derbyshire

Chief Environmental Health Officers'
Environmental Protection Group

Air Quality in Derbyshire Summary Report

December 2009

Executive Summary

The Environment Act 1995, Part IV places a statutory obligation on all local authorities to review and assess the air quality within their area against seven Air Quality Standards. Progress Reports were introduced into the Local Air Quality Management (LAQM) system a number of years ago following a detailed evaluation of the review and assessment process. Updating and Screening Assessments (USA) are prepared in the years when local authorities are not carrying out their statutory annual Progress Reports or carrying out Detailed Assessments. This practice ensures that air quality is continually being assessed and reviewed. The latest reporting year for USA reports is 2009.

New technical guidance (LAQM.TG(09)) to support local authorities in undertaking their duties under the Environment Act 1995 was published by DEFRA in February 2009. Assessment of air quality is now undertaken on a source-by-source basis, rather than by considering each pollutant in turn.

Derby City Council and the eight borough and district councils within Derbyshire have all completed, or are currently completing, the third three yearly air quality Updating and Screening Assessment.

Monitoring is routinely undertaken for nitrogen dioxide by eight of the nine Councils, there are currently seven Air Quality Management Areas (AQMAs) within the County of Derbyshire and four Councils are progressing to Detailed Assessment for a number of different pollutants.

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1. Introduction

In 1995 the UK Government published its strategic policy framework for air quality management which established national strategies and policies that culminated in the Environment Act 1995 to provide a framework for air quality control through air quality management and air quality standards.

National air quality standards have been proposed by the Expert Panel on Air Quality Standards (EPAQS) and along with their objectives were enacted through the Air Quality Regulations in December 1997 and subsequently in the Air Quality (England) Regulations 2000 (as amended). The Air Quality (England) Regulations 2000 (as amended) set out air quality objectives for seven pollutants, which should be achieved by dates varying from 2003 to 2010. Section 82 of The Environment Act 1995 requires local authorities to undertake periodic reviews of air quality.

The first stage of the review and assessment is an Updating and Screening Assessment (USA). This is based upon the identification of any changes since the previous three yearly review and assessment (conducted in 2006), and the associated risks posed to air quality. Where the risk of exceeding an air quality objective is identified, a Detailed Assessment (DA) must be carried out to identify with reasonable certainty whether an objective is likely to be breached. If an objective is likely to be breached then the Local Authority must declare an Air Quality Management Area (AQMA).

As part of the ongoing process of assessment, in 2009 Derby City Council and the eight borough and district councils within Derbyshire have each undertaken an Air Quality Updating and Screening Assessment of current air quality and predicted likely future air quality in their own areas. The Derbyshire Chief Environmental Health Officers' Environmental Protection Group (DEPG) acts as a focus for the exchange of information and expertise through regular meetings and seminars. This report has been prepared by DEPG to bring the 2009 results of each USA together in one document to present a wider picture of air quality in the County of Derbyshire.

Local Authorities are not required to monitor air quality for all seven pollutants. Technical guidance (LAQM.TG(09)) details the phased approach that should be taken to identify likely sources of each pollutant, situations where there is relevant public exposure to the identified source and therefore where exceedences of the air quality objectives have the potential to occur.

2. Derbyshire

Derbyshire is situated in the Midlands, and is bordered by Cheshire, Yorkshire, Nottinghamshire, Leicestershire and Staffordshire. The County has an area of 255,071 hectares and at mid-2007 had a population of 758,150 people. The Peak District National Park covers more than a third of the land area.

Around 15 per cent of Derbyshire's population live in rural areas (villages, hamlets and isolated dwellings), 65 per cent live in urban conurbations containing more than 10,000 people and the remainder in towns and urban fringe areas.



Figure 1. The location of Derbyshire and the nine local authorities.

3. Bench Marks for Reviewing and Assessing Air Quality

The Air Quality Standards (England) Regulations 2007 came into force on 15 February 2007. The Regulations bring together in one statutory instrument the Government's requirements to fulfill separate EU Daughter Directives through a single consolidated statutory instrument. The Air Quality Objectives prescribed for LAQM are presented in Table 1. This table presents the objectives in units of microgrammes per cubic metre ($\mu\text{g}/\text{m}^3$) for all pollutants except carbon monoxide which is measured in milligrammes per cubic metre (mg/m^3), with the number of exceedences in each year that are permitted (where applicable). An explanation of the averaging times for the objectives are presented in Table 2.

Table 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 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

Table 2: Averaging period for air quality assessments

Averaging Period	Objectives should apply at	Objectives should not apply at
Annual Mean	<p>All background locations where members of the public might regularly be exposed</p> <p>Building façades of residential properties, schools, hospitals etc.</p>	<p>Building façades of offices or other places of work where members of the public do not regularly have access and gardens of residential properties</p> <p>Kerbside sites (as opposed to locations at the building façade) or any other location where exposure is expected to be short term</p>
24 hour mean & 8 hour mean	<p>All locations where the annual mean would apply</p> <p>Gardens of residential properties</p>	<p>Kerbside sites (as opposed to locations at the building façade) or any other location where exposure is expected to be short term</p>
1 Hour mean	<p>All locations where the annual and 24 hour and 8 hour mean would apply</p> <p>Kerbside sites (e.g. pavements of busy shopping streets)</p> <p>Those parts of car parks and railway stations which are not fully enclosed</p> <p>Any outdoor locations to which the public might reasonably to expect access</p>	<p>Kerbside sites where the public would not be expected to have regular access</p>
15 minute mean	<p>All locations where members of the public might reasonably be exposed for 15 minutes or longer</p>	

4. Automatic monitoring sites

Air quality is monitored across the United Kingdom through a variety of national monitoring stations where ambient air quality is continuously assessed for certain pollutants. There are 121 active monitoring stations on the national AURN network, of which two are situated in **Chesterfield**, Derbyshire (Table 3).

Table 3. AURN monitoring stations in Derbyshire

Site Name	Address	Site type	Monitoring Start Date	Grid reference	Pollutants monitored
Queens Park Annexe, Chesterfield	Adjacent to Pavilion, Queens Park Annexe	Urban Background	13th March 2008	437909 370545	NO ₂ PM ₁₀ PM _{2.5} 3 x co-located NO ₂ tubes
Chatsworth Road, Chesterfield	Adjacent to 461 Chatsworth Road, Chesterfield	Urban Roadside	13 March 2008	436349 370 657	NO ₂ PM ₁₀ PM _{2.5} Benzene (for NPL) 3 x co-located NO ₂ tubes

Two further monitoring stations are located close to Derbyshire, at Ladybower Reservoir in South Yorkshire and in Nottingham city centre. The location of all AURN monitoring stations can be seen at: <http://www.bv-aurnsiteinfo.co.uk/> and monitoring data is available at <http://www.airquality.co.uk/index.php>.

Within in Derbyshire there are a number of automatic monitoring sites that are operated by individual local authorities that do not form part of the national AURN network.

Bolsover District Council operate an urban background site at Glebe Junior School, Hamlet Lane, South Normanton (NGR 444180, 356353), which monitors nitrogen oxide (NO), nitrogen dioxide (NO₂) and fine particulates (PM₁₀) using a TEOM.

Derby City operate three urban continuous chemiluminescence NO₂ analysers at Council House (NGR 435474, 336252), Warwick Avenue (NGR 433678, 334533) and Abbey Street (NGR 434839, 335294).

5. Non-automatic monitoring sites

5.1 Nitrogen dioxide

With the exception of Amber Valley Borough Council, the remaining eight local authorities undertake routine monitoring for nitrogen dioxide (NO₂) using passive diffusion tubes. The results from the nitrogen dioxide diffusion tube monitoring are compared to the 40 µg/m³ annual mean objective.

In total 251 diffusion tubes are deployed across Derbyshire at 209 different locations (Table 4).

Table 4. Nitrogen dioxide diffusion tube monitoring sites

Local Authority	Number of sites	Location(s)
Bolsover	22 (two locations with triplicate tubes, one location with duplicate tubes)	Various, mainly along M1 corridor
Chesterfield	38	Various
Derby City	73	Vicinity of inner and outer ring roads.
Derbyshire Dales	18	Various
Erewash	18 (triplicate tubes)	In and around AQMAs
High Peak	11	Various
North-East Derbyshire	15 (two locations with triplicate tubes)	Various
South Derbyshire	11	Various

6. Detailed Assessments

Five local authorities are currently undertaking DAs, where it has been identified that there is a risk that an Air Quality Objective may be exceeded at a location with relevant public exposure. The aim of a DA is to identify with reasonable certainty whether or not a likely exceedence will occur.

There are currently four DAs being, or due to be, undertaken within Derbyshire and details of these are presented in Table 5.

Table 5. Detailed Assessments in progress in Derbyshire

Local Authority	Pollutant	Source	Location	Status of Detailed Assessment
Derby City	PM ₁₀	Industrial	Sinfin	In progress
Derbyshire Dales	PM ₁₀	Poultry Farm	Cubley, Ashbourne	Completed. Undergoing statutory consultation.
Erewash	NO ₂	Traffic	East of the M1 in Sandiacre and Long Eaton.	Existing AQMAs may require extending. Requirement for DA to be reviewed on

				completion of M1 widening program in late 2009.
High Peak	NO ₂	Traffic	A628, Tintwistle.	To be commenced

7. Air Quality Management Areas

If a DA has identified a breach of an Air Quality Objective an AQMA must be declared, detailing the magnitude and geographical extent of the exceedence. Once an AQMA has been declared an Action Plan will be produced within 12-18 months of declaration, which will include actions and dates by when proposed measures to improve air quality are to be implemented.

Whilst local authorities are under a legal obligation to review air quality there is no legal duty placed upon them to achieve the Air Quality Objectives. This is in part because pollutant contributions may arise from sources outside the Council's control, e.g. Environment Agency regulated processes or Highways Agency controlled roads. Local authorities must, however, demonstrate that they are working towards achieving the Air Quality Objectives even if the required actions are to be implemented by a different regulatory authority.

There are currently seven AMQAs within Derbyshire and summary details of these are presented in Table 6. Full details of each AQMA and the associated Detailed Assessment are available from the relevant Council.

Table 6. Current AQMAs in Derbyshire

Local Authority	Pollutant	Source	Location
Bolsover	NO ₂	Traffic	Twelve properties at Carter Lane East, South Normanton, adjacent to junction 28 of the M1.
Bolsover	NO ₂	Traffic	Single residential dwelling at Chesterfield Road, Barlborough, adjacent to the A616/A619 roundabout.
Bolsover	NO ₂	Traffic	Five residential properties at Orchard Close, Barlborough, adjacent to the M1 north of junction 30.
Derby City	PM ₁₀	Industrial	Victory Road, Sinfin, adjacent to QDF Castings.
Derby City	NO ₂	Traffic	Various adjacent to busy roads.
Erewash	NO ₂	Traffic	East of the M1 in Sandiacre.
Erewash	NO ₂	Traffic	East of the M1 in Long Eaton.

8. Further Information

This report aims to present a summary of the work undertaken by the nine Derbyshire local authorities in reviewing and assessing air quality. For further information on specific local air quality issues please contact the relevant individual authority (see contact details).

Full USA reports (where complete) and information on air quality can be located at the following local authority websites.

Table 10: Local Authority air quality web pages

Authority	Website
Amber Valley	http://www.ambervalley.gov.uk/services/environment/environmentalprotection/pollution/airpollution/Air+Quality.htm
Bolsover	http://www.bolsover.gov.uk/Default.aspx?page=7341
Chesterfield	http://www.chesterfield.gov.uk/default.aspx?CATID=57
Derby City	http://www.derby.gov.uk/Environment/Pollution/AirPollution.htm
Derbyshire Dales	http://www.derbyshiredales.gov.uk/environment_pollution_and_noise/pollution/air_pollution/default.asp
Erewash	http://www.erewash.gov.uk/environmental_issues/pollution/air_pollution/default.asp
High Peak	http://www.highpeak.gov.uk/environment/pollution.asp#air
North East Derbyshire	http://www.ne-derbyshire.gov.uk/environment--planning/environmental-health/domestic--industrial/pollution-monitoring
South Derbyshire	http://www.south-derbys.gov.uk/Environment/Pollution/AirPollution/?qsNavSetting=max

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