



Air Quality Update and Screening Assessment

May 2006

**Health & Enforcement Services
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Summary

Under Part IV of the Environment Act 1995 there is a requirement for all Local Authorities to assess their local air quality and to predict future conditions against the National Air Quality Objectives.

This report has been compiled as part of the third round of the air quality assessment for Harborough District Council. The Update and Screening Assessment has been carried out in accordance with the requirements of the DEFRA guidance TG (03) as amended.

The purpose of this report is to review the findings of the original Review and Assessment undertaken in 2001 and the first Update and Screening Assessment of 2003 to:

- Identify any changes that have occurred in the district which may effect the air quality, and:
- Take into account any improvements that have occurred in the prediction methods used for assessing the future air quality.

The pollutants examined in this report are Benzene, 1,3 Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulphur Dioxide and Particulates. For each pollutant a checklist has been completed in accordance with the above mentioned guidance to determine whether there is the possibility of exceedances in the National Air Quality Objectives and whether a more detailed assessment of the levels of pollution is required.

Updating and Screening Assessment Summary Checklist for **Carbon Monoxide**

Item	Response
A) Monitoring data	This authority is currently not monitoring Carbon Monoxide
B) Very busy roads or junctions in built-up areas	There is a junction with the M1, M6 and A14 within the district, however there is no relevant exposure within 10m of this junction.
Conclusion	There have been no significant changes with regards to Carbon Monoxide, therefore it is not anticipated that it will be necessary to proceed beyond the Update and Screening Assessment.

Updating and Screening Assessment Summary Checklist for **Benzene**

Item	Response
A) Monitoring data outside an AQMA	This authority is currently not monitoring for Benzene
B) Monitoring data within an AQMA	See above
C) Very busy roads or junctions in built up areas	There is a junction with the M1, M6 and A14 within the district, however there is no relevant exposure within 10m of this junction.
D) Industrial sources.	An assessment of industrial sources was undertaken as part of the previous Update and Screening Assessment. No industrial processes were identified within the district and surrounding area where there would be a significant impact on the local air quality. There have been no changes since the previous USA
E) Petrol stations	There are twelve petrol stations currently authorised under Part B of the Environmental Protection Act 1990 for petrol vapour recovery. These petrol stations have a throughput greater than 1000m ³ /annum however none are adjacent to busy roads with more than 30,000 vehicles per day. Consequently it is felt that they would not be regarded as significant sources.
F) Major fuel storage depots (petrol only)	There are no major fuel storage depots within the district
Conclusion	There have been no significant changes with regards to Benzene, therefore it is not anticipated that it will be necessary to proceed beyond the Update and Screening Assessment.

Updating and Screening Assessment Summary Checklist for **1,3-butadiene**

Item	Response
A) Monitoring data	This authority is not currently monitoring 1,3-Butadiene
B) New industrial sources.	There are no industrial processes of relevance in the authority, or any of the neighbouring authorities. There has been no change in this position.
Conclusion	There have been no significant changes with regards to 1,3-Butadiene therefore it is not anticipated that it will be necessary to proceed beyond the Update and Screening Assessment.

Updating and Screening Assessment Summary Checklist for **Lead**

Item	Response
A) Monitoring data	This authority is currently not monitoring for lead.
B) New industrial sources.	There are no industrial processes of relevance in the authority, or any of the neighbouring authorities. There has been no change in this position.
Conclusion	There have been no significant changes with regards to Lead therefore it is not anticipated that it will be necessary to proceed beyond the Update and Screening Assessment.

Updating and Screening Assessment Summary Checklist for **Nitrogen Dioxide**

Item	Response
A) Monitoring data outside an AQMA	This authority has a network of diffusion tubes throughout the district. The all of the results were bias adjusted using the techniques described in the DEFRA guidance LAQM.TG(03). The bias correction factor of 0.81 was used as determined by the University of West of England web site - http://www.uwe.ac.uk/aqm/review/diffusontube310306.xls .The results for 2005 can be found in appendix 1
B) Monitoring data within an AQMA	There are a number of diffusion tubes within the Air Quality Management Area and this were corrected using the method described above and the results can be found in Appendix 1. In addition there is a real time road side monitoring station for Nitrogen Dioxide within the AQMA. As part of

	<p>the QA/QC procedure all data from the monitor is handled and verified by consultants Casella ETi. The results for 2005 can be found in appendix 2.</p> <p>Within the Air Quality Management Area there were 20 hourly exceedences within the month of January. Investigations could not identify any possible source of the problem, e.g. local road works, problems with other roads in the vicinity resulting in additional traffic or elevated levels recorded by neighbouring local authorities. In addition since 2002 there has only been one recorded exceedence of the hourly average of $200\mu\text{g}/\text{m}^3$ indicating that high number of exceedences experienced in January 2005 was not typical of the situation within the AQMA, however we will continue to monitor the situation in the forthcoming year. Whilst there are shops within the AQMA, in the vicinity of the monitoring station the likelihood of people spending 1 hour or more is very remote.</p>
<p>C) Narrow congested streets with residential properties close to the kerb</p>	<p>Using the definition in LAQM.TG(03) there was one street in Kibworth that would fall within these criteria where the traffic exceeds 10,000 vehicles per day and that possible receptors were within 5m of the kerb. Traffic information obtained from Leicestershire County Council count sites was inputted into the DMRB screening model. The results can be found in Appendix 3. By using this screening method it can be concluded that the predicted annual mean for this area would not exceed the National Air Quality Objective.</p>
<p>D) Junctions.</p>	<p>One busy junction was identified in the first Upgrade and Screening Assessment however using the DMRB screening tool it was felt that there would be no exceedence of the National Air Quality Objectives at this location. Further analysis of traffic data does not identify a busy junction with more than 10,000 vehicles a day with a relevant exposure within the district.</p>
<p>E) Busy streets where people may spend 1-hour or more close to traffic</p>	<p>Using the definition in LAQM.TG(03) there are no streets that would fall within these criteria where the traffic exceeds 10,000 vehicles per day and that there is the likelihood of members of the public spending 1 hour or more on a regular basis.</p>
<p>F) Roads with high flow of buses and/or HGVs.</p>	<p>Traffic data identified 2 possible locations with an unusually high proportion of HGV's or buses. Both of these locations are en-route to a major distribution centre and there are no relevant exposures within 10m of these roads therefore it was felt that a more detailed assessment would</p>

	not be required.
G) New roads constructed or proposed since the previous round of R&A	There have been no new roads constructed since the previous update and screening assessment. The Highways Agency has announced plans to improve the M1, M6 and A14 junction which situated in the district. The preferred route has been announced however the Statutory Orders have not been laid. Initial air quality studies demonstrate that due to the lack of relevant exposures in close proximity to the development there will be no exceedences of the National Air Quality Objectives, therefore at this stage it will not be necessary to progress to a more detailed assessment.
H) Roads with significantly changed traffic flows, or new relevant exposure	There are no roads which have had an increased traffic flow of more than 25% since the previous Update and Screening Assessment
I) Bus Stations	There are no bus stations in the district
J) Industrial sources.	There are no industrial processes of relevance for Nitrogen Dioxide within the district or surrounding areas. There has been no change in this position
K) Aircraft	There are no significant airfields in the district that would contribute to elevated levels of nitrogen dioxide. East Midlands airport is approximately 40km to the north of the district. LAQM.TG(03) advises that once an aircraft has reach an altitude of 200m or more it would not make a significant contribution to ground-level concentrations of nitrogen dioxide. Therefore it is not anticipated that this airport will have any impact on the nitrogen dioxide levels in Harborough district.
Conclusion	It is unlikely that the air quality objectives for Nitrogen Dioxide will be exceeded outside the existing Air Quality Management Area, therefore it will not be necessary to carry out a detailed assessment. The problems of air quality within the AQMA have been addressed in the Action Plan which has been incorporated into the Leicestershire Local Transport Plan

Updating and Screening Assessment Summary Checklist for **Sulphur Dioxide**

Item	Response
A) Monitoring data outside an AQMA	This authority is currently not monitoring Sulphur Dioxide

B) Monitoring data within an AQMA	See above
C) Industrial sources.	<p>During the first round of the review and assessment process, a number of power stations situated in the Trent Valley to the North-West of the District were identified as potential emitters of large quantities of sulphur dioxide. However an assessment of the Environment Agency published information on these Part A Processes confirmed that the concentration of pollutants emitted would not be significant to the District.</p> <p>There have been no changes in this position</p>
D) Areas of domestic coal burning	Harborough district does not have a significant density of coal burning properties therefore it is felt that there would be no significant contribution from this source to the overall levels of sulphur dioxide in the area.
E) Small Boilers > 5 MW (thermal).	The combustion plants located within the District appear to be well below 5 MW power rating and would not have a significant influence on the overall concentrations of sulphur dioxide.
F) Shipping	There are no local sources of shipping emissions.
G) Railway Locomotives	Trains were considered in the last Upgrade and Screening Assessment and it was concluded that it would be unlikely that there would be an exceedence in the air quality objective from this source.
Conclusion	There have been no significant changes with regards to Sulphur Dioxide therefore it is not anticipated that it will be necessary to proceed beyond the Update and Screening Assessment.

Updating and Screening Assessment Summary Checklist for **PM₁₀**

Item	Response
A) Monitoring data outside an AQMA	This authority does not currently monitor PM ₁₀ outside an Air Quality Management Area
B) Monitoring data within an AQMA	There is one Air Quality Management Area within the district; this was declared on the grounds of incidences of Nitrogen Dioxide, however monitoring of PM ₁₀ is continually monitored within the AQMA. There is one PM10 real time monitor (TEOM) at a roadside location. As part of the QA/QC procedure all data from the TEOM is handled and verified by

	<p>consultants Casella ETi. The results for 2005 can be found in appendix 2. Current guidance advises that it is necessary to apply an adjustment factor of 1.3 for results from a TEOM. Consequently the annual mean is $31.3\mu\text{g}/\text{m}^3$ with 2 exceedences of the 24 hour mean of $50\mu\text{g}/\text{m}^3$. It is considered unlikely that the PM_{10} objectives will be exceeded at this location.</p>
C) Junctions.	<p>One busy junction was identified in the first Upgrade and Screening Assessment however using the DMRB screening tool it was felt that there would be no exceedence of the National Air Quality Objectives at this location. Further analysis of traffic data does not identify a busy junction with more than 10,000 vehicles a day with a relevant exposure within the district.</p>
D) Roads with high flow of buses and/or HGVs.	<p>Traffic data identified 2 possible locations with an unusually high proportion of HGV's or buses. Both of these locations are en-route to a major distribution centre and there are no relevant exposures within 10m of these roads therefore it was felt that a more detailed assessment would not be required.</p>
E) New roads constructed or proposed since last round of R&A	<p>There have been no new roads constructed since the previous update and screening assessment. The Highways Agency has announced plans to improve the M1, M6 and A14 junction which situated in the district. The preferred route has been announced however the Statutory Orders have not been laid. Initial air quality studies demonstrate that due to the lack of relevant exposures in close proximity to the development there will be no exceedences of the National Air Quality Objectives, therefore at this stage it will not be necessary to progress to a more detailed assessment.</p>
F) Roads with significantly changed traffic flows, or new relevant exposure.	<p>There are no roads which have had an increased traffic flow of more than 25% since the previous Update and Screening Assessment.</p>
G) Roads close to the objective during the second round of Review and Assessment	<p>There were no roads close to the objective level identified as part of the Review and Assessment process.</p>
H) New industrial sources or Industrial sources with substantially increased emissions, or new	<p>There are no industrial processes of relevance for PM_{10} within the district or surrounding areas. There has been no change in this position.</p>

relevant exposure	
I) Areas of domestic solid fuel burning	This was examined in the previous Update and Screening Assessment. No areas of high levels of domestic coal burning were identified and there has been no change in this position.
J) Quarries / landfill sites / opencast coal / handling of dusty cargoes at ports etc.	An application for a Pollution Prevention and Control permit has recently been submitted to the Environment Agency for the continuation of a quarry to be used for inert landfill. As part of the application a detail risk assessment has been carried out on the potential effect of activities carried out on site on local receptors. Five residential properties are situated within a radius of the installation boundary, the closest residential property is approximately 45m from the boundary and access to this property is via the quarry site entrance. The site has been used as a quarry and landfill for approximately 15 years and in that time no complaints have been received regarding dust problems. As part of the Permit application the company provided a detailed risk assessment and management procedure for minimising the impact of dust. In view of the above it is not anticipated that a detailed assessment will be required at this stage however the situation will be monitored in the future to determine whether a more detailed assessment will be required.
K) Aircraft	There are no significant airfields in the district that would contribute to elevated levels of PM ₁₀ 's.
Conclusion	There have been no significant changes with regards to PM10 emissions within the district and as such it will not be necessary to proceed beyond the Update and Screening Assessment

Appendix 1 Results of the Raw Data and Bias Adjusted Data of the Nitrogen Dioxide Diffusion Tube Survey 2005

All results are in $\mu\text{g}/\text{m}^3$

Tube Number	Name	Easting	Northing	Jan 05	Feb 05	Mar 05	April 05	May 05	June 05	July 05	Aug 05	Sept 05	Oct 05	Nov 05	Dec 05	AVE	2005 Corrected Roadside Results
1	Brooklands	4735	2871	32	29	25	19	13	14	15	13	16	22	25	30	21.1 17.1	17.1
2	LASS Lutterworth	4545	2842	64	71	67	62	53	26	A	55	A	A	74	64	59.5 48.2	48.2
3	Bushby	4653	2038	33	31	31	17	35	13	18	18	18	21	28	A	23.9 19.4	19.4
4	Regent Ct Lutterworth	4545	2842	84	97	A	70	62	61	58	67	63	65	72	61	69.1 55.9	55.9
5	Monitoring Station Lutterworth	454476	284543	-	-	-	53	52	63	55	56	64	64	77	67	62.3 50.4	50.4
7	Theddingworth	466628	285598	-	-	33	24	30	21	33	27	31	28	34	A	29 23.5	23.5
8	Lilac Drive Lutterworth	453092	284555	-	-	40	24	24	A	21	23	34	44	39	42	32.3 26.2	26.2
9	Maxwell Dr Lutterworth	454381	285980	-	-	36	28	19	26	21	24	30	44	33	40	30.1 24.4	24.4
10	Central Park Lutterworth	454577	285491	-	-	49	42	38	38	48	36	47	A	57	56	45.7 37	37

11	Day Nursery Lutterworth	454538	284933	-	-	57	A	45	49	A	49	56	46	66	65	54.1 43.8	43.8
12	A6 Kibworth	468426	294312	-	-	50	42	33	32	38	40	46	48	63	64	45.6 36.9	36.9
13	Rockingham Rd Harborough	474744	287613	-	-	47	25	24	23	15	31	37	39	53	A	32.7 26.46	26.46
14	Harboro Rubber	474009	287333	-	-	41	A	27	26	27	28	28	A	47	57	35.1 28.4	28.4
14	Western Ave Harborough	472832	286381	-	-	24	18	15	15	20	19	22	26	32	34	22.5 18.2	18.2
15	The Square Harborough	473377	287230	-	-	A	4	33	34	51	A	A	39	A	60	36.8 29.8	29.8
16	Walcote	456813	283651	-	-	41	27	24	27	A	21	33	61	35	20	32.1 26.01	26.01
17	Jazz hair Lutterworth	454454	284394	-	-	-	-	-	-	A	43	48	A	60	55	51.5 41.7	41.7

A = Tube missing

The information in RED is the Bias Corrected Data

 Results in shaded boxes refer to tubes within the Air Quality Management Area

Appendix 2

2005 Results from the Real Time Monitor situated inside the Air Quality Management Area in Lutterworth

2005	Nitrogen Dioxide		Particulates	
	Monthly Mean	No of exceedences of the 1 hr mean	Monthly Mean	No of exceedences of the 24 hr mean
Jan	41	20	20.7	1
Feb	51.5	0	25.0	0
March	52.8	0	30.3	0
April	55.5	0	27.9	0
May	46.5	0	20.8	0
June	52.7	0	22.1	0
July	46	0	22.5	0
August	55.3	0	21.9	0
Sept	67.7	0	25.4	0
October	58.5	0	25	0
November	73.9	4	26.7	1
December	66	0	21.4	0
	Ave 55.6	24	24.1	2

All results are measured in $\mu\text{g}/\text{m}^3$

Appendix 3

The results of the DMRB assessment for the A6 in Kibworth

Current receptor							
Receptor Name	A6			Receptor number	8		
Assessment year	2005						
Results							
Pollutant	Annual mean				For comparison with Air Quality Standards		
	Background concentration	Road traffic component	Total	Units	Metric	Value	Units
CO	0.00	0.09	0.09	mg/m ³	Annual mean*	0.09	mg/m ³
Benzene	0.00	0.11	0.11	µg/m ³	Annual mean	0.11	µg/m ³
1,3-butadiene	0.00	0.11	0.11	µg/m ³	Annual mean	0.11	µg/m ³
NO _x	33.3	25.6	58.9	µg/m ³	Not applicable		
NO ₂	21.6	6.4	28.0	µg/m ³	Annual mean*	28.0	µg/m ³
PM ₁₀	18.8	2.97	21.77	µg/m ³	Annual mean	21.8	µg/m ³
					Days >50µg/m ³	6	Days