2010 Air Quality Progress Report for Charnwood Borough Council

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

July 2010

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Executive Summary

As part of their duties under the Environment Act 1995 local authorities are obliged to produce Air Quality Progress Reports detailing the current air quality within their districts.

Progress Reports are intended to maintain the continuity of the Local Air Quality Management (LAQM) process, and fill in the gaps between the three yearly cycle of Review and Assessment. Progress Reports are required in all years where the authority is not completing and Updating & Screening Assessment (USA). Charnwood Borough Council completed its latest USA in 2009.

The LAQM reports ask 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 three 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) sources.

In 2009, the monitoring of nitrogen dioxide at 39 locations in Charnwood demonstrated a breach of UK air quality objectives at 10 sites (an additional 2 sites which recorded a breach during 2009 are shown within the report to be beneath the objective levels when the nearest receptors are considered).

8 of the 10 sites reporting exceedences are within the existing Loughborough Air Quality Management Area. The remaining 2 sites fall within an area of Loughborough where extensive redevelopment has started in connection with the Loughborough Eastern Gateway and are likely to see positive improvements in the air quality due to improved traffic flow and reduced congestion.

Additional monitoring undertaken during 2009 around the Humberstone Lane junction at Thurmaston, has provided further data in respect of last years Detailed Assessment for NO_2 (annual mean) levels in this area. The monitoring has shown that measured concentrations are falling beneath the objective levels at relevant locations, and there is therefore no need to proceed to the declaration of an Air Quality Management Area in respect of NO2 (annual mean) at this location.

The monitoring and analysis for the Detailed Assessment of PM_{10} levels in the vicinity of the Lafarge Aggregates quarry at Mountsorrel has now been completed. Additional information in respect of spatial modelling is currently being finalised in conjunction with our external consultants for our final report submission shortly to DEFRA.

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1 Introduction

1.1 Description of Local Authority Area

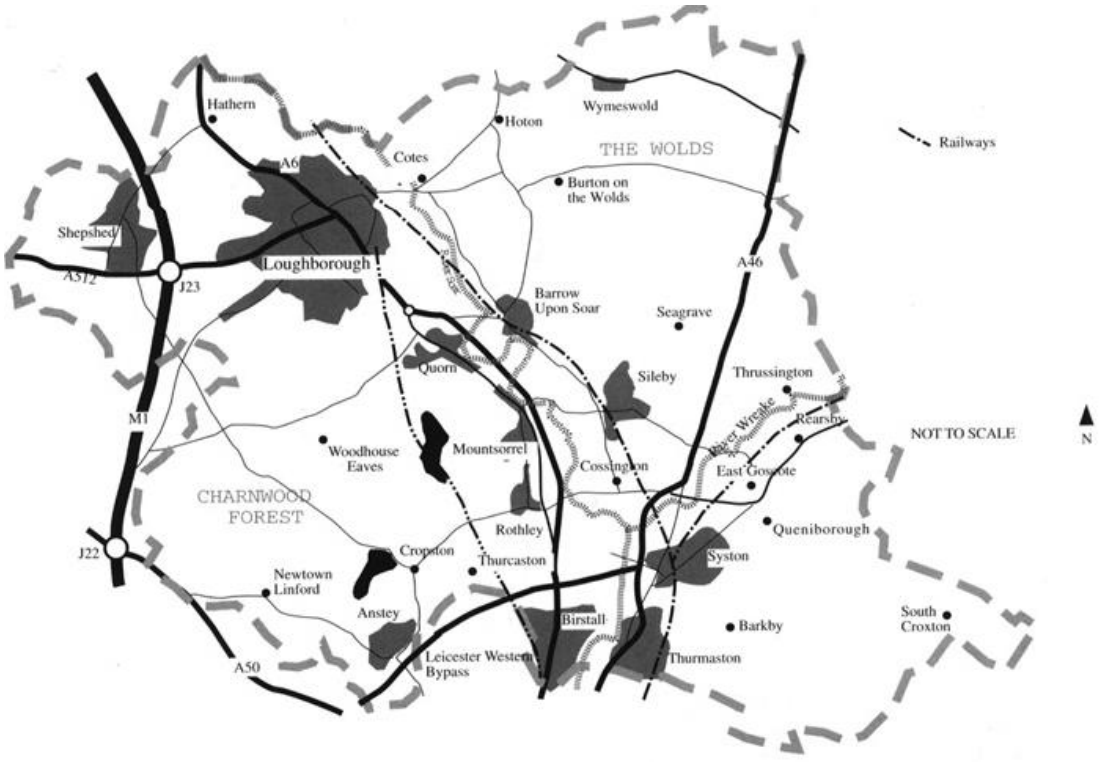
The Borough of Charnwood is located in the heart of the East Midlands sitting centrally in the triangle formed by Nottingham, Leicester and Derby. The Borough covers an area of 108 square miles and consists of a mix of urban settlements and rural farmland.

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 Progress Report

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Objectives

The air quality objectives applicable to Local Air Quality Management (LAQM) **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (for carbon monoxide the units used are milligrammes per cubic metre, mg/m^3). Table 1.1. includes the number of permitted exceedences in any given year (where applicable).

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

Pollutant	Concentration	Measured as	Date to be achieved by
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. This report explained that the intended (expected) 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.

Following communications with DEFRA it was agreed that this outstanding Detailed Assessment could be deferred until 2009. **Due to the complexity and nature of the issues involved, there has been a delay in collating and reporting on the 2009 data obtained. At the time of writing, the final report is currently being finalised by our consultants and submission is imminent.**

A Detailed Assessment in respect of NO_2 diffusion tube results around the junction at Humberstone Lane, Thurmaston, was also submitted in 2009. Whilst the outcome of the model contained in the report suggested that there was a potential for exceedences on the northern side of Humberstone Lane, this appeared to contradict local knowledge that would indicate that the southern side would be most affected. Recommendations were made to DEFRA that a period of diffusion tube monitoring would be undertaken, specifically targeting the properties highlighted in the report to be at 'risk', prior to drawing the final conclusions. DEFRA accepted our proposals. **Our comments on these monitoring results are made within this report.**

2009 also saw the submission of our 3 year Updated & Screening Assessment. All conclusions and recommendations were accepted by DEFRA.

We therefore approach this particular reporting phase of the policy guidance with three 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

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 3 automatic monitoring sites, summarised in Table 2.1.

The analysers are serviced under schedule via Casella Ltd.

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 were first considered to be derived from the King’s College London Volatile Correction Model (VCM) – however, please see notes under Tables 2.5a/b. Historic gravimetric correction applies the default correction factor (1.3) as advised in previous editions of the Guidance.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQMA?	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	X 452352	Y 320697	NO_2, SO_2, PM_{10}	TEOM (PM_{10}) UV Fluorescence Chemi-lluminescence (NO_2)	N	N	N/A	N
Baxter Gate (Loughborough)	Kerbside	X 453687	Y 319672	NO_2	Chemi-lluminescence	Y	N (Not in the immediate vicinity of the monitor)	1m	N
Melton Rd (Syston)	Roadside	X 462540	Y 311428	NO_2	Chemi-lluminescence	Y	Y (10m)	3m	N

2.1.2 Non-Automatic Monitoring

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

During 2009:

- Nitrogen dioxide diffusion tubes were deployed at 39 sites (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.

No sulphur dioxide or benzene monitoring was undertaken during 2009. This decision was based on significant historic monitoring data indicating that any likely breach of these particular Air Quality Standards would be improbable.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
Ratcliffe Rd (Loughborough)	Roadside	X 454087 Y 320392	NO_2	Y	Y (façade)	~3m	Y
Shelthorpe Rd (Loughborough)	Roadside	X 454234 Y 318657	NO_2	N	Y (~8m)	~3m	Y
Forest Rd (Loughborough)	Roadside	X 452833 Y 318776	NO_2	N	Y (façade)	~6m	Y
Haydon Road (Loughborough)	Roadside	X 452314 Y 319620	NO_2	Y	Y (~8m)	~6m	Y
Alan Moss Rd/Epinal Way (Loughborough)	Roadside	X 452173 Y 319924	NO_2	Y	Y (façade)	~15m	Y
Epinal Way/Ling Rd (Loughborough)	Roadside	X 453678 Y 318194	NO_2	N	Y (façade)	~9m	Y
Leicester Rd (Loughborough)	Roadside	X 454002 Y 319253	NO_2	Y	-	~3m	Y
Derby Rd (Loughborough)	Roadside	X 453231 Y 320028	NO_2	Y	Y (~3m)	~3m	Y
Derby Rd/Brisco Avn (Loughborough)	Roadside	X 452670 Y 320527	NO_2	Y	Y (~3m)	~4m	Y
Durham Rd AQMS 1 (Loughborough)	Urban Background	X 452352 Y 320697	NO_2	N	N	n/a	n/a
Durham Rd AQMS 2 (Loughborough)	Urban Background	X 452352 Y 320697	NO_2	N	N	n/a	n/a
Durham Rd AQMS 3 (Loughborough)	Urban Background	X 452352 Y 320697	NO_2	N	N	n/a	n/a
Alan Moss Rd/A6 Derby Rd (Loughborough)	Roadside	X 452903 Y 320212	NO_2	Y	Y (façade)	~8m	Y
High St (Loughborough)	Roadside	X 453730 Y 319596	NO_2	Y	-	~3m	Y
Market Place (Loughborough)	Urban Centre	X 453611 Y 319540	NO_2	Y	N	n/a	n/a
Ashby Rd (Loughborough)	Roadside	X 453189 Y 319709	NO_2	Y	Y (façade)	~4m	Y
Cow Hill Lodge (Shepshed)	Roadside	X 448876 Y 318307	NO_2	N	Y (façade)	~10m	Y
Rosebery St (Loughborough)	Roadside	X 452697 Y 319921	NO_2	N	Y (~13m)	~3m	Y
Melton Rd Town Centre (Syston)	Roadside	X 462777 Y 311692	NO_2	Y	Y (~3m)	~3m	Y
1123 Melton Rd (Syston)	Roadside	X 462351 Y 311213	NO_2	Y	Y (façade)	~6m	Y
1116 Melton Rd (Syston)	Roadside	X 462373 Y 311254	NO_2	Y	Y (façade)	~3m	Y
Loughborough Rd (Birstall)	Roadside	X 459233 Y 309590	NO_2	N	Y (façade)	~15m	Y

A6 (Birstall)	Roadside	X 459178 Y 309890	NO_2	N	Y ~2m	~5m	Y
21 Humberstone Lane (Thurmaston)	Roadside	X 460821 Y 308757	NO_2	N	Y (façade)	~6m	Y
5 Wayside Dr (Thurmaston)	Roadside	X 460861 Y 308824	NO_2	N	Y (façade)	~6m	N
43 Humberstone Ln (Thurmaston)	Roadside	X 460861 Y 308824	NO_2	N	Y (façade)	~5m	Y
38 Humberstone Ln (Thurmaston)	Roadside	X 460908 Y 308775	NO_2	N	Y (façade)	~5m	Y
22 Humberstone Ln (Thurmaston)	Roadside	X 460835 Y 308784	NO_2	N	Y (façade)	~5m	Y
Ashby Rd Central (Shepshed)	Roadside	X 448121 Y 318257	NO_2	N	Y (~12m)	2m	Y
Loughborough Rd (Hathern)	Roadside	X 450260 Y 321922	NO_2	N	Tube located ~3m from kerb Nearest receptor is approx 30m away and approx 13m from kerb		Y
Baxter Gate (Loughborough)	Roadside	X 453682 Y 319672	NO_2	Y	-	~2m	Y
Barrow St (Loughborough)	Roadside	X 453901 Y 319488	NO_2	N	Y (façade)	~10m	Y
School St (Loughborough)	Roadside	X 453946 Y 319619	NO_2	N	Y (façade)	~3m	Y
Fennel St (Loughborough)	Roadside	X 453694 Y 319890	NO_2	N	Y (façade)	~3m	Y
High St (Syston)	Roadside	X 462369 Y 311809	NO_2	Y	Y (façade)	~4m	Y
Syston AQMS 1	Roadside	X 462540 Y 311428	NO_2	Y	Y (~10m)	~3m	Y
Syston AQMS 2	Roadside	X 462540 Y 311428	NO_2	Y	Y (~10m)	~3m	Y
Syston AQMS 3	Roadside	X 462540 Y 311428	NO_2	Y	Y (~10m)	~3m	Y
Baxter Gate AQMS 1 (Loughborough)	Kerbside	X 453687 Y 319672	NO_2	Y	-	~1m	Y
Baxter Gate AQMS 2 (Loughborough)	Kerbside	X 453687 Y 319672	NO_2	Y	-	~1m	Y
Baxter Gate AQMS 3 (Loughborough)	Kerbside	X 453687 Y 319672	NO_2	Y	-	~1m	Y
33 Nottingham Rd (Loughborough)	Roadside	X 454000 Y 319977	NO_2	N	-	~3m	Y
89 Nottingham Rd (Loughborough)	Roadside	X 454154 Y 320116	NO_2	N	Y (façade)	~3m	Y
156 Ratcliffe Rd (Loughborough)	Roadside	X 454285 Y 320294	NO_2	N	Y (façade)	~ 6m	Y
156 Meadow Rd (Loughborough)	Roadside	X 453933 Y 320663	NO_2	N	Y (façade)	~ 8m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

There are no sites recording more than 18 1-hour means above 200µgm^{-3}, however as can be seen from the following 2009 data results there are a number of exceedences of the 40µgm^{-3} annual mean, the majority of which are in areas already declared as part of an AQMA.

Two sites: Ashby Rd Central (Shepshed) and Loughborough Rd (Hathern) are both roadside locations where the tubes are positioned some distance away from the façade of the nearest receptor.

Using the "NO_2 with Distance from Roads Calculator" (Issue 2) 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 receptors, as follows:

Ashby Rd Central (Shepshed)

Using the calculator the concentration at the receptor is shown below to be 33.0µg/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)	12.8288	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	(Note 2)	49.9	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	(Note 3)	33.0	µg/m^3

Note 1: This 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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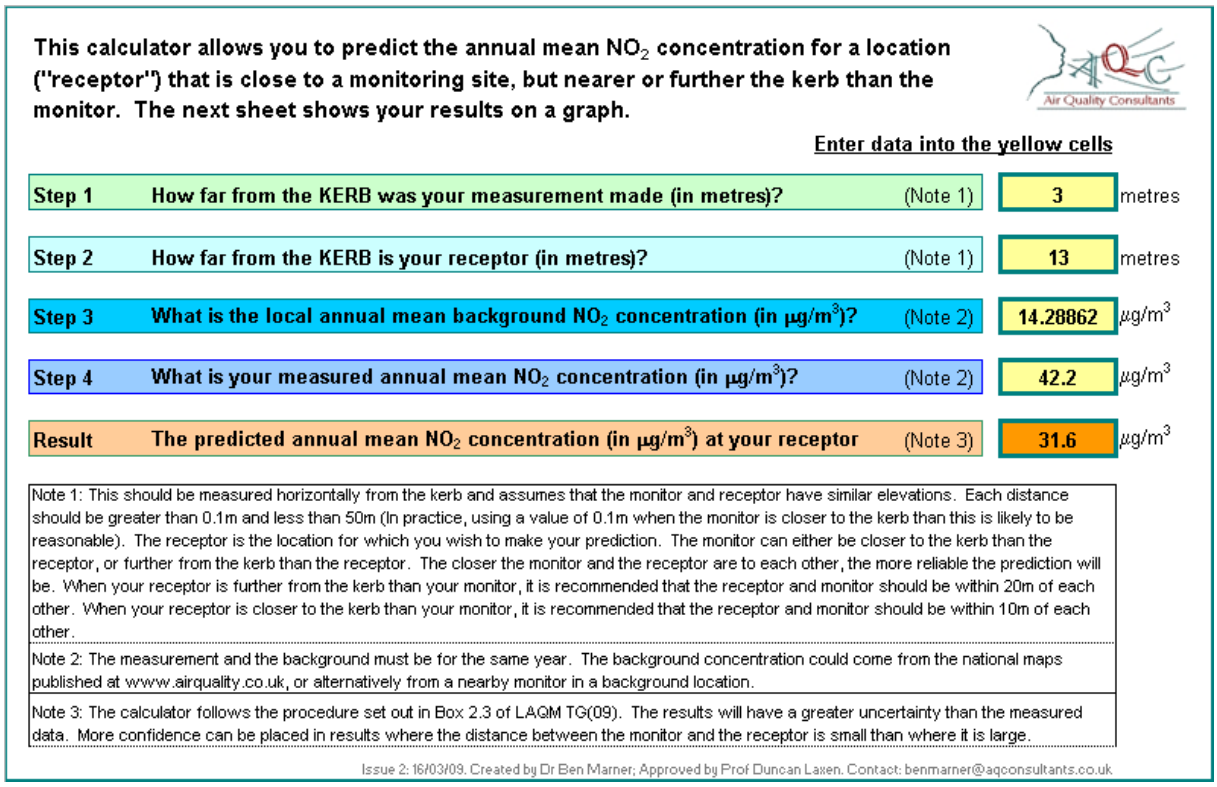
Loughborough Rd (Hathern)

Using the calculator the concentration at the receptor is shown below to be 31.6µg/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.

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)	14.28862	µg/m^3
Step 4	**What is your measured annual mean NO_2 concentration (in µg/m^3)?**	(Note 2)	42.2	µg/m^3
Result	**The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor**	(Note 3)	31.6	µg/m^3

Note 1: This 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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3 further tubes along the area of Nottingham Rd and its junction with Ratcliffe Rd have also shown exceedences during 2009. As previously reported, traffic in this area of town will be imminently affected by the proposed ***Loughborough Eastern Gateway Scheme and Loughborough Inner Relief Road*** (further info regarding the current position of the schemes proposals are outlined in Section 4 of this report). We therefore maintain our view (as discussed with DEFRAs consultants in 2008) that there would be no benefit in proceeding to a Detailed Assessment at this time when traffic flow in the area will soon be dramatically altered.

Detailed Assessment of NO2 at Humberstone Lane (Thurmaston) – further comments / conclusions

Following submission in 2009 of our Detailed Assessment in respect of NO_2 levels around the junction at Humberstone Lane, Thurmaston; it was agreed with DEFRA that a period of further monitoring would be allowed with the results being reported in this update.

This additional period of monitoring was requested in response to the conclusions contained in the Detailed Assessment, prepared by our consultants. The conclusions of their report were primarily based on the outcome of an air quality model of the junction.

The model suggested that there was a potential for exceedences of the annual mean air quality objective on the northern side of Humberstone Lane, however these conclusions appeared to contradict local knowledge that would indicate that the southern side would be most likely exposed to any traffic derived NO2.

As no historic diffusion tube monitoring had been conducted on the northern side of Humberstone Lane, we proposed to deploy diffusion tubes at 2 potential residential receptors at either end of the properties which had been highlighted to exceed the objective level by the model.

These 2 tubes were first exposed in June 2009 and the monthly (raw) concentrations are as follows:

	NITROGEN DIOXIDE RESULTS MICROGRAMS/CUBIC METRES								
Site ref		Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	AVG
23c	38 HUMBERSTONE LANE, THURMASTON	19.07	20.16	19.17	24	32.22	32.69	37.59	26.41
23d	22 HUMBERSTONE LANE, THURMASTON	23.4	22.86	23.03	28.28	33.93	35.02	36.38	28.99

This raw data has been adjusted in Appendix A of this report ("Short-term to Long-term Data adjustment") to give, during 2009:

Best estimate of 22 Humberstone Lane = 30.60µg/m^3
Best estimate of 38 Humberstone Lane = 27.85µg/m^3

As the bias correction factor for the Syston tubes is x1.00 for 2009; these figures therefore represent final values, and can be seen to fall comfortably beneath the objective levels.

Therefore, as a supporting conclusion (further to the previously submitted Detailed Assessment);

As the concentrations fall beneath the objective levels at relevant locations, there is no need to proceed to the declaration of an Air Quality Management Area in respect of NO2 (annual mean) at Thurmaston.

Automatic Monitoring Data

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations (μg/m^3)		
					2007	2008	2009
11	Durham Rd, L'boro	N	-	97.7	30.6	26.7	28.7
34-36	Melton Rd, Syston	Y	-	97.2	n/a	34.4	32.5
37-39	Baxter Gate, L'boro	Y	-	82.9	n/a	**47.8**	**42.0**

Table 2.3b Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 [b] %	Number of Exceedences of hourly mean (200 μg/m^3) If the period of valid data is less than 90% of a full year, include the 99.8th percentile of hourly means in brackets.		
					2007	2008	2009
11	Durham Rd, L'boro	N	(Full Year)	99.9	0	0	0
34-36	Melton Rd, Syston	Y	(Full Year)	99.6	n/a	6	0
37-39	Baxter Gate, L'boro	Y	(Full Year)	84.9	n/a	0	0 (107)

Diffusion Tube Monitoring Data

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture for monitoring period [a] %	Data Capture for full calendar year 2009 [b] %	Annual mean concentrations (μg/m^3)		
					2007	2008	2009
1	Ratcliffe Rd (Loughborough)	Y	100	100	51.0	48.0	**46.3**
2	Shelthorpe Rd (Loughborough)	N	100	100	33.3	31.9	31.4
3	Forest Rd (Loughborough)	N	100	100	38.0	35.3	37.3
5	Haydon Road (Loughborough)	Y	100	100	37.7	37.2	38.3
6	Alan Moss Rd/Epinal Way (Loughborough)	Y	100	100	34.7	31.8	32.4
7	Epinal Way/Ling Rd (Loughborough)	N	100	100	37.3	33.6	36.0
8	Leicester Rd (Loughborough)	Y	92	92	48.9	41.2	**43.1**
9	Derby Rd (Loughborough)	Y	100	100	46.2	38.9	**46.1**
10	Derby Rd/Brisco Avn (Loughborough)	Y	83	83	39.5	36.3	39.7
11 i	Durham Rd AQMS 1 (Loughborough)	N	100	100	30.8	26.7	28.3
11 ii	Durham Rd AQMS 2 (Loughborough)	N	100	100	30.4	27.2	29.0
11 iii	Durham Rd AQMS 3 (Loughborough)	Y	100	100	30.2	26.5	28.9
12	Alan Moss Rd/A6 Derby Rd (Loughborough)	Y	100	100	42.8	44.5	**40.2**
13	High St (Loughborough)	Y	92	92	78.2	65.9	**76.2**
14	Market Place (Loughborough)	Y	100	100	32.7	28.6	29.8
15	Ashby Rd (Loughborough)	Y	92	92	48.3	46.6	**48.3**
16	Cow Hill Lodge (Shepshed)	N	100	100	-	36.1	36.3
17	Rosebery St (Loughborough)	N	92	92	29.1	27.5	26.7
18	Melton Rd Town Centre (Syston)	Y	100	100	42.3	33.3	35.7
19	1123 Melton Rd (Syston)	Y	100	100	38.2	30.6	30.4
20	1116 Melton Rd (Syston)	Y	92	92	43.6	32.7	35.4
21	Loughborough Rd (Birstall)	N	100	100	43.7	30.7	32.2
22	A6 (Birstall)	N	100	100	44.5	36.4	37.6

23	21 Humberstone Lane (Thurmaston)	N	100	100	48.3	37.4	39.8
23a	5 Wayside Dr (Thurmaston)	N	100	100	-	26.5	30.3
23b	43 Humberstone Ln (Thurmaston)	N	100	100	-	33.9	37.1
23c	38 Humberstone Ln (Thurmaston)	N	100 (From June)	50	-	-	27.9
23d	22 Humberstone Ln (Thurmaston)	N	100 (From June)	50	-	-	30.6
26	Ashby Rd Central (Shepshed)	N	100	100	50.7	47.6	**49.9**
27	Loughborough Rd (Hathern)	N	100	100	45.9	38.2	**42.2**
28	Baxter Gate (Loughborough)	Y	92	92	57.8	49.8	**56.1**
29	Barrow St (Loughborough)	N	100	100	37.6	36.5	35.8
30	School St (Loughborough)	N	100	100	35.9	30.7	31.2
31	Fennel St (Loughborough)	N	100	100	36.9	35.1	35.8
33	High St (Syston)	Y	100	100	40.8	30.0	31.6
34	Syston AQMS 1	Y	100	100	-	36.5	37.0
35	Syston AQMS 2	Y	100	100	-	33.9	34.7
36	Syston AQMS 3	Y	100	100	-	33.2	35.9
37	Baxter Gate AQMS 1 (Loughborough)	Y	100	100	-	46.4	**55.2**
38	Baxter Gate AQMS 2 (Loughborough)	Y	100	100	-	48.5	**54.1**
39	Baxter Gate AQMS 3 (Loughborough)	Y	100	100	-	48.5	**52.0**
44	33 Nottingham Rd (Loughborough)	N	100 (From Feb)	92	-	-	**43.5**
45	89 Nottingham Rd (Loughborough)	N	92 (From Feb)	83	-	-	**48.1**
46	156 Ratcliffe Rd (Loughborough)	Y	100 (From Feb)	92	-	-	**40.6**
47	156 Meadow Rd (Loughborough)	N	100 (From Feb)	92	-	-	35.6

[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

[b] 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%.)

2009

Results for tubes 18-23, 23a-d and 33-36 have been corrected against the Syston automatic monitor (factor = 1.00)

All other tubes are corrected against the Durham Road automatic monitor (factor = 1.17)

Note: Results for tubes 13, 28, and 37-39 would normally be corrected against the **Baxter Gate automatic monitor** (factor = 0.92) however as data capture was < 90% in 2009, we have opted to use the factor from Durham Rd instead.

2008

Results for tubes 13, 28, and 37-39 have been corrected against the Baxter Gate automatic monitor (factor = 1.08)

Results for tubes 18-23, 23a-d and 33-36 have been corrected against the Syston automatic monitor (factor = 0.94)

All other tubes are corrected against the Durham Road automatic monitor (factor = 1.13)

2007

All tubes corrected against the Durham Road automatic monitor (factor = 1.12)

2.2.2 PM_{10}

In 2009 there were no recorded breaches of either the annual mean or 24-hour mean on objectives at our only long-term automatic (TEOM) monitoring site.

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

A separate Detailed Assessment in respect of PM_{10} levels in the vicinity of the Lafarge Quarry in Mountsorrel is due to be submitted imminently.

Table 2.5a Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations (μg/m^3)		
					2007	2008	2009
11	Durham Rd, L'boro	N	94	94	19.5	16.9	17.8

Table 2.5b Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture 2009 %	Number of Exceedences of daily mean objective (50 μg/m^3)		
					2007	2008	2009
11	Durham Rd, L'boro	N	94	94	8	1	8

Notes:

i. 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.

ii. 2009 figures were calculated by using the King's College London Volatile Correction Model (VCM).

2.2.3 Sulphur Dioxide

In 2009 there were no recorded breaches of either 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 2.6 Results of Automatic Sulphur Dioxide Monitoring

2009	
Maximum 15 minute mean concentration	87.8µgm^{-3}
Exceedences of 15 minute concentration @ 266µgm^{-3}	0
Maximum 1 hour mean concentration	106.4µgm^{-3}
Exceedences of 1 hour concentration @ 350µgm^{-3}	0
Maximum 24-hour mean concentration	13.3µgm^{-3}
Exceedences of 24-hour concentration @ 125µgm^{-3}	0
Data capture	71.4%

(A conversion factor of 2.66 has been applied to the raw data originally measured as ppb, as per Annex1: 1.163 / Box A1.5 (pg A1-36) LAQM.TG assuming 20°C and 101.3 kPa)

As the 71% data capture recorded for 2009 was <90%; guidance states that a percentile calculation should be used rather than a count of exceedences:

15 Minute Mean Concentration (2009)
From the 25,009 data points captured throughout 2009, the 99.9th percentile is calculated as being 26.6µgm^{-3}

1 Hour Mean Concentration (2009)
From the 6,464 data points captured throughout 2009, the 99.7th percentile is calculated as being 18.6µgm^{-3}

24 Hour Mean Concentration (2009)
From the 276 data points captured throughout 2009, the 99th percentile is calculated as being 2.6µgm^{-3}

2.2.4 Benzene

No monitoring was undertaken during 2009. This decision was based on significant historic monitoring data indicating that any likely breach of this particular Air Quality Standards 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 all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

3.1 Road Traffic Sources

3.1.1 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.

3.1.2 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.

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

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

3.1.4 Junctions

Charnwood Borough Council confirms that there are no new/newly identified busy junctions (>10,000 vehicles) that have not been adequately considered in previous rounds of Review and Assessment.

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

Charnwood Borough Council confirms that there have been no relevant new roads constructed or proposed since the Last Review and Assessment

3.1.6 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 25% increase in traffic flow), which have not been adequately considered in previous rounds of Review and Assessment.

3.1.7 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.

3.2 Other Transport Sources

3.2.1 Airports

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

3.2.2 Railways (Diesel and Steam Trains)

3.2.2.a 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.***

3.2.2.b 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))

3.3 Ports (Shipping)

There are no ports or shipping within the Local Authority area.

4 Industrial Sources

4.1 Industrial Installations

4.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Newhurst Quarry (Shepshed) – Application for Energy Recovery Facility (ERF)

As part of the application for the ERF, the applicant BIFFA, were required to employ specialist consultants to undertake a detailed air quality impact assessment, including dispersion modelling of combustion emissions to demonstrate that the facility would not cause significant pollution to the environment or human health and would not adversely effect local air quality.

A copy of this assessment was submitted as part of the planning application and is available to view on the County Council's web site as part of the technical report contained in Appendix 6-1.

Application Number	2009/2497/02
County Council Identity Number	2009/C166/02
Application Details	Application for an energy recovery facility and ancillary facilities.

http://www.leics.gov.uk/index/environment/planning/community_services_planning/planning_applications/index/environment/planning/community_services_planning/planning_applications/eplanning_searchform/eplanning_resultpage/eplanning_detailpage.htm?appno=2009/2497/02&map=f

The assessment considered the potential impacts during:-

1. The construction phase of:

    - fugitive dust from traffic movements and construction; and
    - combustion pollutants (PM_{10}, NO_x, etc) from construction traffic.

and

2. The site operational phase of:

    - combustion pollutants (PM_{10}, NO_x, etc) from traffic;
    - combustion pollutants (specified in the Waste Incineration Directive) from the stack; and
    - fugitive odours and bioaerosols from waste handling operations.

The assessment was based upon a comparison of the baseline situation (both current and projected without the development proposals) against the air quality impacts resulting from the '*with development*' proposal scenario.

Each of the activities associated with the proposal were assessed for potential air quality impacts. The Environmental Statement concluded that "***the proposed ERF was not predicted to give rise to significant adverse air quality effects for either human or ecological receptors***" .The conclusions were based on air quality modelling of projected emissions from the additional traffic burden that the facility would generate, dispersion modelling for emissions from the stacks, together with qualitative assessments of dust, odours and bioaerosols arising from plant operations.

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

4.1.2 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.

4.1.3 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.

4.2 Major Fuel (Petrol) Storage Depots

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

4.3 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).

4.4 Poultry Farms

Sunrise Poultry Farms, Seagrave Road, Sileby.
Environmental Agency Licence No. RP3237MG
Permit Date 30/01/07

The above facility is permitted for 339,472 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.

5 Commercial and Domestic Sources

5.1 Biomass Combustion – Individual Installations

Charnwood Borough Council confirms that there are no biomass combustion plants meeting the specified criteria in the Local Authority area.

5.2 Biomass Combustion – Combined Impacts

Charnwood Borough Council confirms that there are no biomass combustion plants in the Local Authority area.

5.3 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.

6 New Developments with Fugitive or Uncontrolled Sources

In February 2010 Leicestershire County Council granted planning permission for a new recycling and household waste site (RHWS) to be constructed on a vacant plot of land off Granite Way on the outskirts of the village of Mountsorrel (grid ref 457281-315624). This site will replace an existing RHWS at Sileby which is intended to be closed, once the Mountsorrel facility is fully operational.

Application Number	2009/1714/02
County Council Identity Number	2009/L115/02
Application Details	Proposed new recycling and household waste site (to replace existing facility in Sileby)

The planning application/decision can be viewed at:

http://www.leics.gov.uk/index/environment/planning/community_services_planning/planning_applications/eplanning_searchform/eplanning_resultpage/eplanning_detailpage.htm?appno=2009/1714/02&sd=01/01/2009&ed=11/06/2010&kw=&map=f

The full Air Quality report is included as Appendix 9 in the planning application.

Over 40 sites were assessed against a variety of set criteria to identify suitable locations for an upgraded RHWS. These criteria included, but were not limited to, location, area, shape, access, current use and planning history.

An air quality assessment was undertaken in accordance with the "Technical Guidance LAQM, TG(09)". This included assessing the potential sources that could reduce air quality from such a site, which included, but was not limited to: particulate matter (PM 10), dust, odour and road traffic emissions. The conclusions of the qualitative assessment from an operational RHWS at the proposed location are summarised below:-

"*In the view of the waste types that would be handled on site, the location of the storage of such wastes and the standard control measures to be implemented during operation, the impact of fugitive emissions of dust and odour from the facility on amenity and human health can be considered to be of negligible significance. No further mitigation measures are considered necessary.*

The additional traffic generated by the proposed site on Granite Way and surrounding roads is predicted to result in a negligible increase in baseline pollutant concentrations at air quality sensitive receptors. No mitigation measures to decrease the air quality impacts of additional road traffic are considered to be necessary."

Air emissions during the construction works will potentially be higher. However these will be restricted to increased dust emissions into the air, especially during dry and windy periods. To minimise such emissions to the air appropriate dust suppression measures will be undertaken during the construction of the proposed site.

It is however important to note that the RHWS site is situated within an existing industrial area and nearby to the Mountsorrel Lafarge Aggregates quarry which is the focus of a separate Detailed Assessment.

Any impact on the air quality is expected to be minimal compared to existing air quality impacts within the surrounding area.

Charnwood Borough Council has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area.

* Mountsorrel RHWS

These will be taken into consideration in the next Updating and Screening Assessment, scheduled for 2012.

7 Planning Applications

Loughborough Inner Relief Road

Full details of the scheme can be seen at:
http://www.leics.gov.uk/index/highways/road_pathway_maintenance/major_transport_projects/loughborough_town_centre_transport_proposals.htm

Planning permission for the Loughborough Inner Relief Road (LIRR) was granted in May 2007. The scheme will provide a peripheral route around the central core of the town, replacing the A6 between its junctions at Bridge Street and at Southfields Road. The IRR is not intended to increase capacity, but it will enable the part of the A6 through the town centre to be closed off to traffic (except buses) and eliminate the severance and conflict which exists between the high volume of traffic and large numbers of pedestrian crossing movements.

As part of the Planning Application, a full Air Quality Assessment - NO_2 and PM_{10} - for the proposed route (which significantly impacts on the existing Loughborough NO_2 AQMA) was submitted as part of the Transport Analysis Guidance (TAG) as required by the DfT.

A Public Inquiry associated with the Compulsory Purchase Order for the Inner Relief Road was held in October 2009. A further AQ Assessment was presented by consultants, supported by more recent data and more reliable modelling methods. The decision letter is still awaited from the Secretary of State for Transport

A favourable decision would clear the way for the County Council to submit a request for approval to proceed to the next key stage of the scheme i.e. Conditional Approval and detail design.

However, the Department for Transport have informed the County Council that firm departmental budgets from 2011/2012 will only be known after the Government has carried out a comprehensive spending review later this year and currently any applications for Conditional Approval will be put on hold.

In view of this and uncertainties about wider Government spending over coming months, it seems at present that the start of the works (originally scheduled for Spring 2011 may be delayed.

Government Officers have said that hopefully they will be able to provide an update in a couple of month's time when the position is clearer.

Loughborough Eastern Gateway

Planning permission for the new link road and housing was granted in April 2009 and all of the land required for development has now been acquired.

All of the funding has been approved, including a substantial grant form the Homes and Communities Agency. In addition a significant grant from EMDA has also been received to add to the funds provided by the Borough and County Councils.

Leicestershire County Council has selected a preferred contractor to construct the link roads under its Midlands Framework arrangements. The road contract is due to start on 5th July 2010 and is expected to be completed in about 12 months.

Upon completion of the link road, the element of the scheme is the closure of Ratcliffe Road and Burder Street to through traffic. This will have a significant positive impact to areas of the town subject to an existing AQMA and elevated NO_2 concentrations as reported on above.

8 Implementation of Action Plans

Table 5.1 Action Plan Progress

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
***** Borough Council input					
Performance Indicator Measures					
*	NO_2 monitoring within AQMAs	Target set in LTP2 for end 2010/11. Annual monitoring available via District Council	Passive diffusion tubes monitor NO_2 levels at or near critical locations within the AQMA. There is also an automatic monitoring station within the AQMA. In Loughborough the annual monitoring of nitrogen dioxide shows that A6 High Street has by far the highest levels in the AQMA. We have set a nitrogen dioxide target for this location in the LTP (see right). The A6 Loughborough Derby Road just north of the town centre was the second worst location in the AQMA. We have set an optional nitrogen dioxide target for this location in the LTP (see right).	Outcome to date: Measurements are in µg/m^3 NO_2 A6 High Street 2004 (baseline) 67.7 2005 63.2 2006 70.4 2007 78.2 2008 65.9 2009 76.0 2010 (target) 52.2 A6 Derby Road 2004 (baseline) 45.7 2005 37.0 2006 40.1 2007 42.8 2008 44.5 2009 45.7 2010 (target) <40.0 STATUS: NOT ON TRACK Due to fluctuations in observed NO_2 concentrations, even where emissions are decreasing, no trajectory has been specified in the LTP towards the AQMA targets. Instead, progress towards meeting air quality targets has been measured indirectly using traffic growth indicators in the three AQMAs (see below).	There were breaches of UK air quality objectives at 6 location sites within the Loughborough AQMA in 2008, although the levels recorded were generally lower than in 2007. Extra tubes were put out early this year at Nottingham Road/Meadow Lane to undertake pre-monitoring of the emerging Loughborough Eastern Gateway scheme. Work is being undertaken to better align longer-term traffic monitoring with air quality monitoring to try and better understand the relationship between the data being collected. Our work moving forward will focus on what we can do to improve the levels of air quality between now and the completion of the Loughborough Inner Relief Road which remains the central plank of our strategy to improve congestion and air quality within Loughborough.
	Traffic growth monitoring in Loughborough	Annual targets set in LTP2 to end 2010/11	Induction loops in the road continuously measure traffic flows in both directions on the A6 in Loughborough Town Centre.	Outcome to date: **2004 2005 2006 2007 2008 2009 2010** *Trajectory* 100 101.9 103.8 105.7 107.6 109.5 111.4 Actual 100 101.2 99.1 101.4 94.4 STATUS: ON TRACK	Traffic growth, our proxy for the measurement of air quality levels is well within the trajectory set in the LTP. The LTP target was set to limit the growth in traffic rather than reduce it. There was a significant reduction in traffic flows between 2007 and 2008. This is in line with the drop in car travel experienced between 2007 and 2008 (1.7% in Leicester and Leicestershire), largely attributable to the fuel price increases of that year (see draft Economic Assessment for Leicester and Leicestershire, October 2009).

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
Action Plan					
1	Loughborough Inner Relief Road to divert traffic away from A6 in town centre	LTP2: Yrs 2 – 5 (07/08 – 10/11)	<u>Progress:</u> Planning permission for the Inner Relief Road was granted in May 2007, which forms the main component of the Loughborough Town Centre Transport Scheme. A bid for funding was submitted to Central Government in August 2007, and in November 2008 the Department for Transport (DfT) awarded Programme Entry Status to the scheme, which is the first stage of a three-stage funding approval process. Compulsory purchase and side road orders were published in December 2008, which have received three objections. A Public Inquiry was held between 6-8th October 2009	<u>Planned outcomes:</u> By removing through traffic away from the town centre it is expected that the scheme will deliver a significant improvement in air quality in the town centre and on High Street (the most critical site within the Loughborough AQMA). <u>Outcome to date:</u> SLIGHTLY BEHIND SCHEDULE BASED ON ORIGINAL LTP2 TIMESCALES	Signing and other town centre restrictions to divert traffic and pedestrianise the A6 and other streets will complement the main road scheme.
2	Signing or town centre restrictions to divert traffic from A6 onto Epinal Way				
3	Town centre vehicle restrictions to pedestrianise A6 and other streets				

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
* 4	Fewer parking spaces or higher charges to restrain car access to work or shops	LTP2: Years 2 – 5 (07/08 – 10/11)	The Loughborough Parking Strategy includes a common charging policy to discourage 'cruising' for cheaper spaces, and parking concessions for lower-emission vehicles for Borough Council issued tickets and permits. Civil Parking Enforcement (CPE) was introduced in Leicestershire from July 2007. This has seen the enforcement of parking regulations pass from the Police to the County and District Councils. The Loughborough Parking Strategy identified that a lack of enforcement regulations was a concern. The introduction of CPE is expected to greatly improve enforcement of parking and therefore assist demand management in Loughborough Town Centre by freeing road space for through traffic. We are undertaking a data gathering exercise to allow us to monitor the effectiveness of CPE, although no detailed analysis of the data has been completed to date. Initial observations have however identified that for the first 18 months of the CPE operation, there has been a steady decline in the number of Penalty Charge Notices issued on street, indicating a higher level of compliance with parking	Planned outcomes: reduction in emissions due to discouragement of "cruising" for cheaper spaces and encouragement of low-emission vehicles. Outcome to date: ON TRACK	Car parking charges are already the highest in the County (£5.50 per day). They are felt to be as high as practicable relative to other local urban centres to restrain car access to work and shops whilst avoiding a detrimental effect on the vitality of the town centre. The Loughborough Parking Strategy provides the findings of a review of existing parking provision in Loughborough town centre and sets out the framework for parking policies in the town centre for the period to 2021 against the background of the overall vision for the town centre as outlined in the Town Centre Masterplan (TMP).

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
			restrictions.		
		LTP2: Years 2 – 5 (07/08 – 10/11)	Residents parking schemes are planned for Burder Street as part of the Loughborough Eastern Gateway, and for Queens Road/School Street to be delivered by 2010/2011.	Planned outcome: reduction of availability of free on-street parking in vicinity of railway station and Great Central Railway. Will increase incentive for access by means other than the private car. Outcome to date: ON TRACK	Planning permission for the housing and link road associated with the Loughborough Eastern Gateway has been granted. Design work is progressing on the link road which includes the residents parking scheme for Burder Street (see 7 and 12 below).
5 and 20	Investment in cycle route network to reach all parts of Loughborough	LTP2: Years 2 – 5 (07/08 to 10/11)	Loughborough is the principal focus of our LTP2 funding for cycling infrastructure outside Central Leicestershire. Over this time we plan to extend the cycle network to reach all areas of Loughborough.	Planned outcome: benefits to air quality arising from easier promotion of cycling and modal shift for shorter journeys becoming more attractive helping to reduce the number of cars in town centre. Outcome to date: ON TRACK (to achieve increase in cycling). 12% increase in cycling at counting points across Loughborough in first 3 years of LTP2. A large amount of growth has occurred at a counter on Epinal Way, close to the University which is likely to be linked to growth in the student population which has gone up by approximately 6% in last 3 years.	We have improved cycleways across Loughborough both on and off the highway to help reduce congestion within the town. This has delivered an increase in cycle usage, most notably on the A512 which saw a 14% increase in 2007. Members of the Charnwood Cycle User Group (CCUG) have assisted in the work providing input to route audits that have helped inform the programme of works, most notably on the A6, A512 and the A6004. A sub-group of the CCUG has provided positive feedback on the work undertaken to date. Existing tracks have been upgraded to current standards, cycle links have been provided to new housing developments in the town and new toucan crossings and improved signing have been provided across Loughborough to encourage people to cycle safely. The improvements have

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
					been funded by the County Council, Charnwood Borough Council, SUSTRANS and Cycling England.

6	Stronger QBP to improve bus services and facilities	LTP2: Years 1 & 2 (06/07 – 07/08)	Work has taken place in the first two years of LTP2 to improve bus priority on the A6 into Loughborough. Upgrades have also been made to bus stops facilities and bus vehicles on routes into Loughborough.	<u>Planned outcome:</u> Benefits to air quality through less traffic growth and congestion. <u>Outcome to date:</u> ON TRACK. Bus patronage has increased in Loughborough from 2.86m in 2006/07 to 3.06m in 2007/08, and 3.69m in 2008/9.	
18	Increasing bus travel through work on Quality Bus Partnership	LTP2: Years 1 – 5 (06/07 – 10/11)			
* 7	Improved interchange at railway station as part of station yard redevelopment	LTP2: Years 2 – 5 (07/08 – 10/11)	Planning Permission has been granted to build 122 dwellings and a new link road from Nottingham Road to Meadow Lane on derelict land around Loughborough Rail Station. This will enable a much improved access to the station, reducing delay and congestion in the area. Charnwood Borough Council are continuing to work with Network Rail to bring forward improvements to the station forecourt area, which combined with the new link road will enable greatly improved public transport interchange facilities at the station. Leicestershire County Council are facilitating construction of the link road and are also progressing traffic management improvements to	<u>Planned outcome:</u> greatly improved air quality in the Ratcliffe Road / Burder Street area. Encouragement of more people onto public transport by making train travel more attractive. <u>Outcome to date:</u> NOT ON TRACK (based on planned outcome to improve air quality). Air quality monitoring at Ratcliffe Road shows that there has been an increase in nitrogen dioxide levels from 36.4 $\mu g/m^3$ $NO_{2\ in}$ 2005 to 46.3 $\mu g/m^3$ NO_2 in 2009.	A travel plan has been produced for Loughborough Station as part of a Department for Transport pilot scheme. The travel plan was approved in April 2009, and Leicestershire County Council has taken on the project management of the travel plan: identifying key stakeholders, establishing a steering group, arranging and chairing meetings. Views and opinions of stakeholders have been gathered throughout the year and the meetings have provided a valuable forum for discussion and action. Some of the key findings from the initial research are:
* 12	New link road through railway station yard to divert traffic from Ratcliffe Road	LTP2: Years 2 – 5 (07/08 – 10/11)			

			surrounding narrow residential streets, including removing lorries from unsuitable routes and introducing a residents parking scheme.		• Of the 31 pilot stations Loughborough had the 3rd highest (29.2%) level of bus use to/from the station. • Loughborough had the 9th lowest (4.9%) level of single occupancy car use to/from the station. An Action Plan has been developed and the following initiatives have already been implemented: 1. Introduction of Plus Bus scheme for Loughborough (May 09). 2. Production of sustainable travel information map for Loughborough Station (August 09). 3. Customer service staff trained to provide onward sustainable travel information to passengers (June 09). 4. Additional 20 secure cycle storage facilities installed. (March 09). 5. Interim improvements for bus access to station (March 09). Monitoring surveys on mode of travel to the station will be carried out in autumn 2010 and again in autumn 2011 to assess the impact of the initiatives.

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
8	Continuing requirement for workplace travel plans with new developments	LTP2: Years 1 & 2 (06/07 & 07/08)	Our highways, transportation and development guide for developers requires a travel plan for new developments over a certain area or number of dwellings. Furthermore, national planning guidance (PPG13) specifies that even smaller developments will require travel plans where they might generate significant amounts of traffic in, or near to, air quality management areas. Work continues to encourage major employers across the County to put workplace travel plans in place to reduce congestion. We are working closely with District Councils where planning applications are involved.	Planned outcome: Traffic-related air quality will improve on routes to work and around work locations, with additional congestion and safety benefits due to modal shift away from individual private car use for travelling to work. Outcome to date: ON TRACK (base on LTP2 workplace travel plan target). 41% of major employers (>250 employees) across the County now have travel plans in place, which is an increase from 39% in July 2008. We are on track to achieve our target for 50% of major employers to have travel plans by the end of 2010/11.	A new Personalised Travel Planning and Accessibility Team is being set up at the County Council from November 2009 to promote sustainable travel choices as alternatives to single car occupancy. This work will be based on best practice advice after pilots in Peterborough, Worcester and Darlington.
21	Smarter choices and promotion building on workplace travel plans	LTP2: Years 1 – 5 (06/07 to 10/11)			
9	Development of a park and ride scheme for Loughborough	Not proposed in the current LTP period	Although not feasible within the 2006-11 LTP period, provision of possible park and ride sites was put forward by the County Council as one of a number of mitigating measures to deliver the new housing growth planned for Loughborough to 2026 in the draft East Midlands Regional Plan. A range of potential measures for Loughborough was put forward as part of this work which sought to assess the transport implications of	Planned outcome: the scheme would have the potential to significantly reduce travel into the town centre by private car, and increase the viability of public transport Outcome to date: n/a	Work continues with Charnwood Borough Council to develop measures to support growth in Loughborough.

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
			Sustainable Urban Extensions (SUEs) across the County.		
10	Reduce vehicle access to town centre by congestion charging (hypothetical) –	Not specified in LTP	Following the withdrawal of support from Nottingham and Derby City Councils the 6Cs study into the feasibility of a congestion management package to deal with the economic consequences of congestion in the 6Cs area has been discontinued.	Planned outcome: any measures which reduced congestion would clearly have significant and beneficial air quality impacts. Outcome to date: n/a. The work done to date as part of the study provided the six local authorities involved with a consistent picture of levels of congestion across the major cities and towns within the area as a whole, enabling local authorities to analyse and compare levels of congestion across the region. The precise measurement of the delays produced by the study provides invaluable information for future transport planning.	Although the region's work on congestion charging has been discontinued, a number of initiatives are being pursued to reduce congestion (and therefore air quality) in Loughborough. These include the Loughborough Inner Relief Road (see 1), the Loughborough Eastern Gateway Project (see 7 & 12) and the investigation into a number of potential measures to deliver the housing growth planned for Loughborough (see 9). The introduction of measures to better balance demand and supply on the County's transport network will be considered as part of LTP3.
* 11	Cleaner vehicles in central area with a Low Emission Zone	LTP: 5-10 years (i.e. not proposed in current LTP period)	A low emission zone would only allow access to the centre by vehicles which meet the most recent emission standards. This is subject to completion of the Loughborough Inner Relief Road (see action 1).	Planned outcome: See action 1 Outcome to date: See action 1	

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
13	Work through Quality Bus Partnerships to reduce bus emissions	LTP2: Years 1&2 (06/07 & 07/08)	A number of bus operators in the County either have or are developing strategies that include initiatives to improve fuel efficiency. Both First Bus and Arriva are introducing driving training to reduce fuel consumption. One of the schemes involves the fitting of economy driving style LED indicators which will rate driving style as green, amber and red in relation to hard acceleration and harsh braking. This will have a positive benefit of also increasing customer comfort. Another example is the provision of information on timetables for drivers to turn off engines if they will be at bus stops for longer than 2 minutes. Bus operators are working to modernise their fleets. By working in partnership over a number of areas Arriva invested £9.6m in 54 new vehicles in 2006/07 which has significantly reduced the average age of their vehicle fleet. Older vehicles have been replaced with new vehicles containing lower emission Euro 4 engines. Meynells Gorse Park and Ride vehicles were upgraded to EEV emission	Planned outcome: Potential significant improvement in air quality, particularly at bus timing points and termini, by reducing idling time. Outcome to date: ON TRACK (based on work to reduce bus emissions)	We work closely with commercial bus companies through Quality Bus Partnerships and a range of other complementary fora and meetings. Some District Councils have raised concerns about emissions from school buses and the effect on air quality. School buses have a much higher average age but driver techniques, regular maintenance and strict enforcement of emission testing can reduce the impact these services have in terms of emissions. Where we have concerns about poorly maintained vehicles we will alert the Vehicle Operating Standards Agency (VOSA). We are also looking into initiatives to provide better vehicle utilisation and increase loading capacities to ensure that vacant seats are kept to a minimum. This will help reduce the number of vehicles on the road.

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
			standards in mid 2008. In addition to this, the new Enderby Park and Ride service, introduced in November 2009 makes use of EEV vehicles.		
* 14	7.5 tonne weight limit to divert lorries away from A6 through town centre	LTP2: Years 1 & 2 (06/07 & 07/08)	At the time of writing the LTP, diverting goods vehicles was not considered feasible because of the detrimental effect on alternative routes. However, voluntary emissions testing was carried out in Loughborough in association with the Vehicle Operator Services Agency (VOSA) in 2006. Very few failure ratings with regard to emissions were identified, and it was not considered viable to progress further.	Outcome to date: n/a	

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
15	Land use planning for no unnecessary additional traffic through town centre	LTP2 Year 1 (06/07) onwards	The New Growth Point Initiative being pursued by the 3 Cities and 3 Counties reflect the principles of urban concentration. Substantial growth is proposed for Loughborough over the coming years. As part of the Sustainable Urban Extension process in Leicestershire 3000-4000 new homes are proposed for Loughborough. Options for development to either the east or west of Loughborough are being considered, which will both require the provision of a relief road to take traffic out of Loughborough town centre.	Planned outcome:Bbeneficial effects on emission levels and air quality as a result of maximising the possibilities for provision of public transport and demand management measures. Outcome to date: ON TRACK	All plans for development are subject to review by the Environmental Health Team at Charnwood Borough Council for noise / air quality issues. It is going to be a major challenge for the Borough and County Council to deliver the levels of growth proposed for Loughborough whilst limiting the impact on air quality. Our assessment of the transportation implications of SUEs across Leicestershire in response to the draft Regional Plan identifies a range of potential mitigating measures to limit the impact of planned housing growth in the Loughborough SUE. These have all been identified with the intention of limiting the impact of the growth on traffic levels.
		LTP2: Years 1 & 2 (06/07 & 07/08)	Within Local Development Frameworks it will be necessary for any major development, residential or commercial, to carry out a Sustainability Appraisal as part of the planning application process.	Planned outcome: This will further reduce the impact any new major development will have on the air quality within Air Quality Management Areas.	
16	Network management for	LTP2: Years 1 – 5 (06/07	We have a Network Management Plan in place which sets out the way in which we perform the Network	Planned outcome: Prevention of serious congestion on the main road through the town, and minimisation of	

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
	roadworks, incidents and planned events	to 10/11)	Management Duty placed on local transport authorities by the Traffic Management Act 2004. This includes our approach to co-ordinating streetworks which sees regular meetings with statutory undertakers and transport authorities as well as how we deal with incidents and planned events. The Loughborough Fair and Loughborough Canal Festival both have their own organising committees. We have well documented incident management procedures which are discussed and developed on a regular basis at the Local Contingency Forum. Our roadworks protocol aims to provide improved roadworks information to the public and greater involvement for the public in our approach to delivering roadworks.	consequent air quality problems Outcome to date: ON TRACK	

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
* 17	Increasing travel by train with bus connections to town centre and key destinations	LTP2: Years 1-5 (06/07 to 10/11)	Through-ticketing has been introduced on the service running in Loughborough between the rail station and the town. The Loughborough-Derby Skylink and Sprint Service to the University have had frequency increases and newer vehicles introduced. A new personalised Travel Planning and Accessibility Team is being set up from November 2009 to promote sustainable travel choices as alternatives to single car occupancy based on best practice advice after pilots in Peterborough, Worcester and Darlington. See also 7 and 12 for details of the Loughborough Eastern Gateway Project and Loughborough Station Travel Plan which will improve access to the town from the station.	Planned outcome: Encouragement of people to use the bus to get to the rail station. Reduction of burden of cars on the area of the AQMA local to the rail station. Outcome to date: ON TRACK	
19	School travel planning with investment in walking	LTP2: Years 1-5 (06/07 to 10/11)	Concerted efforts continue to increase the number of schools with travel plans across the County. We work closely with schools to encourage and support them in the development of plans. To further encourage them to do so our	Planned outcome: Traffic-related air quality will improve both on the route to school and around the school itself, with additional congestion and child safety benefits, due to modal shift away from individual private car use for the	As well as monitoring the number of schools with travel plans, our second LTP also monitors the % of journeys to school as the only pupil. This allows us to look at the impact that school travel plans are having as part of efforts to

Action Plan in LTP2 (Table 7.4)	Measure	Original timescale	Current position / progress with measure	Outcome to date / planned outcome	Comments
	and cycling routes		capital investment programme for safer routes to school is focused on those who have travel plans or are developing them.	school run. Outcome to date: ON TRACK. 71% of the schools in Leicestershire have travel plans in place, which is an increase from 64% in July 2008. The County remains on track to achieve its target of 90% STP coverage by 2010/11. Based on data available to the end of July 2009, 70% of schools in Charnwood have travel plans in place, which is an increase from 64% in July 2008.	encourage changes in travel behaviour as part of the school journey. In 2008/09, 24.6% of pupils in Leicestershire travelled to school by car as the only pupil. This is a reduction of over 4% from the 2006/07 figure of 26.2%.
22	Better vehicle use of roadspace for less disruption to free flowing traffic	LTP2: Years 1-5 (06/07 to 10/11)	Our ongoing transport improvement programme includes schemes which are aimed at improving traffic flows through improvements to traffic signal and Intelligent Transport Systems, and major and minor junctions.	Planned outcome: Reduction in congestion and improved air quality, with efficient junction designs and smarter electronic controls making best use of a junction's capacity and increasing the throughput of traffic. Outcome to date: ON TRACK	

Charnwood Borough Council Parking Policy

The Council has also introduced a staff parking permit application system based on the Department of Transport CO_2 emissions vehicle 'VED banding'.

This reflects the National Transport Policy which primarily aims to reduce CO_2 emissions by discouraging the use of the car and encourage other forms of public transport.

% apportioned charges using £5.70 (as 100%) as a base figure have been used to determine incremental bands to create a tariff consistent with the VED bandings for road tax purposes

Table I Concession parking rate shown as a % of the VED apportionment

VED BAND	CO_2 emissions LOW RATE	CO_2 emissions HIGH RATE	Concession rate As a % of the VED apportionment	Car tax band
A	0	100	£0.00	0
B	101	110	£0.50	35
C	111	120	£0.50	35
D	121	130	£1.70	120
E	131	140	£1.70	120
F	141	150	£1.80	125
G	151	165	£2.10	150
H	166	175	£2.10	175
I	176	185	£2.50	175
J	186	200	£3.00	215
K	201	225	£3.00	215
L	226	255	£5.70	405
M	255	0	£5.70	405

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

New (2009) monitoring data shows that the 40µgm-^{1} annual mean objective for NO_2 was exceeded at the following monitored locations:

1. Baxter Gate (Loughborough)
2. High St (Loughborough)
3. Ratcliffe Rd (Loughborough) (2 sites)
4. Nottingham Rd (Loughborough) (2 sites)
5. Leicester Rd (Loughborough)
6. Derby Rd (Loughborough)
7. Alan Moss Rd/A6 Derby Rd (Loughborough)
8. Ashby Rd (Loughborough)
9. Ashby Rd Central (Shepshed) *
10. Loughborough Rd (Hathern) *

* As shown under 2.2.1; when considering the nearest receptors, the result from the roadside tubes at Shepshed and Hathern fall within the objective level when the "NO_2 with Distance from Roads Calculator" (Issue 2) is applied to the data.

The other locations fall within the existing Loughborough Air Quality Management Area with the exception of the tubes on Nottingham Rd (Loughborough)

9.2 Conclusions relating to New Local Developments

For both:

a. Energy Recovery Facility (ERF) at Shepshed
b. Recycling and household waste site (RHWS) at Granite Way, Mountsorrel

The detailed air quality reports submitted as part of the planning process have reported in both instances that there are will be "negligible" or no "significant" air quality effects.

Charnwood Borough Council has already instigated long-term monitoring programmes to cover potential air quality issues in the vicinity of the forthcoming operations. This will allow both "before" and "after" comparisons to be made with observed monitored results which will be submitted in future air quality reports.

9.3 Proposed Actions

This Progress report 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
c. Subject to an outstanding Detailed Assessment

The above proposed actions are pending the final outcome of a Detailed Assessment to PM_{10} levels in the vicinity of the Lafarge Aggregates quarry at Mountsorrel due to be submitted shortly and continued diffusion tube monitoring in the area of Nottingham Road (Loughborough) where extensive redevelopment work has already commenced.

Further to the submission of the Mountsorrel PM_{10} Detailed Assessment our next action will be the submission of the 2011 Progress Report.

10 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

Appendix B: Unadjusted Monthly Mean NO_2 Tube Data (2009)

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 (if available)

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	24.6	28.7	1.17
34/36	Melton Rd, Syston	32.6	32.5	1.00
37/39	Baxter Gate, L'boro	45.9	42.0	0.92*

* Data capture for 2009 <90%

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 ***using locally derived factors***.

- 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

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.

It should be noted however that historically our correction factors have been considerably higher than those that can be obtained via the national correction spreadsheet. ***We therefore feel that our corrected results may be marginally (at least) exaggerated.***

PM Monitoring Adjustment

The 2009 figures shown in tables 2.5a & 2.5b have bee 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

From the diffusion tube sites monitored during 2009, two sites would be considered of "short-term" duration where data adjustment is necessary to allow for seasonal variation etc.

Both the tubes at 22 & 38 Humberstone Lane (Thurmaston) were deployed in June and are now part of our long-term network

Applying the calculation as per Box 3.2 Estimation of annual mean concentrations from short-term monitoring data on page 3.4 of LAQM.TG(09):

Partial measured mean concentration (**M**) for 22 Humberstone Lane (June-Dec 09) = 29.0µg/m^3
Partial measured mean concentration (**M**) for 38 Humberstone Lane (June-Dec 09) = 26.4µg/m^3

Site	Site Type	Annual Mean (Am)	Period Mean (Pm)	Ratio (Am/Pm)
Durham Rd, L'boro	Urban Background	24.2	23.1	1.048
Market Place, L'boro	Urban Centre (pedestrianised)	25.5	23.6	1.081
Rosebery St, L'boro	Roadside	22.8	22.0	1.036
			Average (R_a)	**1.055**

Best estimate of 22 Humberstone Lane in 2009 will be **M x R_a** = 29.0 x 1.055 = 30.60µg/m^3
Best estimate of 38 Humberstone Lane in 2009 will be **M x R_a** = 26.4 x 1.055 = 27.85µg/m^3

QA/QC of automatic monitoring

The analysers are serviced under schedule via Casella Ltd.
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

Appendix B: Unadjusted Monthly Mean NO_2 Tube Data (2009)

	NITROGEN DIOXIDE RESULTS MICROGRAMS/CUBIC METRES													
Site Ref		Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	UNBIASED ANN.AVE
1	RATCLIFFE RD,LOUGHBOROUGH	54.22	59.13	39.09	33.6	17.07	36.18	37.1	33.4	32.97	41.06	44.78	46.64	39.6
2	SHELTHORPE RD,LOUGHBOROUGH	43.42	41.22	26.44	26.82	9.33	28.07	17.97	17.4	22.97	26.39	30.45	31.67	26.8
3	FOREST RD,LOUGHBOROUGH	40.73	46.56	47.95	30.68	16.64	29.35	23.82	24.43	24.99	29.55	30.29	37.85	31.9
5	HAYDON RD, LOUGHBOROUGH	52.98	44.27	36.26	27.38	13.46	23.83	27.76	28.53	24.66	36.76	37.19	39.39	32.7
6	ALAN MOSS RD/EPINAL WAY, LOUGHBOR	42.06	41.59	33.11	26.73	10.93	20.91	15.76	22.8	22.77	32.17	30.48	32.68	27.7
7	EPINAL WAY/LING RD	40.66	43.49	33.61	27.85	12.29	26.63	25.18	24.24	26.52	33.24	36.29	38.72	30.7
8	LEICESTER RD,LOUGHBOROUGH	nd	56.63	35.45	41.16	15.43	41.47	31.35	24.77	34.32	42.14	36.53	45.81	36.8
9	DERBY RD, LOUGHBOROUGH 1	51.22	63.57	38.98	36.66	21.72	43.05	29.15	26.36	31.08	41.55	38.89	50.61	39.4
10	DERBY RD/BRISCOE AVE 2	49.67	47.14	35.44	29.87	18.44	nd	nd	23.08	24.74	37.52	31.8	41.36	33.9
11 i	DURHAM RD, LOUGHBOROUGH	37.15	38.01	27.15	19.36	6.9	20.38	15.76	14.78	21.01	28.67	27.46	33.89	24.2
11 ii	DURHAM RD 2, LOUGHBOROUGH	38.38	38.71	25	21.74	12.28	20.44	15.29	15.99	20.3	29.23	27.21	32.82	24.8
11 iii	DURHAM RD 3, LOUGHBOROUGH	37.74	38.24	25.77	24.03	9.22	19.23	15.6	14.81	20.83	29.91	28.24	32.85	24.7
12	ALAN MOSS RD/A6	47.4	55.99	40.3	33.83	11.2	33.77	27.57	23.68	26.17	32.73	35.66	43.71	34.3
13	HIGH ST,LOUGHBOROUGH	70.85	90.69	69.4	54.53	42.3	59.05	67.04	nd	55.64	65.67	75.4	66.03	65.1
14	MARKET PLACE,LOUGHBOROUGH	40.18	39.66	27.41	22.52	10.53	17.52	18.04	17.52	21.29	29.72	29.97	31.26	25.5
15	ASHBY RD, LOUGHBOROUGH	55.82	57.88	50.99	32.81	nd	35.09	33.71	30.8	31.15	45.3	37.66	43.18	41.3
16	LODGE HOUSE SHEPSHED	41.47	43.8	33.79	32.21	16.34	28.82	27.92	24.41	22.86	32.21	35.08	33.61	31.0
17	ROSEBERY ST,LOUGHBOROUGH	29.69	38.22	nd	20.24	8.98	15.25	14.61	15.68	19.21	27.98	29.21	31.71	22.8
18	MELTON RD TOWN CENTRE,SYSTON 1	52.8	54.05	35.77	30.03	22.65	31.96	29.04	26.36	28.51	38.52	38.49	40.71	35.7
19	1123 MELTON RD/ADJ ST PETERS RD, SYS	41.06	50.01	36.82	28.45	12.96	26.55	22.02	22.49	26.27	31.23	33.26	33.79	30.4
20	1116 MELTON RD SYSTON 3	45.39	56.59	41.82	32.47	17.32	nd	27.36	26.47	34.21	33.93	31.54	42.27	35.4
21	LOUGHBOROUGH RD,BIRSTALL	45.95	32.78	40.78	30.3	15.07	25.89	28.53	24.08	25.72	35.7	38.22	43.6	32.2
22	BIRSTALL A6	59.63	49.77	36.96	38.45	17.92	33.68	27.23	26.34	32.91	44.45	38.94	44.78	37.6
23	HUMBERSTONE LANE,THURMASTON	58.28	60.39	42.77	35.86	16.66	32.89	34.35	33.1	32.64	44.5	46.14	39.53	39.8
23a	5 WAYSIDE DR, THURMASTON	45.52	43.49	36.24	29.22	13.5	23.21	21.04	21.66	27.87	32.48	32.4	37.53	30.3
23b	43 HUMBERSTONE LANE, THURMASTON	53.94	50.32	41.69	33.03	19.23	33.98	29.75	29.14	31.82	42.92	37.84	41.44	37.1
23c	38 HUMBERSTONE LANE, THURMASTON	nd	nd	nd	nd	nd	19.07	20.16	19.17	24	32.22	32.69	37.59	26.4
23d	22 HUMBERSTONE LANE, THURMASTON	nd	nd	nd	nd	nd	23.4	22.86	23.03	28.28	33.93	35.02	36.38	29.0
26	ASHBY RD CENTRAL,SHEPSHED	55.82	57.88	43.53	38.31	22.8	45.26	35.4	32.86	38.21	49.8	41.31	50.42	42.6
27	LOUGHBOROUGH RD,HATHERN	65.89	55.78	34.88	30.68	14.77	25.53	29.57	26.09	28.3	36.34	37.8	46.9	36.0
28	BAXTERGATE, LOUGHBOROUGH	65.89	64.14	nd	47.51	31.3	48.34	44.46	35.63	37.98	55.64	47.34	49.57	48.0
29	BARROW ST, LOUGHBOROUGH	44.37	49.39	38.82	28.24	14.38	26.43	22.41	19.55	25.5	33.32	30.27	34.29	30.6
30	SCHOOL ST, LOUGHBOROUGH	40.31	43.21	30.58	22.26	9.12	20.47	17.82	16.34	22.63	32.48	29.84	34.5	26.6
31	FENNEL ST, LOUGHBOROUGH	45.74	45.89	31.16	30.07	14.15	25.39	22.13	20.43	24.48	35.13	34.84	38.25	30.6
33	HIGH STREET, SYSTON	42.7	48.05	39.2	27.7	12.67	26.03	28.3	25.85	22.64	30.87	38.78	36.89	31.6
34	SYSTON AQMS1	63.27	54.7	42.03	27.99	13.11	25.55	33.46	28.14	30.76	39.34	41.77	43.29	37.0
35	SYSTON AQMS2	51.59	51.72	41.81	28.08	15.06	29.92	32.73	23.7	31.94	36.25	35.88	37.44	34.7
36	SYSTON AQMS3	52.84	53.77	43.71	30.53	15.13	26.37	36.3	27.58	29.95	34.37	39.48	40.28	35.9
37	LOUGHBOROUGH AQMS1	63.88	66.59	52.55	50.74	26.75	50.31	26.23	34.82	40.53	51.44	45.7	56.72	47.2
38	LOUGHBOROUGH AQMS2	59.9	69.03	51.06	40.55	25.73	49.32	39.15	30.79	42.29	53.67	47.42	45.52	46.2
39	LOUGHBOROUGH AQMS3	42.52	69.79	48.25	42.76	24.13	51.45	39.34	34.2	37.79	55.97	44.31	42.57	44.4
44	33 NOTTINGHAM RD, LOUGHBOROUGH	nd	47.37	42.24	33.68	22.67	38.51	31.38	29.47	32.19	35.62	46.74	49.29	37.2
45	89 NOTTINGHAM RD, LOUGHBOROUGH	nd	nd	50.51	39.16	26.44	44.53	36.82	37.52	39.44	26.77	55.29	54.88	41.1
46	156 RATCLIFFE RD, LOUGHBOROUGH	nd	50.89	40.96	27.15	18.23	29.91	23.72	20.07	28.55	35.29	34.55	38	34.7
47	156 MEADOW LANE, LOUGHBOROUGH	nd	41.04	35.6	24.32	13.58	19.31	20.21	21.02	24.78	32.3	32.99	38.79	30.4