



**2011 Air Quality Progress Report**  
**for**  
**North West Leicestershire District Council**  
**In fulfilment of**  
**Part IV of the Environment Act 1995**  
**Local Air Quality Management**  
  
**Date (April 2011)**

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# 1 Executive Summary

This progress report has been produced as part of North West Leicestershire District Council's requirement to assess present and predicted future air quality against the objectives prescribed by the Air Quality Regulations 2000 (as amended). If an exceedence of any objective is considered likely, there is a requirement to proceed to a Detailed Assessment of that pollutant and to declare an Air Quality Management Area (AQMA), if the exceedence is confirmed. The council has declared 5 Air Quality Management Areas since 2001. In order to assess the air quality in the district this report considers new monitoring data and assesses the impact of new developments on air quality within the district.

The council undertakes extensive monitoring of nitrogen dioxide (NO<sub>2</sub>) using passive diffusion tubes.

UKCoal undertook particulate monitoring in the village of Ravenstone. A fault with monitor was detected in June as such data prior to this date the data is unreliable. Data recorded following the repair of the monitor has been quality assured and adjusted (where necessary), in accordance with the published guidance so that they can be compared to the objective levels.

The council has installed 2 NO<sub>2</sub> automatic monitors within the district, 1 within the Coalville AQMA and 1 within the Castle Donington AQMA. The data has been quality assured and adjusted (where necessary), in accordance with the published guidance so that they can be compared to the objective levels.

Exceedences of the annual mean objective for NO<sub>2</sub> were detected within several of the AQMAs it is also assumed that the M1 Mole Hill AQMA exceeded the 1 hour mean objective for NO<sub>2</sub> as the annual mean exceeded 60 µgm<sup>-3</sup>. The council is currently going through the process of amending the Air Quality management Order.

A potential exceedence of the 1 hour mean objective for NO<sub>2</sub> was detected within the Coalville AQMA.

No Exceedences of the objectives for PM<sub>10</sub> were detected.

The council will undertake the following actions

- Await the results of the detailed assessment of the M1 AQMA and amend the air quality management order accordingly.
- Await the results of the detailed assessment of the Coalville AQMA and amend the air quality management order accordingly.
- Undertake a detailed assessment of Broomleys junction within the Coalville AQMA for an exceedence of the 1 hour mean air quality standard for NO<sub>2</sub>.
- Submit the 2012 Update and screening assessment.
- Draft a revised Air Quality Action Plan and put it out for public consultation.

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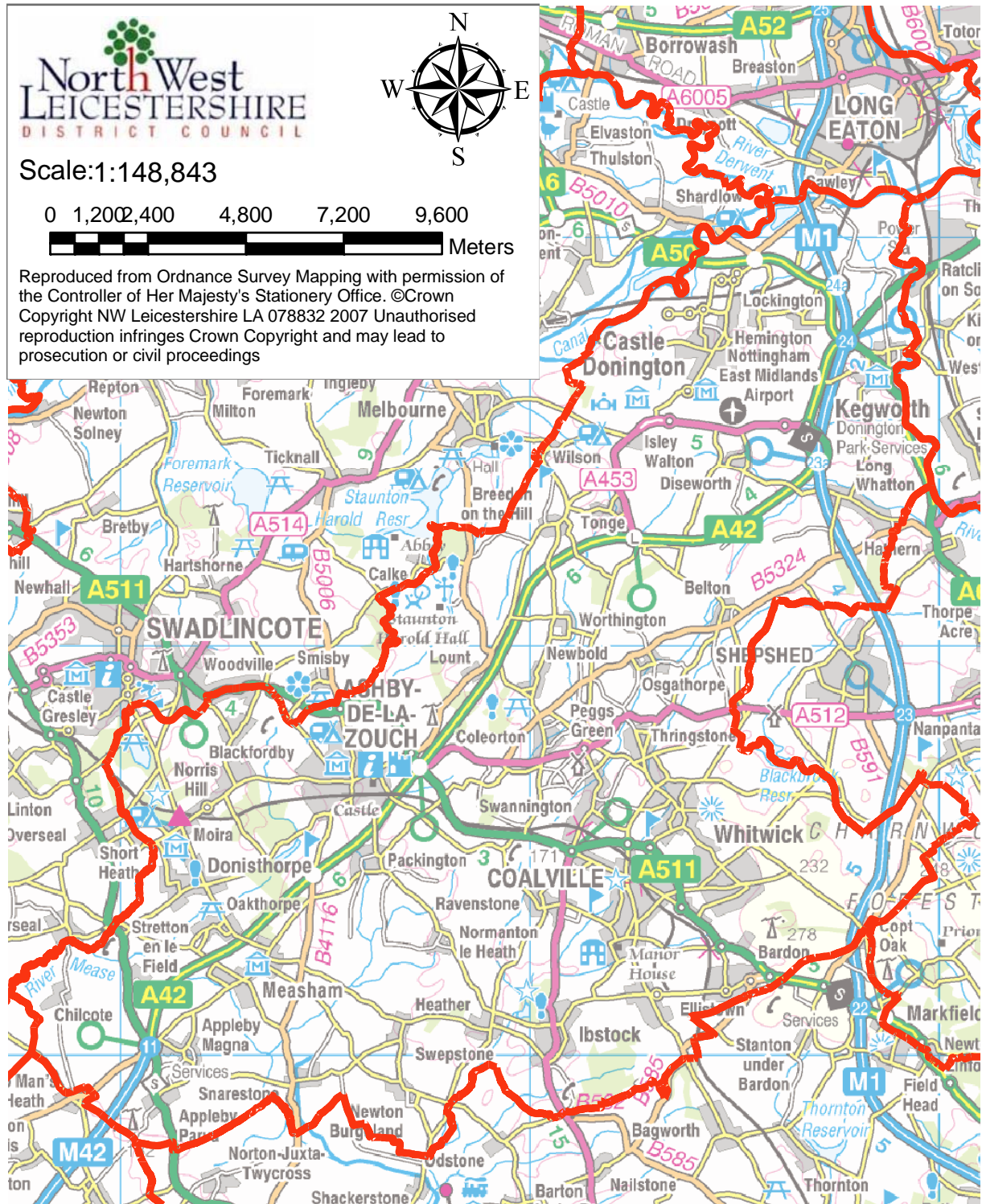
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## 2 Introduction

### 2.1 Description of Local Authority Area

Figure 1 Map of North West Leicestershire District





North West Leicestershire lies in the East Midlands Region and is both the name and geographical location. The district is situated in the heart of the National Forest and lies between Leicester, Burton-on-Trent, Derby and Nottingham, covering 105 square miles. The district is mostly rural with a large extent of industry historically from coal mining, but more recently with Nottingham East Midlands Airport and large quarries. The population of 88,800 live mainly in the principle towns of Coalville and Ashby-de-la-Zouch; and the large villages of Castle Donington, Kegworth and Ibstock. Three established main roads run through the district, the M42/A42 between Birmingham and Nottingham, the M1 and the A50/A511 from Leicester to Burton-on-Trent.

## 2.2 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.

## 2.3 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 2000/0928)[11],
- The Air Quality (England) (Amendment) Regulations 2002 (SI 2002/3043)[12]
- The Air Quality Standards Regulations 2007 (SI 2007/0717)[13]
- The Air Quality Standards Regulations 2010 (SI 2010/1001)[14]

They are shown in Table 1. Table 1 includes the number of permitted exceedences in any given year (where applicable).

Table 1. Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

Pollutant	Concentration	Measured as	Date
Benzene	16.25 $\mu\text{gm}^{-3}$	Running annual mean	2003
	5.00 $\mu\text{gm}^{-3}$	Running annual mean	2010
1,3-Butadiene	2.25 $\mu\text{gm}^{-3}$	Running annual mean	2003
Carbon monoxide	10.0 $\text{mgm}^{-3}$	Running 8-hour mean	2003
Lead	0.5 $\mu\text{gm}^{-3}$	Annual mean	2004
	0.25 $\mu\text{gm}^{-3}$	Annual mean	2008
Nitrogen dioxide	200 $\mu\text{gm}^{-3}$ not to be exceeded more than 18 times a year	1-hour mean	2005
	40 $\mu\text{gm}^{-3}$	Annual mean	2005
Particles (PM <sub>10</sub> ) (gravimetric)	50 $\mu\text{gm}^{-3}$ not to be exceeded more than 35 times a year	24-hour mean	2004
	40 $\mu\text{gm}^{-3}$	Annual mean	2004
Sulphur dioxide	350 $\mu\text{gm}^{-3}$ not to be exceeded more than 24 times a year	1-hour mean	2004
	125 $\mu\text{gm}^{-3}$ not to be exceeded more than 3 times a year	24-hour mean	2004
	266 $\mu\text{gm}^{-3}$ not to be exceeded more than 35 times a year	15-minute mean	2005

## 2.4 Summary of Previous Review and Assessments

Six AQMAs were designated in North West Leicestershire during the first round of review and assessment for the level of nitrogen dioxide concentrations. After Further Assessments it was determined that only two of these locations required AQMA designations and the remaining four were revoked. The USA undertaken in 2006 [8] concluded that these two sites should remain AQMAs and identified three additional locations where Detailed Assessments should be undertaken to determine whether new AQMAs were required for nitrogen dioxide concentrations. The two AQMAs designated during the first round are presented in Figure 5 and Figure 4

The Detailed Assessment [2] undertaken in September 2007 of the three locations identified as possible areas for AQMAs in the USA 2006 [1] was The three locations were High Street / Bondgate in Castle Donington, Broom Leys Road, Coalville and Bardon Road, Coalville. The Detailed Assessment found that exceedences of the nitrogen dioxide objective were occurring in Castle Donington at properties located next to the carriageway along High Street and Bondgate due to traffic emissions. Monitoring at both locations in Coalville identified nitrogen dioxide concentrations that exceeded the mean annual objective during 2005, 2006 and 2007. The Detailed Assessment concludes that AQMAs should be designated at all three locations. As a result of these reports, two additional AQMAs were designated; the first in Castle Donington, presented in Figure 3, and the second covering Broom Leys Road and Bardon Road in Coalville, presented in Figure 2.

The Air Quality Progress Report conducted in April 2008 [3] recommended that a detailed assessment of the village of Copt Oak and the area surrounding East midlands airport be undertaken to determine if AQMA's should be determined at these locations.

The Detailed Assessment of Copt Oak published in January 2009 [5] found that an AQMA should be declared and that the area should cross

the district boundary to include an area within the borough of Hinckley and Bosworth. The North West Leicestershire District Council portion is shown in Figure 6

The Detailed assessment of East midlands airport published in March 2009 [4] concluded that the Air quality objective for NO<sub>2</sub> would not be exceeded within 1000m of the airport as a result of air traffic emissions.

The further assessment of Bardon Road, Coalville published in February 2009 [6] supported the original declaration of the AQMA comprising the four residential properties at Broom Leys Junction and the one hundred and seventy two residential properties on Bardon Road.

The further assessment of High street castle Donington published in April 2009 [7] supported the original declaration of the AQMA comprising ninety one residential properties on High Street and Bondgate, Castle Donington.

The update and screening assessment published October 2009 [8] found that a detailed assessment for SO<sub>2</sub> is required in some areas of the district in relation to the burning of solid fuel, this assessment is currently being undertaken. The report also recommended that the M1 AQMA is expanded to include an exceedence of the 1-hour mean objective for NO<sub>2</sub> as the yearly mean has exceeded 60µgm<sup>-3</sup>.

A Further Assessment for the AQMA declared at Copt Oak is also currently being undertaken.

The Authority is currently undertaking detailed assessments of the Coalville AQMA and the M1 AQMA in order to determine if the areas of these AQMAs can be reduced.

Figure 2 Coalville AQMA

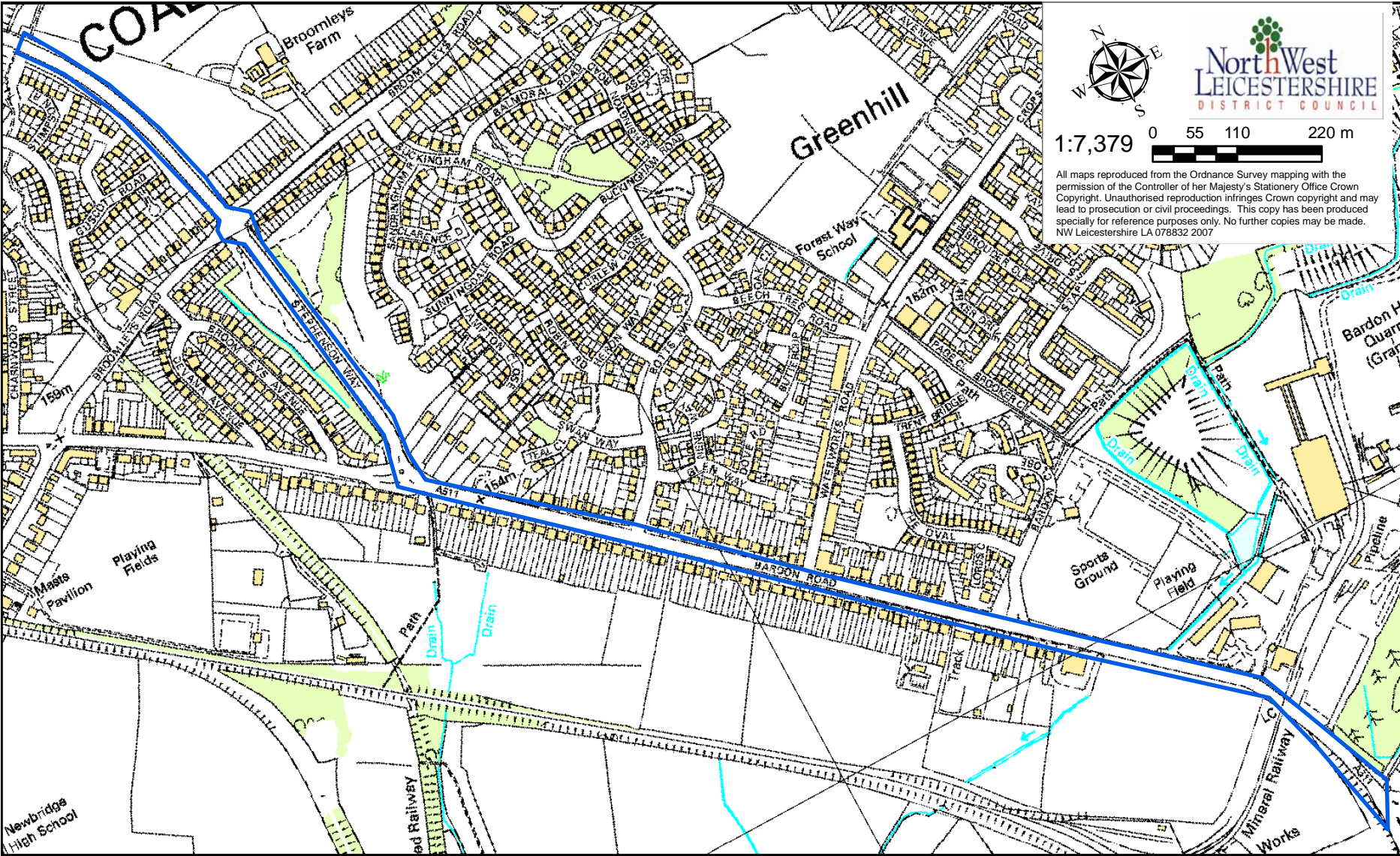


Figure 3 Castle Donington AQMA

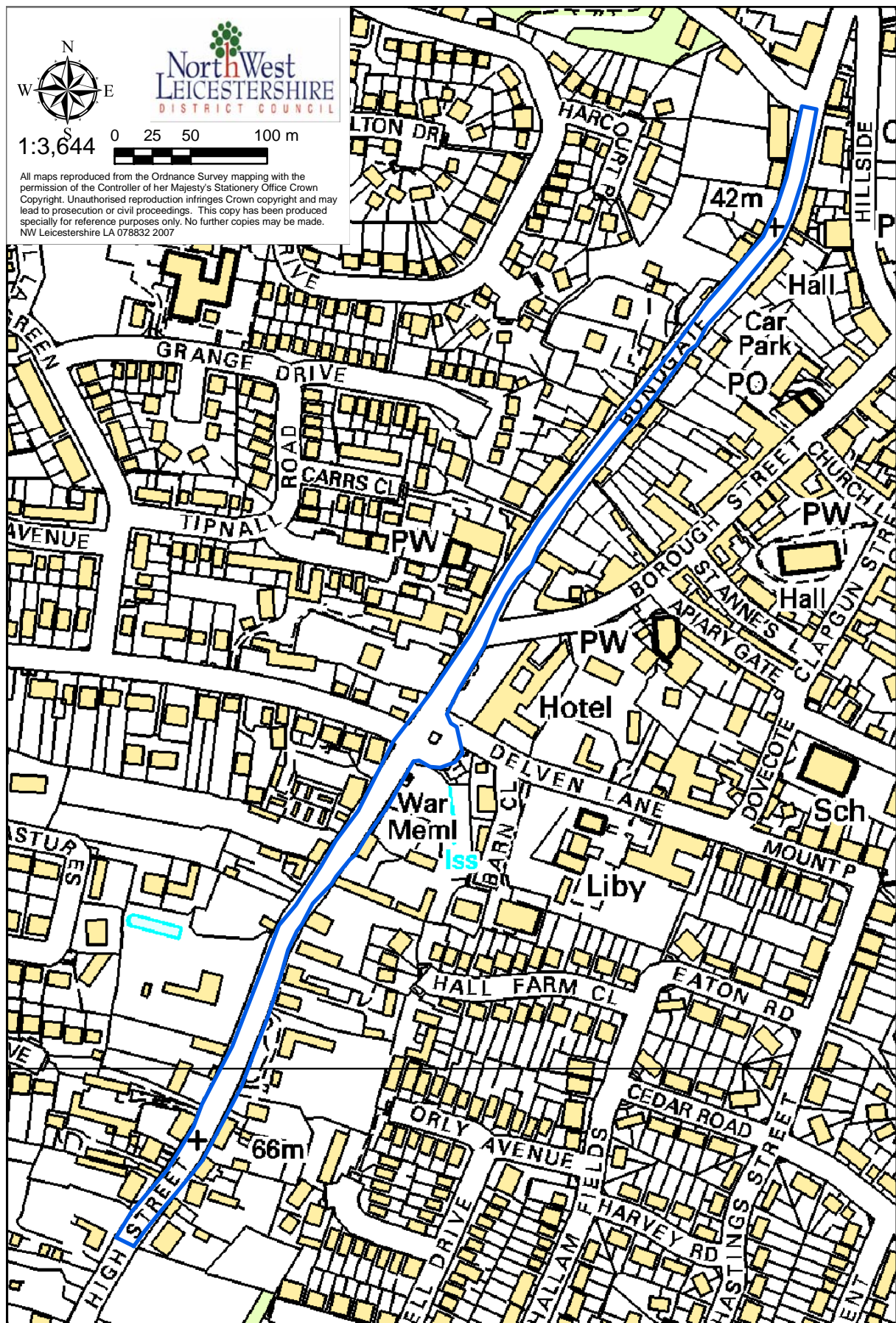


Figure 4 Kegworth AQMA

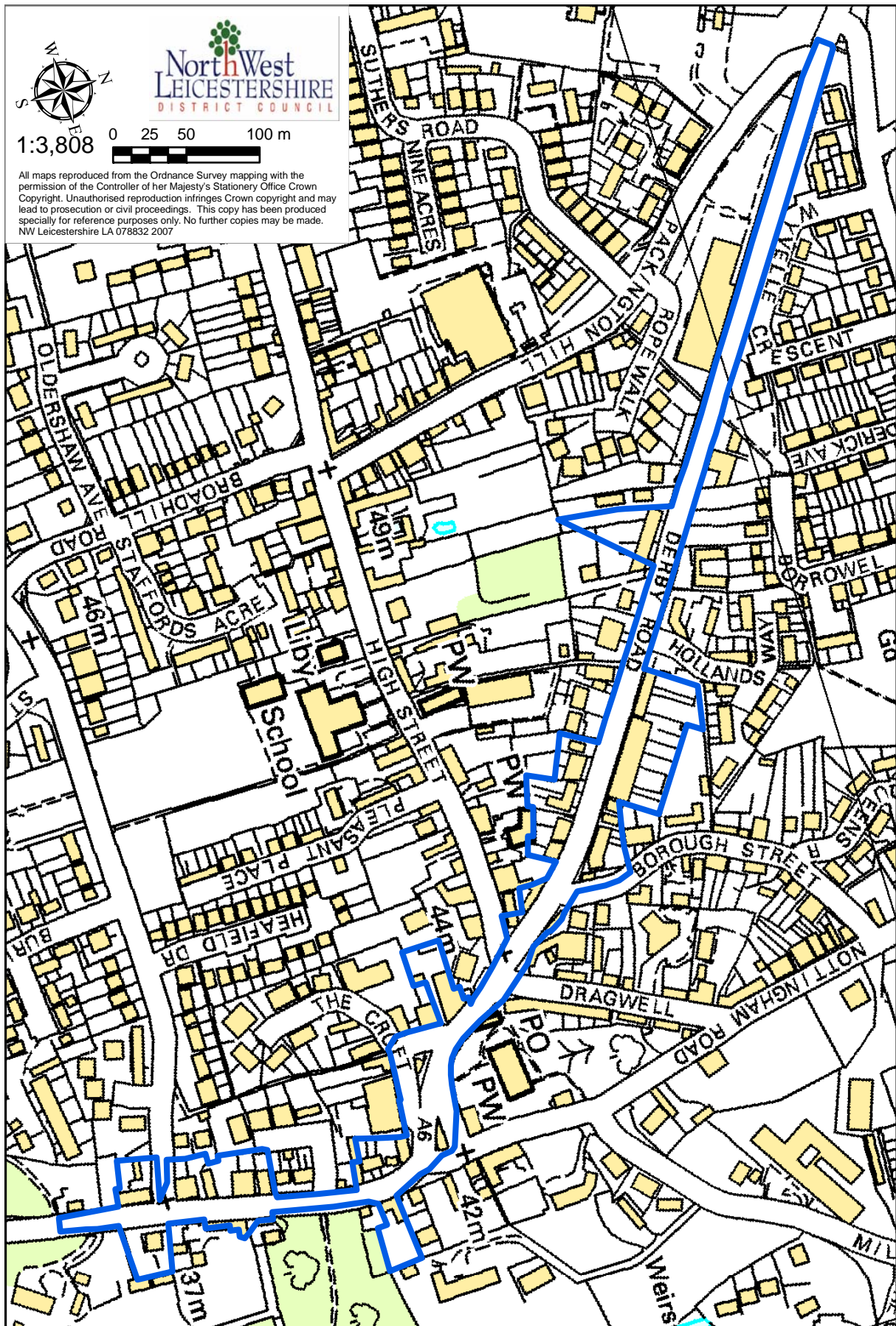
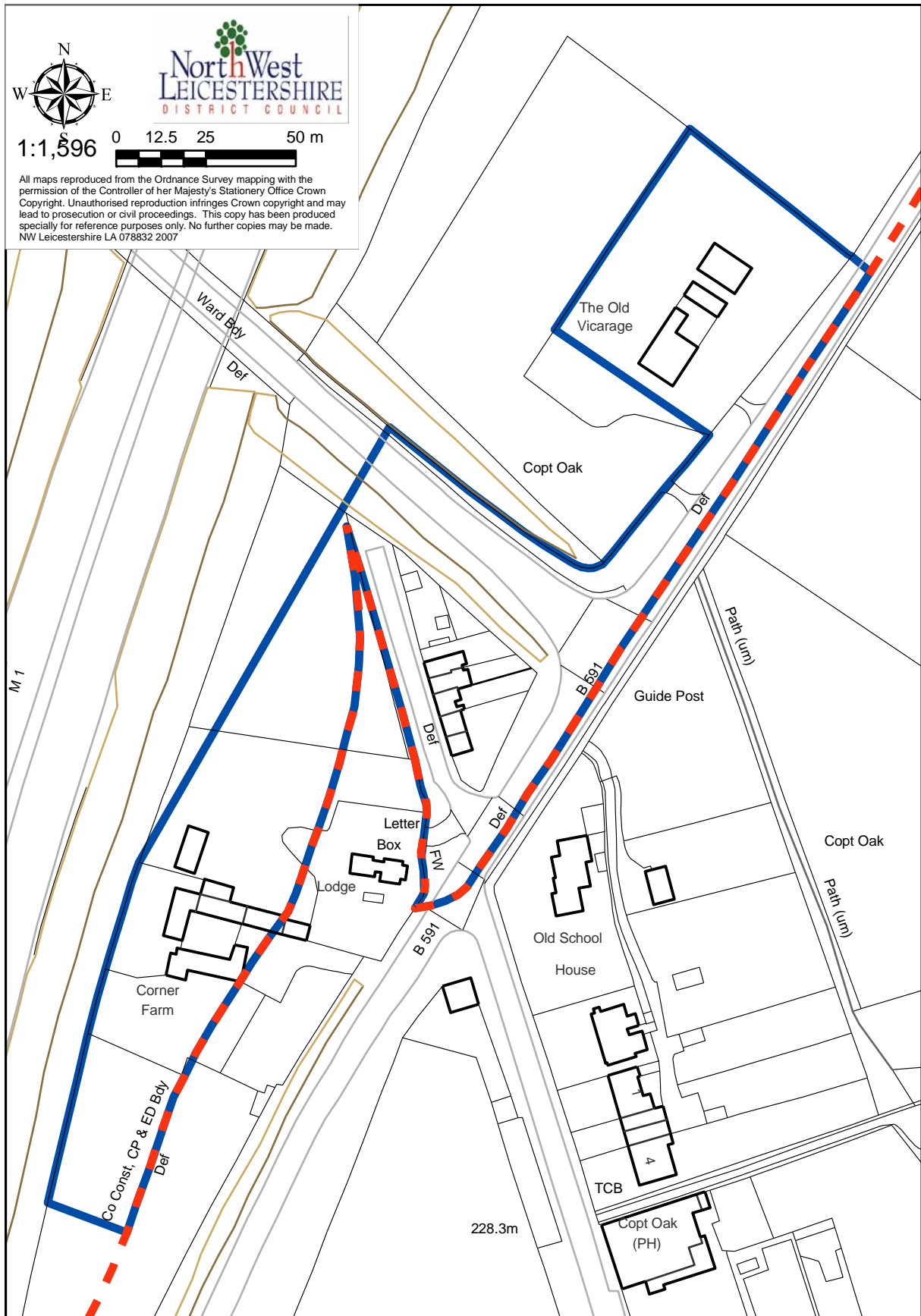


Figure 5 M1 AQMA





Figure 6 Copt Oak AQMA



### 3 Modelling used in the report

#### 3.1 Façade Correction

Some monitoring data will require a façade correction, the corrections were undertaken using the procedure outlined in Box 2.3: Predicting nitrogen dioxide concentrations at different distances from road of the technical guidance (reproduced in Table 2)

Table 2. Box 2.3: Predicting nitrogen dioxide concentrations at different distances from roads?

<b>Box 2.3: Predicting nitrogen dioxide concentrations at different distances from roads</b>	
<p>A method has been developed to allow NO<sub>2</sub> measurements made at one distance from a road to be used to predict concentrations at a different distance from the same road. It is appropriate for distances between 0.1 m and 140 m of the kerb.</p>	
<p><b>Step 1:</b> Identify the local background concentration in µgm<sup>-3</sup>, either from local monitoring or from the national maps published at <a href="http://www.airquality.co.uk">www.airquality.co.uk</a>. (Note that the background concentration must be less than the measured concentration).</p>	
<p><b>Step 2:</b> apply the following calculation</p>	
$C_z = \left( \frac{C_y - C_b}{-0.5476 \times \ln(D_y) + 2.7171} \right) \times (-0.5476 \times \ln(D_z) + 2.7171) + C_b$	
<p>Where:</p>	
<i>C<sub>z</sub></i>	is the total predicted concentration (µgm <sup>-3</sup> ) at distance <i>D<sub>z</sub></i> ;
<i>C<sub>y</sub></i>	is the total measured concentration (µgm <sup>-3</sup> ) at distance <i>D<sub>y</sub></i> ;
<i>C<sub>b</sub></i>	is the background concentration (µgm <sup>-3</sup> );
<i>D<sub>y</sub></i>	is the distance from the kerb at which concentrations were measured;
<i>D<sub>z</sub></i>	is the distance from the kerb (m) at which concentrations are to be predicted.
<i>Ln(D)</i>	is the natural log of the number <i>D</i> .
<p>Results derived in this way will have a greater uncertainty than the measured data. Further assistance with this procedure and interpretation of the results can be obtained from the Review and Assessment helpdesk (<a href="http://laqm.defra.gov.uk/helpdesks.html">http://laqm.defra.gov.uk/helpdesks.html</a>).</p>	
<p><b>Calculator</b></p>	
<p>The equation above is available as a simple calculator (available at <a href="http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html">http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html</a>). This is set up to work from 0.1 to 50 m from the kerb, as this is the range that is likely to be relevant for Local Air Quality Management (LAQM) work. Kerbside sites should be treated as being at 0.1 m from the kerb. The calculator works for receptors either closer to or further from the kerb than the monitor. The greater the distance between the receptor and monitor, the greater the uncertainty in the derived receptor concentration. It is therefore recommended that if the receptor is further from the kerb than the monitor it should be no more than 20m away. If the receptor is closer to the kerb, then it should be no more than 10 m from the monitor.</p>	

Modified from Box 2.3 page 2-6 of the technical Guidance 2009 [23] (modification are improved layout of equation and insertion and update of hyperlinks where footnotes are present in the original).

## 3.2 Annualisation

Where only short-term periods of monitoring data are available, the results may be adjusted to estimate an annual mean concentration using the approach set out in Box 3.2: Estimation of annual mean concentrations from short-term monitoring data of the technical guidance LAQM.TG(09) [23] (reproduced in Table 3).

Table 3. Box 3.2: Estimation of annual mean concentrations from short-term monitoring data

Box 3.2: Estimation of annual mean concentrations from short-term monitoring data			
<b>Example</b>			
It has only been possible to carry out a monitoring survey (automatic or diffusion tube) at site <b>S</b> for six months between July and December 2008. The measured mean concentration <b>M</b> for this period is $30.2\mu\text{g m}^{-3}$ . How can this be used to estimate the annual mean for this location?			
<b>Adjustment to estimate annual mean</b>			
The adjustment is based on the fact that patterns in pollutant concentrations usually affect a wide region. Thus if a six month period is above average at one place it will almost certainly be above average at other locations in the region. The adjustment procedure is as follows:			
<ol style="list-style-type: none"> <li>1. Identify two to four nearby, long-term, continuous monitoring sites, ideally those forming part of the national network. These should be background sites to avoid any very local effects that may occur at roadside sites, and should, wherever possible lie within a radius of about 50 miles.</li> <li>2. Obtain the annual means, <b>Am</b>, for the calendar year for these sites, 2008 in this example.</li> <li>3. Work out the period means, <b>Pm</b>, for the period of interest, in this case July to December 2008. [It may be necessary to use unratified automatic data.]</li> <li>4. Calculate the ratio, <b>R</b>, of the annual mean to the period mean (<b>Am/Pm</b>) for each of the sites.</li> <li>5. Calculate the average of these ratios, <b>R<sub>a</sub></b>. This is then the adjustment factor.</li> <li>6. Multiply the measured period mean concentration <b>M</b> by this adjustment factor <b>R<sub>a</sub></b> to give the estimate of the annual mean for 2008.</li> </ol>			
<b>Long term site</b>	<b>Annual mean 2008 (Am)</b>	<b>Period Mean 2008 (Pm)</b>	<b>Ratio (Am/Pm)</b>
A	28.6	29.7	0.963
B	22.0	22.8	0.965
C	26.9	28.9	0.931
D	23.7	25.9	0.915
<b>Average (R<sub>a</sub>)</b>			<b>0.944</b>
For this example the best estimate of the annual mean for site <b>S</b> in 2008 will be $\mathbf{M} \times \mathbf{R}_a = 30.2 \times 0.944 = 28.5\mu\text{g m}^{-3}$ .			
<b>Notes</b>			
<ul style="list-style-type: none"> <li>• Monitoring data for the long-term sites must have adequate data capture rates: above 90% is preferable; sites with data capture below 75% should not be used.</li> <li>• It may be appropriate to use diffusion tube results from a long-term survey to adjust short-term diffusion tube results. To allow for the greater uncertainty of diffusion tubes results from four or more sites should be used. Ensure that the tubes are from the same supplier using the same method of preparation.</li> <li>• If the short-term period covers, for instance, February to June 2009, and the work is being carried out in August 2009, then an annual mean for 2009 will not be available. The calculation can then be carried out using the ratio to the 2008 annual mean, but the result is then an estimate of the 2008 annual mean at the short-term site.</li> </ul>			

Modified from Box 3.2 page 3-4 of the technical Guidance 2009 [23].

## 4 New Monitoring Data

### 4.1 Summary of Monitoring Undertaken

#### 4.1.1 Automatic Monitoring Sites

North West Leicestershire district council has procured 2 automatic monitors located within the AQMA's at Castle Donington and Coalville these are shown in Figure 7 and Figure 8. QA/QC procedures for these sites is presented in Appendix A.

UK Coal operated a crusher at their Ravenstone colliery under a Part B Environmental permit which has now been surrendered. The permit required UK Cola to undertake dust monitoring. The monitor at Creswell Drive was removed in September, the monitor at the primary school was left in situ until 22<sup>nd</sup> of December in order to show that exceedences of Air Quality Standards recorded during the first half of the year where the result of a fault with the monitor and not true exceedences of air quality standards.

Table 4. Details of Automatic Monitoring Sites

Site ID	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?
			X	Y						
1	Coalville	Roadside	443660	314002	NO NO <sub>2</sub> NO <sub>x</sub>	Chemiluminescence	Y	5.8	2	Y
2	Castle Donington	Roadside	444534	327365	NO NO <sub>2</sub> NO <sub>x</sub>	Chemiluminescence	Y	0	1.5	Y
3	Creswell drive Ravenstone	Other	440115	313492	PM <sub>10</sub> PM <sub>2.5</sub> PM <sub>1</sub>	Topas (turnkey)	N	Y	N/A	Y
4	Ravenstone Primary	Other	440328	313385	PM <sub>10</sub> PM <sub>2.5</sub> PM <sub>1</sub>	Topas (turnkey)	N	N	N/A	N

Figure 7 Map of Castle Donington Automatic Monitoring Site

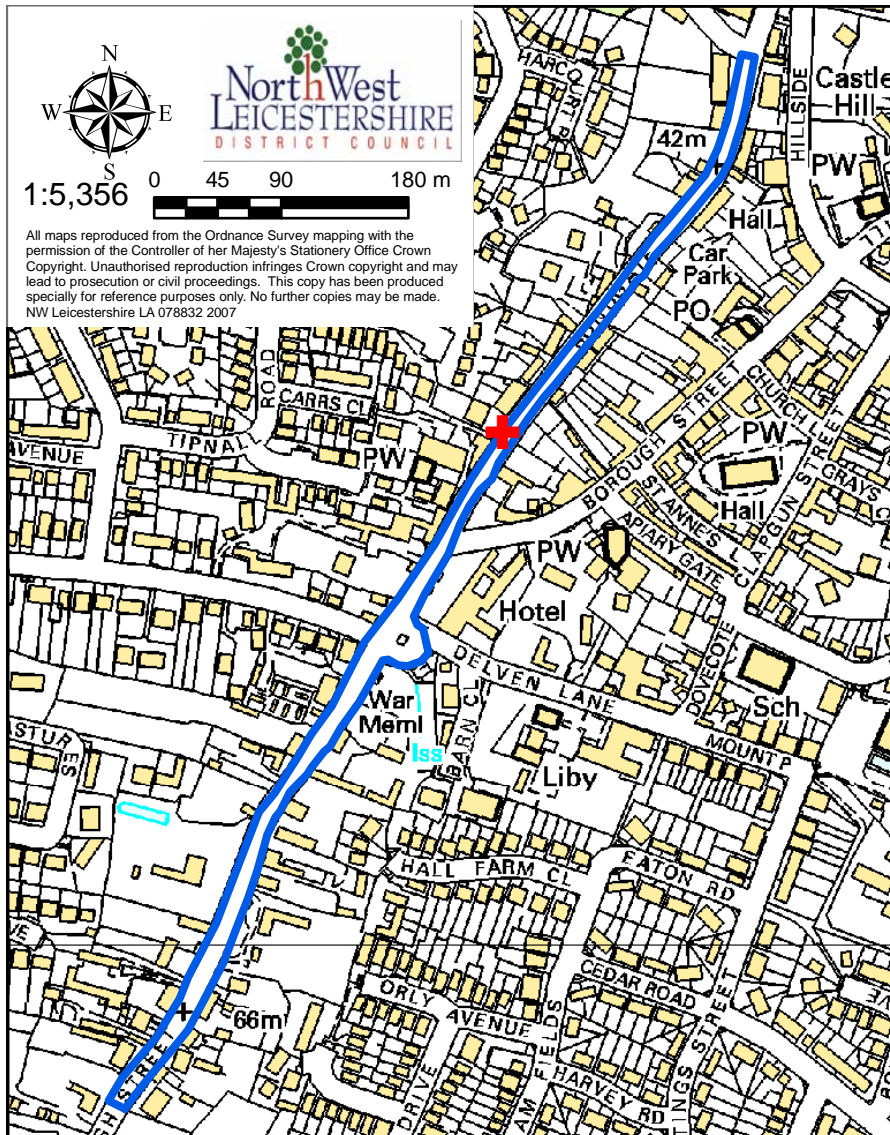


Figure 8 Map of Coalville Donington Automatic Monitoring Site

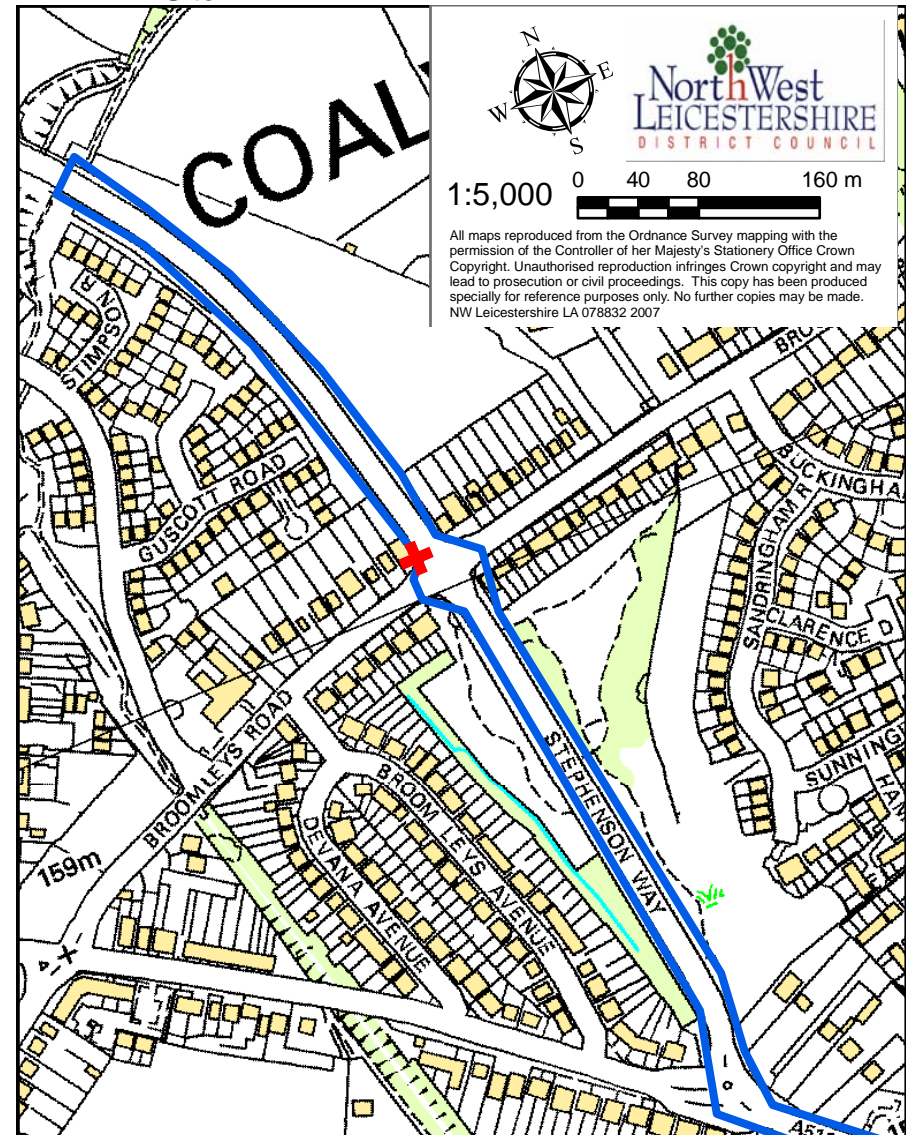
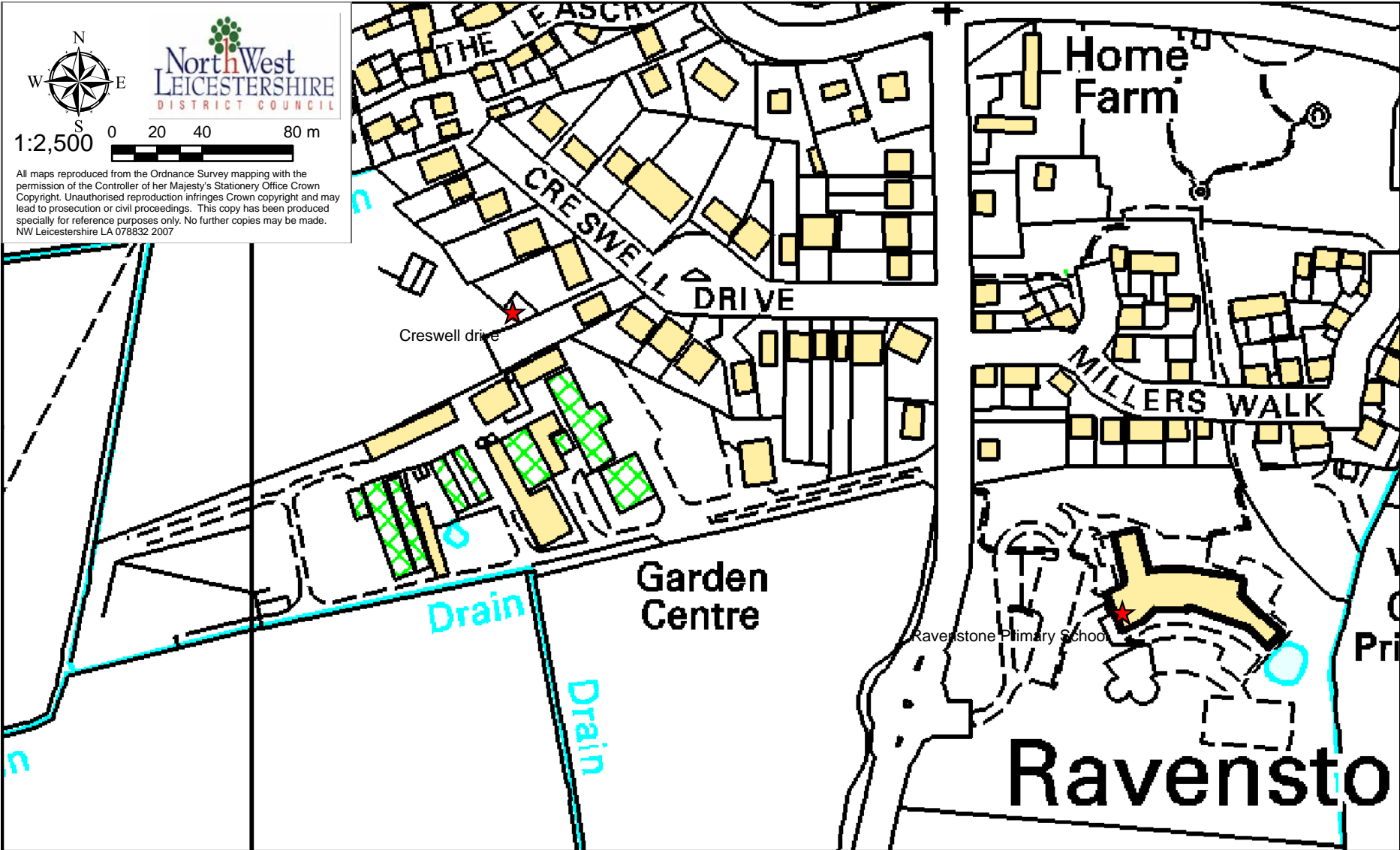


Figure 9 Map of PM<sub>x</sub> Monitors near Ravenstone



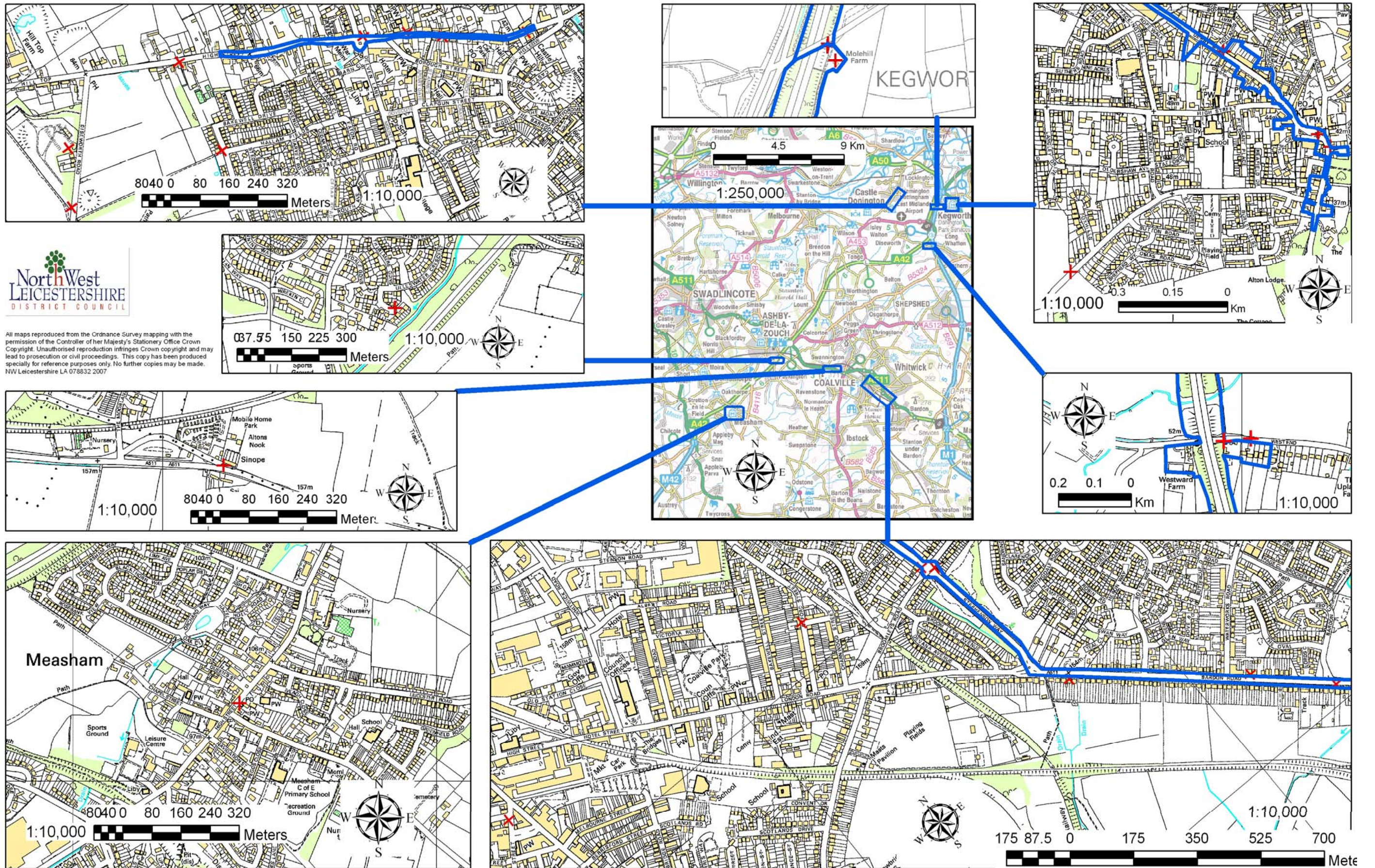
## 4.1.2 Non-Automatic Monitoring

The council undertakes extensive diffusion tube monitoring within its AQMAs. Details of the tubes is presented in Table 5.

Monitoring site, 86686 - NWLeicestershire 05N, 86688 - NWLeicestershire 07N, 86691 - NWLeicestershire 10N, 86705 - NWLeicestershire 24N, 86706 - NWLeicestershire 25N, and 86708 - NWLeicestershire 27N where discontinued at various periods during the year in order to relocate the tubes to co-locate them with automatic monitors.

Site 86692 - NWLeicestershire 11N was discontinued following a detailed assessment of the M1 AQMA. The tube has been moved to a new location between the M1 and the nearest property.

Figure 10 Map(s) of Non-Automatic Monitoring Sites



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Table 5. Details of Non-Automatic Monitoring Sites

Site ID	Tube Site Code	Site Name	Site Type	OS Grid Ref		Tube Number	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?
				X	Y						
86682 - NWLeicestershire	01N	Jackson Street Coalville	Urban Centre	442316	314217	1	NO <sub>2</sub>	N	N	N/A	N
86683 - NWLeicestershire	02N	Oxford Street Coalville	Urban Background	443282	314120	2	NO <sub>2</sub>	N	N	N/A	N
86684 - NWLeicestershire	03N	181 Bardon Rd Coalville	Roadside	444139	313222	3	NO <sub>2</sub>	Y	0	10	Y
86685 - NWLeicestershire	04N	244 Bardon Rd Coalville	Roadside	444302	313048	4	NO <sub>2</sub>	Y	7.5	1	Y
86686 - NWLeicestershire	05N	62 Bardon Rd Coalville	Roadside	443748	313528	5	NO <sub>2</sub>	Y	0	13.9	Y
86687 - NWLeicestershire	06N	Broomleys junction (1)	Roadside	443632	314026	6	NO <sub>2</sub>	Y	5.8	2	Y
86688 - NWLeicestershire	07N	Broomleys junction (2)	Roadside	443660	314002	7	NO <sub>2</sub>	Y	5.8	2	Y
96689 - NWLeicestershire	08N	End Cottage Copt Oak	Rural	448138	313012	8	NO <sub>2</sub>	Y	0	N/A	N
86690 - NWLeicestershire	09N	Whitwick Rd Copt Oak	Rural	448120	313066	9	NO <sub>2</sub>	Y	N	N/A	N
86691 - NWLeicestershire	10N	The Terrace Charley	Roadside	448518	313579	10	NO <sub>2</sub>	N	0	2.2	Y
86692 - NWLeicestershire	11N	LW M1	other	447024	323757	11	NO <sub>2</sub>	N	N	N/A	N
86693 - NWLeicestershire	12N	Aeropark	Other	444161	326355	12	NO <sub>2</sub>	N	N	N/A	N
86694 - NWLeicestershire	13N	Diseworth Lane CD	Other	444362	326305	13	NO <sub>2</sub>	N	N	N/A	N
86695 - NWLeicestershire	14N	69 High St CD	Roadside	444216	326788	14	NO <sub>2</sub>	Y	0	2.9	Y
86696 - NWLeicestershire	15N	137 Stonehill CD	Other	444478	326733	15	NO <sub>2</sub>	N	N	N/A	N
86697 - NWLeicestershire	16N	Crossroads CD	Roadside	444450	327233	16	NO <sub>2</sub>	Y	7.53	1	Y
86698 - NWLeicestershire	17N	13 Bondgate CD	Roadside	444512	327335	17	NO <sub>2</sub>	Y	2	2.5	Y
86699 - NWLeicestershire	18N	34 Bondgate CD	Roadside	444580	327411	18	NO <sub>2</sub>	Y	0	2.3	Y
86700 - NWLeicestershire	19N	94 Bondgate CD	Roadside	444707	327603	19	NO <sub>2</sub>	Y	0.8	1.4	Y
86701 - NWLeicestershire	20N	Derby Rd Kegworth	Roadside	448523	326885	20	NO <sub>2</sub>	Y	3.2	1	Y
86702 - NWLeicestershire	21N	A6 Kegworth	Roadside	448784	326655	21	NO <sub>2</sub>	Y	4.5	1	Y

Site ID	Tube Site Code	Site Name	Site Type	OS Grid Ref		Tube Number	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?
				X	Y						
86703 - NWLeicestershire	22N	A6 2 Kegworth	Roadside	448817	326621	22	NO <sub>2</sub>	Y	0	2.3	Y
86704 - NWLeicestershire	23N	120 Whatton Rd Kegworth	Suburban	448108	326305	23	NO <sub>2</sub>	N	N	N/A	Y
86705 - NWLeicestershire	24N	M1 Mole AQM	Other	447435	326460	24	NO <sub>2</sub>	Y	N	N/A	Y
86706 - NWLeicestershire	25N	M1 Mole 2 AQM	Other	447435	326460	25	NO <sub>2</sub>	Y	N	N/A	N
86707 - NWLeicestershire	26N	Molehill House	Roadside	447457	326420	26	NO <sub>2</sub>	Y	0	50	Y
86708 - NWLeicestershire	27N	Keg Mole	other	447436	326468	27	NO <sub>2</sub>	Y	N	N/A	Y
86709 -NWLeicestershire	28N	Ashby A42	Urban Background	436342	315836	28	NO <sub>2</sub>	N	N	N/A	Y
86710 - NWLeicestershire	29N	Measham	Roadside	433457	312213	29	NO <sub>2</sub>	N	2.3	1.6	Y
86712 - NWLeicestershire	31N	Sinope	Roadside	440167	315264	31	NO <sub>2</sub>	N	7.8	3.2	Y
86742 - NWLeicestershire	32N	M1 Bridge Copt Oak	Other	448082	313100	30	NO <sub>2</sub>	N	N	N/A	Y
86942 - NWLeicestershire	33N	Monitoring station Copt Oak (1)	Other	448124	313048	5	NO <sub>2</sub>	Y	N	N/A	Y
86943 - NWLeicestershire	34N	monitoring station Copt Oak (2)	Other	448124	313048	10	NO <sub>2</sub>	Y	N	N/A	Y
86944 - NWLeicestershire	35N	monitoring station Coalville (1)	Roadside	443660	314002	7	NO <sub>2</sub>	Y	5.8	2	Y
86945 - NWLeicestershire	36N	monitoring station Coalville (2)	Roadside	443660	314002	27	NO <sub>2</sub>	Y	5.8	2	Y
86946 - NWLeicestershire	37N	monitoring station CD (1)	Roadside	444534	327365	24	NO <sub>2</sub>	Y	0	1.5	Y
86947 - NWLeicestershire	38N	monitoring station CD (2)	Roadside	444534	327365	25	NO <sub>2</sub>	Y	0	1.5	Y
86948 - NWLeicestershire	39N	LW New M1	Other	446935	323744	11	NO <sub>2</sub>	Y	N	N/A	N

## 4.2 Comparison of Monitoring Results with Air Quality Objectives

### 4.2.1 Nitrogen Dioxide

#### 4.2.1.1 Automatic Monitoring Data

The authority commissioned an automatic monitor in Coalville at Broomleys junction on the 10/09/2011. The annual mean was annualised using the data shown in Table 8 in line with Box 3.2 of LAQM.TG(09) [23]. The annualised mean shows an exceedence of the annual mean Air Quality Standard for NO<sub>2</sub>. The monitor has also detected 29 exceedences of the Hourly Mean Air Quality Standard for NO<sub>2</sub> which is greater than the allowed 18 exceedences

The authority commissioned an automatic monitor in Castle Donington on Bondgate on the 10/11/2011. The annual mean was annualised using the data shown in Table 8 in line with Box 3.2 of LAQM.TG(09) [23]. The annualised mean shows an exceedence of the annual mean Air Quality Standard for NO<sub>2</sub>. No exceedences of the hourly mean Air Quality Standard were recorded.

QA/QC procedures are presented in Appendix A.

Table 6. Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Site Name	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2009 <sup>b</sup> %	Annual mean concentrations (µgm <sup>-3</sup> )				
					2006 <sup>cd</sup>	2007 <sup>cd</sup>	2008 <sup>cd</sup>	2009 <sup>cd</sup>	2010 <sup>c</sup>
1	Coalville	Y	97.9	22.7					54.63
2	Castle Donington	Y	99.8	14.05					40.84

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 should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year shown in green using data presented in Table 8.
- d Annual mean concentrations for previous years are optional.

Annualised mean (See Box 3.2 of TG(09))

Table 7. Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID	Site Name	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2009 <sup>b</sup> %	Number of Exceedences of hourly mean (200 µg <sup>m</sup> <sup>-3</sup> ) If the period of valid data is less than 90% of a full year, include the 99.8 <sup>th</sup> percentile of hourly means in brackets.				
					2006 <sup>cd</sup>	2007 <sup>cd</sup>	2008 <sup>cd</sup>	2009 <sup>cd</sup>	2010 <sup>c</sup>
1	Coalville	Y	97.9	22.7					29 (270.44)
2	Castle Donington	Y	99.8	14.1					0 (130.28)

- 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 Numbers of exceedences for previous years are optional.

Table 8. Data used for annualisation of Automatic monitoring sites (See Box 3.2 of LAQM.TG(09))

Urban Background Monitoring data taken from AURN network	Means			Ratio	
	whole year (AM)	Coalville Period (CV <sub>pm</sub> )	Castle Donington period (CD <sub>pm</sub> )	Coalville (AM/CV <sub>pm</sub> )	Castle Donington (AM/CD <sub>pm</sub> )
Leicester City	41.52	43.83	44.50	0.947	0.933
Nottingham	39.96	46.93	49.97	0.851	0.800
Northampton	20.61	26.79	29.01	0.769	0.710
			mean ratio	<u>0.856</u>	<u>0.814</u>

Figure 11 Graph of results at Coalville Monitoring station

**Coalville NO<sub>2</sub> Monitoring results 15/09/2010 to 31/12/2010**

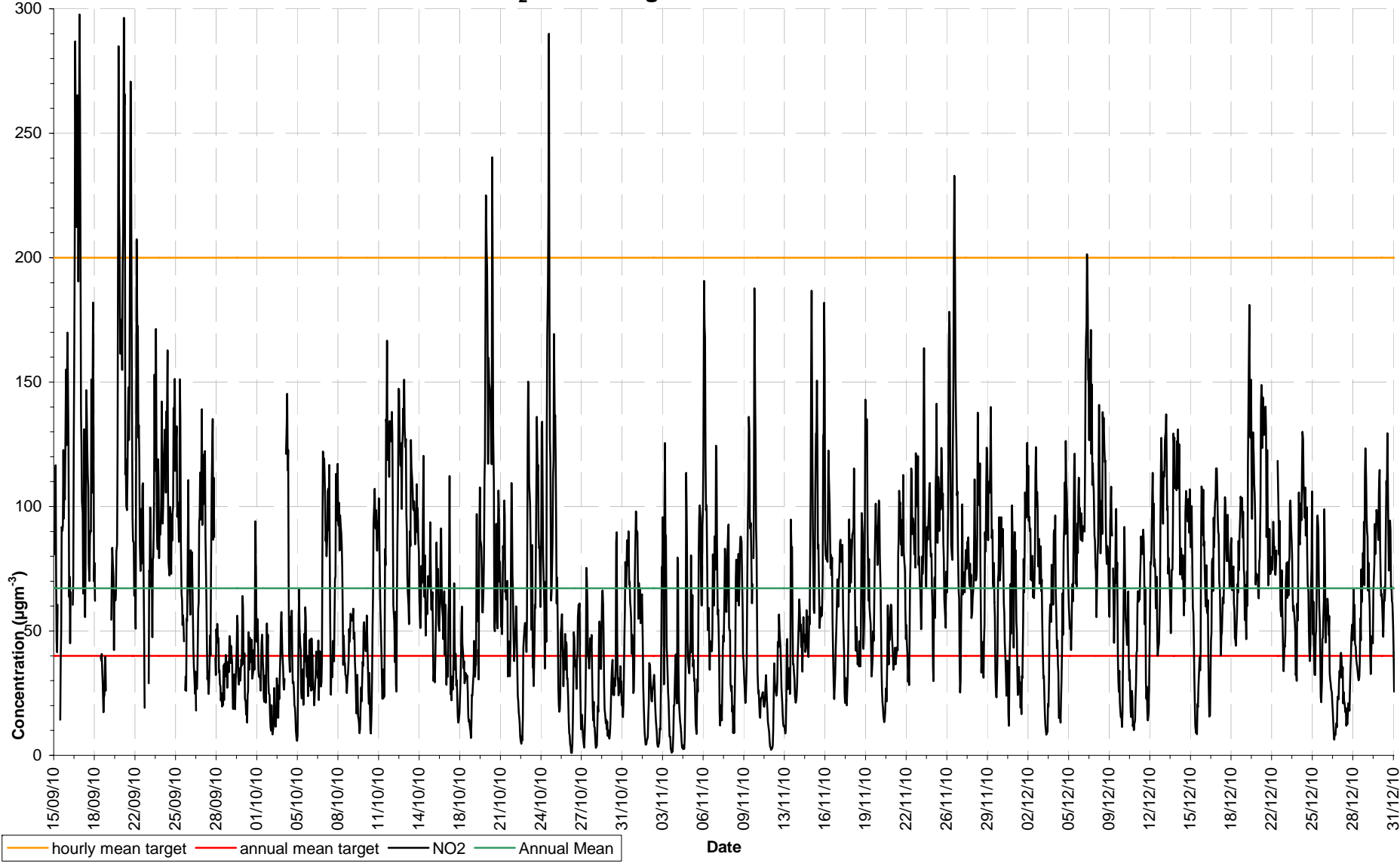
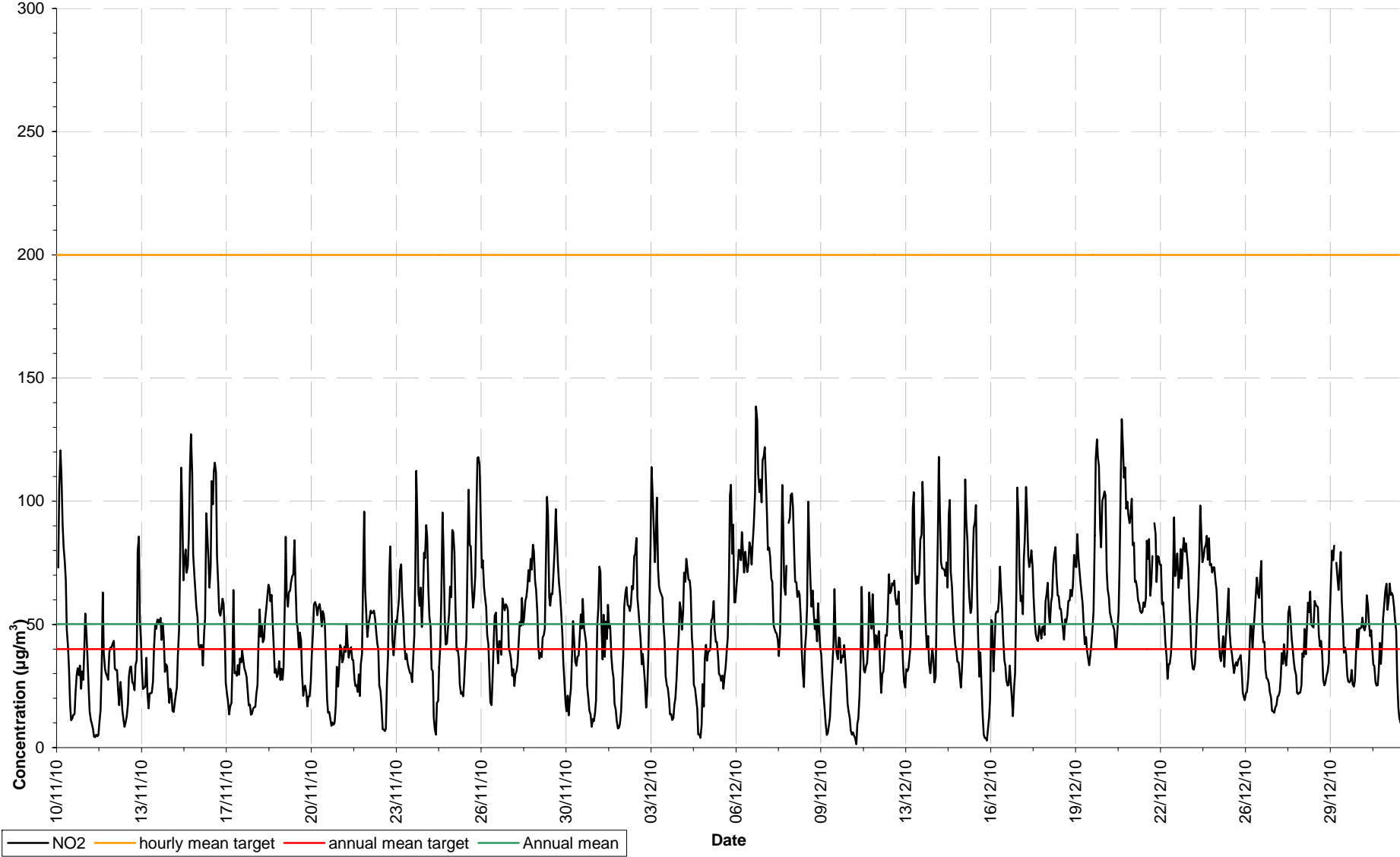


Figure 12 Graph of Results at Castle Donington Monitoring Station

**Castle Donington Monitoring results 10/11/2010 to 31/12/2010**



#### 4.2.1.2 Diffusion Tube Monitoring Data

An overview of the data is shown in Table 9. Façade corrections of relevant tubes is shown in Table 10. Full monitoring data is available in Appendix B.

Most tubes have recorded significantly higher than normal levels of NO<sub>2</sub> than in previous years, this can be seen in Figure 13.

##### **Coalville**

(86682 - NWLeicestershire 01N, 86683 - NWLeicestershire 02N, 86684 - NWLeicestershire 03N, 86685 - NWLeicestershire 04N, 86686 - NWLeicestershire 05N, 86687 - NWLeicestershire 06N, 86688 - NWLeicestershire 07N, 86944 - NWLeicestershire 35N, 86945 - NWLeicestershire 36N)

Tubes 86682 - NWLeicestershire 01N, 86683 - NWLeicestershire 02N which are located outside of the AQMA did not record an exceedance of the annual mean Air Quality Standard.

Tube 86684 - NWLeicestershire 03N which is on the Façade of 181 Bardon road did not record an exceedance of the annual mean Air Quality Standard.

Tube 86685 - NWLeicestershire 04N which is on a lamp post outside 244 Bardon road recorded an exceedance of the annual mean Air Quality Standard. However when a façade correction is applied to the tube (Table 10) there is not an exceedance of the annual mean air quality standards at the nearest relevant receptor.

Tube 86686 - NWLeicestershire 05N was located on the façade of 62 Bardon Road. It was removed at the end of May at the request of the home owner. The annualised mean did not record an exceedance of the annual mean air quality standard.

Tubes 86687 - NWLeicestershire 06N is located on Broomleys junction diagonally opposite the automatic monitor. It recorded an exceedence of the annual mean air quality standards.

Tube 86688 - NWLeicestershire 07N was located on the lamppost near to where the Coalville automatic monitor has been located. It was discontinued to move the tube onto the monitor. The annualised mean for the site recorded an exceedence of the annual mean air quality standard.

Tubes 86944 - NWLeicestershire 35N and 86945 - NWLeicestershire 36N are located on the Coalville automatic monitor. Both tubes recorded an exceedence of the annual mean air quality standard.

### **Castle Donington**

(86693 - NWLeicestershire 12N, 86694 - NWLeicestershire 13N, 86695 - NWLeicestershire 14N, 86696 - NWLeicestershire 15N, 86697 - NWLeicestershire 16N, 86698 - NWLeicestershire 17N, 86699 - NWLeicestershire 18N, 86700 - NWLeicestershire 19N, 86946 - NWLeicestershire 37N, 86947 - NWLeicestershire 38N)

Tube 86693 - NWLeicestershire 12N located at the Aeropark is outside of the AQMA and did not record an exceedence of the air quality standard.

Tube 86694 - NWLeicestershire 13N located on Diseworth Lane near to the airport did not record an exceedence of the air quality standard.

Tube 86695 - NWLeicestershire 14N Located on a lamppost outside 69 High Street just south of the AQMA did not record an exceedence of the air quality standards.

Tube 86696 - NWLeicestershire 15N located on a lamppost outside 137 Stonehill did not record an exceedence of the air quality standard.

Tube 86697 - NWLeicestershire 16N located on a lamppost at the crossroads of Park Lane, High Street, and Bondgate recorded an exceedence of the air quality standards however when a façade correction



is applied the air quality standards are not being exceeded at the nearest relevant receptor.

Tube 86698 - NWLeicestershire 17N located on a lamppost outside 13 Bondgate recorded an exceedence of the air quality standard however when a façade correction is applied the recorded value drops below the air quality standard. The façade corrected value is within 1 standard deviation of the air quality standards at the nearest receptor.

Tube 86699 - NWLeicestershire 18N located on a lamppost outside 34 Bondgate recorded an exceedence of the air quality standard at the façade of the property.

Tube 86700 - NWLeicestershire 19N is located on a road sign outside 94 Bondgate recorded a value within 1 standard deviation of the air quality standard. A façade correction of the value is still within 1 standard deviation of the air quality standard.

Tubes 86946 - NWLeicestershire 37N, and 86947 - NWLeicestershire 38N are located on the air quality monitor. They both recorded annualised means which exceed the air quality standard.

### **Copt Oak**

(96689 - NWLeicestershire 08N, 86690 - NWLeicestershire 09N, 86691 - NWLeicestershire 10N, 86742 - NWLeicestershire 32N, 86942 - NWLeicestershire 33N, 86943 - NWLeicestershire 34N)

Tube 96689 - NWLeicestershire 08N is located on the façade of end cottage, Whitwick Road did not record an exceedence of the air quality standard

Tube 86690 - NWLeicestershire 09N is located on a road sign on Whitwick road it recorded an exceedence of the air quality standard however there are no relevant receptors nearby.

Tube 86691 - NWLeicestershire 10N recorded an annualised mean within 1 standard deviation of the air quality standard. However the tube has been consistently below the air quality standard.

Tube 86742 - NWLeicestershire 32N is along whitwick Road on the bridge over the M1. It recorded an exceedence of the air quality standard however there are no relevant receptors nearby. The tube is located in a location for traffic modelling.

Tubes 86942 - NWLeicestershire 33N, and 86943 - NWLeicestershire 34N are located in the position of the soon to be commissioned air quality monitor. They recorded annualised means which are within 1 standard deviation of the air quality standard.

### **Kegworth**

(86701 - NWLeicestershire 20N, 86702 - NWLeicestershire 21N, 86703 - NWLeicestershire 22N, 86704 - NWLeicestershire 23N)

Tube 86701 - NWLeicestershire 20N, located on a lamppost on derby road recorded an exceedence of the air quality standard within the AQMA

Tube 86702 - NWLeicestershire 21N, located on a road sign outside the parish council offices recorded an exceedence of the air quality standard

Tube 86703 - NWLeicestershire 22N, located on a lamppost outside 29 market place recorded an exceedence of the air quality standard.

Tube 86704 - NWLeicestershire 23N located on road sign outside 120 Whatton Road did not record an exceedence of the air quality standard.

### **M1 (Mole Hill Farm and Long Whatton)**

(86705 - NWLeicestershire 24N, 86706 - NWLeicestershire 25N, 86707 - NWLeicestershire 26N, 86708 - NWLeicestershire 27N, 86692 - NWLeicestershire 11N, 86948 - NWLeicestershire 39N)

Tubes 86705 - NWLeicestershire 24N, and 86706 - NWLeicestershire 25N, were co-located at the Highways Agency substation on Ashby road. They both have annualised means exceeding  $60 \mu\text{g m}^{-3}$  which exceed the

annual mean air quality standard. LAQM.TG(09)[23] states that values exceeding  $60 \mu\text{g m}^{-3}$  indicated that an exceedence of the hourly mean air quality standard is likely.

Tube 86707 - NWLeicestershire 26N, is located on the façade of molehill farm house, it recorded a value within 1 standard deviation of the air quality standard.

86708 - NWLeicestershire 27N, was located on a sign post outside the highways agency substation on Ashby Road has an annualised mean which exceeds the air quality standard.

Tube 86692 - NWLeicestershire 11N, located on a road sign opposite 61 West End has an annualised mean which does not exceed the air quality standard.

Tube 86948 - NWLeicestershire 39N, located on a fence post between 67 West End and the M1, has an annualised mean which does not exceed the air quality standard.

#### **Other Tubes**

(86709 -NWLeicestershire 28N, 86710 - NWLeicestershire 29N, 86712 - NWLeicestershire 31N)

Tube 86709 -NWLeicestershire 28N, located on a lamppost on Loweswater Grove, did not record an exceedence of the air quality standard.

Tube 86710 - NWLeicestershire 29N, located outside the post office on High street did not record an exceedence of the air quality standard.

Tube 86712 - NWLeicestershire 31N, located on a road sign by the phone box on the A511 recorded a value within 1 standard deviation of the air quality standard however when a façade correction is applied the value at the nearest relevant receptor is below the air quality standard.

Table 9. Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Tube Site Code	Location	Within AQMA ?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2009 <sup>b</sup> %	Annual mean concentrations ( $\mu\text{g m}^{-3}$ )				
						2006 <sub>cd</sub>	2007 <sub>cd</sub>	2008 <sub>cd</sub>	2009 <sub>cd</sub>	2010 <sub>c</sub>
86682 - NWLeicestershire	01N	Jackson Street Coalville	N	100.0%	100.0%	27.4	31.2	30.33	32.01	33.30
86683 - NWLeicestershire	02N	Oxford Street Coalville	N	100.0%	100.0%	21.6	13.3	22.49	20.45	28.09
86684 - NWLeicestershire	03N	181 Bardon Rd Coalville	Y	100.0%	100.0%			27.60	26.44	33.71
86685 - NWLeicestershire	04N	244 Bardon Rd Coalville	Y	100.0%	100.0%	35.1	36.3	31.54	32.17	<b>43.88</b>
86686 - NWLeicestershire	05N	62 Bardon Rd Coalville	Y	100.0%	41.7%			23.05	21.63	30.06
86687 - NWLeicestershire	06N	Broomleys junction (1)	Y	91.7%	91.7%	39.7	<b>46</b>	39.63	<b>40.24</b>	<b>42.12</b>
86688 - NWLeicestershire	07N	Broomleys junction (2)	Y	100.0%	66.7%	37.4	26.3	39.20	36.36	<b>51.98</b>
96689 - NWLeicestershire	08N	End Cottage Copt Oak	Y	100.0%	100.0%			29.58	29.66	32.49
86690 - NWLeicestershire	09N	Whitwick Rd Copt Oak	Y	100.0%	100.0%	39.6	<b>44.4</b>	<b>41.14</b>	<b>43.63</b>	<b>46.25</b>
86691 - NWLeicestershire	10N	The Terrace Charley	N	100.0%	66.7%	32.4	35.5	32.65	31.16	37.87
86692 - NWLeicestershire	11N	LW M1	N	75.0%	75.0%	27.7	32.3	29.56	28.52	34.24
86693 - NWLeicestershire	12N	Aeropark	N	91.7%	91.7%	18	16.9	17.90	17.83	27.29
86694 - NWLeicestershire	13N	Diseworth Lane CD	N	100.0%	100.0%	20.6	20.2	21.93	19.01	28.15
86695 - NWLeicestershire	14N	69 High St CD	N	100.0%	100.0%		34.9	25.97	25.98	31.89
86696 - NWLeicestershire	15N	137 Stonehill CD	N	100.0%	100.0%	17.9	17.8	17.36	15.58	23.12
86697 - NWLeicestershire	16N	Crossroads CD	Y	91.7%	91.7%			33.65	34.20	<b>40.51</b>
86698 - NWLeicestershire	17N	13 Bondgate CD	Y	100.0%	100.0%	35.5	<b>38.8</b>	35.98	34.35	<b>43.00</b>
86699 - NWLeicestershire	18N	34 Bondgate CD	Y	91.7%	91.7%			<b>47.32</b>	<b>44.92</b>	<b>55.70</b>
86700 - NWLeicestershire	19N	94 Bondgate CD	Y	100.0%	100.0%			34.74	30.44	39.59
86701 - NWLeicestershire	20N	Derby Rd Kegworth	Y	100.0%	100.0%	35.3	31.4	33.43	36.49	<b>41.55</b>
86702 - NWLeicestershire	21N	A6 Kegworth	Y	100.0%	100.0%	<b>43.5</b>	<b>44.6</b>	39.38	<b>41.64</b>	<b>50.24</b>
86703 - NWLeicestershire	22N	A6 2 Kegworth	Y	91.7%	91.7%	<b>41.2</b>	<b>43.6</b>	38.37	37.77	<b>44.75</b>
86704 - NWLeicestershire	23N	120 Whatton Rd Kegworth	N	91.7%	91.7%	21.7	21.4	23.29	19.17	26.77
86705 - NWLeicestershire	24N	M1 Mole AQM	Y	83.3%	83.3%	<b>56.5</b>	<b>67</b>	<b>67.39</b>	<b>63.80</b>	<b>69.89</b>
86706 - NWLeicestershire	25N	M1 Mole 2 AQM	Y	83.3%	83.3%	<b>59.1</b>	<b>67.1</b>	<b>68.92</b>	<b>67.52</b>	<b>66.37</b>
86707 - NWLeicestershire	26N	Molehill House	Y	100.0%	100.0%	39.1	39.1	34.92	<b>41.54</b>	<b>39.73</b>
86708 - NWLeicestershire	27N	Keg Mole	Y	100.0%	66.7%	<b>57.3</b>	<b>61.1</b>	<b>67.10</b>	<b>48.04</b>	<b>59.14</b>
86709 - NWLeicestershire	28N	Ashby A42	N	100.0%	100.0%	26.4	26.8	26.90	28.72	29.96
86710 - NWLeicestershire	29N	Measham	N	75.0%	75.0%	26.9	28.3	31.41	24.35	30.60
86712 - NWLeicestershire	31N	Sinope	N	100.0%	100.0%	29.1	30.4	29.33	31.12	36.46
86742 - NWLeicestershire	32N	M1 Bridge Copt Oak	N	91.7%	91.7%				<b>59.57</b>	<b>68.52</b>
86942 - NWLeicestershire	33N	Monitoring station Copt Oak (1)	Y	85.7%	50.0%					37.30
86943 - NWLeicestershire	34N	monitoring station Copt Oak (2)	Y	100.0%	33.3%					38.65

Site ID	Tube Site Code	Location	Within AQMA ?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2009 <sup>b</sup> %	Annual mean concentrations ( $\mu\text{g m}^{-3}$ )				
						2006 <sub>cd</sub>	2007 <sub>cd</sub>	2008 <sub>cd</sub>	2009 <sub>cd</sub>	2010 <sub>c</sub>
86944 - NWLeicestershire	35N	monitoring station Coalville (1)	Y	50.0%	16.7%					47.05
86945 - NWLeicestershire	36N	monitoring station Coalville (2)	Y	75.0%	25.0%					46.09
86946 - NWLeicestershire	37N	monitoring station CD (1)	Y	50.0%	8.3%					40.96
86947 - NWLeicestershire	38N	monitoring station CD (2)	Y	50.0%	8.3%					43.44
86948 - NWLeicestershire	39N	LW New M1	Y	100.0%	8.3%					34.35

- 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 should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.  
d Annual mean concentrations for previous years are optional.

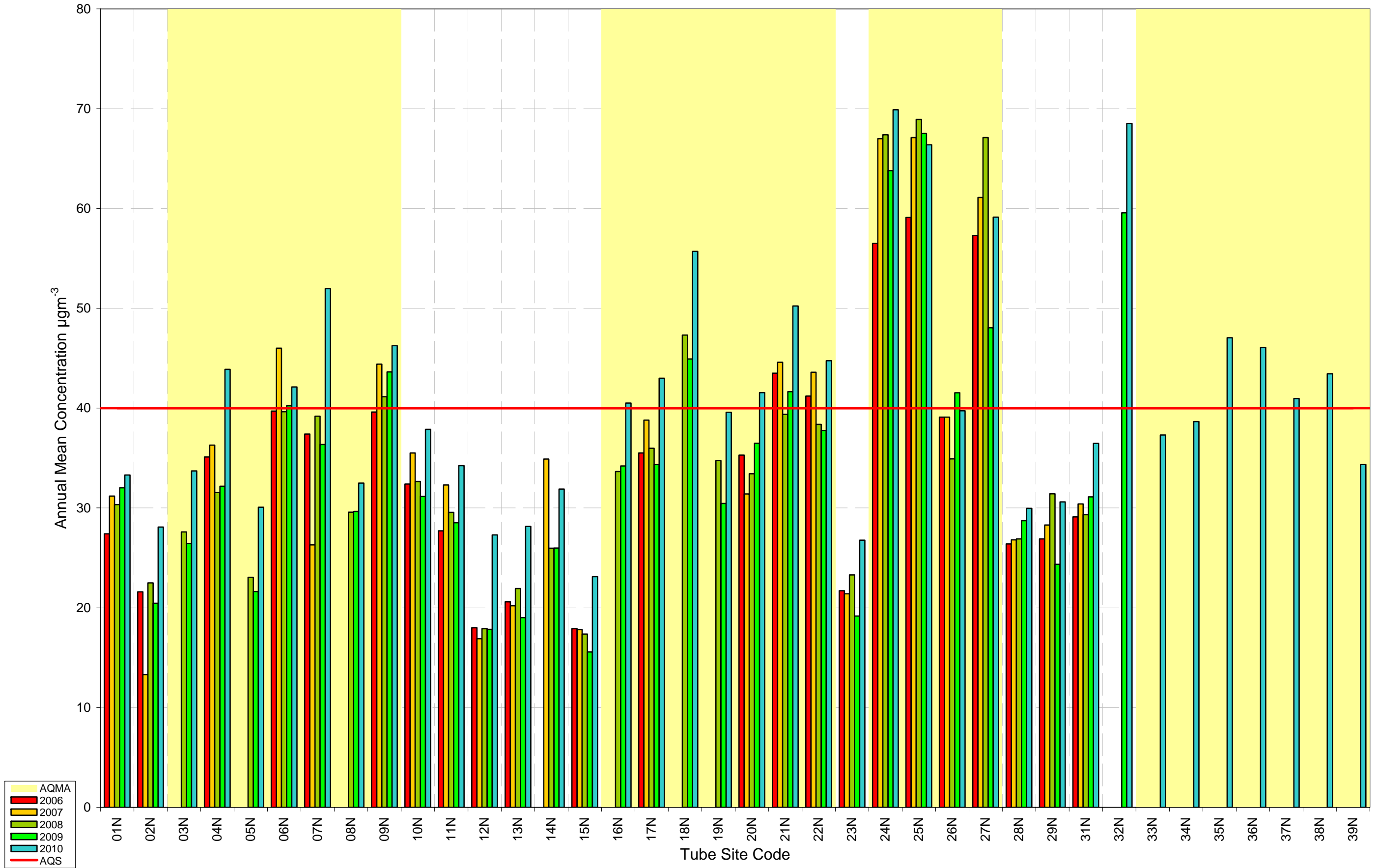
Annualised mean (See Box 3.2 of TG(09))

Table 10. Façade corrected Tube Data

Site ID	Tube Site Code	Location	Within AQMA ?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2009 <sup>b</sup> %	2010 Annual mean concentration ( $\mu\text{g m}^{-3}$ )	façade correction - fall-off in nitrogen dioxide concentrations with distance from road See Box 2.3 pg 2-6 of LAQM.TG(09)			
							background concentration grid reference		relevant background concentration	receptor correction for roadside tubes <small>(Bias adjusted mean used)</small>
							X	Y		
86685 - NWLeicestershire	04N	244 Bardon Rd Coalville	Y	100.0%	100.0%	43.88	443500	312500	12.45	30.33
86687 - NWLeicestershire	06N	Broomleys junction (1)	Y	91.7%	91.7%	42.15	443500	313500	13.57	33.01
86688 - NWLeicestershire	07N	Broomleys junction (2)	Y	100.0%	66.7%	50.26	443500	313500	13.57	38.56
86697 - NWLeicestershire	16N	Crossroads CD	Y	91.7%	91.7%	40.51	443500	326500	11.93	28.16
86698 - NWLeicestershire	17N	13 Bondgate CD	Y	100.0%	100.0%	43.00	443500	326500	11.93	38.48
86700 - NWLeicestershire	19N	94 Bondgate CD	Y	100.0%	100.0%	39.59	444500	327500	15.16	37.20
86701 - NWLeicestershire	20N	Derby Rd Kegworth	Y	100.0%	100.0%	41.55	447500	326500	27.70	37.55
86702 - NWLeicestershire	21N	A6 Kegworth	Y	100.0%	100.0%	50.24	448500	326500	18.76	39.42
86710 - NWLeicestershire	29N	Measham	N	75.0%	75.0%	30.60	432500	311500	13.59	27.22
86712 - NWLeicestershire	31N	Sinope	N	100.0%	100.0%	36.46	439500	314500	9.93	27.84
86946 - NWLeicestershire	37N	monitoring station CD (1)	Y	50.0%	8.3%	49.98	443500	313500	13.57	38.37
86947 - NWLeicestershire	38N	monitoring station CD (2)	Y	50.0%	8.3%	48.96	443500	313500	13.57	37.68

Figure 13 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.

**Trend in NO<sub>2</sub> Diffusion Tube data**  
(Annualised values used where calculated)



## 4.2.2 PM<sub>10</sub>

UKCoal currently undertake particulate monitoring in the village of Ravenstone as part of their Environmental permit.

The Creswell Drive monitoring station was located North East of the colliery at the nearest domestic dwelling down prevailing wind (South Westerly prevailing wind).

The Ravenstone primary school monitor is located to the south east of the Creswell drive monitor west of the colliery.

The monitoring location at Creswell Drive did not detect an exceedence of either the annual mean objective or the 24 hour mean objective (see Table 11 and Table 12 ).

The monitor located at Ravenstone Primary School detected 35 exceedences of the of the 24-hour mean objective between January and May 2010. Enquiries where made with UK coal in order to ascertain the reason for the exceedences. It was eventually found that the Topaz monitor had developed a fault which the engineer stated could be the cause of the high readings. The fault was repaired on the 14/07/2010, since the repair the monitor has detected 3 exceedences of the 24-hour mean. A comparison of the results before and after the monitor was repaired is shown in Table 13. The period following removal of the monitor covers 44% of the year whilst the period prior to the repair covers 49% of the year.

Table 11. Results of PM<sub>10</sub> Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2009 <sup>b</sup> %	Annual mean concentrations (µg m <sup>-3</sup> )				
					2006 <sup>cd</sup>	2007 <sup>cd</sup>	2008 <sup>cd</sup>	2009 <sup>cd</sup>	2010 <sup>c</sup>
	Creswell Drive	N	71	60				9.8	10.83
	Ravenstone Primary	N	85	93				24.96	55.32

- 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 should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.  
 d Annual mean concentrations for previous years are optional.

Table 12. Results of PM<sub>10</sub> Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture 2009 <sup>b</sup> %	Number of Exceedences of daily mean objective (50 µg m <sup>-3</sup> ) If data capture < 90%, include the 90 <sup>th</sup> percentile of daily means in brackets.				
					2006 <sup>cd</sup>	2007 <sup>cd</sup>	2008 <sup>cd</sup>	2009 <sup>cd</sup>	2010 <sup>c</sup>
	Creswell Drive	N	71	60				0 (15)	0 (17.60)
	Ravenstone Primary	N	85	93				20 (27.9)	68

- 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 Numbers of exceedences for previous years are optional.

Table 13. Comparing results of Ravenstone monitor for whole year with results from before and after repair on 14/07/2011

	all Year		Since monitor fixed (14/07/2010)		prior to monitor fixed (14/07/2010)	
	PM <sub>10</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
number of exceedences	68	15	3	0	65	15
max value µg m <sup>-3</sup>	1445.07	200.16	54.38	40.74	1445.07	200.16
min value µg m <sup>-3</sup>	0.00	0.00	4.79	2.48	0.00	0.00
mean of daily mean µg m <sup>-3</sup>	55.32	15.26	17.27	8.28	89.40	21.49
stdev	141.25	20.61	8.97	5.59	188.02	26.39
90th percentile of daily mean	87.09	29.56	28.91	14.63	130.11	42.83
range	1445.07	200.16	49.59	38.25	1445.07	200.16
% year coverage	93%	93%	44%	44%	49%	49%



### 4.2.3 Sulphur Dioxide

The Authority does not currently monitor for this pollutant.

### 4.2.4 Benzene

The Authority does not currently monitor for this pollutant.

### 4.2.5 Other pollutants monitored

#### 4.2.5.1 PM<sub>2.5</sub>

Table 14. Results of PM<sub>2.5</sub> Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2009 <sup>b</sup> %	Annual mean concentrations (µgm <sup>-3</sup> )				
					2006 <sub>cd</sub>	2007 <sub>cd</sub>	2008 <sub>cd</sub>	2009 <sub>cd</sub>	2010 <sub>c</sub>
	Creswell Drive	N	71	60				4.76	4.93
	Ravenstone Primary	N	85	93				7.87	18.07

- 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 should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.
- d Annual mean concentrations for previous years are optional.

## 4.3 Summary of Compliance with AQS Objectives

This authority has recorded exceedences of the Annual mean air quality standard for NO<sub>2</sub> at several locations within its declared AQMA's

The authority detect an exceedence of the 1-hour mean air quality standard for NO<sub>2</sub> within the Coalville AQMA which was declared for an exceedence of the annual mean air quality standard. It should be noted that the recorded annual mean at Broomleys junction has never exceeded 60 µgm<sup>-3</sup>.

Exceedences of 60 µgm<sup>-3</sup> were also detected at molehill farm. The M1 AQMA is currently undergoing a detailed assessment to rationalise the

area declared prior to an amendment of the order to include an exceedence of the 1-hour mean Air Quality Standard.

The diffusion tube placed directly over the M1 near to Copt Oak also recorded an exceedence of  $60 \mu\text{g m}^{-3}$  however there are no domestic properties within 50m of the site and it is unlikely that a person would spend an hour in or around that location. The nearest domestic property to the site is End Cottage. There is a diffusion tube on the façade of this property (96689 - NWLeicestershire 08N) which did not record an exceedence of the annual mean air quality standard.

North West Leicestershire District Council has measured concentrations of  $\text{NO}_2$  above the 1-hour objective at relevant locations, and will need to proceed to a Detailed Assessment, for Broomleys junction in Coalville.

## 5 New Local Developments

### 5.1 Road Traffic Sources

There are no new

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed since the last Updating and Screening Assessment.
- Roads with significantly changed traffic flows.
- Bus or coach stations.

in the district

### 5.2 Other Transport Sources

There are no new

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

in the district

## 5.3 Industrial Sources

There are no new

- Industrial installations: new or proposed installations for which an air quality assessment has been carried out.
- Industrial installations: existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- Industrial installations: new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.
- Petrol stations.
- Poultry farms.

in the District

## 5.4 Commercial and Domestic Sources

There are no new

- Biomass combustion plant – individual installations.
- Areas where the combined impact of several biomass combustion sources may be relevant.
- Areas where domestic solid fuel burning may be relevant.

in the District

## 5.5 New Developments with Fugitive or Uncontrolled Sources

There are no new

- Landfill sites.
- Quarries.
- Unmade haulage roads on industrial sites.
- Waste transfer stations etc.
- Other potential sources of fugitive particulate emissions.

In the District

North West Leicestershire District Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

## **6 Local / Regional Air Quality Strategy**

The Authority is not currently part of a local or regional air quality strategy

## **7 Planning Applications**

### **7.1 10/01093/OUTM – Pending consideration**

Residential development of up to 800 dwellings with associated highway works, including demolition of existing buildings, drainage infrastructure, formation of two new accesses onto Grange Road, a local centre (comprising uses within classes A1-A5, B1, C2, C3 and D1 of the Use Classes

The air quality reports states that this development will have a negligible impact on the AQMA

### **7.2 10/01208/OUTM – Pending consideration**

Residential development, village centre (including: primary school, retail, business and other uses (Classes A1, A2, A3, A4, A5, B1, D1 (healthcare) and D2 (community facilities)), public open space, recreation areas, play areas, woodland planting, and associated infrastructure including roads, sewers and water storage ponds (Outline - all matters other than part access reserved)

The air quality reports states that this development will have a negligible impact on the AQMA

## **8 Air Quality Planning Policies**

There are currently no adopted Local Plan policies dealing specifically with air quality.

The emerging Local Development Framework (LDF) currently does not have any adopted Development Plan Documents. However work on establishing sites and/or broad areas for future developments is very likely to include an appraisal of whether the sites in question will adversely

affect, or be adversely affected by, local air quality issues and whether particular types of development of a site could help address existing air quality issues.

## **9 Local Transport Plans and Strategies**

Air quality measures for the AQMA in Kegworth were included in LTP2 however budget constraints have meant that many of these have not been implemented. North West Leicestershire District Council is currently liaising with Leicestershire County Council for inclusion of Air quality measures relating to the 5 AQMA's to be included in LTP3

## **10 Climate Change Strategies**

The Strategy is currently being drafted by North West Leicestershire District Council.

## **11 Implementation of Action Plans**

Table 15. Action Plan Progress

	Actions	Details	Stakeholder	Completion Date	Progress	Progress during 2010
<b>Reducing Vehicle Emissions</b>						
1	Undertake roadside vehicle emission testing	North West Leicestershire District Council will re-evaluate the viability of the resumption of vehicle emission testing.	NWLDC	Completed	Vehicle Emission Testing undertaken in early 2006. Low uptake at voluntary testing days. Unviable to continue.	N/A
2	Improve the Council Fleet	North West Leicestershire District Council will continue to favour low emission vehicles in its own fleet.	NWLDC	Completed	New refuse vehicles fitted with hydraulic system controls (known as "oil on demand") which controls engine revs and reduces fuel consumption	N/A
3	Reduction in speed	Reduction in speed limit to optimum for NOx emissions from vehicles using the M1	HA	2005 – 2011	Will be reviewed as part of the options appraisal for Phase 2 of the M1 Improvement Programme.	Awaiting action by the Highways Agency
4	Discourage drivers from allowing their engines to idle unnecessarily when parked	The Council will carry out campaigns to raise awareness and to discourage drivers from allowing their engines to idle when their vehicles are parked for prolonged periods	NWLDC	Completed	Enforcement under The Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002 has been carried out and fixed penalties have been issued.	N/A
<b>Improving the Road Network to Reduce Congestion</b>						
5	Use of Hard Shoulder	Use of hard shoulder on M1 during periods of congestion – crawler lanes	HA	2005-2011	Dependant upon the results of the M40 study.	Awaiting action by the Highways Agency
6	Access Closure	Closure of side roads and rerouting of local traffic around Kegworth Junction 24 of the M1	HA	2005-2011	Will be reviewed as part of the options appraisal for Phase 2 of the M1 Improvement Programme.	Awaiting action by the Highways Agency

	<b>Actions</b>	<b>Details</b>	<b>Stakeholder</b>	<b>Completion Date</b>	<b>Progress</b>	<b>Progress during 2010</b>
7	Improved signing	Improved signing on the M1 to reduce congestion	HA	Completed	Advance notification of miles/time information to reduce congestion is now regularly available	N/A
8	Use of physical barriers	Use of physical barriers to obstruct the air flow and reduce noise to neighbours	HA	2005 – 2011	Will be reviewed as part of the options appraisal for Phase 2 of the M1 Improvement Programme.	Awaiting action by the Highways Agency
9	New Road Proposals	A bypass to be built for the A6 through Kegworth	LCC HA	2011	Need for a bypass included in LTP2. Completion is due during LTP3 depending on the outcome of Council and HA discussions.	Awaiting implementation of LTP3
10	Introduction of high occupancy lanes	Introduce high occupancy vehicles lanes along the M1 to reduce congestion	HA	2005 – 2010	Will be reviewed as part of the options appraisal for Phase 2 of the M1 Improvement Programme.	Awaiting action by the Highways Agency
11	Widening of the M1	Widening of the M1 and/or A543	HA	2005 – 2010	Will be reviewed as part of the options appraisal for Phase 2 of the M1 Improvement Programme.	Awaiting action by the Highways Agency
12	Improvements to Junction 24 of the M1	Improvements to Junction 24 of the M1 to reduce congestion in the area	HA	2005 – 2010	Will be reviewed as part of the options appraisal for Phase 2 of the M1 Improvement Programme.	Awaiting action by the Highways Agency
<b>Using Area Planning Measures to Reduce Traffic Volumes</b>						
13	Consideration of air quality in respect of Planning Applications	When assessing Planning Applications the implications of new development for air quality will be taken into consideration	NWLDC	Completed	All planning applications are assessed for possible air quality implications.	N/A
<b>Reducing Air Pollution From Industry/Commerce and Residential Areas</b>						



	Actions	Details	Stakeholder	Completion Date	Progress	Progress during 2010
14	Control of Industrial Emissions	The Council will regulate industrial processes under Part 1 of the Environmental Protection Act 1990. In addition the Council will continue with its programme of searching for additional industrial premises which require a permit.	NWLDC	Ongoing	The Council regulates 80 Part B installations for emissions to air and 5 A2 installations for emissions to land, air and water. Since 1 <sup>st</sup> January 2006 4 installations have been found to be operating without a Permit and fines have been issued.	N/A
15	Emissions from chimneys	The Council will continue to enforce the provisions of the Clean Air Act 1993 with respect to emissions of smoke from chimneys across the District	NWLDC	Ongoing	The Council has investigated 7 alleged breaches of the Clean Air Act 1993 with respect to emissions of smoke from chimneys since 1 <sup>st</sup> January 2006.	N/A
16	Boiler Plant and Chimney Heights	The Council will enforce the provisions of the Clean Air Act 1993 in respect of chimney heights for new plant and smoke control	NWLDC	Ongoing	All LA-IPPC permit applications must include chimney height calculations where appropriate.	N/A
17	Control of Bonfires	The Council will enforce the provisions of the Clean Air Act 1993 and Part III of the Environmental Protection Act 1990 in respect to bonfires across the District.	NWLDC	Ongoing	The District Council has investigated 181 garden bonfire complaints since 1 <sup>st</sup> January 2006. Details of alternative to burning waste are actively promoted by the District through its' discounted compost bin scheme.	N/A
<b>Changing Levels of Travel Demand / Promotion of Alternative Modes of Transport</b>						
18	Improving access to information	The Council will work with partners to encourage Travel Plans for employers and schools	NWLDC LCC	Ongoing	The Council has yet to adopt a Green travel plan, however the council has implemented several schemes to promote greener travel under The Green Footprints Corporate Action Plan (see section <b>Error! Reference source not found.</b> for details).	N/A
19	Improved public transport network	The Council will work closely with the County Council within LTP2	NWLDC LCC	Completed	A new railway station has opened at Ratcliffe-on-Soar linking to the airport with bus services.	N/A

	<b>Actions</b>	<b>Details</b>	<b>Stakeholder</b>	<b>Completion Date</b>	<b>Progress</b>	<b>Progress during 2010</b>
20	School 'Walking Buses'	The Council will work with Leicestershire County Council to promote walking buses for local schools within LTP2	NWLDC LCC	Ongoing	In October 2006 School children in Ashby-de-la-Zouch set a world record for the largest walking bus.	N/A
21	Safer routes to Schools	The Council will work with Leicestershire County Council to promote safer routes to Schools within LTP2	NWLDC LCC	Ongoing	Four scheme locations have been identified for traffic calming, footpath improvements and crossings.	N/A
22	Introduce Car Parking Charges	Car Parking will be introduced to all Council owned car parks in the District	NWLDC	Completed - Enforcement Ongoing	Car parking charges have been introduced and greater enforcement following decriminalisation	N/A
23	Improved public transport network to East Midlands Airport	The Council will work with its partners to improve the public transport network to the Airport	NWLDC EMA LCC	Completed	A new railway station has opened at Ratcliffe-on-Soar linking to the airport with bus services. Coalville is already linked by a bus service launched in 2007.	N/A
<b>Other Measures</b>						
24	Publicise Air Quality Information on the Website	Utilise the Council's Website to publicise Air Quality information	NWLDC	Ongoing	All monitoring data for Air quality is now available on the council website, along with copies of all review and assessment reports, AQMA orders, detailed assessments and further assessments.	N/A
25	Promote home working	Promote home working with the Council for suitable employee's	NWLDC	Completed	Home working promoted for suitable posts.	N/A
26	Presentations to Schools	Undertake presentations to Schools highlight Air Quality issues	NWLDC	Completed	Presentations to local schools undertaken in 2007.	N/A

## **12 Conclusions and Proposed Actions**

### **12.1 Conclusions from New Monitoring Data**

Air quality within the districts AQMAs has remained mostly unchanged.

A detailed assessment of Broomleys junction with regard to an exceedence of the 1 hour mean air quality standard is required following the results of 3 months of real-time monitoring.

### **12.2 Conclusions relating to New Local Developments**

No new local developments require more detailed consideration

### **12.3 Other Conclusions**

Implementation of the air quality action plan has stalled due to the current financial situation and the implementation of local transport plan 3. The Action plan also doesnot cover the more recent AQMAs of Castle Donington, Coalville, and Copt Oak. It is therefore appropriate that the action plan be revised.

### **12.4 Proposed Actions**

Await the results of the detailed assessment of the M1 AQMA and amend the air quality management order accordingly.

Await the results of the detailed assessment of the Coalville AQMA and amend the air quality management order accordingly.

Undertake a detailed assessment of Broomleys junction within the Coalville AQMA for an exceedence of the 1 hour mean air quality standard for NO<sub>2</sub>.

Submit the 2012 Update and screening assessment.

Draft a revised Air Quality Action Plan and put it out for public consultation.

## 13 References

### 13.1 Previous Review and Assessment Reports

- [1] North West Leicestershire District Council , 2006, *Air Quality Updating and Screening Assessment 2006*. Coalville: North West Leicestershire District Council,.
- [2] North West Leicestershire District Council, 2007, *Air Quality Detailed Assessment for Coalville and Castle Donington*. Coalville: North West Leicestershire District Council.
- [3] Conestoga-Rovers & Associates (Europe) Ltd, 2008, *Air Quality Progress Report 2008 Report No. 933628*. Coalville: North West Leicestershire District Council.
- [4] Conestoga-Rovers & Associates (Europe) Ltd, 2009a, *Air Quality Detailed Assessment For East Midlands Airport Report No.933690-1*. Coalville: North West Leicestershire District Council.
- [5] Conestoga-Rovers & Associates (Europe) Ltd, 2009b, *Air Quality Detailed Assessment For Copt Oak Report No. 933690-2-RPT2*. Coalville: North West Leicestershire District Council.
- [6] Conestoga-Rovers & Associates (Europe) Ltd, 2009c, *Air Quality Further Assessment Of Bardon Road AQMA, Coalville Report No. 933690-2-RPT3*. Coalville: North West Leicestershire District Council.
- [7] *Conestoga-Rovers & Associates (Europe) Ltd, 2009d, Air Quality Further Assessment of Castle Donington AQMA Report No.933690-4*. Coalville: North West Leicestershire District Council.
- [8] North West Leicestershire District Council, 2009, *Air Quality Update and Screening Assessment 2009*. Coalville: North West Leicestershire District Council.
- [9] North West Leicestershire District Council, 2010, *Air Quality Progress Report 2010*, Coalville: North West Leicestershire District Council.

## 13.2 Acts, Statutory Instruments, and Orders

- [10] Environment Act 1996 (c. 25), London: Her Majesty's Stationary Office  
Available at: <http://www.legislation.gov.uk/ukpga/1995/25/contents>  
[Accessed 21/03/2011]
- [11] *Air Quality (England) Regulations 2000* SI 2000/0928, London: HMSO  
Available at: <http://www.legislation.gov.uk/uksi/2000/928/contents/made>  
[Accessed 21/03/2011]]
- [12] *Air Quality (England) (Amendment) Regulations 2002* SI 2002/3043,  
London: HMSO. Available at:  
<http://www.legislation.gov.uk/uksi/2002/3043/contents/made> [Accessed  
21/03/2011]
- [13] *The Air Quality Standards Regulations 2007* SI 2007/0717, London:  
HMSO Available at  
<http://www.legislation.gov.uk/uksi/2007/64/contents/made> [Accessed  
21/03/2011]
- [14] *The Air Quality Standards Regulations 2010* SI 2010/1001, London:  
HMSO. Available at  
<http://www.legislation.gov.uk/uksi/2010/1001/contents/made> [Accessed  
21/03/2011]
- [15] *North West Leicestershire District Council Air Quality Management Order  
2009 (No. 1)*, 2009 Coalville: North West Leicestershire District Council.  
Available at  
[http://www.nwleics.gov.uk/pages/air\\_quality\\_management\\_area\\_copt\\_oak](http://www.nwleics.gov.uk/pages/air_quality_management_area_copt_oak)  
[Accessed 21/03/2011]
- [16] *North West Leicestershire District Council Air Quality Management Order  
2008 (No. 1)*, 2008, Coalville: North West Leicestershire District Council.  
Available at  
[http://www.nwleics.gov.uk/pages/air\\_quality\\_management\\_area\\_castle\\_do  
nington](http://www.nwleics.gov.uk/pages/air_quality_management_area_castle_donington) [Accessed 21/03/2011]
- [17] *North West Leicestershire District Council Air Quality Management Order  
2008 (No. 2)*, 2008, Coalville: North West Leicestershire District Council.

Available at

[http://www.nwleics.gov.uk/pages/air\\_quality\\_management\\_area\\_coalville](http://www.nwleics.gov.uk/pages/air_quality_management_area_coalville)

[Accessed 21/03/2011]

- [18] *The North West Leicestershire District Council (Kegworth Air Quality Management Area) Order 2001*, 2001, Coalville: North West Leicestershire District Council Available at [http://www.nwleics.gov.uk/pages/air\\_quality\\_management\\_area\\_high\\_street\\_kegworth](http://www.nwleics.gov.uk/pages/air_quality_management_area_high_street_kegworth) [Accessed 21/03/2011]
- [19] *North West Leicestershire District Council (M1 Air Quality Management Area) Order 2001*, 2001, Coalville: North West Leicestershire District Council Available at [http://www.nwleics.gov.uk/pages/m1\\_mole\\_hill\\_farm\\_kegworth](http://www.nwleics.gov.uk/pages/m1_mole_hill_farm_kegworth) [Accessed 21/03/2011]
- [20] *M1 Air Quality Management Area (nitrogen dioxide) Revocation Order 2004*, 2004, Coalville: North West Leicestershire District Council Available at [http://www.nwleics.gov.uk/pages/m1\\_mole\\_hill\\_farm\\_kegworth](http://www.nwleics.gov.uk/pages/m1_mole_hill_farm_kegworth) [Accessed 21/03/2011]

### 13.3 British Standards

- [21] British Standards Institution, 2007. *BS EN 15259:2007 Air quality. Measurement of stationary source emissions. Requirements for Progress Report 32 measurement sections and sites and for the measurement objective, plan and report*. Milton Keynes: BSI
- [22] British Standards Institution 2007. *BS ISO 4226:2007 - Air quality. General aspects. Units of measurement*. Milton Keynes: BSI

### 13.4 Technical guidance

- [23] Department for Environment Food and Rural Affairs, 2009, *Local Air Quality Management Technical Guidance LAQM.TG(09)*. London: Department for Food and Rural Affairs
- [24] Department For Environment Food and Rural Affairs. 2010. *Errata to LAQM.TG(09): Is the example in Box 2.1 of TG(09) correct?* London:

Department for Environment Food and Rural Affairs.[Online] Available at <http://laqm2.defra.gov.uk/supportguidance/> [Accessed 21/03/2011]

- [25] Department for Environment Food and Rural Affairs, 2009. *Local Air Quality Management Policy Guidance LAQM.PG(09)*. London: Department for Food and Rural Affairs
- [26] Department for Food and Rural Affairs, 2003. *Local Air Quality Management Technical Guidance LAQM.TG(03)*. London: Department for Food and Rural Affairs

## 13.5 Other Documents

- [27] AEA, 2007a, National Atmospheric Emissions Inventory. [www.naei.org.uk](http://www.naei.org.uk)  
Department for Food and Rural Affairs
- [28] AEA, 2007b, Air Quality Archive via the internet [www.airquality.co.uk](http://www.airquality.co.uk)  
Department for Food and Rural Affairs
- [29] Department for Food and Rural Affairs, 2007, *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. CM 7169 NIA 61/06-07*, London: Her Majesty's Stationary Office.
- [30] Bureau Veritas, 2011, *National Diffusion Tube Bias Adjustment Factor Spreadsheet*. [online] London: Department for Environment Food and Rural Affairs. Available at:  
[http://laqm.defra.gov.uk/documents/Diffusion Tube Bias Factors v03\\_11.xls](http://laqm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors_v03_11.xls) [Accessed 21/03/2011]
- [31] AEA, 2010, Quality assurance/quality control (QA/QC) framework. [Online] London: Department for Environment, Food and Rural Affairs. Available at:  
<http://laqm1.defra.gov.uk/review/tools/no2/qa-qc.php> [Accessed 21/03/2011]
- [32] Department for Transport, 2008. *Annual Average Daily Traffic Flows*. London: Department for Transport <http://www.dft.gov.uk/matrix>
- [33] Highways Agency, 1992 (updated June 2010). *Design Manual for Roads and Bridges Volume 11, Section 3 Environmental Assessment Progress Report 34 Techniques*. Birmingham: Highways Agency. Available at:

<http://www.standardsforhighways.co.uk/dmrb/index.htm> [accessed 07/03/2011].

- [34] Laxen & Marner (2003) Analysis of the Relationship between 1-Hour and Annual Mean Nitrogen Dioxide at UK Roadside and Kerbside Monitoring Sites. Available from DEFRA, 2007b.
- [35] Office for National Statistics, updated 04 November 2010, *Resident Population Estimates, All Persons, Mid 2009*. [online] Available at: <http://neighbourhood.statistics.gov.uk/dissemination/LeadTrendView.do?a=3&b=277034&c=north+west+leicestershire&d=13&e=13&f=26982&g=466548&i=1001x1003x1004x1005&l=1818&o=322&m=0&r=1&s=1297168244107&enc=1&adminCompld=26982&variableFamilyIds=6766&xW=779>



**14 Appendices**

## **Appendix A      QA:QC Data**

### **Diffusion Tube Bias Adjustment Factors**

The national bias adjustment spreadsheet (march 2011) did not include data for Lambeth scientific limited. It is therefore appropriate to use the factor for the nearest available year which is 2009. The bias adjustment for Lambeth scientific for 2009 is 1.02.

Environmental Scientifics group have a bias adjustment factor for 2010 of 0.84

### **QA/QC of automatic monitoring**

The analyser at Coalville is an API 200 chemiluminescence analyser, and at Castle Donington is an API 200A chemiluminescence analyser.

#### **QA/QC**

Routine instrument calibrations are conducted once per month, which involve zero and span checks, a written record of the gas analyser diagnostics and a general visual inspection of all equipment is undertaken.

#### **Data retrieval and daily data checking**

Data from the monitoring station is retrieved and processed on a data logger as 15-minute mean data. The logger is interrogated via a Siemens TC35i GSM modem at 8-hourly intervals by the ENVIEW 2000 software hosted at TRL. This is used to retrieve, check and archive data.

TRLs internal QA/QC procedures require all data to be backed up on a secure server and all documentation associated with each site to be uniquely identified and securely stored to provide an audit trail.

Daily data inspections are undertaken during office hours using the facilities of the Data Management System. Initial observations of the Management System indicate whether the site has been contacted during its nominated 'poll time'

overnight. If this has not been successful a manual poll of the site may be required. If this is not successful further investigation of the communications integrity will be required to establish contact with the site modem and data logger.

Three day plots of recorded data are viewed for the requested site, and these are inspected and assessed for continuity, validity, minimum and maximum values, date and time, power failures and general integrity. All anomalies are recorded on the Daily Check sheet, as required. Any anomalies or queries arising from daily inspection of data, or system operation, are brought to the attention of the Project Manager who will evaluate the situation, and initialise any necessary action. In the event that the PM is not available, contact will be made with the next available senior person within the monitoring team. Any issues identified with equipment operation will be referred to the client for attention within 24 hours (excluding weekends).

On a weekly basis, data are examined using summary statistics and outlier analysis to establish data validity. In the event that unusual data episodes are recorded, these would be routinely examined over longer data periods to establish their impact on trends, but would also be cross referenced with data peaks and troughs recorded at other national monitoring stations. In addition, integrity and validity of data logger clock times are checked, and any significant errors recorded in the Data Management System logbook.

All site data recorded through the Data Management System is archived on TRLs Network. The data is backed up daily, and the TRL IT Department maintains these data within their long-term and secure archives. This secures all data in the event of any system failure.

### **Data calibration and ratification**

Data is ratified as per AURN recommended procedures. The calibration and ratification process for automatic gas analysers corrects the raw dataset for any drift in the zero baseline and the upper range of the instrument. This is done using a Microsoft Excel-based calibration and ratification file which incorporates the zero and span check information from the calibration visits. The zero

reading recorded during the calibration visits is used to adjust any offset of the baseline of the data. The difference between the span value obtained between one calibration visit and the next visit is used to calculate a factor. This change is assumed to occur at the same rate over the period between calibrations and as such the factor is used as a linear data scaler. This effectively results in the start of the period having no factor applied and the end of the period being scaled with the full factor with a sliding scale of the factor in-between. After applying the calibration factors, it is essential to screen the data, by visual examination, to see if they contain any unusual measurements or outliers. Errors in the data may occur as a result of equipment failure, human error, power failures, interference or other disturbances. Data validation and ratification is an important step in the monitoring process. Ratification involves considerable knowledge of pollutant behaviour and dispersion, instrumentation characteristics, field experience and judgement.

On completion of this data correction procedure, these data were converted to hourly means and a summary of these data were provided to North West Leicestershire District Council.

## QA/QC of diffusion tube monitoring

Start writing here...

## Appendix B      NO<sub>2</sub> tube data

Site details	location	Location Type	Grid Reference		Our Tube No.	Pollutant 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 ?	analysed by Environmental Scientifics												analysed by Lambeth scientific services		BIAS =		1.02	length of monitoring period (months)	% Monitoring Period Data Coverage	% Annual Data coverage	Standard deviation
			X	Y							Measurement Period (ugm <sup>-3</sup> )												MEAN	Bias Adjusted Mean	No of results						
											1	2	3	4	5	6	7	8	9	10	11	12									
86682 - NWLeicestershire 01N	Jackson Street Coalville	Urban Centre	442316	314217	1	NO <sub>2</sub>	N	N	N/A	N	43	52	38	25	29	24	20	21	28	31	33	48	32.65	33.30	12	12	100	100	10.46		
86683 - NWLeicestershire 02N	Oxford Street Coalville	Urban Background	443282	314120	2	NO <sub>2</sub>	N	N	N/A	N	42	41	33	22	18	21	15	15	22	25	38	38	27.54	28.09	12	12	100	100	10.29		
86684 - NWLeicestershire 03N	181 Bardon Rd Coalville	Roadside	444139	313222	3	NO <sub>2</sub>	Y	0	10	Y	59	44	36	23	27	26	20	18	27	28	47	42	33.05	33.71	12	12	100	100	12.41		
86685 - NWLeicestershire 04N	244 Bardon Rd Coalville	Roadside	444302	313048	4	NO <sub>2</sub>	Y	7.5	1	Y	57	62	54	32	34	34	26	23	33	39	65	57	43.02	43.88	12	12	100	100	14.95		
86686 - NWLeicestershire 05N	62 Bardon Rd Coalville	Roadside	443748	313528	5	NO <sub>2</sub>	Y	0	13.9	Y	43	47	31	20	22								32.51	33.16	5	5	100	41.7	12.17		
86687 - NWLeicestershire 06N	Broomleys junction (1)	Roadside	443632	314026	6	NO <sub>2</sub>	Y	5.8	2	Y	56		61	31	39	28	35	35	41	40	55	33	41.29	42.12	11	12	91.7	91.7	11.14		
86688 - NWLeicestershire 07N	Broomleys junction (2)	Roadside	443660	314002	7	NO <sub>2</sub>	Y	5.8	2	Y	68	71	64	39	50	47	17	38					49.28	50.26	8	8	100	66.7	18.25		
96689 - NWLeicestershire 08N	End Cottage Copt Oak	Rural	448138	313012	8	NO <sub>2</sub>	Y	0	N/A	N	39	44	42	21	28	23	24	26	27	29	40	40	31.85	32.49	12	12	100	100	8.29		
86690 - NWLeicestershire 09N	Whitwick Rd Copt Oak	Rural	448120	313066	9	NO <sub>2</sub>	Y	N	N/A	N	49	59	59	36	38	42	41	41	36	44	48	51	45.34	46.25	12	12	100	100	8.07		
86691 - NWLeicestershire 10N	The Terrace Charley	Roadside	448518	313579	10	NO <sub>2</sub>	N	0	2.2	Y	41	48	46	25	34	34	26	33					35.90	36.61	8	8	100	66.7	8.55		
86692 - NWLeicestershire 11N	LW M1	other	447024	323757	11	NO <sub>2</sub>	N	N	N/A	N	43	50	42		20	24	24		28	32	31		32.66	33.31	9	12	75.0	75.0	10.18		
86693 - NWLeicestershire 12N	Aeropark	Other	444161	326355	12	NO <sub>2</sub>	N	N	N/A	N	40	40	29	15	15	22	16		22	21	36	38	26.75	27.29	11	12	91.7	91.7	10.24		
86694 - NWLeicestershire 13N	Diseworth Lane CD	Other	444362	326305	13	NO <sub>2</sub>	N	N	N/A	Y	37	38	31	11	17	17	13	29	46	25	33	34	27.60	28.15	12	12	100	100	11.04		
86695 - NWLeicestershire 14N	69 High St CD	Roadside	444216	326788	14	NO <sub>2</sub>	Y	0	2.9	Y	40	46	44	27	23	28	19	14	27	34	25	49	31.26	31.89	12	12	100	100	11.11		
86696 - NWLeicestershire 15N	137 Stonehill CD	Other	444478	326733	15	NO <sub>2</sub>	N	N	N/A	N	32	37	29	16	13	15	10	21	15	21	28	35	22.66	23.12	12	12	100	100	9.21		
86697 - NWLeicestershire 16N	Crossroads CD	Roadside	444450	327233	16	NO <sub>2</sub>	Y	7.53	1	Y	66	54	48	30	35	37		13	30	42	38	44	39.71	40.51	11	12	91.7	91.7	13.82		
86698 - NWLeicestershire 17N	13 Bondgate CD	Roadside	444512	327335	17	NO <sub>2</sub>	Y	2	2.5	Y	52	66	51	30	37	40	26	34	39	35	52	45	42.16	43.00	12	12	100	100	11.21		
86699 - NWLeicestershire 18N	34 Bondgate CD	Roadside	444580	327411	18	NO <sub>2</sub>	Y	0	2.3	Y	68	81	64	43	46	51		37	22	60	59	70	54.61	55.70	11	12	91.7	91.7	16.81		
86700 - NWLeicestershire 19N	94 Bondgate CD	Roadside	444707	327603	19	NO <sub>2</sub>	Y	0.8	1.4	Y	55	63	55	26	29	30	21	21	31	39	45	51	38.81	39.59	12	12	100	100	14.54		

Site details	location	Location Type	Grid Reference		Our Tube No.	Pollutant 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 ?	analysed by Environmental Scientifics												analysed by Lambeth scientific services		BIAS =		1.02	length of monitoring period (months)	% Monitoring Period Data Coverage	% Annual Data coverage	Standard deviation
			X	Y							Measurement Period (ugm <sup>-3</sup> )												MEA N	Bias Adjusted Mean	No of results						
											1	2	3	4	5	6	7	8	9	10	11	12									
86701 - NWLeicestershire 20N	Derby Rd Kegworth	Roadside	448523	326885	20	NO <sub>2</sub>	Y	3.2	1	Y	56	57	56	34	22	25	26	29	32	37	56	59	40.74	41.55	12	12	100	100	14.71		
86702 - NWLeicestershire 21N	A6 Kegworth	Roadside	448784	326655	21	NO <sub>2</sub>	Y	4.5	1	Y	63	67	67	39	34	35	35	35	47	50	62	57	49.25	50.24	12	12	100	100	13.46		
86703 - NWLeicestershire 22N	A6 2 Kegworth	Roadside	448817	326621	22	NO <sub>2</sub>	Y	0	2.3	Y	53	63	53	39	30	37	31	37	35		52	52	43.87	44.75	11	12	91.7	91.7	11.14		
86704 - NWLeicestershire 23N	120 Whatton Rd Kegworth	Suburban	448108	326305	23	NO <sub>2</sub>	N	N	N/A	Y	36	40	29	25	14	19	16	19	23	26		42	26.25	26.77	11	12	91.7	91.7	9.56		
86705 - NWLeicestershire 24N	M1 Mole AQM	Other	447435	326460	24	NO <sub>2</sub>	Y	N	N/A	Y	78	79	80	60	38	60	64	70	62	63			65.32	66.62	10	12	83.3	83.3	12.40		
86706 - NWLeicestershire 25N	M1 Mole 2 AQM	Other	447435	326460	25	NO <sub>2</sub>	Y	N	N/A	N	77	77	96	51	39	56	40	73	55	56			62.03	63.27	10	12	83.3	83.3	18.21		
86707 - NWLeicestershire 26N	Molehill House	Roadside	447457	326420	26	NO <sub>2</sub>	Y	0	50	Y	47	47	48	45	23	29	32	34	35	35	45	47	38.95	39.73	12	12	100	100	8.60		
86708 - NWLeicestershire 27N	Keg Mole	other	447436	326468	27	NO <sub>2</sub>	Y	N	N/A	Y	59	67	77	58	34	44	51	58					56.06	57.18	8	8	100	66.7	13.30		
86709 - NWLeicestershire 28N	Ashby A42	Urban Background	436342	315836	28	NO <sub>2</sub>	N	N	N/A	Y	38	45	44	25	19	22	16	17	23	32	34	38	29.38	29.96	12	12	100	100	10.34		
86710 - NWLeicestershire 29N	Measham	Roadside	433457	312213	29	NO <sub>2</sub>	N	2.3	1.6	Y	44	47		22	25		16	21	23		28	44	30.00	30.60	9	12	75.0	75.0	11.73		
86712 - NWLeicestershire 31N	Sinope	Roadside	440167	315264	31	NO <sub>2</sub>	N	7.8	3.2	Y	42	49	37	22	30	22	61	24	32	32	38	40	35.75	36.46	12	12	100	100	11.51		
86742 - NWLeicestershire 32N	M1 Bridge Copt Oak	Other	448082	313100	30	NO <sub>2</sub>	N	N	N/A	Y	80	88	101	46	51	60		55	62	65	58	74	67.18	68.52	11	12	91.7	91.7	16.65		
86942 - NWLeicestershire 33N	Monitoring station Copt Oak (1)	Other	448124	313048	5	NO <sub>2</sub>	Y	N	N/A	Y													33.67	34.34	6	7	85.7	50.0	6.89		
86943 - NWLeicestershire 34N	monitoring station Copt oak (2)	Other	448124	313048	10	NO <sub>2</sub>	Y	N	N/A	Y													40.25	41.06	4	4	100	33.3	7.27		
86944 - NWLeicestershire 35N	monitoring station Coalville (1)	Roadside	443660	314002	7	NO <sub>2</sub>	Y	5.8	2	Y													49.00	49.98	2	4	50.0	16.7	18.38		
86945 - NWLeicestershire 36N	monitoring station Coalville (2)	Roadside	443660	314002	27	NO <sub>2</sub>	Y	5.8	2	Y													48.00	48.96	3	4	75.0	25.0	12.12		
86946 - NWLeicestershire 37N	monitoring station CD (1)	Roadside	444534	327365	24	NO <sub>2</sub>	Y	0	1.5	Y													49.00	49.98	1	2	50.0	8.3	0.00		
86947 - NWLeicestershire 38N	monitoring station CD (2)	Roadside	444534	327365	25	NO <sub>2</sub>	Y	0	1.5	Y													53.00	54.06	1	2	50.0	8.3	0.00		
86948 - NWLeicestershire 39N	LW New M1	Other	446935	323744	11	NO <sub>2</sub>	Y	N	N/A	N													43.00	43.86	1	1	100	8.3	0.00		

## **Appendix C      Annualisation of Diffusion Tube Data**



Site details	location	BIAS = 1.02		annualisation (see Box 3.2 pg 3-4 of TG(09) where annual data coverage for a site is <75% site has been excluded)															
		MEAN	Bias Adjusted Mean	period mean								Ratio (annual mean / period mean)							
				Jan - May	Jan - Aug	Jan - Oct	Jan - Nov	Jun - Dec	Sept - Dec	Nov - Dec	Dec	Jan - May	Jan - Aug	Jan - Oct	Jan - Nov	Jun - Dec	Sept - Dec	Nov - Dec	Dec
86682 - NWLeicestershire 01N	Jackson Street Coalville	32.65	33.30	37.35	31.47	31.08	31.25	29.29	35.00	40.50	48.00	0.874	1.037	1.051	1.045	1.115	0.933	0.806	0.680
86683 - NWLeicestershire 02N	Oxford Street Coalville	27.54	28.09	31.28	25.93	25.44	26.58	24.86	30.75	38.00	38.00	0.880	1.062	1.082	1.036	1.108	0.895	0.725	0.725
86684 - NWLeicestershire 03N	181 Bardon Rd Coalville	33.05	33.71	37.72	31.57	30.76	32.24	29.71	36.00	44.50	42.00	0.876	1.047	1.074	1.025	1.112	0.918	0.743	0.787
86685 - NWLeicestershire 04N	244 Bardon Rd Coalville	43.02	43.88	47.85	40.28	39.43	41.75	39.57	48.50	61.00	57.00	0.899	1.068	1.091	1.030	1.087	0.887	0.705	0.755
86687 - NWLeicestershire 06N	Broomleys junction (1)	41.29	42.12	46.80	40.74	40.69	42.12	38.14	42.25	44.00	33.00	0.882	1.013	1.015	0.980	1.083	0.977	0.938	1.251
96689 - NWLeicestershire 08N	End Cottage Copt Oak	31.85	32.49	34.64	30.77	30.22	31.11	29.86	34.00	40.00	40.00	0.920	1.035	1.054	1.024	1.067	0.937	0.796	0.796
86690 - NWLeicestershire 09N	Whitwick Rd Copt Oak	45.34	46.25	48.22	45.64	44.51	44.83	43.29	44.75	49.50	51.00	0.940	0.994	1.019	1.011	1.047	1.013	0.916	0.889
86693 - NWLeicestershire 12N	Aeropark	26.75	27.29	27.85	25.32	24.47	25.63	25.83	29.25	37.00	38.00	0.960	1.056	1.093	1.044	1.036	0.915	0.723	0.704
86694 - NWLeicestershire 13N	Diseworth Lane CD	27.60	28.15	26.84	24.15	26.42	27.02	28.14	34.50	33.50	34.00	1.028	1.143	1.045	1.022	0.981	0.800	0.824	0.812
86695 - NWLeicestershire 14N	69 High St CD	31.26	31.89	35.83	30.02	30.11	29.65	28.00	33.75	37.00	49.00	0.873	1.041	1.038	1.054	1.116	0.926	0.845	0.638
86696 - NWLeicestershire 15N	137 Stonehill CD	22.66	23.12	25.39	21.62	20.90	21.54	20.71	24.75	31.50	35.00	0.893	1.048	1.085	1.052	1.094	0.916	0.719	0.648
86697 - NWLeicestershire 16N	Crossroads CD	39.71	40.51	46.57	40.41	39.43	39.29	34.00	38.50	41.00	44.00	0.853	0.983	1.007	1.011	1.168	1.032	0.969	0.903
86698 - NWLeicestershire 17N	13 Bondgate CD	42.16	43.00	46.97	41.86	40.89	41.90	38.71	42.75	48.50	45.00	0.897	1.007	1.031	1.006	1.089	0.986	0.869	0.937
86699 - NWLeicestershire 18N	34 Bondgate CD	54.61	55.70	60.33	55.67	52.41	53.07	49.83	52.75	64.50	70.00	0.905	0.981	1.042	1.029	1.096	1.035	0.847	0.780
86700 - NWLeicestershire 19N	94 Bondgate CD	38.81	39.59	45.55	37.47	36.98	37.70	34.00	41.50	48.00	51.00	0.852	1.036	1.050	1.029	1.142	0.935	0.809	0.761
86701 - NWLeicestershire 20N	Derby Rd Kegworth	40.74	41.55	44.97	38.11	37.39	39.08	37.71	46.00	57.50	59.00	0.906	1.069	1.090	1.042	1.080	0.886	0.708	0.690
86702 - NWLeicestershire 21N	A6 Kegworth	49.25	50.24	54.00	46.88	47.20	48.55	45.86	54.00	59.50	57.00	0.912	1.051	1.043	1.015	1.074	0.912	0.828	0.864
86703 - NWLeicestershire 22N	A6 2 Kegworth	43.87	44.75	47.72	42.95	42.06	43.06	40.67	46.33	52.00	52.00	0.919	1.022	1.043	1.019	1.079	0.947	0.844	0.844
86704 - NWLeicestershire 23N	120 Whatton Rd Kegworth	26.25	26.77	28.75	24.72	24.67	24.67	24.17	30.33	42.00	42.00	0.913	1.062	1.064	1.064	1.086	0.865	0.625	0.625
86707 - NWLeicestershire 26N	Molehill House	38.95	39.73	42.08	38.18	37.54	38.22	36.71	40.50	46.00	47.00	0.926	1.020	1.038	1.019	1.061	0.962	0.847	0.829
86709 -NWLeicestershire 28N	Ashby A42	29.38	29.96	34.10	28.19	28.05	28.59	26.00	31.75	36.00	38.00	0.861	1.042	1.047	1.027	1.130	0.925	0.816	0.773
86710 - NWLeicestershire 29N	Measham	30.00	30.60	34.50	29.16	28.28	28.25	26.40	31.67	36.00	44.00	0.870	1.029	1.061	1.062	1.136	0.947	0.833	0.682
86712 - NWLeicestershire 31N	Sinope	35.75	36.46	35.99	35.87	35.09	35.36	35.57	35.50	39.00	40.00	0.993	0.997	1.019	1.011	1.005	1.007	0.917	0.894
86742 - NWLeicestershire 32N	M1 Bridge Copt Oak	67.18	68.52	73.00	68.57	67.44	66.50	62.33	64.75	66.00	74.00	0.920	0.980	0.996	1.010	1.078	1.038	1.018	0.908

average annualisation ration 0.906 1.034 1.049 1.028 1.086 0.941 0.820 0.799