STROUD DISTRICT COUNCIL

# Local Air Quality Management

# Updating & Screening Assessment

# 2003

## Executive Summary

A Policy Document, "Local Air Quality Management" [1] has been sent by DEFRA to the Head of Housing and Head of Environmental Services, with the intention that it be widely read.

This Statutory Assessment made under Part IV of the Environmental Protection Act 1995, follows from the Air Quality Assessments made at earlier stages.[2] New regulations[3] require an assessment every three years with progress reports, essentially reporting annual data in intervening years, to be reported to DEFRA. Detailed technical guidance[1] has been issued and is followed in this report. Reports concern a calendar year and should be reported by the end of May 2003 and the end of March in subsequent years. This report together with supporting technical data was sent to DEFRA on 23rd May 2003. The Gloucestershire Pollution Group has produced a supporting document discussing monitoring across the County[4].

The six local authorities in the County are proposing to develop an Air Quality Strategy in conjunction with the University of the West of England, to provide guidance on problem areas and suggest [planning] controls to prevent air quality deteriorating in the future.

The conclusion of this report, for all the pollutants to be considered (see Appendix 1), is that there is no need for this authority to undertake detailed assessments.

This report should be widely consulted on.

[1] Part IV of the Environment Act 1995, Local Air Quality Management, Policy Guidance LAQM.PG(03). and Technical Guidance TG(03)
[2] Air Quality Review and Assessment Stages 2 and 3
[3] Air Quality (England) Amendment Regulations 2002
[4] A Report on the Air Quality in the County of Gloucestershire in 2002 by Casella CRE, May 2003.

## 1,3–butadiene Updating & Screening Assessment

Standard The Government and the Devolved Administration have adopted a maximum running annual mean concentration of 2.25μgm/$m^3$ as an air quality standard for 1,3–butadiene. The objective is for the standard to be achieved by the end of 2003.

(A) Monitoring Data Stage 1 assessment revealed no areas of concern and so there was no monitoring undertaken. However concentrations of 1,3–butadiene are measured at a limited number of UK national network sites. Maximum running annual mean concentrations of 1,3–butadiene measured at all urban background/centre and roadside locations are already well below the 2003 objective of 2.25μgm/$m^3$ . The estimated annual mean concentration from the www.airquality.co.uk map of 1,3–butadiene for this Authority for 2003 is <0.1μgm/$m^3$.

(B) Industrial sources No industrial sources were identified during the first round of review and assessment as likely to give rise to exceedences of the running annual mean objective for 1,3–butadiene. No new relevant industrial sources have been identified as defined in the LAQM.TG(03).

Conclusion In view of the above, there is no need for this Authority to proceed to a Detailed Assessment in relation to 1,3–butadiene.

## Benzene Updating & Screening Assessment

Standard The Government and the Devolved Administration have adopted a maximum running annual mean concentration of 16.25μgm/$m^3$ as an air quality standard for benzene. The objective is for the standard to be achieved by the end of 2003. It is further proposed that the concentration be reduced to 5μgm/$m^3$ by the end of 2010.

(A) Monitoring Data Stage 1 assessment revealed no areas of concern and so there was no monitoring undertaken. However concentrations of benzene are measured at UK national network sites. Measured concentrations at all urban background and roadside locations are already significantly below the 2003 objective of 16.25μgm/$m^3$ . In recent years the concentrations measured at urban background locations have also been below the tighter 2010 objectives. The estimated annual mean concentration from the www.airquality.co.uk maps of benzene for this Authority for 2003 and 2010 are <0.3μgm/$m^3$.

(B) Very busy road junctions To be classed as, very busy in the LAQM.TG(03), a single carriageway road must have a traffic flow exceeding 80,000 vehicles per day and a motorway 140,000 vehicles per day. Gloucestershire County Council Traffic data for 2000 show a single carriageway maximum of 21,600 vehicles per day and a motorway maximum of 72,300 vehicles per day for this Authority. There are therefore no busy roads as defined in the LAQM.TG(03).

(C) Industrial sources No industrial sources were identified during the first round of review and assessment as likely to give rise to exceedences of the running annual mean objective for benzene. No new relevant industrial sources have been identified as defined in the LAQM.TG(03).

(D) Petrol Stations The only relevant petrol stations, as defined in the LAQM.TG(03) are the North and South Stinchcombe Services on the M5. However there are no relevant exposure locations within 10m of the pumps.

(E) Major fuel storage depots (petrol only) There are no major petrol storage depots, as defined in the LAQM.TG(03), within the Authority boundaries.

(F) Conclusion In view of the above, there is no need for this Authority to proceed to a Detailed Assessment in relation to Benzene.

## Carbon monoxide Updating & Screening Assessment

Standard The Government and the Devolved Administration have adopted an 8-hour running mean concentration of 11.6mg/$m^3$ as an air quality standard for carbon monoxide. A new objective of 10mg/$m^3$ as a maximum daily running 8-hour mean concentration, to be achieved by the end of 2003 has been set.

(A) Monitoring Data Stage 1 assessment revealed no areas of concern and so there was no monitoring undertaken. Concentrations of carbon monoxide are measured at UK national network sites. Measured concentrations at all background and roadside locations are all below the objectives. Carbon monoxide concentrations adjacent to major roads have also been modelled at national level. The results suggest that the 10mg/$m^3$ objective will be met by 2003. The estimated annual mean concentration from the www.airquality.co.uk map of carbon monoxide for this Authority for 2001 is 0.2-0.3mgm/$m^3$.

(B) Very busy roads and junctions To be classed as, very busy in the LAQM.TG(03), a single carriageway road must have a traffic flow exceeding 80,000 vehicles per day and a motorway 140,000 vehicles per day. Gloucestershire County Council Traffic data for 2000 show a single carriageway maximum of 21,600 vehicles per day and a motorway maximum of 72,300 vehicles per day for this Authority. There are therefore no busy roads as defined in the LAQM.TG(03).

Conclusion In view of the above, there is no need for this Authority to proceed to a Detailed Assessment in relation to Carbon monoxide.

## Lead Updating & Screening Assessment

Standard The Government and the Devolved Administration have adopted a maximum annual mean concentration of 0.5μgm/$m^3$ as an air quality standard for lead. The objective is for the standard to be achieved by the end of 2004. In addition, a lower air quality objective of 0.25μgm/$m^3$ by the end of 2008 has also been set.

(A) Monitoring Data Stage 1 assessment revealed no areas of concern and so there was no further monitoring undertaken. Historically, concentrations were measured in close proximity to a foundry in Dursley which showed an annual mean concentration of 0.11μgm/$m^3$. This foundry has now ceased production. Concentrations of lead are measured at UK national network sites. Measured concentrations at all background and roadside locations are well below the objectives for 2004 and 2008.

(B) Industrial sources No industrial sources were identified during the first round of review and assessment as likely to give rise to exceedences of the annual mean objective for lead. No new relevant industrial sources as defined in the LAQM.TG(03) have been identified.

Conclusion In view of the above, there is no need for this Authority to proceed to a Detailed Assessment in relation to Lead.

# Nitrogen Dioxide Updating & Screening Assessment

Standard The Government and the Devolved Administration have adopted two air quality objectives for nitrogen dioxide, an annual mean concentration of 40μgm/$m^3$ and a 1-hour mean concentration of 200μgm/$m^3$ not to be exceeded more than 18 times per year. The objective is for the standard to be achieved by the end of 2005.

(A) Monitoring Data outside an AQMA Concentrations of nitrogen dioxide are measured at UK national network sites. The estimated annual mean concentrations from the www.airquality.co.uk map of nitrogen dioxide for this Authority for 2005 are between 10-30μgm/$m^3$. Extensive monitoring has been undertaken using GRADCO diffusion tubes. No sites exceed the annual mean concentration standard.

(B) Monitoring Data within an AQMA The AQMA previously declared is now in the process of being rescinded.

(C) Narrow etc streets These were assessed in the first review.

(D) Junctions Traffic flows in Gloucestershire data maps have been considered and over 20 junctions were assessed as over 10000 vehicles per day. Each junction was viewed in detail using MapInfoProView 6.0 to assess whether there was relevant exposure within 10m of the kerb. Only one junction fell within this description – Painswick. However as a cross check several other junctions were also tested using the latest version of the DMRB software. All were well within the adopted standard.

| Location | Year | Dist to centre | Flow AADT | LDV % | HGV % | Background Nox – NO2 | Annual mean NO2 |
|---|---|---|---|---|---|---|---|
| Painswick | 2005 | 5m | 11200 | 92 | 8 | 25.36 –17.84 | 24.4 |
| Stroud Bowbridge | 2005 | 10m | 16100 | 92 | 8 | 25.36 –17.84 | 25.2 |
| Stonehouse Roundabout | 2005 | 10m | 32450 | 92 | 8 | 25.36 –17.84 | 27.2 |

(E) Busy streets where people may spend 1-hour or more close to traffic These were considered in the first review

(F) Roads with high flows of buses and/or HGVs These were covered at (D)

(G) New roads None identified

(H) Roads close to objective in last round These were covered at (D)

(I) Roads with significant change to flow None identified

(J) Bus stations No relevant exposure identified within 10m of any bus station and no station with a flow of vehicles greater than 1000 buses per day.

(K) New industrial sources — No industrial sources were identified during the first round of review and assessment as likely to give rise to exceedences of standard for nitrogen dioxide. No new relevant industrial sources have been identified as defined in the LAQM.TG(03).

(L) Industrial sources with increased emissions — None identified.

(M) Aircraft — Not applicable.

Conclusion — In view of the above, there is no need for this Authority to proceed to a Detailed Assessment in relation to nitrogen dioxide.

## PM10 Updating & Screening Assessment

Standard The Government and the Devolved Administration have adopted an annual mean concentration of 40μgm/$m^3$ and 50μgm/$m^3$ as the fixed 24-hour mean to be exceeded on no more than 35 days per year. The objective is for the standard to be achieved by the end of 2004.

(A) Monitoring Data outside AQMA Stage 1 assessment revealed no areas of concern and so there was no monitoring undertaken. More recent data (See A Report on the Air Quality in the County of Gloucestershire in 2002 attached) from the two stations at Cheltenham and Forest of Dean do not give any cause for concern.

(B) Monitoring Data inside AQMA The AQMA previously declared is now in the process of being rescinded.

(D) Junctions Traffic flows in Gloucestershire data maps have been considered and over 20 junctions were assessed as over 10000 vehicles per day. Each junction was viewed in detail using MapInfoProView 6.0 to assess whether there was relevant exposure within 10m of the kerb. Only one junction fell within this description – Painswick. However as a cross check several other junctions were also tested using the latest version of the DMRB software. All were well within the adopted standard.

| Location | Year | Dist to centre | Flow AADT | LDV % | HGV % | Background | Annual mean | Days Exceeded |
|---|---|---|---|---|---|---|---|---|
| Painswick | 2004 | 5m | 11200 | 92 | 8 | 17.5 | 20.6 | 4 |
| Stroud Bowbridge | 2004 | 10m | 16100 | 92 | 8 | 17.5 | 20.8 | 4 |
| Stonehouse Roundabout | 2004 | 10m | 32450 | 92 | 8 | 17.5 | 27.2 | 6 |

(E) Roads with high flows of buses and/or HGVs These were covered at (D)

(F) New roads since last round None identified

(G) Roads close to objective in last round These were covered at (D)

(H) Roads with significant change to flow None identified

Conclusion In view of the above, there is no need for this Authority to proceed to a Detailed Assessment in relation to PM10.

# Sulphur Dioxide Updating & Screening Assessment

Standard The Government and the Devolved Administration have adopted a 15-minute mean of 266μgm/$m^3$ as an air quality standard for sulphur dioxide with an objective that the standard is not to be exceeded more than 35 times in a year by the end of 2005.

(A) Monitoring Data Stage 1 assessment revealed no areas of concern. However following discussion with the Gloucestershire Pollution Group two diffusion tubes were placed in the south of the area and measurements made in concert with others in different parts of the area i.e. Cotswold, Forest of Dean and Tewkesbury.

| Annual Average SO2 Diffusion Tube Data | | | | |
|---|---|---|---|---|
| Site | 1999 | 2000 | 2001 | 2002 |
| Cotswold | 2.8 | 4.2 | | |
| FOD1 | 4.0 | 3.3 | 4.0 | 2.3 |
| FOD2 | 6.7 | 6.2 | 2.2 | 2.9 |
| FOD3 | 6.8 | | | |
| Stroud1 | | | 7.4 | 6.9 |
| Stroud2 | | | 5.1 | 6.4 |
| Tewkesbury | 6.9 | 4.3 | 3.7 | |
| Annual average standard - 20μgm/$m^3$ | | | | |

As may be seen, in all instances the overall background levels recorded are well within the prescribed limit.

Conclusion In view of the above, there is no need for this Authority to proceed to a Detailed Assessment in relation to Sulphur Dioxide.

APPENDIX 1

| **Objectives included in the Air Quality Regulations (England) (Wales) 2000 and in Air Quality (England) (Wales) (Amendment) Regulations 2002 for the purpose of Local Air Quality Management** | | | |
|---|---|---|---|
| **Pollutant** | **Objective** | **Concentration Measured as** | **Date to be achieved by** |
| **Benzene** | 16.25 μg/m$^3$ (5 ppb) | Running annual mean | 31 Dec 2003 |
| **Benzene** | 5 μg/m$^3$ (1.54 ppb) | Annual average | 31 Dec 2010 |
| **1,3-butadiene** | 2.25 μg/m$^3$ (1 ppb) | Running annual mean | 31 Dec 2003 |
| **Carbon Monoxide** | 10 mg/m3 (8.6 ppm) | Maximum daily running 8-hour mean | 31 Dec 2003 |
| **Lead** | 0.5 μg/m$^3$ | Annual mean | 31 Dec 2004 |
| **Lead** | 0.25 μg/m$^3$ | Annual mean | 31 Dec 2008 |
| **Nitrogen Dioxide** | 200 μg/m$^3$ (132 ppb) not to be exceeded more than 18 times a year | 1- hour mean | 31 Dec 2005 |
| **Nitrogen Dioxide** | 40 μg/m$^3$ (21 ppb) | Annual mean | 31 Dec 2005 |
| **Sulphur Dioxide** | 350 μg/m$^3$ (132 ppb) not to be exceeded more than 24 times a year | 1-hour mean | 31 Dec 2004 |
| **Sulphur dioxide** | 125 μg/m$^3$ (47 ppb) not to be exceeded more than 3 times a year | 24-hour mean | 31 Dec 2004 |
| **Sulphur Dioxide** | 266 μg/m$^3$ (100 ppb) not to be exceeded more than 35 times a year | 15- minute mean | 31 Dec 2004 |
| **Particles ($PM_{10}$)** | 50 μg/m$^3$ not to be exceeded more than 35 times a year | 24-hour mean | 31 Dec 2004 |
| **Particles ($PM_{10}$)** | 40 μg/m$^3$ (21 ppb) | Annual mean | 31 Dec 2004 |