2012 Air Quality Updating and Screening Assessment for Charnwood Borough Council

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

July 2012

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Executive Summary

As part of their duties under the Environment Act 1995 local authorities are obliged to undertake a full Updating and Screening Assessment of air quality within their districts, every 3 years.

The report asks local authorities to review and assess air quality in their areas in detail, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences have been recorded or are considered likely, the local authority must then proceed to a Detailed Assessment prior to the declaration of an Air Quality Management Area (AQMA) and the preparation of an Air Quality Action Plan (AQAP), setting out the measures it intends to put in place in pursuit of the objectives.

Charnwood has four Air Quality Management Areas (AQMAs), which were declared because of predicted breaches of national air quality objectives at residential properties in the borough. The causes of these predicted breaches are resulting from both emissions from local traffic and commercial (railway & quarry) sources.

In 2011, the monitoring of nitrogen dioxide at 38 locations in Charnwood demonstrated a breach of UK air quality objectives at 2 sites. Both sites reporting exceedences fall within the existing Loughborough Air Quality Management Area which was declared in response to (traffic derived) exceedences of the nitrogen dioxide (annual mean) air quality concentration objective.

The recent opening of the Loughborough Eastern Gateway Project, and looking further ahead to Loughborough Inner Relief Road (LIRR), is expected to bring measurable air quality improvements to residents living alongside the arterial routes through Loughborough.

The 2007 installation of the automatic nitrogen dioxide monitor in Syston has enabled us to gain a more localised and accurate indication of air quality in the southern areas of the Borough. The results since the monitor was installed are pointing towards a gentle trend of improvement in this region.

Progress with Lafarge quarry in relation to the Mountsorrel (PM_{10}) Air Quality Management Area declared in November 2011, is on-going. A dust management plan has been approved and a number of process solutions and procedural improvements have now been implemented and will be periodically assessed and reviewed. Early results from these changes are already indicating a positive influence in interim results and suggesting that the permissible dust levels are much more likely to be achieved in future.

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1 Introduction

1.1 Description of Local Authority Area

The Borough of Charnwood is located in the heart of the East Midlands sitting centrally in the triangle formed by Nottingham, Leicester and Derby. The Borough covers an area of 108 square miles and consists of a mix of urban settlements and rural farmland.

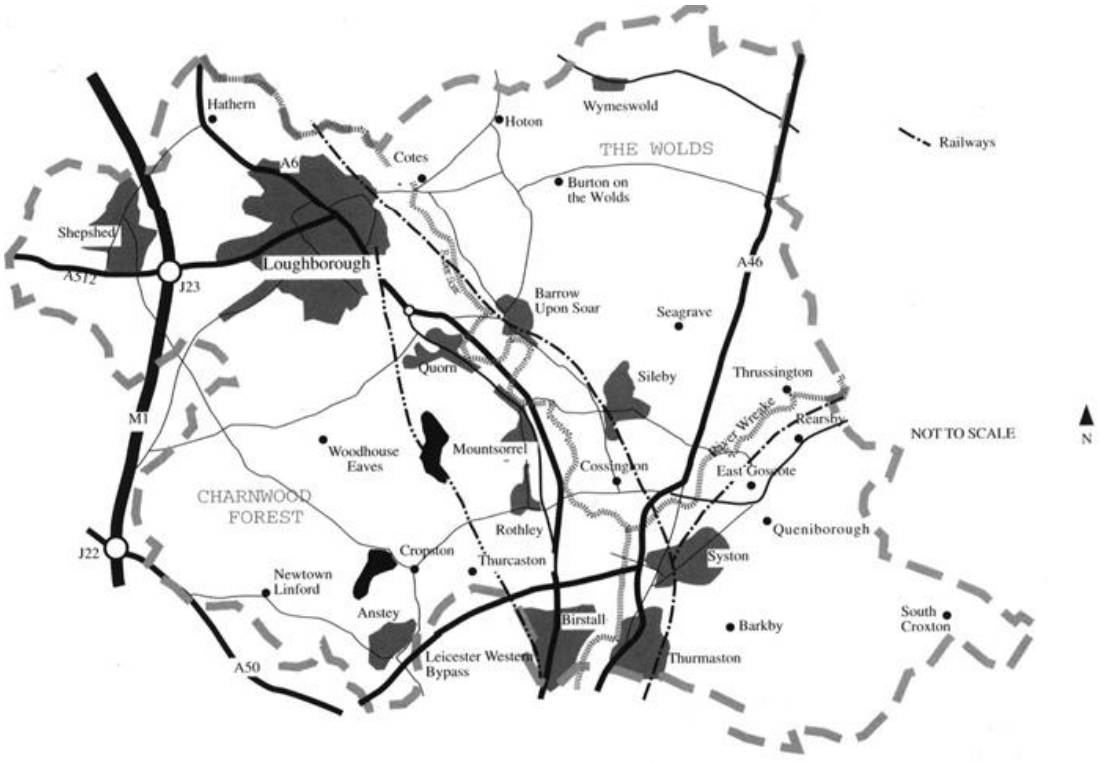
Map of Charnwood Borough in Leicestershire

The Borough of Charnwood

Just over one third of the 155,000+ population live in the thriving university town of Loughborough. The remaining residents are distributed between the northern town of Shepshed and the southern towns and villages on the outskirts of the city of Leicester including Anstey, Birstall, Thurmaston and Syston and the villages located along the Soar and Wreake river valleys.

Charnwood has a wide range of commercial and industrial activities. Loughborough is traditionally associated with the engineering sector, whilst the villages along the Soar and Wreake have long associations with the footwear, hosiery and knitwear

industries. High technology industries are being rapidly attracted into the Borough, mirroring the national experience of the contraction of the traditional heavy industries. The changing industrial infrastructure of the Borough will continue to create challenges in relation to air quality management.



A substantial and varied transport network serves the Borough. The major road links include the M1 motorway, the A6 and the A46 all of which run to a greater or lesser extent through the Borough. The Ivanhoe and Great Central railway lines run through the central spine of the Borough, and the East Midlands airport is located approximately three miles from the north western boundary of Charnwood.

Generally ambient air pollution has never been considered to be of excessive concern for local residents in the Borough. However, as is the case in many parts of the country, the atmospheric emissions from certain individual point sources have caused considerable nuisance for those residents in the immediate vicinity. Some of these individual point sources will not have been highlighted through this report, as they are not producers of any of the seven key pollutants highlighted in the National Air Quality Strategy. This does not indicate a lack of concern by the authors of the report to generate solutions to these problems, but is simply due to the fact that they fall outside the remit of this report.

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.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The airquality 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 microgrammes per cubic metre $\mu g/m^3$ (milligrammes 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 LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003

	5.00 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

In December 2000 Charnwood Borough Council completed a first Review and Assessment of air quality in the Borough. The object of the project was to determine whether concentrations of seven pollutants identified by UK Government as being most concern to public health were likely to be above air quality objectives set in the National Air Quality Strategy. The objectives of the Strategy are based on levels at which there are considered to be no effect on human health.

Three Air Quality Management Areas were declared in 2001 on the basis of this report.

In May 2003 an Updating and Screening Assessment was issued to review the findings of the original project by taking into consideration any changes that had occurred outside of the three Air Quality Management Areas that had been declared on the basis of the first assessment, as well as any improvements that had been made in the methods of predicting air quality changes.

2004 saw two further detailed assessments published. One provided a detailed review and assessment of traffic related air quality – the Round 1, Stage 4 Review and Assessment. The other provided a detailed review and assessment of air quality around two industrial locations – the Round 2 Detailed Review and Assessment. These reports were undertaken to examine and refine in more detail the predictions of how air quality is likely to change in each of those areas in relation to the possibility of potential breaches against the set objectives, in order to produce an Action Plan implementing changes that would endeavour to see that the objectives are met.

Following a Progress Report submitted in 2005, a full review and assessment of air quality in Charnwood was undertaken in the Round 3 Updating and Screening Assessment, completed in 2006. All sources of air pollution were considered in this report, with collated monitoring data from previous years being fully analysed based on the methodology outlined in Technical Guidance LAQM.TG(03) Update – January 2006 published by the Department for the Environment Food and Rural Affairs.

In 2007 a Progress Report was prepared for DEFRA, presenting results from our monitoring network throughout 2006. It was explained as part of the report that an intended Detailed Assessment in relation to PM10 levels in the vicinity of the Lafarge Aggregates quarry at Mountsorrel, which had been identified during previous year's reports, had not been undertaken due to technical issues (data retrieval and software problems) with the on-site monitoring equipment. Subsequently, following a more thorough period of monitoring during 2009-2010; this Detailed Assessment was ultimately completed in 2011 with the recommendation made by Authority that a further AQMA should be declared in respect to exceedences of the 24-hr PM10 objective being accepted by DEFRA. The AQMA was declared in November 2011.

The 2009 Detailed Assessment in respect of previously reported NO_2 diffusion tube concentrations around the junction at Humberstone Lane, Thurmaston, had pointed towards there being potential exceedences on the northern side of Humberstone Lane. The outcome of the modelling within this report suggested being in contradiction to local knowledge in that the southern side would be most affected. Recommendations were made to DEFRA that a further period of diffusion tube monitoring would be undertaken, specifically targeting the properties highlighted in the report to be at 'risk', prior to drawing final conclusions. Updated results/comments made as part of our 2010 Progress Report – concluding that concentrations were within the objective levels at the relevant locations - indicated that there was no need to proceed to a declaration of an AQMA in respect to the NO2 (annual mean). DEFRA accepted these conclusions.

2009, 2010 and 2011 also saw the submission of our 3 year Updated & Screening Assessment and subsequent progress reports. All conclusions and recommendations were accepted by DEFRA.

We therefore approach this particular reporting phase of the policy guidance with four declared Air Quality Management Areas within the Borough:

1. **Loughborough Air Quality Management Area**
   Designated in relation to a likely breach of the nitrogen dioxide (annual mean) objective as specified in the Air Quality Regulations (England)(Wales) 2000

2. **GCR Air Quality Management Area**
   Designated in relation to a likely breach of the sulphur dioxide (fifteen minute mean) objective as specified in the Air Quality Regulations (England)(Wales) 2000.

3. **Syston Air Quality Management Area**
   Designated in relation to a likely breach of the nitrogen dioxide (annual mean) objective as specified in the Air Quality Regulations (England)(Wales) 2000

4. **Mountsorrel Air Quality Management Area**
   Designated in relation to a likely breach of the particulate matter (PM10) (24 hour mean) objective as specified in the Air Quality Regulations (England)(Wales) 2000

All the above reports are available on the Charnwood Borough Council website at the following address: www.charnwood.gov.uk/environment/airpollution.html

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Charnwood operates 4 automatic monitoring sites, summarised in Table 2.1.

The analysers are serviced under schedule via Casella Ltd and SupportingU.

Daily “automatic” and fortnightly manual calibrations are also undertaken, the later performed by the Local Authority

Data validation and ratification procedures follow Technical Guidance LAQM.TG(09)

Following latest guidance, the factors used for the gravimetric TEOM data correction are derived from the King’s College London Volatile Correction Model (VCM).

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS GridRef	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
Durham Rd (Loughborough)	Urban background	452352	320697	NO_2, SO_2, PM_{10}	N	TEOM (PM_{10}) UV Fluorescence Chemi-Illuminescence	N	n/a	N
Baxter Gate (Loughborough)	Roadside	453687	319672	NO_2	Y	Chemi-Illuminescence	N (Not in the immediate vicinity of the monitor)	1m	N
Melton Rd (Syston)	Roadside	462540	311428	NO_2	Y	Chemi-Illuminescence	Y (10m)	3m	N
Mountsorrel	Industrial / Other	457355	315396	PM_{10}	Y	Volumetric Gravimetric	Y (~34M)	n/a	Y

2.1.2 Non-Automatic Monitoring Sites

Since the completion of the first review and assessment of air quality we have sought to continuously update and improve our monitoring network.

During 2011:

- Nitrogen dioxide diffusion tubes were deployed at 38 locations (tubes in triplicate being used at the 3 automatic monitoring sites).

Tubes were located as close as practicable to receptor locations – usually on the façades of residential properties.

Table 2.2 Details of Non-Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
Ratcliffe Rd (Loughborough)	Roadside	454087	320392	NO_2	Y	N	Y (façade)	~3m	Y
Shelthorpe Rd (Loughborough)	Roadside	454234	318657	NO_2	N	N	Y (~8m)	~3m	Y
Forest Rd (Loughborough)	Roadside	452833	318776	NO_2	N	N	Y (façade)	~6m	Y
Haydon Rd (Loughborough)	Roadside	452314	319620	NO_2	Y	N	Y (~8m)	~6m	Y
Alan Moss Rd/Epinal Way (Loughborough)	Roadside	452173	319924	NO_2	Y	N	Y (façade)	~15m	Y
Epinal Way/Ling Rd (Loughborough)	Roadside	453678	318194	NO_2	N	N	Y (façade)	~9m	Y
Leicester Rd (Loughborough)	Roadside	454002	319253	NO_2	Y	N	-	~3m	Y
Derby Rd (Loughborough)	Roadside	453231	320028	NO_2	Y	N	Y (~3m)	~3m	Y

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
Derby Rd/Brisco Avn (Loughborough)	Roadside	452670	320527	NO_2	Y	N	Y (~3m)	~4m	Y
Durham Rd AQMS 1 (Loughborough)	Urban Background	452352	320697	NO_2	N	Y	N	n/a	n/a
Durham Rd AQMS 2 (Loughborough)	Urban Background	452352	320697	NO_2	N	Y	N	n/a	n/a
Durham Rd AQMS 3 (Loughborough)	Urban Background	452352	320697	NO_2	N	Y	N	n/a	n/a
Alan Moss Rd/A6 Derby Rd (Loughborough)	Roadside	452903	320212	NO_2	Y	N	Y (façade)	~8m	Y
High St (Loughborough)	Roadside	453730	319596	NO_2	Y	N	-	~3m	Y
Market Place (Loughborough)	Urban Centre	453611	319540	NO_2	Y	N	N	n/a	n/a

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
Ashby Rd (Loughborough)	Roadside	453189	319709	NO_2	Y	N	Y (façade)	~4m	Y
Cow Hill Lodge (Shepshed)	Roadside	448876	318307	NO_2	N	N	Y (façade)	~10m	Y
Rosebery St (Loughborough)	Roadside	452697	319921	NO_2	N	N	Y (~13m)	~3m	Y
Melton Rd Town Centre (Syston)	Roadside	462777	311692	NO_2	Y	N	Y (~3m)	~3m	Y
1123 Melton Rd (Syston)	Roadside	462351	311213	NO_2	Y	N	Y (façade)	~6m	Y
1116 Melton Rd (Syston)	Roadside	462373	311254	NO_2	Y	N	Y (façade)	~3m	Y
Loughborough Rd (Birstall)	Roadside	459233	309590	NO_2	Y	N	Y (façade)	~15m	Y
A6 (Birstall)	Roadside	459178	309890	NO_2	N	N	Y (~2m)	~5m	Y
21 Humberstone Lane (Thurmaston)	Roadside	460821	308757	NO_2	N	N	Y (façade)	~6m	Y

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
5 Wayside Drive (Thurmaston)	Roadside	460861	308824	NO_2	N	N	Y (façade)	~6m	N
43 Humberstone Lane (Thurmaston)	Roadside	460861	308824	NO_2	N	N	Y (façade)	~5m	Y
38 Humberstone Lane (Thurmaston)	Roadside	460908	308775	NO_2	N	N	Y (façade)	~5m	Y
22 Humberstone Lane (Thurmaston)	Roadside	460835	308784	NO_2	N	N	Y (façade)	~5m	Y
Ashby Rd Central (Shepshed)	Roadside	448121	318257	NO_2	N	N	Y (~12m)	2m	Y
Loughborough Rd (Hathern)	Roadside	450260	321922	NO_2	N	N	Tube located ~3m from kerb. Nearest receptor is ~30m away and ~13m from kerb		Y

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
Baxter Gate (Loughborough)	Roadside	453682	319672	NO_2	Y	N	-	~2m	Y
Barrow St (Loughborough)	Roadside	453901	319488	NO_2	N	N	Y (façade)	~10m	Y
School St (Loughborough)	Roadside	453946	319619	NO_2	N	N	Y (façade)	~3m	Y
Fennel St (Loughborough)	Roadside	453694	319890	NO_2	N	N	Y (façade)	~3m	Y
High St (Syston)	Roadside	462369	311809	NO_2	Y	N	Y (façade)	~4m	Y
Syston AQMS 1	Roadside	462540	311428	NO_2	Y	Y	Y (~10m)	~3m	Y
Syston AQMS 2	Roadside	462540	311428	NO_2	Y	Y	Y (~10m)	~3m	Y
Syston AQMS 3	Roadside	462540	311428	NO_2	Y	Y	Y (~10m)	~3m	Y
Baxter Gate AQMS 1 (Loughborough)	Kerbside	453687	319672	NO_2	Y	Y	-	~1m	Y
Baxter Gate AQMS 2 (Loughborough)	Kerbside	453687	319672	NO_2	Y	Y	-	~1m	Y

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
Baxter Gate AQMS 3 (Loughborough)	Kerbside	453687	319672	NO_2	Y	Y	-	~1m	Y
33 Nottingham Rd (Loughborough)	Roadside	454000	319977	NO_2	N	N	-	~3m	Y
89 Nottingham Rd (Loughborough)	Roadside	454154	320116	NO_2	N	N	Y (façade)	~3m	Y
156 Ratcliffe Rd (Loughborough)	Roadside	454285	320294	NO_2	N	N	Y (façade)	~6m	Y
156 Meadow Rd (Loughborough)	Roadside	453933	320663	NO_2	N	N	Y (façade)	~8m	Y

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Whilst 2 of our automatic analysers show no exceedences of the hourly mean. Data from our instrument on Baxter Gate has recorded more than 18 1-hour means above 200µgm^{-3} during 2011.

Having compared the output from the analyser against the results of the triplicate diffusion tubes which we have sited at the same location (and taking into consideration previous years monitored results at this location); due to observed discrepancies between results we feel that these exceedences are inaccurate and that there has been a data issue with the analyser during periods of the year.

Problems were first encountered with the auto-calibration of the instrument during April and this was followed by intermittent power failures during a period from October through to January 2012. Both issues were served by engineer call-outs with the later resulting in the fitting of a new PSU unit. The dates of the exceedences appear to fall within these periods of disruption to the analyser.

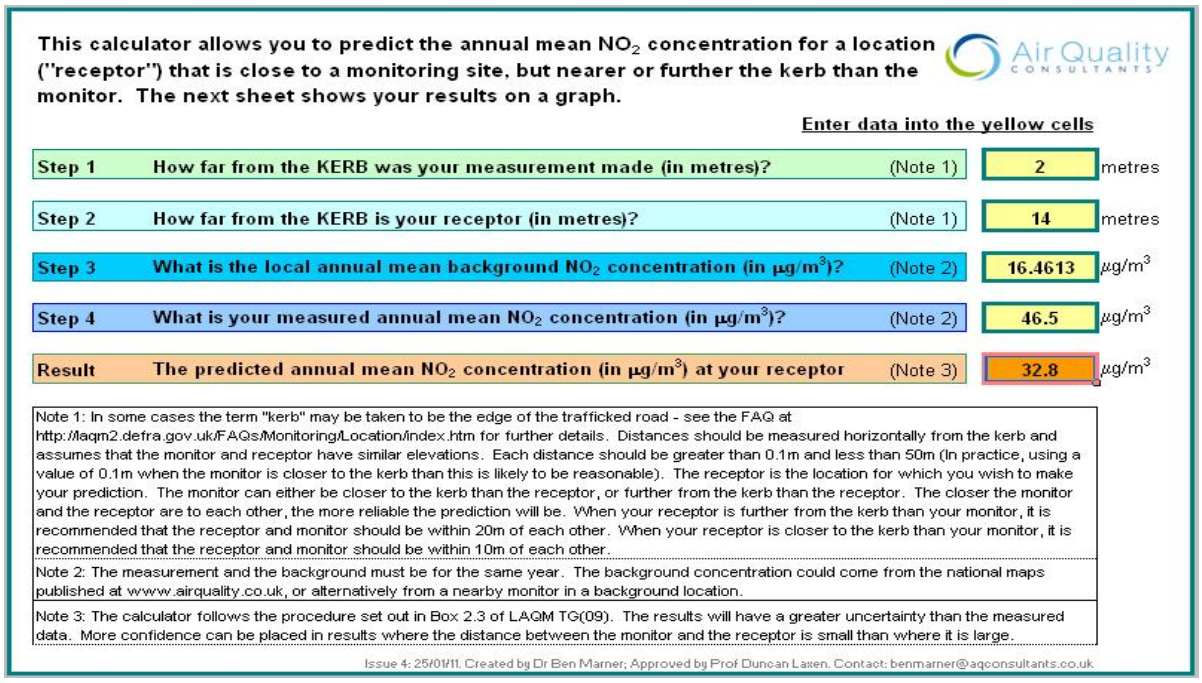
As can be seen from the following results for 2011; during this period there have been no diffusion tubes falling outside of an existing AQMA that have exceeded the 40µgm^{-3} annual mean.

The raw data for three sites: Ashby Rd Central (Shepshed), Loughborough Rd (Hathern) and A6 (Birstall) have been distance corrected as they are all roadside locations where the tubes are positioned some distance away from the façade of the nearest receptor – in all cases on a roadside lighting column.

Using the "NO_2 with Distance from Roads Calculator" (Issue 4) available from the UK Air Quality Archive, it is possible for us to calculate the distance NO_2 falloff between these kerbside tubes and the nearest receptors, as follows:

Ashby Rd Central (Shepshed)

Using the calculator the concentration at the nearest receptor is shown below to be 32.8µg/m^{-3}



This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

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Enter data into the yellow cells

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	2	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	14	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	(Note 2)	16.4613	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	(Note 2)	46.5	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	(Note 3)	32.8	µg/m^3

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

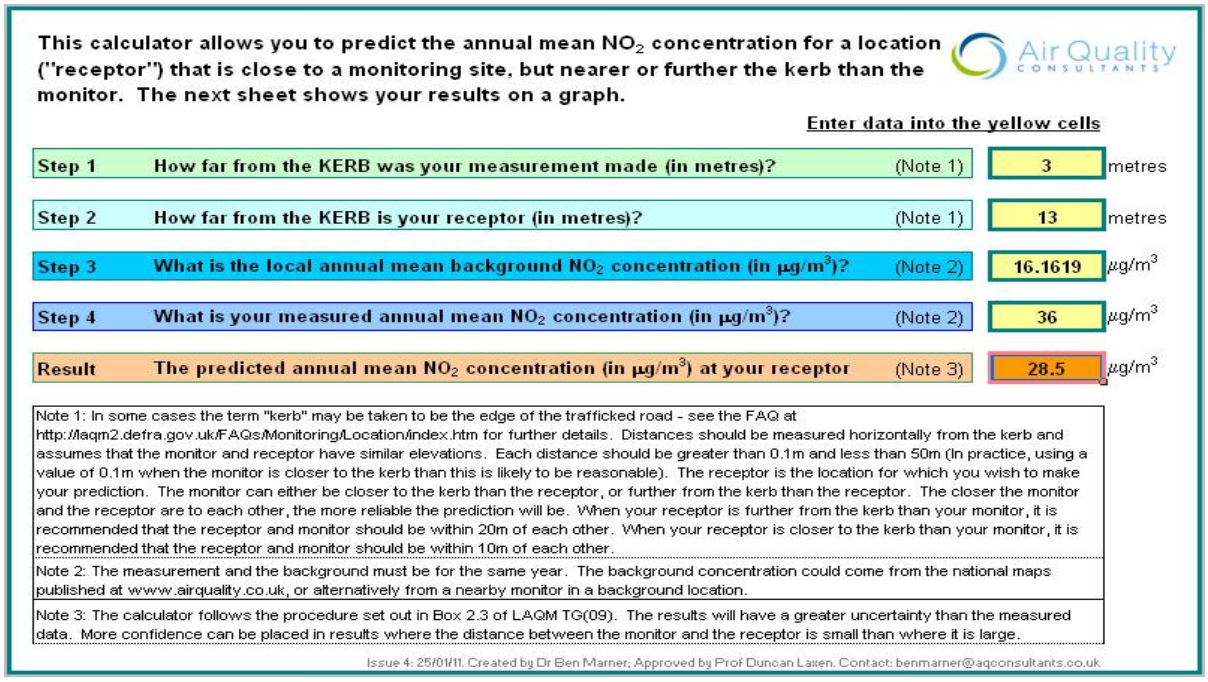
Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

Issue 4: 25/01/11. Created by Dr Ben Marner; Approved by Prof Duncan Laxen. Contact: benmarner@aqconsultants.co.uk

Loughborough Rd (Hathern)

Using the calculator the concentration at the nearest receptor is shown below to be 28.5µg/m^{-3}



This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

Air Quality CONSULTANTS

Enter data into the yellow cells

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	3	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	13	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	(Note 2)	16.1619	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	(Note 2)	36	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	(Note 3)	28.5	µg/m^3

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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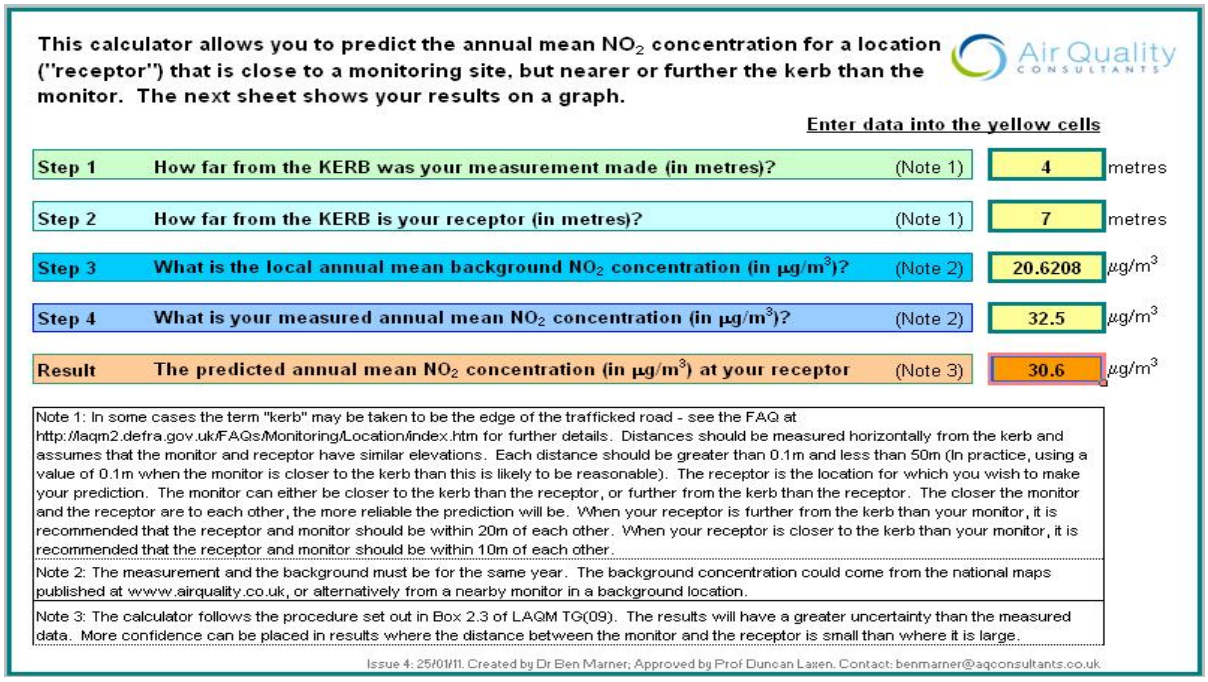
A6 (Birstall)

Using the calculator the concentration at the nearest receptor is shown below to be 30.6µg/m^{-3}



This calculator allows you to predict the annual mean NO_2 concentration for a location ("receptor") that is close to a monitoring site, but nearer or further the kerb than the monitor. The next sheet shows your results on a graph.

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Enter data into the yellow cells

Step 1	How far from the KERB was your measurement made (in metres)?	(Note 1)	4	metres
Step 2	How far from the KERB is your receptor (in metres)?	(Note 1)	7	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	(Note 2)	20.6208	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	(Note 2)	32.5	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	(Note 3)	30.6	µg/m^3

Note 1: In some cases the term "kerb" may be taken to be the edge of the trafficked road - see the FAQ at http://laqm2.defra.gov.uk/FAQs/Monitoring/Location/index.htm for further details. Distances should be measured horizontally from the kerb and assumes that the monitor and receptor have similar elevations. Each distance should be greater than 0.1m and less than 50m (In practice, using a value of 0.1m when the monitor is closer to the kerb than this is likely to be reasonable). The receptor is the location for which you wish to make your prediction. The monitor can either be closer to the kerb than the receptor, or further from the kerb than the receptor. The closer the monitor and the receptor are to each other, the more reliable the prediction will be. When your receptor is further from the kerb than your monitor, it is recommended that the receptor and monitor should be within 20m of each other. When your receptor is closer to the kerb than your monitor, it is recommended that the receptor and monitor should be within 10m of each other.

Note 2: The measurement and the background must be for the same year. The background concentration could come from the national maps published at www.airquality.co.uk, or alternatively from a nearby monitor in a background location.

Note 3: The calculator follows the procedure set out in Box 2.3 of LAQM TG(09). The results will have a greater uncertainty than the measured data. More confidence can be placed in results where the distance between the monitor and the receptor is small than where it is large.

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Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Site Location	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Annual Mean Concentration μg/m^3				
				2007	2008	2009	2010	2011
11	Durham Rd, L'boro	Full Year	97.7	30.6	26.7	28.7	28.7	24.8
34-36	Melton Rd, Syston	Full Year	94.7	n/a	34.4	32.5	34.4	30.6
37-39	Baxter Gate, L'boro	Full Year	92.0	n/a	**47.8**	**42.0**	**51.6**	**53.5**

Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Location	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Number of Exceedences of Hourly Mean (200 μg/m^3)				
				2007	2008	2009	2010	2011
11	Durham Rd, L'boro	Full Year	99.9	0	0	0	0	0
34-36	Melton Rd, Syston	Full Year	94.9	n/a	6	0	0	0
37-39	Baxter Gate, L'boro	Full Year	94.5	n/a	0	0 (107)	0	184

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] If the period of valid data is less than 90%, the 99.8th percentile of hourly means in shown in brack

Diffusion Tube Monitoring Data

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor) 2011 ($\mu g/m^3$)
1	Ratcliffe Rd (Loughborough)	Roadside	Y	-	100%	n/a	n/a	30.8 (0.89)
2	Shelthorpe Rd (Loughborough)	Roadside	N	-	100%	n/a	n/a	22.5 (0.89)
3	Forest Rd (Loughborough)	Roadside	N	-	100%	n/a	n/a	25.4 (0.89)
5	Haydon Rd (Loughborough)	Roadside	Y	-	100%	n/a	n/a	33.9 (1.15)
6	Alan Moss Rd/Epinal Way (Loughborough)	Roadside	Y	-	100%	n/a	n/a	30.2 (1.15)
7	Epinal Way/Ling Rd (Loughborough)	Roadside	N	-	100%	n/a	n/a	25.3 (0.89)
8	Leicester Rd (Loughborough)	Roadside	Y	-	100%	n/a	n/a	31.8 (0.89)

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor) 2011 ($\mu g/m^3$)
9	Derby Rd (Loughborough)	Roadside	Y	-	100%	n/a	n/a	31.4 (0.89)
10	Derby Rd/Brisco Avn (Loughborough)	Roadside	Y	-	100%	n/a	n/a	32.7 (1.15)
11 i	Durham Rd AQMS 1 (Loughborough)	Urban Background	N	Triplicate	100%	n/a	n/a	25.1 (1.15)
11 ii	Durham Rd AQMS 2 (Loughborough)	Urban Background	N	Triplicate	100%	n/a	n/a	23.8 (1.15)
11 iii	Durham Rd AQMS 3 (Loughborough)	Urban Background	N	Triplicate	100%	n/a	n/a	25.5 (1.15)
12	Alan Moss Rd/A6 Derby Rd (Loughborough)	Roadside	Y	-	100%	n/a	n/a	**40.6** (1.15)
13	High St (Loughborough)	Roadside	Y	-	100%	n/a	n/a	**52.6** (0.89)
14	Market Place (Loughborough)	Urban Centre	Y	-	100%	n/a	n/a	21.3 (0.89)

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor) 2011 ($\mu g/m^3$)
15	Ashby Rd (Loughborough)	Roadside	Y	-	100%	n/a	n/a	31.9 (0.89)
16	Cow Hill Lodge (Shepshed)	Roadside	N	-	100%	n/a	n/a	33.8 (1.15)
17	Rosebery St (Loughborough)	Roadside	N	-	100%	n/a	n/a	24.3 (1.15)
18	Melton Rd Town Centre (Syston)	Roadside	Y	-	100%	n/a	n/a	30.4 (0.90)
19	1123 Melton Rd (Syston)	Roadside	Y	-	100%	n/a	n/a	26.0 (0.90)
20	1116 Melton Rd (Syston)	Roadside	Y	-	100%	n/a	n/a	29.0 (0.90)
21	Loughborough Rd (Birstall)	Roadside	Y	-	100%	n/a	n/a	30.9 (0.90)
22	A6 (Birstall)	Roadside	N	-	100%	n/a	Y	30.6 (0.89)
23	21 Humberstone Lane (Thurmaston)	Roadside	N	-	100%	n/a	n/a	32.5 (0.90)

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor) 2011 ($\mu g/m^3$)
23a	5 Wayside Drive (Thurmaston)	Roadside	N	-	100%	n/a	n/a	24.6 (0.90)
23b	43 Humberstone Lane (Thurmaston)	Roadside	N	-	100%	n/a	n/a	30.0 (0.90)
23c	38 Humberstone Lane (Thurmaston)	Roadside	N	-	100%	n/a	n/a	23.7 (0.90)
23d	22 Humberstone Lane (Thurmaston)	Roadside	N	-	100%	n/a	n/a	25.5 (0.90)
26	Ashby Rd Central (Shepshed)	Roadside	N	-	100%	n/a	Y	32.8 (0.89)
27	Loughborough Rd (Hathern)	Roadside	N	-	100%	n/a	Y	28.5 (0.89)
28	Baxter Gate (Loughborough)	Roadside	Y	-	100%	n/a	n/a	39.1 (0.89)
29	Barrow St (Loughborough)	Roadside	N	-	100%	n/a	n/a	24.5 (0.89)

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor) 2011 (μg/m^3)
30	School St (Loughborough)	Roadside	N	-	100%	n/a	n/a	21.4 (0.89)
31	Fennel St (Loughborough)	Roadside	N	-	100%	n/a	n/a	25.1 (0.89)
33	High St (Syston)	Roadside	Y	-	100%	n/a	n/a	26.7 (0.90)
34	Syston AQMS 1	Roadside	Y	Triplicate	100%	n/a	n/a	31.5 (0.90)
35	Syston AQMS 2	Roadside	Y	Triplicate	100%	n/a	n/a	30.3 (0.90)
36	Syston AQMS 3	Roadside	Y	Triplicate	100%	n/a	n/a	30.3 (0.90)
37	Baxter Gate AQMS 1 (Loughborough)	Kerbside	Y	Triplicate	100%	n/a	n/a	38.6 (0.89)
38	Baxter Gate AQMS 2 (Loughborough)	Kerbside	Y	Triplicate	100%	n/a	n/a	37.3 (0.89)
39	Baxter Gate AQMS 3 (Loughborough)	Kerbside	Y	Triplicate	100%	n/a	n/a	36.9 (0.89)

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor) 2011 (μg/m^3)
44	33 Nottingham Rd (Loughborough)	Roadside	N	-	92%	n/a	n/a	31.1 (0.89)
45	89 Nottingham Rd (Loughborough)	Roadside	N	-	100%	n/a	n/a	39.3 (0.89)
46	156 Ratcliffe Rd (Loughborough)	Roadside	N	-	92%	n/a	n/a	25.8 (0.89)
47	156 Meadow Rd (Loughborough)	Roadside	N	-	92%	n/a	n/a	26.0 (0.89)

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] Means ARE be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2007 to 2011)

Site ID	Location	Within AQMA?	Annual mean concentration μg/m^3				
			2007	2008	2009	2010	2011
1	Ratcliffe Rd (Loughborough)	Y	51.0	48.8	46.3	42.3	30.8
2	Shelthorpe Rd (Loughborough)	N	33.3	31.9	31.4	28.3	22.5
3	Forest Rd (Loughborough)	N	38.0	35.3	37.3	31.6	25.4
5	Haydon Rd (Loughborough)	Y	37.7	37.2	38.3	34.8	33.9
6	Alan Moss Rd/Epinal Way (Loughborough)	Y	34.7	31.8	32.4	31.2	30.2
7	Epinal Way/Ling Rd (Loughborough)	N	37.3	33.6	36	34.3	25.3
8	Leicester Rd (Loughborough)	Y	48.9	41.2	43.1	43.2	31.8
9	Derby Rd (Loughborough)	Y	46.2	38.9	46.1	43.1	31.4

Site ID	Location	Within AQMA?	Annual mean concentration μg/m^3				
			2007	2008	2009	2010	2011
10	Derby Rd/Brisco Avn (Loughborough)	Y	39.5	36.3	39.7	36.8	32.7
11 i	Durham Rd AQMS 1 (Loughborough)	N	30.8	26.7	28.3	28.6	25.1
11 ii	Durham Rd AQMS 2 (Loughborough)	N	30.4	27.2	29.0	28.6	23.8
11 iii	Durham Rd AQMS 3 (Loughborough)	N	30.2	26.5	28.9	28.7	25.5
12	Alan Moss Rd/A6 Derby Rd (Loughborough)	Y	42.8	44.5	40.2	39.6	**40.6**
13	High St (Loughborough)	Y	78.2	65.9	76.2	66.0	**52.6**
14	Market Place (Loughborough)	Y	32.7	28.6	29.8	29.5	21.3

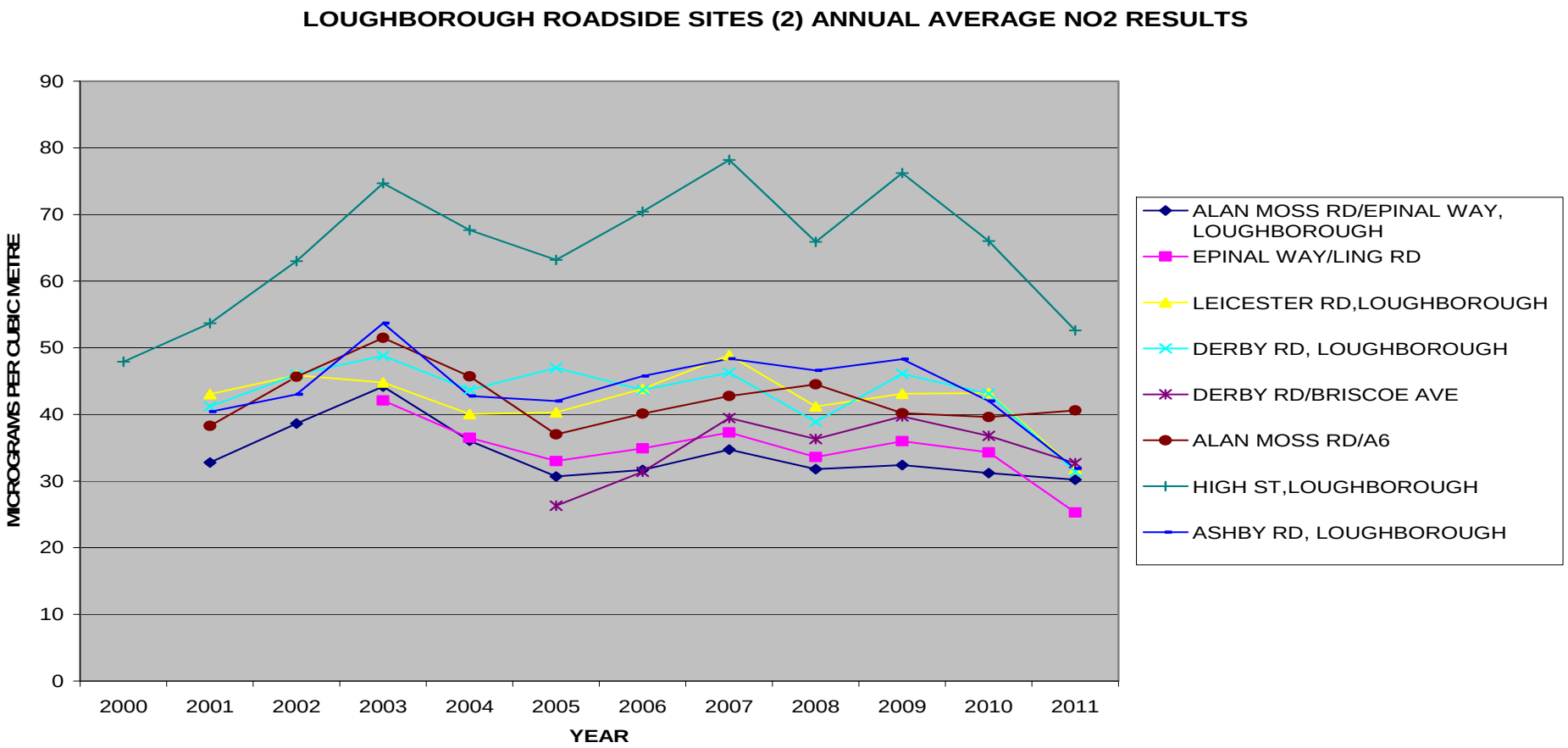
Site ID	Location	Within AQMA?	Annual mean concentration μg/m^3				
			2007	2008	2009	2010	2011
15	Ashby Rd (Loughborough)	Y	48.3	46.6	48.3	42	31.9
16	Cow Hill Lodge (Shepshed)	N	-	36.1	36.3	37.1	33.8
17	Rosebery St (Loughborough)	N	29.1	27.5	26.7	26.1	24.3
18	Melton Rd Town Centre (Syston)	Y	42.3	33.3	35.7	34.8	30.4
19	1123 Melton Rd (Syston)	Y	38.2	30.6	30.4	32.4	26.0
20	1116 Melton Rd (Syston)	Y	43.6	32.7	35.4	37.2	29.0
21	Loughborough Rd (Birstall)	N	43.7	30.7	32.3	34.4	30.9
22	A6 (Birstall)	N	44.5	36.4	37.6	39.7	30.6
23	21 Humberstone Lane (Thurmaston)	N	48.3	37.4	39.8	40.3	32.5

Site ID	Location	Within AQMA?	Annual mean concentration μg/m^3				
			2007	2008	2009	2010	2011
23a	5 Wayside Drive (Thurmaston)	N	-	26.5	30.3	30.9	24.6
23b	43 Humberstone Lane (Thurmaston)	N	-	33.9	37.1	46.4	30.0
23c	38 Humberstone Lane (Thurmaston)	N	-	-	27.9	28.7	23.7
23d	22 Humberstone Lane (Thurmaston)	N	-	-	30.6	32.1	25.5
26	Ashby Rd Central (Shepshed)	N	50.7	32.7	33.0	31.5	32.8
27	Loughborough Rd (Hathern)	N	45.9	38.2	31.6	29.9	28.5

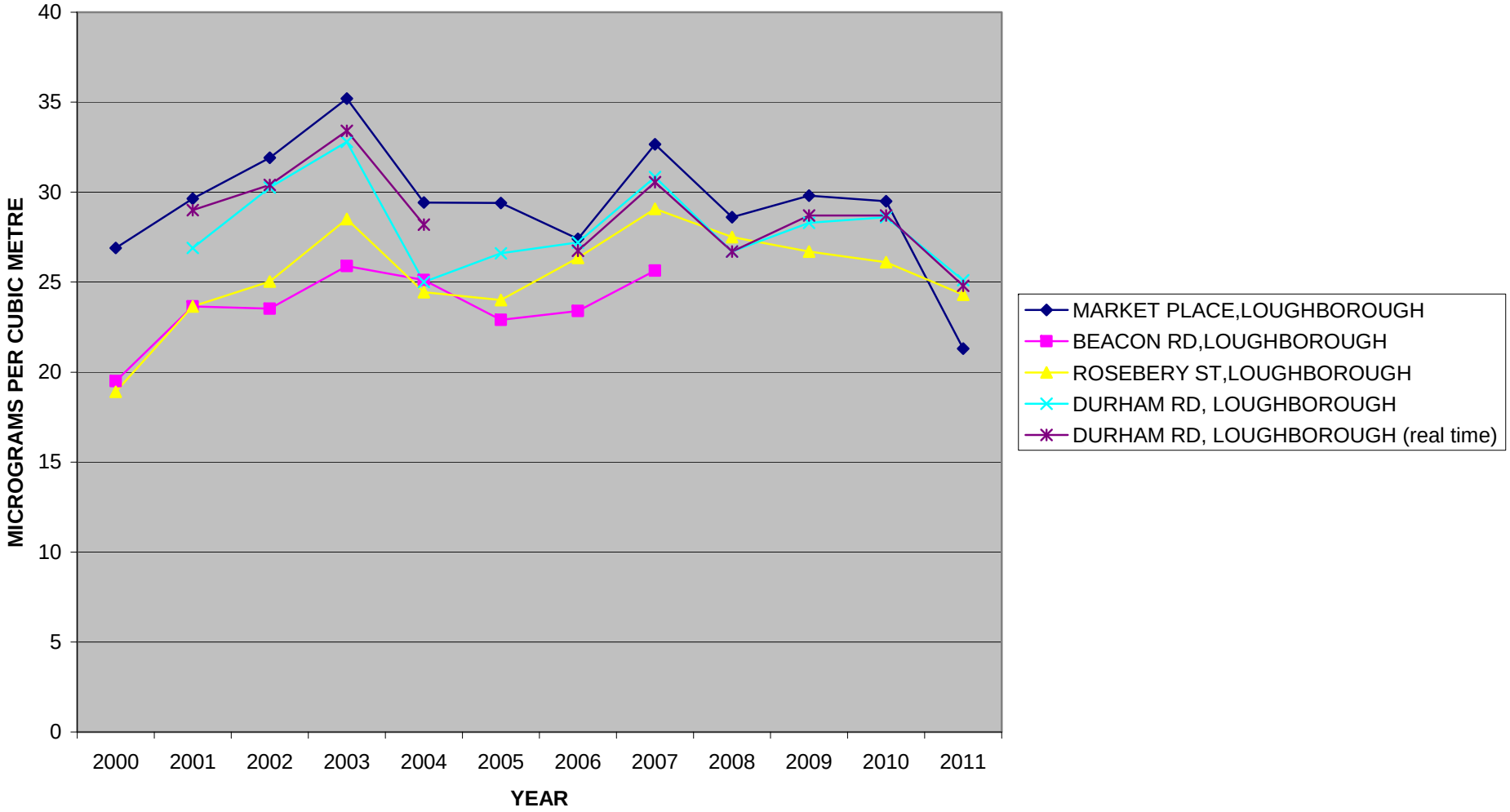
28	Baxter Gate (Loughborough)	Y	57.8	49.8	56.1	53.4	39.1
29	Barrow St (Loughborough)	N	37.6	36.5	35.8	33.4	24.5
30	School St (Loughborough)	N	35.9	30.7	31.2	30.9	21.4
31	Fennel St (Loughborough)	N	36.9	35.1	35.8	33.9	25.1
33	High St (Syston)	Y	40.8	30.0	31.6	32.5	26.7
34	Syston AQMS 1	Y	-	36.5	37.0	35.0	31.5
35	Syston AQMS 2	Y	-	33.9	34.7	35.2	30.3
36	Syston AQMS 3	Y	-	33.2	35.9	33.3	30.3
37	Baxter Gate AQMS 1 (Loughborough)	Y	-	46.4	55.2	52.5	38.6
38	Baxter Gate AQMS 2 (Loughborough)	Y	-	48.5	54.1	52.4	37.3
39	Baxter Gate AQMS 3 (Loughborough)	Y	-	48.5	52.0	50.3	36.9
44	33 Nottingham Rd (Loughborough)	N	-	-	43.5	41.5	31.1

45	89 Nottingham Rd (Loughborough)	N	-	-	48.1	48.8	39.3
46	156 Ratcliffe Rd (Loughborough)	N	-	-	40.6	36.5	25.8
47	156 Meadow Rd (Loughborough)	N	-	-	35.6	29.8	26.0

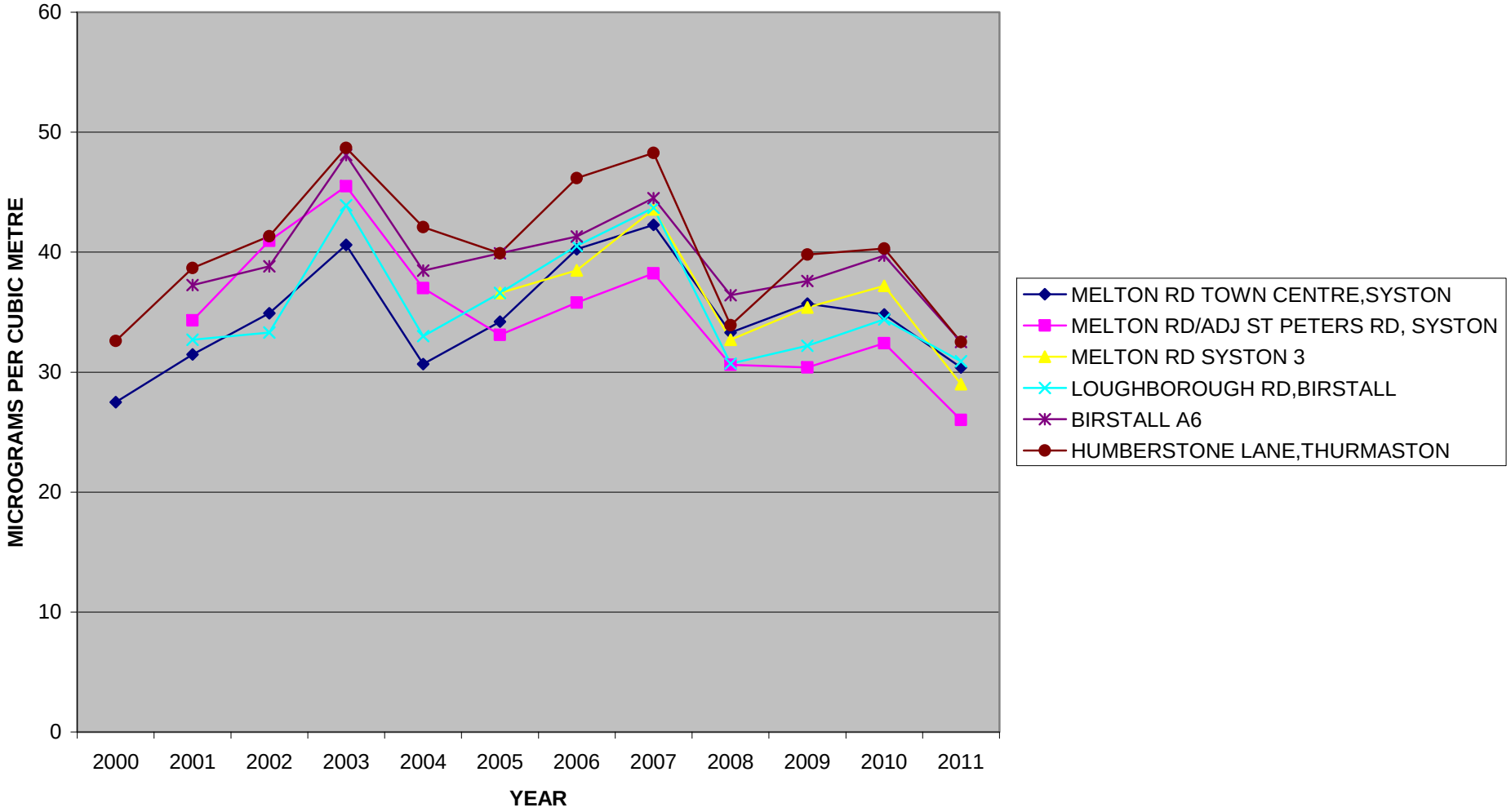
Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



LOUGHBOROUGH BACKGROUND SITES ANNUAL AVERAGE NO2 RESULTS



SYSTON, BIRSTALL & THURMASTON ROADSIDE ANNUAL AVERAGE NO2 RESULTS



2.2.2 PM_{10}

In 2011 there were no recorded breaches of either the annual mean or 24-hour mean objectives at our established automatic (TEOM) monitoring site.

This site is an urban background site just outside of the Loughborough NO2 AQMA

In addition to this monitor; since 26th October 2011 we have been operating a Partisol unit in the vicinity of the Lafarge Quarry in Mountsorrel to monitor PM10 levels in connection with the Mountsorrel AQMA.

Whilst fuller results will be presented in an upcoming Further Assessment report; current recorded results through to 30th April 2012 indicate **14 exceedences** of the 24-hr mean National Air Quality Objective from 156 valid sampling days. This would be the equivalent to 33 exceedences per annum, compared to the permitted maximum of 35

As a comparison - results obtained during a similar study in 2009/10 showed **41 exceedences** in a corresponding seasonal period of time from 142 valid sampling days, the equivalent to 105 exceedences per annum.

Table 2.7 Results of Automatic Monitoring of PM_{10}: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration μg/m^3				
						2007	2008	2009	2010	2011
11	Durham Rd, L'boro (Urban Background)	N	97.5	97.5	Y	19.5	16.9	17.8	17.8	19.1

Table 2.8 Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 μg/m^3)				
						2007	2008	2009	2010	2011
11	Durham Rd, L'boro (Urban Background)	N	97.5	97.5	Y	8	1	8	1	5

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

2.2.3 Sulphur Dioxide

In 2011 there were no recorded breaches of the 15 minute, 1 hour or 24-hour mean objectives at our automatic SO_2 monitoring site.

The monitoring site is an urban background site just outside of the Loughborough NO_2 AQMA

Table 2.9 Results of Automatic Monitoring of SO_2: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Number of Exceedences (percentile in bracket μg/m^3)[c]		
					15-minute Objective (266 μg/m^3)	1-hour Objective (350 μg/m^3)	24-hour Objective (125 μg/m^3)
11	Durham Rd, L'boro (Urban Background)	N	97.8	97.8	0	0	0

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] if data capture is less than 90%, include the relevant percentile in brackets

2.2.4 Benzene

Charnwood Borough Council no longer monitor for Benzene. This decision was based on significant historic monitoring data indicating that any likely breach of the particular Air Quality Standard would be improbable.

2.2.5 Summary of Compliance with AQS Objectives

Charnwood Borough Council has examined the results from monitoring in the Borough.

Concentrations outside of existing AQMAs are either below the objectives at relevant locations, or have been subjected to a previous Detailed Assessment and/or discussed with DEFRA that there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

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

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

Charnwood Borough Council confirms that there are no new/newly identified busy streets (>10,000 vehicles per day) where people may spend 1 hour or more close (within 5m) to traffic, that have not been adequately considered in previous rounds of Review and Assessment.

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

Charnwood Borough Council confirms that there are no new/newly identified roads with high flows (>20%) of buses/HDVs, that have not been adequately considered in previous rounds of Review and Assessment.

3.4 Junctions

Charnwood Borough Council confirms that there are no new/newly identified busy junctions/busy roads, which have not been adequately considered in previous rounds of Review and Assessment.

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

Loughborough Eastern Gateway

The Loughborough Eastern Gateway link road officially opened in November 2011 to traffic as part of the major £20 million Eastern Gateway scheme to revamp the eastern approach to Loughborough.

Work on the road, called Station Boulevard, which now links Meadow Lane and Nottingham Road began in September 2010 and means Burder Street and Ratcliffe Road are now closed to through-traffic, bringing relief to residents.

Ratcliffe Road is currently designated as part of the Loughborough AQMA in respect to likely breaches of nitrogen dioxide (annual mean) concentrations.

Additional diffusion tubes have now been added to our monitoring network along this new stretch of road to validate the conclusions the Environmental Assessment submitted as part of the planning application process.

The existing diffusion tube situated on Ratcliffe Road is to be left in place to monitor the expected reduction of NO_2 at this site.

Loughborough Inner Relief Road

Plans originally submitted in August 2007 were put on hold following the Government's spending review in autumn 2010. An updated £15 million bid was submitted to the Government in September 2011 and granted approval by the Department for Transport during December 2011.

The enhanced development and regeneration of the improvement scheme is hoped to reduce traffic demand on the town centre network by removing traffic from A6 Market Place by diverting it to a new purpose built Inner Relief Road. This will be combined with related junction improvements on the Loughborough A6004 Ring Road at Forest Road and Belton Road West Extension.

Early site clearance started in the town in April 2012 to make way for the construction of the relief road, with the main work planned to start in October 2012.

The three main elements to the scheme i.e. the A6004 junction improvements, the completion of the inner relief road and the improvements to the town centre are expected to continue until early 2015.

Further scheme details can be seen at www.leics.gov.uk/major_transport_projects

Charnwood Borough Council has assessed new/proposed roads meeting the criteria in Section A.5 of Box 5.3 in TG(09), further to those previously identified (above), and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.6 Roads with Significantly Changed Traffic Flows

Charnwood Borough Council confirms that there are no new/newly identified roads with significantly changed traffic flows (i.e roads with more than 10,000 vehicles per day that have experienced more than a 25% increase in traffic flow), which have not been adequately considered in previous rounds of Review and Assessment.

3.7 Bus and Coach Stations

Charnwood Borough Council confirms that there are no relevant bus stations (un-enclosed / close to relevant exposure, including nearby residential properties) in the Local Authority area.

4 Other Transport Sources

4.1 Airports

There are no airports in the Local Authority or relevant exposure within 1,000m of an airport boundary.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

The GCR AQMA

The GCR AQMA came into effect on 30th November 2005 in respect of likely breaches of the sulphur dioxide (fifteen minute mean). This decision was based upon a monitoring study conducted between December 2004 and April 2005 during which time a UV fluorescence sulphur dioxide monitor was located 50 metres away from the location at which steam locomotives are brought “into steam” at the Great Central Railway engine sheds.

No further periods of monitoring have been conducted since the declaration of this AQMA. It is however felt that the results (which are discussed fully in our previously submitted “Progress Report and Round 2 Further Assessment”) in conjunction with the current operational procedures at GCR, are broadly representative of the current air quality of the area.

Charnwood Borough 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, that have not been adequately considered in previous rounds of Review and Assessment ***or are subject to an existing AQMA.***

4.2.2 Moving Trains

Charnwood Borough Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m. (As per the rail lines listed in Table 5.1 of the LAQM.TG(09))

4.3 Ports (Shipping)

There are no ports or shipping 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

Charnwood Borough Council confirms that they have assessed any new/proposed industrial installations for which an Air Quality Assessment has been carried out, and concluded that it will not be necessary to proceed to any Detailed Assessments.

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

Charnwood Borough Council confirms that there are no industrial installations with substantially increased (greater than 30%) 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

Charnwood Borough Council have assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to any Detailed Assessment.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

Charnwood Borough Council confirms that there are no petrol stations meeting the specified criteria**.**

i.e. with an annual throughput of 2000m^3, close to a road with more than 30,000 vehicles and with relevant exposure within 10m of the pumps (ignoring petrol stations with Stage 2 recovery systems fitted).

5.4 Poultry Farms

Sunrise Poultry Farms, Seagrave Road, Sileby.
Environmental Agency Licence No. RP3237MG/V004
Permit Date 25/04/12

The above facility is permitted for 362,224 laying hens. All houses have side extraction ventilation systems.

As the farm has less than 400, 000 birds and is mechanically ventilated then it will therefore not be necessary to proceed to a Detailed Assessment.

Charnwood Borough Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Charnwood Borough Council has assessed the 65 kW biomass combustion plant (Biomass Pellet Boiler) at St Bartholomews Primary School, Quorn, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

Charnwood Borough Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

Charnwood Borough Council confirms that there are no areas of significant domestic fuel use (any area of about 500x500m with more than 50 houses burning coal/smokeless fuels as their primary source of heating) in the Local Authority area.

7 Fugitive or Uncontrolled Sources

Charnwood Borough Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area which have not been considered by previous rounds of review and assessment.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Nitrogen Dioxide

New (2011) monitoring data shows that the 40µgm^3 annual mean objective for NO_2 was exceeded at the following 2 monitored locations:

1. Alan Moss Rd/A6, Loughborough
2. High Street, Loughborough

Both of these locations fall within the existing Loughborough AQMA.

No further monitoring has identified any potential or actual exceedences at relevant locations outside of existing AQMAs.

Whilst it is difficult to draw many conclusions from the 2011 town centre results due to the use this year of the national bias correction factor instead of a locally derived factor; it is encouraging to note that the tubes corrected against the other 2 real-time monitors in the Borough are continuing to show progressive long term reductions in concentration.

PM_{10}

Interim results from the Partisol monitor at Mountsorrel are indicating that there has been a significant improvement in dust concentrations within the village.

Regular update meetings continue to be held with the quarry management team to appraise both process and operational improvements that have been implemented under the quarry dust management plan. Much of the plan was formulated as a direct result of the anticipated conclusions to the 2011 Detailed Assessment and is therefore in an advanced stage.

Further information regard the continuing monitoring data and improvement work will be presented in the Further Assessment later this year.

8.2 Conclusions from Assessment of Sources

Outside of the existing SO_2 AQMA (The Loughborough GCR AQMA) we consider that no other new/existing/significantly changed sources are leading to (or will lead to) potential exceedences of the Air Quality Objective within the Borough.

8.3 Proposed Actions

The Updating and Screening Assessment has not identified the need to proceed to a Detailed Assessment for any pollutant in this round of review. We also do not feel that any changes are required to existing AQMAs in terms of boundary changes/revocation at this time.

Currently all pollutants/monitoring sites/objectives are either:

a. Compliant

b. Already within an existing AQMA

Our diffusion tube monitoring network is annually reviewed to consider potential developing 'hotspots' or in preparation for larger infrastructure schemes such as the Eastern Gateway Project (EGP) and the Loughborough Inner Relief road (LIRR).

With the recent opening of the EGP and initial work having now commenced on the LIRR; monitoring sites have already been identified and underway from early 2012 to monitor the outcome of these projects for inclusion in future review reports.

Further to our submission of a Further Assessment in respect of the recently declared Mountsorrel AQMA for PM_{10}; our next action will be the submission of the 2013 Progress Report.

9 References

LAQM Technical Guidance document TG(09)
www.defra.gov.uk/environment/airquality/local/guidance/pdf/tech-guidance-laqm-tg-09.pdf

Charnwood Borough Council - Previous Air Quality Review & Assessment documents (including Final AQ Action Plan)
www.charnwood.gov.uk/pages/airpollution

LAQM Support - NO_2 Diffusion Tube QA/QC
www.laqmsupport.org.uk/no2qaqc.php

Appendices

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

All NO_2 diffusion tubes are supplied and analysed by Gradko using 20% TEA in water preparation.

Factor from Local Co-location Studies

Triplicates are co-located at our 3 automatic monitoring sites:

Site ID	Location	Triplicate annual mean average (µg/m^3) (Dm)	Automatic analyser annual mean concentration (µg/m^3) (Cm)	Bias correction factor (Cm / Dm)
11	Durham Rd, L'boro	21.5	24.8	1.15
34/36	Melton Rd, Syston	34.1	30.6	0.90
37/39	Baxter Gate, L'boro	42.3	53.5	1.27 (calculated) 0.89 (used – see below)

Discussion of Choice of Factor to Use

Consideration was given to the advisory documents on the LAQM Support website when defining and considering whether to use local or national co-location bias adjustment factors.

The following factors were part of our decision for deciding on which factors to use:

- Tube exposure time
- Length of the monitoring study
- QA/QC of the chemiluminescence analyser
- QA/QC of diffusion tubes
- Siting of the co-location study
- Siting of other tubes in the survey

Historically, due to having 3 monitors in the Borough, we have chosen to apply the most appropriate correction factor against each of the individual tubes i.e. tubes in the south of the Borough are corrected against the Syston station factor, rather than the using the factors from the monitors in the north of the Borough.

However, for correction factor derived from our Baxter Gate monitor for 2011 seems excessively "high" and appears to be due to a poor degree of precision between the annual means as recorded by the analyser compared to those measured by the triplicate diffusion tubes. This we assume is due to faults with the analyser picked up by engineer visits during 2011 and has been discussed above.

Therefore for the 2011 diffusion tubes which would normally be corrected against the Baxter Gate analyser we will apply the factor as per The National Diffusion Tube Bias Adjustment Factor Spreadsheet v03/12 which gives a factor of 0.89 (from 26 studies) for Gradko analysed 20% TEA in water samples for 2011.

PM Monitoring Adjustment

2009 to 2011 figures shown in tables 2.7 & 2.8 have been adjusted by using the King's College London Volatile Correction Model (VCM).

Figures for 2007 and 2008 have been derived by using the default 1.3 gravimetric correction factor as advised in previous editions of the Technical Guidance.

Short-term to Long-term Data adjustment

There were no monitoring sites during 2011 that would have been "short term".

Therefore no further data adjustment is necessary for seasonal variation

QA/QC of automatic monitoring

The analysers were serviced under schedule via Casella Ltd. and SupportingU.

Daily "automatic" and fortnightly manual calibrations are also undertaken, the later performed by the Local Authority.

Data validation and ratification procedures follow Technical Guidance LAQM.TG(09)

QA/QC of diffusion tube monitoring

The independent Workplace Analysis Scheme for Proficiency (WASP), operated by the Health and Safety Laboratory, is yearly assessment against agreed performance criteria that is aimed at the analytical laboratories that supply and analyse the diffusion tubes.

This scheme allows national co-ordination within a quality assurance/quality control (QA/QC) framework

Quarterly performance summaries in the WASP scheme for the laboratory chosen to prepare and analyse diffusion tubes on behalf of Charnwood Borough Council (Gradko) over the preceding 12 months, prepared by AEA, are as follows:

WASP Rounds 97 - 100 (Apr 2007 - Apr 2008)	:	Good
WASP Rounds 98 - 102 (Jul 2007 - Jul 2008)	:	Good
WASP Rounds 99 - 103 (Oct 2007 - Oct 2008)	:	Good

WASP Rounds 100 - 104 (Jan 2008 - Jan 2009):	Good
WASP Rounds 101 - 105 (Apr 2008 - Apr 2009):	Good
WASP Rounds 102 - 106 (Jul 2008 - Jul 2009) :	Good
WASP Rounds 103 - 107 (Oct 2008 - Oct 2009) :	Good
WASP Rounds 104 - 108 (Jan 2009 - Jan 2010) :	Good
WASP Rounds 105 - 109 (April 2009 - April 2010):	Good
WASP Rounds 105 - 113 (April 2009 - June 2011):	Satisfactory

[Includes new Z-Score performance]

WASP Rounds 108 - 115 (Jan 2010 - Dec 2011)**:**	Satisfactory

[Includes new Z-Score performance]

Appendix B: Unadjusted Monthly Mean NO_2 Diffusion Tube Data (2011)

	NITROGEN DIOXIDE RESULTS MICROGRAMS/CUBIC METRES													
Site ref		Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	UNBIASED ANN.AVE
1	RATCLIFFE RD,LOUGHBOROUGH	48.61	47.07	36.99	32.81	29.17	35.47	27	34.01	34.26	33.89	33.85	22.5	34.64
2	SHELTHORPE RD,LOUGHBOROUGH	34.96	28.64	36.58	25.46	18.08	20.16	20.3	22.25	20.78	24.35	31.16	20.28	25.25
3	FOREST RD,LOUGHBOROUGH	35.88	32.79	39.02	24.47	21.57	24.53	21.26	25.93	29.12	29.33	34.49	24.14	28.54
5	HAYDON RD, LOUGHBOROUGH	41.8	28.88	29.64	29.72	15.84	29.54	25.4	28.85	32.06	30.89	34.67	25.99	29.44
6	ALAN MOSS RD/EPINAL WAY, LOUGHBORO	36.4	29.86	29.19	25.52	18.39	22.77	18.42	24.8	26.89	25.23	33.45	23.76	26.22
7	EPINAL WAY/LING RD	34.01	30.75	31.37	30.83	20.41	25.7	19.54	27.14	29.33	28.47	39.24	24.67	28.46
8	LEICESTER RD,LOUGHBOROUGH	50.47	38.99	46.3	35.27	30.75	33.36	28.22	34	32.47	32.5	43.22	23.7	35.77
9	DERBY RD, LOUGHBOROUGH 1	55.57	39.48	39.56	31.76	23.67	31.61	29.77	34.33	35.16	33.36	42.92	25.52	35.23
10	DERBY RD/BRISCOE AVE 2	45.48	29.14	29.06	27.11	22.98	18.14	22.19	28.26	27.52	29.13	38.97	23.4	28.45
11 i	DURHAM RD, LOUGHBOROUGH	31.96	25.2	26.1	24.48	14.52	16.93	12.45	19.84	18.66	20.79	32.4	18.08	21.78
11 ii	DURHAM RD 2, LOUGHBOROUGH	31.51	13.68	25.45	22.35	13.72	16.39	15.13	19.58	18.48	21.16	30.34	20.34	20.68
11 iii	DURHAM RD 3, LOUGHBOROUGH	34.87	24.61	23.27	22.76	12.25	26.42	16.27	19.27	17.86	20.99	31.02	16.12	22.14
12	ALAN MOSS RD/A6	50	38.45	35.88	30.91	24.16	63.5	25.65	29.95	31.52	29.19	35.24	29.42	35.32
13	HIGH ST,LOUGHBOROUGH	60.46	58.81	60.98	52.83	41.94	63.5	48.6	77.99	76.85	59.91	54.85	52.29	59.08
14	MARKET PLACE,LOUGHBOROUGH	33.31	38.86	22.45	23.65	16.31	18.76	16.79	20.18	20.13	22.38	36.22	18.6	23.97
15	ASHBY RD, LOUGHBOROUGH	46.4	42.49	39.46	41.83	28.61	30.46	33.37	34.82	27.01	33.54	42.73	29.89	35.88
16	LODGE HOUSE SHEPSHED	37.34	34.24	35.07	19.25	24.45	30.46	23.7	28.59	32.01	31.82	32.64	23.5	29.42
17	ROSEBERY ST,LOUGHBOROUGH	32.32	24.17	25.91	19.24	12.72	14.97	11.37	18.18	18.74	23.43	32.22	20.74	21.17
18	MELTON RD TOWN CENTRE,SYSTON 1	47.1	35.45	39.48	33.82	23.99	31.57	25.73	32.33	32.97	31.73	41.3	30.49	33.83
19	1123 MELTON RD/ADJ ST PETERS RD, SYSTO	37.6	31.13	36.88	27.51	22.09	25.97	19.51	28.65	27.93	27.96	33.75	27.27	28.85
20	1116 MELTON RD SYSTON 3	50.06	37.64	31.92	31.07	23.43	31.11	23.56	32.29	32.47	29.41	35.07	29.12	32.26
21	LOUGHBOROUGH RD,BIRSTALL	48.97	33.35	36.94	37.53	26.9	30.55	24.57	30.82	37.33	31.45	39.02	33.94	34.28
22	BIRSTALL A6	53.52	38.59	41.82	33.91	29.23	34	26.94	33.12	34.43	31.37	48.95	27.51	36.12
23	HUMBERSTONE LANE,THURMASTON	50.37	37.31	36.55	37.38	28.18	33.99	26.92	32.14	36.66	36.34	43.77	33.93	36.13
23a	5 WAYSIDE DR, THURMASTON	43.55	28.8	30.9	27.36	21.37	23.88	20.46	26.86	24.19	25.31	30.74	24.97	27.37
23b	43 HUMBERSTONE LANE, THURMASTON	46.84	37.27	33.48	32.99	28.75	32.13	24.63	33.33	34.74	33.24	31.76	31.09	33.35
23c	38 HUMBERSTONE LANE, THURMASTON	41.78	27.7	28.73	24.13	18.17	21.64	17.54	24.93	25.17	27.77	33.03	25.9	26.37
23d	22 HUMBERSTONE LANE, THURMASTON	37.3	30.89	31.88	27.69	20.42	24.95	22.01	29.52	27.83	27	33.09	27.36	28.33
26	ASHBY RD CENTRAL,SHEPSHED	55.05	42.49	43.58	41.98	32.57	40.24	37.75	39.02	41.09	34.7	48.05	28.41	40.41
27	LOUGHBOROUGH RD,HATHERN	46.11	30.81	28.34	27.48	23.18	29.43	25.78	36.91	30.33	32.24	40.36	24.9	31.32
28	BAXTERGATE, LOUGHBOROUGH	60.95	46.03	49.26	39.79	36.77	45.51	35.49	42.08	43.51	43.68	52.07	31.45	43.88
29	BARROW ST, LOUGHBOROUGH	35.07	28.92	28.21	24.38	21.4	23.12	20.21	25.25	26.03	27.68	36.35	33.77	27.53
30	SCHOOL ST, LOUGHBOROUGH	37.21	25.06	26.4	20.98	16.6	19.6	17.67	22.05	22.01	24.53	33.05	22.87	24.00
31	FENNEL ST, LOUGHBOROUGH	38.51	32.08	38.13	26.15	20.32	23.11	18.68	24.34	26.44	28.9	38.03	23.9	28.22
33	HIGH STREET, SYSTON	33.1	33.04	32.66	29.04	20.8	26.89	22.48	30.52	29.18	29.01	39.11	30.8	29.72
34	SYSTON AQMS1	43.25	43.1	33.14	31.75	25.7	31.75	22.39	41.26	41.54	33.12	39.69	32.87	34.96
35	SYSTON AQMS2	43.13	35.47	31.46	30.27	24.92	32.29	21.56	42.77	33.85	32.04	41.45	34.72	33.66
36	SYSTON AQMS3	46.08	39.48	29.9	30.11	25.97	31.67	21.03	38.56	37.37	30.37	39.45	34.21	33.68
37	LOUGHBOROUGH AQMS1	55.85	43.72	58.19	37.68	40.61	41.74	31.95	41.26	43.27	41.35	49.88	35.21	43.39
38	LOUGHBOROUGH AQMS2	57.98	39.75	50.92	38.46	36.64	43.06	31.97	42.77	40.61	38.73	51.09	31.39	41.95
39	LOUGHBOROUGH AQMS3	57.2	42.45	45.64	39.44	34.45	42.52	33.63	38.56	44.05	42.52	52.51	24.28	41.44
44	33 NOTTINGHAM RD, LOUGHBOROUGH	45.68	0	36.56	33.46	29.96	31.45	27.91	33.7	36.84	32.09	46.07	31.27	35.00
45	89 NOTTINGHAM RD, LOUGHBOROUGH	56.9	46.87	46.89	38.28	41.86	43.4	32.34	40.97	43.97	51.64	54.36	32.03	44.13
46	156 RATCLIFFE RD, LOUGHBOROUGH	45.62	28.58	26.12	29.11	27.12	30.64	26.43	0	24.17	28.6	31.43	21.67	29.04
47	156 MEADOW LANE, LOUGHBOROUGH	37.27	34.21	0	24.7	10.43	24.01	16.04	44.92	27.09	35.98	37.15	29.95	29.25